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Brian L. Guillot
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Regulatory Affairs
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May 1, 2019

VIA HAND DELIVERY
Ms. Lora W. Johnson, CMC, LMMC
Clerk of Council
City Hall, Room 1E09
1300 Perdido Street
New Orleans, Louisiana 70112

RE: Filing of Entergy New Orleans, LLC's Energy Smart Program Year 8 Annual Program Report, and Annual Evaluation, Measurement and Verification Report (Resolutions R-11-52, R-17-31, R-17-176, R-17-177, R-17-623; UD-08-02, UD-17-03)

Dear Ms. Johnson:

On February 3, 2011, the Council of the City of New Orleans ("Council") adopted Resolution R-11-52 requiring periodic reports regarding Energy Smart to be filed with the Council. A series of Council Resolutions, R-17-31, R-17-176, R-17-177, and R-17-623, approved the continuance of the Energy Smart for Program Years 7-9 with APTIM, Environmental and Infrastructure ("APTIM") as the Third Party Administrator and ADM Associates, Inc. ("ADM") as the Third Party Evaluator.

On behalf of APTIM, Entergy New Orleans, LLC submits the enclosed original and three copies of the Energy Smart Annual Program Report and Annual Evaluation, Measurement and Verification Report for the period of January 1, 2018 to December 31, 2018. Should you have any questions regarding this filing, please contact my office at (504) 670-3680.

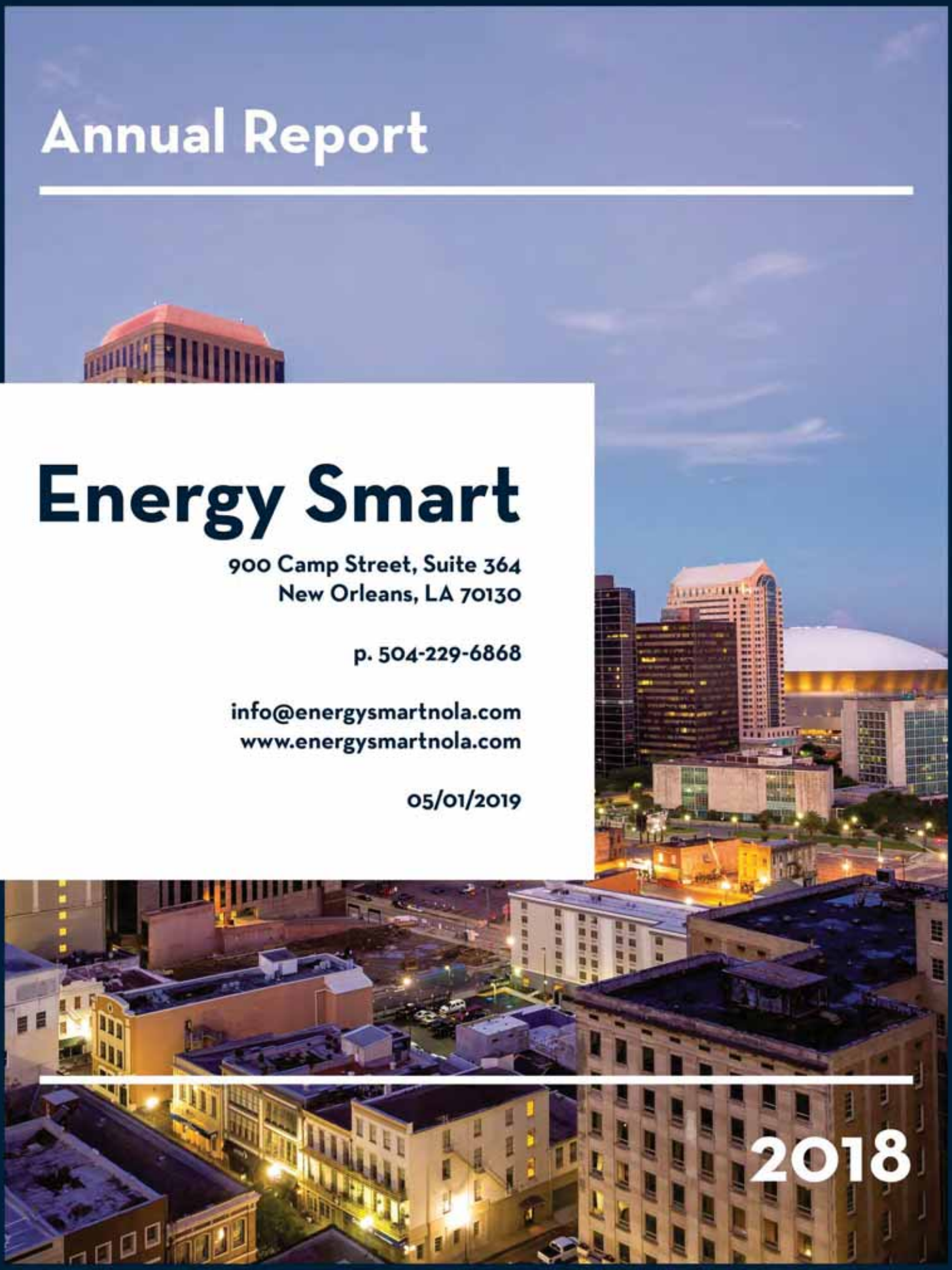
Thank you for your assistance with this matter.

Sincerely,

Brian L. Guillot

Enclosure
cc: Official Service List UD-08-02 and UD-17-03 *(via electronic mail)*

Annual Report



Energy Smart

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05/01/2019

2018

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EXECUTIVE SUMMARY

The Energy Smart Program (the "Program") was developed by the New Orleans City Council ("Council"), is administered by Entergy New Orleans, LLC ("ENO") and is currently implemented by APTIM (formerly CB&I), the Third-Party Administrator ("TPA"). This report contains data on the Program and post-evaluation results from the Evaluation, Measurement and Verification (EM&V) report produced by ADM Associates, the Third-Party Evaluator ("TPE").

The current Energy Smart portfolio of offerings runs from April 1, 2017 through December 31, 2019. To ensure success in current and future offerings, the Program, led by APTIM, has engaged a number of subcontractors that have extensive experience in energy efficiency offerings in the New Orleans market to implement the Program, including:

- Accelerated Innovations
- Baynham Environmental
- Energy Wise Alliance
- Franklin Energy Services
- Green Coast Enterprises
- Green Light New Orleans
- ILSI Engineering
- TSG Services
- Urban League of Louisiana

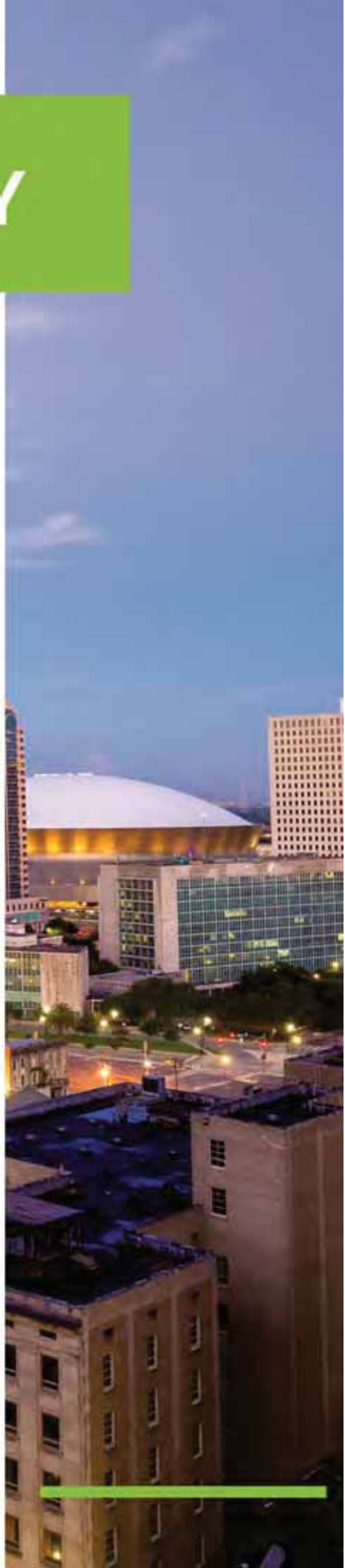
This report contains data on the Energy Smart Residential and Commercial & Industrial offerings, which span the east bank of New Orleans and Algiers territory. The data includes the following:

- Summary of activity by offering
- kWh savings and incentive spend by offering
- Marketing, outreach and engagement highlights
- Training and workforce development activities

Program Year 8 is divided into four quarters:

- Quarter 1 ("Q1"): January – March
- Quarter 2 ("Q2"): April – June
- Quarter 3 ("Q3"): July – September
- Quarter 4 ("Q4"): October – December

An emphasis on working collaboratively with ENO, the Council's Advisors, and numerous stakeholders, including local policy advocacy stakeholders, local trade ally stakeholders and local higher education stakeholders, has been important for the implementation of the Energy Smart program in 2018. ENO and APTIM view collaborative teamwork among the large number of stakeholders with diverse interests as a critical component to the overall success of the program.



Staff List

Name	Title	Company	Location
Tom Quasius	TPA Director	APTIM	Chicago, IL
Kristin McKee	Program Director	APTIM	New Orleans, LA
Mike Dessilla	Program Operations Lead	APTIM	New Orleans, LA
Dawn Ellerd	Marketing & Outreach Lead	APTIM	New Orleans, LA
Kevin Fitzwilliam	Training & Development Specialist	APTIM	New Orleans, LA
Spencer Kurtz	Energy Engineer	APTIM	Charlotte, NC
Mobuayo Pedro-Egbe	Energy Engineer	APTIM	New Orleans, LA
Justin Pink	Data and Systems Lead	APTIM	New Orleans, LA
Philip Russo	Trade Ally Liaison	APTIM	New Orleans, LA
Tamzen Jenkins	Marketing & Communications Specialist	APTIM	New Orleans, LA
Michael Slaughter	Finance	APTIM	Baton Rouge, LA
Jessica Wagner	Director of Marketing	APTIM	Madison, WI
Nate Warren	Program Support	APTIM	Madison, WI
George Leonard	Commercial QA/QC	ILSI Engineering	New Orleans, LA
Keeley Evans	Commercial Project Coordinator	TSG Services	New Orleans, LA
Jackie Dadakis	Chief Operating Officer	Green Coast Enterprises	New Orleans, LA
Joe Ryan	Director of Energy Services	Green Coast Enterprises	New Orleans, LA
Jared Sessum	Commercial Energy Manager	Green Coast Enterprises	New Orleans, LA
Linda Baynham	Commercial Outreach	Baynham Environmental	New Orleans, LA
Josh Kruebbe	Residential QA/QC	Baynham Environmental	New Orleans, LA
Jacob Pohlman	Residential QA/QC	Baynham Environmental	New Orleans, LA
Nate Wolf	Residential Program Manager	Franklin Energy Services	New Orleans, LA
Alan Mitchell	Operations Manager	Franklin Energy Services	New Orleans, LA
Karen O'Brien	Program Manager, Special Projects	Franklin Energy Services	New Orleans, LA
Liz McKinley	Residential Marketing Manager	Franklin Energy Services	Indianapolis, IN
Atom Davis	Trade Ally Liaison	Franklin Energy Services	New Orleans, LA
Raven Carr	Operations Analyst	Franklin Energy Services	New Orleans, LA
Bernadelle Tilus	Project Coordinator	Franklin Energy Services	New Orleans, LA
Daniel Franklin	Energy Advisor	Franklin Energy Services	New Orleans, LA
James Herman	Energy Advisor	Franklin Energy Services	New Orleans, LA
James Phillips	Energy Advisor	Franklin Energy Services	New Orleans, LA
Dwayne Haley	Energy Advisor	Franklin Energy Services	New Orleans, LA
Jamie Wine	School Kits & Education Director	Energy Wise Alliance	New Orleans, LA
Emily Snyder	School Kits, Education Manger	Energy Wise Alliance	New Orleans, LA
Kevin Kellup	School Kits, Education Coordinator	Energy Wise Alliance	New Orleans, LA
Brandon Muetzel	Community Outreach Manager	Energy Wise Alliance	New Orleans, LA
Andreas Hoffman	Green Light Direct Install	Green Light New Orleans	New Orleans, LA
Zach Carlsen	Scorecard Project Manager	Accelerated Innovations	St. Paul, MN

Offerings Overview

Residential

- Home Performance with ENERGY STAR®
- Residential Lighting & Appliances
- Low Income Audit & Weatherization
- High Efficiency Tune Up
- Multi-Family
- Direct Load Control (EasyCool)
- School Kits & Education
- Green Light Direct Install
- Behavioral (Scorecard)

Commercial & Industrial

- Small Commercial Solutions
- Large Commercial & Industrial Solutions
- Publicly Funded Institutions

PROGRAM PERFORMANCE & ACTIVITY

Program Performance and Activity

Table 2.1

	kWh SAVINGS	kWh GOAL*	% TO kWh GOAL	kW SAVINGS	kW TARGET*	% TO kW TARGET	INCENTIVE SPENT	INCENTIVE BUDGET	% OF BUDGET
Algiers – Commercial	1,136,181	1,470,573	77.26%	57.07	245.54	23.24%	$140,156	$179,862	77.92%
Algiers - Residential	1,805,883	1,639,924	110.12%	362.13	886.32	40.86%	$197,278	$227,905	86.56%
N.O. - Commercial	27,940,371	28,963,320	96.47%	3,142.54	4,844.57	64.87%	$3,243,917	$4,045,479	80.19%
N.O. - Residential	19,434,093	14,025,490	138.56%	5,372.26	6,902.64	77.83%	$2,065,704	$2,077,539	99.43%
TOTAL	**50,316,528**	**46,099,307**	**109.15%**	**8,078.76**	**8,934.00**	**69.37%**	**$5,647,055**	**$6,530,784**	**86.47%**

*Goals are reflective of the Supplemental and Amended Energy Smart Implementation Plan PY 7 – 9, approved 12/14/2017. Savings reflect verified gross savings as documented in ADM's Evaluation, Measurement and Verification (EM&V) report.

Summary tables show savings and incentive spend from January 1st through December 31st, 2018.

Table 2.2

	NET PEAK DEMAND REDUCTION (KW)	NET ANNUAL ENERGY SAVINGS (KWH)	TOTAL PROGRAM EXPENDITURES	TRC (B/C RATIO)	UCT (B/C RATIO)
New Orleans	7,707.01	41,331,965	$11,322,042	1.70	1.86
Algiers	371.75	2,648,146	$939,849	1.18	1.23

Residential Summary

The Energy Smart Residential portfolio built on the momentum of Program Year 7 ("PY7") resulting in positive program growth in Program Year 8 ("PY8"). The Energy Smart team focused on creating awareness and participation within the different offerings. Customer engagement methods varied throughout the year utilizing electronic marketing, direct mail, mass marketing and community outreach. The varied marketing approach allowed the Energy Smart Program to reach all customer types in the Entergy New Orleans footprint regardless of location or demographic. Overall Energy Smart

Residential portfolio savings goals were exceeded in both the New Orleans and Algiers service areas. Trade Ally participation generated tremendous results that significantly attributed to the success of PY8. The Energy Smart team will continue to focus on generating awareness and enrollments in EasyCool in Program Year 9 ("PY9").

Commercial & Industrial Summary

The Energy Smart Commercial & Industrial (C&I) portfolio evolved substantially throughout PY8 and saw success across all offerings. The Energy Smart team focused on engaging large users, Algiers customers and major industry segments. The Trade Ally Network continued to build and develop in support of the increased energy savings goals in PY8. Several major design changes and enhancements were introduced in PY8, including a Retro-commissioning offering, the removal of prescriptive measure pre-approval below a specified incentive threshold, the establishment of a Higher Education Cohort and the release of an end-of-year custom incentive bonus that drove significant production in the final quarter of the year. In PY9, the Energy Smart is focusing heavily on strategic marketing, outreach and engagement efforts to drive awareness and participation.

RESIDENTIAL OFFERINGS

Residential Offerings Summary

The Energy Smart Residential portfolio built on the momentum of PY7 resulting in positive program growth in PY8. The Energy Smart team focused on creating awareness and participation within the different offerings. Customer engagement methods varied throughout the year utilizing electronic marketing, direct mail, mass marketing and community outreach. The varied marketing approach allowed the Energy Smart Program to reach all customer types in the Entergy New Orleans footprint regardless of location or demographic. Overall Energy Smart Residential portfolio savings goals were exceeded in both the New Orleans and Algiers territories. Trade Ally participation generated tremendous results through attic insulation, duct sealing, air sealing and high-efficiency A/C tune-up measures.

After performing a mid-year evaluation on the Energy Smart Behavioral (Scorecard) offering, it was determined that there could potentially be a shortfall in reaching the New Orleans City Council's kWh savings goals for PY8. In an effort to boost savings and reach the kWh savings goals, three tactics were implemented in the fourth quarter to achieve savings through other residential offerings. The Energy Smart team shifted funds from the Commercial and Industrial budget to the residential Home Performance with ENERGY STAR (HPwES) and Residential Lighting & Appliance offerings to support the savings boost. An extension of the Residential Lighting & Appliance offering was put in place to generate deeper savings from local retailers. A Home Energy Saving Kit option was developed to promote interest in the Energy Smart Program through the HPwES offering. The free kit consisted of LED lighting and water saving measures. The kit tactic was promoted with a postage-paid business reply card and a paid Facebook ad campaign. The final tactic as a part of the boost was an LED Giveaway where the Energy Smart team worked with local food banks, houses of worship and other community organizations to provide free LED bulbs to Entergy New Orleans customers. Final PY8 evaluation results determined that the Energy Smart Behavioral offering exceeded the energy savings goals. While the boost was ultimately not required to achieve goal, the additional tactics enhanced the overall savings achievement in both Algiers and New Orleans.

The Energy Smart team increased staffing over the course of PY8, most notably in Q4. Additional staff was brought in to support EasyCool switch and thermostat installations. As the Energy Smart Program has grown over the past two years, staffing changes were made to ensure proper support for program management, implementation and quality assurance.

All Energy Smart Program staff are expected to provide a high level of customer satisfaction in the safest manner possible. In PY8 there were no injuries or vehicle collisions. The Energy Smart team will continue to build momentum from this looking towards PY9. Safety meetings, in field audits and driving trainings, are presented to the team each month. Safety continues to be a top priority for the Energy Smart team.

Program challenges in PY8 included the Residential Lighting and Appliance and the EasyCool offering. Retail outlets in the Algiers territory are minimal with many of the big box stores that help drive savings located in the neighboring town of Gretna, which is outside of the Entergy New Orleans footprint. In PY9, the Energy Smart team will look to add new retailers into the offering to promote greater savings. The LED giveaway tactic, a component of the Retail Lighting and Appliance offering, was utilized heavily in

the Algiers territory as a way to increase LED distribution to customers. The EasyCool offering has proven to be a challenge as customers are not motivated or unwilling to participate in a program involving their A/C unit. The Energy Smart team utilized multiple marketing strategies during PY8 to increase the awareness and benefits of participation in the offering. Education was a key component in marketing this offering to the customer base. The other challenging factor is the climate of New Orleans. The cycling events occur in the hottest parts of the summer months when peak demand is at its highest; a period in which customers are most concerned with their A/C units. The EasyCool offering can be challenging in most markets but New Orleans humidity presents a unique challenge compared to many other locations in the United States. At the end of 2018, a marketing blitz was implemented that included general program marketing across multiple mediums including bus stops, billboards, and print ads. In addition to this general program marketing blitz a portion of the marketing was used to target EasyCool participation. In December, approximately 50,000 business reply cards were sent to customers to promote EasyCool. These cards included postage paid return address enrollment forms to ensure a simple process for customers to enroll. Over 1% of cards were returned which is in-tune with direct mail industry return benchmarks, however not all leads generated enrollment as not all customers that were interested met eligibility requirements. The Energy Smart team will continue to educate customers about the benefits of participating in EasyCool in PY9 and look for opportunities to increase enrollment.

Table 4.1

RESIDENTIAL OFFERINGS	KWH SAVINGS	KWH GOAL*	% TO SAVINGS GOAL	KW SAVINGS	KW TARGET*	% TO KW TARGET	INCENTIVE SPENT	INCENTIVE BUDGET	% OF BUDGET
Algiers – Home Performance	376,159	149,257	252.02%	85.11	30.00	283.70%	$80,877	$80,877	100.00%
Algiers – Retail Lighting & Appliance	307,473	264,768	116.13%	63.80	55.80	114.34%	$27,874	$28,311	98.46%
Algiers – Multifamily	37,760	37,633	100.34%	11.84	7.40	160.00%	$7,010	$10,603	66.11%
Algiers – Low Income	121,880	98,072	124.28%	31.87	21.10	151.04%	$46,959	$33,794	138.96%
Algiers – High Efficiency Tune Ups	160,029	133,532	119.84%	58.78	40.20	146.22%	$26,474	$24,728	107.06%
Algiers – DLC	-	-	N/A	103.15	83.27	123.87%	$1,160	$12,040	9.63%
Algiers – School Kits	48,272	136,695	35.31%	5.71	18.55	30.78%	$6,067	$23,800	25.49%
Algiers – Green Light	9,061	97,542	9.29%	1.87	16.00	11.69%	$858	$13,751	6.24%
Algiers – Scorecard	745,249	722,424	103.16%	-	614.00	N/A	-	-	N/A
N.O. – Home Performance	3,074,470	2,008,202	153.10%	683.65	404.52	169.00%	$606,432	$590,509	102.70%
N.O. – Retail Lighting & Appliance	5,525,610	3,503,824	157.70%	1,137.85	735.98	154.60%	$363,920	$350,408	103.86%

N.O. – Multi-Family	829,465	493,311	168.14%	210.31	96.58	217.76%	$150,985	$133,363	113.21%
N.O. – Low Income	1,907,136	1,316,362	144.88%	470.94	285.11	165.18%	$451,025	$452,430	99.69%
N.O. – High Efficiency Tune Ups	2,295,461	1,711,475	134.12%	793.67	536.11	148.04%	$364,108	$323,920	112.41%
N.O. – DLC	-	-	N/A	1,967.02	1,106.23	177.81%	$22,120	$107,960	20.49%
N.O. – School Kits	800,576	546,782	146.42%	94.75	74.49	127.20%	$100,621	$95,200	105.69%
N.O. – Green Light	67,967	167,958	40.47%	14.07	27.62	50.94%	$6,492	$23,749	27.34%
N.O. – Scorecard	4,933,408	4,277,576	115.33%	-	3,636.00	N/A	-	-	N/A
TOTAL	**21,239,976**	**15,665,414**	**135.59%**	**5,734.39**	**7,788.96**	**73.62%**	**$2,262,982**	**$2,305,444**	**98.16%**

* Goals are reflective of the Supplemental and Amended Energy Smart Implementation Plan PY 7 – 9, approved 12/14/2017. Savings reflect verified gross savings as documented in ADM's Evaluation, Measurement and Verification (EM&V) report.

Home Performance with ENERGY STAR

Offering Description

The objective of the Home Performance with ENERGY STAR® (HPwES) offering is to achieve long term, significant cost-effective electricity savings. The offering uses local auditors and contractors to help residential customers analyze their energy use and identify opportunities to improve efficiency, install low-cost energy-saving measures and identify and implement more comprehensive home efficiency projects. HPwES offers three levels of home energy audits. The Level I Assessment includes a "walk-through" inspection and direct installation of low-cost measures, such as LEDs and water measures. To generate additional savings at the time of the audit, smart thermostats are included as a direct install measure. The Level II and III Assessments are comprehensive home inspections with diagnostic testing, performed by a qualified contractor, targeted to achieve deeper savings within the home.

Home Energy Kits were added to the offering in support of the end of year savings boost. The free kits provided immediate savings as well as cross promotional opportunities to other Energy Smart offerings.

Offering Highlights

The HPwES offering exceeded savings goals in both New Orleans and Algiers. Marketing, community outreach, and trade ally engagement were the methods used to engage Entergy New Orleans customers and create awareness for the HPwES offering. Marketing methods included bill inserts, email campaigns, Facebook ads, call center outreach, newsletter postings, billboards, and a new Energy Smart Program website. Program collateral was enhanced using local images taken throughout New Orleans and Algiers. The Energy Smart team used multiple methods to engage the whole Entergy New Orleans customer base. Community Outreach was performed by Energy Wise Alliance to provide a voice to the program in the community and engage customers directly. Trade ally references provided a high rate of the program leads through outreach efforts as well as referrals from satisfied HPwES customers.

A total of 739 customers participated in the HPwES offering in 2018. The savings were a combination of direct install measures and trade ally follow up measures. Direct installations consisted of LED lighting, high-efficiency showerheads and water aerators, smart strips, smart thermostat along with a comprehensive walk-through assessment. Depending on eligibility requirements, some customers qualified for rebates on follow up measures including attic insulation, A/C tune-up, air sealing and duct sealing measures. Duct sealing and attic insulation provided a large portion of savings due to the effectiveness of those measures in 2018.

In Q4 the Energy Smart team added a free Energy Saving Kit option as part of the end of year savings boost to engage customers with another avenue for achieving energy savings. A postage-paid business reply card mailer and a simultaneous Facebook campaign were deployed to increase awareness of the additional kit option. Kits included energy-saving products, a product brochure that detailed each item included as well as details on additional Energy Smart offerings. There were 4,926 kits provided to customers in 2018.

New Orleans:

- A total of 16,939 measures were installed during the program year.
- A total of 4,272 kits were shipped in 2018.
- The offering reached 153.10% of the kWh goal, achieving 3,074,470 kWh.
- The offering reached 169.00% of the kW target, achieving 683.65 kW.

Algiers:

- A total of 2,980 measures were installed during the program year.
- A total of 654 kits were shipped in 2018.
- The offering reached 252.02% of the kWh goal, achieving 376,159 kWh.
- The offering reached 283.70% of the kW target, achieving 85.11 kW.

Table 5.1: HPwES 2018 Tactical Calendar

TACTIC	TIMING
Outreach Events	Monthly
Circuit Newsletter	June, September, October, November
School Kits Brochure	Monthly
Facebook Paid Ad (kit promotion)	December
HPwES Email	August
Bill Insert	July
Scorecard Cross Promotion	October

HPwES Collateral:

- HPwES Brochure
- General Energy Smart Program Handout
- Kit Business Reply Mail Card
- Kit Brochure
- Energy Efficiency Day Flyer
- "Sorry We Missed You" Door Hanger
- Energy Smart Rebate Check Insert
- HPwES Survey and Survey Return Mailer Card
- HPwES July Bill Insert
- HPwES Email Campaign
- Home Energy Audit Report

Offering Budget and Savings

Table 5.2

HPwES	COST			ENERGY SAVINGS (kWh)			DEMAND REDUCTION (kW)		
	Budget	Actual	%	Pre-Evaluated	Evaluated	%	Pre-Evaluated	Evaluated	%
ALGIERS HPwES	$80,877	$80,877	100%	334,726	376,159	112.38%	73.77	85.11	115.37%
N.O. HPwES	$590,509	$606,432	102.7%	2,795,666	3,074,470	109.97%	596.69	683.65	114.57%

Table reflects verified gross energy savings achievement from ADM's Evaluation, Measurement and Verification (EM&V) findings relative to pre-evaluated savings reported by TPA.

Planned or Proposed Changes to Offering and Budget

The Energy Smart team will again look to overdrive savings in the HPwES offering while working within the 2019 budget. The HPwES offering will continue to offer kits to Entergy New Orleans customers in 2019.

Residential Lighting & Appliances

Offering Description

The objective of the Residential Lighting and Appliance offering is to increase awareness and sales of energy efficient lighting and appliances to residential customers. The offering is available to Entergy New Orleans retail customers through point of sale and rebate incentives at participating retailers. The offering gives customers the opportunity to purchase, largely through retail locations, a variety of discounted products that are ENERGY STAR® qualified.

Point-of-sale rebates are available for LED lighting at locations in both New Orleans and Algiers. Appliance rebate forms are available for appliance purchases of ENERGY STAR approved appliances including pool pumps, refrigerator, window AC units and heat pump water heaters.

Offering Highlights

The Residential Lighting and Appliance offering provided a substantial amount of savings for the Residential portfolio in 2018. The bulk of the savings occurred in the New Orleans territory at 157.70% of goal. The Algiers territory finished the PY8 at 116.13% of goal. In support of the end of year savings boost, the Residential Lighting and Appliance offering was expanded to include additional products within the retail stores and introduced an LED Giveaway option. Customers were eligible to receive up to four LED bulbs through the giveaways which were provided through community groups, houses of worship, and food pantries. Algiers was a primary focus of this tactic to support the gap in savings from the retail stores.

New Orleans:

- A total of 48,393 measures were sold during the program year.
- The offering reached 157.70% of the kWh goal, achieving 5,525,610 kWh.
- The offering reached 154.60% of the kW target, achieving 1,137.85 kW.

Algiers:

- A total of 8,748 measures were sold during the program year.
- The offering reached 116.13% of the kWh goal, achieving 307,473 kWh.
- The offering reached 114.34% of the kW target, achieving 63.80 kW.

Table 6.1: Residential Lighting and Appliance 2018 Tactical Calendar

TACTIC	TIMING
Outreach Events	Monthly
Circuit Newsletter	March, June, August, September, October, November, December
School Kits Brochure	Monthly
Bill Insert	July and September
Kit Brochure	December
Scorecard Cross Promotion	September, November, December

Residential Lighting and Appliance Collateral:

- General Energy Smart Program Handout
- Duct Efficiency Rebate Application
- Attic Insulation / Air Filtration Rebate Application
- Central A/C Rebate Application
- Energy Efficiency Day Flyer
- Point of Purchase Signage
- Energy Smart Rebate Check Insert
- Window A/C Rebate Application
- Heat Pump Water Heater Rebate Application
- Pool Pump Rebate Application
- Refrigerator Rebate Application
- Retail Lighting July / September Bill Insert
- Retail Lighting Handout

Table 6.2: Participating Retailers

Retail Company	Supported Retail Programs		Address
	Lighting	Appliances	
Barto Appliance		X	1400 Airline Dr
Costco Wholesale	X	X	3900 Dublin St
Dollar Tree (Algiers)	X		3771 General DeGaulle Dr
Dollar Tree (Donna Villa Shopping Center)	X		9671 Chef Menteur Hwy
Dollar Tree (Gentilly Retail Center)	X		4242 Chef Mentuer Hwy
Dollar Tree (Morrison)	X		11701 Morrision Rd
Dollar Tree (Navarre)	X		5201 Canal Blvd
Dollar Tree (Tulane/Carrollton)	X		4115 S Carrollton Ave

Retail Company	Supported Retail Programs		Address
	Lighting	Appliances	
Home Depot (Bullard)	X	X	12300 I-10 Service Rd
Home Depot (Central)	X	X	1100 S Claiborne Ave
Lowes (Central)		X	2501 Elysian Fields Ave
Lowes (Read)		X	5770 Read Blvd
The Green Project	X		2831 Marais St
Walmart (Behrman)	X	X	4001 Behrman Pl
Walmart (Bullard)	X	X	6000 Bullard Ave
Walmart (Chef Menteur)	X	X	4301 Chef Menteur Hwy
Walmart (Tchoupitoulas)	X	X	1901 Tchoupitoulas St
Rouses Market (Mid City)	X		400 N Carrollton Ave
Rouses Market (Algiers)	X		4001 General De Gaulle Dr
Rouses Market (Uptown)	X		4500 Tchoupitoulas St
Rouses Market (Gentilly)	X		6600 Franklin Ave
Rouses Market (CBD)	X		701 Baronne St
Rouses Market (French Quarter)	X		701 Royal St

The Energy Smart team provided “train the trainer” style training on the Retail offering, including available rebates for sales with retail managers, cashiers, other applicable employees and interested customers who are present. This also includes providing marketing materials and signage to employees.

Table 6.3: PY8 Retail Training Calendar

DATE	LOCATION	AUDIENCE	NUMBER OF PARTICIPANTS
6/1/2018	Dollar Tree / 3771 General DeGaulle Dr	Retail Employees	3
6/23/2018	The Green Project / 2831 Marais St	Retail Employees	24
8/8/2018	Barto Appliance / 1400 Airline Dr	Retail Employees/Customers	3
8/8/2018	Dollar Tree / 3771 General DeGaulle Dr	Retail Employees/Customers	3
8/8/2018	Dollar Tree / 9671 Chef Menteur Hwy	Retail Employees/Customers	3
8/10/2018	Dollar Tree / 4115 S. Carrollton Ave	Retail Employees/Customers	4
8/10/2018	Costco / 3900 Dublin St	Retail Employees/Customers	5
8/14/2018	Home Depot / 12300 I-10 Service Rd	Retail Employees/Customers	13
9/1/2018	Lowes / 2501 Elysian Fields Ave	Retail Employees/Customers	3

DATE	LOCATION	AUDIENCE	NUMBER OF PARTICIPANTS
9/1/2018	Wal-Mart / 4001 Behrman Pl	Retail Employees/Customers	3
9/1/2018	The Green Project / 2831 Marais St	Retail Employees/Customers	4
10/2/2018	Lowes / 5770 Read Blvd	Retail Employees/Customers	2
10/2/2018	Home Depot / 1100 S Claiborne Ave.	Retail Employees/Customers	7
10/12/2018	Home Depot / 12300 I-10 Service Rd	Retail Employees/Customers	5
10/23/2018	Wal-Mart / 6000 Bullard Ave	Retail Employees/Customers	2
10/24/2018	Costco / 3900 Dublin St	Retail Employees/Customers	4
11/11/2018	Rouses Market / 701 Royal St	Retail Employees/Customers	3
11/20/2018	Dollar Tree / 4242 Chef Mentuer Hwy	Retail Employees	1
11/20/2018	Dollar Tree / 9671 Chef Menteur Hwy	Retail Employees/Customers	2
11/20/2018	Wal-Mart / 4301 Chef Menteur Hwy	Retail Employees/Customers	2
11/20/2018	Dollar Tree / 11701 Morrision Road	Retail Employees/Customers	3
11/20/2018	Rouses Market / 6600 Franklin Ave	Retail Employees/Customers	3
11/20/2018	Rouses Market / 701 Baronne St	Retail Employees	4
11/20/2018	Rouses Market / 400 N Carrollton Ave	Retail Employees/Customers	5
11/23/2018	Dollar Tree / 4115 S. Carrollton Ave	Retail Employees	1
11/23/2018	Dollar Tree / 5201 Canal Blvd.	Retail Employees/Customers	3
11/27/2018	Wal-Mart / 1901 Tchoupitoulas St	Retail Employees/Customers	2
12/10/2018	Dollar Tree / 3771 General DeGaulle Dr	Retail Employees/Customers	3
12/10/2018	Rouses Market / 4001 General De Gaulle Dr	Retail Employees/Customers	3
12/11/2018	Rouses Market / 4500 Tchoupitoulas St	Retail Employees	2
Totals	30 Trainings		125 Participants

Offering Budget and Savings

Table 6.4

RESIDENTIAL LIGHTING & APPLILANCE	COST			ENERGY SAVINGS (kWh)			DEMAND REDUCTION (kW)		
	Budget	Actual	%	Pre-Evaluated	Evaluated	%	Pre-Evaluated	Evaluated	%
Algiers Lighting & Appliance	$28,311	$27,874	98.46%	234,604	307,473	131.06%	48.37	63.80	131.90%
N.O. Lighting & Appliance	$350,408	$363,920	103.86%	4,672,972	5,525,610	118.25%	955.48	1,137.85	119.09%

Table reflects verified gross energy savings achievement from ADM's Evaluation, Measurement and Verification (EM&V) findings relative to pre-evaluated savings reported by TPA.

Planned or Proposed Changes to Offering and Budget

In PY9, the offering will focus on increasing participating stores in the Algiers territory. Algiers has been a challenging location due to the lack of available retailers within the territory. The Energy Smart team will work to add additional retailers, such as new Dollar General and Walgreens locations.

LED giveaway tactic in 2018, the Energy Smart team will continue to have Energy Wise Alliance to utilize the bulbs as an engagement tool at public events. In addition, the LED bulbs can be utilized to provide quick, cost-effective savings in targeted areas such as Algiers to support goal attainment.

Multi-Family

Offering Description

The Multi-Family offering targets multi-family property owners (landlords) and managers, as well as apartment and condo occupants. The Multi-Family offering addresses the unique needs of this type of home configuration, which are often overlooked, through a combination of incentives for both direct install and prescriptive measures, and through property owner and tenant education. This offering includes duplex homes, which provide greater opportunities for energy savings within New Orleans where duplex dwelling structures are prevalent.

Offering Highlights

The Multi-Family offering achieved 168% the kWh goal in New Orleans and achieved 100% of goal in Algiers. Marketing, community outreach, and trade ally engagement were the methods used to engage Entergy New Orleans customers and create awareness for the Multi-Family offering. Marketing methods included bill inserts, email campaigns, Facebook ads, call center outreach, newsletter postings, billboards, and a new Energy Smart website. Community outreach was performed by Energy Wise Alliance to provide a presence in the community and engage customers directly. A high rate of program leads were acquired through trade ally references and outreach efforts as well as references from Energy Smart customers.

A total of 261 units were completed.

In 2018, duplexes and quadplexes made up the savings for the offering. Due to the unique housing stock in New Orleans, duplexes were marketed to in the same manner as the Low-Income Weatherization and HPwES offerings. This similar marketing approach generated a lot of interest in the Multi-Family market sector. The offering provides similar direct install measures and follow-up measures to Income-Qualified Weatherization and HPwES offerings. Programmable thermostats are an additional measure that is offered to Multi-Family customers.

New Orleans:

- A total of 4,672 measures were installed during the program year.
- The offering reached 168.14% of the kWh goal, achieving 829,465 kWh.
- The offering reached 217.76% of the kW target, achieving 210.31 kW.

Algiers:

- A total of 320 measures were installed during the program year.
- The offering reached 100.34% of the kWh goal, achieving 37,760 kWh.
- The offering reached 160.00% of the kW target, achieving 11.84 kW.

Table 7.1: Multi-Family 2018 Tactical Calendar

TACTIC	TIMING
Outreach Events	Monthly
Circuit Newsletter	May
School Kits Brochure	Monthly
Email Campaign	August
Kit Brochure	December
Bill Insert	July

Multi-Family Collateral:

- General Energy Smart Program Handout
- Energy Efficiency Day Flyer
- Energy Smart Rebate Check Insert
- Property Manager Checklist
- MF Survey and Survey Return Mailer Card

Offering Budget and Savings

Table 7.2

MULTI-FAMILY	COST			ENERGY SAVINGS (kWh)			DEMAND REDUCTION (kW)		
	Budget	Actual	%	Pre-Evaluated	Evaluated	%	Pre-Evaluated	Evaluated	%
Algiers Multifamily	$10,603	$7,010	66.11%	36,549	37,760	103.31%	6.16	11.84	192.21%
N.O. Multifamily	$133,363	$150,985	113.21%	799,581	829,465	103.74%	199.53	210.31	105.40%

Table reflects verified gross energy savings achievement from ADM's Evaluation, Measurement and Verification (EM&V) findings relative to pre-evaluated savings reported by TPA.

Planned or Proposed Changes to Offering and Budget

A majority of housing stock in PY8 was duplexes and quadplexes. There was significant demand for small Multi-Family dwellings in PY8. Larger complexes have made up most savings for this offering in program years prior to 2017. The Energy Smart team will evaluate opportunities for larger complexes based on eligibility and budget availability. The Energy Smart team will also look for opportunities to cross-promote the Commercial and Industrial offering in common spaces throughout multi-family properties.

Low-Income Audit & Weatherization

Offering Description

The Low-Income Audit & Weatherization (LIW) offering gives qualified customers the opportunity to receive energy efficiency measures in their homes free of charge. Upgrades range from direct install measures, such as LED light bulbs and water savings measures, to smart thermostats and comprehensive envelope measures (attic insulation, air sealing and duct sealing).

Offering Highlights

The Low-Income Audit & Weatherization offering exceeded savings goals in both New Orleans and Algiers. Marketing, community outreach and trade ally engagement were the methods used to engage Entergy New Orleans customers and create awareness of the LIW offering. Marketing methods included bill inserts, email campaigns, Facebook ads, call center outreach, newsletter postings, billboards, and a new Energy Smart website. The program team used multiple methods to engage the income-qualified sector of the customer base. Community outreach was performed by Energy Wise Alliance to provide a presence in the community and engage customers directly. A high rate of program leads was acquired through trade ally references and outreach efforts as well as references from participating HPwES customers.

Over 521 customers participated in the LIW offering in 2018. The savings were a combination of direct install measures and trade ally follow-up measures. Direct installations consisted of LED lighting, high-efficiency showerheads and water aerators, smart strips, smart thermostats, air sealing along with a comprehensive walk-through assessment. If customers met eligibility requirements, follow-up measures included attic insulation, AC tune-up, air sealing, and duct sealing measures. Duct sealing and attic insulation provided a large portion of savings due to the effectiveness of those measures in 2018.

The Low-Income Audit & Weatherization offering is designed to provide energy efficiency to income-qualified customers within the New Orleans footprint. The Energy Smart team strives to exceed program goals to ensure this portion of the customer base has opportunities to reduce electric costs and increase the comfort of their home.

New Orleans:

- A total of 6,621 measures were installed during the program year.
- The offering reached 144.88% of the kWh goal, achieving 1,907,136 kWh.
- The offering reached 165.18% of the kW target, achieving 470.94 kW.

Algiers:

- A total of 853 measures were installed during the program year.
- The offering reached 124.28% of the kWh goal, achieving 121,880 kWh.
- The offering reached 151.04% of the kW target, achieving 31.87 kW.

Table 8.1: Low-Income Audit & Weatherization 2018 Tactical Calendar

TACTIC	TIMING
Outreach Events	Monthly
Circuit Newsletter	June, September, October, November
School Kits Brochure	Monthly
HPwES/ LIW Email	August
Bill Insert	July
Outreach Events	Monthly

LIW Collateral:

- Brochure
- General Energy Smart Program Handout
- Energy Efficiency Day Flyer
- Sorry We Missed You Door Hanger
- Energy Smart Rebate Check Insert
- LIW Survey and Survey Return Mailer Card
- Home Energy Audit Report

Offering Budget and Savings

Table 8.2

LOW INCOME AUDIT & WEATHERIZATION	COST			ENERGY SAVINGS (kWh)			DEMAND REDUCTION (kW)		
	Budget	Actual	%	Pre-Evaluated	Evaluated	%	Pre-Evaluated	Evaluated	%
Algiers Low Income Audit & Wx	$33,794	$46,959	138.96%	114,907	121,880	106.07%	30.29	31.87	105.22%
N.O. Low Income Audit & Wx	$452,430	$451,025	99.69%	1,753,527	1,907,136	108.76%	423.18	470.94	111.29%

Table reflects verified gross energy savings achievement from ADM's Evaluation, Measurement and Verification (EM&V) findings relative to pre-evaluated savings reported by TPA.

Planned or Proposed Changes to Offering and Budget

The Low-Income Audit & Weatherization offering will continue to operate in a similar fashion in PY9 but with an increased focus on smart thermostats where applicable. The Energy Smart team will continue to look for new and innovative methods to engage the customer base to attain goals in 2019. One area of opportunity the Energy Smart program team is looking into offering is air sealing as a follow-up measure performed by trade allies.

High Efficiency AC Tune-Up

Offering Description

The High-Efficiency A/C Tune-Up offering is designed to minimize market barriers to efficient cooling in residences. This program provides residential customers with a comprehensive set of options to lower their energy consumption and costs associated with keeping their homes cool and comfortable in the summer. Customers with functioning A/C units that are more than one year old can improve the efficiency of their units with the help of a comprehensive A/C tune-up. Customers with failed units or working but inefficient units are eligible for incentives for replacing the unit with a new energy efficient system.

Offering Highlights

The High Efficiency A/C Tune-Up offering allows customers to participate in Energy Smart without previous participation in a comprehensive home energy assessment. The offering experienced most of the participation in periods of the year that have temperatures above 70 degrees. Both New Orleans and Algiers territories achieved their savings goals in 2018. The program recruited new Trade Allies to the program to support the savings goals. Increased trade ally engagement in the program was a goal following 2017 and allowed the Energy Smart Program to have a greater impact on the local community by bringing additional contractors into the offering.

A total of 850 customers participated in the program. This offering is focused on trade ally duct sealing and A/C tune ups. Customers can utilize this program every two years to ensure their A/C unit is clean and charged for optimal use. This offering can be completed without an initial assessment which gives customers a different option should they choose to abstain from performing the initial home energy assessment. Trade allies have used this opportunity to demonstrate the value of their work while cross promoting other offerings to enhance customers experience and participation in the Energy Smart Program.

New Orleans:

- A total of 1,561 measures were installed during the program year.
- The offering reached 134.12% of the kWh goal, achieving 2,295,461 kWh.
- The offering reached 148.04% of the kW target, achieving 793.67 kW.

Algiers:

- A total of 117 measures were installed during the program year.
- The offering reached 119.84% of the kWh goal, achieving 160,029 kWh.
- The offering reached 146.22% of the kW target, achieving 58.78 kW.

Table 9.1: A/C Tune-Up 2018 Tactical Calendar

TACTIC	TIMING
Outreach Events	Monthly
Circuit Newsletter	March, June
School Kits Brochure	Monthly
Email Campaign	August
Kit Brochure	December
Scorecard Cross Promotion	July

A/C Tune-Up Collateral:

- General Energy Smart Residential Handout
- Rebate Application
- Energy Efficiency Day Flyer
- A/C Tune-Up Brochure
- Energy Smart Rebate Check Insert
- A/C Tune-Up Email
- A/C Tune-Up Survey

Offering Budget and Savings

Table 9.2

HIGH EFFICIENCY AC TUNE-UP	COST			ENERGY SAVINGS (kWh)			DEMAND REDUCTION (kW)		
	Budget	Actual	%	Pre-Evaluated	Evaluated	%	Pre-Evaluated	Evaluated	%
Algiers High Efficiency Tune Up	$24,728	$26,474	107.06%	147,001	160,029	108.86%	54.46	58.78	107.93%
N.O. High Efficiency Tune Up	$323,920	$364,108	112.41%	2,098,600	2,295,461	109.38%	724.95	793.67	109.48%

Table reflects verified gross energy savings achievement from ADM's Evaluation, Measurement and Verification (EM&V) findings relative to pre-evaluated savings reported by TPA.

Planned or Proposed Changes to Offering and Budget

The High-Efficiency A/C Tune-Up offering will not see any major changes in 2019. A focus will remain on recruiting and training new trade allies to grow a more capable contractor workforce and provide more benefits to customers.

Direct Load Control (EasyCool)

Offering Description

The Direct Load Control (EasyCool) offering is an opt-in load control initiative that allows Energy Smart to cycle off a participant's home central air conditioner condenser during peak demand hours throughout cycling season. The events run for four hours (2 p.m. – 6 p.m.) and cycle the condenser on and off every 15 minutes. Participating customers are incentivized after each cooling season with a $40 incentive check. During cycling events, the AC unit is sent a signal to activate the switch. The EasyCool offering is designed to reduce demand load at peak times in the cooling season.

Offering Highlights

The EasyCool offering completed five successful cycling events in 2018. These events occurred during the cycling season which is June through September. A total of 645 control devices were installed and controlled in 2018 and a total of 1,018 active devices were installed in the field by the end of 2018. The Energy Smart team conducted various marketing and community outreach campaigns promoting EasyCool to customers. Bill inserts, business reply cards, email campaigns, postcards, mass marketing, community outreach, calling campaigns, Facebook ads and the new program website were all used to generate enrollments in the EasyCool offering.

Multiple mediums were used to engage customers in the EasyCool offering, including the addition of an educational video to explain the offering to customers with more visual detail. The video was launched using Facebook ad paid campaigns and placed on the program enrollment page. Facebook ads were A/B tested to enhance performance with a static image versus the video as well as a Facebook form versus the landing page enrollment form. Overall, the four campaigns performed at or above the industry average and received 1,831 clicks.

New Orleans:

- A total of 563 devices were installed during the program year.
- The offering reached 177.81% of the kW target, achieving 1,967.02 kW.

Algiers:

- A total of 82 devices were installed during the program year.
- The offering reached 123.87% of the kW target, achieving 103.15 kW.

Table 10.1: EasyCool Cycling Events

DIRECT LOAD CONTROL CYCLING EVENTS					
Date	7/23/2018	8/7/2018	8/15/2018	9/13/2018	9/18/2018
Start Time (hours)	1400 hrs	1400 hrs	1400 hrs	1400 hrs	1400 hrs
End Time	1830 hrs	1830 hrs	1830 hrs	1830 hrs	1830 hrs
# Devices Controlled	**638**	**626**	**689**	**716**	**729**
Cycle Strategy (ex. 40%)	**50% (15 min on/off)**	**50% (15 min on/off)**	**50% (15 min on/off)**	**50% (15 min on/off)**	**50% (15 min on/off)**

Table 10.2: EasyCool Facebook Campaigns

AD NAME	IMPRESSIONS	CLICKS	CTR	AVG. CPC
June 2018	72,405	1,005	1.39%	$.65
August 2018 (FB Form)	12,214	194	1.59%	$1.03
August 2018 (Web Traffic)	17,849	258	1.45%	$.78
October 2018	31,369	374	1.19%	$1.05

Table 10.3: EasyCool 2018 Tactical Calendar

TACTIC	TIMING
Outreach Events	Monthly
Circuit Newsletter	April, July, October
School Kits Brochure	Monthly
Email	June, July, November
Facebook Paid Ad	June, August, October
Bill Insert	September
Post Card	August
Direct Mail Business Reply Card	December
Outbound Calling Campaign	August, October
Scorecard Cross Promotion	August

EasyCool Collateral:

- Pre-Season Letter
- End of Season Letter
- EasyCool Brochure
- EasyCool Postcard
- FAQ Sheet
- EasyCool Terms and Conditions
- Energy Smart Rebate Check Insert
- Pocket Door Hanger
- EasyCool Survey

- EasyCool Business Reply Mail Card
- EasyCool Facebook Ads
- EasyCool Video
- EasyCool Switch Sticker

Offering Budget and Savings

Table 10.4

DIRECT LOAD CONTROL (EASYCOOL)	COST			DEMAND REDUCTION (kW)		
	Budget	Actual	%	Pre-Evaluated	Evaluated	%
Algiers DLC	$12,040	$1,160	9.63%	-	103.15	N/A
N.O. DLC	$107,960	$22,120	20.49%	-	1,967.02	N/A

Table reflects verified gross energy savings achievement from ADM's Evaluation, Measurement and Verification (EM&V) findings relative to pre-evaluated savings reported by TPA.

Planned or Proposed Changes to Offering and Budget

The EasyCool offering in PY8 experienced issues with generating enrollments. There are several factors involved, but one major issue is the heat and humidity in the cycling season. Customers are often reluctant to give control of their A/C units for these events, despite customers typically experiencing minimal changes in temperatures within the home. In PY8 the Energy Smart team engaged the customer base in a variety of marketing and outreach methods. The Energy Smart team will evaluate what marketing and outreach tactics had the best results in PY8 and continue to build off those tactics. In addition, new tactics and engagement methods will be leveraged to increase enrollments to the offering.

In 2019, the Energy Smart team will have customers navigate through the program website to sign up for EasyCool. This will provide more qualified leads than the team experienced in 2018 through forms on Facebook. The Energy Smart team will evaluate other enrollment options including incentivized enrollments to promote participation in the EasyCool offering. The amount of the incentive and the delivery of the incentive will be evaluated by the Energy Smart team. Neighborhood canvassing is another option to consider for this program to create interest. Energy Smart employees will promote the program going door to door in the community to interface with the customer directly. The goal is to increase awareness and appeal of the offering to prospective participants.

School Kits & Education

Offering Description

Energy Smart School Kits and Education is an offering for middle and high school students that combines in-class education programming and a free Energy Smart Starter Kit for students to bring home and install with their parents. Kits consisted of four 9 watt LED light bulbs, two 15 watt LED light bulbs, one low-flow shower head, one low-flow kitchen sink aerator, one low-flow bathroom sink aerator and one water flow bag.

Offering Highlights

In PY8, the Energy Smart team delivered 3,640 kits to students in their classrooms. The team reached out to 100% of public schools with 6th grade classes, several high schools and about a third of the scholarship schools in Orleans Parish. Methods included phone, email and in-person visits to each campus. The decentralized nature of the Orleans Parish School District makes it more difficult to reach students than within other parishes in Louisiana.

In total, the Energy Smart team provided the School Kit offering to 46 New Orleans schools and visited 1 fifth grade, 38 sixth grade, 2 seventh grade, 2 eighth grade and 14 high school class grade levels. The average school received 79 kits.

Each school received two visits by Energy Smart staff instructors and included content aligned with the Louisiana Student Standards for Science. The educational content included fun, hands-on activities such as a skit with costumes about how electricity reaches a customer's home, information about the importance of conserving electricity, the bicycle generator and the home retrofit game.

The changes to the School Kit offering in PY8 included reaching out to more high schools with topical class offerings, and adding 3 as well as cross-training three existing staff teachers to increase the team's flexibility with scheduling classes and the ability to service multiple schools on the same day.

The Energy Smart team faced challenges with reaching the target goal in Algiers. Within four schools in Algiers, the team's outreach efforts were either declined or the school was non-responsive. Additionally, The Energy Smart team received responses too late in the program year after the allocated kits for the year had already been assigned to other schools. The territory is also facing upcoming school closures that will limit the opportunity for the School Kit offering in Algiers.

From PY7 to PY8, the kWh per kit installed increased about 12%, from 218.8 kWh to 244.9 kWh per kit. While the increase rate in kWh savings per kit is slowing, we are still seeing a slight gain year-on-year. Our educators focus more education attention on water heat than in the past, and the increase is almost entirely attributable to higher electric water heat reported from the students.

Projected lifetime savings indicate that the kits installed will produce 4,548,219 kWh in New Orleans and 274,245 kWh in Algiers.

New Orleans:

- A total of 3,433 kits were distributed during the program year.
- The offering reached 146.42% of the kWh goal, achieving 800,576 kWh.
- The offering reached 127.20% of the kW target, achieving 94.75 kW.

Algiers:

- A total of 207 kits were distributed during the program year.
- The offering reached 35.31% of the kWh goal, achieving 48,272 kWh.
- The offering reached 30.78% of the kW target, achieving 5.71 kW.

Offering Budget and Savings

Table 11.1

SCHOOL KITS & EDUCATION OFFERING	COST			ENERGY SAVINGS (kWh)			DEMAND REDUCTION (kW)		
	Budget	Actual	%	Pre-Evaluated	Evaluated	%	Pre-Evaluated	Evaluated	%
Algiers School Kits & Education	$23,800	$6,067	25.49%	48,272	48,272	100.00%	5.71	5.71	100.00%
N.O. School Kits & Education	$95,200	$100,621	105.69%	800,576	800,576	100.00%	94.75	94.75	100.00%

Table reflects verified gross energy savings achievement from ADM's Evaluation, Measurement and Verification (EM&V) findings relative to pre-evaluated savings reported by TPA.

Planned or Proposed Changes to Offering and Budget

In PY9, the Energy Smart team will continue to offer high quality, energy efficiency education to 3,500 classroom children in Orleans Parish public and scholarship schools. The Energy Smart team will renew outreach effort to Algiers schools to increase participation in Energy Smart for Kids.

The team struggled to distribute enough kits in PY8 partly because of changing conditions in Algiers. In PY8, the Orleans Parish School Board announced that two Algiers schools, William J. Fischer Academy and McDonough # 32 Literacy Charter School, would face closure in 2019. In the meantime, these schools were combined into one campus and their enrollment dropped by half. As a result, PY8 kit delivery numbers for those 2 schools was reduced by half from previous years to about 30 kits. The Energy Smart team was not successful in obtaining programming at Algiers school L.B. Landry -O.P. Walker College and Career and Preparatory High School in PY8. However, Energy Smart plans to secure programming in PY9.

In PY9, the Energy Smart team will continue to focus on obtaining programming in Algiers schools.

Green Light New Orleans

Offering Description

Green Light New Orleans (GLNO) installs energy-efficient lighting for residents utilizing volunteers. GLNO installed energy-efficient CFL and LED light bulbs in Energy Smart qualified homes in Orleans Parish in 2018.

Offering Highlights

During 2018, Green Light New Orleans installed 2,977 energy efficient light bulbs in qualified homes in the East Bank and 430 light bulbs in the West Bank.

In addition to energy efficiency, Green Light's light bulb program is focused on bringing people together to engage within the New Orleans community and educate the community about other energy efficient measures available. Green Light recruited approximately 320 volunteers from diverse parts of the community to help install energy-efficient light bulbs.

There continues to be demand for energy efficient light bulbs from residents within Orleans Parish who have yet to replace their incandescent bulbs. Green Light will continue to service all new applicants.

Green Light's other two programs—the backyard vegetable garden program and the rain barrel program—receive many applicants who first became familiar with the organization through light bulbs many years ago. In this way, the light bulb program is a proven way to connect Orleans Parish residents with access to resources that will help them improve their health and well-being.

The CFL light bulbs for PY8 were donated by Sylvania.

Lifetime savings indicate that the lamps installed will produce 324,867 kWh in New Orleans and 42,589 kWh in Algiers.

New Orleans:

- A total of 2,951 measures were installed during the program year.
- The offering reached 40.47% of the kWh goal, achieving 67,967 kWh.
- The offering reached 50.94% of the kW target, achieving 14.07 kW.

Algiers:

- A total of 390 measures were installed during the program year.
- The offering reached 9.29% of the kWh goal, achieving 9,061 kWh.
- The offering reached 11.69% of the kW target, achieving 1.87 kW.

Green Light installed 3,341 light bulbs, of which 3,024 were CFLs and 317 were LEDs.

Table 12.1

TERRITORY	LAMPS	CFLS	LEDS
New Orleans	2,951	2,665	286
Algiers	390	359	31
Total	3,341	3,024	317

Offering Budget and Savings

Table 12.2

GREEN LIGHT	COST			ENERGY SAVINGS (kWh)			DEMAND REDUCTION (kW)		
	Budget	Actual	%	Pre-Evaluated	Evaluated	%	Pre-Evaluated	Evaluated	%
Algiers Green Light	$13,751	$858	6.24%	9,052	9,061	100.10%	1.87	1.87	100.00%
N.O. Green Light	$23,749	$6,492	27.34%	67,788	67,967	100.26%	14.01	14.07	100.43%

Table reflects verified gross energy savings achievement from ADM's Evaluation, Measurement and Verification (EM&V) findings relative to pre-evaluated savings reported by TPA.

Planned or Proposed Changes to Offering and Budget

In PY9, Green Light will evaluate the opportunity to eliminate CFLs and exclusively install LEDs.

Behavioral (Scorecard)

Offering Description

The Behavioral offering provides customers with a home energy report with information regarding potential ways to lower their electric bills. The offering launched as a residential energy savings behavioral pilot in January 2017. Approval for release of the new Energy Smart Scorecard, revised to an opt-out distribution model began in May 2018.

Offering Highlights and Participation

Highlights

Energy Smart's goal is to maximize the cost-effectiveness and evaluability of the energy savings impacts, while also ensuring inclusion or exclusion of appropriate customer segments. Working with Entergy's third-party evaluator, ADM Associates, Inc., the transition to an opt-out program model is now well underway. Evaluation results for PY8 – for the five months since transitioning to opt-out – demonstrated that savings were trending ahead of goals. On average, participants saved .66% off of their utility bills. Extrapolated to a full year, they would have saved about 1.2% (9,402,114 kWh).

Table 13.1

BEHAVIORAL (SCORECARD)	ENERGY SAVINGS (kWh)		
	Pre-Evaluated	Evaluated	%
Algiers Scorecard	-	745,249	N/A
N.O. Scorecard	-	4,933,408	N/A

Participation

When the new opt-out distribution model for Scorecard launched on May 2, 2018, there was an initial treatment group of 25,000 customers, in addition to the previously registered participants from the opt-in phase. The distribution then increased to 50,000 recipients in in Q2.

In late Q4, the Energy Smart team learned that the new Entergy Customer Engagement Portal (CEP) was expected to go live in March 2019, in accordance with the roll-out of Advanced Metering Infrastructure (AMI). The new Entergy CEP portal is intended to replace the current Scorecard portal and customers who will receive a new AMI meter will be able to download a Home Energy Report directly from the new Entergy CEP. Accordingly, the Scorecard that is currently supplied by implementer Accelerated Innovations (AI) will no longer be necessary.

Due to these forthcoming changes in PY9, Energy Smart adjusted its Scorecard distribution list in December 2018 to include all Entergy New Orleans residential customers for whom a direct email address has been provided, totaling 113,971 addresses.

Following are the delivery metrics of the distribution of Scorecards each week starting on May 2, 2018 through the last week of the Q4, in descending order.

Table 13.2

SEND DATE	TYPE	COUNT	% OF SEND
12/28/2018	Send	43950	100
	Open	6199	14.1
	Click	123	0.28
	Bounce	1721	3.92
	Unsubscribe	30	0.06
12/21/2018	Send	9604	100
	Open	1701	17.71
	Click	31	0.32
	Bounce	372	3.87
	Unsubscribe	5	0.04
12/14/2018	Send	5285	100
	Open	834	15.78
	Click	18	0.34
	Bounce	270	5.11
12/7/2018	Send	9615	100
	Open	1488	15.48
	Click	27	0.28
	Bounce	529	5.5
	Unsubscribe	5	0.04
11/30/2018	Send	33405	100
	Open	5854	17.52
	Click	95	0.28
	Bounce	1556	4.66
	Unsubscribe	14	0.06
11/9/2018	Send	34612	100
	Open	6389	18.46
	Click	89	0.26
	Bounce	1725	4.98
	Unsubscribe	13	0.05
11/2/2018	Send	8847	100
	Open	1733	19.59
	Click	22	0.25
	Bounce	376	4.25
	Unsubscribe	4	0.03
10/12/2018	Send	13228	100
	Open	2425	18.33
	Click	24	0.18

	Bounce	647	4.89
	Unsubscribe	9	0.05
	Send	27938	100
	Open	4638	16.6
9/21/2018	Click	68	0.24
	Bounce	1296	4.64
	Unsubscribe	21	0.08
	Send	13110	100
	Open	1757	13
9/7/2018	Click	29	0.22
	Bounce	685	5
	Unsubscribe	3	0.02
	Send	7801	100
	Open	1290	16.5
8/31/2018	Click	13	0.17
	Bounce	353	4.53
	Unsubscribe	3	0.04
	Send	13122	100
	Open	2125	16
8/24/2018	Click	39	0.3
	Bounce	589	4.5
	Unsubscribe	59	0.44
	Send	8625	100
	Open	1590	18.43
8/17/2018	Click	52	0.6
	Bounce	379	4.39
	Unsubscribe	5	0.03
	Send	14928	100
	Open	2480	16.61
8/10/2018	Click	59	0.4
	Bounce	753	5.04
	Unsubscribe	8	0.05
	Send	11937	100
	Open	2014	16.87
8/3/2018	Click	43	0.36
	Bounce	610	5.11
	Unsubscribe	8	0.05
	Send	8689	100
	Open	1728	19.89
7/27/2018	Click	24	0.28
	Bounce	367	4.22
	Unsubscribe	11	0.07

7/20/2018	Send	10451	100
	Open	1951	18.67
	Click	56	0.54
	Bounce	402	3.85
	Unsubscribe	3	0.02
7/13/2018	Send	32950	100
	Open	6121	18.58
	Click	155	0.47
	Bounce	1614	4.9
	Unsubscribe	33	0.3
6/29/2018	Send	5177	100
	Open	1045	20.19
	Click	21	0.41
	Bounce	212	4.1
	Unsubscribe	2	0.04
6/22/2018	Send	807	100
	Open	142	17.6
	Click	4	0.5
	Bounce	30	3.72
6/15/2018	Send	24729	100
	Open	4762	19.26
	Click	143	0.58
	Bounce	1008	4.08
	Complaint	10	0.04
6/1/2018	Send	5693	100
	Open	951	16.7
	Click	16	0.28
	Bounce	252	4.43
	Unsubscribe	2	0.04
5/25/2018	Send	1752	100
	Open	298	17.01
	Click	3	0.17
	Bounce	56	3.2
5/18/2018	Send	8034	100
	Open	1807	22.49
	Click	25	0.31
	Bounce	308	3.83
	Unsubscribe	9	0.11
5/11/2018	Send	9580	100
	Open	1773	18.51
	Click	31	0.32
	Bounce	423	4.42

	Unsubscribe	17	0.18
	Send	25225	100
	Open	6143	24.35
5/2/2018	Click	95	0.38
	Bounce	1010	4
	Unsubscribe	26	0.1

Marketing & Outreach

Outreach Events

Beginning in Q1, Scorecard program literature and information was distributed by the Energy Smart team at weekly outreach tabling events in both Entergy Customer Care Centers (Canal St. and Algiers). Pamphlets and program information is also available to pick-up during business hours (Mon-Fri 8:00 am – 5:00 pm) at the same locations. The Scorecard offering was cross-promoted with other Energy Smart offerings at all outreach events, including The New Orleans Home and Garden Show in the Superdome, Entergy Job Fair, Audubon Fete, and the Algiers Public Library.

Marketing & Advertising

The Energy Smart team launched a promotional advertising campaign with the New Orleans RTA to raise awareness about the availability of the Scorecard offering. Beginning February 19, 2018 and running through March 19, 2018, large (2.5 feet x 5.6 feet) advertisements were posted at 25 different bus shelters throughout Orleans Parish, specifically in locations with high traffic and ridership. During the time of this advertising campaign, 35 new customers enrolled in the offering. In the absence of any additional program promotions during this time period, the Energy Smart team assumes that these new registrations are attributable primarily to the RTA campaign.

Planned or Proposed Changes to Offering and Budget

With the roll-out of AMI and the launch of the new Customer Engagement Portal in PY9, the Energy Smart team will remove customers from the Scorecard distribution as they receive their new AMI meter. Entergy New Orleans customers who do not receive AMI meters will continue to receive the monthly Scorecard. However, when the new Entergy CEP launches, the Energy Smart Scorecard will modify its messaging and links in order to direct customers to the new CEP as opposed to the EnergySmartCard.com portal.

COMMERCIAL & INDUSTRIAL OFFERINGS

Commercial & Industrial Offerings Summary

The Commercial & Industrial (C&I) Portfolio includes Small Commercial Solutions, Large Commercial and Industrial Solutions and Publicly Funded Institution offerings for both East bank and Algiers Entergy New Orleans customers. Overall, the C&I Portfolio achieved 29,076,552 kWh in gross savings reaching 95.54% of the C&I Portfolio Goal of 30,433,893 kWh.

The Energy Smart team implemented several strategies in PY8 to increase savings achievement compared to PY7, while staying under budget. Marketing, outreach and engagement strategies included:

- Market Segment and Territory Focused Targeted Outreach
    - The Energy Smart team brought in a dedicated outreach position to target key accounts and the Algiers territory, generate program awareness and bridge any knowledge gap to bring in more production in areas where savings were needed.
    - Created and facilitated a Higher Education Cohort.
    - Engaged large energy users, key segments and associations, stakeholders and trade allies to create awareness and drive participation.
- New Offerings and Enhancements
    - Developed new offerings and implemented enhancements to existing offerings to address any participation barriers in the market. The Large C&I offering launched a Retro-commissioning (RCx) offering and the Program removed the requirement for pre-approval for prescriptive projects with an estimated incentive under $5,000.
- Custom Incentive Bonus
    - Energy Smart released an incentive bonus for all custom projects to generate production at the end of the year in support of goal achievement.
    - The incentive bonus was announced on September 17th and offered an additional $0.03 per kWh saved for all custom projects submitted on or after the announcement date and completed by December 31st.
    - The bonus proved to be impactful as the C&I offerings received 45% of the total applications received and 37% of the total savings achieved after the bonus was announced. This level of production was generated in the final quarter of PY8.

Table 15.1

COMMERCIAL & INDUSTRIAL OFFERINGS	KWH SAVINGS	KWH GOAL*	% TO SAVINGS GOAL	KW SAVINGS	KW TARGET*	% TO KW TARGET	INCENTIVES SPENT	INCENTIVE BUDGET	% OF BUDGET
Algiers – Small C&I	418,266	484,792	86.28%	42.23	97.79	42.37%	$51,178	$83,496	61.29%
Algiers - Large C&I	488,175	766,112	63.72%	27.34	113.72	21.60%	$62,677	$62,677	100.00%
Algiers – PFI	229,740	219,669	104.58%	-12.50	34.03	-36.73%	$26,301	$33,689	78.07%
N.O. – Small C&I	6,870,151	5,309,288	129.40%	799.05	1,013.63	77.33%	$904,448	$999,008	90.53%
N.O. - Large C&I	18,402,858	21,047,929	87.43%	2,146.82	3,459.45	55.75%	$2,050,624	$2,646,787	77.48%
N.O. – PFI	2,667,362	2,606,103	102.35%	196.67	371.49	52.94%	$288,846	$399,684	72.27%
TOTAL	**29,076,552**	**30,433,893**	**95.54%**	**3,199.61**	**5,090.11**	**62.86%**	**$3,384,073**	**$4,225,341**	**80.09%**

*Goals are reflective of the Supplemental and Amended Energy Smart Implementation Plan PY 7 – 9, approved 12/14/2017.
Savings reflect verified gross savings as documented in ADM's Evaluation, Measurement and Verification (EM&V) report.

Small Commercial Solutions

Offering Description

The Small Commercial Solutions (SCS) offering provides small businesses and other qualified non-residential customers the opportunity to achieve electricity savings through prescriptive or custom projects. Buildings with a peak demand of under 100 kW are eligible for these incentives. The Program advises participants of available financial incentives for eligible efficiency measures that are installed in their facilities.

Offering Highlights

In PY8, there were 119 projects implemented on the East Bank and 11 projects in Algiers, compared to 42 projects on the East Bank and 4 projects in Algiers in PY7.

The Energy Smart team implemented several strategies that impacted production in the Small Commercial Solutions Program positively, which included:

- Targeted Outreach to Specific Market Segments and Territories
  - Historically, Algiers has been difficult to reach and generate participation. The Energy Smart team expanded to include a dedicated outreach position which included a focus on Algiers. Through direct outreach and strategic planning, the team was able to bring in almost three times the number of projects in PY8 than in PY7 and achieve 121.77% of the PY8 savings goal. This dedicated outreach also built awareness and project leads that will result in participation in PY9 and future program years.
- Prescriptive Pre-Approval Enhancement
  - Energy Smart removed the pre-approval requirement for prescriptive projects with estimated incentives under $5,000.
  - The Program responded to feedback that the prescriptive process was too burdensome for projects with smaller incentives by removing the pre-approval requirement below a $5,000 incentive threshold and by streamlining the application process.
  - The Small Commercial offering processed 8 projects under these changes, which was an increase from participation prior to the enhancement.
- Custom Incentive Bonus
  - Energy Smart released an incentive bonus for all custom projects to generate production at the end of the year in support of goal achievement. The bonus, released on September 17th, offered an additional $0.03 per kWh on all custom projects submitted after the release date and completed before December 31st.
  - The bonus increased the Small Commercial Solutions custom incentive rate to $0.15/kWh saved for both lighting and non-lighting projects.
  - The bonus was very impactful for the SCS Offering and the most impactful for any of the three offerings. The bonus generated 53% of all completed projects and 51% of all savings achieved in PY8. This additional funding helped lower the initial project costs for small commercial customers where funding is often the major barrier to participation.

Table 16.1

New Orleans

Project Components	Count of Project Components	Total Gross Savings (kWh)	Total Incentives
Custom Lighting	156	6,757,936	$889,587
Custom Non-Lighting	3	20,437	$1,927
Prescriptive	27	170,246	$12,933
Total	**186**	**6,948,619**	**$904,448**

Algiers

Project Components	Count of Project Components	Total Gross Savings (kWh)	Total Incentives
Custom Lighting	14	346,626	$48,528
Prescriptive	5	79,028	$2,650
Total	**19**	**425,653**	**$51,178**

New Orleans:

- A total of 119 projects were implemented during the program year.
- The offering reached 129.40% of the kWh goal, achieving 6,870,151 kWh.
- The offering reached 78.83% of the kW target, achieving 799.05 kW.

Algiers:

- A total of 11 projects were implemented during the program year.
- The offering reached 86.28% of the kWh goal, achieving 418,266 kWh.
- The offering reached 43.18% of the kW target, achieving 42.23 kW.

Percentage of total project cost covered by the incentives:

Table 16.2

Project Type	Total Incentives	Total Project Costs	% Covered
Custom Lighting	$938,115	$1,397,161	67.14%
Custom Non-Lighting	$1,927	$71,235	2.71%
Prescriptive	$15,583	$42,822	36.39%
Total	**$955,625**	**$1,511,219**	**63.24%**

Offering Budget and Savings

Table 16.3

SMALL COMMERCIAL	COST			ENERGY SAVINGS (kWh)			DEMAND REDUCTION (kW)		
	Budget	Actual	%	Pre-Evaluated	Evaluated	%	Pre-Evaluated	Evaluated	%
Algiers Small Commercial	$83,496	$51,178	61.29%	425,653	418,266	98.26%	43.19	42.23	97.78%
N.O. Small Commercial	$999,008	$904,448	90.53%	6,948,619	6,870,151	98.87%	834.64	799.05	95.74%

Table reflects verified gross energy savings achievement from ADM's Evaluation, Measurement and Verification (EM&V) findings relative to pre-evaluated savings reported by TPA.

Planned or Proposed Changes to Offering and Budget

Several program changes and additions are planned for PY9. The Energy Smart team plans to introduce a Small Business Direct Install Lighting offering in Q2 of PY9. This offering will aim to further streamline the prescriptive process by having a qualified network of trade ally service provider that can install a suite of basic lighting measures at little to no cost to the customer where the burden of applying is almost completely removed from the customer. This offering will be a great tool for the qualified trade allies to generate additional opportunities and for customers that will realize the benefits of getting quality energy efficient equipment installed at little cost and time spent.

The Energy Smart team will implement a strategic marketing and outreach plan in PY9. The goal is to continue to segment out the ENO customer base so that the program can run marketing campaigns by e-blasts, direct mailers, and other methods, as well as direct targeted outreach on the ground. The SCS offering would like to generate more production from the local "mom and pop" shops local to New Orleans so that those businesses can realize all the benefits of participating.

Large Commercial & Industrial Solutions

Offering Description

The primary objective of the Large Commercial and Industrial Solutions ("Large C&I") offering is to provide a solution for non-residential customers interested in purchasing energy efficient technologies that can produce verifiable savings either through a calculated (prescriptive) or a measured and verified (custom) approach. Buildings with a peak demand of 100 kW or more are eligible for these incentives. The Large C&I offering is designed to generate significant energy savings, as well as a longer-term market penetration by developing delivery channels, such as design professionals, distributors, installation contractors, and Energy Service Companies (ESCOs).

Offering Highlights

In PY8, the Energy Smart team continued to focus on generating more production from custom projects rather than lighting projects to increase the percentage of non-lighting projects and to generate deeper energy savings. In PY8, there were 90 projects implemented in New Orleans and 3 projects in Algiers compared to 41 projects implemented in New Orleans and one project in Algiers in PY7.

With the savings goals more than doubling from PY7 to PY8, the Energy Smart team implemented several strategies to maximize production. Those strategies included:

- Targeted Outreach to Specific Market Segments and Territories
  - APTIM brought on a dedicated outreach position where one of the main focuses for PY8 was key large energy users that haven't participated in the Program. The Energy Smart team compiled a list of key accounts to target and generate Program awareness.
- Established a Higher Education Cohort
  - Energy Smart established a Higher Education Cohort in PY8. The Cohort participation grew throughout the year and the impacts of this group are demonstrated by participating members having completed 20 projects in PY8 accounting for 3M kWh in gross energy savings.
- Launched a Retro-commissioning (RCx) Offering
  - The new RCx offering provides specific process and incentives for RCx studies and measures offered by a closed group of qualified service providers to create more opportunities for non-lighting measures that can drive quick cost-effective projects that realize high energy savings.
- Prescriptive Pre-Approval Enhancement
  - Energy Smart removed the pre-approval requirement for prescriptive projects with estimated incentives under $5,000.
  - The Program responded to feedback that the prescriptive process was too burdensome for projects with smaller incentives by removing the pre-approval requirement below a $5,000 incentive threshold and by streamlining the application process.
- Custom Incentive Bonus
  - Energy Smart released an incentive bonus for all custom projects to generate production at the end of the year in support of goal achievement. The bonus, released on September

17th, offered an additional $0.03 per kWh on all custom projects submitted after the release date and completed before December 31st.

- The bonus increased the Large C&I custom incentive rate to $0.12/kWh for lighting and $0.15/kWh for non-lighting projects.
- The bonus for the Large C&I Offering aided in the offering filling the pipeline, with 33% of all projects processed and 31% of all savings processed coming in after the bonus was launched on 9/17. The limited time additional funding helped large commercial customers act on completing lighting projects in 2018 when they might not have otherwise if the additional funding wasn't available.

Table 17.1

New Orleans

Project Components	Count of Project Components	Total Gross Savings (kWh)	Total Incentives
Custom Lighting	78	12,244,999	$1,283,199
Custom Non-Lighting	32	5,826,035	$722,139
Prescriptive	22	803,665	$45,286
Total	**132**	**18,874,699**	**$2,050,624**

Algiers

Project Components	Count of Projects	Total Gross Savings (kWh)	Total Incentives
Custom Lighting	1	178,796	$23,243
Custom Non-Lighting	2	323,559	$39,434
Total	**2**	**502,355**	**$62,677**

New Orleans:

- A total of 90 projects were implemented during the program year.
- The offering reached 87.43% of the kWh goal, achieving 18,402,858 kWh.
- The offering reached 62.06% of the kW target, achieving 2,146.82 kW.

Algiers:

- A total of 3 projects were implemented during the program year.
- The offering reached 63.72% of the kWh goal, achieving 488,175 kWh.
- The offering reached 24.04% of the kW target, achieving 27.34 kW.

Percentage of total project cost covered by the incentives:

Table 17.2

Project Type	Total Incentives	Total Project Costs	% Covered
Custom Lighting	$1,306,442	$3,138,006	41.63%
Custom Non-Lighting	$761,573	$5,204,061	14.63%
Prescriptive	$45,286	$197,765	22.90%
Total	**$2,113,301**	**$8,539,832**	**24.75%**

Offering Budget and Savings

Table 17.3

LARGE C&I	COST			ENERGY SAVINGS (kWh)			DEMAND REDUCTION (kW)		
	Budget	Actual	%	Pre-Evaluated	Evaluated	%	Pre-Evaluated	Evaluated	%
Algiers Large C&I	$62,677	$62,677	100%	502,355	488,175	97.18%	29.53	27.34	92.58%
N.O. Large C&I	$2,646,787	$2,050,624	77.84%	18,874,699	18,402,858	97.50%	2,169.94	2,146.82	98.93%

Table reflects verified gross energy savings achievement from ADM's Evaluation, Measurement and Verification (EM&V) findings relative to pre-evaluated savings reported by TPA.

Planned or Proposed Changes to Offering and Budget

With savings goals increasing year over year, the Energy Smart team plans to implement additional strategies and offering changes to achieve the higher goals in PY9. The Program is going to continue to implement a strategic marketing and outreach plan. With the RCx Offering officially launching in November of PY8, there will be dedicated effort in PY9 around pushing the offering to generate awareness and production. The team has market segments, trade associations and customer groups targeted for marketing and outreach campaigns for each quarter in PY9. Trade Ally trainings will be facilitated throughout the year as well to increase production through a trade ally driven projects. Additional detail for both the marketing and outreach plans and Trade Ally trainings can be found in the sections to follow.

Publicly Funded Institutions

Offering Description

The Publicly Funded Institutions (PFI) offering was added to the C&I portfolio in PY7 in an effort to directly support the City's initiatives to increase efficiency in government buildings. The PFI program provides financial incentives and technical services to encourage publicly funded customers to implement energy saving measures. The PFI program is designed to help this customer segment overcome barriers to energy improvement, such as higher first-cost of efficiency equipment and a lack of technical knowledge or resources. The PFI program supports government building participation by carving out a budget specifically for these institutions that in previous years were unable to participate, as funds were exhausted by the time municipalities were able to plan, approve and execute energy efficiency projects.

As its name suggests, the Publicly Funded Institutions program is a public-sector Energy Smart offering that targets local government and municipality buildings. The unique offering aims to assist end-user customers in overcoming barriers that are specific to public funded organizations through hands-on expertise and consulting, program-assisted benchmarking, and the development of an Energy Master Plan that provides customers with a roadmap to decrease energy consumption. As an additional service, the Energy Smart team educates customers on the various financial vehicles available to fund the implementation of energy efficiency improvements as needed.

Offering Highlights

In PY8, there were 24 projects implemented in New Orleans and 1 project in Algiers compared to 3 projects implemented in New Orleans and no projects completed in Algiers in PY7.

In the second year of the PFI Offering, the Energy Smart team kept building momentum achieving more than three times the amount of savings in PY8 than the offering achieved in PY7. Some key tactics were used in PY8 to achieve this success:

- Partnership with Green Coast Enterprises
    - APTIM and GCE continued to successfully work together to identify opportunities and generate savings for Publicly Funded Institutions located in New Orleans and Algiers. GCE leveraged their relationships with the City of New Orleans and Publicly Funded Schools in the area, used their technical expertise to identify opportunities and knowledge of the Energy Smart Program to offer a concierge service to these customers to participate in the Program. GCE directly contributed to 1.2 million kWh in savings, 41% of the total savings achieved in the PFI Offerings, which resulted in over $130,000 in incentives for those customers.
- Established a Higher Education Cohort
    - Energy Smart established a Higher Education Cohort in PY8. The Cohort participation grew throughout the year and the impacts of this group are demonstrated by 7 participating Cohort members having completed 20 projects in PY8 accounting for 3M kWh in gross energy savings and $333,000 in incentives.

- Launched a Retro-commissioning (RCx) Offering
    - The new RCx offering provides specific process and incentives for RCx studies and measures offered by a closed group of qualified service providers to create more opportunities for non-lighting measures that can drive quick cost-effective projects that realize high energy savings.
- Prescriptive Pre-Approval Enhancement
    - Energy Smart removed the pre-approval requirement for prescriptive projects with estimated incentives under $5,000.
    - The team responded to feedback that the prescriptive process was too burdensome for projects with smaller incentives by removing the pre-approval requirement below a $5,000 incentive threshold and by streamlining the application process.
- Custom Incentive Bonus
    - Energy Smart released an incentive bonus for all custom projects to generate production at the end of the year in support of goal achievement. The bonus, released on September 17th, offered an additional $0.03 per kWh on all custom projects submitted after the release date and completed before December 31st.
    - The bonus increased the Large PFI customer incentive rate to $0.12/kWh saved for lighting and $0.15/kWh saved for non-lighting projects. For Small Commercial PFI customers, the incentive rate increased to $0.15/kWh for both lighting and non-lighting projects.
    - The bonus contributed to PFI hitting the gross savings goals in both New Orleans and Algiers, with 48% of the projects and 41% of the totals savings processed in PY8 coming in after the bonus was launched. The additional incentive the bonus provided allowed these Publicly Funded customers, where funding available has been a barrier to participate, complete energy efficiency projects by reducing the overall project costs and payback timelines.

Table 18.1

New Orleans

Project Components	Count of Project Components	Total Gross Savings (kWh)	Total Incentives
Custom Lighting	15	1,874,443	$200,266
Custom Non-Lighting	3	766,760	$86,020
Prescriptive	6	28,041	$2,560
Total	**24**	**2,669,244**	**$288,846**

Algiers

Project Components	Count of Projects	Total Gross Savings (kWh)	Total Incentives
Custom Non-Lighting	1	229,740	$26,301
Total	**1**	**229,740**	**$26,301**

New Orleans:

- A total of 24 projects were implemented during the program year.
- The offering reached 102.35% of the kWh goal, achieving 2,667,362 kWh.
- The offering reached 52.94% of the kW target, achieving 196.67 kW.

Algiers:

- One project was implemented during the program year.
- The offering reached 104.58% of the kWh goal, achieving 229,740 kWh.
- The offering did not achieve any demand savings.

Percentage of total project cost covered by the incentives:

Table 18.2

Project Type	Total Incentives	Total Project Costs	% Covered
Custom Lighting	$200,266	$444,022	45.10%
Custom Non-Lighting	$111,521	$120,057	92.89%
Prescriptive	$2,560	$25,496	10.04%
Total	**$315,347**	**$589,576**	**53.32%**

Program Budget and Savings

Table 18.3

PUBLICLY FUNDED INSTITUTIONS	COST			ENERGY SAVINGS (kWh)			DEMAND REDUCTION (kW)		
	Budget	Actual	%	Pre-Evaluated	Evaluated	%	Pre-Evaluated	Evaluated	%
Algiers Publicly Funded	$33,689	$26,301	78.07%	229,740	229,740	100.00%	-12.50	-12.50	100.00%
N.O. Publicly Funded	$399,684	$288,846	72.27%	2,669,244	2,667,362	99.93%	221.02	196.67	88.98%

Table reflects verified gross energy savings achievement from ADM's Evaluation, Measurement and Verification (EM&V) findings relative to pre-evaluated savings reported by TPA.

Planned or Proposed Changes to Program and Budget

Several program changes and additions are planned for PY8. With the Retro-commissioning Offering officially launching in November of PY8, there will be dedicated effort in PY9 around pushing the offering to generate awareness and production in the PFI sector where there are several customers who would be ideal candidates. The Energy Smart team will continue working with Green Coast Enterprises to identify additional opportunities with the City of New Orleans and the Publicly Funded schools in the area.

MARKETING, OUTREACH & ENGAGEMENT

Marketing and Outreach

The first quarter of PY8 was heavily focused on outreach while the program teams reviewed and updated materials and messaging for the new program year. In February, Energy Smart was featured in a panel presentation at the Association of Energy Services Professionals (AESP) National Conference which took place in downtown New Orleans. The panel presentation showcased Energy Smart's focus on stakeholder engagement, local partnerships, workforce development and supplier diversity. Commercial outreach utilized cross-promotion through local organizations and partners. Residential marketing and outreach efforts focused on refreshing rebate applications and attending community events to promote Energy Smart to residential customers.

In Q2, the Energy Smart team focused on improving communications and overall engagement through enhanced cross-promotion, new and updated marketing collateral, new digital tactics and increased trade ally co-branded marketing. Energy Smart hired a local woman-owned website developer and worked with a local photographer to capture local New Orleans imagery and actual residential program participants. Residential marketing began utilizing Entergy's monthly Circuit e-newsletter and cross-promoting other residential offerings through the school kit offering. Beginning in Q2 and continuing throughout the remainder of PY8, the team focused the majority of its marketing and outreach efforts on promoting the EasyCool offering. The Energy Smart team expanded to include a dedicated commercial outreach member focused on large users, associations and Algiers. Energy Smart also began engagement with the City's Downtown Energy Challenge, led by the Office of Resilience and Sustainability.

In Q3, Energy Smart focused on improving and increasing direct marketing and outreach across the residential and commercial offerings. Energy Smart launched a new program website with improved user experience and local imagery. Residential tactics included direct mail via post cards, bill inserts, an animated video to improve the narrative for EasyCool and increased Trade Ally engagement through a monthly Trade Ally newsletter. Additionally, the Energy Smart team performed A/B testing to compare different messaging and imagery in the marketing tactics to determine the most effective strategies. Commercial tactics included print ads, customer and trade ally e-blasts and direct targeted outreach.

In the final quarter of PY8, Energy Smart shifted focus on an end-of-year boost to achieve additional residential savings. In an effort to boost savings and reach the kWh savings goals, due to a mid-year evaluation of the Behavioral (Scorecard) offering that projected a shortfall in savings, additional tactics were implemented in Q4 and were the prime focus on residential marketing and outreach efforts. In December, Energy Smart received additional marketing funding to run a general awareness campaign that included bus shelter ads, billboards, print ads and streaming media. The Commercial offerings introduced a custom incentive bonus to drive participation and support goal attainment in PY8. Commercial marketing and outreach efforts focused on promoting the end of year incentive bonus and encouraging quick turn-around projects.

Residential Marketing and Outreach

Highlights

In 2018, marketing and outreach were focused on engaging customers in the entire suite of Energy Smart offerings. Cross-promotion was utilized via the Energy Smart for Kids kit brochures, the monthly Circuit e-newsletter, and the monthly Scorecard emails and inclusion in e-newsletters from other local organizations.

The 2018 Marketing Outreach Strategy included the following objectives:

- Enhanced Customer Journey including engagement metrics and customer satisfaction analytics.
- Omni-channel Marketing ensuring deeper customer education and awareness utilizing multiple tactics across traditional and digital mediums.
- Focus on customer education/awareness to promote EasyCool.
- Target cross-program promotional opportunities to ensure active customers are offered additional opportunities for energy savings.

To enhance deeper engagement, the Energy Smart team examined the customer experience for entering the program (phone, website, outreach event, and trade ally, marketing tactics) and reviewed methods to enhance those entrance points for the customer. Energy Smart launched a new program website with local imagery, easy navigation and the ability to quickly make updates as needed. Program collateral received similar updates with the use of local images from photo shoots taken in New Orleans and Algiers using Energy Smart customers and staff.

Providing omni-channel marketing to promote Energy Smart was a key to success in 2018. Bringing greater emphasis to digital tactics, the Energy Smart team implemented multiple program email campaigns, provided an article in the Circuit e-newsletter monthly that varied depending on the season

and the focused offering, paid Facebook ad campaigns, and video marketing. Reaching the customer base via these digital tactics provided deeper data for tracking the success of campaigns and A/B test messaging and images helped make the program's call to action more effective.

EasyCool was a high priority in PY8. Multiple messaging channels were used to ensure the customer understood the offering, such as digital, direct mail, outreach and outbound calling campaigns. Energy Smart also implemented two bill inserts in 2018.

Marketing Tactics

- Post card campaign
- Direct mail business reply card mailing
- Multiple outbound calling campaigns for customer who showed interest
- Email campaigns to all eligible customers with email addresses
- Paid Facebook ad campaigns
- Educational outreach throughout New Orleans and Algiers

Additionally, the Energy Smart team implemented a sticker on all switches in the Direct Load Control offering that includes the Energy Smart logo and a direct phone number for customers to call if they have questions regarding the switch once it was installed.

Table 21.1: 2018 Circuit Newsletter Metrics

Month	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Scheduled Recipients	101915	101956	102250	102148	102236	101810	103371	103706	103813	104183
Delivery Rate	99.53%	99.57%	99.62%	99.54%	99.48%	99.66%	99.43%	99.49%	99.29%	99.00%
Open Rate (Newsletter Interest)	16.37%	17.58%	19.50%	20.67%	24.25%	17.57%	14.78%	18.36%	18.83%	16.33%
Click-to-Open Rate (Detailed Content Interest)	06.97% (1158)	17.27% (3081)	10.55% (2097)	14.12% (2967)	9.75% (2405)	17.57% (1142)	7.39% (1123)	08.15% (1544)	05.62% (1090)	05.11% (861)
Total Clicks	483	3196	1039	617	808	91	56	46	163	22
Unique Clicks	443	2695	920	557	737	79	54	38	152	18
Click Rate	2.67%	15.10%	4.63%	2.65%	2.99%	.44%	.36%	.20%	.78%	.11%
Ranked Link	1 out of 15	1 out of 13	1 out of 14	2 out of 14	2 out of 14	4 out of 13	5 out of 13	6 out of 15	3 out of 14	10 out of 15

Residential Customer Satisfaction

Understanding program performance and customer satisfaction is vital to Energy Smart's success as a significant amount of program participation comes from word-of-mouth marketing. In 2018, surveys were launched in multiple mediums to ensure continuous customer feedback for program improvement. Energy Smart will benchmark these numbers and review on a quarterly basis to ensure high program satisfaction to continuously identify areas for improving the customer journey. Surveys were launched in Q3 via an automatic email upon project completion as well as a leave behind survey card that can be returned via postage paid mail. Customer satisfaction across all programs showed positive responses with most customers highly satisfied as well as highly likely to recommend Energy Smart to their friends or colleagues.

Across the Energy Smart offerings customer satisfaction regarding the service, installation, safety and enrollment process consistently ranged between 8 and 10, with 10 being highly satisfied. Areas for improvement in 2019, will focus on customer enrollment and communication with program and trade ally staff. Trade ally communication with the customer will continue to be highly monitored with quality assurance throughout the year to ensure customers are responded to in a timely manner. Strategies to increase customer engagement in 2019 will be focused on customer motivational responses from 2018 that prioritized saving money on their utility bill and helping the environment. Increasing customer engagement within the Energy Smart portfolio will include enhanced opportunities for customers to provide survey responses. Customer's detailed responses highlighted their appreciation of the professionalism and knowledge of the energy auditor, their satisfaction with the offerings and interest in additional opportunities to lower their bill and save more energy. In 2019, customers that participate in all offerings will be able to communicate satisfaction feedback in multiple ways: business reply card, an online survey link listed on the card as well as an email sent to customers after program completion that includes a link to the online survey.

Table 21.2 Customer Satisfaction Survey Results - HPwES/IQW/MF

Question	HPwES	IQW	MF
Overall, how satisfied are you with the offering?	9.19	10	10
How satisfied were you with the professionalism of the energy advisor?	9.61	10	8.2
How satisfied were you with the energy advisor's knowledge about the products installed and ability to answer your questions?	9.50	10	8.2
How satisfied are you with the safety measures taken by the energy advisor? (Used ladder, wore gloves, had on safety glasses, etc.).	9.58	10	9.8
How satisfied were you with the energy-efficient products installed?	9.38	10	10
How likely are you to implement changes recommended by the energy advisor?	9.36	8	N/A
How satisfied were you with the enrollment and scheduling process?	8.88	8	N/A

Question	HPwES	IQW	MF
How likely is it that you would recommend the program to a friend or colleague?	9.58	8	9.5
Top motivation to participate in the offering.	Wanted to reduce my utility bill.	Free of Charge / Wanted to reduce my utility bill.	Wanted to reduce my utility bill.

*Scoring is based on question response average

Table 21.3 EasyCool Customer Satisfaction Survey Results

Question	EasyCool Scores*
The energy advisor completing the work was professional.	9.47
The amount of time to complete the work was satisfactory.	9.64
The energy advisor worked in a safe manner (Used ladder, wore gloves, had on safety glasses, etc.).	9.59
The energy advisor left the site neat and clean - free from any debris.	9.78
How likely is it that you would recommend the program to a friend or colleague?	9.34
Top motivation to participate.	Wanted to reduce my utility bill. / Wanted to help the environment.

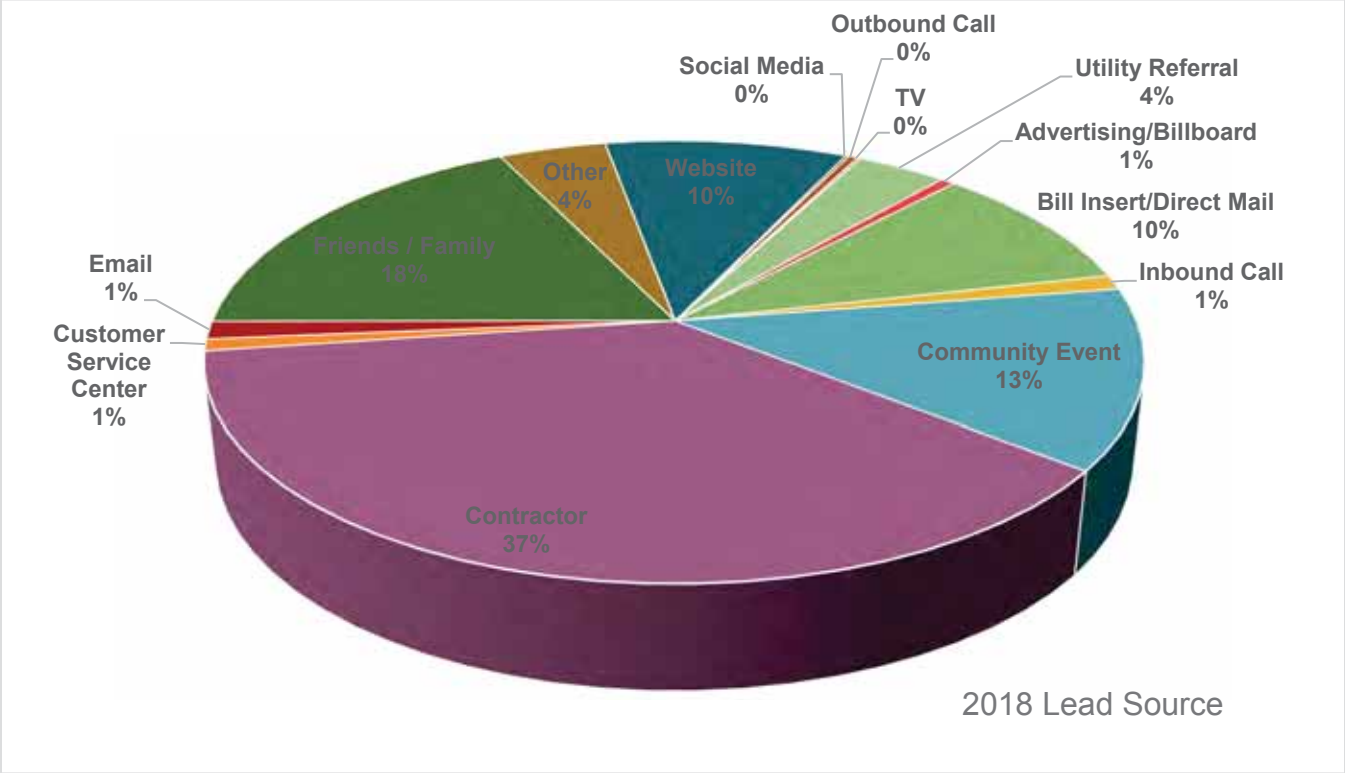
*Scoring is based on question response average

Table 21.4: A/C Tune-Up Customer Satisfaction Survey Results

Question	A/C Tune-Up Scores*
Overall, how satisfied are you with the A/C Tune-up offering?	9.14
How satisfied were you with the professionalism of the trade ally?	9.19
How satisfied were you with the trade ally's knowledge and ability to answer your questions?	9.19
How satisfied are you with the safety measures taken by the trade ally? (Used ladder, wore gloves, had on safety glasses, etc.)	9.1
How satisfied were you with the quality of service provided by your trade ally?	9.25
How satisfied were you with the enrollment and scheduling process?	8.95
How likely is it that you would recommend the program to a friend or colleague?	9.29
Top motivation to participate.	Wanted to reduce my utility bill.

*Scoring is based on question response average

Chart 21.5 Lead Sources



Participation was tracked using identified lead marketing sources for customers in 2018 that included contractor, community event/outreach, customer service center, email, friends and family/word of mouth marketing, direct mail, utility referrals, social media, Energy Smart website and traditional advertising. The highest performing lead sources for 2018 included referral sources such as contractors and family and friends. Outreach events additionally provided a portion of program participation with our increased focus on Energy Smart visibility in New Orleans and Algiers. Direct mail and advertising numbers increased in the end of PY8 with the marketing blitz that included outdoor signage, billboards and large direct mail campaigns. Digitally focused tactics tracked the lowest in 2018, offering that this tactic is better used as an awareness and education tool rather than lead generation. High customer satisfaction will continue to drive high word of mouth marketing lead sources into PY9.

Proposed Plans for PY9

Marketing plans in PY9 will build upon the success of the Circuit E-newsletter and with more engaging content to prevent redundancies with a static audience, increased digital marketing targeting EasyCool including paid display ads, increasing customers as promoters (noting that 18 percent of completed projects were referred by friends or family in 2018) by creating referral collateral that includes an EasyCool postcard and a customer referral door hanger, launching a second EasyCool reply card based on the successful response of the first mailing sent in December and increased retail presence in Algiers including paid social media ads promoting retail outreach events to increase foot traffic.

Community Outreach

Highlights

Throughout PY8, the Energy Smart team attend 131 events, or about 11 events per month in all five Council Districts. Of those events, 36 (27%) events were in Algiers and 73% were in New Orleans.

Events included workshops, tabling at festivals and neighborhood group presentations. Total visibility at events was 20,410 approximate attendees or 90% over goal. The Energy Smart team collected 753 customer leads and had 3,158 individual conversations with individuals about the program.

Table 21.6

Council District	Number of Events
A	19
B	41
C	44
D	19
E	12
Total	135

Review

In PY8, the Energy Smart team eliminated events that were less well attended in previous years and focused the program's emphasis on areas that needed additional outreach. For example, Energy Smart performed more outreach geographically in Algiers for both the Home Performance with ENERGY STAR offering and the Small Commercial offering. The Energy Smart team also focused on doing more effective follow up with each lead through email and phone efforts, in order to convert leads to participation.

The non-profit retrofit element of community outreach expanded to include a small commercial prescriptive piece. The Energy Smart team worked with small businesses to perform prescriptive lighting upgrades in order to increase kWh savings in Algiers.

As part of the end of year boost, Energy Smart distributed LEDs through the LED Giveaway tactic, which engaged 54 community organizations. Within each participating organization, the team collected leads for the HPwES and EasyCool residential offerings. In PY9, the Energy Smart team plans to leverage these leads with the goal of converting them into participating customers.

Stakeholder Advisory Group Meeting

On September 19, 2018 Energy Smart held its first Residential Stakeholder Advisory Group meeting at the Urban League of Louisiana. Representatives of groups that work on issues that are relevant to residential energy efficiency were invited to participate, including The Alliance for Affordable Energy, the

Greater New Orleans Housing Alliance (GNOHA), the Finance Authority of New Orleans (FANO), Enterprise, Jericho Road Housing, the New Orleans Redevelopment Authority (NORA), the City's Office of Neighborhood Engagement, the City's Office of Sustainability and Resilience, 350.org's local chapter, AIA New Orleans and the Council Districts' Constituent Liaisons.

During the meeting, the Energy Smart team presented a PY7 review and gave an update on the status of offerings for PY8. Discussion topics included, successes, lessons learned, challenge areas and plans for the future. The attendees provided valuable insight and suggestions for addressing some of the challenges identified. Suggestions from attendees that are being taken into consideration for this program year, next year and/or the next cycle of programs include:

- Refer a friend post card
- Door hangers for neighbors of participating homes
- Outreach to Algiers President's Council and Council Member Palmer
- Marketing specifically geared toward A/C replacement with messaging regarding average life cycle of equipment and proactive change-out before equipment fails
- Targeted outreach to multi-family complexes for A/C tune-up (PY9)
- Adding refer a friend language to CSAT surveys (PY9)
- Increasing HVAC replacement incentive amount (PY9)
- Midstream strategies (next program cycle)

The Residential Stakeholder Advisory Group will meet on an annual basis.

Commercial Marketing and Outreach

Highlights

In PY8, the Energy Smart team implemented several commercial marketing and outreach tactics to raise awareness of the Energy Smart Program and incentive offerings and to increase participation among the business community in both East Bank and Algiers territories. Marketing collateral developed in PY8 included updated program overviews, a business leave behind post card, Retro-commissioning (RCx) offering materials, case studies and commercial trade ally business cards. Energy Smart ran print ads in local business journals, sent eblasts to commercial customers and trade allies and established memberships with local organizations and associations. Programmatic updates and announcements, such as the Retro-commissioning launch, event and training notices and the custom incentive bonus announcement were implemented to drive awareness and participation in the commercial offerings. The Energy Smart team also sent end of year eblasts to both participating and non-participating customers and trade allies as a reminder of the concluding program year and to generate last-minute participation.

Direct targeted outreach to key customers and segments was also utilized to focus on the large consumers and industry sectors. To drive awareness and participation in Algiers, over twenty large commercial customers were contacted via direct outreach efforts such as emails or phone calls. Fifty-eight presentations about the program and incentive offerings were made to key target associations and potential commercial customers in higher education, commercial property management, hospitals/healthcare, grocery, publicly funded/government institutions and retail.

In Q4, the Program was infused with additional marketing funds to run a general awareness campaign. Tactics in this blitz included a 30 second video, billboard, bus shelters and a variety of print ads during the month of December. The main goal of this marketing blitz was to increase general awareness of the Energy Smart program and was not focused on promoting any specific offerings.

Marketing Collateral

- Commercial Case Study featuring Pel Hughes.
- Prescriptive Incentives List.
- Business leave-behind post card.
- Poster for Urban League of Louisiana's Contractor Training Center.
- RCx offering collateral and RCx approved Service Provider list.
- Commercial Trade Ally business cards.
- Custom incentive bonus half-sheet.

Marketing Tactics

- Listing in the 2018 New Orleans Chamber of Commerce Directory.
- Placed ad in City Business' May 25th Edition, focused on energy and the environment.
- Print ads placed in Biz New Orleans in May and August monthly issues.
- Social media Facebook ad placed by Biz New Orleans.
- Stay Local membership and SourceNOLA campaign sponsorship throughout July.
    - Email and social campaign promoting SourceNOLA in June and July.
- Cross-promotional email through GNO, Inc. in Q1 to large commercial property owners, managers and developers including Domain Companies, JCH Development, ULI, Stirling Properties, Intl-Matex Tank Terminals (IMTT), Convention and Visitors Bureau (CVB), LCMC, Corporate Realty and Select Properties.
- Cross-promotional email through American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) to membership base, largely to target non-lighting opportunities in Q3.
- Eblast to Commercial trade allies on January 19 announcing the start of PY8.
    - Open rate: 46.3%
    - Click rate: 9.3%
- Eblast to Commercial customers and trade allies on June 18 announcing the release of a new Prescriptive Incentive calculator tool.
    - Open rate: 47%
    - Click rate: 5.1%
- Eblast to C&I customers on August 29 to 7,297 recipients announcing the custom incentive rate increase and Pel Hughes case study release.
    - Open rate: 18.7%
    - Click rate: .7%
- HVAC incentive increase and custom bonus announcement email sent September 20 to 344 recipients.
    - Open rate 44.8%
    - Click rate 3.8%.
- Eblast to participating Commercial customer and trade allies on December 10 stating critical end of year dates and promoting quick turn-around projects.
    - Open rate: 41.2%
    - Click rate: 2.0%

- Eblast to non-participating Commercial customer and trade allies on December 10 stating critical end of year dates and promoting quick turn-around projects.
    - Open rate: 14.8%
    - Click rate: 1.1%

Outreach Events, Presentations and Tactics

The Energy Smart team attended numerous events and held presentations for industry groups.

Table 22.1

DATE	EVENT
1/25/2018	LifeCity Love Your City Gala
3/6/2018	Chamber of Commerce Power Lunch
4/4/2018	Downtown Energy Challenge Workshop
4/25/2018	Algiers Development District Meeting
5/2/2018	Biz New Orleans Publisher's Luncheon
7/20/2018	LifeCity Manufacturing Workshop
7/26/2018	Big Buildings Energy Savings Working Group Presentation
8/30/2018	Small Business Expo
9/10/2018	Black Chamber of Commerce Luncheon
9/11/2018	International Facility Managers Association (IFMA) Luncheon
12/7/2018	ULLA Opportunities Outlook 2019 for DBEs in Construction

- **Program Presentations**
    - Higher Education – 19 presentations
    - Healthcare/Hospitals – 7 presentations
    - Property Management – 17 presentations
    - Hospitality – 3 presentations
    - Associations – 5 presentations
        - GPRO (2 presentations at GPRO)
        - ASHRAE
        - Chamber of Commerce
        - Trade Ally Quarterly Meeting in Q4
    - Publicly Funded Institutions/Government – 3 presentations
    - Retail – 1 presentation
    - Grocery – 2 presentations
- **Façade Renewal Grant Applicant Outreach**: performed direct outreach to participants of NORA's Small Commercial Façade Renewal Program to help them identify opportunities for energy efficiency improvements that performed during the time of other upgrades. This outreach touched 55 people throughout three workshops in Q1 and the Energy Smart team conducted direct follow-ups with applicants later in the year.
- **Algiers Commercial Canvassing**: dedicated 1-2 days per week on door-to-door outreach to Algiers commercial customers. This consisted of first-time touches and follow-up meetings with new customers who expressed interest in participating and with past

participants that may have additional energy efficiency upgrade opportunities.

- **Financial Institution Outreach**: conducted outreach to financial institutions in Q1 to create awareness of the program and benefits to their commercial customers. Engaged institutions included Liberty Bank, Finance Authority of New Orleans, Advantage Capital, Crescent Growth Capital, and GNO, Inc.
- **Prescriptive Lighting Installations**: engaged program partner Energy Wise Alliance in Q4 to perform prescriptive LED lighting upgrades in common areas in apartment complexes.
- **Custom Incentive Bonus Promotion**: conducted outreach to over 100 contacts in Q4 via email and phone and reached out directly to facilities that could implement lighting projects by the end of the year.
- **Realty Company Engagement**: performed outreach to major realty companies that manage, own or sell properties within the territory, including Latter & Blum, Summit Properties, Corporate Realty, Property One, and the Domain Companies.
- **Entergy Customer Service Manager Engagement**: collaborated with Entergy staff that manage key customer accounts with an emphasis on hospital and grocery sectors.
- **Higher Education Cohort**: held quarterly meetings with institutions of higher education and other organizations with campus configurations.

Higher Education Cohort

Energy Smart established a Higher Education Cohort in PY8 with the goal of developing a peer-to-peer exchange network that provides a forum for sharing effective methods for achieving energy savings as well as overcoming barriers to success. The Cohort provides a platform for collaboration to share knowledge, reduce barriers and promote effective strategies for making campuses more sustainable and energy efficient. On a quarterly basis, institutions are convened to report on current and future energy efficiency projects, share “hands on” knowledge about participation in Energy Smart, demonstrate leadership in the industry to their peers, identify the support they need to implement projects and also receive training on specific relevant topics. The cohort and ongoing engagement with this sector led to some application submittals and to an understanding of how to include Energy Smart into future capital projects for higher energy savings.

The Energy Smart team continues to engage institutions that have not participated in Energy Smart or the Cohort to emphasize the benefits on participations. Energy Smart saw the Cohort expand throughout the year to include non-higher education organizations that face similar challenges with campus configurations.

Table 22.2

DATE	LOCATION	TOPIC
Q1 – February 1	Urban League of Louisiana	Cohort Introduction & Overview
Q2 – May 17	Urban League of Louisiana	Building Automation Systems & Controls
Q3 – August 9	The Shop at the CAC	Southeastern Louisiana University’s Sustainability Initiatives
Q4 – November 28	LSU Medical Center	Energy Smart Retro-commissioning Offering Overview

Participating Institutions and Organizations:

- Dillard University
- Louisiana State University Medical Center
- Louisiana State University Health Foundation
- Southern University at New Orleans (SUNO)
- Tulane University
- University of New Orleans (UNO)
- Xavier University
- New Orleans Baptist Theological Seminary (NOBTS)
- Archdiocese of New Orleans
- New Orleans Baptist Association

Association of Energy Services Professionals (AESP) National Conference (February 20, 2018)

Energy Smart was selected to present about the program's stakeholder engagement efforts on a panel with representatives from three energy efficiency programs from other cities. Derek Mills, Demand Side Manager for Entergy New Orleans, and Jackie Dadakis, COO of Green Coast Enterprises, spoke about the new program design that focuses on local partnerships, workforce development and supplier diversity.

Proposed Plans for PY9

In PY9, an increased effort will be placed on building program awareness, increasing participation and developing the capability of the workforce to complete energy efficiency projects. The Energy Smart team will execute a variety of marketing strategies and tactics with a focus on direct commercial customer outreach, targeting Algiers, leveraging memberships to cross-promote the program and working at the association level to reach customers within the major industry sectors. The Commercial and Industry marketing strategy will have the following objectives:

- Increasing program awareness and participation.
- Educating customers about the benefits of energy efficiency.
- Grow and support a robust, engaged and qualified trade ally network.

Commercial & Industrial Customer Satisfaction

Customer satisfaction is one of the highest priorities for the Energy Smart Program. Surveying was conducted to Entergy New Orleans' Third Party Evaluator, ADM. Results showed that 99% of participating Commercial and Industrial customers were satisfied with the program overall. While results showed high satisfaction with the program and process, the Energy Smart team continuously works to improve and enhance the customer experience.

Table 22.3

Question	Result
How clear was the information on how to complete the application?	0.94
Did you have a clear sense of whom you could go to for assistance with the application process?	0.96
How did the final incentive payment that you received compare to what you were expecting when you submitted your final application materials?	0.92
Once you submitted the final application and paperwork, how much time passed until your organization received the incentive payment?	0.77
How satisfied or dissatisfied you are with the staff member who assisted you with your project?	0.96
How satisfied or dissatisfied you are with the facility assessment or other technical services received from the staff person?	0.98
How satisfied or dissatisfied you are with the amount of time it took to get the rebate or incentive?	0.91
How satisfied or dissatisfied you are with the range of equipment that qualifies for the program?	0.93
How satisfied or dissatisfied you are with the steps you had to take to get through the program?	0.94
How satisfied or dissatisfied you are with the contractor or trade ally that provided the service?	0.99
How satisfied or dissatisfied you are with the energy efficiency improvement(s) you completed?	0.97
How satisfied or dissatisfied you are with the program overall?	0.99

Trade Allies

The overall mission of the Trade Ally Network is to develop and increase the local residential, commercial and industrial contractor base by facilitating training opportunities, marketing engagement opportunities and providing assistance with program participation.

Engaging the registered Trade Ally Network is a key factor in the success of the Energy Smart program. Throughout PY8, the Energy Smart team continued to focus on enhancements to the Trade Ally Network and improvements to the application process. These actions led to a dramatic increase in the number of projects submitted by trade allies and higher quality of work.

The Energy Smart team worked to empower and enrich the Trade Ally Network. To strengthen trade allies from previous years and support the onboarding of new trade allies, the Energy Smart team worked to increase the overarching goals, processes, procedures and contractor documentation that will continue to inform the activities of the trade ally program.

Trade Ally Documents & Processes

In 2018, the Energy Smart team created several resources and marketing materials to improve and enhance the trade ally experience.

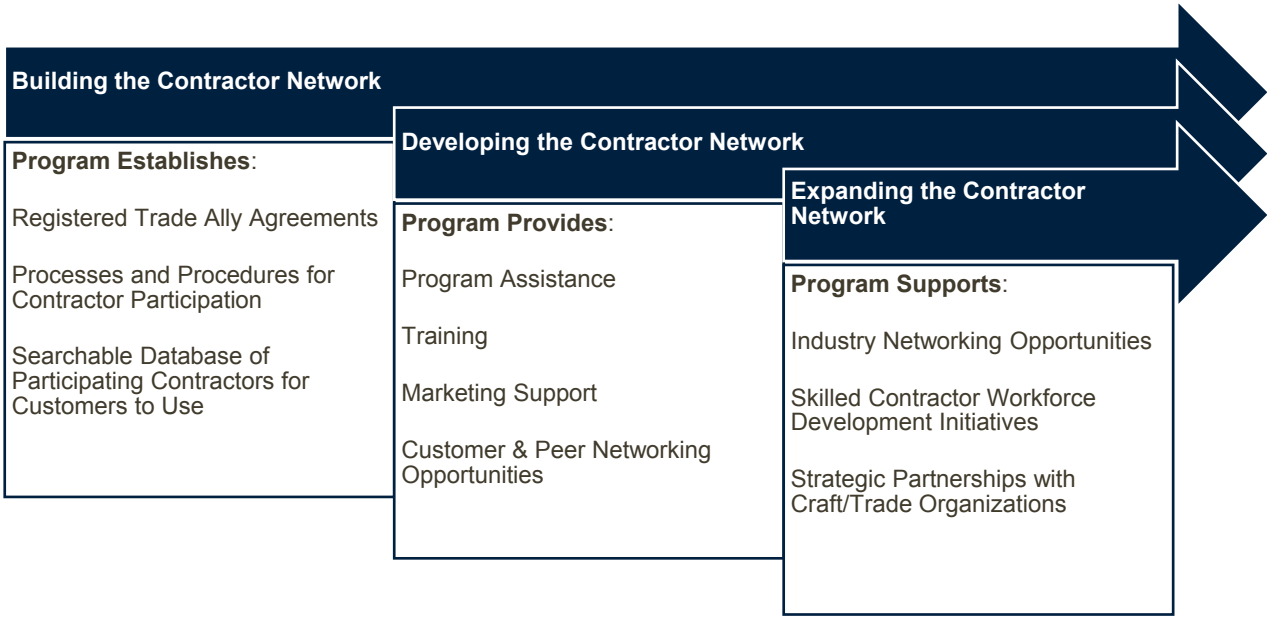
- Trade Ally Resources
    - Individual Residential Trade Ally Program Portals
    - Monthly Residential Trade Ally Newsletter
    - List of upcoming training and outreach opportunities through program partners (such as the Urban League Contractor Resource Center trainings, SBA learning center, LifeCity, SELACACI)
    - Monthly Residential Trade Ally Feedback Survey
    - Monthly Residential Program Status Infographic
- Trade Ally Marketing Materials
    - Registered Residential Trade Ally Manuals
    - Registered Residential Trade Ally Energy Smart badges
    - General Energy Smart Business Cards for Trade Allies
    - Trade Ally Internal Incident Tracking process

Trade Ally Network Development Plan & PY8 Highlights

The graphic below depicts the overall trade ally network development plan that was set into motion in PY7 and will continue to make progress and meet milestones over the course of this program cycle, which ends December 31, 2019. PY7 focused on building the contractor network and began to develop the trade ally capabilities. PY8 saw significant progress in activities related to further developing the contractor network to facilitate participation. The number of registered commercial trade allies in PY8 was roughly triple that of PY7, fueling a comparable increase in total number of projects completed and amount of incentives awarded. The Energy Smart team accomplished this by focusing on recruitment of

HVAC and other non-lighting contractors to expand contractor options within the Residential and Commercial Trade Ally Networks and by diversifying the services they offer, such as through the Retro-Commissioning (RCx) offering. At its launch in November, there were ten qualified trade allies capable of assisting customers participate in the RCx offering that were approved as service providers. In addition, partnerships were formed and strengthened such as with Johnstone Supply, SELACACI and Urban League of Louisiana to host program trainings and connect registered trade allies to further business and trade development programs.

Chart 23.1



In response to feedback from the Q1 Residential Trade Ally Advisory Group (TAAG) meeting, the Energy Smart team opened access to the new Trade Ally Portal system for all registered residential trade allies. Portals are privately connected to each trade ally team, giving direct access to full listings of assigned customers, digital rebates, field guides and resource files that assist them with participating.

In response to more Residential TAAG meeting feedback, the monthly residential Trade Ally Newsletter was launched on June 15th. This monthly correspondence provides program updates, industry news, training opportunities, and performance awareness spotlights and includes a survey to inform future trade ally programming. With the initial launch of the newsletter, the overall response included a 47 percent open rate.

To increase transparency and generate trade ally momentum, the September Trade Ally Newsletter featured its first Trade Ally “Budget Update” section. This notice is an infographic showing the remaining budgets for each offering. In the same month, the newsletter began to share relevant news and updates from LifeCity, Urban League of Louisiana, Johnstone Supply of New Orleans, Urban Green, SELACACI, Efficiency First and the Building Performance Institute (BPI) to provide a comprehensive monthly list of trainings, webinars and public events for trade allies to further connect to the industry and community. The success of the residential newsletter resulted in plans to launch a quarterly commercial Trade Ally Newsletter in PY9.

Throughout 2018, the Energy Smart team continued to perform outreach to trade organizations and through referrals in order to raise general awareness in the contractor community about Energy Smart and steps to participate.

Trade Ally Advisory Group (TAAG)

In 2018, the Energy Smart team continued to host Trade Ally Advisory Group (TAAG) meetings to solicit feedback from trade allies and to inform positive changes and enhancements to the program. Residential TAAGs were held quarterly, while C&I were bi-annually. In PY9, C&I TAAGs will be held quarterly. The PY8 TAAG attendees were a concentrated reflection of the program's larger trade ally network with HVAC, weatherization and insulation capabilities represented at residential TAAGs and lighting, non-lighting, and energy consulting capabilities at C&I TAAGs. The Energy Smart team solicited feedback on a variety of areas including barriers to customer participation, project processes, project material usages, potential new measures, program and trade ally marketing efforts and training opportunities. The Energy Smart team made several key changes to address issues and feedback brought up by trade allies during each of the TAAG meetings.

In each meeting, the team used the requests and feedback of trade allies to create multiple initiatives for community engagement and program efficiency that will be implemented in PY9, such as:

- Spreading out the Residential Trade Ally Newsletter to bi-monthly and making sure to better engage trade allies for each.
- Launching a quarterly C&I Trade Ally Newsletter.
- Connecting with trainings and outreach organizations within the industry and local area to share with the trade ally network.
- Inviting trade allies to on-site partner outreach events, where they can engage directly with the community alongside Energy Smart staff.
- Directing training focus to the trade ally staff and technicians, to include best practices for services as well as soft skills.

Measuring the Network

Contractor Engagement

Recognizing a need to increase the number of registered trade allies with the ability to support residential HVAC offerings, the team focused on increasing the number of HVAC residential trade allies. Ten contractors joined the Residential Trade Ally Network in 2018, all of which have the capabilities to support HVAC measure projects through at least one of the following residential offerings: A/C Tune-Up, Home Performance with ENERGY STAR, Income-Qualified Weatherization and Multi-Family. Fifty-nine contractors joined the C&I Trade Ally Network in 2018, more than doubling the ability to support both lighting and non-lighting offerings, including approving ten Retro-commissioning service providers.

Table 23.2

CATEGORY	# OF COMPANIES
C&I Network	89
Residential Network	22
Total Engagement	**111**

Engagement is defined as contractors who have applied and been approved to become Registered Residential Trade Allies or, in lieu of an operating Registered C&I Trade Ally Network, contractors who applied for one or more C&I project in 2018. Engagement data includes the specific program offerings that each company has the ability to support and their measure level capabilities as reported on their program-approved trade ally application. Contractors who register with both are counted in both totals.

Contractor Participation

Trade ally participation increased for both the Residential and Commercial and Industrial offerings in PY8. Among commercial trade allies, 15 trade allies completed projects without being registered. The Energy Smart team will continue to engage participating but unregistered contractors in PY9 to recruit them into the network.

CATEGORY	# OF COMPANIES
C&I Network	40
Residential Network	13
Total Participation	**38**

Participation is defined as trade allies who have completed and closed out projects in 2018 and the program and/or level measure details associated with the work completed.

Planned or Proposed Changes in PY9

The Energy Smart team will introduce a tiered network for C&I trade allies in Q2 of PY9. Trade allies will be grouped into lighting and non-lighting categories and ranked according to their participation (project count and kWh savings) in PY8.

In PY9, the Energy Smart team will launch a searchable database on the program website where customers can search for products and services. Trade allies will be listed according to their tier, giving the benefit of higher performing trade allies being listed higher.

Program Training

In PY8, Energy Smart's training efforts significantly increased to support larger savings goals and increase visibility of the program. Training opportunities were offered to a variety of Energy Smart audiences and several Energy Smart partners, including the Urban League of Louisiana and Green Coast Enterprises, contributed to the creation and facilitation of quality learning opportunities.

Not included in documented training data are the individual learning opportunities facilitated by a field technician for participating residential trade allies. Topics included program paperwork submittal and processing, field installation quality standards and customer support.

Audiences Trained

In 2018, the Energy Smart team provided training to the following groups:

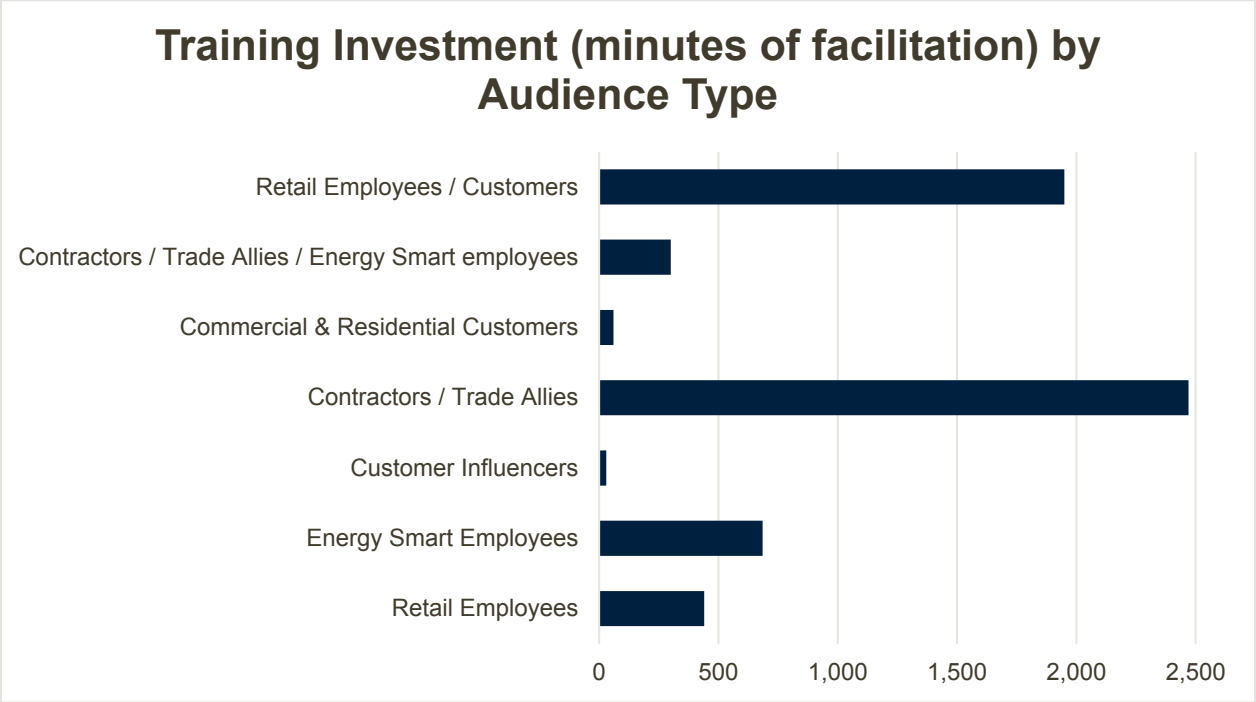
- **Contractors/Trade Allies**: This group was targeted for training to increase existing technical skill levels, energy efficiency knowledge and program literacy to generate interest with their customer base and provide customers with a better participation experience.
- **Energy Smart Employees**: This group was targeted for training to leverage existing knowledge and best practices across the program team.
- **Customer Influencers**: Customers were taught about the program and available resources in order to empower them as participants and ensure the healthy organic growth of the program. Influencers were targeted for training to equip individuals who have access to and influence over Entergy customers with the information that they need to train and inform their networks about energy efficiency practices and available energy efficiency incentives through Energy Smart.
- **Retail Employees**: This group was targeted for training to orient retail managers, section managers and other employees about energy efficient products available for purchase at their stores and rebates available to residents.

Trade Allies and contractors received the highest investment of training hours, followed by Retail Employees/Customers and then Energy Smart program staff. This data reflects the program's efforts to develop and train program partners to support program implementation.

Training Topics/Content Categories

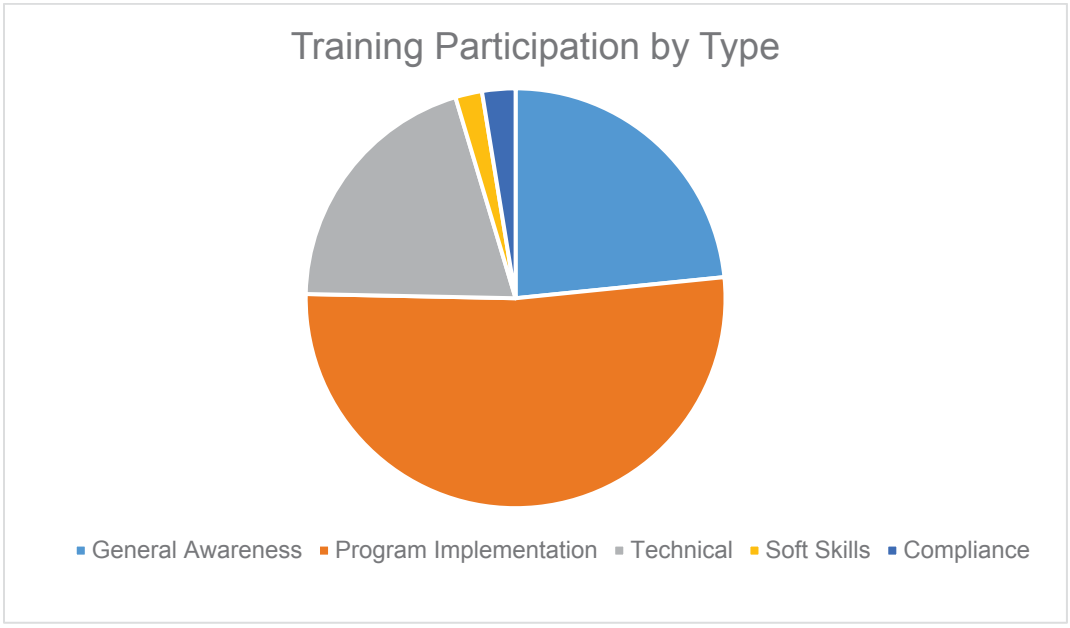
- **Compliance Training**: Topics included administrative ethics and protection of customer data.
- **General Awareness Training**: Topics included Energy Smart eligibility and participation guidelines.
- **Soft Skills Training**: Topics included marketing skills, customer service practices and operations topics.
- **Technical Training**: Topics included the fundamentals of energy efficiency, intermediate energy efficiency training, program calculator walkthroughs, operations certification opportunities and best practices of performing program measures.
- **Program Implementation Training**: Topics included trade ally orientations, retailer educations and training on program processes, systems and annual plans.

Chart 24.1



In 2018, the Energy Smart team provided training to 389 individuals, nearly doubling the 2017 total of 207 individuals. Audiences for individual sessions included Customer Influencers, contractors and Trade Allies, Publicly Funded Institutions representatives (such as public-school representatives) and Energy Smart employees.

Chart 24.2



Market Segmentation Training Highlight

Energy Smart, in partnership with the Urban League of Louisiana, held "Green Building Professional (GPRO) Operations & Maintenance Essentials," a customer market segmentation and trade ally training event in November 2018. Energy Smart brought together a collaborative group of local and national resources to contribute to the multi-faceted event, including:

- Urban League of Louisiana's Contractor Resource Center
    - Event outreach, marketing, and registration support
    - Facility use
    - Event Programming: Contractor Resource Center info session
    - Certification Proctor
- Baynham Environmental
    - Linda Baynham, Co-Teacher, event promotion
- Franklin Energy
    - Adam Davis, Co-Teacher, event promotion
- Urban Green Council
    - Course creators
- New Orleans Office of Resilience and Sustainability
    - Camille Pollan – Energy Efficiency Program Manager, Guest speaker
    - Initiative drivers
- Pel Hughes Printing
    - Event material printing
- National APTIM program support resources
- Local Energy Smart support

Training Objective: This local-focused certification training aims to increase contractor knowledge of the principles of high-performance construction and how to maintain efficient operations for a medium to large scale building. Contractors and operations-specific business managers had the opportunity to network and learn about common inefficiencies and their negative business impacts, discuss relevant efficiency improvement projects for Orleans Parish and ultimately understand how to leverage available Energy Smart incentives to execute efficiency improvement projects.

At the end of the course, students were tested on their understanding of many facets of building science and operations, with the goal of increasing energy efficiency improvement through regular operations and maintenance to the benefit of local businesses in the Orleans Parish unique commercial market.
Technical Emphasis: Identify efficiency projects and measures relevant to larger commercial buildings, including commercial plumbing equipment, lighting fixtures that maintain customer design focus and New Orleans ambiance, HVAC controls and upgrades, ventilation systems and occupancy controls.

Session Description: The session kicked off with an introduction to the New Orleans City Energy Project's background and community impact goals and then transitioned to a review of the Energy Smart program. Industry guest speaker, Camille Pollan, Energy Efficiency Program Manager for the City's Office of Resilience and Sustainability, spoke about the unique climate and challenges of Orleans Parish's

commercial and residential industries. Camille spoke on the current state of the Orleans Parish market, what she sees “on the horizon” and presented the business case for local large buildings to use the Energy Smart program as an opportunity to become more efficient and profitable.

At Camille’s conclusion, the main session began with an analysis of green building fundamentals. Energy Smart-specific projects were highlighted to teach participants the basics of sustainable construction and operations. The two-day course continued, delving into the critical tools needed to transition from conventional to sustainable operations practices.

Following the main session, participants attended testing for the GPRO Operations & Maintenance Essentials and GPRO Fundamentals of Building Green certifications and were introduced to the Urban League of Louisiana’s Contractor Resource Center. All participants were invited to a breakout session led by Energy Smart to become more familiar with program details.

Quality Assurance

Residential Quality Assurance

The Energy Smart team performs multiple checks for quality assurance within the residential portfolio.

All project applications are reviewed for accuracy before approving the incentive payment. The team provided both on-site and in-office training with approved trade allies on program requirements to ensure quality work and submissions. Customer calls were reviewed internally with the use of calibration calls to evaluate call center agents on the performance of their interactions with customers. The combined feedback has led to improvements that will be delivered to customers in PY8 and PY9.

Desk audits of projects are also performed regularly, identifying and inspecting any irregularities or documentation of services performed. These included follow-ups for any customer calls as well as inspections of diagnostic testing procedures and services to ensure compliance to the Best Practice Standards, which are outlined in the Trade Ally Manual.

Additionally, a secondary QA/QC technician was hired to conduct field audits at the end of 2018 and will perform continuous audits throughout 2019. QA/QC Technicians reviewed 10.79% of all field work in PY8.

Chart 25.1

OFFERING	% OF PROJECTS INSPECTED
Home Performance	10.83%
Multi-Family	10.34%
Low Income	15.85%
High Efficiency Tune Up	9.55%
EasyCool	9.30%
TOTAL	**10.79%**

Commercial & Industrial Quality Assurance

The program conducted QA/QC checks on 100% of Commercial & Industrial (C&I) projects in PY8. These checks include both pre-installation and post-installation desk reviews and on-site inspections. The checks during the pre-installation reviews ensure the customer/project are eligible for the program and that the estimated savings/incentives that are reserved and communicated to the customer are accurate. That accurate estimate gives the customer and contractor confidence that if the scope of work that was pre-approved is followed that they will have a good idea of the savings and incentive they will receive. The post-installation checks verify that the equipment being incentivized is installed and operational, incentives match the claimed savings and that the claimed savings are accurate and will be realized upon evaluation. Additionally, desk audits were performed quarterly to review program documentation and processes.

Initiatives

Market Segmentation

The Energy Smart team chose to target the Orleans Parish Commercial and Multi-Family industry for additional general awareness and technical training in PY8. This industry was chosen because it represents a deep representation of Orleans Parish energy usage and further supported Energy Smart's community engagement goals. As a primary method of focus on these groups, the program worked with multiple partners to introduce and train contractors and building management of the Orleans parish area in the certification course, Operations & Maintenance Essentials from GPRO, a credentialing program created by Urban Green Council.

Within the Residential Portfolio, the Energy Smart team also worked with SELACACI and JohnStone of New Orleans to promote growth and engage local contractors within the Air Conditioning industry. These initiatives included introductory presentations, cross promotion and staff attendance of events, and enrolling interested members as new trade allies into the Residential programs.

Supplier Diversity

Energy Smart partners with multiple small and disadvantaged businesses to help deliver the program. Choosing these partners was part of a conscious decision to create a deliberately dynamic and diverse delivery model and invest in the development of local businesses, providing them with necessary experience to thrive and grow in the energy efficiency sector.

As the third party administrator, APTIM subcontracted with 12 vendors to help deliver the Energy Smart program. Among these partners, 5 vendors had supplier diversity credentials, including Baynham Environmental, Green Coast Enterprises, KT Consulting, ILSI Engineering, and TSG Services. Additionally, the Energy Smart team used local DBEs for printing, including Pel Hughes and CAD Printing.

These small, minority, and/or disadvantaged businesses that supported Energy Smart are meaningful contributors to the program design and delivery. Their scopes of work were developed to increase their skills and capabilities in the energy efficiency field and/or expand capacity and exposure in the New Orleans market.

In total, Energy Smart spent over a half a million dollars of non-incentive program administration and implementation funds on diverse suppliers.

Workforce Development

A key component of Energy Smart's delivery model is to continuously improve and elevate trade ally skills and capabilities through training and workforce development initiatives. The program's main training and workforce development partner is the Urban League of Louisiana, a national organization with significant experience with workforce development and training initiatives.

The Urban League of Louisiana (ULLA) serves an integral role in the New Orleans community as an advocate, a service provider and a trusted source of information for communities of color and underserved populations on a variety of topics. As such, Urban League plays a pivotal role in engaging these communities on behalf of Energy Smart, reaching minority contractors to prepare them to provide energy efficiency services for clients and to prepare them for green industry opportunities in the region.

Additionally, ULLA's Contractor Resource Center provides support and training to local contractors who may not have previous experience performing energy efficiency upgrades or who haven't worked with a utility incentive program in the past.

The majority of Energy Smart Residential and Commercial program trainings are developed, coordinated and facilitated through the program's partnership with the Urban League of Louisiana's Contractor Resource Center, which already provides year-round training for contractors at their multiple Louisiana locations.

Residential workforce development also initiatives included regular field-based trainings with trade ally staff to explain code of conduct, best practices, materials and methods for working with different types of residences throughout Orleans Parish. These trainings occur regularly while quality assurance inspections of the work performed was taking place. Furthermore, meetings were held at the request of trade allies, where aspects of the offerings or measures were explained in greater detail, to ensure best possible operations between a trade ally and the Program.

FINANCIAL PERFORMANCE

Incentive Budget Highlights

Table 27.1

	INCENTIVES BUDGET*	INCENTIVE SPEND	% OF BUDGET*
ALGIERS – SMALL C&I	$83,496	$51,178	61.29%
ALGIERS - LARGE C&I	$62,677	$62,677	100%
ALGIERS – PFI	$33,689	$26,301	78.07%
ALGIERS - RES	$227,905	$197,278	86.56%
N.O. – SMALL C&I	$999,008	$904,448	90.53%
N.O. - LARGE C&I	$2,646,787	$2,050,624	77.48%
N.O. – PFI	$399,684	$288,846	72.27%
N.O. - RES	$2,077,539	$2,065,704	99.43%
TOTAL	**$6,530,784**	**$5,647,055**	**86.47%**

*Budgets are reflective of the Supplemental and Amended Energy Smart Implementation Plan PY 7 – 9, approved 12/14/2017.

As of December 31, 2018, ENO-Legacy Energy Smart had a remaining balance of approximately $3.8 million left in the account. This funding is composed of Rough Production Cost Equalization payments as well as funding stemming from a Community Block Development Grant tax treatment. ENO-Algiers Energy Smart had approximately $319K remaining in the account.

Net Savings Summary

ADM, Entergy's Third Party Evaluator, conducted the program evaluation to verify the gross energy savings of each offering. Additionally, ADM estimated program net-to-gross ratios (NTGRs) through evaluation of free-ridership and spillover effects. The contribution to portfolio savings by program is summarized in Table 27.2. NTGRs were estimated at the measure-level in aggregate for both ENO and Algiers territories.

The portfolio overall achieved 96.15% of the kWh goal and 65.61% of the kW target for New Orleans, and 85.14% of the kWh goal and 32.84% of the kW target for Algiers. These values represent savings net-of-free-ridership, compared to the filed goals that had assumed gross savings without accounting for free-ridership. Across the whole program, Energy Smart achieved 95.40% of the kWh goal and 62.73% of the kW target.

Table 28.1

OFFERING	VERIFIED NET KWH SAVINGS	KWH GOAL*	% TO SAVINGS GOAL	VERIFIED NET KW SAVINGS	KW TARGET*	% TO KW TARGET
Algiers – Small Commercial	404,881	484,792	83.52%	41.43	97.79	42.37%
Algiers – Large C&I	411,884	766,112	53.76%	24.56	113.72	21.60%
Algiers – Publicly Funded	229,740	219,669	104.58%	-12.50	34.03	-36.73%
Algiers – Home Performance	299,241	149,257	200.49%	71.16	30.00	237.20%
Algiers – Retail Lighting & Appliance	214,659	264,768	81.07%	44.54	55.80	79.82%
Algiers – Multifamily	31,077	37,633	82.58%	8.71	7.40	117.70%
Algiers – Low Income	121,880	98,072	124.28%	31.87	21.10	151.04%
Algiers – High Efficiency Tune Ups	143,064	133,532	107.14%	52.66	40.20	131.00%
Algiers – DLC	-	-	N/A	103.15	83.27	123.87%
Algiers – School Kits	38,316	136,695	28.03%	4.48	18.55	24.15%
Algiers – Green Light	8,155	97,542	8.36%	1.69	16.00	10.56%
Algiers – Scorecard	745,249	722,424	103.16%	-	614.00	N/A
N.O. – Small Commercial	6,650,306	5,309,288	125.26%	783.87	1,013.63	77.33%
N.O. – Large C&I	15,526,872	21,047,929	73.77%	1,928.70	3,459.45	55.75%
N.O. – Publicly Funded	2,667,362	2,606,103	102.35%	196.67	371.49	52.94%

N.O. – Home Performance	2,529,013	2,008,202	125.93%	588.06	404.52	145.37%
N.O. – Retail Lighting & Appliance	3,615,618	3,503,824	103.19%	776.76	735.98	105.54%
N.O. – Multi-Family	742,057	493,311	150.42%	195.41	96.58	202.33%
N.O. – Low Income	1,907,136	1,316,362	144.88%	470.94	285.11	165.18%
N.O. – High Efficiency Tune Ups	2,063,575	1,711,475	120.57%	712.66	536.11	132.93%
N.O. – DLC	-	-	N/A	1,967.02	1,106.23	177.81%
N.O. – School Kits	635,448	546,782	116.22%	74.26	74.49	99.69%
N.O. – Green Light	61,170	167,958	36.42%	12.66	27.62	45.84%
N.O. – Scorecard	4,933,408	4,277,576	115.33%	-	3,636.00	N/A
TOTAL	**43,980,111**	**46,099,307**	**95.40%**	**8,078.76**	**12,879.07**	**62.73%**

*Goals are reflective of the Supplemental and Amended Energy Smart Implementation Plan PY 7 – 9, approved 12/14/2017. Savings reflect verified net energy savings as documented in ADM's Evaluation, Measurement and Verification (EM&V) report.

Appendices

Appendix A: School Kits & Education Summary

SCHOOL	DATE BOOKED	# OF STUDENTS	COUNCIL DISTRICT	TERRITORY
Paul Habans Community School	1/29/2018	60	C	Algiers
New Orleans Charter Science & Math High School	1/30/2018	44	A	Eastbank
Esperanza Charter School	2/22/2018	53	A	Eastbank
James Singleton Charter School	2/26/2018	52	B	Eastbank
St. Peter Claver	2/27/2018	22	D	Eastbank
Edward Hynes Charter School	3/1/2018	75	A	Eastbank
Edgar P. Harney Spirit Of Excellence Academy	3/2/2018	31	A	Eastbank
Ben Franklin Math And Science Middle School	3/14/2018	85	A	Eastbank
St. Augustine High School	3/19/2018	106	D	Eastbank
Arise Academy	3/23/2018	48	C	Eastbank
St Rita Catholic School	3/26/2018	26	A	Eastbank
Lafayette Academy	3/27/2018	109	A	Eastbank
Kipp Central City Academy	4/3/2018	78	B	Eastbank
Renew Sci Tech	4/5/2018	40	B	Eastbank
Warren Easton Hs	4/12/2018	61	C	Eastbank
Sylvanie Williams College Prep	4/17/2018	21	B	Eastbank
Lusher High School	4/19/2018	21	A	Eastbank
Fannie C. Williams Charter School	5/5/2018	30	E	Eastbank
Lake Area New Tech Early College High School	5/7/2018	30	D	Eastbank
Success Preparatory Academy	5/7/2018	69	B	Eastbank
Medard H. Nelson Charter School	5/10/2018	47	D	Eastbank
Pierre A. Capdau Charter School At Avery Alexander	5/14/2018	60	D	Eastbank
Dwight D. Eisenhower Academy Of Global Studies	5/14/2018	90	C	Algiers
Mildred Osborne Charter School	5/21/2018	37	E	Eastbank
St. Mary's	8/23/2018	125	E	Eastbank
Renew Schaumburg Elementary	8/29/2018	90	E	Eastbank
Gw Carver High School	9/6/2018	385	B	Eastbank
St. Rita	9/7/2018	25	A	Eastbank
Cohen College Prep	9/18/2018	65	B	Eastbank
William J Fischer	9/18/2018	30	C	Algiers
Bishop Mcmanus	9/19/2018	30	E	Eastbank
St. Mary's Academy Boys	10/4/2018	12	E	Eastbank
Ben Franklin Middle	10/4/2018	91	A	Eastbank
Joseph A. Craig Charter School	10/5/2018	30	C	Eastbank
International High School Of New Orleans	10/8/2018	15	B	Eastbank
St. Joan Of Arc	10/9/2018	30	A	Eastbank
Harney	10/16/2018	40	B	Eastbank
Crescent Leadership	10/16/2018	27	C	Algiers
Einstein	10/18/2018	148	E	Eastbank

Audubon Charter	10/19/2018	67	B	Eastbank
Encore Academy	10/22/2018	120	D	Eastbank
Esperanza Charter School	10/29/2018	60	A	Eastbank
Lafayette Academy	10/30/2018	126	B	Eastbank
Akili	11/5/2018	140	D	Eastbank
Pierre Capdau	11/6/2018	100	D	Eastbank
Andrew H Wilson Charter School	11/6/2018	160	B	Eastbank
The Net: Central City	11/27/2018	23	B	Eastbank
Kipp Believe	12/3/2018	90	A	Eastbank
Abramson Sci Academy	12/11/2018	180	E	Eastbank
Morris Jeff Community School	12/13/2018	91	A	Eastbank
Mcdonough #42 Charter School	12/18/2018	45	D	Eastbank
	TOTAL	**3,640**		

Appendix B: Community Outreach Summary

DATE	PRESENTATION TYPE	EVENT NAME/ ORGANIZATION	DISTRICT	AUDIENCE	REACH
1/2/2018	Table at Public Building	Entergy CCC - Westbank	C	Residential, Algiers	300
1/3/2018	Table at Public Building	Entergy CCC - Westbank	C	Residential, Algiers	150
1/9/2018	Table at Public Building	Entergy Solar Meeting	D	Residential	55
1/13/2018	Fair or Festival	Kingsley House Health and Resource Fair	B	Residential (IQW)	120
1/16/2018	Table at Public Building	Super LiHEAP Days	C	Residential (IQW)	280
1/18/2018	Table at Public Building	Cooter Brown's supports EWA fundraiser	A	Residential	30
1/22/2018	Presentation	NORA Facade Renewal Grant workshop (1101 N Broad St. (Gentilly))	D	Commercial	15
1/24/2018	Presentation	NORA Facade Renewal Grant workshop (4626 Alcee Fortier Blvd (NO East))	E	Commercial	20
1/25/2018	Presentation	NORA Facade Renewal Grant workshop (1300 St Bernard (Rampart))	C	Commercial	20
1/25/2018	Presentation	Love Your City Gala (Sheraton New Orleans Hotel)	C	Commercial and Residential	100
1/30/2018	Meeting/Presentation	Liberty Bank (6600 Plaza Dr. N.O. East)	E	Commercial	1
1/31/2018	Meeting	Finance Authority of New Orleans	C	Residential (Lender)	1
1/31/2018	Meeting/Presentation	Advantage capital	C	Commercial	1
1/31/2018	Meeting/Presentation	GNO Inc- Access to capital	C	Commercial	2
2/1/2018	Presentation/ Focus Group	Greater New Orleans Housing Alliance (GNOHA) Member Meeting	A	Res/MF and Commercial	9
2/1/2018	Meeting/Presentation	Crescent Growth Capital	C	Commercial	3
2/1/2018	Meeting/Presentation	Higher Education Cohort	A	Commercial	5
2/1/2018	Table at Public Building	Entergy CCC	B	Residential	150
2/5/2018	Table at Public Building	Entergy CCC	B	Residential	250
2/7/2018	Table at Public Building	Algiers Public Library	C	Residential, Algiers	35
2/16/2018	Table at Public Building	Entergy Power Station work fair	E	Residential	125
2/19/2018	Table at Public Building	Algiers Public Library	C	Residential, Algiers	65
2/27/2018	Table at Public Building	Super LiHEAP Days	B	Residential (IQW)	300
2/28/2018	Table at Public Building	Super LiHEAP Days	C	Residential, Algiers (IQW)	300
3/1/2018	Table at Public Building	Super LiHEAP Days	E	Residential (IQW)	300
3/5/2018	Table at Public Building	Entergy CCC - Westbank	C	Residential, Algiers	250
3/6/2018	Presentation	Chamber Power Lunch	C	Commercial	50
3/9/2018	Table at Public Building	New Orleans Home and Garden Show	B	Residential (Citywide)	1,000
3/10/2018	Fair or Festival	Hike the Greenway	A	Residential	250
3/10/2018	Neighborhood Presentation	LCIA - Lakeview Community Improvement Association	A	Residential	100
3/10/2018	Table at Public Building	New Orleans Home and Garden Show	B	Residential (Citywide)	1,000
3/11/2018	Table at Public Building	New Orleans Home and Garden Show	B	Residential (Citywide)	1,000
3/12/2018	Table at Public Building	Algiers Public Library	C	Residential, Algiers	75
3/15/2018	Table at Public Building	Algiers Bill Rerouting	C	Residential, Algiers	-
3/20/2018	Table at Public Building	Algiers Bill Rerouting	C	Residential, Algiers	-
3/22/2018	Table at Public Building	Rusty Nail Fundraiser	B	Residential	65
3/23/2018	Neighborhood Presentation	LA Green Corps Class	D	Residential	16
3/24/2018	Fair or Festival	Earthfest	A	Residential	5,000

3/26/2018	Meeting/presentation	Residential Resilience and Sustainability Financing Workshop	C	Residential (Lender)	20
4/2/2018	Table at Public Building	Entergy CCC	B	Residential	120
4/3/2018	Table at Public Building	Entergy CCC	B	Residential	280
4/4/2018	Presentation	Downtown Energy Challenge Workshop	B	Commercial	10
4/13/2018	Table at Public Building	Home Depot	E	Residential	65
4/16/2018	Neighborhood Presentation	Coliseum Square Neighborhood Association	B	Residential	31
4/20/2018	Fair or Festival	XULA Earth Day	B	Residential	80
4/24/2018	Fair or Festival	Earth Day	A	Residential	450
4/25/2018	Meeting/presentation	Algiers Development District	C	Commercial Algiers	2
4/27/2018	Fair or Festival	Audubon Zoo to Do for Kids	A	Residential	2,500
5/1/2018	Table at Public Building	Entergy CCC - Westbank	C	Residential Algiers	45
5/2/2018	Presentation	Biz New Orleans Luncheon	A	Commercial	15
5/3/2018	Presentation to Entergy CCC staff	Entergy CCC - Canal	B	Residential	8
5/7/2018	Fair or Festival	Environmental Awareness Fair - Baby Ben	D	Residential	440
5/10/2018	Table at Public Building	New Orleans East Hospital Week	E	Residential	90
5/12/2018	Fair or Festival	Old Algiers Crawfish Boil	C	Residential Algiers	150
5/17/2018	Meeting/Presentation	Higher Education Cohort	A	Commercial	7
5/20/2018	Fair or Festival	Bike Easy Second Line	A	Residential	250
5/23/2018	Neighborhood Presentation	Health Blue	E	Residential	16
5/24/2018	Neighborhood Presentation	Viet with Seniors Day	E	Residential	24
5/24/2018	Table at Public Building	73 Distilling Fundraiser	D	Residential	85
6/1/2018	Table at Public Building	Entergy CCC - Westbank	C	Algiers	120
6/4/2018	Table at Public Building	Canal CCC - Customer Appreciation Day	B	Residential	250
6/5/2018	Table at Public Building	Council on Aging - Storm Prep/Energy Smart Meeting	A	Residential	16
6/6/2018	Meeting/Presentation	Corporate Realty staff	B	Commercial	2
6/6/2018	Fair or Festival	Zoobilation - Push EasyCool and Home Performance	A	Residential	1,500
6/6/2018	Table at Public Building	Council on Aging - Storm Prep/Energy Smart Meeting	A	Residential	28
6/13/2018	Table at Public Building	Council on Aging - Storm Prep/Energy Smart Meeting	E	Residential	30
6/14/2018	Table at Public Building	Council on Aging - Storm Prep/Energy Smart Meeting	B	Residential	25
6/18/2018	Table at Public Building	Council on Aging - Storm Prep/Energy Smart Meeting	A	Residential	20
6/19/2018	Table at Public Building	Council on Aging - Storm Prep/Energy Smart Meeting	B	Residential	25
6/20/2018	Table at Public Building	Council on Aging - Storm Prep/Energy Smart Meeting	D	Residential	35
6/20/2018	Table at Public Building	Council on Aging - Storm Prep/Energy Smart Meeting	D	Residential	42
6/23/2018	Table at Public Building	Energy Smart Lighting Retail offering	C	Residential	50
6/28/2018	Table at Public Building	Council on Aging - Storm Prep/Energy Smart Meeting	B	Residential	35
6/30/2018	Fair or Festival	Homeowner Sustainability Workshop	B	Residential	50
7/2/2018	Table at Public Building	Entergy CCC - Canal	B	Residential	250
7/3/2018	Table at Public Building	Entergy CCC - Canal	B	Residential	300

7/13/2018	Neighborhood Presentation	LA Green Corps Class	D	Residential	25
7/19/2018	Table/Sponsor	Propeller/Online	B/Citywide	Commercial	50
7/20/2018	Neighborhood Presentation	LA Green Corps Class	D	Residential	25
7/20/2018	Workshop	LifeCity Lean and Green Workshop	C/Citywide	Commercial	20
7/21/2018	Fair or Festival	Paul Habans School Supply Give Away	C	Residential, Algiers	60
7/22/2018	Fair or Festival	Audubon Zoo Kids Triathlon	A	Residential	150
7/26/2018	Presentation	Big Building Energy Saving Working Group	C	Commercial	12
8/2/2018	Neighborhood Presentation	Energy Happy Hour	D	Residential	15
8/3/2018	Table at Public Building	Customer Care Center	B	Residential	250
8/7/2018	Table at Public Building	Customer Care Center	B	Residential	100
8/9/2018	Presentation	Higher Education Cohort	C	Commercial	20
8/17/2018	Neighborhood Presentation	Evacuteer - Keller Library	B	Residential	30
8/25/2018	Fair or Festival	Jericho Road Blood Drive	B	Residential	20
8/27/2018	Neighborhood Presentation	Lutheran Services - Senior Center	E	Residential	30
8/29/2018	Neighborhood Presentation	NAMI - Mental Health First Aid	A	Residential	12
9/4/2018	Table at Public Building	Customer Care Center - Canal St	B	Residential	150
9/5/2018	Table at Public Building	Customer Care Center -Westbank	C	Residential, Algiers	125
9/6/2018	Nonprofit Retrofit	Longue Vue Assessment	A	Commercial/Nonprofit	4
9/10/2018	Attended Meeting	Black Chamber of Commerce Luncheon	D	Commercial	20
9/11/2018	Neighborhood Presentation	Broadmoor Community Church	B	Residential	113
9/11/2018	Presentation	International Facility Managers Association (IFMA) Luncheon	C	Commercial	20
9/18/2018	Neighborhood Presentation	Dat Dog Consultation	C	Commercial/Small	5
9/19/2018	Fair or Festival	Wednesday's on the Point	C	Residential, Algiers	150
9/20/2018	Neighborhood Presentation	Algiers Point Neighborhood Association	C	Residential, Algiers	21
9/21/2018	Nonprofit Retrofit	McKenna Museum	B	Commercial/Nonprofit	3
9/22/2018	Fair or Festival	Energy Day - Children's Museum	B	Residential	250
9/26/2018	Nonprofit Retrofit	Le Musee Museum	D	Commercial/Nonprofit	3
9/29/2018	Fair or Festival	Girl Scouts - B.I.G. Event	D	Residential	2,000
10/2/2018	Fair or Festival	Wings and Watts	B	Residential	125
10/5/2018	Fair or Festival	Energy Efficiency Day @ Xavier University	B	Residential	200
10/5/2018	Fair or Festival	St. Roch Block Party	C	Residential	150
10/5/2018	Table at Public Building	Energy Efficiency Day @ Algiers Public Library	C	Algiers	30
10/6/2018	Fair or Festival	Algiers Fest	C	Algiers	1,000
10/6/2018	Fair or Festival	Botanical Gardens Fall Garden Festival	A	Residential	550
10/7/2018	Fair or Festival	Botanical Gardens Fall Garden Festival	A	Residential	450
10/8/2018	Table at Public Building	Algiers Public Library	C	Algiers	25
10/9/2018	Table at Public Building	CCC-Westbank	C	Algiers	125
10/10/2018	Fair or Festival	Wednesdays on the point	C	Algiers	250
10/10/2018	Neighborhood Presentation	Latter and Blum Presentation	A	Residential	75
10/12/2018	Fair or Festival	Gentilly Fest	D	Residential	500
10/12/2018	Neighborhood Presentation	LA Green Corps Class	D	Residential	17
10/13/2018	Fair or Festival	Gentilly Fest	D	Residential	700
10/14/2018	Fair or Festival	Gentilly Fest	D	Residential	600
10/16/2018	Fair or Festival	Night out against Crime	E	Residential	150

10/16/2018	Neighborhood Presentation	Latter and Blum Presentation	C	Algiers	20
10/16/2018	Table at Public Building	CCC-Westbank	C	Algiers	100
10/17/2018	Fair or Festival	Wednesday at the Point	C	Algiers	180
10/17/2018	Neighborhood Presentation	Touro Synagogue Green Committee	B	Residential	4
10/17/2018	Table at Public Building	Office of Community and Economic Development - Business Information Sessions	C	Algiers	22
10/18/2018	Fair or Festival	Park-ing Day	B	Residential	45
10/19/2018	Neighborhood Presentation	LA Green Corps Class	D	Residential	17
10/20/2018	Fair or Festival	Dillard University 12th Annual Housing, Health and Community Resource Fair	D	Residential	200
10/24/2018	Fair or Festival	Algiers Wednesday at the Point	C	Algiers	350
10/24/2018	Table at Public Building	CCC-Westbank	C	Algiers	60
10/25/2018	Table at Public Building	Dollar Tree - Algiers	C	Algiers	40
10/28/2018	Fair or Festival	Lower 9th Ward	E	Residential	180
10/29/2018	Table at Public Building	Algiers Public Library	C	Algiers	30
10/30/2018	Table at Public Building	CCC-Westbank	C	Algiers	85
11/1/2018	Neighborhood Presentation	Carrollton Riverbend/Carrollton United Neighborhood Association	A	Residential	42
11/1/2018	Neighborhood Presentation	Faubourg St John NA		Residential	
11/5/2018	Table at Public Building	CCC-Eastbank	B	Residential	300
11/6/2018	Table at Public Building	CCC-Westbank	C	Algiers	120
11/7/2018	Fair or Festival	Tulane Internship Fair - Spring Recruitment	A	Residential	250
11/10/2018	Fair or Festival	City of NO Neighborhood Summit	D	Residential	200
11/15/2018	Nonprofit Retrofit	Janice's home - future nonprofit	C	Commercial	2
11/28/2018	Neighborhood Presentation	Krewe De Lose	B	Residential	15
11/28/2018	Meeting/Presentation	Higher Education Cohort		Commercial	12
11/29/2018	Nonprofit Retrofit	First Free Mission Baptist Church	C	Algiers	3
11/30/2018	Neighborhood Presentation	Krewe De Lose	B	Residential	8
12/3/2018	Canvassing	Westbank Canvassing with Linda B.	C	Algiers	20
12/4/2018	Table at Public Building	CCC Westbank	C	Algiers	80
12/6/2018	Fair or Festival	Life City's Holiday Celebration - Tabling	B	Residential	350
12/7/2018	Meeting/Presentation	ULLA Opportunities Outlook 2019 for DBEs in Construction		Commercial	45
12/8/2018	Table at Public Building	Youth Program Performance @ St. Anna's Episcopal- LED Distribution	C	Residential	28
12/9/2018	Neighborhood Presentation	St. Anna's Episcopal Congregation distribution of LEDs	C	Residential	110
12/10/2018	Neighborhood Presentation	Krewe de Lose	B	Residential	16
12/11/2018	Nonprofit Retrofit	VIET	E	Residential	4
12/12/2018	Neighborhood Presentation	ReFresh Coalition Monthly Meeting	B	Residential	10
12/12/2018	Nonprofit Retrofit	N.O Bible Fellowship Baptist Church	E	Residential	1
12/13/2018	Neighborhood Presentation	Krewe de Lose	B	Residential	25
12/13/2018	Canvassing	Algiers canvassing	C	Algiers	20
12/15/2018	Table at Public Building	Food Assistance Day @ St. Anna Episcopal Church	C	Residential	35
12/17/2018	Nonprofit Retrofit	Casa Borrega Install Final	B	Commercial	2
Total Events	**159**			**Total Reach**	**30,570**

Appendix C: Training and Education

DATE	TITLE	AUDIENCE	# ATTENDEES	LENGTH	OBJECTIVE	DESCRIPTION
2/7/2018	HVAC & Custom Non-Lighting Energy Smart Info Session	Commercial and Residential Customers	18	60	General awareness	Introduce Energy Smart program to residential and C&I HVAC contractors at Johnstone Supply. Includes a calculator demonstration and workshop with iPads.
3/15/2018	2018 Residential Trade Ally Orientation	Contractors / Trade Allies	26	120	Program Implementation	Orient existing and prospective trade allies by informing them about how to participate as a registered Residential Trade Ally that performs work with the program. Members of the residential team all speak to their areas of responsibility so that TAs can better understand how to work efficiently and effectively with the program.
3/15/2018	Q1 Residential TAAG Update	Contractors / Trade Allies	18	120	Program Implementation	Formal feedback event; workshop learning about program processes and back-end logistics.
4/2/2018	Intro to Demand Side Management and the Energy Smart Program	Contractors / Trade Allies	10	60	Technical	Introduce Tulane's Masters of Sustainable real estate class to demand side management and utility efficiency programs. Increase energy efficiency literacy in the next generation of the sustainability industry's workforce.
4/17/2018	Common Calculator Issues and Solutions	Contractors / Trade Allies	2	60	Program Implementation	Calculator training workshop for troubleshooting common contractor issues with the custom lighting calculator (Southeast LED).
4/26/2018	SELLing Energy	Contractors / Trade Allies	2	540	Technical	Third party training to learn how to sell energy efficiency effectively.
5/3/2018	Prescriptive Calculator Demonstration Training	Contractors / Trade Allies	8	60	Technical	Establish a baseline understanding of the new prescriptive calculator and learn how to navigate features and communicate instructions to inquiring customers.
5/16/2018	Proper Materials & Usage for Air Sealing & Duct Sealing	Contractors/ Trade Allies	13	120	Technical	Training technicians and crew leads the best methods to seal and repair systems while performing services for customers. Explaining the Best Practices Standards.
5/22/2018	2018 C&I TAAG Update	Contractors/ Trade Allies	2	120	Program Implementation	Formal feedback event; workshop learning
6/1/2018	Retail training	Contractors/ Trade Allies	3	10	Program Implementation	Train the trainer style walkthrough of Energy Smart's retail program offerings with retail managers, cashiers, other applicable employees and interested customers who were present.

6/7/2018	GPRO Operations & Maintenance Essentials	Contractors/ Trade Allies	3	480	Program Implementation	Certification training to increase Energy Smart staff knowledge of the principles of high performance construction and how to maintain efficient operations. Train the trainer course to qualify staff to roll out the training to Energy Smart contractors and stakeholders at a later date.
6/8/2018	GPRO Operations & Maintenance Essentials	Contractors/ Trade Allies	3	480	Program Implementation	Certification training to increase Energy Smart staff knowledge of the principles of high performance construction and how to maintain efficient operations. Train the trainer course to qualify staff to roll out the training to Energy Smart contractors and stakeholders at a later date.
6/20/2018	Marketing Energy Star with Your Business	Contractors/ Trade Allies	3	120	Soft Skills	Training trade allies on how to market the ENERGY STAR programs to customers. Explaining the materials that are available to add to their marketing.
6/20/2018	Q2 Residential TAAG Update	Contractors/ Trade Allies	18	120	Program Implementation	Formal feedback event; workshop learning
6/22/2018	SELLing Energy Follow Up Module	Contractors/ Trade Allies	2	60	Technical	Third party training to learn how to sell energy efficiency effectively.
6/22/2018	SELLing Energy Follow Up Module	Contractors/ Trade Allies/ Energy Smart Employees	2	120	Technical	Third party training to learn how to sell energy efficiency effectively.
6/23/2018	Retail training	Contractors/ Trade Allies/ Energy Smart Employees	24	180	Program Implementation	Train the trainer style walkthrough of Energy Smart's retail program offerings with retail managers, cashiers, other applicable employees and interested customers who were present.
8/8/2018	Retail training	Customer Influencers	3	15	Program Implementation	Train the trainer style walkthrough of Energy Smart's retail program offerings with retail managers, cashiers, other applicable employees and interested customers who were present.
8/8/2018	Retail training	Customer Influencers	3	15	Program Implementation	Train the trainer style walkthrough of Energy Smart's retail program offerings with retail managers, cashiers, other applicable employees and interested customers who were present.
8/8/2018	Retail training	Energy Smart Employees	3	20	Program Implementation	Train the trainer style walkthrough of Energy Smart's retail program offerings with retail managers, cashiers, other applicable employees and interested customers who were present.

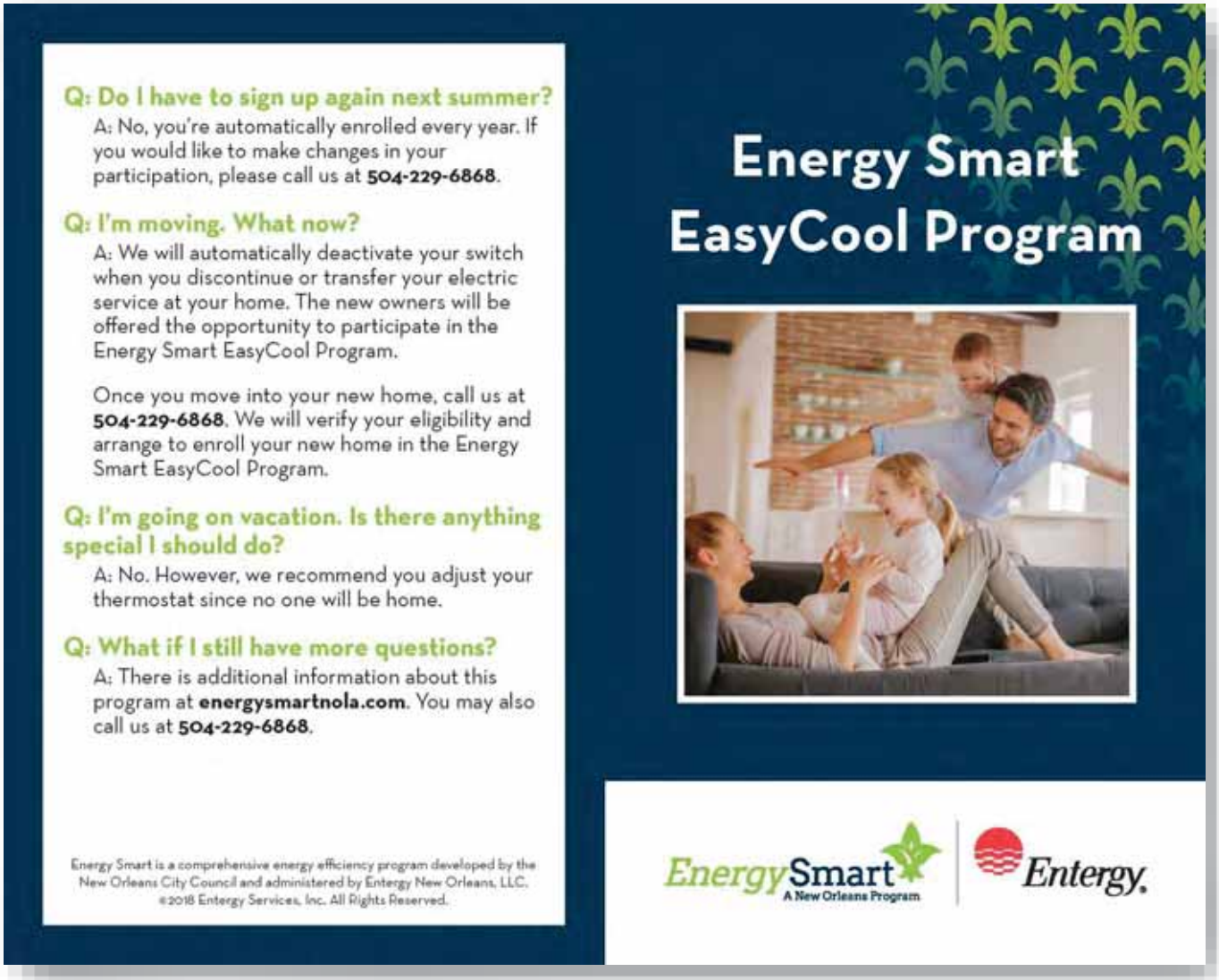
8/10/2018	Retail training	Energy Smart Employees	4	15	Program Implementation	Train the trainer style walkthrough of Energy Smart's retail program offerings with retail managers, cashiers, other applicable employees and interested customers who were present.
8/10/2018	Retail training	Energy Smart Employees	5	20	Program Implementation	Train the trainer style walkthrough of Energy Smart's retail program offerings with retail managers, cashiers, other applicable employees and interested customers who were present.
8/14/2018	Retail training	Energy Smart Employees	5	60	Program Implementation	Train the trainer style walkthrough of Energy Smart's retail program offerings with retail managers, cashiers, other applicable employees and interested customers who were present.
8/22/2018	ENO Confidentiality Training	Energy Smart Employees	2	30	Compliance	Develop a baseline knowledge of confidentiality for program implementation including: general considerations, APTIM company standards, and Entergy contractual standards. Required training to satisfy ENO initial training and annual reoccurrence training requirement for all program employees.
8/29/2018	Residential Training	Energy Smart Employees	3	240	Program Implementation	New Orleans Baptist Theological Seminary. Review of campus and housing stock, as well as training about services and measures in the program, and energy saving opportunities.
8/29/2018	Synergy Customer Training	Energy Smart Employees	30	180	Program Implementation	Train customers and trade ally partners about how to leverage Energy Smart incentives to help fund efficiency projects
8/29/2018	Q3 Residential TAAG Update	Energy Smart Employees	8	120	Program Implementation	Formal feedback event; workshop learning
9/1/2018	Lowes / 2501 Elysian Fields Ave	Retail Employees	3	120	General awareness	Residential Lighting & Appliance offering training.
9/1/2018	Wal-Mart / 4001 Behrman Pl	Retail Employees	3	20	General awareness	Residential Lighting & Appliance offering training.
9/1/2018	The Green Project / 2831 Marais St	Retail Employees	4	30	General awareness	Residential Lighting & Appliance offering training.
9/4/2018	Legal Training: Gifts and Entertainment	Retail Employees	8	30	Compliance	Provide information about administration policies that govern the ethics associated with partner and client interactions
9/11/2018	Building Business Capacity the Energy Smart Way	Retail Employees	11	120	Technical	Train Trade Allies and local contractors on the resources available to them through Energy Smart to build business capacity. Resources include access to the Contractor Resource Center training and development programs, software tools and more.

9/25/2018	RCx Service Provider Training	Contractors / Trade Allies	10	120	Program Implementation	Train prospective Retro-commissioning Service Providers on the benefits and implementation processes of the upcoming Commercial & Industrial Retro-commissioning program.
10/2/2018	Lowes / 5770 Read Blvd	Retail Employees/ Customers	2	120	General awareness	Residential Lighting & Appliance offering training.
10/2/2018	Home Depot / 1100 S Claiborne Ave.	Retail Employees/ Customers	7	120	General awareness	Residential Lighting & Appliance offering training.
10/12/2018	Home Depot / 12300 I-10 Service Rd	Retail Employees/ Customers	5	120	General awareness	Residential Lighting & Appliance offering training.
10/17/2018	Adding Value to Your Business Training	Retail Employees/ Customers	5	120	Soft Skills	Training operations and crew leads on how to focus on extra benefits for customers while performing services for them. This focuses on expanding customer services and picking the right plan for a business.
10/22/2018	Costco	Retail Employees/ Customers	2	30	General awareness	Residential Lighting & Appliance offering training.
10/23/2018	Home Depot	Retail Employees/ Customers	4	120	General awareness	Residential Lighting & Appliance offering training.
10/23/2018	Wal-Mart / 6000 Bullard Ave	Retail Employees/ Customers	2	20	General awareness	Residential Lighting & Appliance offering training.
10/24/2018	Costco / 3900 Dublin St	Retail Employees/ Customers	4	30	General awareness	Residential Lighting & Appliance offering training.
11/1/2018	GPRO Operations & Maintenance Essentials	Retail Employees/ Customers	15	480	Technical	Trade Allies and Program employees participated in this third party training and certification course
11/2/2018	GPRO Operations & Maintenance Essentials	Retail Employees/ Customers	15	480	Technical	Trade Allies and Program employees participated in this third party training and certification course
11/11/2018	Rouses Market / 701 Royal St	Retail Employees/ Customers	3	15	General awareness	Residential Lighting & Appliance offering training.
11/14/2018	Residential TAAG Meeting Q4	Retail Employees/ Customers	11	120	Program Implementation	Updates provided on 2018 program status; Focus group questions for 2019 program implementation
11/20/2018	Dollar Tree / 4242 Chef Mentuer Hwy	Retail Employees/ Customers	1	15	General awareness	Residential Lighting & Appliance offering training.
11/20/2018	Dollar Tree / 9671 Chef Menteur Hwy	Retail Employees/ Customers	2	15	General awareness	Residential Lighting & Appliance offering training.

11/20/2018	Wal-Mart / 4301 Chef Menteur Hwy	Retail Employees/ Customers	2	20	General awareness	Residential Lighting & Appliance offering training.
11/20/2018	Dollar Tree / 11701 Morrision Road	Retail Employees/ Customers	3	15	General awareness	Residential Lighting & Appliance offering training.
11/20/2018	Rouses Market / 6600 Franklin Ave	Retail Employees/ Customers	3	15	General awareness	Residential Lighting & Appliance offering training.
11/20/2018	Rouses Market / 701 Baronne St	Retail Employees/ Customers	4	15	General awareness	Residential Lighting & Appliance offering training.
11/20/2018	Rouses Market / 400 N Carrollton Ave	Retail Employees/ Customers	5	15	General awareness	Residential Lighting & Appliance offering training.
11/23/2018	Dollar Tree / 4115 S. Carrollton Ave	Retail Employees/ Customers	1	15	General awareness	Residential Lighting & Appliance offering training.
11/23/2018	Dollar Tree / 5201 Canal Blvd.	Retail Employees/ Customers	3	15	General awareness	Residential Lighting & Appliance offering training.
11/27/2018	Wal-Mart / 1901 Tchoupitoulas St	Retail Employees/ Customers	2	20	General awareness	Residential Lighting & Appliance offering training.
12/10/2018	Dollar Tree / 3771 General DeGaulle Dr	Retail Employees/ Customers	3	15	General awareness	Residential Lighting & Appliance offering training.
12/10/2018	Rouses Market / 4001 General De Gaulle Dr	Retail Employees/ Customers	3	15	General awareness	Residential Lighting & Appliance offering training.
12/11/2018	Rouses Market / 4500 Tchoupitoulas St	Retail Employees/ Customers	2	15	General awareness	Residential Lighting & Appliance offering training.
12/12/2018	Q4 C&I TAAG Update	Retail Employees/ Customers	20	120	Program Implementation	Updates provided on 2018 program status; Focus group questions for 2019 program implementation
TOTAL NUMBER TRAINED			**391**			

Appendix D: Marketing Collateral

EasyCool Brochure



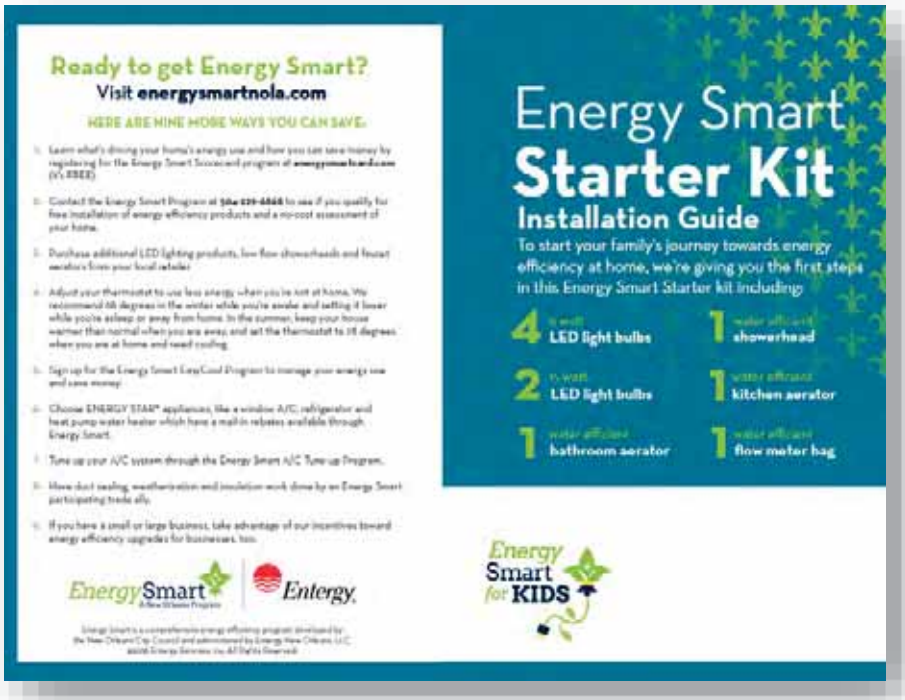
Commercial & Residential Check Inserts

A/C Tune-up Brochure

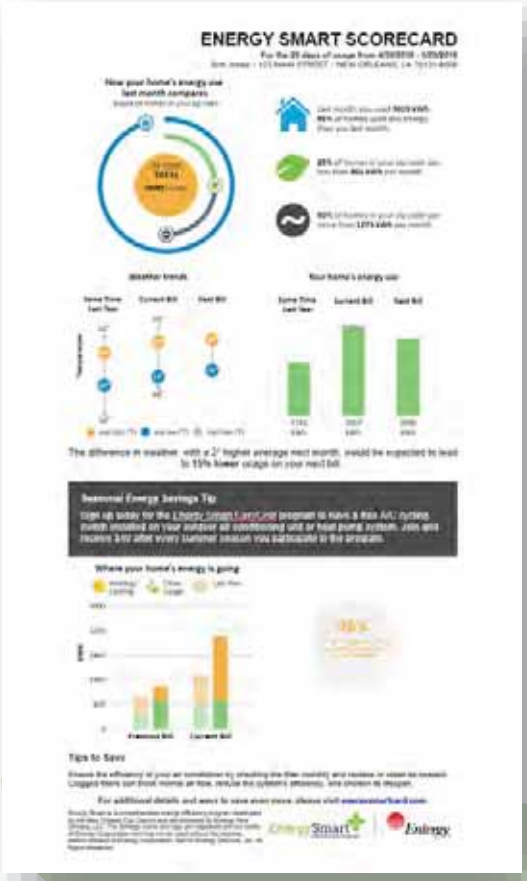
EasyCool Brochure

School Kit Insert

School Kit Installation Guide



Energy Smart Scorecard



Seasonal Energy Savings Tip

Sign up today for the Energy Smart EasyCool program to have a free A/C cycling switch installed on your outdoor air conditioning unit or heat pump system. Join and receive $40 after every summer season you participate in the program.

Circuit Newsletters

Tips to warm your home in the new year and save

As the new year is here and the cooler weather is upon us, here are a few reminder tips to keep your home warm and save energy and money in the process:

- Change or clean your air filters once a month.
- Add area rugs on tile or hardwood floors.
- Keep curtains and blinds closed at night.

Also take advantage of Energy Smart rebates when making energy-saving improvements:

- Attic insulation: up to $.40 per sq. ft.
- Air infiltration sealing: average $250 per home for 650 CFM50 reduction.
- Duct sealing: average $400 per home for 200 CFM25 reduction.

Visit **energysmartnola.com** or call **504-229-6868** to learn what Energy Smart offers to help you save in the new year!

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Spring into Energy Efficiency

Spring is here – the perfect time to clean up, make minor repairs and get ready for rising temperatures. Here are seven quick tips that'll help you save money and energy this season.

1. **Service your air conditioner.**
   Replacing air filters and cleaning the evaporator coil not only helps your air conditioner last longer – it can lower its energy consumption by up to 15 percent. Looking for a full A/C tune-up – that's also affordable? Click here to learn more!
2. **Close the blinds on heat.**
   Drawing your blinds or curtains on hot, sunny days can slash the heat inside when temperatures rise outside. The less your air conditioner works, the more energy efficient you'll be!
3. **Cool off with the ENERGY STAR® label.**
   In the market for a new refrigerator, window A/C unit or central A/C? Make sure to look for the ENERGY STAR label – and apply for a rebate through Entergy's Energy Smart program!
4. **Get your pool ready.**
   Your pool is the best place to cool off on hot days, but does your pool pump heat up your energy bill? An ENERGY STAR® certified pool pump can be programmed to match your pool's operation, reducing energy waste, lowering your bill and qualifying you for a rebate!
5. **Learn more about Entergy's Energy Smart Programs.**
   From focusing on specific systems like you're A/C or water heater to taking a whole-house look at your home's energy health, Entergy offers an Energy Smart solution for you. Visit **energysmartnola.com** or call **504-229-6868** to learn all of the ways you can save energy this spring.

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ALSO IN THIS ISSUE

- VIDEO: Save Energy with Advanced Power Strips
- A cool $40 isn't the only reason to sign up for EasyCool.
- Remodeling? Build in Energy Efficiency
- How Do They Do That? Fireworks

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A cool $40 isn't the only reason to sign up for EasyCool.

The EasyCool Program is one of the easiest ways Entergy New Orleans customers can earn $40 every year. Simply sign up, and if you are eligible, we'll install an A/C cycling switch or "smart switch" on your outdoor air conditioning unit or heat pump. For each summer season you participate, we'll give you $40. There's no need to sign up again next summer, your enrollment is automatic – just keep enjoying your $40 year after year.

$40 in your pocket is just the start. Here are four more reasons to sign up:

1. **You'll make a difference.**
   When you participate in this program, you help reduce demand on the grid, which benefits the environment, ensures a continual supply of energy and keeps electric costs more affordable.
2. **It only applies to four months of the year.**
   During the months of June, July, August and September – and only when demand on the grid is extremely high – your "smart switch" may be activated. If activated, your air conditioner or heat pump will still operate, circulating already cooled air, but will cycle on and off for short periods of time – and only up to four hours.
3. **It's free to participate. And you don't need to be home for the installation.**
   We provide the equipment and installation is free. Also, if your outdoor unit is accessible, you don't need to be home during installation.
4. **Signing up is easy.**
   Simply call 504-229-6868 or complete this online form. Participation is open to residential homeowners or renters living in the Entergy New Orleans service territory with a central air conditioner or heat pump system on the ground floor. Other terms apply, so call or go online to learn more.

Looking for other ways to save energy this summer? Visit energysmartnola.com or call 504-229-6868.

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How to Make the Most of Lighting and Appliance Sales

As fall approaches, August is a great time to find sales on lighting and appliances at your favorite local retailer. Make the following energy-saving purchases even more affordable with Energy Smart rebates.

ENERGY STAR® Window Air Conditioner Units

As retailers prepare for cooler temperatures, many stores offer discounts on their window A/C units. Look for ENERGY STAR-rated models, so you not only earn a $50 rebate, but also enjoy lower energy costs.

Learn More

ENERGY STAR Heat Pump Water Heaters

The average home's second largest energy user is the hot water heater. ENERGY STAR Heat Pump Water Heaters are two to three times more energy efficient than conventional electric resistance water heaters – saving an average of $330 per year on your energy bill. Plus, you can receive a $400 Energy Smart rebate.

Learn More

ENERGY STAR Refrigerators

It's refrigerator sale season – wouldn't you love $50 cash back on top of your deal? Selecting an eligible ENERGY STAR refrigerator can help you save on your bill, month after month.

Learn More

ENERGY STAR LED Lighting

As the days get shorter, we rely on our home's lighting more and more. That's what makes now the perfect time to update to energy-efficient LED light bulbs. They use up to 80 percent less energy and can last up to 15 times longer than traditional incandescent bulbs. Plus, when you shop at participating retailers, you can receive instant Energy Smart rebates at the register.

Learn More

Looking for other ways to save energy at home? Visit energysmartnola.com or call 504-229-6868.

ENERGY STAR Pool Pumps

The energy your pool pump uses can be significant and costly – especially if yours is a conventional, one-speed model. An ENERGY STAR-certified pool pump can be programmed to run at speeds to match the pool operation, eliminating wasted energy. In addition, you can earn a $300 Energy Smart rebate when you purchase a qualifying model.

Learn More

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This school year make your favorite subject energy savings.

With summer winding down, kids across New Orleans are back in school. With the changing schedule and activities, along with the slight drop in temperature, September brings new opportunities for saving energy at home.

Adjust your thermostat.

Do you now have fewer people in the house during the day? No need to keep your home as cool as before. Increasing your daytime temperature, even by a couple degrees, can make a noticeable difference on your bill.

Switch to efficient products and earn rebates.

Back-to-school typically brings great sales on lighting and equipment. In addition, you can receive rebates from Energy Smart when you purchase qualifying products: ENERGY STAR® Window Air Conditioner Units, ENERGY STAR Pool Pumps, ENERGY STAR Heat Pump Water Heaters, ENERGY STAR Refrigerators and ENERGY STAR LED Lighting.

Unplug devices or use a smart power strip.

Laptops, tablets, video game consoles and TVs will still use energy, even when no one is using them. Make a habit of unplugging those devices before you leave your home or better yet, plug them into a smart power strip. These energy-saving products prevent electronics and appliances from drawing energy when not in use. If your home is eligible, you can receive a free smart power strip as part of the Home Performance with ENERGY STAR® program.

Block out the sun and the heat.

Temperatures can be very hot in September. On sunny days, closing your blinds or curtains before you leave home can help keep the heat out, which means your air conditioner won't need to work as hard to keep your home cool.

Help your kids be Energy Smart this school year.

Energy Smart for Kids is a one-of-a-kind, at-school learning opportunity which includes two sessions of hands-on, curriculum-correlated activities. Available for sixth grade or tenth grade classes in Orleans Parish charter schools, the Energy Smart for Kids program teaches how the energy system works and what kids can do to save energy. In addition, each student is provided with an energy efficiency starter kit full of gear that they can install at home. Contact your child's school to see if they have booked their classes.

Looking for other ways to save energy at home? Visit energysmartnola.com or call 504-229-6868.

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Make a difference and receive $40: Sign up for EasyCool

The Energy Smart EasyCool Program is one of the many ways Entergy New Orleans makes it easy to save energy – and make a difference too. When you participate in this demand response program, you help to ease the demand on the electrical grid, which ensures a continual supply of energy and manages the cost of electricity.

The best part? Participating is easy – most people forget how much of a difference they're making – and you will receive $40 following each cycling season (June-September). Here's how it works:

Step 1: See if you qualify.

Simply call **504-229-6868** or complete this online form to see if you qualify. Participation is open to residential homeowners living in the Entergy New Orleans service territory with a central air conditioner or heat pump system on the ground floor. Other terms apply, so call or go online to see if you qualify.

Step 2: Receive your smart switch.

Once your eligibility is confirmed, we'll schedule a time to install an A/C cycling switch or "smart switch" on your outdoor air conditioning unit or heat pump system. Since the work is performed on your outdoor unit, you don't need to be home during installation. We provide the equipment and the installation is FREE.

Step 3: Receive your cool cash reward.

Enjoy your $40 following each summer season that you participate. Your enrollment is automatic after you initially sign up – just keep enjoying your $40 year after year.

So, what does the "smart switch" do?

In the event when demand is extremely high and only during the months of June, July, August or September, your "smart switch" may be activated. If activated, your air conditioner or heat pump will still operate, circulating already cooled air, but will cycle on and off for short periods of time – and only up to 4 hours. This small change makes a big difference in reducing energy demand, which benefits the environment and keeps electric costs more affordable.

Participate today.

Call **504-229-6868** or click here to see if you qualify for the EasyCool Program.

Looking for other ways to save energy this summer? Visit energysmartnola.com or call **504-229-6868** today.

Share

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Entergy

Circuit
BY ENTERGY
ENERGY INSIGHTS FOR YOU, POWERED BY US.

Newsletters | Save Me Money | Keep Me Informed | Energy Efficiency Programs | eLibrary

ALSO IN THIS ISSUE

Check out more money saving tips, tools & interesting articles GO

Nine Ways to Save Energy – and Money – this Summer

As temperatures heat up this summer, we've got some simple tips to cool down your energy usage.

1. **Service your air conditioner.** Replacing air filters and cleaning the evaporator coil not only gets your air conditioner ready for cooling season – it can lower its energy consumption by up to 15 percent. And if you get a qualified professional tune-up, you can earn a rebate through the Energy Smart A/C Tune-up Program.
2. **Use ceiling fans.** Give your air conditioner some help and turn on your ceiling fans. Using them both can allow you to raise your thermostat four degrees, saving electricity.
3. **Cook outside.** On warmer spring days, keep the heat out of your home by using an outdoor grill instead of an indoor stove and oven.
4. **Purchase ENERGY STAR® qualified appliances and equipment.** Not only do ENERGY STAR products, such as window A/C units, refrigerators and heat pumps, help you save energy and money – but you can earn an Energy Smart rebate as well.
5. **Use your window treatments.** Super-hot day? Drawing your blinds or curtains can slash the heat inside when temperatures rise outside. During milder yet sunny days, switch off the lights and use windows to brighten your home with natural light.
6. **Caulk air leaks.** Using low-cost caulk to seal cracks and openings in your home keeps warm air out, which could lower your energy bill.
7. **Set the thermostat.** Setting a programmable thermostat to a higher temperature when you are not at home can help reduce your energy costs by approximately 10 percent.
8. **Seal ducts.** Air loss through ducts can account for nearly 30 percent of your cooling system's energy consumption. Sealing and insulating your ducts can go a long way toward lowering your electricity bills. Work with an Energy Smart participating contractor to receive up to a $200 rebate on duct sealing.
9. **Sign up for a free home energy assessment** through the Home Performance with ENERGY STAR program, designed to help deliver cooler homes in the summer, warmer homes in the winter and lower utility bills all year long. Your energy assessment includes the free installation of several energy-saving products* (such as energy-efficient light bulbs, a smart power strip, water-saving showerheads and faucet aerators and other air sealing products) so you can start saving energy right away.

Looking for other ways to save energy this summer? Visit energysmartnola.com or call 504-229-6888.

*Measures are determined based on the environment, overall efficiency and product availability. Products may not be installed in each unit depending on utility eligibility and existing baselines. Energy-efficient light bulbs will be installed only in fixtures containing incandescent or halogen lamps.

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ALSO IN THIS ISSUE

Check out more money saving tips, tools & interesting articles GO

Live in an apartment? Own a multifamily property? We can help you save energy.

If your multifamily property signs up for the Energy Smart Multifamily Program, tenants can receive free energy-saving products – all without spending a cent. In addition to saving on your energy bill, these high-quality, longer-lasting products can help improve the value of the building and reduce maintenance.

What do you get for signing up?

Tenants will receive free installation of qualifying energy-saving products* in their unit, which may include:

- LED light bulbs
- Showerheads
- Kitchen and bathroom faucet aerators
- Programmable thermostat

Who can participate?

Qualifying multifamily properties must contain two or more electric meters under one roof and be an Entergy customer in Orleans Parish to receive direct install energy efficiency improvements.

How can I sign up?

If you are a tenant, contact your property manager and tell them you are interested in participating in the Energy Smart Multifamily Program. Property managers or owners can schedule a free property assessment online or call 504-229-6868 to sign up today.

Looking for other ways to save energy this summer? Visit energysmartnola.com.

*Measures are determined based on the environment, overall efficiency and product availability. Products may not be installed in each unit depending on utility eligibility and existing baselines. LEDs will be installed only in fixtures containing incandescent or halogen lamps.

Share

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Submit

EasyCool Email & Social Media Campaign

EnergySmart A New Orleans Program | Entergy

Join the Energy Smart EasyCool Program and you'll earn $40 every year.

When you join the Energy Smart EasyCool Program, you can earn $40 every year while helping to ensure a continual supply of energy for you and your neighbors.

How the EasyCool Program Works:

We'll come to your home and install an A/C cycling or "smart" switch on your outdoor air conditioning unit or heat pump system — all for FREE.

On select summer weekday afternoons, when electricity demand is at its highest, the EasyCool device may cycle your A/C on and off for short periods.

You will receive $40 after every summer season for participating in the program.

Find out if you qualify ▶

Participation in the Energy Smart EasyCool Program is dependent upon Entergy account type and eligibility.

EnergySmart
A New Orleans Program | Entergy

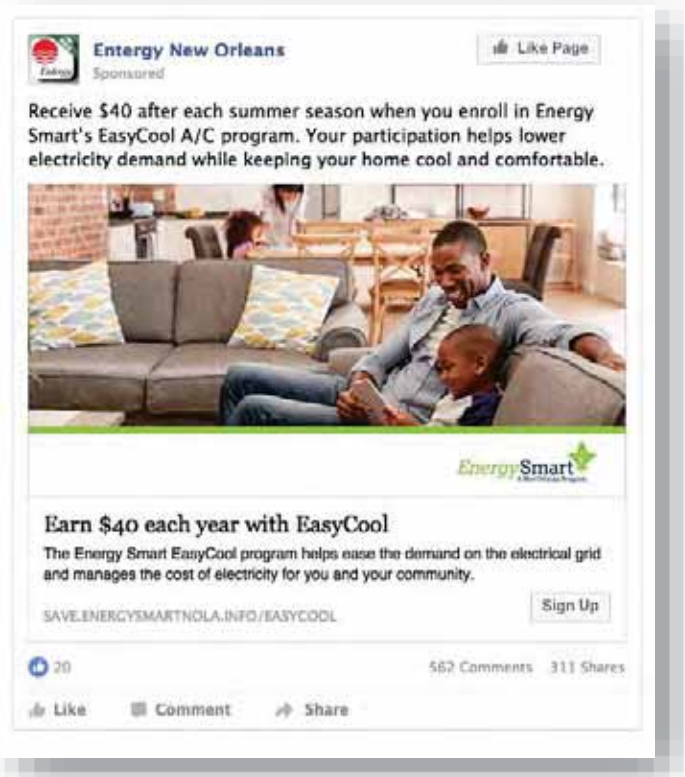
Don't miss out on receiving $40 when you sign up for the EasyCool Program.

Sign up to lower your neighborhood's electricity demand and get rewarded.

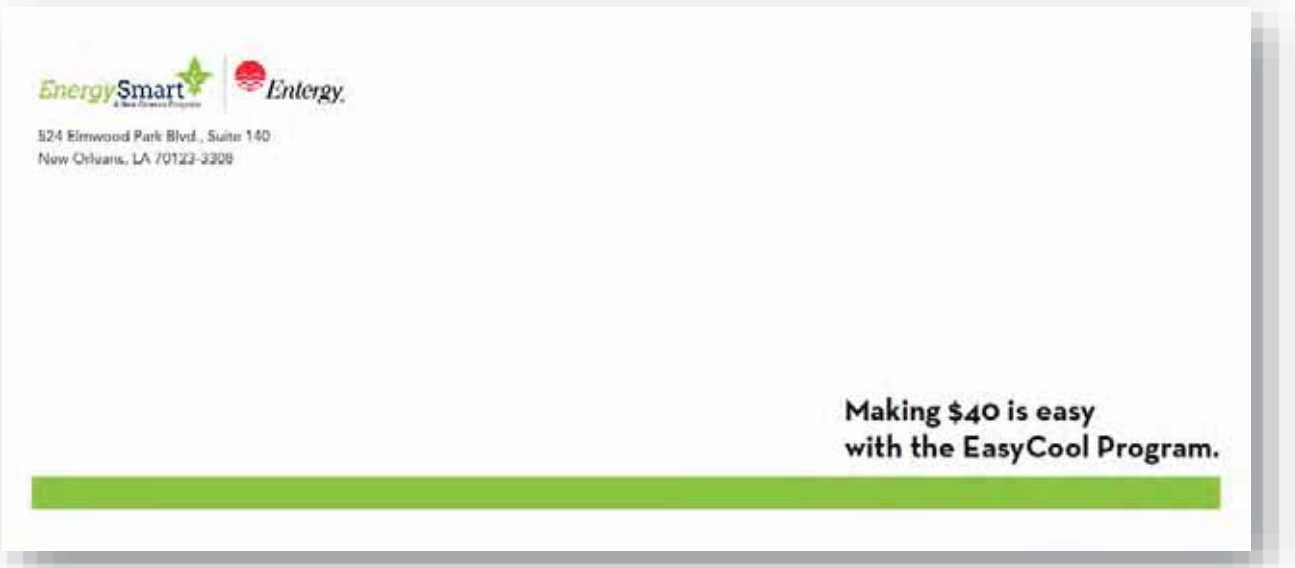
Entergy's Energy Smart EasyCool program is now offering customers a **$40 bonus** for their participation each summer season. Use that extra money to enjoy the warm summer weather while keeping your home cool and comfortable. Ready to get started? Find out if you qualify below.

Find out if you qualify ▶

Participation in the Energy Smart EasyCool Program is dependent upon Entergy account type and eligibility.



Easycool Pre-Season Envelope & Letter



502-229-6868
energysmartnola.com
info@energysmartnola.com

June 12, 2018

Addressee's Name
Street Mailing Address
City, State Postal Code

Dear Energy Smart EasyCool Program Participant,

Thank you for participating in Entergy New Orleans' **Energy Smart EasyCool Program**. Now in its third year, the program has helped us manage costs by reducing the need to import electricity or run expensive generators when demand for electricity is at its highest. Your continued participation in the Energy Smart EasyCool Program benefits the environment and helps keep costs down for all residents of New Orleans.

Things to remember:

- The program's cycling season is **June 1 through Sept. 30**. During this period, we may call an "event," which means the switch to cycle your cooling system will be activated. The EasyCool device is only activated on select summer weekdays. When it is activated, your air conditioner will still operate, but for about half as long, while allowing the fan to circulate already cooled air.
- These cycling events are limited to weekdays (no weekends or holidays) during times when electricity demand is at its highest – typically for two - four hours between 2 and 6 p.m.
- You are permitted to "opt-out" of two events per season and still retain the $40 annual incentive.
- Event notifications are posted on the Energy Smart EasyCool Program website and on our Facebook and Twitter pages. Typically, notifications are posted the day of a cycling event.

If you have a question about the program, please call the number listed below. Thanks again for participating in the Energy Smart EasyCool Program.

Sincerely,
Your Energy Smart EasyCool Program Team

p.s. Don't forget to tell your family and friends about the Energy Smart EasyCool Program. For more information on saving energy, visit **energysmartnola.com** or call us at **504-229-6868**.

EasyCool Landlord Authorization Form

Energy Smart Residential Energy Efficiency Programs

Energy Smart EasyCool Landlord / Owner's Acknowledgement

Customer Name: _____

Landlord/Owner Name: _____

Property Address: _____

City: _____ ZIP: _____

Contact Phone Number: _____

Contact Email Address: _____

As the landlord/owner of the rental property listed above, I understand:

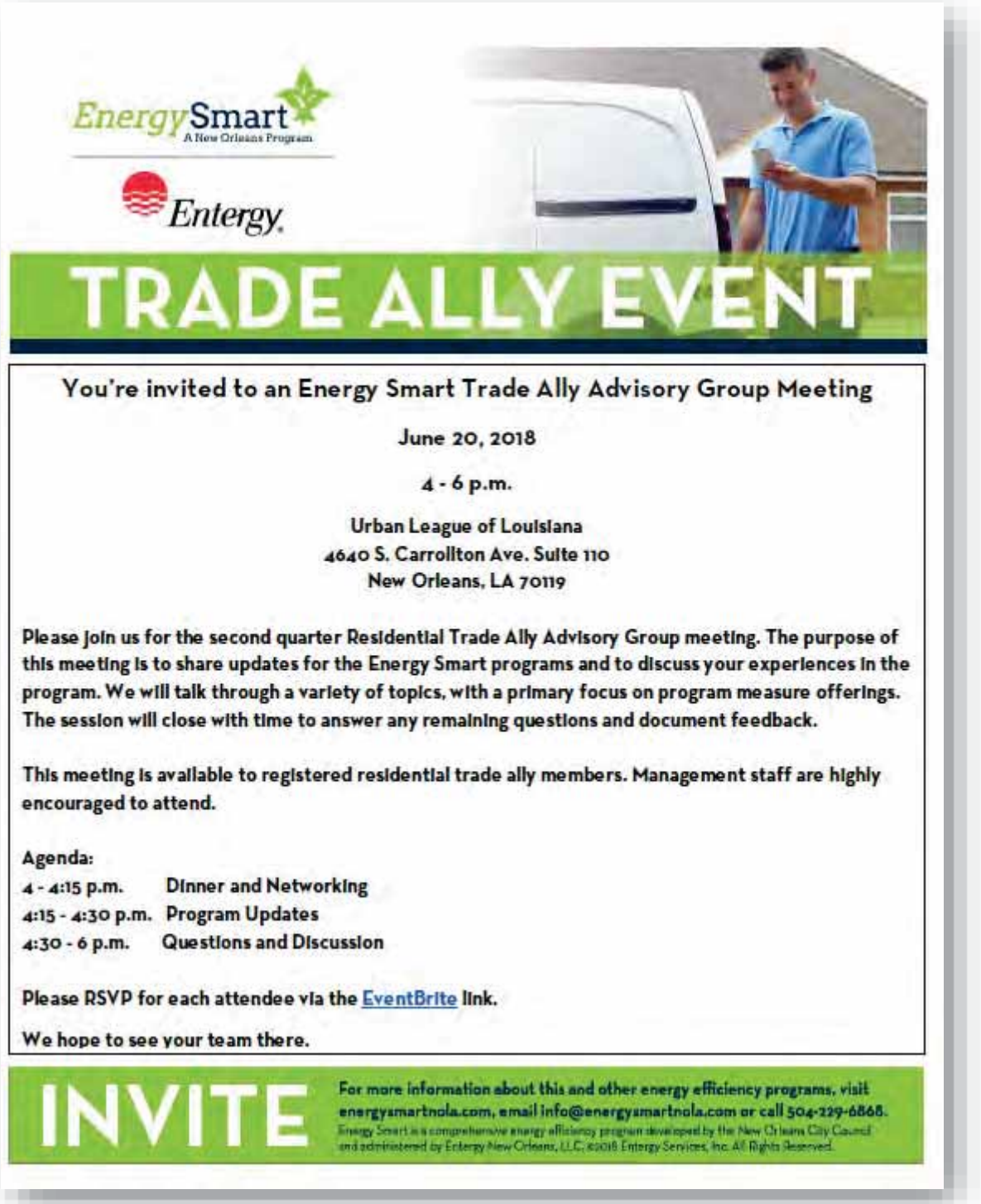
- Energy Smart or its authorized representative will install Energy Smart EasyCool equipment on all air conditioning unit(s) or heat pump(s) serving the property identified above.
- There are no fees to participate.
- Tenants will receive $40 for participation at the end of each year.
- I agree to notify new tenants of their participation in the program and that their participation is voluntary.
- I may contact the Energy Smart EasyCool Program at **504-229-6868** for questions or problems related to the device.
- The landlord/owner or tenant will not be liable for any damage that has been sustained as a direct result of the program equipment.

_____ _____

Owner/Manager Signature Date

For more information about this and other energy efficiency programs, visit **energysmartnola.com**, email **info@energysmartnola.com** or call **504-229-6868**.

Residential Trade Ally Advisory Group Meeting Invitation



EnergySmart
A New Orleans Program

Entergy

TRADE ALLY EVENT

You're invited to an Energy Smart Trade Ally Advisory Group Meeting

June 20, 2018

4 - 6 p.m.

Urban League of Louisiana
4640 S. Carrollton Ave. Suite 110
New Orleans, LA 70119

Please join us for the second quarter Residential Trade Ally Advisory Group meeting. The purpose of this meeting is to share updates for the Energy Smart programs and to discuss your experiences in the program. We will talk through a variety of topics, with a primary focus on program measure offerings. The session will close with time to answer any remaining questions and document feedback.

This meeting is available to registered residential trade ally members. Management staff are highly encouraged to attend.

Agenda:

4 - 4:15 p.m.	Dinner and Networking
4:15 - 4:30 p.m.	Program Updates
4:30 - 6 p.m.	Questions and Discussion

Please RSVP for each attendee via the EventBrite link.

We hope to see your team there.

INVITE

For more information about this and other energy efficiency programs, visit energysmartnola.com, email info@energysmartnola.com or call 504-229-6868.

Residential Trade Ally Newsletter

EnergySmart
Entergy

Energy Smart Spotlight

June 2018

Get to Know Your Spotlight

This Energy Smart monthly newsletter series is exclusively for registered trade allies in the residential program. Here, we'll share important news, training alerts and valuable tips to help your business gain the most value from participating in Energy Smart. Please reach out to your Trade Ally Coordinator, Atom Davis, with any questions or topic suggestions for upcoming newsletters.

How does new tax law change expensing for energy efficient improvements?

Tax season is over, but you'll want to pay attention to this article. Commercial businesses can expense the cost of new energy efficient measures while promoting the purchase of new, more efficient equipment with this new tax law. The article also covers other upgrades that can be expensed or incentivized, including HVAC and roofing.

Read more ▶

Easy ways to grow your business.

Louisiana Economic Development has many free services that can help you to find the right ways to keep growing your business, such as employee training tools or assistance with patents. Louisiana Economic Development allows you to search by regions within Louisiana and offers classes and certifications.

Read more ▶

Are you a Disadvantaged Business Enterprise?

Many state and government contracts are required to do a certain percentage of their business with DBE certified vendors. The resources available to your team as a DBE may help bring you more business. This website has what you need to get started and check to see if you're eligible to register under multiple different types of DBE certifications. Energy Smart is available to provide support navigating the process of obtaining these certifications.

Read more ▶

Upcoming Events

Marketing ENERGY STAR® with your Business

June 20, 2018
10:30 a.m. – 12:30 p.m.
Urban League of Louisiana
4640 S. Carrollton Ave.
Suite 110
New Orleans, LA 70119

Residential Trade Ally Advisory Group Meeting

June 20, 2018
4 – 5:30 p.m.
Urban League of League of Louisiana
4640 S. Carrollton Ave.
Suite 110
New Orleans, LA 70119

Commercial Case Study

PEL HUGHES Energy Smart Case Study

OVERVIEW

Pel Hughes is a local, woman-owned print and direct marketing company that operates a 65,000 square foot facility in New Orleans. Energy Smart partners with Pel Hughes for printing and marketing services, and in 2018 Pel Hughes partnered with Energy Smart to access incentives to help them upgrade their 20-year-old, inefficient lighting to LED.

Pel Hughes General Manager Tim Levy explained, "The quality wasn't up to running a printing operation, so LED lighting came to our attention. The Energy Smart Trade Ally was able to offer different lighting levels for different areas of our business that have different needs. We got truer, whiter lights where we need to measure color accuracy and warmer lights where there are more people so it needs to be more comfortable."

RESULTS

Gross Project Cost:	**$66,205**
Energy Smart Incentive:	**$18,547**
Net Project Cost:	**$47,658**
Estimated Energy Savings:	**185,740 kWh/year**
Estimated Cost Savings:	**$16,692 annually**

Simple project payback of two years and 11 months.

28 percent of project cost covered.

"You'll see a 100-year-old machine in here underneath state-of the-art lights. We take the best of proven technologies and combine them with new innovation. We use what works."
Tim Levy, Pel Hughes

EnergySmart A New Orleans Program | Entergy

ENERGY SMART OVERVIEW

Energy Smart is available to all Entergy New Orleans electric customers including:
Small Businesses | Non-profit Organizations | Large Commercial and Industrial Facilities | Publicly Funded Institutions

	PRESCRIPTIVE INCENTIVES	CUSTOM INCENTIVES
	Prescriptive incentives are paid a pre-defined amount per unit for certain measures in the following categories: • Lighting. • HVAC. • Refrigeration. • Commercial Kitchen Equipment. See prescriptive incentive list at **energysmartnola.com**.	Custom incentives are paid based on the estimated energy savings, customer size and project type as follows: • $.10 per kWh saved for **custom lighting** projects in facilities with peak demand >100 kW (large commercial). • $.12 per kWh saved for **custom lighting** projects in facilities with peak demand <100 kW (small commercial). • $.12 per kWh saved for all **custom non-lighting** projects.
☐	Submit completed application, prescriptive incentive calculator, one recent Entergy bill, proposal and spec sheets to **commercialapps@energysmartnola.com**.	Submit completed application, applicable incentive calculator, one recent Entergy bill, proposal and spec sheets to **commercialapps@energysmartnola.com**.
☐	Contact us to find out if pre-approval is required for your prescriptive project.	Pre-approval is required for all custom projects. Program scheduled inspection site visit occurs.
☐	Once approved, implement your project.	Once approved, implement your project.
☐	Contact the program team when project is complete. Submit project completion notice signed by the customer with any updated documentation.	Contact the program team when project is complete. Submit project completion notice signed by the customer with any updated documentation.

Program performs post-review and site inspection. Once complete, the incentive payment is approved.

Commercial customers can contact us for a list of Registered Trade Allies who are trained and experienced in performing energy efficiency upgrades.

CONSULTATIVE ENERGY SERVICES
Energy Smart can help guide projects to increase energy savings and cost-effectiveness.

CASH BACK INCENTIVES
Energy Smart has paid out more than $8.1 million to business customers.

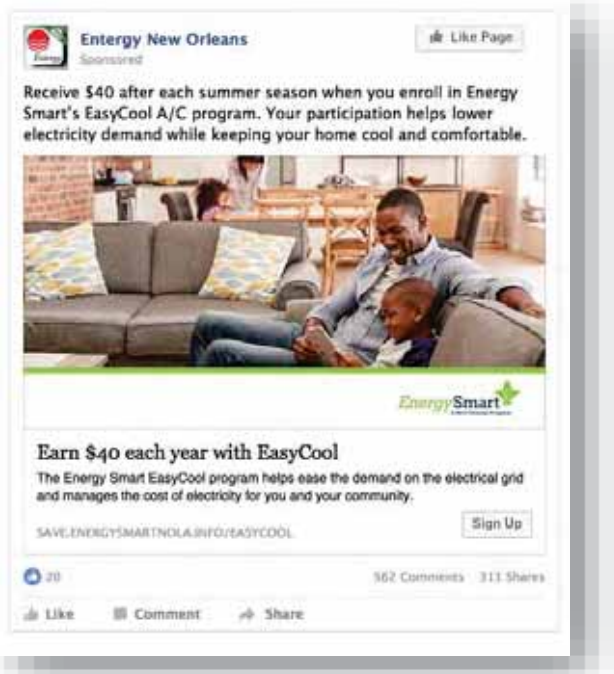
TRAINING & DEVELOPMENT
Energy Smart is committed to providing training and development to participating trade ally contractors.

For information about this and other Energy Smart programs,
visit **energysmartnola.com**, email **info@energysmartnola.com** or call **504-229-6868**.

EnergySmart A New Orleans Program | Entergy

City Business Ad

July Facebook Ad



August Facebook Ad

EasyCool July Email

EnergySmart A New Orleans Program | Entergy

Join the Energy Smart EasyCool Program and you'll earn $40 every year.

When you join the Energy Smart EasyCool Program, you can earn $40 every year while helping to ensure a continual supply of energy for you and your neighbors.

How the EasyCool Program Works:

We'll come to your home and install an A/C cycling or "smart" switch on your outdoor air conditioning unit or heat pump system — all for FREE.

On select summer weekday afternoons, when electricity demand is at its highest, the EasyCool device may cycle your A/C on and off for short periods.

You will receive $40 after every summer season for participating in the program.

Find out if you qualify ▶

Participation in the Energy Smart EasyCool Program is dependent upon Entergy account type and eligibility.

EasyCool Nurture Follow-up Email

EnergySmart
A New Orleans Program
Entergy.

Don't miss out on receiving $40 when you sign up for the EasyCool Program.

Sign up to lower your neighborhood's electricity demand and get rewarded.

Entergy's Energy Smart EasyCool program is now offering customers a **$40 bonus** for their participation each summer season. Use that extra money to enjoy the warm summer weather while keeping your home cool and comfortable. Ready to get started? Find out if you qualify below.

Find out if you qualify ▶

Participation in the Energy Smart EasyCool Program is dependent upon Entergy account type and eligibility.

July Residential Trade Ally Newsletter

EnergySmart
Entergy

Energy Smart Spotlight

July 2018

We can help you co-brand your materials.

From Energy Smart brochures to your most effective marketing material, we can help to make promoting Energy Smart programs easier. Our marketing team continues to update and create program materials. Newer items include an updated A/C Tune-up brochure, cobranded with your logo and the Energy Smart and Entergy logos.

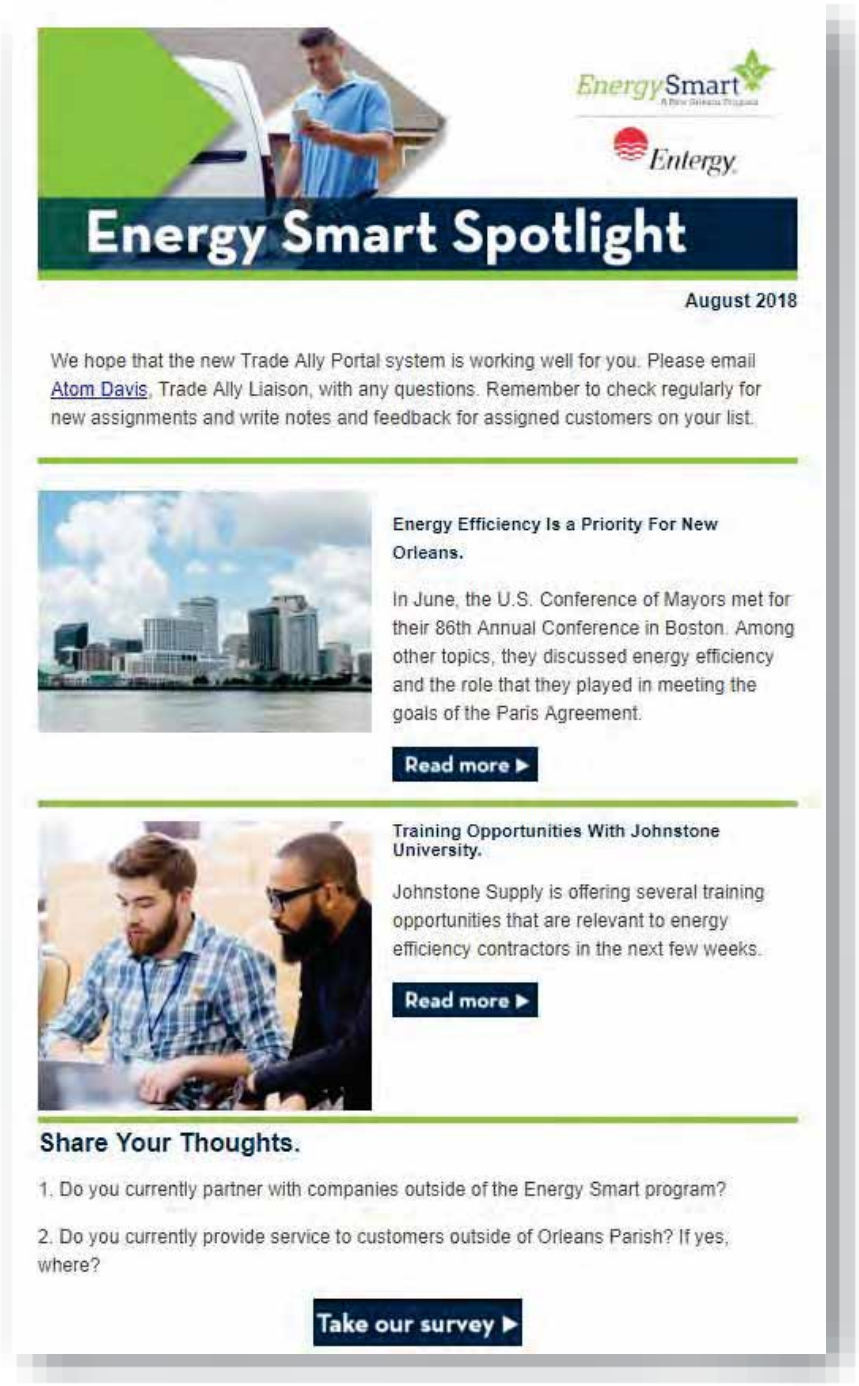
Read more ▶

Four ways to keep your staff safe when it's hot.

Summer heat in Louisiana can be brutal, and for workers in attics the temperature could rise to unsafe levels. Make sure to take precautions against accidents and injuries for you and your staff this summer. Be aware that spending extended periods in the sun or heat can lead to several heat-related illnesses including heat rash, heat cramps, heat exhaustion and heat stroke.

Read more ▶

August Residential Trade Ally Newsletter



EnergySmart

Entergy

Energy Smart Spotlight

August 2018

We hope that the new Trade Ally Portal system is working well for you. Please email Atom Davis, Trade Ally Liaison, with any questions. Remember to check regularly for new assignments and write notes and feedback for assigned customers on your list.

Energy Efficiency Is a Priority For New Orleans.

In June, the U.S. Conference of Mayors met for their 86th Annual Conference in Boston. Among other topics, they discussed energy efficiency and the role that they played in meeting the goals of the Paris Agreement.

Read more ▶

Training Opportunities With Johnstone University.

Johnstone Supply is offering several training opportunities that are relevant to energy efficiency contractors in the next few weeks.

Read more ▶

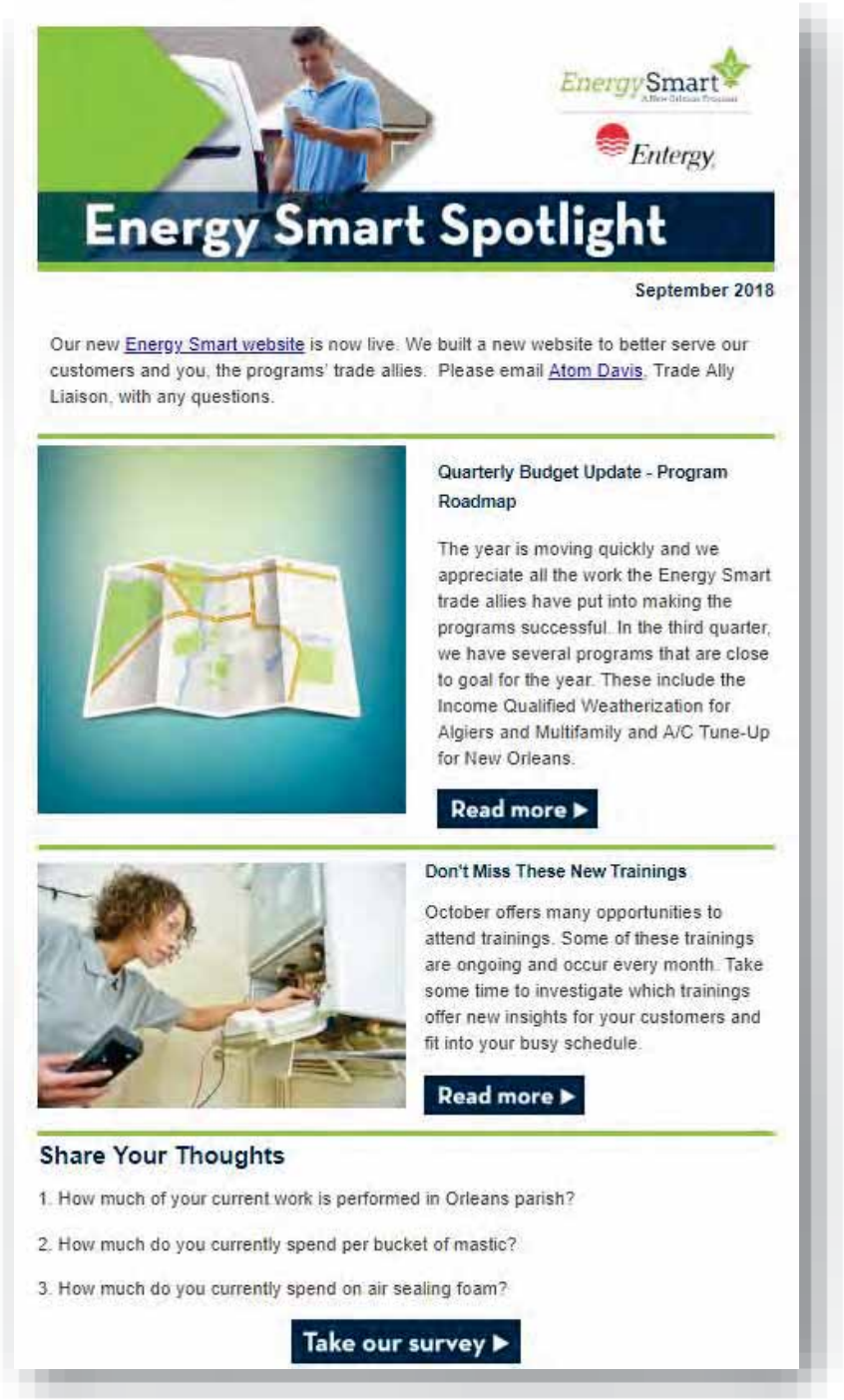
Share Your Thoughts.

1. Do you currently partner with companies outside of the Energy Smart program?

2. Do you currently provide service to customers outside of Orleans Parish? If yes, where?

Take our survey ▶

September Residential Trade Ally Newsletter



EnergySmart
Entergy

Energy Smart Spotlight

September 2018

Our new Energy Smart website is now live. We built a new website to better serve our customers and you, the programs' trade allies. Please email Atom Davis, Trade Ally Liaison, with any questions.

Quarterly Budget Update - Program Roadmap

The year is moving quickly and we appreciate all the work the Energy Smart trade allies have put into making the programs successful. In the third quarter, we have several programs that are close to goal for the year. These include the Income Qualified Weatherization for Algiers and Multifamily and A/C Tune-Up for New Orleans.

Read more ▶

Don't Miss These New Trainings

October offers many opportunities to attend trainings. Some of these trainings are ongoing and occur every month. Take some time to investigate which trainings offer new insights for your customers and fit into your busy schedule.

Read more ▶

Share Your Thoughts

1. How much of your current work is performed in Orleans parish?
2. How much do you currently spend per bucket of mastic?
3. How much do you currently spend on air sealing foam?

Take our survey ▶

October Residential Trade Ally Newsletter

Energy Smart Spotlight

October 2018

Energy Efficiency Creates the Most Jobs in the Energy Industry

It's an exciting time to be working in energy efficiency. The energy efficiency sector is No. 1 in job growth in the industry, which also includes the fossil fuel industry. In Louisiana, 13 percent of all jobs in the energy sector are in the energy efficiency industry. This means that as trade allies of the Energy Smart program, you're the experts in this growing industry.

Read more ▶

A Fall Full of Trainings

November offers many opportunities to attend trainings. Some of these sessions are ongoing and occur every month. Take some time to investigate which trainings offer new insights for your customers and fit into your busy schedule.

Read more ▶

Safety Tip: Protect Yourself From Unnecessary Blame

In the day-to-day grind, we can easily forget about documenting everything about a home. Being blamed for a pre-existing issue is sure to slow business, cost money and cause headaches. Here are a few tips on how to avoid these conflicts.

Read more ▶

Share Your Thoughts

1. Do you charge assigned customers for services in the Energy Smart program beyond the rebate amount?
2. How many employees currently need certifications or re-certifications?
3. If they need to recertify, when do your certifications expire?
4. Do your employees currently drive vehicles with your company logo on them?

Take our survey ▶

Upcoming Events and Trainings

Green Professional Building Skills Training: Operations and Maintenance Essentials

Nov. 1-2

9 a.m. - 5 p.m.

Urban League of Louisiana
4640 S. Carrollton Ave., Suite 110
New Orleans, LA 70119

Following up on the report about the city of New Orleans working toward a richer community of energy efficiency and sustainability, Energy Smart is partnering with Urban League of Louisiana to offer a GPRO training course. The cost is $245, a special price for Energy Smart Trade Allies. This course will cover large multifamily and commercial building operations and maintenance, and will end with the certification exam for the GPRO Operations & Maintenance Essentials certification.

RSVP ▶

Getting to "Yes" on the First Visit to the Job Site

Nov. 15

2 p.m.

Online Webinar

This webinar is designed to teach you about:

1. Technology for business operations and management purposes
2. Your customer's decision-making process
3. What it takes to have loyal and satisfied customers
4. How to increase client referrals
5. Consultative sales techniques

RSVP ▶

EnergySmart A New Orleans Program | Entergy

For more information about this and other energy efficiency programs, visit energysmartnola.com, email info@energysmartnola.com or call 504-229-6868.

Energy Smart is a comprehensive energy efficiency program developed by the New Orleans City Council and administered by Entergy New Orleans, LLC. ©2018 Entergy Services, LLC All Rights Reserved.

December Residential Trade Ally Newsletter

EnergySmart
Entergy

Energy Smart Spotlight

December 2018

Five Ways to Prepare for 2019

As we wrap up a successful year, we want to take some time to first thank you for your partnership and hard work promoting Energy Smart. Looking ahead, we have several ways to make sure that 2019 brings more success to you, your company and the Energy Smart offerings.

Read more ▶

A New Year of Trainings

If you missed any of the training opportunities in 2018, we have many more coming in January and February. Some of these trainings are ongoing and occur every month. Take some time to investigate which trainings offer new insights for your customers and fit into your busy schedule.

Read more ▶

Upcoming Events and Trainings

SELACACI January Heatload Workshop

Jan. 2

6 p.m.

Delgado Community College's Jefferson Campus
5200 Blair Dr., Building B, Room 2
Metairie, LA 70001

These monthly workshops offer trainings specific for HVAC contractors to learn more about heatload software, improve calculation and problem-solving skills. This is a free event that occurs the first Wednesday of every month.

RSVP ▶

EPA 608 Review Course and Test Session

Dec. 27

7 a.m. - 3 p.m.

The Barber Training Center
5630 Powell St.
Harahan, LA 70123

This class is designed to be a review for technicians preparing to take the EPA 608 exam. Available on the same day are sessions to take the course and the test ($180) or only take the test ($95). This review course and test session is $195.

RSVP ▶

July Bill Insert

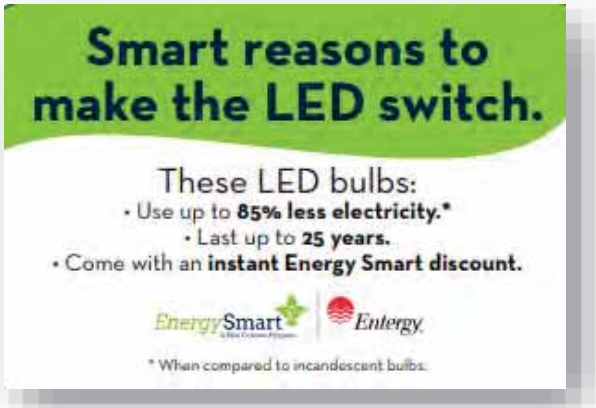
EasyCool Post Card Mailer

September Bill Insert

EasyCool Switch Sticker

EasyCool Video

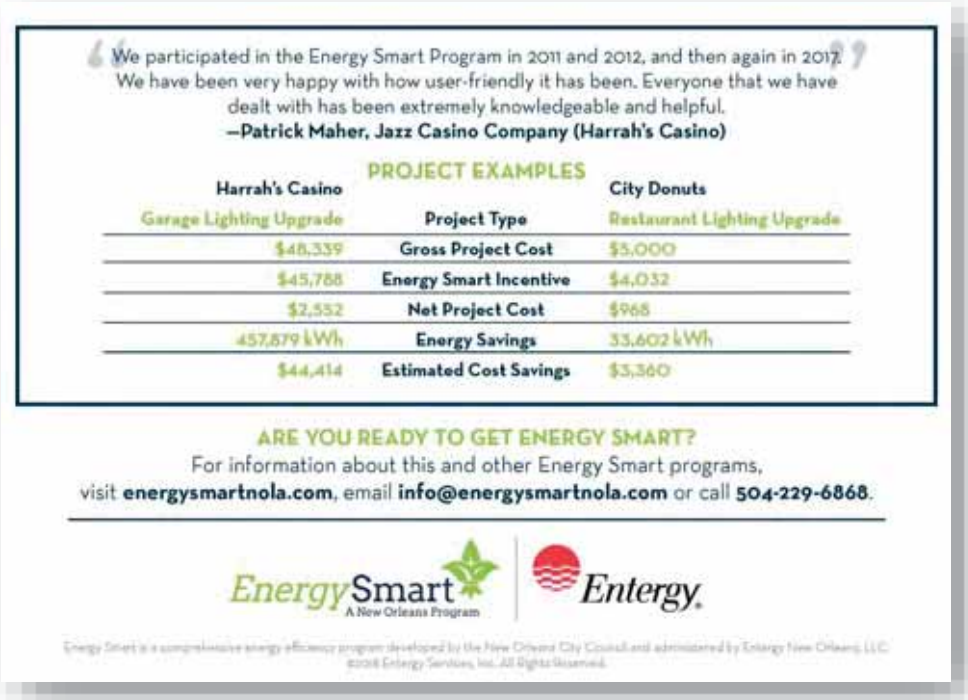
Retail Lighting Shelf Sticker



Appliance Rebates Box Sticker

Biz New Orleans Ad

Business Leave Behind



Website Screen Shots


504-229-6868
About Energy Smart
2010
Year Started
16
Million Dollars in Incentives
70,000
Homes & Businesses Served
135
Million kWh Saved
Why Choose Energy Smart?


504-229-6868
Businesses
Participants can receive up to:
$50,000 for lighting upgrades.
$50,000 for non-lighting upgrades.
Business customers who complete custom projects before December 31, 2018 are eligible for increased incentives.

C&I Customer E-blast

EnergySmart
A New Orleans Program

Entergy

Important Announcements

Dear Energy Smart Trade Allies and Commercial Customers,

As we approach the last quarter of 2018, Energy Smart has two important announcements for trade allies and commercial customers.

HVAC and Heat Pump Incentives Increase

- A/C unit incentives increased from $10-$20/ton to **$66/ton across all capacities**.
- Heat pump incentives increased from $10-$25/ton to **$71/ton across all capacities**.
- Submit a completed Energy Smart Commercial Application, prescriptive calculator, one recent Entergy bill and spec sheets to commercialapps@energysmartnola.com. If estimated incentive is less than $5,000, pre-approval is not required.

Custom Project Incentive Bonus:
For a limited time only, Energy Smart is offering increased incentives on commercial custom projects. Custom projects installed by Dec. 31 will receive an additional $0.03/kWh.

- Small Commercial custom incentives increased from $0.12/kWh to **$0.15/kWh**.
- Large Commercial custom lighting increased from $0.10/kWh to **$0.13/kWh**.
- Large Commercial custom non-lighting increased from $0.12/kWh to **$0.15/kWh**.

Additional details regarding the custom incentive bonus include:

- All standard requirements listed on the Energy Smart Commercial Application apply.
- Custom bonus calculators are available at energysmartnola.com/businesses.
- Bonus eligible for new projects received on or after Sept. 17.
- Project must be fully installed and operational with the *Project Completion Notice* submitted by Dec. 31.
- Bonus limited to a first-come, first-served basis until Dec. 31 or until funds are exhausted.
- Application submittal does not guarantee bonus.
- Bonus will be paid to the recipient of the incentive check.

We hope that these changes will help New Orleans commercial customers take advantage of even greater energy savings.

For more information about Energy Smart, visit energysmartnola.com, email info@energysmartnola.com or call 504-229-6868.

Thank you,
The Energy Smart Program

Our mailing address is:
Energy Smart
900 Camp Street, Suite 364
New Orleans LA 70130

Want to change how you receive these emails?
You can update your preferences or unsubscribe from this list.

Retro-commissioning Overview & Opportunity Assessment

ENERGY SMART RETRO-COMMISSIONING PROGRAM

Buildings need regular maintenance checks and tune-ups in order to maintain optimal efficiency. Energy Smart connects facility owners and managers with experts and provides financial incentives to ensure that their buildings and the equipment within it are in peak operating conditions for prime energy savings.

Energy Smart's Retro-commissioning program helps large commercial and industrial customers save a significant amount of energy and produce paybacks of less than two years with the help of incentives. Through retro-commissioning (RCx), you can manage energy use more effectively, increase tenant comfort and catch small maintenance needs before they become costly repairs.

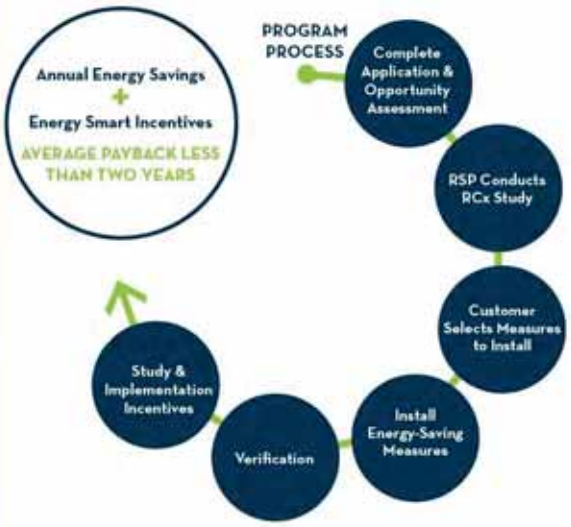
RETRO-COMMISSIONING

RCx is the simple process of improving the performance and energy efficiency of building systems, equipment and operations as a whole. Specialized Trade Allies, called RCx Service Providers, work directly with facility managers to examine all facets of a building, including the structural envelope, building controls, lighting, HVAC, equipment choices, workplace habits, maintenance schedules and operational policies.

The Energy Smart Retro-commissioning program includes low cost measures such as adjustments, recalibrations and process changes that provide quick paybacks. Saving money now can help your company invest in more projects later. Your RSP conducts an RCx Study at your facility, which make recommendations to changes in your systems, equipment and practices that can lead to significant energy and cost savings.

READY TO GET ENERGY SMART?

Visit energysmartnola.com to view a list of qualified RSPs, and then contact the RSP of your choice to get started on the program process or call us at 504-229-6868.



EnergySmart
A New Orleans Program

ENERGY SMART RETRO-COMMISSIONING PROGRAM

The Energy Smart Retro-Commissioning Program is available to Large Commercial and Industrial Entergy New Orleans electric customers, including publicly funded institutions.

TERMINOLOGY

RSP: A Retro-commissioning Service Provider is a specialized Energy Smart Trade Ally who is qualified to assist customers through the RCx process.

Opportunity Assessment: A set of screening questions designed to determine well-qualified candidates for RCx.

Enrollment Application: A form that when completed and approved, admits a customer into the Retro-commissioning Program and allows the RSP to conduct a study.

Study: A comprehensive audit that inspects, assesses and analyzes energy usage. The study identifies and provides savings and cost analysis of low-cost RCx measures.

Measure Selection Form: A form detailing a set of recommended measures to be implemented.

INCENTIVE STRUCTURE

Incentives are paid for both the cost of the approved RCx study performed and for the implementation of qualified energy saving measures. Both incentives are paid at the completion of the project. Incentive rates and structure are below:

INCENTIVE PHASE	INCENTIVE RATE
Approved RCx Study and Workbook	50 percent of study cost[1]
Verification of Implemented Savings	$0.12/kWh

[1] **Up to $15,000**

- **Customers are eligible for up to $100,000 per site per year, up to $50,000 for custom lighting and $50,000 across all custom non-lighting projects.**
- **In order to be eligible for the study incentive, customers must implement at least one of the measures recommended in the approved study.**

ELIGIBILITY

Eligibility is limited to large commercial and industrial Entergy New Orleans electric customers that meet facility requirements and are determined to be good candidates through the results of an Opportunity Assessment. Examples of good candidates include customers that have:

- Over 100,000 sq. ft. of conditioned space.
- A high average electric energy intensity.
- Robust building control systems.
- Other equipment where RCx can make a difference and are motivated to implement projects and train staff.

Participants in the Retro-commissioning Program will also potentially identify other energy saving opportunities that qualify for custom or prescriptive incentives. Energy Smart will assist in guiding you to these energy saving opportunities and programs.

For information about this and other Energy Smart programs, visit **energysmartnola.com**, email **info@energysmartnola.com** or call **504-229-6868**.

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ENERGY SMART
RETRO-COMMISSIONING PROGRAM

OPPORTUNITY ASSESSMENT

Mark your selection with a check mark. Select one answer per question unless otherwise instructed.

COMPANY INFORMATION

Company Name:

_____

_____

Facility Address:

_____

_____

Company Contact Name:

_____

Company Contact Title:

_____

Company Contact Phone Number:

_____

Company Contact Email:

_____

ENERGY INFORMATION

1. What is the total annual kWhs used by the facility?

_____

2. What is the average electric intensity of the facility (kWh/Sq. f.t)?

_____

3. What percentage of the utility budget is:

Electricity _____

Natural Gas _____

Steam _____

Other _____

4. What is the estimated percent use reduction that you hope to achieve?

Electricity _____

Natural Gas _____

Steam _____

Other _____

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PROJECT PARAMETERS

5. What is the building type:

- ☐ Office.
- ☐ Industrial.
- ☐ Faith-Based.
- ☐ Food Service.
- ☐ Health Care.
- ☐ Publicly Funded.
- ☐ Education.
- ☐ Warehouse.
- ☐ Lodging.
- ☐ Service.
- ☐ Other.

6. What is the square footage of the facility?

_____

7. What is the percentage of the facility that is:

Heated_____

Air Conditioned _____

8. What is the number of floors in the facility (including those below grade)?

_____

9. How old is your facility or what year was your facility built?

_____

10. What are the annual hours of operation of the facility?

_____

11. What is the fuel source for the heating of domestic water?

- ☐ Electric.
- ☐ Natural Gas.
- ☐ Steam.
- ☐ Other.

12. What is the fuel source for the building heat?

- ☐ Electric.
- ☐ Natural Gas.
- ☐ Steam.
- ☐ Other.

13. What are the measures that will be investigated as part of your project? Check all that apply.

- ☐ Air Handler Optimization.
- ☐ Chiller Optimization.
- ☐ Compressed Air Optimization.
- ☐ Lighting Sensor/Controls Optimization
- ☐ Pump and Motor Savings.
- ☐ Industrial Processes.
- ☐ Domestic Water Heating Systems.
- ☐ Building Controls.

OPPORTUNITY SCREENING

14. How would you describe your current energy policy?

- ☐ We don't have an energy policy.
- ☐ We have an energy policy but it lacks goals or processes for meeting them.
- ☐ We have an energy policy that includes goals and processes for meeting them.

15. What is your current approach to analyzing your energy bill to track cost and usage?

- ☐ Energy use and cost metrics are not tracked.
- ☐ Energy use is tracked and may be reviewed regularly.
- ☐ Energy costs are tracked and may be reviewed regularly.
- ☐ Both energy use and costs are tracked and reviewed at least annually.

16. What level of funding is your management willing to commit to energy saving recommissioning projects?

- ☐ There is no funding available.
- ☐ Less than $5,000 per year.
- ☐ Less than $10,000 per year.
- ☐ Over $10,000 per year.

17. What documentation is currently available (blue prints, balance reports, sequence of operations schedules, etc.)?

- ☐ No documentation is available.
- ☐ Some documentation, but it is not complete.
- ☐ All documentation is available and it is up-to-date.

18. Which type of ventilation distribution is most common in your facility?

- ☐ Constant Volume Variable Air Volume.
- ☐ Volume Variable Air Volume with Occupancy Sensor.

OPPORTUNITY ASSESSMENT - CONT.

OPPORTUNITY SCREENING - CONT.

19. Which type of air handling unit is most common in your facility?

- ☐ Unit Vents.
- ☐ Make-up Air Units.
- ☐ Rooftop Units.
- ☐ Air Handling Units.
- ☐ Rooftop Unit or Air Handling Unit with Heat.
- ☐ Recovery.

20. Which type of economizer is most common in your facility?

- ☐ No Economizer.
- ☐ Water-side Economizer.
- ☐ Air-side Economizer.

21. Which type of heating system is most common in your facility?

- ☐ District Steam Heating.
- ☐ Steam Boilers Direct-fire Roof Top Unit.
- ☐ Hot Water Boilers.
- ☐ Condensing Hot Water Boilers.

22. Which type of cooling system is most common in your facility?

- ☐ No Cooling or District Cooling.
- ☐ Packaged Direct Expansion Units.
- ☐ Custom Air Handling Units Air Cooled Chiller Water Cooled Chiller.

23. How would you describe your current controls for your lighting systems?

- ☐ This facility's lighting system has been recently upgraded and is controlled by the facility's Emergency Management System or other control system.
- ☐ The majority of the facility's lighting system has not been upgraded within the past three years but it is controlled by the facility's Emergency Management System system or other control system.
- ☐ This facility's lighting system has been recently upgraded but it is manually controlled by staff.
- ☐ The majority of the facility's lighting system has not been upgraded within the past three years and no controls are present.

24. What level of building controls is currently in use?

- ☐ Central plant only.
- ☐ Central plant and air handling units, roof top units, etc.
- ☐ All equipment including zone level.
- ☐ All equipment including zone level and lighting.

25. What type of building controls are currently in use?

- ☐ Local controllers or all-pneumatic controls.
- ☐ Direct Digital Control with pneumatic actuation.
- ☐ Direct Digital Control with digital actuation.

26. What type of building scheduling is currently in use?

- ☐ Scheduled to match occupancy with optimum start programs in place.
- ☐ Scheduled to match occupancy with preset warm-up time.
- ☐ No scheduling program exists.

27. What type of trending data is currently available?

- ☐ No trending data available.
- ☐ Trending data is available but not set up to trend specific points.
- ☐ A majority of points are trended with look-back capabilities.

Contact Us

Visit **energysmartnola.com**, email **info@energysmartnola.com** or call **504-229-6868**.

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Retro-Commissioning Service Provider List

ENERGY SMART RETRO-COMMISSIONING PROGRAM: SERVICE PROVIDER LIST

The following is a listing of pre-qualified service providers approved to participate in the Energy Smart RCx offering:

Company Name	Contact Name	Phone Number	Email	Website
Automated Control Solutions	Paul Reuter Jr.	504-210-1096	prjr@acscompanies.com	www.acscompanies.com
Flick Engineering Professionals	Lorey Flick	504-858-2854	lorey@flickeng.com	www.flickeng.com
Siemens Industry Inc.	Mitchell Mendis	504-201-3504	mitchell.mendis@siemens.com	www.siemens.com
Thompson Building Energy Solutions	John Thompson	225-931-5453	john@thompsonbes.com	www.thompson-bes.com
Trane Gulf South	Paul Adkins	225-445-7172	paul.adkins@irco.com	www.tranegulfsouth.com

For information about this and other Energy Smart programs,
visit **energysmartnola.com**, email **info@energysmartnola.com** or call **504-229-6868**.

EnergySmart A New Orleans Program | Entergy

Custom Incentive Bonus Half Sheet

ENERGY SMART IS OFFERING INCREASED INCENTIVES ON CUSTOM PROJECTS

Custom projects installed by Dec. 31 will receive an additional $0.03/kWh.

- $ Small Commercial custom incentives increased from $0.12/kWh to $0.15/kWh.
- $ Large Commercial custom lighting increased from $0.10/kWh to $0.13/kWh.
- $ Large Commercial custom non-lighting increased from $0.12/kWh to $0.15/kWh.

Additional details regarding the custom incentive bonus include:

- *All standard requirements listed on the Energy Smart Commercial Application apply.*
- *Bonus eligible for new projects received on or after Sept. 17.*
- *Project must be fully installed and operational with the Project Completion Notice submitted by Dec. 31.*
- *Bonus limited to a first-come, first-served basis until Dec. 31 or until funds are exhausted.*
- *Application submittal does not guarantee bonus.*
- *Bonus will be paid to the recipient of the incentive check.*

ARE YOU READY TO GET ENERGY SMART?

For information about Energy Smart programs and to find a participating trade ally, visit **energysmartnola.com**, email **info@energysmartnola.com** or call **504-229-6868**.

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CUSTOM INCENTIVE BONUS

POTENTIAL PROJECT EXAMPLES

Small Commercial custom project:

100,000 kWh saved x $0.12 (standard incentive)	+	100,000 kWh x $0.03 (bonus)	=	**Total Incentive**
$12,000		**$3,000**		**$15,000**

Large Commercial custom lighting project:

250,000 kWh saved x $0.10 (standard incentive)	+	250,000 kWh x $0.03 (bonus)	=	**Total Incentive**
$25,000		**$7,500**		**$32,500**

ARE YOU READY TO GET ENERGY SMART?

For information about Energy Smart programs and to find a participating trade ally, visit **energysmartnola.com**, email **info@energysmartnola.com** or call **504-229-6868**.

EnergySmart A New Orleans Program | Entergy

Facebook Ad Kit

Facebook Ad EasyCool Video

LED Promotional Retail Handout

ENERGY SMART DISCOUNTED LED LIGHT BULBS

Entergy New Orleans residential customers can purchase ENERGY STAR® LED light bulbs with instant discounts at participating Energy Smart retailers. LED light bulbs can last for up to 25,000 hours, which is 15 times longer than traditional incandescent bulbs.

Participating retailers include:

Algiers

- Dollar Tree (General De Gaulle Dr.)
- Walmart (Behrman Pl.)

Eastbank

- Dollar Tree (Donna Villa Shopping Center)
- Dollar Tree (Gentilly Retail Center)
- Dollar Tree (Morrison)
- Dollar Tree (Navarre)
- Dollar Tree (Tulane/Carrollton)
- Home Depot (Bullard)
- Home Depot (Central)
- The Green Project
- Walmart (Bullard)
- Walmart (Chef Menteur)
- Walmart (Tchoupitoulas)

For more information about Energy Smart programs and a current list of retailers, visit **energysmartnola.com** or call **504-229-6868**.

Energy Smart is a comprehensive energy efficiency program developed by the New Orleans City Council and administered by Entergy New Orleans, LLC.

EnergySmart A New Orleans Program | Entergy

EasyCool End of Season Letter

EnergySmart | Entergy

504-229-6868
energysmartnola.com
info@energysmartnola.com

‹Date›

‹Addressee's Name ›
‹Street Mailing Address›
‹City›, ‹State› ‹Postal Code›

Dear ‹Addressee's Name›,

Thanks for your participation in the Energy Smart EasyCool Program, which makes an important contribution to reducing energy demand, benefiting the environment and keeping electric costs more affordable.

Your electric bill is calculated, in part, from two basic components - the electrical requirements of each appliance in your home (watts) and the length of time you use the appliances (hours). During the summer, both components reach their highest demand, called peak demand. And since air conditioning and heating units typically are the biggest energy users in any home, Entergy New Orleans offers the EasyCool Program to ease those peak demand costs when temperatures are at their most extreme.

We work hard to provide you with safe, affordable and reliable service. To thank you for helping use energy wisely, we're enclosing this $40 check for your participation in the 2018 cooling season.

If you have a question about the program, please call the number listed below. We also would appreciate it if you would visit **energysmart.easycool.energysmartfeedback.com** to take a short survey that will help us improve our programs and services. Thanks again for participating in the Energy Smart EasyCool Program.

Sincerely,
Your Energy Smart EasyCool Program Team

P.S. Don't forget to tell your family and friends about Energy Smart EasyCool Program. To learn more ways to save energy and money, visit **energysmartnola.com** or call us at **504-229-6868**.

EasyCool November Email

EnergySmart A New Orleans Program | Entergy

Join your Energy Smart neighbors who already earned their $40 from the EasyCool Program.

When you join the Energy Smart EasyCool Program, you can earn $40 after every summer season while helping to ensure a continual supply of energy for you and your neighbors.

How the EasyCool Program Works:

We'll come to your home and install an A/C cycling or "smart" switch on your outdoor air conditioning unit* or heat pump system — all for FREE.

On select summer weekday afternoons, when electricity demand is at its highest, the EasyCool device may cycle your A/C on and off for short periods.

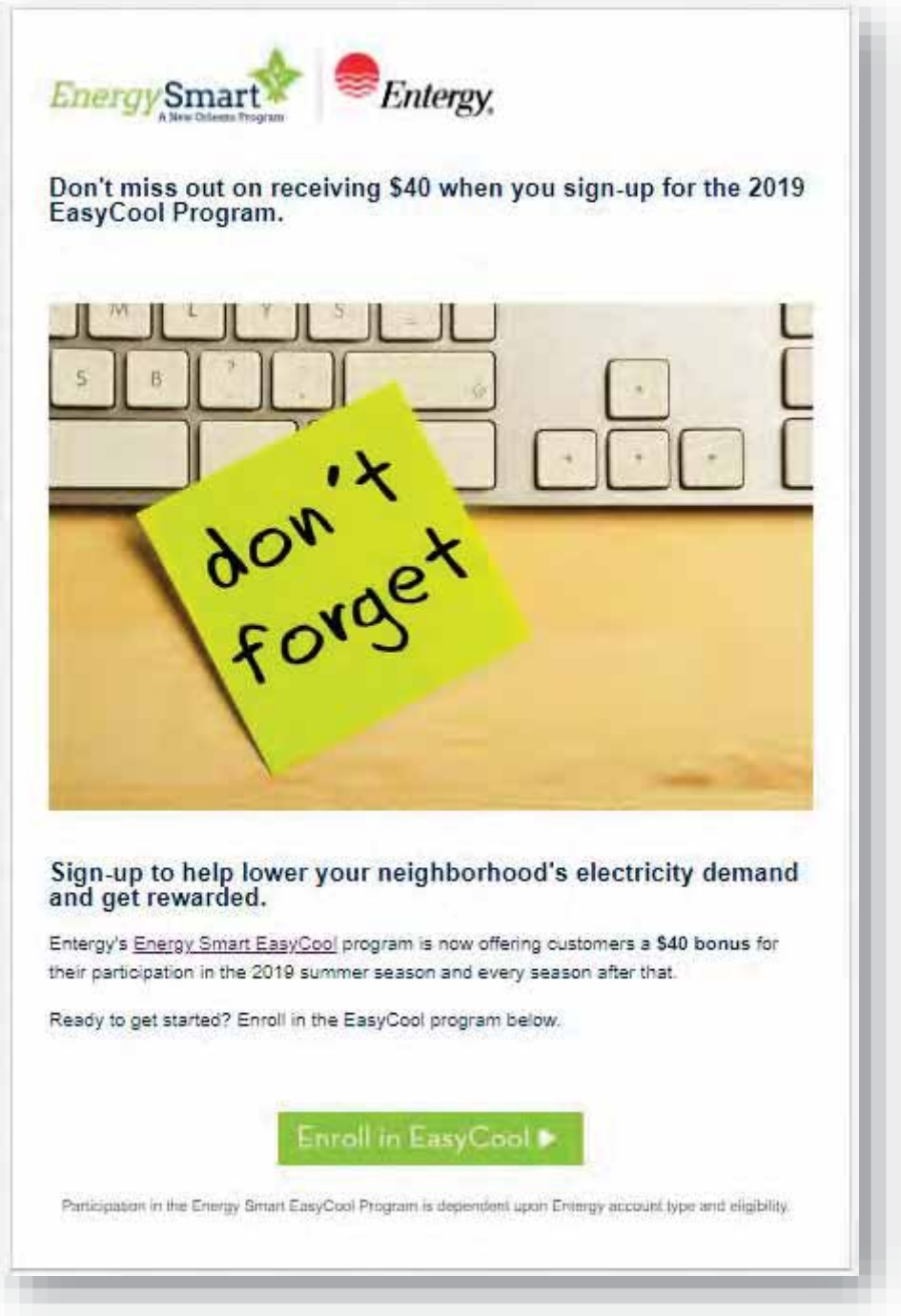
You will receive $40 after every summer season for participating in EasyCool starting in 2019.

Start your savings by clicking below. For more information visit energysmartnola.com or call 504-229-6868.

Enroll in EasyCool ▶

*Participation in the Energy Smart EasyCool Program is dependent upon Entergy account type and eligibility. Window A/C units are not eligible.

EasyCool November Nurture Email



EnergySmart
A New Orleans Program

Entergy

Don't miss out on receiving $40 when you sign-up for the 2019 EasyCool Program.

Sign-up to help lower your neighborhood's electricity demand and get rewarded.

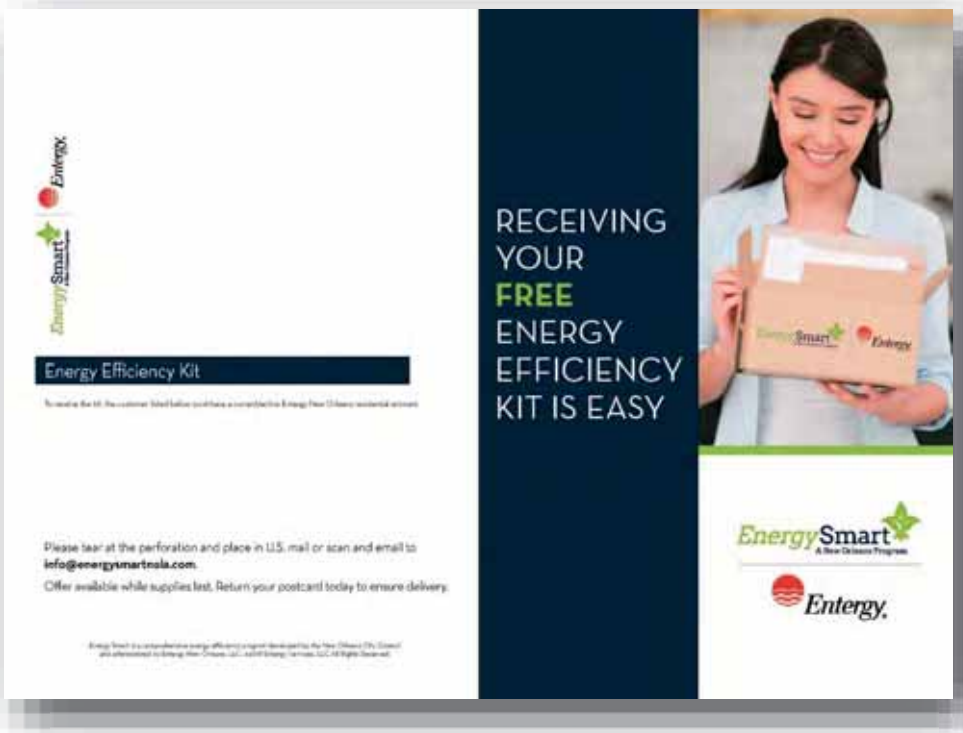
Entergy's Energy Smart EasyCool program is now offering customers a **$40 bonus** for their participation in the 2019 summer season and every season after that.

Ready to get started? Enroll in the EasyCool program below.

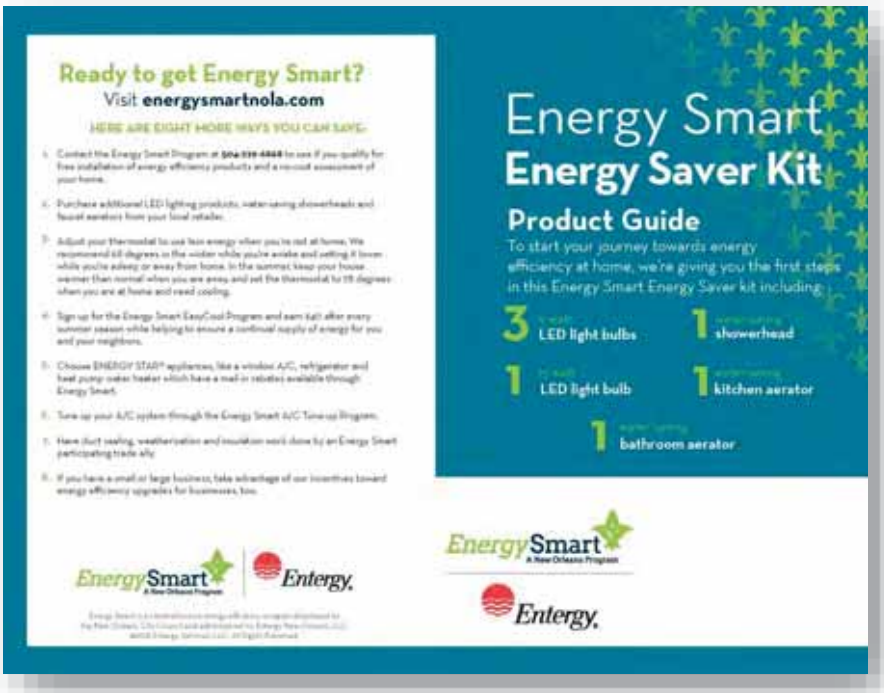
Enroll in EasyCool ▶

Participation in the Energy Smart EasyCool Program is dependent upon Entergy account type and eligibility.

Home Energy Savings Kit Business Reply Mailer



Home Energy Savings Kit Label



Home Energy Savings Kit Product Guide

WHAT IS ENERGY SMART?

Energy Smart helps conserve the amount of energy (from electricity and water) we use at home and at businesses throughout our communities. The small amounts saved add up quickly, as well as help the environment. You can start saving immediately with these complimentary items in your Energy Smart Energy Saver Kit.

Congratulations

You took the first step on your energy efficiency journey with the Energy Smart Energy Saver Kit Program. You've cut down on your energy use and started lowering your energy costs. So why stop now? Call **504-229-6868** to schedule your assessment.

Questions?

For more information, visit **energysmartnola.com,** call **504-229-6868** or email **info@energysmartnola.com.**

And make sure to tell your friends and family that are Entergy New Orleans customers about these energy-saving options.

EnergySmart A New Orleans Program | Entergy.

LED LIGHT BULBS

Light-emitting diodes, or LEDs, are another great energy saving light source. These bulbs can last for up to 25,000 hours, 15 times longer than incandescents. Standard incandescents use up to 80 percent more energy than energy-efficient LED light bulbs.

WATER-SAVING SHOWERHEAD

A **water-saving showerhead** can save energy by using up to 75 percent less water than most standard showerheads. It provides a powerful, flow rate regardless of water pressure and helps reduce water use in a big way.

WATER-SAVING AERATORS

These **aerators** can be installed on most kitchen and bathroom sink faucets in order to save water and energy. They produce powerful streams of water at a reduced flow rate, regardless of available water pressure. Plus, there's an additional bonus: less energy is required to heat hot water.

EasyCool December Business Reply Card Mailer

Residential Offerings Step-by-Step Guide

Energy Smart Step-By-Step Guide

More Opportunities to Save

Rebates

(Work must be completed by a Participating Trade Ally, except for lighting discounts.)

In-Store Lighting Discounts
- Visit energysmartnola.com for a list of participating retailers.

Central A/C Replacement - Up to $500 Mail-In Rebate per unit.
- An AHRI certificate for all the parts of the new HVAC unit must be sent proving the efficiency of the system.
- New units below 16 SEER and 8.5 HSPF are not eligible for rebates.

Central A/C Tune-Up - Up to $150 per unit.
- All Entergy New Orleans residential customers are eligible.
- System must be at least 1 year old.
- The unit must be in working order at the time of the tune-up.
- Rebates do not cover adding new refrigerant, or repairing or replacing any mechanical parts.
- The same A/C system is eligible for a second rebate only after 2 years have elapsed.

Attic Insulation - Up to $.40 per Sq. Ft.
- Gas heated homes are not eligible for rebates.
- Areas to be insulated must be less than an effective r value of R-8 in order to be eligible for rebates.
- Areas that are not in condition to be insulated (unfinished, damaged) are not eligible for insulation rebates.

Central A/C Duct Sealing - Up to $2 per CFM50 reduction.
- There must be a functioning central HVAC unit in order to be eligible for duct sealing rebates.
- More than 50 percent of ducts must be in unconditioned space.

Home Air Sealing - Up to $.40 per CFM50 reduction.
- Gas heated homes are not eligible for rebates.
- There must be a 10 percent reduction in air flow to be eligible for a rebate.
- Houses need to be in livable condition in order to be eligible for rebates for work performed.

All diagnostic tests and safety tests must be sent alongside of the rebate forms in order to be accepted.

Mail-In Rebates

ENERGY STAR window A/C Units
- $50 Mail-In Rebate.

ENERGY STAR refrigerators
- $50 Mail-In Rebate.

ENERGY STAR pool pumps
- $300 Mail-In Rebate.

ENERGY STAR heat pump water heaters
- $400 Mail-In Rebate.

Please allow up to 4-6 weeks from the date all required information is received to process your rebate. Must allow the program team to perform on-site inspections of the appliances installed or work performed. A rebate check will be mailed to the purchaser listed on the rebate forms. Email address will only be used to notify you of your rebate status.

EasyCool Program

Homeowners or renters in the Entergy New Orleans service territory with a central A/C or heat pump system (window A/C units are not eligible) can sign up for Energy Smart's EasyCool, a **free** program that moderates energy usage during high-demand periods. At the end of each summer season you participate, you'll receive $40.

We provide the **free** switch device, which will be installed by an Energy Smart technician at **no cost** to you. In most cases, you do not have to be present for the device to be installed.

Participation is open to qualifying customers in Entergy New Orleans service territory. Generally, once you sign up for the Energy Smart EasyCool Program the switch will be installed within 45 days. If you would like to opt-out or have questions, please call **504-229-6868**.

To find a Participating Trade Ally to work with you on your weatherization projects or a retailer where you can purchase products eligible for a rebate, call **504-229-6868** or visit **energysmartnola.com**.

EnergySmart A New Orleans Program | Entergy.

Energy Smart Step-By-Step Guide
During the Assessment

Home Performance with ENERGY STAR®

Through the Home Performance with ENERGY STAR Program, you'll receive a **free** Home Energy Assessment with recommendations for ways to improve your home's energy efficiency. Rather than focusing on a single problem (like an old heater or cooling system, insufficient insulation or leaky windows) the Home Performance with ENERGY STAR Program helps you improve your home's whole system. Receive installation of energy saving products in your home. **Free** energy saving upgrades* may include:

LED Light Bulbs
- Limit of 30 per household.
- LEDs can only replace incandescent or halogen light bulbs.
- Lighting cannot be replaced in rarely used spaces such as an attic or closet.
- Bulbs will not be replaced if in a location that may be a safety hazard.

Smart Thermostats
- Electric heated systems only.
- Single family housing only.
- Can only replace an existing non-programmable thermostat.
- Usually a follow-up measure installed at a later date.

Programmable Thermostats
- Electric heated systems only.
- Multifamily housing only.
- Can only replace an existing non-programmable thermostat.
- Usually a follow-up measure installed at a later date.

Smart Power Strips
- Single family housing only.

Low-Flow Showerheads
- Electric water heated areas only.
- Handheld showerheads cannot be replaced.

Hot Water Pipe Insulation
- Electric water heated areas only.
- Limit of 10 ft. of pipe insulation at the heater source only.

Low-Flow Bathroom Aerators
- Electric water heated areas only.
- Specialty faucet types cannot be replaced.

Low-Flow Kitchen Aerators
- Electric water heated areas only.
- Specialty faucet types cannot be replaced.

*Actual products installed may differ from the images shown. Measures are determined based on the environment, overall efficiency and product availability. Products may not be installed in each unit depending on utility eligibility and existing baselines.

After the Assessment

Energy Smart offers home energy assessments and instant rebates to residential Entergy New Orleans electric customers who invest in energy improvements in their homes. With the help of a Participating Trade Ally, if you make home improvements to upgrade your equipment and reduce your energy bills, you'll also be helping to protect the environment. Energy Smart approves trade allies and works with them closely to ensure the highest quality work.

- If you are a renter, it is necessary to have the owner of the property sign an approval form.
- Service must be performed between April 1, 2017 and Dec. 31, 2019.
- The application must be submitted within 45 days of the service being provided.
- We may ask for you to fill out a questionnaire to provide feedback regarding satisfaction with the program.

For more information about this and other energy efficiency programs, visit **energysmartnola.com,** email **info@energysmartnola.com** or call **504-229-6868.**

EnergySmart A New Orleans Program | Entergy.

Energy Efficiency Month Flyer

Celebrate Energy Efficiency Month With Savings

ENERGY SMART PROGRAMS TO KICK START YOUR SAVINGS

- Schedule a Home Performance with ENERGY STAR® energy assessment to learn ways to save in your own home.
- View your free Energy Smart Scorecard online to get energy-saving tips and learn how your energy usage fluctuates with the weather.
- Improve your cooling with an A/C tune-up and an instant rebate of up to $150.
- Ask if your school is participating in Energy Smart for Kids, an in-class program designed to teach students about energy efficiency.
- Find out if you qualify for an energy advisor to assess your home for leaks around doors, windows, ducts and more.

For more information about these Energy Smart programs, visit **energysmartnola.com** or call **504-229-6868**.

Begin saving today with these easy tips:

- Change your HVAC air filter every three months to keep your system working efficiently.
- Turn off lights and fans when they're not in use.
- Use a smart power strip for your electronics.
- Wash your clothes in cold water.
- Turn off the water when you're not using it.
- Use a low-flow showerhead to save water.
- Install and set a programmable or smart thermostat for your home.

EnergySmart A New Orleans Program | Entergy

Learn More About ENERGY STAR®

WHY CHOOSE ENERGY STAR?

It's truly the smart selection. The ENERGY STAR label means higher quality, better performance and more energy savings. By choosing ENERGY STAR, you're not just saving on energy and costs, you're doing your part for the environment. It's top rated and saves money. ENERGY STAR-qualified lighting solutions and appliances are easy ways to lower your energy bills for years to come. **Plus, you can receive instant or mail-in rebates to offset the initial cost with Energy Smart.**

LIGHTING STATS

- ENERGY STAR LEDs use only a quarter of the energy standard incandescent light bulbs consume and last up to 25 times longer.
- On average, upgrades save up to $55 each year.
- **You'll receive a discounted price from the manufacturer at participating Energy Smart retailers.**

POOL PUMP STATS

- ENERGY STAR pool pumps run quietly and keep filter systems running longer.
- On average, an upgrade saves over $300 each year.
- **You can receive a $300 rebate on qualifying pool pumps from Energy Smart.**

HEAT PUMP WATER HEATER STATS

- ENERGY STAR heat pump water heaters transfer heat from the surrounding air to heat the water. If the air is too cold, it uses a heating element to heat the water instead.
- Over the lifespan of the water heater, you can save up to $3,500.
- **You can receive a $400 rebate on qualifying heat pump water heaters from Energy Smart.**

ROOM WINDOW AIR CONDITIONER STATS

- ENERGY STAR room window air conditioners give you more control over your comfort, in addition to energy savings.
- On average, an upgrade uses about 10 percent less energy.
- **You can receive a $50 rebate on qualifying room window A/C units from Energy Smart.**

For more information about the Energy Smart programs, visit **energysmartnola.com** or call **504-229-6868.**

For more information about ENERGY STAR products, visit **energystar.gov/products/appliances**

ENERGY STAR

EnergySmart A New Orleans Program | Entergy.

Commercial Trade Ally Business Card

Digital Bulletin

Marketing Blitz Bus Shelter Ad

Marketing Blitz Ad in the Gambit Weekly

Marketing Blitz Ad in LA Weekly

Marketing Blitz Ad in Data News Weekly

Marketing Blitz Ad in Where Y'at

C&I End of Year Reminder Email

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Appendix E: Program Photos

Derek Mills, Demand Side Manager for Entergy New Orleans and Jackie Dadakis, COO of Green Coast Enterprises, speaking at the Association of Energy Services Professionals (AESP) National Conference in New Orleans, Feb. 20, 2018

Commercial Project Quality Assurance Site Visit

Custom Commercial project: Chiller/Controls/Variable Frequency Drive (VFD) upgrade project

Updated Outdoor Sign at Entergy Customer Care Center (3400 Canal St.)

LIHEAP sign-up day: Energy Smart staff educated attendees about the program and signed residents up for home assessments

Residential Trade Ally Advisory Group meeting on March 15, 2018

Residential Trade Ally Training

EasyCool Switch Install

Energy Smart Vehicle

Outreach Event - Adult Education

Outreach Event - Energy Bike

Residential Home Assessment

Gladewaves Senior Luncheon

Louisiana Children's Museum Outreach

Bishop McManus School Program

Higher Education Cohort Meeting

Ben Franklin Festival Outreach

Retro-commissioning Training

Residential Trade Ally Advisory Group Meeting

Evaluation of PY8 Energy Efficiency Programs Portfolio

Submitted to:

Entergy New Orleans

May 2019

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1. Executive Summary

This report provides a summary of the evaluation effort of the 2018 ("Program Year 8" or "PY8") Energy Efficiency (EE) portfolio by Energy New Orleans (ENO) and Entergy New Orleans-Algiers (Algiers). This evaluation was led by ADM Associates Inc. (herein known as "ADM", or "the Evaluators").

1.1 Summary of ENO Energy Efficiency Programs

In PY8, the ENO EE portfolio contained the following programs:

- Home Performance with Energy Star Program (HPwES);
- Low Income Audit and Weatherization Program (LIA&Wx);
- Multifamily Program;
- Green Light Direct Install Program (GLDI);
- Residential Lighting and Appliances Program (RLA);
- Residential Heating and Cooling Program / High Efficiency AC Tune-Up (RH&C);
- School Kits and Education Program (SK&E);
- Scorecard Behavioral Program;
- EasyCool Direct Load Control Program (EasyCool);
- Small Commercial Solutions Program (SCS);
- Large Commercial and Industrial Solutions Program (Large C&I) and
- Publicly Funded Institutions Program (PFI).

In PY8, Aptim served as the prime contractor and was ultimately responsible for the overall implementation and the performance of the program. They were also the lead implementer and responsible for the marketing and outreach, trade ally management, rebate processing, and project verification and quality control for the Small Commercial Solutions, Large C&I, and Publicly Funded Institutions programs. Aptim is also responsible for management of the subcontractors Franklin Energy, Energy Wise Alliance, and Green Light New Orleans.

Franklin Energy served as the prime subcontractor for the following residential programs:

- Home Performance with Energy Star;
- Low Income Audit and Weatherization;
- Multifamily;
- Residential Lighting and Appliances;
- Residential Heating and Cooling; and
- Direct Load Control.

For these programs, Franklin Energy was responsible for marketing and outreach, tracking progress to goals and program budgets, verification and quality control, trade ally management, performing energy assessments for HPwES, LIA&Wx and Multifamily programs, rebate processing and reporting. The role of Energy Wise Alliance remains consistent with prior years. They perform outreach for the residential programs in the form of event participation and implementation of the school kits program. Green Light continues to implement the efficient light bulb direct install program.

1.2 Evaluation Objectives

The goals of the PY8 EM&V effort were as follows:

- For prescriptive measures, verify that savings are being calculated according to the appropriate protocols.
- For custom measures, this effort comprises the calculation of savings according to accepted protocols (e.g., IPMVP, etc.). These protocols ensure that custom measures are cost-effective and provide reliable savings.
- Conduct limited process evaluation. Process evaluation activities included interviews with three implementation contractor staff and brief surveys of program participants.

1.3 Summary of Data Collection

The on-site data collected as part of this EM&V effort is detailed in Table 1-1. The Evaluators collected on-site data for HPwES, LIA&Wx, MF, RH&C, EASYCOOL, SBS, Large C&I and PFI Programs.

Table 1-1 Summary of On-Site Data Collected

Program	***Site Visits***
HPwES	26
LIA&Wx	17
Multifamily	7[1]
Green Light New Orleans	0
RLA	0
Residential Heating & Cooling	45
Energy Smart School Kits and Education	0
Small Commercial Solutions	14
Large C&I	16
Publicly Funded Institutions	9
Direct Load Control	88
Smart Thermostat Pilot	0
Total	**169**

[1] Individual dwellings

The Evaluators completed surveys of 835 customers as part of the PY8 evaluation to collect information for use in verifying participation, assessing net savings, assessing the customer experience and satisfaction with programs, and levels of program awareness.

Table 1-2 Summary of Customer Surveys Completed

Survey Group	Mode	Survey Fielding Time Frame	Number of Contacts*	Number of Completions
HPwES Participant	Telephone	November 2018	162	53
LIA&Wx Participant	Telephone	November 2018	88	22
Multifamily Participant	Telephone	November 2018	88	22
RLA - Appliance Rebate Participant	Telephone	November 2018	105	33
Residential Heating & Cooling Participant	Telephone	November 2018	338	68
Behavioral Program			6,000	169
Treatment group	Online	January 2019	*3,000*	*63*
Control group			*3,000*	*106*
Residential non-participants	Online	January 2019	5,000	157
C&I Participant			111	35
Large C&I Participant	Online / Telephone	September 2018	*55*	*24*
Small Business Participant		Jan/Feb 2019	*51*	*10*
PFI Participant			*5*	*1*
Direct Load Control Participant	Online	November 2018	500	86
Total			**18,503**	**835**

*For some groups the number of contacts was all of the participants with contact information available. For others, the contacts were a sample of all available contacts.

Trade ally in-depth interviews (IDI) and surveys were used to assess trade allies experience with the program and to identify opportunities for program improvement and increasing program reach. In total, interviews or surveys were completed with 30 trade allies (Table 1-3).

Table 1-3 Summary of Trade Ally Interviews and Surveys

Group	Data Collection Type	Data Collection Time Frame	Number of Contacts	Number of Completions
C&I Trade Allies	In-Depth Interview	July/August 2018	19	8
C&I Trade Allies	Online Survey	July/August 2018	41	5
Residential Trade Allies	In-Depth Interview	July/August 2018	7	15
Residential Trade Allies	Online Survey	July/August 2018	13	2
Total			**80**	**30**

In-depth interviews with program staff provided insight into program management and operations. Interviews were completed with 16 Entergy, implementation contractor, and program partner staff.

Table 1-4 Summary of Staff Interviews

Programs	Organizational Role	Interviewed Staff Roles	Number of Staff Interviewed
Portfolio	Entergy	DSM Manager	1
Portfolio	Entergy	Project Manager	1
Portfolio	Implementation Contractor	Program Director	2
RLA	Implementation Contractor	Director of Operations and Support	1
RLA	Implementation Contractor	Program Manager	1
C&I and Residential Incentive Programs	Implementation Contractor	Project Lead	2
C&I and Residential Incentive Programs	Implementation Contractor	Trade Ally Liaison	2
Residential Incentive Programs	Implementation Contractor	Marketing Manager	1
EnergySmart Behavioral Program	Implementation Contractor	Vice President of Marketing	1
C&I and Residential Incentive Programs	Implementation Contractor	Marketing and Communications Specialist	1
Schools Program and Residential Rebate Outreach	Program Partner	Executive Director	1
Schools Program and Residential Rebate Outreach	Program Partner	Outreach Manager	1
Publicly Funded Institutions	Program Partner	Chief Operating Officer	1
Total			**16**

1.4 Impact Findings

1.4.1 Verified Savings

Table 1-5 and

Program	Annual Energy Savings (kWh)		Realization Rate	Peak kW		Realization Rate
	Expected	Verified		Expected	Verified	
HPwES	2,795,666	3,074,470	109.97%	596.69	683.65	114.57%
LIA&Wx	1,753,527	1,907,136	108.76%	423.18	470.94	111.29%
Multifamily	799,581	829,465	103.74%	199.53	210.31	105.40%
Green Light Direct Install	67,788	67,967	100.26%	14.01	14.07	100.43%
Lighting and Appliances	4,672,972	5,525,610	118.25%	955.48	1,137.85	119.09%
Residential Heating & Cooling	2,098,600	2,295,461	109.38%	724.95	793.67	109.48%
Energy Smart School Kits and Education	800,576	800,576	100.00%	94.75	94.75	100.00%
Scorecard Behavioral	0	4,933,408	N/A	0.00	0.00	N/A
Direct Load Control	0	0	N/A	0.00	1,967.02	N/A

Small Commercial Solutions	6,948,619	6,870,151	98.87%	834.64	799.05	95.74%
Large C&I	18,874,699	18,402,858	97.50%	2,169.94	2,146.82	98.93%
Publicly Funded Institutions	2,669,244	2,667,362	99.93%	221.02	196.67	88.98%
Total	**41,481,272**	**47,374,464**	**114.21%**	**6,234.19**	**8,514.80**	**136.58%**

Table 1-6 present verified impacts by program for ENO and Algiers, respectively. The values in these tables are comparisons of the savings listed by ENO and their program implementation staff ("Expected Savings") and those verified by the Evaluators ("Verified Savings").

Table 1-5 Gross Impact Summary – New Orleans

Program	***Annual Energy Savings (kWh)***		***Realization Rate***	***Peak kW***		***Realization Rate***
	Expected	***Verified***		***Expected***	***Verified***	
HPwES	2,795,666	3,074,470	109.97%	596.69	683.65	114.57%
LIA&Wx	1,753,527	1,907,136	108.76%	423.18	470.94	111.29%
Multifamily	799,581	829,465	103.74%	199.53	210.31	105.40%
Green Light Direct Install	67,788	67,967	100.26%	14.01	14.07	100.43%
Lighting and Appliances	4,672,972	5,525,610	118.25%	955.48	1,137.85	119.09%
Residential Heating & Cooling	2,098,600	2,295,461	109.38%	724.95	793.67	109.48%
Energy Smart School Kits and Education	800,576	800,576	100.00%	94.75	94.75	100.00%
Scorecard Behavioral	0	4,933,408	N/A	0.00	0.00	N/A
Direct Load Control	0	0	N/A	0.00	1,967.02	N/A
Small Commercial Solutions	6,948,619	6,870,151	98.87%	834.64	799.05	95.74%
Large C&I	18,874,699	18,402,858	97.50%	2,169.94	2,146.82	98.93%
Publicly Funded Institutions	2,669,244	2,667,362	99.93%	221.02	196.67	88.98%
Total	**41,481,272**	**47,374,464**	**114.21%**	**6,234.19**	**8,514.80**	**136.58%**

Table 1-6 Gross Impact Summary - Algiers

Program	Annual Energy Savings (kWh)		Realization Rate	Peak kW		Realization Rate
	Expected	Verified		Expected	Verified	
HPwES	334,726	376,159	112.38%	73.77	85.11	115.37%
LIA&Wx	114,907	121,880	106.07%	30.29	31.87	105.22%
Multifamily	36,549	37,760	103.31%	6.16	11.84	192.21%
Green Light Direct Install	9,052	9,061	100.10%	1.87	1.87	100.00%
Lighting and Appliances	234,604	307,473	131.06%	48.37	63.80	131.90%
Residential Heating & Cooling	147,001	160,029	108.86%	54.46	58.78	107.93%
Energy Smart School Kits and Education	48,272	48,272	100.00%	5.71	5.71	100.00%
Scorecard Behavioral	0	745,249	N/A	0.00	0.00	N/A
Direct Load Control	0	0	N/A	0.00	103.15	N/A
Small Commercial Solutions	425,653	418,266	98.26%	43.19	42.23	97.78%
Large C&I	502,355	488,175	97.18%	29.53	27.34	92.58%
Publicly Funded Institutions	229,740	229,740	100.00%	-12.50	-12.50	100.00%
Total	**2,082,859**	**2,942,064**	**141.25%**	**280.85**	**419.20**	**149.26%**

In addition, the Evaluators estimated program net-to-gross ratios (NTGRs) through evaluation of free-ridership and spillover effects. The contribution to portfolio savings by program is summarized in Table 1-7 through Table 1-9. NTGRs were estimated at the measure-level in aggregate for both ENO and Algiers programs. However, program-level NTGRs may differ due to variances in contribution to program savings by measure rebated through each program.

Table 1-7 Net kWh and kW Impacts – New Orleans

Program	Verified Gross kWh	Verified Gross kW	NTGR	Verified Net kWh	Verified Net kW
HPwES	3,074,470	683.65	82.26%	2,529,013	588.06
LIA&Wx	1,907,136	470.94	100.00%	1,907,136	470.94
Multifamily	829,465	210.31	89.46%	742,057	195.41
Green Light Direct Install	67,967	14.07	90.00%	61,170	12.66
Lighting and Appliances	5,525,610	1,137.85	65.43%	3,615,618	776.76
Residential Heating & Cooling	2,295,461	793.67	89.90%	2,063,575	712.66
Energy Smart School Kits and Education	800,576	94.75	79.37%	635,448	74.26
Scorecard Behavioral	4,933,408	0.00	100.00%	4,933,408	0.00
Direct Load Control	-	1,967.02	N/A	0	1,967.02
Small Commercial Solutions	6,870,151	799.05	96.80%	6,650,306	783.87

Large C&I	18,402,858	2,146.82	84.37%	15,526,872	1,928.70
Publicly Funded Institutions	2,667,362	196.67	100.00%	2,667,362	196.67
Total	**47,374,464**	**8,514.80**	**87.25%**	**41,331,965**	**7,707.01**

Table 1-8 Net kWh and kW Impacts – Algiers

Program	*Verified Gross kWh*	*Verified Gross kW*	*NTGR*	*Verified Net kWh*	*Verified Net kW*
HPwES	376,159	85.11	79.55%	299,241	71.16
LIA&Wx	121,880	31.87	100.00%	121,880	31.87
Multifamily	37,760	11.84	82.30%	31,077	8.71
Green Light Direct Install	9,061	1.87	90.00%	8,155	1.69
Lighting and Appliances	307,473	63.80	69.81%	214,659	44.54
Residential Heating & Cooling	160,029	58.78	89.40%	143,064	52.66
Energy Smart School Kits and Education	48,272	5.71	79.38%	38,316	4.48
Scorecard Behavioral	745,249	0.00	100.00%	745,249	0.00
Direct Load Control	-	103.15	N/A	0	103.15
Small Commercial Solutions	418,266	42.23	96.80%	404,881	41.43
Large C&I	488,175	27.34	84.37%	411,884	24.56
Publicly Funded Institutions	229,740	-12.50	100.00%	229,740	-12.50
Total	**2,942,064**	**419.20**	**90.01%**	**2,648,146**	**371.75**

Table 1-9 Summary of Goal Attainment – New Orleans

Program	*Verified Net kWh*	*kWh Goal*	*% kWh Goal Attained*	*Verified Net kW*	*kW Goal*	*% kW Goal Attained*
HPwES	2,529,013	2,008,202	125.93%	588.06	404.52	145.37%
LIA&Wx	1,907,136	1,316,362	144.88%	470.94	285.11	165.18%
Multifamily	742,057	493,311	150.42%	195.41	96.58	202.33%
Green Light Direct Install	61,170	167,958	36.42%	12.66	27.62	45.84%
Lighting and Appliances	3,615,618	3,503,824	103.19%	776.76	735.98	105.54%
Residential Heating & Cooling	2,063,575	1,711,475	120.57%	712.66	536.11	132.93%
Energy Smart School Kits	635,448	546,782	116.22%	74.26	74.49	99.69%
Scorecard Behavioral	4,933,408	4,277,576	115.33%	0.00	3,636.00	N/A
Direct Load Control	-	-	N/A	1,967.02	1,106.23	177.81%
Small Commercial Solutions	6,650,306	5,309,288	125.26%	783.87	1,013.63	77.33%
Large C&I	15,526,872	21,047,929	73.77%	1,928.70	3,459.45	55.75%
Publicly Funded Institutions	2,667,362	2,606,103	102.35%	196.67	371.49	52.94%
Total	**41,331,965**	**42,988,810**	**96.15%**	**7,707.01**	**11,747.21**	**65.61%**

Table 1-10 Summary of Goal Attainment – Algiers

Program	Verified Net kWh	kWh Goal	% kWh Goal Attained	Verified Net kW	kW Goal	% kW Goal Attained
HPwES	299,241	149,257	200.49%	71.16	30.00	237.20%
LIA&Wx	121,880	98,072	124.28%	31.87	21.10	151.04%
Multifamily	31,077	37,633	82.58%	8.71	7.40	117.70%
Green Light Direct Install	8,155	97,542	8.36%	1.69	16.00	10.56%
Lighting and Appliances	214,659	264,768	81.07%	44.54	55.80	79.82%
Residential Heating & Cooling	143,064	133,532	107.14%	52.66	40.20	131.00%
Energy Smart School Kits and	38,316	136,695	28.03%	4.48	18.55	24.15%
Scorecard Behavioral	745,249	722,424	103.16%	0.00	614.00	N/A
Direct Load Control	-	-	N/A	103.15	83.27	123.87%
Small Commercial Solutions	404,881	484,792	83.52%	41.43	97.79	42.37%
Large C&I	411,884	766,112	53.76%	24.56	113.72	21.60%
Publicly Funded Institutions	229,740	219,669	104.58%	-12.50	34.03	0.00%
Total	**2,648,146**	**3,110,496**	**85.14%**	**371.75**	**1,131.86**	**32.84%**

The portfolio overall achieved 96.15% of the kWh goal and 65.61% of the kW goal for New Orleans, and 85.14% of the kWh goal and 32.84% of the kW goal for Algiers. These values represent savings net-of-free-ridership, compared to the filed goals that had assumed gross savings without accounting for free-ridership.

1.4.2 Summary of Program Adjustments

The Evaluators made several types of adjustments to program savings. They include:

- **M&V Adjustment:** these adjustments describe instances where the Evaluators revised savings based upon data gathered or verified onsite. Examples include commercial building heating types and the appropriateness of the deemed lighting assumptions reflecting verified on-site operation (e.g. non-8,760 vs. 8,760).
- **Verification Adjustment:** these adjustments include changes made based upon field data collection findings but does not include a change to deemed savings. Examples include differences in fixture counts identified during inspection of a commercial lighting retrofit and differences in leakage values measured as part of the Home Performance with ENERGY STAR evaluation.
- **Baseline Correction:** this includes revisions to savings due to correction of the measure baseline. This occurred with residential HVAC systems which had used an early retirement baseline (based upon preexisting equipment) whereas the Evaluators updated this to reflect current minimum code (based upon replacement-on-burnout criteria).
- **Inappropriate Deemed Savings Correction:** this category includes corrections made to per-unit savings values. Several lighting measures in various programs were found to have erroneous deemed savings values which did not originate from

the TRM. The Evaluators used TRM-deemed savings values to asses ex post savings.

- **Calculation, Rounding and Typographical Error Correction:** this category includes miscellaneous calculation errors. The most notable of these was found in ceiling insulation calculations in the Home Performance with ENERGY STAR® Program, where the Evaluators found that program savings were markedly understated.

Figure 1-1 Savings Adjustments – New Orleans

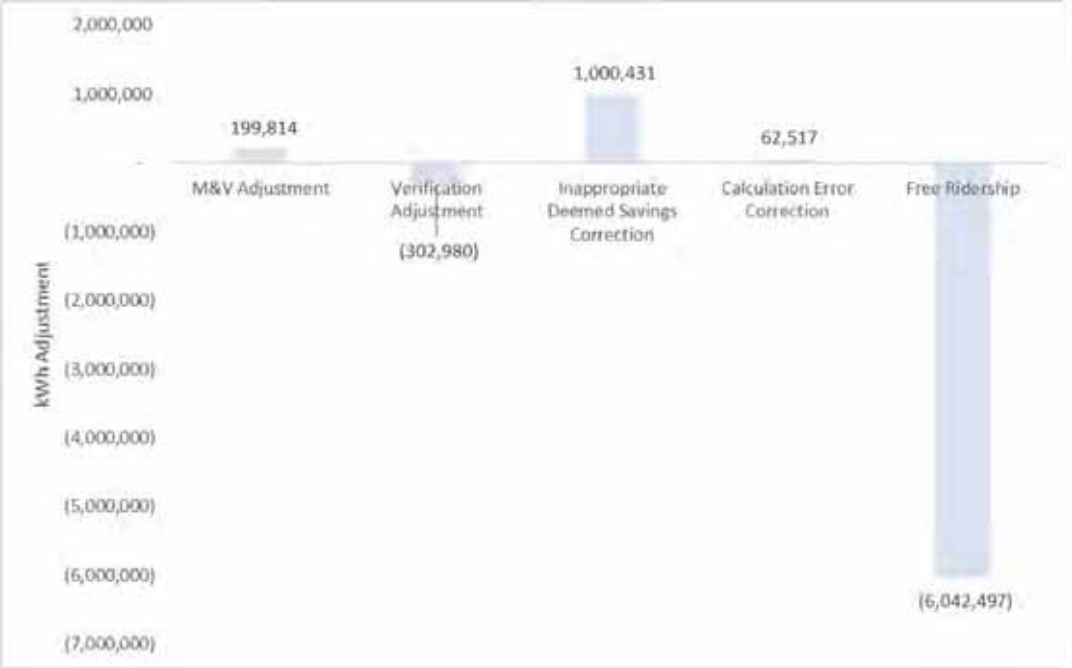


Figure 1-2 kWh Savings Adjustments - Algiers

1.4.3 Cost-Benefit Results

Table 1-11 and Table 1-12 present cost-benefit summary results. The portfolios overall passed TRC and UCT screening.

Most individual programs passed as well, with the exception of:

- ENO: School Kits & Education & DLC.

- Algiers: School Kits & Education, DLC, Small Commercial & Large C&I.

These can be attributed to verified savings falling short of goals.

Table 1-11 Cost-Effectiveness by Program – New Orleans

Program	Net Peak Demand Reduction (kW)	Net Annual Energy Savings (kWh)	Total Program Expenditures	TRC (b/c ratio)	UCT (b/c ratio)
HPwES	588.06	2,529,013	$2,069,458	2.40	2.00
LIA&Wx	470.94	1,907,136			
Multifamily	195.41	742,057			
Green Light New Orleans	12.66	61,170			
Lighting and Appliances	776.76	3,615,618	$535,689	4.57	1.80
Residential Heating & Cooling	712.66	2,063,575	$496,291	3.47	3.77
Energy Smart School Kits	74.26	635,448	$430,052	0.54	0.47
Scorecard Behavioral	0.00	4,933,408	$234,840	4.72	4.72
Direct Load Control	1,967.02	-	$739,304	0.08	0.08
Small Commercial Solutions	783.87	6,650,306	$1,653,188	1.57	1.93
Large C&I	1,928.70	15,526,872	$4,432,253	1.44	1.80
Publicly Funded Institutions	196.67	2,667,362	$730,967	1.51	6.00
Total	**7,707.01**	**41,331,965**	**$11,322,042**	**1.70**	**1.86**

Table 1-12 Cost-Effectiveness by Program - Algiers

Program	Net Peak Demand Reduction (kW)	Net Annual Energy Savings (kWh)	Total Program Expenditures	TRC (b/c ratio)	UCT (b/c ratio)
HPwES	71.16	299,241	$179,744	2.18	1.96
LIA&Wx	31.87	121,880			
Multifamily	8.71	31,077			
Green Light New Orleans	1.69	8,155			
Lighting and Appliances	44.54	214,659	$42,573	3.50	1.36
Residential Heating & Cooling	52.66	143,064	$24,202	3.27	3.26
Energy Smart School Kits	4.48	38,316	$107,512	0.13	0.11
Scorecard Behavioral	0.00	745,249	$39,662	4.22	4.22
Direct Load Control	103.15	-	$54,901	0.06	0.06
Small Commercial Solutions	41.43	404,881	$168,862	0.93	1.13
Large C&I	24.56	411,884	$256,425	0.65	0.75
Publicly Funded Institutions	-12.50	229,740	$65,968	1.16	1.55
Total	**371.75**	**2,648,146**	**$939,849**	**1.18**	**1.23**

1.5 Process Findings and Recommendations

The following subsections summarize findings of the PY8 process evaluation.

1.5.1 Residential Portfolio Findings and Recommendations

1.5.1.1 Nonparticipant Survey Portfolio Findings and Recommendations

The key findings related to the portfolio of residential programs are:

- **There is an opportunity to increase awareness or residential program offerings.** Relatively few of nonparticipating customers (16%) reported that they were aware that Entergy offered rebates for energy efficiency improvements. Among those aware that Entergy provides rebates, awareness was higher among HVAC rebates, LED discounts, and the direct load control program than for other offerings.
- **Customer social networks are important to driving program participation.** Nonparticipants most often learned of the rebates through direct communication from Entergy (e.g., emails, bill inserts), whereas most rebate program participants learned of the program from their social networks. This difference between participants and nonparticipants may suggest that customers who learn of the program through social networks are more likely to participate than customers who learn through other means.
- **Customers equally value energy efficiency benefits, comfort improvements, and health and safety improvements when making home improvements.** This suggests that messaging about rebated measures should focus on all three benefits.
- **Customers are more convinced that making efficiency improvements do not come at the cost of reduced comfort than they are convinced that they have the resources and knowledge to improve energy efficiency.** Consequently, the portfolio offerings that provide information and rebates to assist customers with saving energy address the most important barriers.
- **Entergy is viewed as a somewhat or very trusted source for energy efficiency by about two-thirds of customers, but the majority of these viewed Entergy as "somewhat trustworthy."** Consistent with the findings that participants are more likely to learn of the Entergy offerings through social networks than nonparticipants, these findings indicate that while Entergy is an important source of information, leveraging customers' social networks may be key to motivating program participation.

The key recommendations related to the portfolio of residential programs are:

- **Seek opportunities to leverage participant experiences to recruit future participants.** Encourage participants to talk with friends and family to promote the programs available. Approaches to consider include using "tell a friend" messaging in postcards or letters thanking participants for participating and customer referral bonuses.

1.5.1.2 Home Performance with ENERGY STAR®

- **The program expected savings met its goals in Algiers and New Orleans.**
- **Overall the program tracking data included appropriate measure names and classifications and was free of errors.** However, review of the data indicated that home assessments are inconsistently tracked. The data show that a minority of participants received a home energy assessment, which is inconsistent with the program design. Additionally, during the development of the sample for the survey of nonparticipant covers, the Evaluators learned that the program had difficulty integrating past participation.
- **The marketing approach is broad and uses multiple channels to increase program awareness.** Word of mouth through social networks appears to be a key driver of activity for the residential programs. Energy wise outreach is extensive with attendance at 100 – 120 events a year. Energy wise is reporting useful metrics to Aptim to monitor effectiveness.
- **Marketing activities are tracked but there are some challenges to monitoring marketing effectiveness.** Staff indicated that marketing effectiveness is tracked, but that this is easier for some channels such as social media from which they get analytics that indicates reach, whereas other channels such as postcard mailers are more difficult to track.
- **Social networks are key drivers of program activity.** Survey results indicate that word of mouth is key to driving program awareness, that is, 69% of participants learned of the program through friends, family members, or colleagues.
- **Participants were satisfied with the program.** Most participants (93%) indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as four or five on a five-point satisfaction scale.
- **Participation process is working well for must participants.** Survey results indicate that few participants had issues with the program participation process and nearly all found the assessment report to be helpful. A few respondents, however, indicated that they had not implemented major measures at the time of the survey because they were waiting on program follow up. Review of the data indicated that these customers did have major measures installed, but the time between initial participation and the last measure ranged from two to six months.
- **Interviews with program staff and trade allies indicate that residential trade ally management processes are generally effective**. Trade allies receive training on program processes, and they found this training useful. Additionally, no significant communication issues with the implementation contractor were noted. Two issues raised by some trade allies where:
  - A preference for more information regarding the status of referrals to the program.
  - Not all trade allies were aware of the availability of program marketing material, but they were interested in having them.

The Evaluators' recommendations are as follows:

- **Review data collection and tracking procedures to fully capture program activity including assessments performed.**
- **To the extent practical, continue to work towards integrating program activity from the prior cycle with data from the current cycle.** A comprehensive view of participation will provide information useful to understanding how well the program has reached different customer groups.
- **Continue to develop a means of tracking marketing effectiveness to manage future marketing budgets.** One approach is to collect data on the source of program awareness on the intake application.
- **Develop a strategy to provide greater transparency into the trade ally referral process.** This information may increase trade ally's confidence that their efforts to develop work will result in project work.
- **Continue to promote awareness of program marketing materials with trade allies.** Not all trade allies were aware of these materials and this awareness is developed through ongoing communication and training.
- **Review processes for completing major measure work after installation of direct install and assessments to mitigate customer concerns about the lack of program follow up on the implementation of measures.** Some time constraints may be unavoidable due to contractor workloads, but this may be offset by regular communication with participants about the status of their project.

1.5.1.3 Low Income Audit and Weatherization

- **The program expected savings met its goals in Algiers and New Orleans.**
- **Overall the program tracking data included appropriate measure names and classifications and was free of errors.** However, review of the data indicated that home assessments are inconsistently tracked. The data showed that a minority of participants received a home energy assessment. Additionally, during the development of the sample for the survey of nonparticipant covers, the Evaluator learned that the program had difficulty integrating past participation.
- **The share of customers receiving direct install measures appears low.** Twenty-two percent of participants did not receive direct install measures which should have been installed during the energy assessment. Although some customers will likely refuse measures, the share indicates potential to increase direct install measures in low-income residences.
- **Multiple channels used to promote the program.** Staff discussed multiple channels used to promote residential programs. In addition to these, staff engaged in outreach at senior centers and food pantries. Staff also reported that trade allies were active in promoting the program. Word of mouth was by far the most the common way that customers learned of the program followed by email communication from Entergy.

- **Most participants were satisfied with the program.** Eighty-one percent of participants indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as four or five on a five-point satisfaction scale. Approximately one-third of participants indicated dissatisfaction with the realized energy savings, however, this number represented four respondents because several did not rate their satisfaction with the savings. The expected savings for all but one of these respondents was greater than the program average of 3,586 kWh.
- **Participation process is working well for customers.** Few customers identified any issues with scheduling assessments and most found the assessment report to be helpful.

The Evaluators' recommendations are as follows:

- **Review data collection and tracking procedures to fully capture program activity including assessments performed.**
- **Review direct install procedures.** The 78% installation rate of direct install measures suggest there may be opportunities to increase the number of customers receiving these measures. Additionally, tracking reasons for not installing measures will help staff monitor the issue.
- **Review how savings expectations are communicated to customers.** Four customers indicated dissatisfaction with the program savings. All but one of these customers had higher than average savings for the program.
- **Remove programmable thermostats from the program.** These measures are not included in the New Orleans TRM, nor are they included in the Arkansas TRM as they are outdated technology for the residential sector. Without an appropriate measure study, the savings are speculative and unreliable, and measure studies have historically found that the savings are highly-dependent upon idiosyncratic program factors such as installation quality by the trade ally and preexisting customer behavior surrounding the management of their thermostat, with there being a possible risk of increased energy use if participants have low home occupancy. The Energy Smart portfolio of programs should endeavor to install smart thermostats within programs such as LIA&Wx.

1.5.1.4 EnergySmart for Multifamily

- **The program is producing savings, albeit for a target market that may not have been originally intended.** The program focused exclusively on dwellings with 2-4 units in PY8, and the Evaluators found that 77% of survey respondents owned their residence (compared to 75% within HPwES). Functionally, the MF program in PY8 served as an extension of HPwES, targeting a market sector that is largely similar to the general market targeted by HPwES. With an initial program design to overcome the split-incentive barrier between owners and renters, the outcome of 77% of program participants being homeowners would appear to be out-of-scope.

- **Overall the program tracking data included appropriate measure names and classifications and was free of errors.** However, review of the data indicated that home assessments are inconsistently tracked. The data showed that 1% of participants received a home energy assessment, which given the program design that includes a home energy audit for all participants, is likely a substantial undercount.
- **The share of customers receiving direct install measures was somewhat low.** Nineteen percent of participants did not receive direct install measures which should have been installed during the energy assessment. Although some customers will likely refuse measures, the share indicates potential to increase direct install measures in multifamily properties.
- **Multiple marketing channels are used to promote the program.** Staff noted that multiple marketing channels used to promote residential programs, including the multifamily program. Despite this broad outreach effort, word of mouth was the most common source of program awareness. Internet advertisements, emails from Entergy, and bill inserts, or utility mailers were each cited by 10% of respondents.
- **Program has focused on duplexes and triplexes.** The implementation contractor staff indicated that the program has focused on duplexes and triplexes. Staff believe that most of the larger complexes have previously received services through the program.
- **All participants were satisfied with the program.** All participants indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as four or five on a five-point satisfaction scale. Two respondents did report some dissatisfaction with the work performed.
- **Participation process is working well for customers.** Few customers identified any issues with scheduling assessments and most found the assessment report to be helpful.

The Evaluators' recommendations are as follows:

- **Design the program to cohesively include dwelling and common-area retrofits, allowing for "one-stop shopping" for landlords and property management companies.** At present time, a multifamily landlord or manager would need to go through two separate programs (Multifamily and Small Commercial) in order to complete a comprehensive retrofit of their premise. Program administrators should consider broadening the scope of the Multifamily Program to include common areas within the same application process.
- **Consider different incentive levels for condo owners.** Condo owners that apply for the program should receive incentives that align with HPwES; they do not need to necessarily be funneled in to HPwES as there are marketing synergies when reaching out to condo owners and apartment renters, but program incentives should align with program goals, with a higher incentive offering when the split-incentive barrier for owners versus tenants needs to be overcome.
- **Review data collection and tracking procedures to capture all assessments performed.**

- **Review direct install procedures.** The 82% installation rate of direct install measures suggest there may be opportunities to increase the number of customers receiving these measures. Additionally, tracking reasons for not installing measures will help staff monitor the issue.

1.5.1.5 Green Light Direct Install

No process evaluation was performed for the Green Light Direct Install program forPY8.

1.5.1.6 Residential Lighting and Appliances

- **Program savings goals were not met.** Staff cited the overall size of the territory as a challenge and the lack of big box stores in Algiers as challenges to meeting the savings goal in that area.
- **Overall the program tracking data included appropriate measure names and classifications and was free of errors.**
- **Multiple marketing channels were used to promote the program.** Staff discussed multiple channels used to promote residential programs. Customers are primarily learning of the rebates at a retail location or through internet advertisements; two-thirds of respondents learned of the rebates through a retailer and about one-fifth learned of the rebates through an internet advertisement. The internet and retailers were also most commonly cited as sources of information about the rebated equipment.
- **Most participants were satisfied with the program.** Ninety-seven percent of participants indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as four or five on a five-point satisfaction scale.
- **The rebate participation process is working well for customers.** Ninety-seven percent of participants indicated that they were somewhat or very satisfied with the effort to apply for the rebate by rating their satisfaction as four or five on a five-point satisfaction scale.

The Evaluators' recommendations are as follows:

Consider adding additional rebated appliances. Although not likely to be a high-volume measure, ENERGY STAR dehumidifiers should be considered. A typical rebate level is $25.

1.5.1.7 Residential Heating and Cooling

- **The program exceeded its savings goals.** The program exceeded its savings goals for New Orleans and Algiers. Most of the program savings resulted from air conditioner tune-up and duct sealing measures. One active trade ally company completed 90% of the program projects during the year.
- **Multiple marketing channels used to promote the program.** Staff discussed multiple channels used to promote residential programs. Staff noted that marketing

of the tune-ups increases during the warmer months of the year. Despite these efforts, survey responses indicate that most customers learned of the program from friends, family, or colleagues (88%).

- **Overall program satisfaction was high.** Ninety-six percent of participants rated their satisfaction as a four or a five on a five-point satisfaction scale. One aspect of the program where satisfaction was lower was with the realized energy savings – 17% of respondents reported dissatisfaction with their energy savings.
- **There is little interest in early replacement of HVAC systems.** Residential program participants and nonparticipants provided feedback on their willingness to pay for early replacement of air conditioner units. The findings indicated that the amount customers would be willing to pay to replace an air conditioner unit did not vary significantly if the unit was fully operational, if the unit required $500 in repairs, or if the customer needed to replace a broken furnace. Additionally, between 1-2% of customers across these conditions were willing to spend more than $5,000 on the early replacement of an HVAC system, suggesting that an early replacement program offer would have to provide very high rebate levels to generate much interest.
- **Performance of HVAC tune-ups is relatively common, but recommendations to seal ducts are not.** Approximately 50% of program participants reported that they had had their system tuned up in the past year by a heating and cooling contractor. Contractors reportedly inspected ducts for about half of these participants, but 12% received a recommendation to seal ducts. The finding suggests that duct sealing is underperformed in nonprogram projects.

The Evaluators' recommendations are as follows:

- **Develop strategies to increase uptake of HVAC system replacements.** A limited number of replacements were installed during PY8. Approaches include increasing incentive levels and increased outreach to distributors and installing contractors.
- **Review how savings expectations are communicated to customers for tune-up and duct sealing projects.** The program project impact on utility bills was the one aspect of the program with a higher rate of dissatisfaction. This dissatisfaction may arise from customer's expectations for cost savings compared to what they observe in their monthly charges.

1.5.1.8 School Kits and Education

A process evaluation of the School Kits and Education program was not performed for PY8.

1.5.1.9 Scorecard Behavioral Program

- **Statistically valid savings estimates accounted for 1.17% and 1.15% of annual use for the initial group and supplemental group, respectively.** On average, participants in the initial group saved 156 kWh in PY2018 and participants in the supplemental group saved 52 kWh in PY2018 as compared to the respective control group. This accounts for approximately 1.17% and 1.15% of total annual

electricity use (with 90% confidence between 0.97% and 1.34% kWh annual savings for the initial group and between 0.91% and 1.35% for the supplemental group).

- **Net Evaluated Savings resulted in 5,679 MWh savings for the Entergy New Orleans HER program opt-out households.** Double counting analysis resulted in a double counting savings of 1.5 MWh and -2.6 MWh, respectively, subtracted from the gross savings of 5,678 MWh. This results in a net overall savings of 5,769 MWh.
- **The treatment and control groups for the opt-in group in PY2018 are not evaluable due to the following:**
    - **The post-hoc control group does not satisfactorily match the customer behaviors of the program participants**. Although Propensity Score Matching allows the average kWh per day for each month in the pre-period, this matching method does not include any other customer characteristics as input. Therefore, the control and treatment groups may have different behaviors, but coincidentally matched in average kWh per day. This behavioral mismatch is most evident by the large difference in savings from other programs between each group. Although the control group was eight times larger than the treatment group, each group saved about the same amount of energy from other programs, which means the treatment group is disproportionately more efficient, and therefore, inherently different than the control group.
    - **The differences in household behavior cannot be explicitly controlled for using billing and measure data.** The aggregate of these behavior changes leads the selected control group to match the average daily kWh usage of the treatment group in the pre-period, but not the behavior of the treatment group, and therefore, not the average daily kWh usage of the treatment group in the post-period.
    - **The treatment group is affected by self-selection bias.** The type of households that opt in to an energy efficiency program may be the type of households that would have reduced their energy use even without the program. Survey responses indicated that the treatment group is largely comprised of households which were extremely energy efficient before the program.
- **The program transitioned from an opt-in to an opt-out model.** PY8 was the first year that the program transitioned to an opt-out model. In the new model, a treatment group of randomly selected customers with higher energy usage was selected for the treatment group. Opt-out rates were low (below 3% each month).
- **The delivery and design of the Scorecard were changed for PY8.** The program has focused on improving the accuracy of the data to increase the relevance to customers. Additionally, tips were adapted to coordinate with the overall marketing strategy for the portfolio. The delivery of the reports was also timed so that customers received them after receiving their energy bill to increase the relevance of the report to customers.

- **Open rates are somewhat low.** The open rates of the emails are somewhat low at 16% which reduces the efficacy of the intervention. Staff has considered strategies for improving the open rates but has not tested any due to budget and time constraints.
- **Most participants found the information about their energy use to be accurate and the information easy to understand.** Seventy-three percent of respondents reported that the information about their home was somewhat or very accurate and 79% thought it was somewhat or very easy to understand.
- **Approximately one-half of customers were satisfied with the number of emails they received, and the information provided on their homes.** These rates of satisfaction are lower than for the rebate programs but not unexpected for an opt-out program.
- **Survey results indicate that treatment customers are making more effort to be energy efficiency than control group customers.** These results provide support to the impact that the program is having. However, the rates of taking specific behavioral actions were similar for the treatment and control groups.
- **Program staff and households provided positive feedback about the Scorecard program.** Program staff were optimistic about the program and excited to begin scaling up the program. Seventy-five percent of households were satisfied with the number of emails and 61% were satisfied with the information provided. Survey findings were generally positive with households who appear engaged and interested to learn more about energy efficiency.
- **The pilot phase of the program could not be evaluated in PY2018 due to inherent bias between treatment and control groups.** The groups were matched in the pre-period for average daily kWh usage, but still displayed signals of bias in disproportionate other program savings between the control and treatment groups. A simple t-test between the treatment and control group total other program kWh savings results in a statistically significant difference at the 95% confidence interval.
- **The program transitioned from an opt-in to an opt-out model for PY8.** The Scorecard program scaled up with an opt-out approach – there were two treatment groups of 25,000 residential households who received a monthly home energy report and two control groups of 10,000 who did not receive an energy report. The "initial" treatment and control group were initiated in May 2018 while the "supplemental" group was initiated in July 2018. All other Entergy New Orleans residential households are still be able to sign up to participate in the program.
- **The program recently implemented a new wave of treatment customers in December 2018 using customers already assigned to a previous wave control or treatment group.** The billing data shows there were 42,042 households added to a new wave between December 27, 2018 and January 7, 2019. Of those households, 15,210 (36%) were households that were already designated as a control or treatment household in the initial or supplemental group. Unlike previous waves, the implementors did not contact the Evaluators to create

a randomized control trial for this new wave, nor were they informed of the additional wave until January of 2019. It is unclear if the implementors created an RCT for this wave, however, there are current control customers reassigned as treatment customers in this new wave. This hinders the previous waves from retaining statistically valid control-treatment group comparison by eliminating a large portion of the control customers. The evaluators recommend creating a randomized control trial for any future waves using customers that are not assigned to any current or previous treatment or control groups, even if they have opted out.

- **Households found the scorecards easy to understand and the recommendations useful.** Seventy-three percent of respondents indicated that the information was somewhat or very easy to understand and 68% reported that the tips were somewhat or very useful. Additionally, 51% of participants reported that they acted on one of the tips provided. A large portion of respondents were motivated to reduce electricity costs and usage.
- **A significant portion of survey respondents either did not believe or know if the energy usage information provided in a scorecard was accurate.** A finding from the evaluation of the 2018 program was that 21% of households believed that the information provided on the comparison homes was somewhat or very inaccurate. While the majority of survey participants found the information accurate, those who did not were four times less likely to act on an energy saving tip.
- **The program transitioned from an opt-in to an opt-out model.** PY8 was the first year that the program transitioned to an opt-out model. In the new model, a treatment group of randomly selected customers with higher energy usage was selected for the treatment group. Opt-out rates were low (below 3% each month).
- **The delivery and design of the Scorecard were changed in PY8.** The program has focused on improving the accuracy of the data to increase the relevance to customers. Additionally, tips were adapted to coordinate with the overall marketing strategy for the portfolio. The delivery of the reports was also timed so that customers received them after receiving their energy bill to increase the relevance of the report to customers.
- **Open rates are somewhat low.** The open rates of the emails are somewhat low at 16% which reduces the efficacy of the intervention. Staff has considered strategies for improving the open rates but has not tested any due to budget and time constraints.
- **Most participants found the information about their energy use to be accurate and the information easy to understand.** Seventy-three percent of respondents reported that the information about their home was somewhat or very accurate and 79% thought it was somewhat or very easy to understand.
- **Approximately one-half of customers were satisfied with the number of emails they received, and the information provided on their homes.** These

rates of satisfaction are lower than for the rebate programs but not unexpected for an opt-out program.

- **Survey results indicate that treatment customers are making more effort to be energy efficiency than control group customers.** These results provide support to the impact that the program is having. However, the rates of taking specific behavioral actions were similar for the treatment and control groups.

The Evaluators' recommendations are as follows:

- **For all future waves of the Home Energy Report Program, it is recommended that a randomized control trial (RCT) be created before the onset of the program.** This pre-created control group will allow more reliable analysis results due to significantly decreased self-selection bias. Selection bias is thought to have played a large part in the Pilot's unexpected negative savings result. In addition, 15,210 households in the control or treatment groups were recruited for a new wave starting on December 27, 2018. This will likely cause a bias in the PY9 evaluation; the control and treatment groups in the initial and supplemental groups may no longer match due a differing control sample. After removing these additional wave customers from the previous waves, the initial group control household group will drop from 9,994 to 2,286 and the supplemental group control household group will drop from 9,992 to 2,506. This reduces the control groups by approximately 75%. Due to this change, the Evaluators will likely use a treatment-only model to estimate savings.

- **Send program participants energy-saving information for the upcoming month.** The Pilot of this program had sent out home energy reports detailing ways to save energy for the month that had just passed, leaving participants with decreased potential for savings.

- **Develop a quality assurance (QA) process for monthly scorecard review.** As the program reaches more households, it will be advantageous to create a QA process to ensure content and data is accurate prior to sending monthly scorecards. A QA process could potentially mitigate the risk of households receiving inaccurate data or scorecards sent with content errors. Without a QA process, it is possible households will receive scorecards they find inaccurate or filled with errors, which could lead to disengagement with the reports.

- **Track and monitor future marketing efforts.** By creating a system to track and monitor marketing and outreach efforts, program staff will be able to determine what activities are most effective at reaching households and how to best use limited resources. If social media is used to market the program, explore gathering analytics (e.g., Facebook's Insights) to gauge engagement and consider paying to promote posts to reach a larger audience.

- **Continue marketing for household opt-in participants.** The opt-in group initiated in the PY2017 Pilot could not be evaluated due to biased group

comparison between the treatment and post-hoc control group. For PY2019, the Evaluators recommend continuing the same marketing efforts made in the Pilot. The Evaluators will implement a "variance in adoption" model recommended in the CPUC white paper on opt-in behavior programs[2]. This model requires opt-in customers with varying opt-in start dates and therefore require consistent marketing efforts. As marketing efforts for opt-ins ceased when the program moved to an opt-out design, the Evaluators were unable to implement the variance in adoption model for PY2017 and for PY2018.

- **Create a system to monitor customer satisfaction with scorecards and track implementation of saving tips.** To achieve the highest energy savings potential, it is important that households are implementing monthly savings tips. The program could consider surveying program participants quarterly to gather feedback on the reports. Program staff could also embed a survey link in the portal system to gather ongoing customer feedback. Additionally, conducting focus groups to gain better insight into how households perceive Scorecards may lead to design improvements. Some households may not understand the contents of a report and a focus group or survey may lend information to improve content and data provided to households. Additionally, allowing households to select tips in the portal that they will implement would allow households and program staff to track which tips are selected and of interest to households and reinforce the energy saving behavior[3].

- **Provide a link to information on how home comparisons were developed.** Twenty-one percent of survey respondents believed that the comparison of their homes energy usage to other homes was very inaccurate (4%) or somewhat inaccurate (17%). It might be beneficial to provide more detailed explanation of the Scorecard for households interested in how usage and comparisons are calculated.

- **Continue to build community awareness of the Energy Smart Scorecard program.** Program staff should continue efforts to build awareness of the program to encourage more residential households to participate. This could include additional marketing and outreach efforts, refer-a-friend campaign, and/or working with local leaders to increase buy-in.

- **Establish regularly scheduled meetings and reporting requirements.** Entergy and Accelerated Innovations (AI) should consider a standing meeting to establish a regular cadence of communication as the program moves into the second and third year. In addition, it may be beneficial to create period reporting requirements

[2] California Public Utilities Commission – Energy Division. (2014). Evaluating Opt-in Behavior Programs: Issues, Challenges, and Recommendations [White paper].

[3] Individuals who commit to behaviors tend to engage in the behavior.

Cialdini, R. (2009). Influence: The psychology of persuasion. HarperCollins: New York, NY.

for the implementing vendor (i.e., quarterly reports with enrollment and year-to-date energy saving estimates).

- **Consider using the report to strategically promote rebate programs or measures.** Although the rebate program savings would not be attributed to the behavioral program, the reports could be leveraged to promote underperforming programs or measures or for seasonal promotion of measures such as AC tune-ups in the spring and refrigerator rebates in advance of holiday weekends.

- **Develop strategies to increase the number of program participants who complete profile information about their homes to ensure accurate comparisons.** Staff noted that they encouraged households to complete profile information about their homes that would allow for comparisons to homes of similar size, but that a minority of homes took this step. The Evaluators suggest the following recommendations to address this: 1) Include a statement and link on the home energy reports of households who have not completed their profiles indicating that better information on their homes' energy use can be provided if they complete their profile; and 2) Explore the potential use of third-party data vendors such as Experian or Axciom as sources of data on customer characteristics such as household size.

- **Explore opportunities to engage households with their data and scorecard.** Some survey respondents were interested in more detailed information about their home energy usage data. It may be advantageous for program staff to explore platforms that provide customers an opportunity to engage more with data (i.e., moving from a PDF version of a report to an interactive website). Review of the PY8 scorecard provided in a planning document indicates that staff have made the scorecard more interactive.

- **Continue to explore ways to increase open rates.** The email open rates may increase over time as customers become accustomed to receiving the emailed reports. Nevertheless, the program's effectiveness is dependent on customers viewing and acting on the information provided in the reports. Improvements in open rates should lead to increased program savings.

1.5.1.10 EasyCool Direct Load Control

- **Both ENO and Algiers met their savings goals, but the Program did not meet its installation goal.** The number of devices installed through EasyCool fell below the goal of 1,875 device installations.
- **Staff reported that the multiple channels are used to market the program**. Communications from the utility were the most common sources of information; 65% of customers received an email from Entergy and 34% received a bill insert or mailer from Entergy. /

- **Enrollment process is working well.** Three-quarters of customers reported that their device was installed within two weeks of scheduling the appointment. Additionally, most customers were satisfied with the enrollment process (94%) and the installation of the equipment (92%).
- **The number of events called was appropriate.** The number of events called aligned with most customers' expectations. Eighty-eight percent of customers reported that the number of events was equal to or fewer than what they expected.
- **Some customers experienced discomfort, but this is unlikely to impact participation**. One-half of customers at home during an event were very or moderately uncomfortable during the events. The level of discomfort may have been a result of the cycling strategy or the duration of the events. Despite the reported discomfort, 86% reported that they were somewhat or very likely to participate in the following year. Furthermore, of the eight customers who indicate they may not participate again, one indicated that they would stay in the program if the air conditioner ran more during events.
- **Most participants were satisfied with the program.** Eighty-three percent of participants were satisfied with the program overall.

The Evaluators' recommendations are as follows:

- **Increase aggressiveness current cycling strategy.** Few participants indicated they were likely to leave the program because of comfort issues.
- **Continue to find ways to increase participation.** The primary barriers to participation in load control programs that involving installing cycling switches on compressors stem from uncertainty about the potential comfort impacts, perceived lack of control over the AC unit, and perceived risks of damage to the air conditioning equipment. Some tactics to reduce these barriers include:
    - Consider providing advance notice of events and making it clear on the FAQ and other materials that notice will be provided. Customers generally prefer to receive notice of demand response events. Because staff indicated concerns that advance notice would increase opt outs, an approach to consider is to pilot the advance notice with a random subset of participants and assess the impact on opting out.
    - Provide information on the number of events likely to occur in the year. Uncertainty about the impact of participation on home comfort may be magnified if customers do not have information on the number of events that will occur during a year. Consider providing a typical number of events and/or a cap on the maximum number of events that will be called.
    - Help customers see the "bigger picture." A theme from the responses of additional information that participants were seeking is that they want to understand what the benefits of the program are. While the website presents information on this, consider providing information on how reducing peak loads decreases the need for additional generation and the environmental benefits stemming from that.

- Consider limiting peak events to less than four hours. The program will be more appealing to customers if there the duration of events is shorter because it will reduce the risk of discomfort. However, the length of events needs to be consistent with system peak loads and should not be shortened if doing so will not reduce system peaks.
- Consider a customer referral bonus. Personal referrals are generally considered more trustworthy than other sources of information. A referral bonus will leverage customers experiences with the program, which were largely positive.

1.5.2 Commercial Portfolio Findings and Recommendations

1.5.2.1 Small Commercial Solutions

- **Erroneous reduction in peak coincidence of 0.26 for lighting controls.** For three sampled sites, ex ante kW calculations assumed additional sensor savings for any item that had lighting controls associated with it. For example: Assume an exterior lighting project, whose fixtures were previously controlled by photosensors and thus operating 4,319 hours annually. NLD operation precludes operation during peak times. However, when "Photosensor" controls were indicated in the ex ante calculator for said line item, a 0.26 reduction in PCF would automatically be included in ex ante savings calculations.

  Additionally, project SN8-022 was affected by a similar error: kWh estimates included erroneous additional kWh savings associated with the addition of sensors, though not were installed as part of the project.

  The Evaluators believe that this is an oversite from developing calculators to comply with TRM v1.0 section C.6.2.5.: Lighting Controls, Calculation of Deemed Savings. When applied in that scenario calculations are carried our correctly. The Evaluators recommend this error be fixed in implementor lighting calculators to prevent overestimation of savings.
- **Rounding error between project documentation and program tracking.** During the final review process, the Evaluators contacted the implementors regarding three sites whose site-level kW estimates differed from those listed in program tracking. It was determined that these were the result of rounding errors, specifically that project documents and calculators supplied 2+ digits after a decimal place, but program tracking data rounded to the nearest whole number. The Evaluators suggest the process be updated as to avoid this systematic error.
- **The program met its overall goal but fell short of the goal for Algiers.** Meeting savings goals for Algiers has been a challenge for the program over the last few years. Staff is aware of the issue and is reviewing program participation and outreach processes to identify any barriers they can address to increase participation including reducing the need for preapproval for all projects.

- **The program has a limited marketing budget and is largely trade ally driven, but friends and colleagues and the program awareness were other means customers learned of the program.** Survey responses indicate that trade allies and friends and colleagues were the most common sources of program awareness, followed by the program website. Staff reported that commercial programs were promoted through a wide range of channels including print ads, presentations, and social media. Additionally, marketing materials and co-branding opportunities are available to trade allies. Staff track marketing activities and are developing a more formal tracking system.
- **Trade allies are engaged with the program.** There are many trade allies active in the program relative to its size. Twenty-one trade allies completed projects during PY8, although as is often the case, relatively few contributed disproportionately to the program savings. Trade ally feedback provided during interviews was also positive.
- **Trade allies noted multiple barriers to efficiency improvements.** In addition to issues related to costs, trade ally discussions of barriers to customers adoption of efficiency measures include distrust of savings opportunities, concern over future maintenance costs, or that customers have not "bought into energy efficiency."
- **Program participants were satisfied with the program.** All survey respondents rated their satisfaction as a four or a five on a five-point satisfaction scale.
- **An outsized share of program participation is custom.** Over two-thirds of the projects are custom. This is due to a restricted fixture list, as well as findings from trade allies that projects pay a higher rebate when taken through the custom path.

The Evaluators' recommendations are as follows:

- **Redesign prescriptive incentives to reduce use of the custom project track.** The custom track should be limited to projects that fall outside of TRM-eligible measures and TRM-specified facility types. If trade allies are using the custom track in excess, it may be indicative of an improperly designed prescriptive equipment list. Efforts which contribute to this could include:
    - **Expand the prescriptive list to include linear LEDs.** Such a list could restrict eligibility to fixtures listed by ENERGY STAR or DLC.
    - **Reexamine PY8 projects to calculate prescriptive versus custom incentive amounts and adjust prescriptive incentives to align with the custom values.** If the same project provided a larger incentive with custom inputs, then the program should adjust prescriptive mitigate this effect. Moving more projects to the prescriptive track will reduce administration costs and allow an increased number of projects to complete in the program at the same budget level, while not negatively affecting savings.
    - **Specify projects as "prescriptive", "partially prescriptive", or "custom".** To "partially prescriptive" would entail when a project uses custom wattage inputs (due to use of a non-standard lighting fixture) but uses TRM parameters for hours of use or peak coincidence. "Custom"

would be limited to cases when facility-specific hours of use or peak coincidence factors are applied.

- **Revise program eligibility to specify "<100 kW connected load", rather than "<100 kW peak demand".** The current criterion allows for small business incentives to pay to large commercial customers if their load is heavily off-peak. If allowable under current rate-setting rules, expand this to aggregate facilities with multiple premises in order to set incentives appropriate for the project decision-maker's financial constraints.
- **Revise the prescriptive lighting calculator to correctly calculate peak kW savings from lighting controls.**
- **Correct rounding errors when importing project-level documentation to program-level tracking.**
- **Reduce administrative burden associated with preapproval.** For projects where multiple locations of the same facility are installing the same or similar retrofit, use one project as a proof-of-concept for preapproval. There are projects where multiple locations complete the same or similar retrofit, and after reviewing one, the others should go forward without an additional preapproval required.
- **Add downloadable marketing materials to the website such as flyers and case studies developed by the program.** The website was a commonly mentioned source of program awareness. The addition of marketing materials that address barriers to efficiency identified such as savings potential and maintenance costs of efficient equipment may improve customer receptivity to efficiency projects.
- **Conduct more detailed QA/QC review on new contractors.** The Evaluators found that on average, low-volume trade allies had lower gross realization rates than the two higher-volume trade allies in the sample. Program staff should flag a higher percent of low-volume trade ally projects for review, in order to ensure that they are complying with program rules and to forestall realization rate shortfalls.
- **Develop additional approaches to reaching Algiers customers.** These approaches may include targeted email campaigns and continued targeting of businesses in the area.
- **Add downloadable marketing materials to the website such as flyers and case studies developed by the program.** The website was a commonly mentioned source of program awareness. The addition of marketing materials that address barriers to efficiency identified such as savings potential and maintenance costs of efficient equipment may improve customer receptivity to efficiency projects.
- **Conduct more detailed QA/QC review on new contractors.** The Evaluators found that on average, low-volume trade allies had lower gross realization rates than the two higher-volume trade allies in the sample. Program staff should flag a higher percent of low-volume trade ally projects for review, in order to ensure that they are complying with program rules and to forestall realization rate shortfalls.

1.5.2.2 Large Commercial Solutions

- **Erroneous reduction in peak coincidence of 0.26 for lighting controls.** For two sampled sites, ex ante kW calculations assumed additional sensor savings for any item that had lighting controls associated with it. For example: Assume an exterior lighting project, whose fixtures were previously controlled by photosensors and thus operating 4,319 hours annually. NLD operation precludes operation during peak times. However, when "Photosensor" controls were indicated in the ex ante calculator for said line item, a 0.26 reduction in PCF would automatically be included in ex ante savings calculations.

  The Evaluators believe that this is an oversite from developing calculators to comply with TRM v1.0 section C.6.2.5.: Lighting Controls, Calculation of Deemed Savings. When applied in that scenario calculations are carried our correctly. The Evaluators recommend this error be fixed in implementor lighting calculators to prevent overestimation of savings.
- **The program did not meet its savings goals, however, the number of projects increased significantly over the prior year.** Staff indicated that the budget process has been improved so that funding remains available during the year, but that not all trade allies are aware of this yet. Staff is continuing to communicate this to trade allies.
- **Program activity is largely trade ally driven.** Two thirds of survey respondents learned of the program from a trade ally. Relatively few respondents learned of the program from an ENO account representative (8%) or other means.
- **Trade allies are engaged with the program.** There are many trade allies active in the program relative to its size. Thirty-six trade allies completed projects during PY8, and savings were widely distributed across them.
- **Trade allies noted multiple barriers to efficiency improvements.** In addition to issues related to costs, trade ally discussions of barriers to customers adoption of efficiency measures include distrust of savings opportunities, concern over future maintenance costs, or that customers have not "bought into energy efficiency."
- **Program participants were satisfied with the program.** All survey respondents rated their satisfaction as a four or a five on a five-point satisfaction scale.
- **Survey results suggest there is potential for compressed air efficiency projects in large commercial facilities.** Twenty-four percent of respondents reported that they had compressed air and a minority had efficient systems with variable speed compressors, low-pressure drop filters, no-loss condensate drains, high efficiency blow-off nozzles, and high efficiency cycling refrigerated dryer. Overall, customers expressed interest in incentives to improve the efficiency of their compressed air systems.

The Evaluators' recommendations are as follows:

- **The Evaluators recommend the prescriptive lighting calculator be revised to correctly calculate peak kW savings where sensors are involved.**
- **Work to further engage Entergy account representatives.** Account representatives are a key asset in driving large commercial customer activity. Eight percent of respondents reported that they learned of the program from Entergy account representatives and a trade ally suggested that better education of Entergy service representatives as a means of improving the program. Increased contact and collaboration with the program implementer and training on how the program can help their customers manage energy costs may increase participation.
- **Focus on educating customers on compressed air savings.** Compressed air projects represent a source of potential future energy savings. Educating customers and identifying contractors that provide compressed air services may help drive future program savings.
- **Improve QA surrounding space heating type for lighting retrofits.** The Evaluators found multiple projects where the application stated gas space heating and the on-site inspection found electric resistance. This is a QA metric that should be formally included in program trade ally assessments completed by Aptim, as a "false positive" for gas heating when a building uses electric resistance can increase savings by over 20%.

1.5.2.3 Publicly Funded Institutions

- **Erroneous reduction in peak coincidence of 0.26 for lighting controls.** For five sampled sites, ex ante kW calculations assumed additional sensor savings for any item that had lighting controls associated with it. For example: Assume an exterior lighting project, whose fixtures were previously controlled by photosensors and thus operating 4,319 hours annually. NLD operation precludes operation during peak times. However, when "Photosensor" controls were indicated in the ex ante calculator for said line item, a 0.26 reduction in PCF would automatically be included in ex ante savings calculations.

  The Evaluators believe that this is an oversite from developing calculators to comply with TRM v1.0 section C.6.2.5.: Lighting Controls, Calculation of Deemed Savings. When applied in that scenario calculations are carried our correctly. The Evaluators recommend this error be fixed in implementor lighting calculators to prevent overestimation of savings.

- **Peak coincidence factors do not correspond to default-overridden custom hours of operation.** When deemed hours are overridden in ex ante calculators said hours are used in ex ante calculations, however the deemed peak coincidence factor is still applied. In Project PN8-009 a total of 17 line items had lighting which were located in an "Education: College/university" deemed space. Deemed hours of operation had been overridden from 3,577 to 8,760, however the peak CF remained .69, when it should have been 1.00 to reflect the continuous lighting operation.

- **The PFI Program met its savings goals for the year**. Staff indicated that projects in the pipeline and increased word-of-mouth referrals contributed to the increase in program activity. That said, the program implementation team has been active in developing projects and working with the City of New Orleans, city Universities, and charter schools. These services include benchmarking, assistance with planning, and assistance with the bid process.
- **Marketing and outreach efforts included lunch and learns and individual outreach to public organizations.**
- **Government procurement processes create a barrier to participation.** Both program staff and trade allies noted that procurement process requirements present a barrier to participation. Responses from interviewed trade allies suggest that because of these types of barriers, they are reluctant to pursue working with government entities.

The Evaluators' recommendations are as follows:

- **Work with public sector entities towards an RFQ process instead of an RFP process.** With a pre-qualified list and price-point, projects could be processed more quickly. This may entail establishing different thresholds based on project size.
- **If an RFQ process can be put in place, work towards providing centralized energy advisory services for public institutions, reducing the risk faced by trade allies of developing a project but losing it to another bidder.** ENO has included funding for an energy advisor service in its most recent filing. This energy advisor can serve a valuable role in PFI, as they could help public institutions develop projects for a fixed fee paid by the program, which can then be put out to "quick bid" to a list of preapproved contractors from the RFQ process.
- **Highlight public sector retrofits in general Energy Smart marketing.** Beyond the PFI program, retrofits at high-visibility institutions in the PFI program could spark interest among other customer sectors.
- **Continue efforts to develop projects with publicly funded entities.** The implementation team's efforts are central to the development of program projects. Procurement processes and related challenges make it difficult for trade allies to develop work and as such, the program is likely to continue to need ongoing staff support.

1.6 Report Organization

This report is organized with one chapter providing the full impact and process summary of a specified program. The report is organized as follows:

- Chapter 2 provides general methodologies;
- Chapter 3 provides results for the Home Performance with Energy Star Program (HPwES);
- Chapter 4 provides results for the Low Income Audit and Weatherization Program (LIA&Wx);

- Chapter 5 provides results for the Multifamily Program (MF);
- Chapter 6 provides results for the Green Light Direct Install Program (GLDI);
- Chapter 7 provides results for the Residential Lighting and Appliances Program (RLA);
- Chapter 8 provides results for the Residential Heating and Cooling Program (RH&C);
- Chapter 9 provides results for the School Kits and Education Program (SK&E);
- Chapter 10 provides results for the Scorecard Behavioral Program;
- Chapter 11 provides results for the EasyCool Direct Load Control Program (EASYCOOL PROGRAM);
- Chapter 12 provides results for the Small Commercial Solutions Program (SCS);
- Chapter 13 provides results for the Large Commercial and Industrial Solutions Program (Large C&I);
- Chapter 14 provides results for the Publicly Funded Institutions Program (PFI);
- Appendix A provides the site-level custom reports for the SCS, C&I Solutions and PFI Programs;
- Appendix B provides the survey instruments and interview guides used in this evaluation;
- Appendix C provides support for the Scorecard behavioral analysis;
- Appendix D provides a copy of the Energy Smart Saver Kit Product Guide and
- Appendix E presents cost-benefit results.

2. General Methodology

This section details general impact evaluation methodologies by program-type as well as data collection methods applied. This section will present full descriptions of:

- Gross Savings Estimation;
- Sampling Methodologies;
- Process Evaluation Methodologies; and
- Data Collection Procedures.

2.1 Glossary of Terminology

As a first step to detailing the evaluation methodologies, the Evaluators provide a glossary of terms to follow[4]:

- *Ex Ante* – Forecasted savings used for program and portfolio planning purposes (from the Latin for "beforehand")
- *Ex Post* – Savings estimates reported by an evaluator after the energy impact evaluation has been completed (From the Latin for "from something done afterward")
- *Deemed Savings* – An estimate of an energy savings or demand savings outcome (savings) for a single unit of an installed energy efficiency measure. This estimate (a) has been developed from data sources and analytical methods that are widely accepted for the measure and purpose and (b) is applicable to the situation being evaluated (e.g., assuming 112 kWh savings for a residential advanced power strip)
- *Savings* – The change in energy consumption and/or demand that results directly from program-related actions taken by participants in an efficiency program
- *Realization Rate* – Ratio of Ex Post Savings / Ex Ante Savings (e.g., if the Evaluators verify 105 kWh per showerhead, Realization Rate = 105/112= 93.8% realization rate

2.2 Overview of Methodology

The proposed methodology for the evaluation of the PY8 ENO Portfolio is intended to provide:

- Impact results; and
- Program feedback and recommendations via process evaluation

In doing so, this evaluation will provide the verified gross savings results, provide the recommendations for program improvement, and ensure cost-effective use of ratepayer funds. Leveraging experience and lessons learned from impact evaluation can provide

4 Arkansas TRM V7.0, Volume 1, Pg. 80-86

greater guidance as to methods by which program and portfolio performance could be improved.

2.2.1 Sampling

Programs are evaluated on one of three bases:

- Census of all participants;
- Simple Random Sample; and
- Stratified Random Sample.

2.2.1.1 Census

A census of participant data was used for select programs where such review is feasible. All program measures were evaluated. Programs that received analysis of a census of participants include:

- Home Performance with ENERGY STAR
- Low Income Audit and Weatherization
- Residential Heating & Cooling
- Energy Smart Lighting and Appliances
- Energy Smart School Kits

2.2.1.2 Simple Random Sampling

For programs with relatively homogenous measures (largely in the residential portfolio), the Evaluators conducted a simple random sample of participants. The sample size for verification surveys is calculated to meet 90% confidence and 10% precision (90/10). The sample size to meet 90/10 requirements is calculated based on the coefficient of variation of savings for program participants. Coefficient of Variation (CV) is defined as:

$$CV = \frac{Standard\ Deviation_x}{Mean_x}$$

Where x is the average kWh savings per participant. Without data to use as a basis for a higher value, it is typical to apply a CV of .5 in residential program evaluations. The resulting sample size is estimated at:

$$n_0 = \left(\frac{1.645 * CV}{RP}\right)^2$$

Where,

1.645 = Z Score for 90% confidence interval in a normal distribution

CV = Coefficient of Variation

RP = Required Precision, 10% in this evaluation

2.2.1.3 Stratified Sampling

For the ENO SCS and Large C&I programs, Simple Random Sampling is not an effective sampling methodology as the CV values observed in business programs are typically very

high because the distributions of savings are generally positively skewed. Often, a relatively small number of projects account for a high percentage of the estimated savings for the program.

To address this situation, we use a sample design for selecting projects for the M&V sample that takes such skewness into account. With this approach, we select a number of sites with large savings for the sample with certainty and take a random sample of the remaining sites. To further improve the precision, non-certainty sites are selected for the sample through systematic random sampling. That is, a random sample of sites remaining after the certainty sites have been selected is selected by ordering them according to the magnitude of their savings and using systematic random sampling. Sampling systematically from a list that is ordered according to the magnitude of savings ensures that any sample selected will have some units with high savings, some with moderate savings, and some with low savings. Samples cannot result that have concentrations of sites with atypically high savings or atypically low savings. As a result of this methodology, the required sample for the SCS and Large C&I Programs were reduced to the following strata:

Table 2-1 Stratified Sampling Summary

Program	***Strata***	***Sites Sampled***
Small Commercial Solutions	5	14
Large Commercial and Industrial	4, plus 1 certainty	16
Publicly Funded Institutions	4, plus 1 certainty	5

2.2.2 Impact Calculations

The general approach for calculation of verified kWh and kW savings was to start with deemed savings and refine estimates with primary data collection. Further detail can be found in each program chapter.

2.2.3 Residential Verification and Testing Site Visits

The Evaluators conduct on-site testing and verification of the high impact residential measures, duct sealing and air sealing. The visits were made to sites participating in at least one of four PY8 programs: HPwES, LIA&Wx, MF and AC Tune-Up. During PY8 the Evaluators visited and tested a total of 95 homes; 78 in the ENO territory and 17 in the Algiers territory. Thirty-five of the homes involved air sealing projects and six of the homes involved multiple duct sealing projects, resulting in a total of 98 duct blasting test results.

2.2.3.1 Air Sealing

The Evaluators conducted on-site testing of 35 homes which have received air sealing through one of the four programs. Below, Table 2-2 shows the breakdown of testing by program:

Table 2-2 Air Sealing Field Verification and Testing by Program

Program	Site Visit Count
Home Performance with Energy Star Program	9
Income Qualified Weatherization Program	9
Multifamily Program	3
Residential Heating and Cooling	14
Total	**35**

During these site visits, the Evaluators' field staff conducted blower door testing in an effort to validate post-retrofit leakage estimates indicated in program tracking data.

Details of the results are discussed in detail in HPwES chapter, section 3.3.1 Air Sealing Savings Calculations.

2.2.3.2 Duct Sealing

The Evaluators conducted on-site testing of 98 projects at 92 homes which have received duct sealing through one of the four programs. Below, Table 2-3 shows the breakdown of testing by program:

Table 2-3 Duct Sealing Field Verification and Testing by Program

Program	Site Visit Count	Data Collection Points
Home Performance with Energy Star Program	27	30
Income Qualified Weatherization Program	17	17
Multifamily Program	4	4
Residential Heating and Cooling	44	47
Total	**92**	**98**

During these site visits, the Evaluators' field staff conducted duct blasting testing in an effort to validate post-retrofit leakage estimates indicated in program tracking data.

Details of the results are discussed in detail in the HPwES chapter, section 3.3.2 Duct Sealing Savings Calculations.

2.2.3.3 Other On-Site Verification Items

In addition to directly measuring air infiltration and duct leakage, while on site the Evaluators also verified installation other measures the household may have received from a PY8 program:

- Ceiling insulation levels;
- AC/HP tune-up;
- Appliance installation;
- LED usage and
- Faucet and aerator usage.

2.2.4 Estimation of Net Savings

Table 2-4 summarizes the net savings approach used for each program.

Table 2-4 Summary of Net Savings Approaches

Program	*Self-Report Surveys*	*Literature Review*	*Billing Analysis/Price Response Modeling*	*Deemed Value*
Home Performance with ENERGY STAR	✓			
Low Income Audit and Weatherization				✓
EnergySmart for Multifamily	✓			
Green Light Direct Install				✓
Residential Lighting and Appliances	✓	✓	✓	
Residential Heating and Cooling	✓			
Energy Smart School Kits and Education				✓
Scorecard Behavioral Program			✓	
EasyCool Direct Load Control			✓	
Small Commercial Solutions	✓			
Large Commercial and Industrial	✓			
Publicly Funded Institutions	✓			

2.2.4.1 Residential Program Self-Report Approach

The following sections describes the self-report approaches to estimating free ridership and participant spillover for the residential programs.

2.2.4.1.1 Major Measure Free Ridership Assessment

The objective of the free ridership analysis is to estimate the share of program activity would have occurred in the absence of the program. To accomplish this, the Evaluators administered a survey to program participants that contained questions regarding the participants' plans to implement the incentivized measures and the likelihood of implementing those measures in the absence of program incentives and informational support. Program participants were asked questions regarding:

- Whether or not they had plans to complete the project and if they could afford to complete it without the program discount;
- The likelihood of completing the project without the discount or the incentivized assessment;
- The timing of the project in the absence of the program.

Prior Plans

Respondents who indicated that they did not have plans to install the efficient measure or the financial ability to do so were determined to not be free riders. Free ridership scores were developed for the remaining respondents using survey response data on likelihood of completing the efficiency project or installing the efficient equipment and the program's impact on when that would have occurred.

Likelihood of Project Completion Score

The score reflecting the likelihood of completing the project in the absence of the program was based on the following questions:

- Prior to learning about the program, did you have plans to have an energy assessment of your home performed?
- How likely is it that you would have completed the same < MEASURE> project that you completed through the program if the rebate was not available?
- How likely is it that you would completed the same < MEASURE> project had it not been recommended through the energy assessment of your home?

The first question assesses the existence of prior plans to have the assessment performed while the second and third questions assess the likelihood of the customer implementing the project in the absence of the rebate or energy assessment. A score was assigned to each response for the second and third questions as follows:

- Very likely: 1
- Somewhat likely: .75
- Neither particularly likely or unlikely: .5
- Somewhat unlikely: .25
- Very unlikely: 0

If the participant did not have an assessment performed, or had prior plans to have an assessment performed, the score based on the rating for the likelihood of completing the project without the discount.

If the participant had an assessment and did not have prior plans to have an assessment, the score is based on the minimum of the following two scores:

- The likelihood of completing the project without the assessment; and
- The likelihood of completing the project without the incentive.

Timing Score

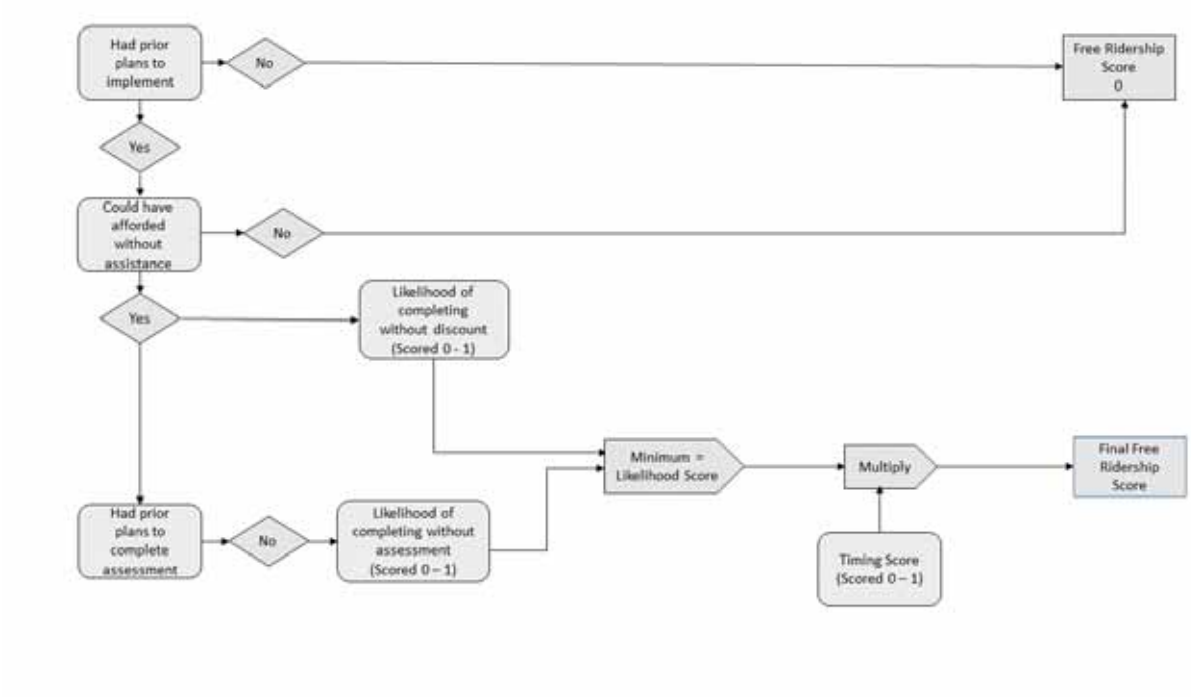
To account for the impact the program may have had on project timing, the likelihood score was multiplied by a timing score. The timing score was developed from responses to a question on when the participant might have completed a project in the absence of the program. Specifically, timing was scored as follows:

- Project would have been completed in 0 to 6 months: 1
- Project would have been completed in 6 months to a year: .67
- Project would have been completed in 1 to 2 years: .33
- Project would have been completed in more than 2 years: 0

Final Free Ridership Score

The procedures used to estimate free ridership are summarized below in Figure 2-1.

Figure 2-1 Summary of Free Ridership Scoring Algorithm

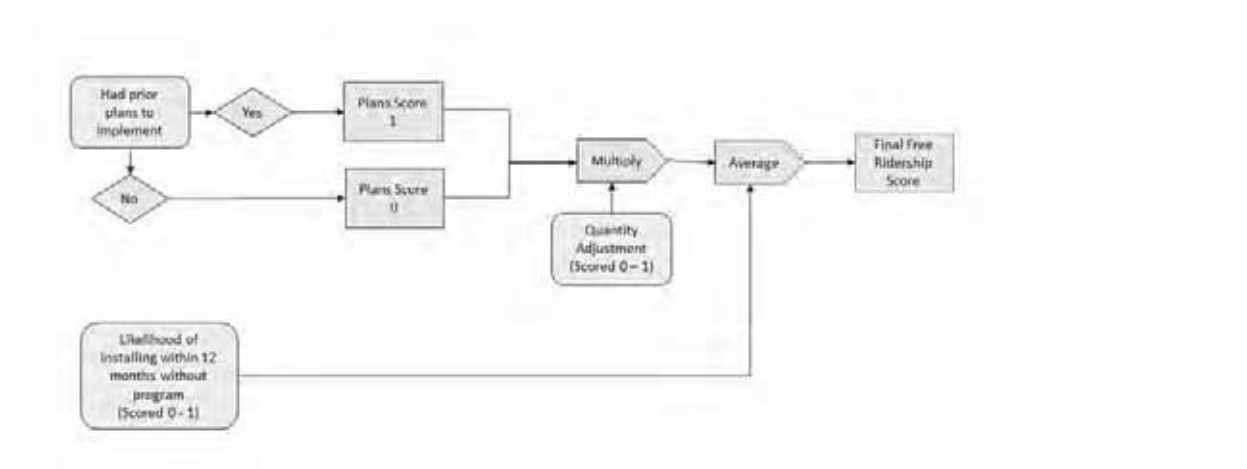


2.2.4.1.2 Direct Install Free Ridership Assessment

The approach to estimating free-ridership for the direct install measures was similar to the approach described above but differs in three regards. First, because the direct install measures are relatively low-cost items, financial ability is less likely to be a factor for participants. Second, because of their relatively low cost and the ability to easily self-install the items, it is unlikely that participants would have had plans to install the equipment for an extended period. As such, the free-ridership methodology did not factor in financial ability or the program's impact on the projects timing. Third, for LED light bulbs, which respondents received several of, the respondent's plans may have been to install fewer than the total number of bulbs received through the program. Consequently, then number of lamps that would have been installed in the absence of the program was taken into consideration.

The free-ridership scoring is summarized in Figure 2-2 Under this approach, a respondent is considered to have prior plans to implement the measure if they 1) stated that they had prior plans and 2) that they had previously purchased that measure type.

Figure 2-2 Direct Install Free Ridership Scoring Methodology



2.2.4.1.3 Participant Spillover Assessment

To estimate participant spillover impacts, participant survey respondents were asked if they had purchased any additional items because of their experience with the program without receiving an incentive.

Participants that indicated one or more energy efficiency purchases were asked additional questions about what was purchased, and the number of units purchased to estimate the savings impact. Additionally, the following two questions were asked to determine whether the energy savings resulting from measures that were attributable to the program:

- On a scale of 0 to 10, where 0 represents “not at all important” and 10 represents “extremely important”, how important was the experience with the program in your decision to purchase the items you just mentioned?
- On a scale of 0 to 10, where 0 represents “not at all likely” and 10 represents “extremely likely,” how likely would you have been to purchase those items if you had not participated in the program?

If the average of the first response and 10 – the second response is 7 or greater, the savings associated with the measures were attributed to the program.

2.2.4.2 Commercial Program Self-Report Approach

2.2.4.2.1 Free Ridership Assessment

Several criteria were used for determining what portion of a customer’s savings for a particular project should be attributed to free ridership. The first criterion was based on the response to the question: “Would you have been financially able to install energy efficient [Measure/Equipment] at the location without the financial incentive from the Program?” Customers that answer “No” to this question are asked to confirm that they would not have allocated funds to the project without the incentive. If a customer confirms that they would not have allocated the funds if the incentives were not available, the customer was not deemed a free rider.

For decision makers that indicated that they were able to undertake energy efficiency projects without financial assistance from the program, three factors were analyzed to determine what percentage of savings may be attributed to free ridership. The three factors were:

- Plans and intentions of firm to install a measure even without support from the program;
- Influence that the program had on the decision to install a measure; and
- A firm's previous experience with a measure installed under the program.

For each of these factors, rules were applied to develop binary variables indicating whether or not a participant's behavior showed free ridership.

The first factor requires determining if a participant stated that his or her intention was to install an energy efficiency measure even without the program. The answers to a combination of several questions were used with a set of rules to determine whether a participant's behavior indicates likely free ridership. Two binary variables were constructed to account for customer plans and intentions: one, based on a more restrictive set of criteria that may describe a high likelihood of free ridership, and a second, based on a less restrictive set of criteria that may describe a relatively lower likelihood of free ridership.

The first, more restrictive criteria indicating customer plans and intentions that likely signify free ridership are as follows (Definition 1):

- The respondent answers "yes" to the following two questions: "Did you have plans to install energy efficient [Measure/Equipment] at the location before deciding to participate in the program?" and "Would you have gone ahead with this planned project if the you had not received the rebate through the program?"
- The respondent answers "definitely would have installed" to the following question: "If the rebates from the program had not been available, how likely is it that you would have installed energy efficient [Measure/Equipment] at the location anyway?"
- The respondent answers "no, program did not affect timing of purchase and installation" to the following question: "Did you purchase and install energy efficient [Measure/Equipment] earlier than you otherwise would have without the program?"
- The respondent answers "no, program did not affect level of efficiency chosen for equipment" in response to the following question: "Did you choose equipment that was more energy efficient than you would have chosen had you not participated in the program?"

The second, less restrictive criteria indicating customer plans and intentions that likely signify free ridership are as follows (Definition 2):

- The respondent answers "yes" to the following two questions: "Did you have plans to install energy efficient [Measure/Equipment] at the location before participating in the program?" and "Would you have gone ahead with this planned installation even if you had not participated in the program?"

- Either the respondent answers “definitely would have installed” or “probably would have installed” to the following question: “If the rebates from the program had not been available, how likely is it that you would have installed energy efficient [Measure/Equipment] at the location anyway?”
- Either the respondent answers “no, program did not affect timing of purchase and installation” to the following question: “Did you purchase and install energy efficient [Measure/Equipment] earlier than you otherwise would have without the program?” or the respondent indicates that while program information and financial incentives did affect the timing of equipment purchase and installation, in the absence of the program they would have purchased and installed the equipment within the next two years.
- The respondent answers “no, program did not affect level of efficiency chosen for equipment” in response to the following question: “Did you choose equipment that was more energy efficient than you would have chosen had you not participated in the program?”

The second factor requires determining if a customer reported that a recommendation from a program representative or past experience with the program was influential in the decision to install a particular piece of equipment or measure.

The criterion indicating that program influence may signify a lower likelihood of free ridership is that either of the following conditions is true:

- The respondent answers “very important” to the following question: “How important was previous experience with the program in making your decision to install energy efficient [Measure/Equipment] at the location?”
- The respondent answers “probably would not have” or “definitely would not have” to the following question: “If the program representative had not recommended [Measure/Equipment], how likely is it that you would have installed it anyway?”

The third factor requires determining if a participant in the program indicates that he or she had previously installed an energy efficiency measure similar to one that they installed under the program without an energy efficiency program incentive during the last three years. A participant indicating that he or she had installed a similar measure is considered to have a likelihood of free ridership.

The criteria indicating that previous experience may signify a higher likelihood of free ridership are as follows:

- The respondent answers “yes” to the following question: “Before participating in the Program, had you installed any equipment or measure similar to energy efficient [Measure/Equipment] at the location?”
- The respondent answers “yes” to the following question: “Has your organization purchased any significant energy efficient equipment in the last three years at the location?” and answered “yes” to the question: “Did you install any of that equipment without applying for a financial incentive through an energy efficiency program?”

The four sets of rules described above were used to construct four different indicator variables that address free ridership behavior. For each customer, a free ridership value was assigned based on the combination of variables. With the four indicator variables, there are 11 applicable combinations for assigning free ridership scores for each respondent, depending on the combination of answers to the questions creating the indicator variables. Table 2-5 shows these values.

Table 2-5 Free Ridership Scores for Combinations of Indicator Variable Responses

Indicator Variables				***Free Ridership Score***
Had Plans and Intentions to Install Measure without Program? (Definition 1)	***Had Plans and Intentions to Install Measure without Program? (Definition 2)***	***Program had influence on Decision to Install Measure?***	***Had Previous Experience with Measure?***	
Y	N/A	Y	Y	100%
Y	N/A	N	N	100%
Y	N/A	N	Y	67%
Y	N/A	Y	N	67%
N	Y	N	Y	67%
N	N	N	Y	33%
N	Y	N	N	33%
N	Y	Y	N	0%
N	N	N	N	0%
N	N	Y	N	0%
N	N	Y	Y	0%

2.2.4.2.2 Participant Spillover Assessment

Program participants may implement additional energy saving measures without receiving a program incentive because of their participation in the program. The energy savings resulting from these additional measures constitute program participant spillover effects.

To assess participant spillover savings, survey respondents were asked whether or not they implemented any additional energy saving measures for which they did not receive a program incentive. Respondents that indicated that they did install additional measures were asked two questions to assess whether or not the savings are attributable to the program. Specifically, respondents were asked:

"How important was your experience with the <PROGRAM> in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all important and 10 is extremely important?"

"If you had not participated in the <PROGRAM>, how likely is it that your organization would still have implemented this measure, using a 0 to 10 scale, where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure?"

The energy savings associated with the measure are considered attributable to the program if the average of the rating for the first question, and 10 – the rating for the second question, is greater than seven, the savings are counted as attributable to the program.

2.2.4.3 Literature Reviews

Literature reviews were performed for ENERGY STAR pool pumps and heat pump water heaters rebated through the Lighting and Appliance Program to estimate measure free ridership. Both of these measures were installed by relatively few program participants (i.e., 5 or less) but were impactful on program savings because each installation generates relatively large savings.

2.2.4.4 Billing Analysis/Price Response Modeling

Savings for the Scorecard Behavioral Program and the Easy Cool Direct Load Control Program were assed through an analysis of participant energy consumption (i.e., billing analysis). The energy impacts developed through these approaches are net impacts. The approaches used are described in additional detail in the program chapters.

For the lighting component of the Lighting and Appliance Program, free ridership was assessed using price response modeling. The approach used is described in additional detail in the program chapter.

2.2.4.5 Deemed Values

The net-to-gross ratio for the Income Qualified Weatherproofing Program was deemed to be 1.0 in line with common practice for estimation of low-income program net savings.[5]

The net-to-gross ratios for the Green Light Direct Install and the Energy Smart School Kits and Education programs were deemed based on prior evaluation findings.

2.2.5 Process Evaluation

The Evaluators completed process evaluations of the following PY8 programs:

- Home Performance with ENERGY STAR
- Low Income Audit and Weatherization
- EnergySmart for Multifamily
- Residential Lighting and Appliances
- Residential Heating and Cooling
- Scorecard Behavioral Program
- Easy Cool Direct Load Control
- Small Commercial Solutions
- Large Commercial and Industrial

[5] See Violette and Rathbun, Chapter 17: Estimating Net Savings: Common Practices. The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures, available electronically at http://www.nrel.gov/docs/fy14osti/62678.pdf, p. 50.

- Publicly Funded Institutions

Table 2-6 Summary of Process Evaluation Activities

Program	Data/Document Review	Staff Interviews	Participant Surveys	Trade Ally Interviews/ Surveys	Non-Participant Surveys
Home Performance with ENERGY STAR	✓	✓	✓	✓	✓
Low Income Audit and Weatherization		✓	✓	✓	✓
EnergySmart for Multifamily	✓	✓	✓	✓	✓
Residential Lighting and Appliances	✓	✓	✓		✓
Residential Heating and Cooling	✓	✓	✓	✓	✓
Scorecard Behavioral Program	✓	✓	✓		✓
EasyCool Direct Load Control	✓	✓	✓		✓
Small Commercial Solutions	✓	✓	✓	✓	
Large Commercial and Industrial	✓	✓	✓	✓	
Publicly Funded Institutions	✓	✓	✓	✓	

2.2.5.1 Data and Document Review

The Evaluators reviewed program documentation such as application forms, the program website, and contractor manuals. The purpose of this was review was to gain understanding of program policies and procedures, assess marketing materials, and review forms used for administering rebate forms.

2.2.5.2 Program Staff Interviews

In-depth interviews with program staff provided insight into program management and operations. Interviews were completed with 16 Entergy, implementation contractor, and program partner staff.

Table 2-7 Summary of Staff Interviews

Programs	***Organizations Role***	***Interviewed Staff Roles***	***Number of Staff Interviewed***
Portfolio	Entergy	DSM Manager	1
Portfolio	Entergy	Project Manager	1
Portfolio	Implementation Contractor	Program Director	2
RLA	Implementation Contractor	Director of Operations and Support	1
RLA	Implementation Contractor	Program Manager	1
C&I and Residential Incentive Programs	Implementation Contractor	Project Lead	2
C&I and Residential Incentive Programs	Implementation Contractor	Trade Ally Liaison	2
Residential Incentive Programs	Implementation Contractor	Marketing Manager	1
EnergySmart Behavioral Program	Implementation Contractor	Vice President of Marketing	1
C&I and Residential Incentive Programs	Implementation Contractor	Marketing and Communications Specialist	1
Schools Program and Residential Rebate Outreach	Program Partner	Executive Director	1
Schools Program and Residential Rebate Outreach	Program Partner	Outreach Manager	1
Publicly Funded Institutions	Program Partner	Chief Operating Officer	1
Total			16

2.2.5.3 Participant Surveys

Telephone or online surveys were administered to program participants. The surveys were used to collect data on participants experience with the program and how the program affected their decision to implement the efficiency measures, for use in estimating net savings.

For telephone surveys, at least five attempts were made to contact each participant contact. For online surveys, three email invitations were sent to the participants.

Table 2-8 Summary of Participant Survey Response

Survey Group	Mode	Survey Fielding Time Frame	Number of Contacts*	Number of Survey Completions
HPwES Participant	Telephone	November 2018	162	53
LIA&Wx Participant	Telephone	November 2018	88	22
Multifamily Participant	Telephone	November 2018	88	22
RLA - Appliance Rebate Participant	Telephone	November 2018	105	33
Residential Heating & Cooling Participant	Telephone	November 2018	338	68
Behavioral Program			6,000	169
Treatment group		January 2019	*3,000*	*63*
Control group	Online		*3,000*	*106*
Residential non-participants	Online	January 2019	5,000	157
C&I Participant			111	28
Large C&I Participant	Online/	September 2018	*55*	*20*
Small Business Participant	Telephone	Jan/Feb 2019	*51*	*7*
PFI Participant			*5*	*1*
Direct Load Control Participant	Online	November 2018	500	86
Total			18,503	835

*For some groups the number of contacts was all of the participants with contact information available. For others, the contacts were a sample of all available contacts.

2.2.5.4 Trade Ally Interviews and Surveys

Trade ally in-depth interviews (IDI) and surveys were used to assess trade allies experience with the program and to identify opportunities for program improvement and increasing program reach. In total, interviews or surveys were completed with 30 trade allies (Table 1-3).

Table 2-9 Summary of Trade Ally Interviews and Surveys

Group	Data Collection Type	Data Collection Time Frame	Number of Contacts	Number of Completions
C&I Trade Allies	In-Depth Interview	July/August 2018	19	8
C&I Trade Allies	Online Survey	July/August 2018	41	5
Residential Trade Allies	In-Depth Interview	July/August 2018	7	15
Residential Trade Allies	Online Survey	July/August 2018	13	2
Total			80	30

3. Home Performance with ENERGY STAR®

3.1 Program Description

The Home Performance with ENERGY STAR® Program (HPwES) is designed to promote energy efficiency by offering home energy walkthrough assessments and/or deeper energy assessments to its residential customers through a participating trade ally. HPwES provides residential customers with access to qualified vendors (trade allies) within the Companies' service areas. The participating trade allies are to help the residential customer analyze their energy use and identify energy efficiency improvements. The trade ally inspection includes a visual inspection of the living space, attic, and crawl space/basement, and exterior of the home, as well as discussion of lifestyle and customer behaviors that impact energy use. Following the assessment, the Energy Smart auditor recommends home improvements to increase energy efficiency. HPwES provides incentives for installing ceiling insulation, duct sealing, and air infiltration sealing in the form of a discount to the customer.

3.1.1 Program Delivery Channels and Expected Savings

A total of 739 households participated in HPwES by way or Direct Install and/or a major measure, with an additional 4,804 households participating by ordering a Home Energy Savings Kit (HESK) via the Energy Smart website.

3.1.1.1 Home Energy Savings Kits

A total of 4,926 kits were distributed to 4,272 New Orleans residences and 654 Algiers residences. Kits were free of charge and included the following items:

- (3) 9W A-Type LEDs;
- (1) 15W A-Type LED;
- (1) 1.5 gpm Kitchen Aerator;
- (1) 1.0 gpm Bathroom Aerator;
- (1) 1.5 gpm Showerhead;
- Literature on included measures and
- Energy Smart promotional materials.

Expected and realized savings from HESKs is presented in section 3.3.5.

3.1.1.2 Direct Install and Major Measure

Below, Table 3-1 summarizes the total number of homes a Direct Install or Major Measure was installed in and/or performed at, total measures installed/performed and the expected kWh and peak kW savings by measure. HESK savings is presented as a single line item in the table for continuity.

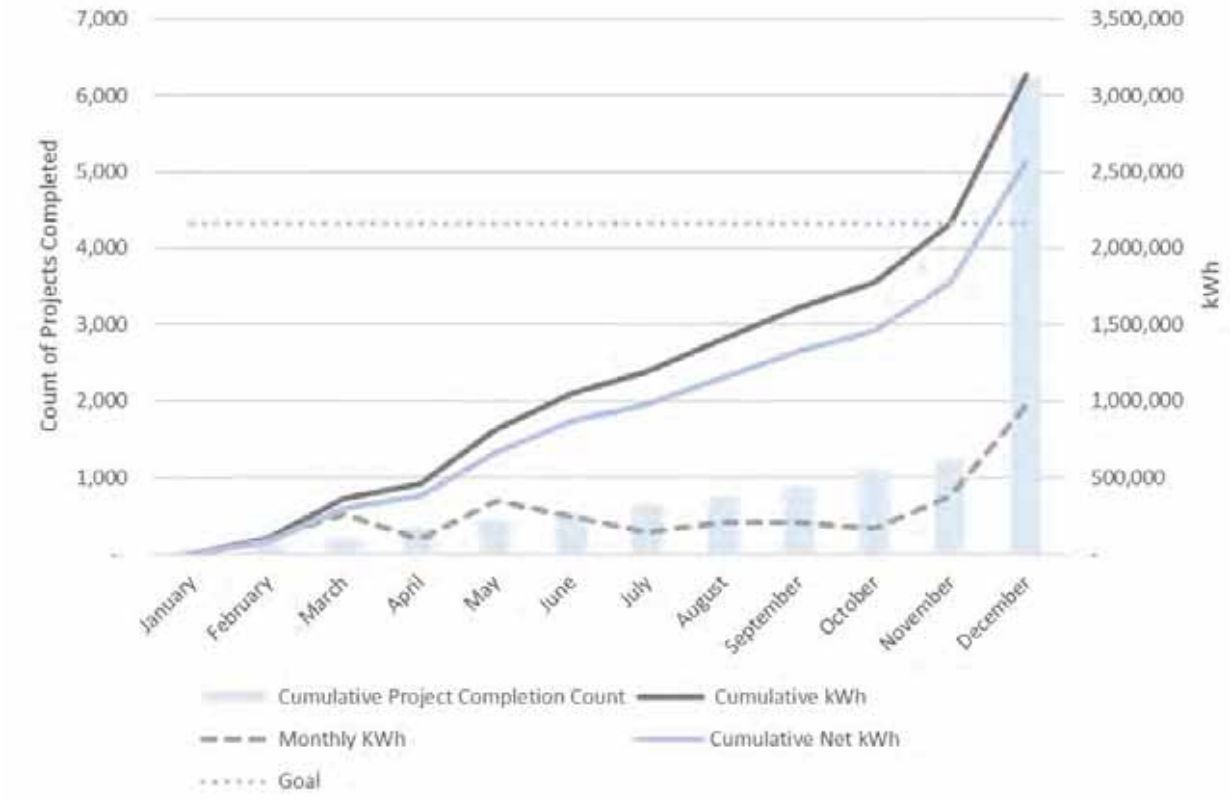
Table 3-1 Summary of Measures and Expected Savings – New Orleans

Measure	Number of Measures Distributed	Expected kWh Savings	Expected kW Savings	Percent of Program Savings (by kWh)
AC/HP Tune ups	96	75,619	27.38	2.7%
Aerators	32	848	0.09	0.0%
Air Sealing	140	155,612	50.59	5.6%
Duct Sealing	57	1,210,153	321.36	43.3%
Insulation	12	98,978	26.21	3.5%
LED Lighting	11,925	354,379	65.56	12.7%
Power Strips	231	64,915	6.88	2.3%
Showerheads	39	11,752	1.22	0.4%
Smart Thermostats	135	203,970	0.00	7.3%
Home Energy Savings Kits	4,272	619,440	97.40	22.2%
Total:	**16,939**	**2,795,666**	**596.69**	

Table 3-2 Summary of Measures and Expected Savings – Algiers

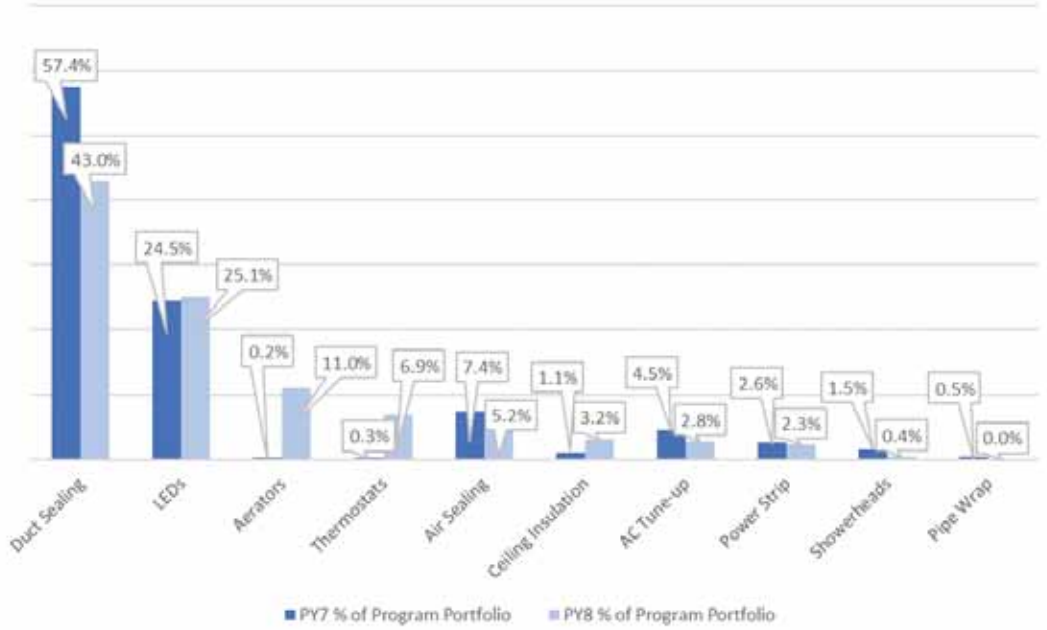
Measure	Number of Measures Distributed	Expected kWh Savings	Expected kW Savings	Percent of Program Savings (by kWh)
AC/HP Tune ups	15	11,697	4.24	3.5%
Aerators	10	354	0.03	0.1%
Air Sealing	9	7,849	2.54	2.3%
Duct Sealing	57	136,756	39.59	40.9%
LED Lighting	2,192	61,941	11.50	18.5%
Power Strips	27	7,061	0.77	2.1%
Showerheads	8	1,808	0.19	0.5%
Smart Thermostats	8	12,432	0.00	3.7%
Home Energy Savings Kits	654	94,830	14.91	28.3%
Total:	**2,980**	**334,726**	**73.77**	

Figure 3-1 Program Performance Over PY8



In PY8 programmable thermostats were replaced by Smart Thermostats. Below, Figure 3-2 illustrates and compares the differences in kWh savings contributions each measure provided during PY7 and PY8.

Figure 3-2 Combined Savings Contribution by Measure, PY7/8 Comparison



In PY7 372 projects summing to 1,218,180 kWh were completed during the abbreviated nine-month program year. Normalizing these figures to 12 months (a full program year) yields an expected 496 projects summing 1,624,239 kWh. The PY8 program ran for a full 12 months surpassing normalized PY7 figures with an increase in expected kWh savings of 92.7%, however average dwelling kWh savings fell by 82.7%. Table 3-3 and Table 3-4 compare program years.

Table 3-3 Participation and Expected Savings by Program Year

PY	Count Homes	Percentage Difference	Expected kWh per Home	Percentage Difference
PY7 (nominal)	348		3,275	
PY7 (normalized)[6]	496	112.4%	3,275	16.9%
PY8[7]	739		3,269	

Table 3-4 Measure Type and Count Installed by Program Year[8]

Measure	Expected kWh PY8	Expected kWh PY7 (normalized)[1]	Expected kWh PY7 (nominal)	Expected kWh PY6	Expected kWh PY5
AC Tune-up	87,316	58,389	43,792	-	-
Aerators	344,544	2,677	2,008	-	-
Air Sealing	163,460	95,567	71,675	349,896	204,014
Ceiling Insulation	98,978	14,459	10,844	60,345	196,735
Duct Sealing	1,346,909	745,144	558,858	1,564,937	1,807,226
LEDs	787,247	317,356	238,017	-	-
Pipe Wrap	-	6,212	4,659	-	-
Power Strip	71,976	33,700	25,275	-	-
Showerheads	240,505	19,587	14,690	-	-
Thermostats	216,402	4,144	3,108	-	-
Wall Insulation		-	-	-	956

The program goals and achievement of the goals is summarized below.

[6] PY7 was an abridged year, lasting only nine months. Figures presented here are normalized to represent a full program year (12 months).
[7] Shown without HES Kits. Including data from HESKs, PY total household count is 5,543 and savings per home is 652 kWh.
[8] Figures adjusted to reflect 9-month PY7 program period.

Table 3-5 HPwES Summary of kWh Goal Achievement

Operating Company	Verified Net kWh	kWh Goal	% of Goal Attained	Verified kW	kW Goal	% of Goal Attained
ENO	2,529,013	2,008,202	125.93%	588.06	404.52	145.37%
Algiers	299,241	149,257	200.49%	71.16	30	237.20%

3.2 M&V Methodology

Evaluation of HPwES included the following:

- Surveys with participants;
- Interviews with program staff;
- Interviews with program trade allies; and
- On-site testing and data collection.

Verified savings were calculated using methods and inputs in the New Orleans TRM v1.0 and incorporated results from on-site testing where appropriate. PY8 major savings components are air infiltration, duct sealing and LEDs. The following section discusses savings calculation methods for these measure in detail.

3.3 Verified Savings by Measure

After reviewing the tracking data and inputs for savings calculations, the Evaluators provided verified savings using deemed values developed for New Orleans combined with in-field testing results.

3.3.1 Air Infiltration Reduction Savings Calculations

Methods for calculating he deemed savings values for air infiltration reduction came from the New Orleans TRM, section B.4.6. Deemed savings multipliers were developed through EnergyGauge, a simulation software program. Multiple equipment configurations were simulated in in developing savings values denominated in deemed savings per CFM50 of air leakage rate reduction. Table 3-6 summarizes the deemed savings values for New Orleans.

Table 3-6 Deemed Savings Values for Air Infiltration Reduction[9]

Equipment Type	kWh/CFM Savings	kW/CFM Savings
Electric AC with Gas Heat	0.4108	0.000331
Elec. Resistance w/ AC	1.0180	0.000332
Heat Pump	0.7210	0.000332

For example, consider a residence with electric AC and gas heat located. If the residence had a leakage rate of 7,200 CFM50 before air infiltration reduction and a leakage rate of 3,500 CFM50 after, then the residence would have an annual savings of:

$$Air\ Infiltration\ Savings = 0.4108 \frac{kWh\ Savings}{CFM_{50}} \cdot \left(5{,}200\ CFM_{50\ pre} - 3{,}500\ CFM_{50\ post}\right)$$

$$Air\ Infiltration\ Savings = 698.36\ kWh$$

3.3.1.1 Field Data Collection

The Evaluators conducted on-site testing of 35 homes which have received air sealing through one of the four programs. Below, Table 3-7 shows the summarizes testing by program:

Table 3-7 Air Sealing Field Verification and Testing by Program

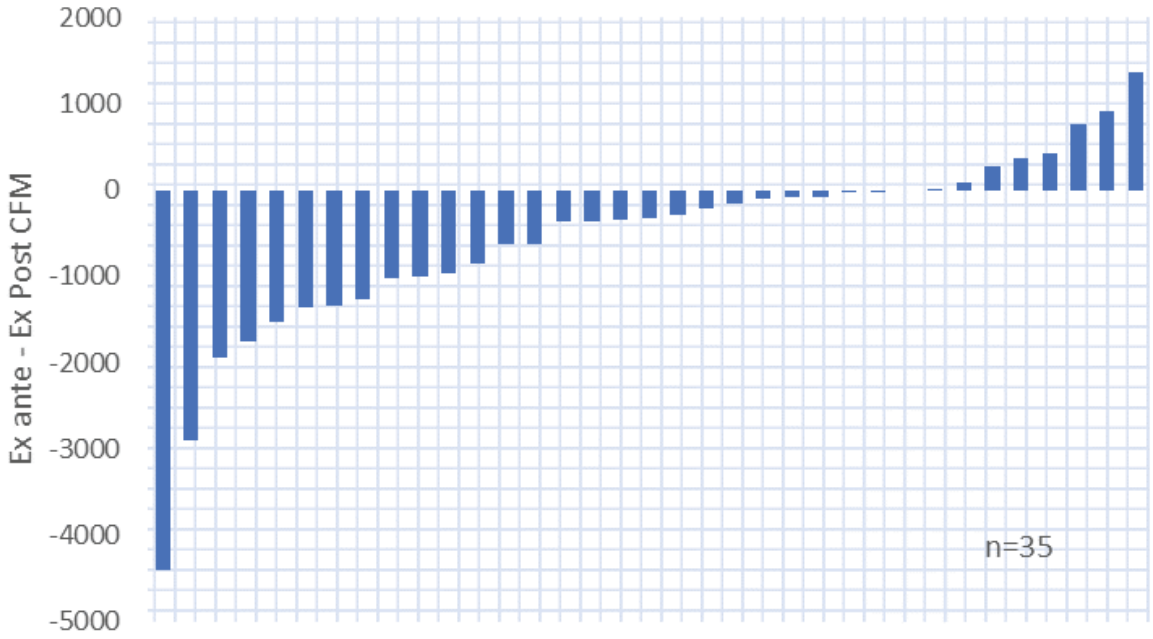
Program	Site Visit Count
Home Performance with Energy Star Program	9
Income Qualified Weatherization Program	9
Multifamily Program	3
Residential Heating and Cooling	14
Total	**35**

During these site visits, the Evaluators' field staff conducted blower door testing in an effort to validate post-retrofit leakage estimates indicated in program tracking data.

The results of the Evaluators' field testing are summarized in Figure 3-3. In this figure, results are organized such that homes with verified leakage that is lower than shown in tracking data (i.e., homes with realization greater than 100%) are at the left end of the graph and homes with verified leakage higher than shown in tracking data (i.e., homes with realization less than 100%) are on the right.

[9] New Orleans TRM V1.0, Table 81, page B-112.

Figure 3-3 Air Sealing Field Testing Results



The Evaluators found that 22.9% of tested homes had higher leakage than shown in program tracking, while 74.3% had lower leakage.

Summary statistics of the Evaluators' field measurements are as follows:

- Mean difference of –565.7 CFM50, 19.0% below expected.
- Median difference of –333 CFM50, 12.8% below expected.

Most homes were within reasonable range of ex ante estimates. However, the Evaluators found a total of four homes with leakage was at least 50% less than expected, 69.6% on average. A weighted average, based on expected CFM, was taken for all 35 measurements, resulting in an average reduction of 14.5%. This factor was used to adjust expected CFM results.

3.3.1.2 Air Sealing Savings Results

The savings resulting from using TRM algorithms and deemed savings parameters, plus the application of field results are summarized in Table 3-8 and Table 3-9.

Table 3-8 Expected and Realized Air Sealing Savings – New Orleans

Heating Type	*Expected kWh Savings*	*Realized kWh Savings*	*kWh Realization Rate*	*Expected Peak kW Savings*	*Realized Peak kW Savings*	*Peak kW Realization Rate*
Natural Gas Furnace	-	-	N/A	-	-	N/A
Electric Resistance	154,519	206,417	133.6%	50.09	67.34	134.4%
Air Source Heat Pump	1,093	1,371	125.4%	0.50	0.63	126.0%
Total	**155,612**	**207,788**	**133.5%**	**50.59**	**67.97**	**134.4%**

Table 3-9 Expected and Realized Air Sealing Savings - Algiers

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	-	-	N/A	-	-	N/A
Electric Resistance	7,849	10,826	137.9%	2.54	3.54	139.4%
Air Source Heat Pump	-	-	N/A	-	-	N/A
Total	**7,849**	**10,826**	**137.9%**	**2.54**	**3.54**	**139.4%**

One home did not include data for home heating type. For this home a multiplier, weighted on heating type of other homes in the program, was calculated and used to evaluate savings.

Ex ante calculations assumed gas heat from on project, however the home heating type was determined to be electrical resistance. The Evaluators were able unable to reasonably recreate ex ante savings calculations for two projects. Using correct methodology, these homes' realization rates were 82.9% and 90.4% before M&V adjustments.

3.3.2 Duct Sealing Savings Calculations

Duct sealing savings was calculated using the following savings algorithms from the New Orleans TRM 1, section B.3.7.

3.3.2.1 Cooling Savings (Electric):

$$kWh_{savings,C} = \frac{(DL_{pre} - DL_{post})\ x\ EFLH_C\ x\ (h_{out}\rho_{out}\ - h_{in}\rho_{in})\ x\ 60}{1{,}000\ x\ SEER}$$

Where:

DL_{pre} = Pre-improvement duct leakage at 25 Pa (ft3/min)

DL_{post} = Post-improvement duct leakage at 25 Pa (ft3/min)

ΔDSE = Assumed improvement in distribution system efficiency = 5% = 0.05

$EFLH_C$ = Equivalent Full Load Hours. (1,637)

h_{out} = Outdoor design specific enthalpy (Btu/lb) See Table 3-10

h_{in} = Indoor design specific enthalpy (Btu/lb.) See Table 3-10

Table 3-10 Deemed Savings Values for Duct Sealing Calculations

Parameter	Value
EFLHC	1,637
HDD	1,349
hout	40
hin	30
ρin	.076
Pout	.074
SEER	11.5

ρ_{out} = Density of outdoor air at 95°F = 0.0740 (lb/ft3)[10]

ρ_{in} = Density of conditioned air at 75°F = 0.0756 (lb./ft3)[4]

60 = Constant to convert from minutes to hours

CAP = Cooling capacity (Btu/hr)

$1{,}000$ = Constant to convert from W to kW

$SEER$ = Seasonal Energy Efficiency Ratio of existing system (Btu/W·hr)

Default value for SEER = 13

TRM EFLHc were developed during analysis of the PY6 pilot load control program, which involved logging residential air conditioner and heat pump operation in New Orleans. This monitoring data was analyzed via regression, which produced EFLHc of 1,637 based upon direct metering for a sample of New Orleans residential air conditioners.

As an example, assume the duct leakage before sealing was measured at 360 CFM and the leakage after sealing was 90 CFM. Using the SEER value of 11.5, the annual savings would be:

kWh per year = (360-90) x 1,637 x (40x0.076 – 30x0.074) x 60 / (1000 x 11.5) = 1,891 kWh per year.

3.3.2.2 Heating Savings (Heat Pump):

$$kWh_{savings,H} = \frac{(DL_{pre} - DL_{post}) x\ 60\ x\ HDD x (h_{out}\rho_{out} - h_{in}\rho_{in})\ x\ 24\ x\ 0.018}{1{,}000\ x\ HSPF}$$

Where:

DL_{pre} = Pre-improvement duct leakage at 25 Pa (ft3/min)

DL_{post} = Post-improvement duct leakage at 25 Pa (ft3/min)

h_{out} = Outdoor design enthalpy, 40 BTU/lb.

h_{in} = Indoor design enthalpy, 30 BTU/lb.

p_{out} = Density of outdoor air at 95 deg. F, .0740 lb./ft.^{3}

p_{in} = Density of outdoor air at 95 deg. F, .0756 lb./ft.^{3}

[10] ASHRAE Fundamentals 2009, Chapter 1: Psychometrics, Equation 11, Equation 41, Table 2

$EFLH_H$ = Equivalent full load heating hours

60 = Constant to convert from minutes to hours

HDD = Heating degree days (1,349)

24 = Constant to convert from days to hours

0.018 = Volumetric heat capacity of air (Btu/ft3°F)

CAP = Heating capacity (Btu/hr)

$1{,}000$ = Constant to convert from W to kW

$HSPF$ = Heating Seasonal Performance Factor of existing system (Btu/W·hr)

Default value for HSPF = 7.30.11

3.3.2.3 Heating Savings (Electric Resistance):

$$kWh_{savings,H} = \frac{(DL_{pre} - DL_{post}) x\ 60\ x\ HDD x (h_{out}\rho_{out} - h_{in}\rho_{in})\ x\ 24\ x\ 0.018}{1{,}000\ x\ HSPF}$$

Where:

DL_{pre} = Pre-improvement duct leakage at 25 Pa (ft3/min)

DL_{post} = Post-improvement duct leakage at 25 Pa (ft3/min)

h_{out} = Outdoor design enthalpy, 40 BTU/lb.

h_{in} = Indoor design enthalpy, 30 BTU/lb.

p_{out} = Density of outdoor air at 95 deg. F, .0740 lb./ft.^{3}

p_{in} = Density of outdoor air at 95 deg. F, .0756 lb./ft.^{3}

$EFLH_H$ = Equivalent full load heating hours

60 = Constant to convert from minutes to hours

HDD = Heating degree days (1,349)

24 = Constant to convert from days to hours

0.018 = Volumetric heat capacity of air (Btu/ft3°F)

CAP = Heating capacity (Btu/hr)

$1{,}000$ = Constant to convert from W to kW

$3{,}412 =$ Constant to convert from Btu to kWh

3.3.2.4 Demand Savings (Cooling):

$$kW_{savings,C} = \frac{kWh_{savings,C}}{EFLH_C}\ x\ CF$$

Where:

[11] Average of Department of Energy minimum allowed HSPF for new heat pumps from 1992-2006 (6.8 HSPF) and after January 23, 2006 (7.7 HSPF)

$kWhsavings_c$ = Calculated kWh savings for cooling

$EFLH_C$ = Equivalent full load cooling hours

CF = Coincidence factor = 0.77[12]

3.3.2.5 Field Data Collection

Duct Sealing data from 30 HPwES, and 68 other program, onsite measurements performed by the Evaluators was incorporated into deemed duct sealing savings calculations.

Below, Table 3-11 shows the breakdown of testing by program:

Table 3-11 Duct Sealing Field Verification and Testing by Program

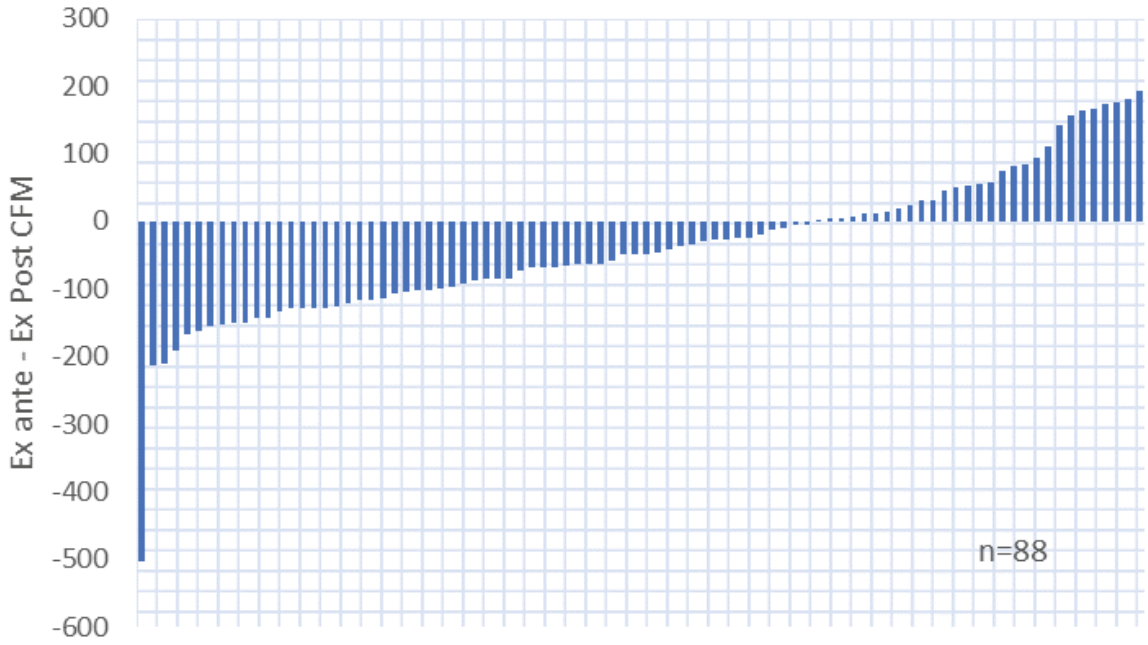
Program	Site Visit Count	Data Collection Points
Home Performance with Energy Star Program	27	30
Income Qualified Weatherization Program	17	17
Multifamily Program	4	4
Residential Heating and Cooling	44	47
Total	**92**	**98**

During these site visits, the Evaluators' field staff conducted duct blasting testing to validate post-retrofit leakage estimates indicated in program tracking data. The Evaluators examined the results of the test data and found four outlier sites, each with leakage greater than 300% of expected. These results of these sites were removed from the sample to prevent bias, resulting in an n of 94.

The results of the Evaluators' field testing are summarized in Figure 3-4. In this figure, results are organized such that homes with verified leakage that is lower than shown in tracking data are at the left end of the graph and homes with verified leakage higher than shown in tracking data are on the right.

[12] Developed through direct monitoring during the development of the New Orleans TRM

Figure 3-4 Dust Sealing Field Testing Results



The Evaluators found that 33.0% of tested homes had higher leakage than shown in program tracking, while 67.0% had lower leakage.

statistics of differences between the Evaluators' field measurements and values listed in tracking data are as follows:

- Mean difference: -39.6 CFM25, 21.1% lower than expected
- Median differencef: -48 CFM25, 33.1% lower than expected

Most homes were within reasonable range of ex ante estimates. However, the Evaluators found a total of 12 homes with leakage greater than 50% of what tracking data claimed, averaging 93.3% higher for all 12 homes. Conversely, the leakage in 27 homes was at least 50% less than expected, 66.5% on average, offsetting the homes with higher leakage. A weighted average, based on expected CFM, was taken for all 88 measurements, resulting in an average reduction of 14.1%. This factor was used to adjust expected CFM results.

3.3.2.6 Duct Sealing Savings Results

The savings resulting from applying TRM algorithms and deemed savings parameters, plus the application of field results are summarized in Table 3-12 and Table 3-13.

Table 3-12 Expected and Realized Duct Sealing Savings – New Orleans

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	304,525	310,449	101.9%	138.93	146.03	105.1%
Electric Resistance	902,489	968,925	107.4%	181.51	193.41	106.6%
Air Source Heat Pump	3,139	3,345	106.6%	0.92	0.98	106.5%
Total	**1,210,153**	**1,282,719**	**106.0%**	**321.36**	**340.42**	**105.9%**

Table 3-13 Expected and Realized Duct Sealing Savings - Algiers

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	48,341	50,375	104.2%	21.93	23.70	108.1%
Electric Resistance	88,415	94,153	106.5%	17.66	18.79	106.4%
Air Source Heat Pump	-	-	N/A	-	-	N/A
Total	**136,756**	**144,528**	**105.7%**	**39.59**	**42.49**	**107.3%**

Two projects did not see a significant enough reduction to results in kWh savings. One project listed cooling capacity as 339 tons. The other projects had an average of 3.43 cooling tons, which was substituted for 339. Ex ante calculations assumed gas heat for five projects, however the home heating type was determined to be electric resistance. Ex ante calculations in three projects incorrectly assumed the opposite. The Evaluators were able unable to reasonably recreate ex ante savings calculations for seven projects. Using correct methodology, these homes' realization rates ranged from -98% to 116% before M&V adjustments.

3.3.3 Direct Install LED Savings Calculations

Methods for calculating he deemed savings values for LEDs came New Orleans TRM, sections B.5.1.7. Calculation of Deemed Savings, B.5.3. ENERGY STAR® Directional LEDs and B.5.4. ENERGY STAR® Omni-Directional LEDs. Deemed per-unit kWh and kW savings were applicable to several lamp types installed during PY8.

3.3.3.1 Deemed Energy Savings

Table 3-14 ENERGY STAR® Omnidirectional LEDs – Deemed Savings Per Lamp[13]

Minimum Lumens	Maximum Lumens	Incandescent Equivalent 1st Tier EISA 2007 (W_{base})	LED Wattage	kWh/Lamp	kW/Lamp
310	749	29	7	16.04	0.00333
750	1,049	43	9	24.79	0.00514
1,050	1,489	53	12	29.89	0.00620
1,490	2,600	72	15	41.56	0.00862

Table 3-15 Deemed Savings for ENERGY STAR® Directional LEDs[14]

Lamp Type	Incandescent Equivalent (Pre-EISA)	Baseline Watts	Efficient Watts	kWh/Lamp	kW/Lamp
PAR20	50	35	8	19.69	0.00408
PAR30	50	35	11	17.50	0.00363
R20	50	45	8	26.98	0.00559
PAR38	60	55	11	32.08	0.00665
BR30	65	65	10	40.10	0.00832
BR40	65	65	14	37.19	0.00771
ER40	65	65	14	37.19	0.00771
BR40	75	65	14	37.19	0.00771
BR30	75	65	13	37.92	0.00786
PAR30	75	55	13	30.62	0.00635
PAR38	75	55	14	29.89	0.00620
R30	75	65	9	40.83	0.00847
R40	75	65	12	38.64	0.00801
PAR38	90	70	11	43.02	0.00892
PAR38	120	70	15	40.10	0.00832
R20	≤ 45	45	6	28.44	0.00590
BR30	≤ 50	50	9	29.89	0.00620
BR40	≤ 50	50	12	27.71	0.00575
ER30	≤ 50	50	11	28.44	0.00590
ER40	≤ 50	50	12	27.71	0.00575

For those lamps which did not have an applicable deemed savings value, savings were calculated using the following TRM algorithms:

13 TRM Table 105, page B-138

14 TRM Table 100, page B-133

3.3.3.2 Calculated Energy Savings and Peak Demand Savings

$$kWh_{savings} = \left((W_{base} - W_{post})/1000\right) \times Hours \times ISR \times IEF_E$$

$$kW_{savings} = \left((W_{base} - W_{post})/1000\right) \times CF \times ISR \times IEF_D$$

Where:

W_{base} = Based on wattage equivalent of the lumen output of the installed LED[15]

W_{post} = Actual wattage of LED installed

$Hours$ = Average hours of use per year (see Table 3-16)

IEF_E = Interactive Effects Factor to account for cooling energy savings and heating energy penalties (see Table 3-16)

IEF_D = Interactive Effects Factor to account for cooling demand savings (see Table 3-16)

CF = Coincidence Factor, (see Table 3-16)

ISR = In Service Rate, or percentage of rebate units that get installed, to account for units purchased but not immediately installed (see Table 3-16)

Table 3-16 Deemed Savings Values for Lighting Calculations

Parameter	Interior Value	Exterior Value
Hours	819.43	1,439
IEF_E	0.91	1.00
IEF_D	1.21	1.00
CF	12.74%	0.0%
ISR	.98	.98

3.3.3.3 Direct Install LED Savings Results

The savings resulting from applying TRM algorithms and deemed savings parameters are summarized in Table 3-17 and Table 3-18.

Table 3-17 Expected and Realized LED Savings – New Orleans

Lamp Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
LED A-Type Lamp	260,786	259,294	99.4%	46.14	53.77	116.5%
LED Directional Lamp	93,593	93,593	100.0%	19.42	19.42	100.0%
Total	**354,379**	**352,887**	**99.6%**	**65.56**	**73.19**	**111.6%**

15 Determined using lamp type, base type and lumen output.

Table 3-18 Expected and Realized LED Savings - Algiers

Lamp Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
LED A-Type Lamp	52,597	52,313	99.5%	9.56	10.85	113.5%
LED Directional Lamp	9,343	9,343	100.0%	1.94	1.94	100.0%
Total	**61,940**	**61,656**	**99.5%**	**11.50**	**12.79**	**111.2%**

Small savings deviation is likely the result of rounding errors in program tracking data.

3.3.4 Deemed Savings for Other Measures

For remaining program measures, the Evaluators used the following TRM sections and tables to verify savings:

Table 3-19 Summary of Measures and Expected Savings – New Orleans

Measure	TRM Section	Calculated/Deemed	TRM Table(s)	Table Page(s)
AC Tune-up[16]	B.3.6	Calculated	N/A	
Aerators	B.2.4	Deemed	Table 33	B-54
Ceiling Insulation	B.4.2	Calculated with deemed savings multipliers	Table 63	B-96
LEDs	B.5.3, B.5.4	Deemed and Calculated	Table 99, Table 100, Table 105	B-132, B-133, B-138
Pipe Wrap	B.2.3	Deemed	Table 31	B-51
Power Strips	B.1.5	Deemed	Table 11	B-26
Showerheads	B.2.5	Deemed	Table 38	B-60
Programmable Thermostats	2.1.12 Arkansas TRM 7	Deemed	Equation 71	86
Smart Thermostats	New Orleans TRM V2	Custom Calculations		

3.3.5 Savings from Home Energy Savings Kits

Savings for HESKs, which contained aerators, LEDs and a showerhead was calculated using applicable sections from Table 20 above. To approximate in-service rates and water heating types, the Evaluators used data taken from the previous four years of the School Kits and Education program. This Energy Smart program sends similar kits home with students and requires they bring back information regarding whether the product was

[16] Detailed methodology for this measure is described in the "Residential Heating and Cooling" section of this report.

installed, and what the home water heating type is. A promotional flyer for the program in available in Appendix D of this report.

Several homes in each territory received multiple kits: 34 homes in New Orleans received two kits, while eight homes received three kits. In Algiers four homes received two kits and one received three.

Table 3-20 Duplicate Kit Distribution

Kits count	New Orleans	Algiers
1	4,180	643
2	34	4
3	8	1
Total	**4,222**	**648**

It is unlikely that additional aerators and showerheads will result in additional savings, though additional LED lighting may have a high in-service rate. The Evaluators have included realized savings from the LED components of the 43 kits sent to duplicate addresses, but not savings from hot water measures.

Using the TRM supplemented with this data, realized Mailer Kit savings is as follows:

Figure 3-5 Mailer Kit Realization Rates, New Orleans

Lamp Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Aerator 1.0	44,429	46,305	104.22%	4.70	4.821	102.34%
Aerator 1.5	26,486	27,783	104.90%	2.99	2.89	96.62%
LED 9	206,338	227,895	110.45%	42.29	65.83	155.65%
LED 15	115,344	129,343	112.14%	23.92	36.79	153.77%
Showerhead	226,843	327,980	144.58%	23.50	34.11	145.17%
Total	**619,440**	**759,306**	**122.58%**	**97.40**	**144.43**	**148.28%**

Figure 3-6 Mailer Kit Realization Rates, Algiers

Lamp Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Aerator 1.0	6,802	7,108	104.50%	0.72	0.74	102.74%
Aerator 1.5	4,055	4,264	105.16%	0.46	0.44	96.87%
LED 9	31,588	34,888	110.45%	6.47	10.08	155.65%
LED 15	17,658	27,180	153.93%	3.66	5.63	153.77%
Showerhead	34,727	50,339	144.95%	3.60	5.24	145.54%
Total	**94,830**	**123,779**	**130.53%**	**14.91**	**22.13**	**148.39%**

3.4 Verified Gross Savings

Realized savings is presented by program channel in Table 3-21 through Table 3-22.

Table 3-21 Gross Realization Summary – New Orleans

Measure	Expected kWh Savings	Expected kW Savings	Verified kWh Savings	Verified kW Savings	Realization	
					kWh	kW
AC/HP Tune ups	75,619	86,690	114.6%	27.38	30.83	112.6%
Aerators	848	848	100.0%	0.09	0.09	100.0%
Air Sealing	155,612	207,788	133.5%	50.59	67.97	134.4%
Duct Sealing	1,210,153	1,282,719	106.0%	321.36	340.42	105.9%
Insulation 0-30	98,978	97,113	98.12%	26.21	26.21	100.00%
LED Lighting	354,379	359,369	101.4%	65.56	65.60	100.1%
Power Strips	64,915	64,915	100.0%	6.88	6.88	100.0%
Showerheads	11,752	11,752	100.0%	1.22	1.22	100.0%
Smart Thermostats	203,970	203,970	100.0%	0.00	0.00	N/A
Mailer Kits	619,440	759,306	122.58%	97.40	144.43	148.28%
Total:	**2,795,666**	**3,074,470**	**109.97%**	**596.69**	**683.65**	**114.57%**

Table 3-22 Gross Realization Summary – Algiers

Measure	Expected kWh Savings	Expected kW Savings	Verified kWh Savings	Verified kW Savings	Realization	
					kWh	kW
AC/HP Tune ups	11,697	12,604	107.8%	4.24	4.48	105.7%
Aerators	354	354	100.0%	0.04	0.04	100.0%
Air Sealing	7,849	10,826	137.9%	2.54	3.54	139.4%
Duct Sealing	136,756	144,528	105.7%	39.59	42.49	107.3%
LED Lighting	61,940	62,768	101.3%	11.50	11.48	99.9%
Power Strips	7,061	7,061	100.0%	0.77	0.77	100.0%
Showerheads	1,807	1,807	100.0%	0.18	0.18	100.0%
Smart Thermostats	12,432	12,432	100.0%	0.00	0.00	N/A
Mailer Kits	94,830	123,779	130.53%	14.91	22.13	148.39%
Total:	**334,726**	**376,159**	**112.38%**	**73.77**	**85.11**	**115.37%**

3.5 Estimation of Net Savings

Participant survey responses were used to estimate the net energy impacts of the program. The program net savings are equal to gross savings, less savings associated with free ridership, plus participant spillover savings. The methodology used is described in detail in Section 2.2.3.

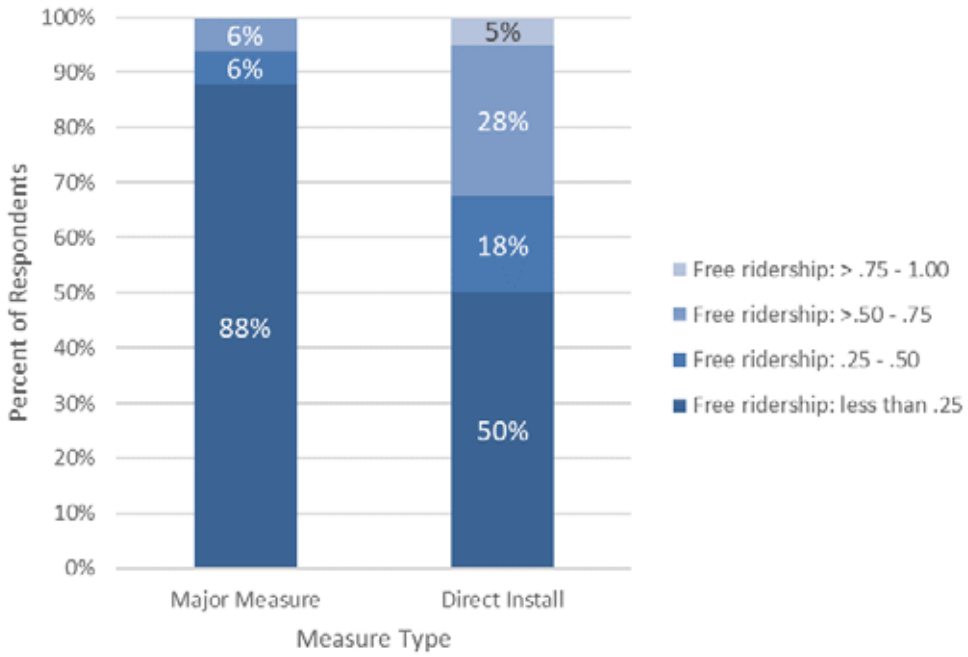
To estimate program-level free ridership, the Evaluator calculated free ridership scores for major and direct install measures, weighted by the participants' gross energy savings and demand reductions. The major and direct install measure free ridership ratios were used to factor the program verified gross savings for the two measure types to estimate free ridership.

A spillover ratio was developed by dividing the total energy savings and demand reductions resulting from spillover measures by the total gross energy savings and demand reductions for the sample of survey respondents.

3.5.1 Net Savings Results

Figure 3-7 summarizes the distribution of free ridership scores by measure type. As shown, free ridership scores were lower for major measures than direct install measures. The difference may be due to the higher cost of major measures and generally greater familiarity with direct install measures like LED light bulbs.

Figure 3-7 Distribution of Free Ridership Scores by Program Component



One respondent reported installing additional measures determined to qualify as spillover savings.

Table 3-23 and Table 3-24 summarize the program net kWh savings and peak kW demand reduction impacts of the HPwES Program.[17]

17 Net savings estimates were based on all survey respondents and the same value was applied to ENO and Algiers projects.

Table 3-23 HPwES Summary of Verified Net Savings

Utility	Expected kWh Savings	Verified Gross kWh Savings	Free Ridership	Spillover	Verified Net kWh Savings	Net to Gross Ratio
ENO	2,795,666	3,074,470	556,381	10,926	2,529,013	82.26%
Algiers	334,726	376,159	78,254	1,337	299,241	79.55%
Total	**3,130,392**	**3,450,629**	**634,637**	**12,263**	**2,828,254**	**81.96%**

Table 3-24 HPwES Summary of Verified Net Peak Demand Reductions

Utility	Expected Peak kW Reductions	Verified Gross Peak kW Reductions	Free Ridership	Spillover	Verified Net Peak kW Reductions	Net to Gross Ratio
ENO	596.69	683.65	98.02	2.43	588.06	86.02%
Algiers	73.77	85.11	14.25	0.3	71.16	83.61%
Total	**670.46**	**768.76**	**112.27**	**2.73**	**659.22**	**85.75%**

Net to gross ratios in above tables represent overall ratios, accounting for both major and DI measures. Individually, major measure NTG is 94.82% and DI is 67.23%

3.6 Process Evaluation Findings

3.6.1 Summary of Program Participation

This section summarizes the findings from the analysis of the program tracking data provided by the implementation contractor.

Table 3-25 summarizes participation in the program. As shown, nearly all participants received direct install measures and approximately 10% implemented a major measure (e.g., insulation, duct sealing). Eight percent of participants received direct install and implemented a major measure.

Program data indicated that 12% of customers received an assessment. This is likely erroneous because the program design is such that projects are initiated with an assessment.

Table 3-25 Share of Customers Receiving Measures and Assessments

Number of Participants	Percent Receiving Direct Install Measures	Percent Receiving Major Measures	Percent Receiving Direct Install and Major Measures	Percent Receiving an Assessment	Average Expected Savings per Participant
5,589	98%	10%	8%	12%	560

Table 3-26 summarizes projects savings by measure type. The table shows that that duct sealing accounted for nearly one-half of program expected savings though it was implemented by less than 10% of participants.

Table 3-26 Summary of Measures Installed

Measure	Expected kWh Savings	Incentives Paid	Number of Participants	Percent of Expected Savings	Incentive Dollars per kWh Saved
Duct sealing	1,346,909	$228,702	403	43.0%	$0.17
Lighting	787,247	$78,816	5,454	25.1%	$0.10
Showerhead	275,131	$31,920	4,955	8.8%	$0.12
Smart thermostat	216,402	$36,000	123	6.9%	$0.17
Air sealing	163,460	$64,248	149	5.2%	$0.39
Insulation	98,978	$6,552	12	3.2%	$0.07
AC tune-up	87,316	$16,650	98	2.8%	$0.19
Faucet aerator	82,973	$12,561	4,947	2.7%	$0.15

3.6.2 Program Goals, Design, and Delivery

This section summarizes the core findings of interviews conducted with Entergy New Orleans (hereafter "Entergy") program staff and Franklin for the purposes of gaining insight into program design, identifying program objectives, and assessing the extent to which there are future opportunities for program improvement.

ADM evaluators spoke with Entergy program staff, in addition to Franklin staff to better understand how the Home Performance with ENERGY STAR (HPwES) program performed in program year 8 (PY8). Staff also reviewed the HPwES webpage (https://www.energysmartnola.info/home-performance-with-energy-star/), which provides details about the program and contact information.

3.6.2.1 Program Goals

Entergy and Franklin both indicated the HPwES is running smoothly and the program expected savings exceeded its expected overall savings.

The HPwES program has separate goals for Algiers and New Orleans (149,257 and 2,008,202 kWh, respectively). During the year, staff reported that meeting the Algiers goal was challenging due to less participation, but the program exceeded it by the end of the year.

3.6.2.2 Program Design

There were not any significant changes to the design of the HPwES program in PY8 until December, when Home Energy Savings kits were introduced to support an end of year boost. These kits account for 22.1% of overall expected savings

HPwES is the main whole home audit program for the Energy Smart portfolio. All participants receive a walkthrough energy assessment and low-cost direct install measures at no cost to the customer. Any residential Entergy customer in a single-family home may participate in the program, however, homes with natural gas heating may not receive measures such as insulation and air sealing.

The program is implemented by Franklin Energy (Franklin) under subcontract to Aptim. Franklin staff conducts the home energy assessments; which staff stated gives them

more control over the process. Franklin staff suggested that some trade allies may not like this change to the program, but they believe it reduces the amount of verification and quality control that is needed in the field.

Trade allies install major measures such as air sealing, duct sealing, and insulation. Currently, there are 13 active trade allies who are listed on the website. Some trade allies have yet to complete projects or have "fallen off" for various reasons. There is a trade ally liaison who works directly with the trade ally network and provides outreach. Franklin provides leads to trade allies and they are required to contact customers within four business days after receiving the lead. After the work is completed, rebates are mailed within 45 days of the initial work order provided by Franklin.

3.6.2.3 Marketing and Outreach

Franklin is responsible for marketing all the residential programs including the HPwES program. Entergy has limited involvement with marketing.

Marketing activities of the residential programs include several channels. Primary marketing activities for the Energy Smart residential programs in PY8 included:

- Developing program marketing collateral such as brochures;
- Bill inserts;
- Trade ally marketing and promotion to clients;
- Email campaigns;
- Entergy's circuit newsletters;
- Facebook ads;
- Nurture email campaigns (outbound phone calls to open emails to encourage program participation);
- Advertising on Entergy's webpage;
- Cross promotion through other Energy Smart programs;
- Post card mailing; and
- Outreach efforts by Energy Wise.

The Energy Smart program launched a new website (https://www.energysmartnola.info/) in PY8. Implementation staff was excited to establish ownership over the website, which had been inherited from the previous implementer. They can better maintain and update the new site and believe it will be easier to navigate for the end user. Within the website, there is a page dedicate to each residential program, which provides useful information about program participation, the process, and participating trade allies, along with their contact information.

Franklin staff does track some marketing efforts but indicated that some forms of marketing are easier to track than others. For example, when they launch a Facebook ad campaign, the platform provides analytics whereas a post card campaign can be more challenging to track outcomes.

The marketing message for residential programs is “comfort and energy savings.” The focus is on simple ways customers can save energy and money, while not losing any comfort. Entergy requested that New Orleans residents and locale be reflected in the marketing. Marketing materials use pictures shot in New Orleans and does not rely on stock photos.

Trade allies have the option of co-branding marketing materials for their use. Trade allies work closely with Franklin and Entergy to develop materials which include both entities branding and logos. There is an approval process for co-branding.

Outreach

Energy Wise staff are mainly responsible for outreach events for the residential Energy Smart programs. They attend and staff booths at fairs, festivals, and other local events. At the Entergy Customer Care Center, they set up tables to provide education to customers about the residential programs. Customer leads generated at events are provided to Franklin for follow up. On a less frequent basis, Energy Wise conducts hands-on workshops where they provide more detailed information to customers about strategies to increase energy efficiency in homes and inform them about Entergy programs.

During a program year, Energy Wise attends approximately 100 to 120 events. Staff select events they believe will have high attendance and people who may be more likely to participate in programs. Staff looks at previous program years to determine what events would be a good fit for the current year. Energy Smart marketing collateral is used at events and when engaging customers.

Energy Wise uses three metrics to measure outreach effectiveness. For each event, Energy Wise tracks how many people attended the event, the number of people who take literature and that staff engages with, and the number of people who require additional follow up. This information is reported to Aptim in addition to the name, date, and address of the event, and the staff that attended.

When Energy Wise engages with a potential program participant, they ask a series of questions to gauge what program may best fit their needs (e.g., Are you a homeowner or a renter? How much is your electricity bill?) and let customers know how they can save money.

> *“People pretty quickly hone in on what they are interested in. People focus in on light bulbs, so we can bring up the retail lighting program and the assessor coming out to do direct install.”*

Although Energy Wise’s outreach activities are primarily focused on residential customers, the organization has provided some assistance to the Small Commercial program. For example, if staff interact with a small business owner at an outreach event, they will speak with them about the Energy Smart program and provide them a list of contractors.

Energy Wise reported that their outreach activity is responsive to the needs of each program and the corresponding goals. That is, they will perform more targeted outreach focused on under subscribed programs.

3.6.2.4 Communication

Entergy, Aptim, and Franklin staff have bi-weekly in-person meetings, along with more frequent informal communication via email and phone. When Franklin and Aptim took over as the implementers, there were weekly meetings, but the frequency was reduced in PY8. (PY7 required more frequent communication because it was the first year of new implementers). The only caveat to biweekly schedule is weekly discussions of the direct load control program during the peak season. The more regular calls help with planning for upcoming peak events. In addition to the biweekly joint call with Entergy, there are internal meetings for Aptim and Franklin.

The goals and objectives of the biweekly meetings are to provide updates on program performance, discuss program issues, identify ways to address challenges, and present creative ideas from the implementers to Entergy.

> *"It allows Entergy employees and our team to have open lines of communication. We feel more comfortable going to them with questions, ideas, and opportunities. Because we have constant face-to-face communication, it has become less rigid."*
> *– Implementation staff*

There are standing agenda items, such as incentive budget and program performances, for each meeting. Prior to each meeting, the implementers coordinate other agenda topics and provide it to Entergy in advance. While the agenda does change each week, topics discussed are based on priorities.

All program staff and implementers agreed the current communication is effective and did not provide any suggestions for improvement. The communication between the program staff and implementers was described as "good", "responsive", "professional", "transparent", and that there is an "open-door policy". One person indicated that the time spent in the biweekly meetings demonstrates a commitment to the client and the programs.

3.6.2.5 Quality Control Processes and Data Management

Entergy primarily relies on data reported by Aptim and utilizes spreadsheets to track key data. Aptim is in the process of developing a comprehensive database. Franklin staff indicated they utilize a Salesforce based system to track program activity. The system allows for the creation of dashboards, which can present data in a variety of ways.

The current data collected for the residential program monitoring includes:

- Participant name and customer information;
- Measures installed;
- Install counts;
- Features of homes (fuel system);
- Home energy savings calculations (which is needed for review);
- Energy savings;
- Incentive budget;
- Lead sources;

- Outreach completion rates; and
- Marketing activities (e.g., emails and newsletters sent, open rates, click through rates, Facebook analytics, outbound calls, and website visits).

Aptim generates monthly reports for Entergy's review. Entergy also receives bi-weekly reports, that specifies program performance and activities.

One Entergy staff person suggested that integrating past program performance to track the program activity across the current and past implementer. This person suggested it would be a useful enhancement but noted that overall, they believe the data is well managed.

3.6.2.6 Quality Control/Assurances

The implementers, Franklin and Aptim, are mainly responsible for quality assurance and control (QA/QC) procedures for the residential programs. For example, with the Home Performance with ENERGY STAR and Income-Qualified Audits and Weatherization programs, QA/QC practices include field verification of the audits and reporting measures installed. Franklin field forms, which were used in PY8, are used during the QA/QC verification visits. During these visits, staff verifies measures installed, counts, and insulation depth diagnostic and visual reviews of infiltration reduction, and preparation methods for services.

Additional quality assurance practices include a trade ally training which is provided by Franklin. The training sessions provide trade allies with information on how to fill out forms, the SharePoint spreadsheet that provides information on projects assigned to trade allies, and any other technical assistance that may be needed.

Another quality assurance practice for the residential programs includes a careful review of marketing collateral. All marketing materials go through several rounds of review before they released for use.

Entergy has a more limited role in the QA/QC procedures for the Energy Smart residential programs. Desk reviews are performed monthly by a former Entergy employee. Reports are provided in advance to create a sample for the desk review. The desk review examines if the KPIs are being followed and areas for improvement.

Entergy staff indicated that Franklin and Aptim are doing a good job of ensuring quality assurance and quality control. There were no anticipated changes or improvements QA/QC procedures for the coming program year.

3.6.2.6.1 Trade Ally Ride-Alongs and On-Site Observations

During the course of PY8 work, field staff from the Evaluators accompanied trade allies during 10 trade ally appointments to homes participating in the HPwES, LIA&Wx, MF and RH&C programs. Trade allies had existing appointments to test homes or install major measures, such as duct sealing, air sealing, insulation and AC tune-ups. Without interfering, the Evaluators observed trade allies' installation and testing procedures. Observations by measure are as follows:

3.6.2.6.1.1 Air Sealing Leakage and Testing:

All observed trade allies performed air sealing testing in accordance with the proper procedures, however it was noted that there are possible missed opportunities: Evaluators suggest finding the largest air leaks first by locating the break in the thermal boundary and then focus on smaller ones. The main sources were Attic Stairs, Fire Places and HVAC closets open to the attic.

3.6.2.6.1.2 Duct Leakage and Testing:

All overserved trade allies performed duct sealing testing in accordance with the proper procedures, however it was noted that there are possible missed opportunities and the Evaluators suggest the follows:

- When readings are high, look for sealing opportunities in the return and for obvious breaks around the collar.
- Any seam or duct collar, interior or exterior, should be sealed with mastic, not foil tape.
- Turn HVAC equipment fan to feel for leaks around air handler, and pressure pan each duct to locate the highest leakage source.
- Seal all air returns. Field staff noted that not all air returns were fully sealed, which can lead to higher test results.

3.6.2.6.1.3 Insulation:

Insulation was consistently installed correctly across all observations. Field staff noted that depth gauges were not always easily visible, but inspections with a ruler all showed the minimum depths claimed.

3.6.2.6.1.4 AC Tune-Ups:

During approximately half of the AC tune-ups observed, trade allies were observed not fully cleaning the units. In one instance, the TA cut a hole in a duct to access the coils.

The TA then sprayed coil cleaner on the coils without first cleaning loose dirt from the coils, then left the cleaner there to dissolve the build-up and flow down the drain line, with no follow-up. This is problematic in that it allows excess dirt to clog the drain and possibly cause issues for the homeowner/renter later on. Coils should be physically cleaned first before chemical cleaners are applied and drain holes should be verified to be unobstructed before completing a job.

3.6.3 Trade Ally Feedback

The following sections summarize the findings from interviews completed with seven residential program trade allies and online surveys completed by two trade allies.

The interviewed trade allies provide services for HPwES, Low Income Audit and Weatherization, Multifamily, and the Heating and Cooling Program. The feedback provided pertains to each of these offerings.

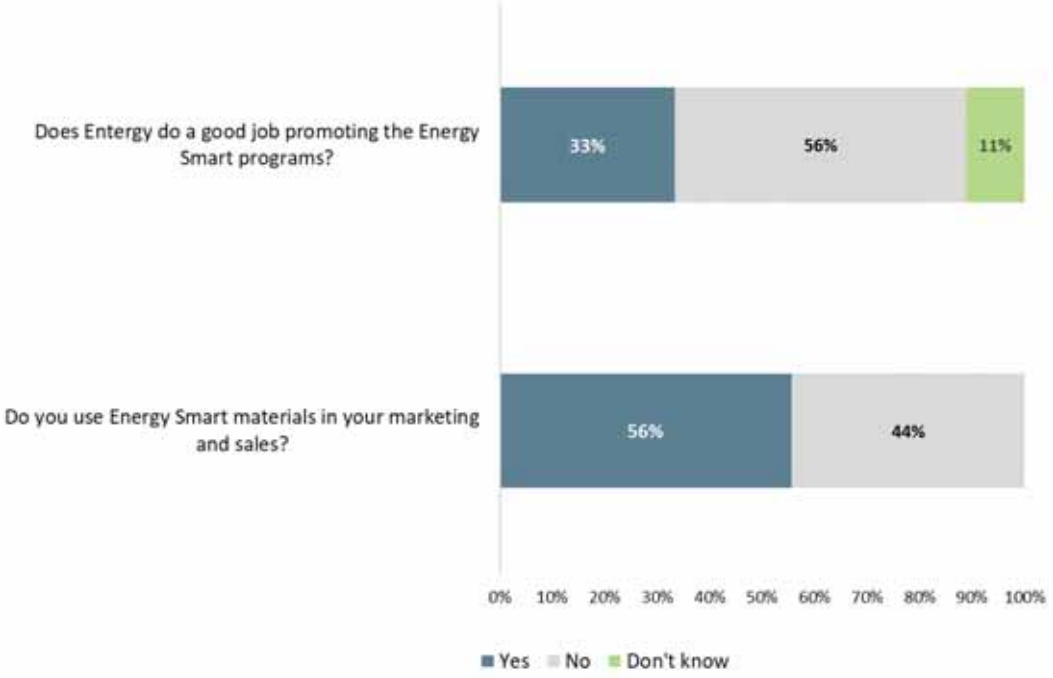
3.6.3.1 Marketing and Promotion of Energy Smart with Customers

All trade allies (n=9) indicated they promote Energy Smart with Entergy New Orleans customers. Some of the trade allies (44%) indicated they encourage customers to visit the Energy Smart website. Some also stated they provide information directly about the

program and rebate process through presentations to customers. One trade ally indicated they use yard signs and door hangers to promote the program and encourage their technicians to engage and educate customers when possible. Some trade allies rely on cold calling, word-of-mouth referrals, paid leads, and digital marketing to solicit interest in participating in the Energy Smart program for Entergy New Orleans customers.

Not all trade allies had Energy Smart materials and expressed interest in having materials on hand when working with customers. Fifty-six percent of trade allies use Energy Smart materials when promoting the program to customers, and 33% believe Entergy does a good job of promoting the program (see Figure 3-8).

Figure 3-8 Trade Ally Views on Energy Smart Marketing Material Use and Promotion



When asked what Entergy could do to better promote Energy Smart, trade allies suggested additional education campaigns, TV and radio advertising, social media campaigns, and targeting materials for specific audiences. Regarding the last suggestion, one trade ally suggested developing collateral that is tailored to the specific equipment which is being promoted and another suggested exploring ways to communicate the program to different socio-economic statuses (SES). Trade allies suggested that well branded materials and advertising adds legitimacy to their efforts of promoting the program and helps them convince potential clients that this program is designed to assist them. One trade ally noted that he has noticed increased awareness of energy efficiency since the program originally launched due in part to the efforts by Entergy.

3.6.3.2 Trade Ally Recruitment of Customers

Among the trade allies that completed projects with the previous implementer, five stated their level of recruitment has changed and three said it has stayed the same. Those who stated their level of recruitment changed stated they find the assessment process to be "difficult" or "hard for us."

Two trade allies believe their recruitment is hampered by the energy assessment process. One trade ally indicated he believes some business is lost because the implementer does the energy assessments on the front end. Another trade ally stated his clients do not have an interest in "another person coming over to do the energy assessment" and that they only complete projects when the implementer provides the referral.

Nevertheless, other trade allies did not consider the implementer's performance of the audits as a limitation. In fact, one trade ally had no reservations with the process *"I am much more of an advocate for the program, I feel more comfortable sending people to Energy Smart and getting positive results."* Another stated*, "I stopped working with [the previous implementation contractor] so I was not going to promote them."*

All trade allies indicated they are notified about assigned projects. Project assignments are shared through a SharePoint Excel document. None had any issues with this process or suggestions for improving the process.

The most common issue raised by trade allies was with respect to the amount of paperwork required to document a project (start to finish). Other complaints included a long period between when a referral is provided to the implementation contractor and when it is sent back as scheduled work. One respondent indicated they had lost leads they had provided. *"If we could do the audit ourselves or be the first person to be there, it would save about a month."*

3.6.3.3 Changes to Work Orders

Six trade allies indicated they identify needed changes to the original work order developed by the implementer, although they all said this does not happen often (approximately 10 – 25% of the time). Examples respondents provided of changes that they requested included:

- Removal of a recommendation to seal attic ducts because the home did not have an attic;
- Changes in baseline insulation levels;
- Homes with gas heating incorrectly identified as having electric heating;
- Measures that need to be included; and
- Items missing like attic inspections.

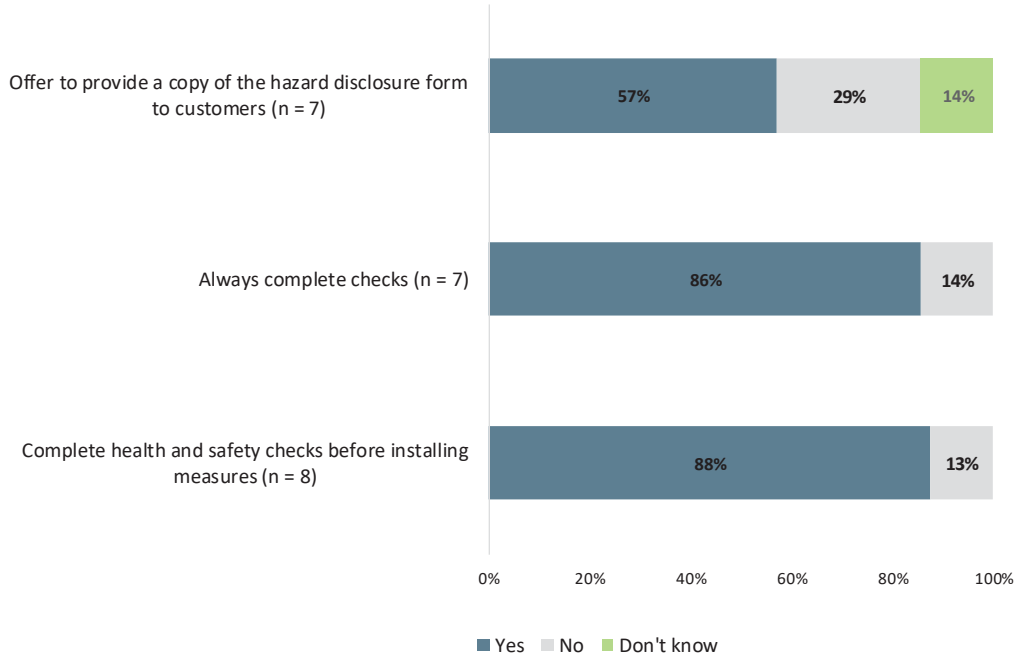
Trade allies indicated they communicate needed work order changes to program staff and that they answer them in a timely manner.

3.6.3.4 Program Design and Function

Most trade allies find the program forms and process to submit project information clear. As stated previously, the biggest issue was the transition to a paper system.

Eighty-eight percent of the trade allies interviewed indicated they complete health and safety checks before installing measure. Among those who complete the health and safety checks, 100% indicated they always complete this practice (see Figure 3-9). Some trade allies indicated they repair health and safety issues depending on the severity of the issue and others indicated they did not. A hazard disclosure form to document issues found in a home is available to all Trade Allies.

Figure 3-9 Health and Safety Disclosure



3.6.3.5 Awareness of Program Measure Requirements

Trade allies were asked to self-report their knowledge and understanding of program limitations as they relate to sealing based on pre-work leakage testing, duct sealing, and insulation. Their responses indicated some inconsistencies in the understanding of program requirements.

- The majority of trade allies interviewed indicated they were aware of the requirements for installing insulation and performing air sealing.
- 25% indicated they were aware of the requirements for duct sealing.
- When asked the maximum R-value of insulation which *could* be installed through the program, three indicated R-30, one stated R-38 and the rest did not provide an answer.[18]

Four trade allies indicated they felt the restrictions were appropriate and do not limit the program's ability to generate energy savings for customers.

3.6.3.6 Training and Communication

Sixty-six percent of interviewed trade allies indicated they received training from the implementation contractor, and among those who received it, all found it somewhat or very useful. One trade ally suggested exploring the option of providing continuing education credits (or CEUs), as this was an option provided by the previous implementation contractor.

[18] There is lo limit to the amount of insulation that can be installed, but the program does not provide incentives past R-30.

None of the trade allies interviewed had any problems communicating with the implementation contractor.

3.6.3.7 AC Tune-Ups

Four trade allies participated in the AC tune-up program. All but one indicated they always inspect a customer's duct system for leakage when completing a tune-up. Two indicated they use a duct leakage tester and two others indicated they use both the tester and conduct a visual inspection. Two trade allies stated they always recommend customers seal their ducts and receive a rebate from Entergy (one trade ally indicated they do this "90%" of the time).

3.6.3.8 Successes, Challenges and Suggestions from Trade Allies

Trade allies rated their satisfaction with communication and the program overall using a scale from 1 (not at all satisfied) to 5 (completely satisfied). Trade allies were most positive about the Energy Smart program overall. On average, trade allies were satisfied with the program overall (mean = 4.0) and communication with program staff (mean = 4.1) (see Table 3-27).

Below is some of the verbatim feedback received from trade allies:

"It offers a meaningful way of reducing energy usage in the city."

"The program itself is a great thing. Energy efficiency is good. The more efficient your unit is, it is a win-win for the customer and company. I think if it was promoted a little bit better and more people know about it, it has great potential."

"I like the program, it helps people who need help, it saves energy."

Table 3-27 Program Satisfaction Among Trade Allies

Satisfaction Rating	Communication with program staff (n = 9)	Program overall (n = 9)
1 - Not at all satisfied	0%	0%
2	0%	0%
3	33%	22%
4	22%	44%
5 - Very satisfied	44%	22%
Don't know	0%	11%

3.6.3.9 Challenges and Suggestions.

Some trade allies expressed frustration with the changes to the new implementation contractor in PY8. The issues noted were a slow process when referrals are provided to the program staff, the change from an electronic to a paper system, and not being able to provide audits themselves which slows down the process of project completion.

Some trade allies provided suggestions to improve the program.

- Create a system that guarantees all referrals provided by trade allies are assigned to that specific contractor.

- Return to a system that is electronic and rely less on paper – online submission of required forms.
- Increase education and awareness campaigns by including more public service announcements (PSAs) or other types of advertising.
- Ensure that all trade allies are aware of the marketing collateral available to them, co-branding opportunities, and the trade ally advisory committee, as some reported they were not aware of these things.

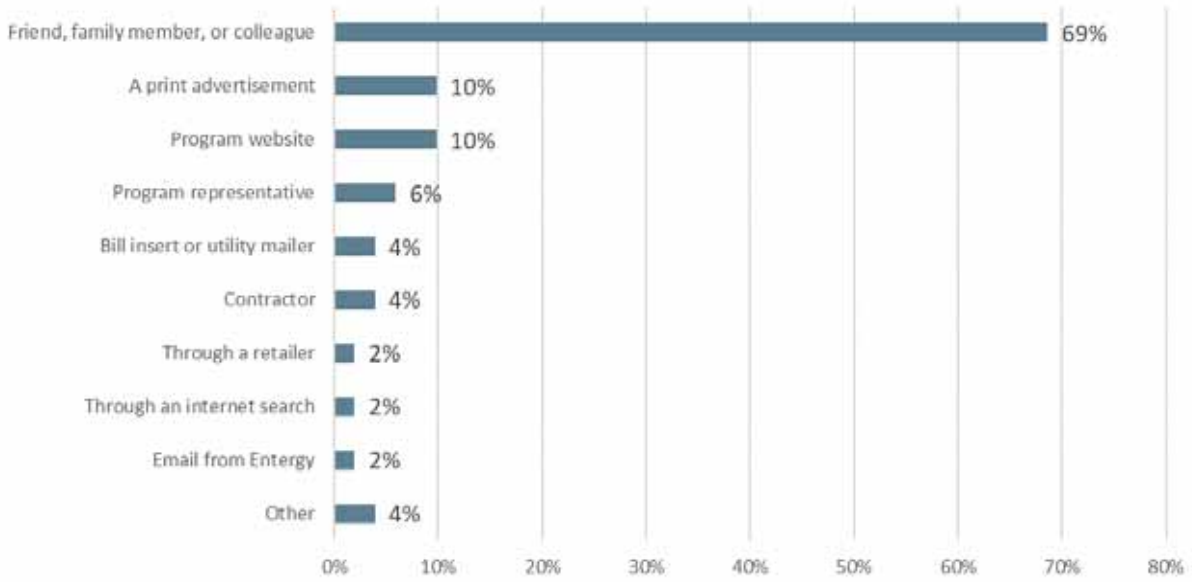
3.6.4 Participant Feedback

The Evaluators administered a telephone survey to a sample of program participants to solicit feedback on customers experience with the program. In total, 53 participants completed the survey.

3.6.4.1 How Customers Learned of the Program

As illustrated in Figure 3-10, customers most often reported learning of the program from their family, friends or coworkers. Program marketing efforts contributed to 26% of customers learning about the program – 10% learned of it from a print advertisement, 10% from the program website, 4% from a bill message or mailer, and 2% from an Entergy email. Additionally, 6% of participants learned of it from a program representative.

Figure 3-10 Source of Program Awareness



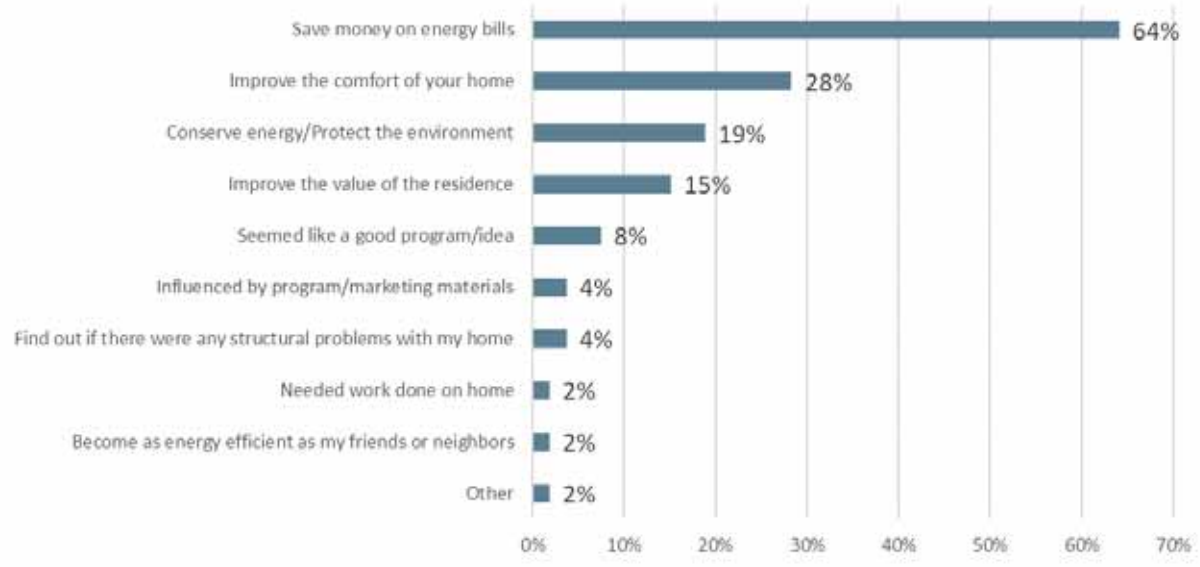
3.6.4.2 Motivations for Participating

Figure 3-11 displays motivations for participating. A clear majority of participants, 64%, were motivated to save money on their energy bills. Other common motivational factors were:

- Improving home comfort (28%);
- Environmental concerns (19%); and

- Improving the value of the home (15%)

Figure 3-11 Reasons for Participating



3.6.4.3 Home Assessment Feedback

An important part of the HPwES program design is the energy assessment which helps customers identify opportunities that they may not be aware of to save energy, provides an opportunity to demonstrate the potential energy savings that may be achieved, and helps address issues to address known comfort issues that would help them save energy.

Most participants 86% indicated that it was easy to schedule the home assessment by rating the ease of scheduling the visit as a 4 or 5 on the 5-point scale (Table 3-28).

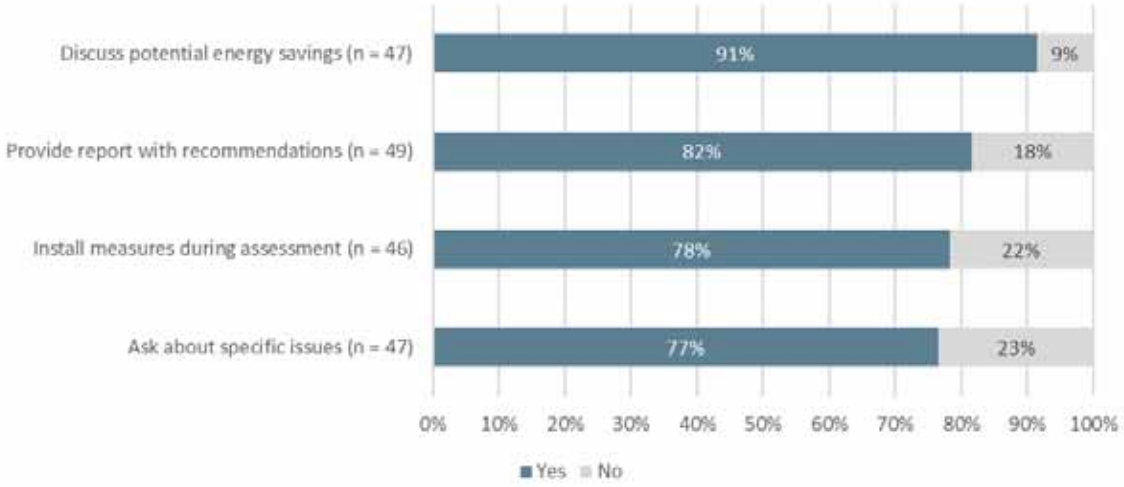
Table 3-28 Ease of Scheduling Assessment

Response	*Valid Percent (n = 53)*
5 (Very easy)	79%
4	8%
3	6%
2	2%
1 (Very difficult)	6%

Figure 3-12 summarizes participant responses to actions taken by the assessor during the visit. Most respondents (91%) reported that the assessor discussed potential energy savings with them. Smaller shares reported that the assessor provided a report with recommendations (82%), installed measures during the visit (78%), or asked about specific issues (77%). It should be noted that tracking data indicated that all but one of

the respondents who reported measures were not installed during the assessment received direct install measures.

Figure 3-12 Participant Reports of the Actions Taken by Assessor



Nearly all participants who reported receiving the assessment report found it to be helpful. Ninety-two percent rated it as 5 – very helpful, and 6% rated the helpfulness as a 4 (Table 3-29).

Table 3-29 Helpfulness of Report

Response	Percent (n = 36)
5 (Very helpful)	92%
4	6%
3	0%
2	3%
1 (Not at all helpful)	0%

3.6.4.4 Barriers to Implementing Recommendations

Forty-nine percent of participants reported that they installed all recommended energy saving measures and a small share, 4% had not completed any of the recommended measures.

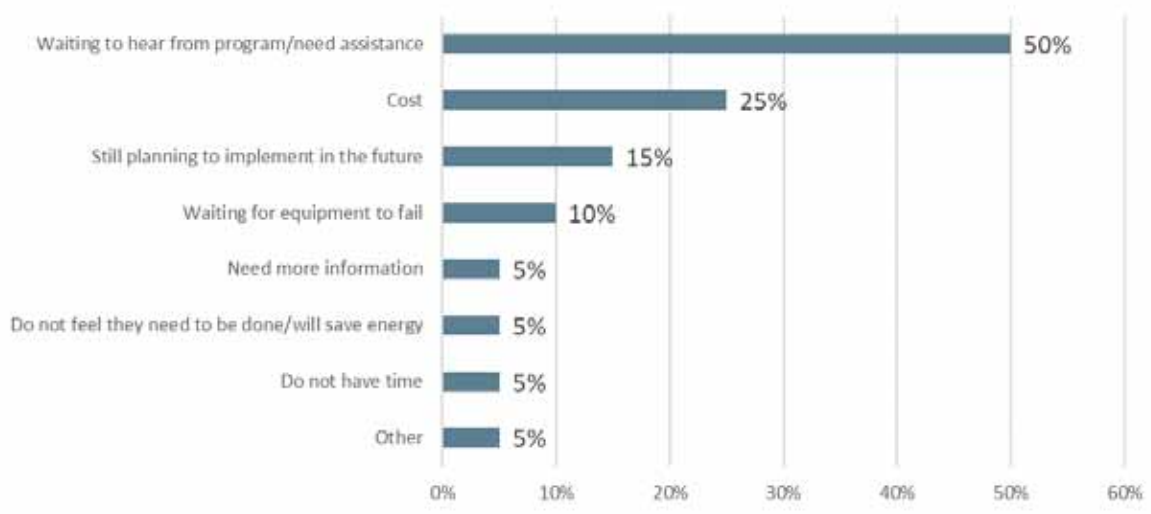
As shown in Table 3-30, insulation was the measure that participants most often reported not installing, followed by AC tune-ups and leakage reduction.

Table 3-30 Recommended Measures Participants Reported Not Installing

Measure	Number Reporting
Insulation	11
AC tune up	5
Air leakage reduction	5
Heating equipment	2

Figure 3-13 summarizes respondents' reasons for not installing all measures. One-half said they had not installed the measures because they were waiting to hear back from programs staff or that the needed program assistance. Review of program tracking data for these customers indicated that all did receive major measures, but that the time between the initial participation and the last measure installation ranged from two to six months.

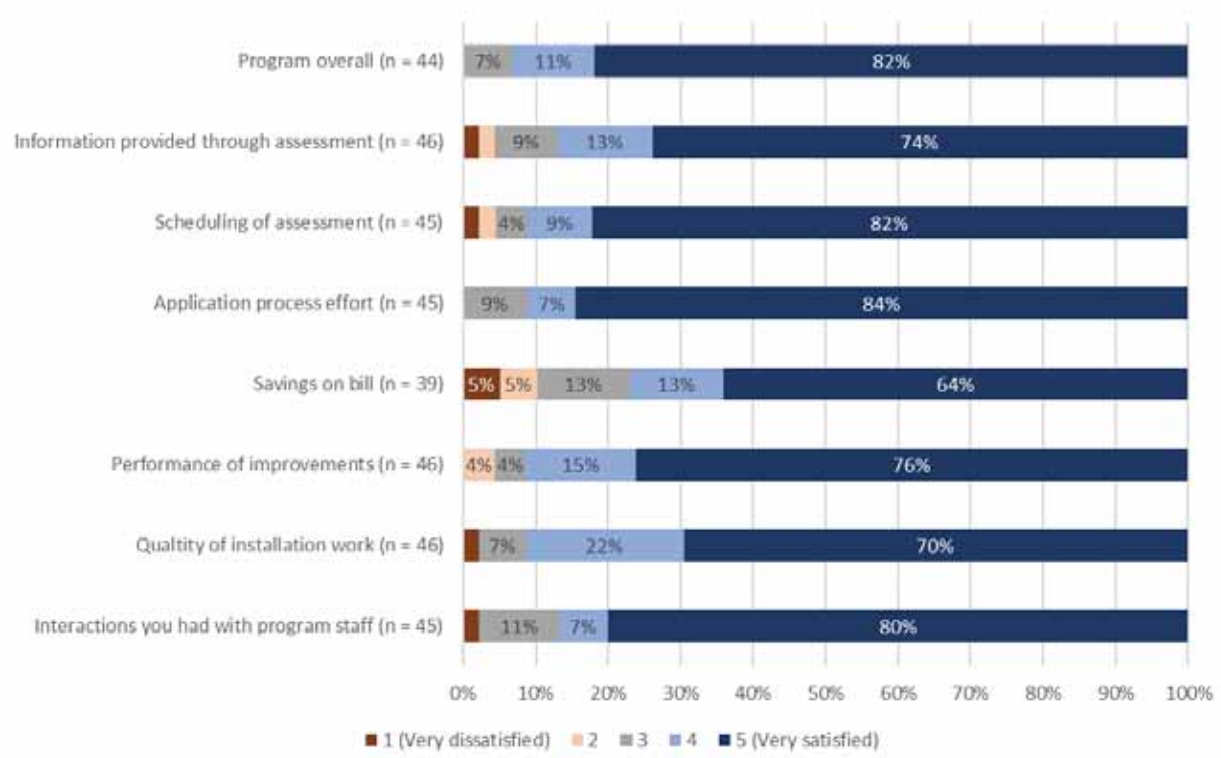
Figure 3-13 Reasons for Not Installing all Measures



3.6.4.5 Participant Satisfaction

Ninety-three percent of respondents indicated satisfaction with the program overall by rating their satisfaction as a four or a five. None were dissatisfied with the program. About 10% of participants were dissatisfied with the savings on their energy bill. While noticing energy savings on a bill can be challenging given the month-to-month variation in energy savings, energy savings were a commonly cited motivation for participating.

Figure 3-14 Participant Satisfaction



Seven respondents provided open ended statements regarding their reasons for dissatisfaction. Again, the most common reason was the lack of energy cost savings noticed.

Table 3-31 Reasons for Dissatisfaction

Reason for Dissatisfaction	Number of Responses	Example Comment
No bill savings	3	"Didn't make difference in the bill, it is still high"
Problems with installed thermostat	1	"Currently experiencing trouble with the thermostat"
Assessment report received late	1	"Received report late"
Difficult to schedule	1	"Hard to schedule"
Didn't finish installing measures	1	"Promised to come out and follow up on the work, and did not show up. Duct work was never fully sealed."

Table 3-32 summarizes participant satisfaction with Entergy as their electricity service provide. Most (61%) of survey respondents were very satisfied with Entergy.

Table 3-32 Satisfaction of Entergy as an Electricity Service Provider

Response	Percent (n = 36)
5 (Very satisfied)	61%
4	11%
3	18%
2	5%
1 (Very dissatisfied)	5%

3.6.5 Nonparticipant Survey Findings

This section summarizes the findings of the nonparticipant survey of residential customers. The survey included questions on:

- Program awareness;
- Energy efficiency purchases made; and
- Energy efficiency attitudes and interest.

The survey also included questions on interest in early replacement of HVAC units and central air conditioner tune-up practices. The findings from these topics are presented in the Heating and Cooling Chapter, Section 8.5.4 and Section 8.5.5.

3.6.5.1 Program Awareness

Sixteen percent of respondents reported that they were aware of rebates for energy efficiency and home improvements offered by Entergy. Differences in level of awareness were not statistically significant for customers who owned or rent the residence or for customers of different incomes.

Figure 3-15 shows the level of awareness of various energy efficiency offerings. Customers generally reported greater awareness of equipment rebates, LED lighting, and the load control program, and generally less awareness of the home weatherization offering.

Figure 3-15 Share of Aware of Entergy Efficiency Offerings

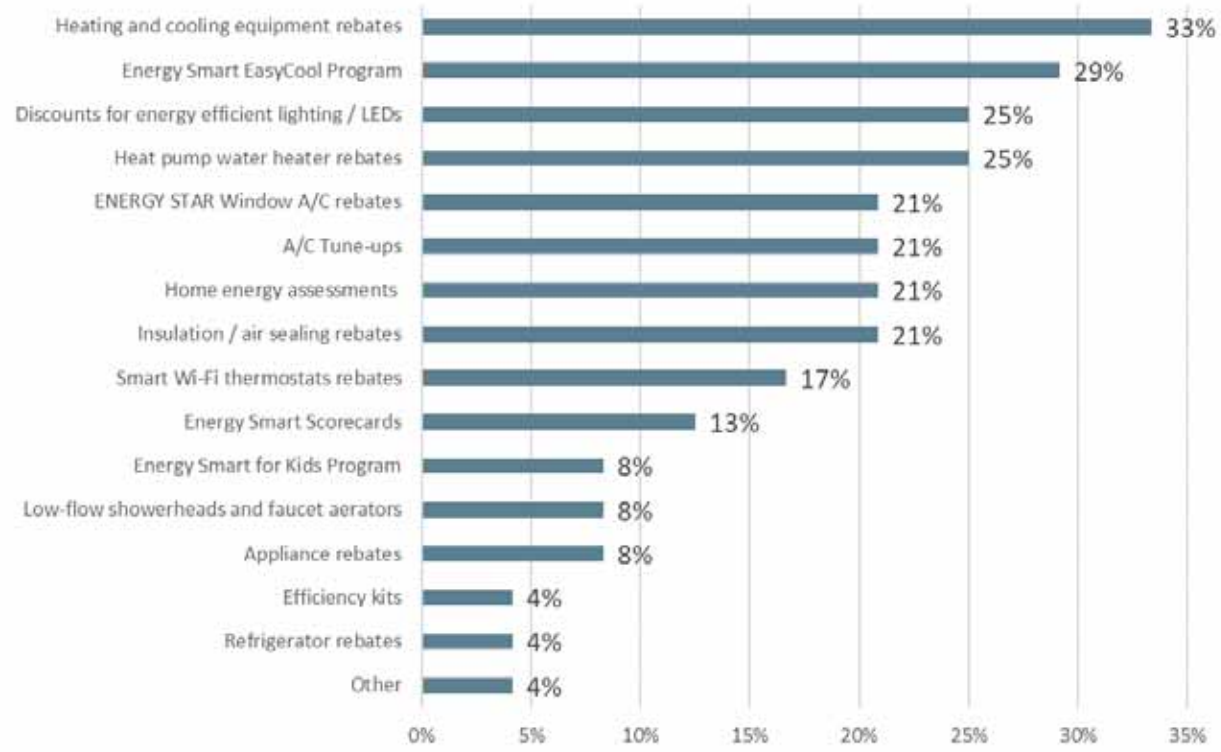
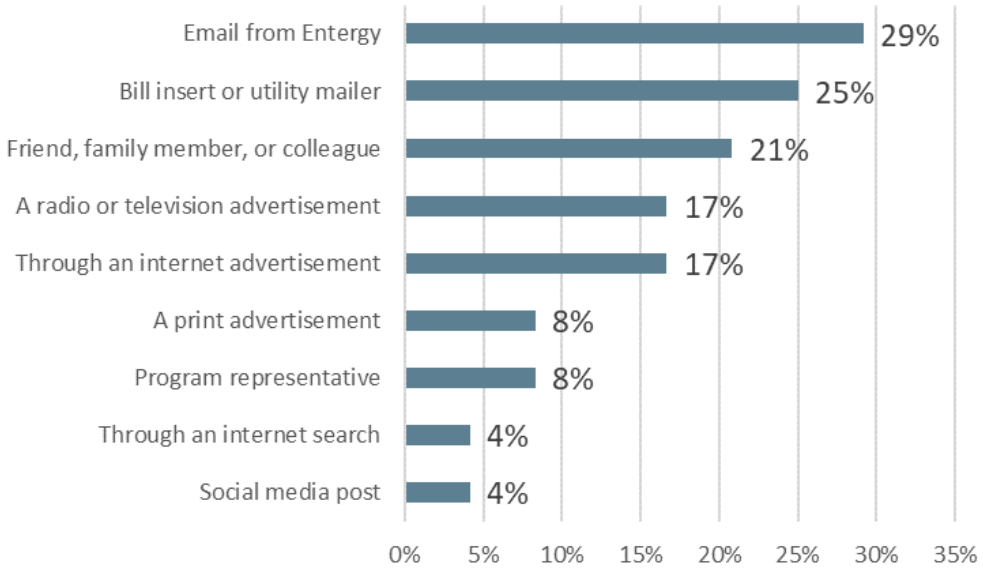


Figure 3-16 summarizes sources of program awareness for those aware of the programs. As shown, direct communications from Entergy in the form of emails and bill inserts or mailers were the most common sources of awareness. Of interest is that the share of nonparticipants learning of the program from family members or friends was 21%. In comparison between 60% and 88% of participants in most programs reported learning of the program from family members and friends. The findings suggest that learning of the program from family members and friends may have a greater influence on participation.

Figure 3-16 Sources of Program Awareness



3.6.5.2 Energy Efficient Equipment Purchases

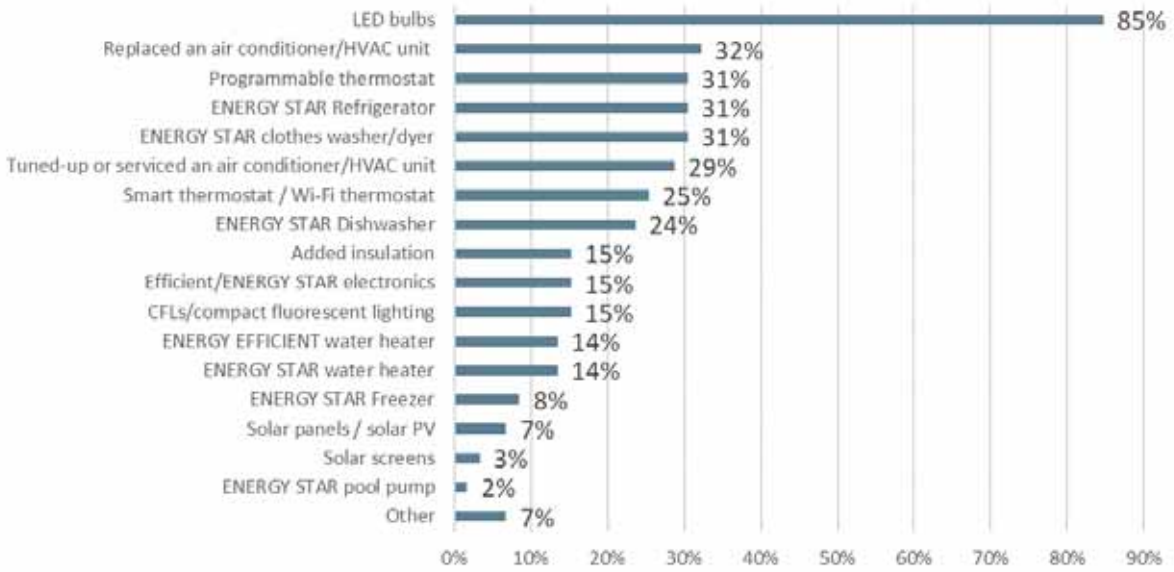
Thirty-nine percent of nonparticipants reported that they had made energy efficiency improvements in the past two-years. Customers aware of the Entergy offerings and those who were not aware reported are making improvements at approximately the same rate (46% and 39%, respectively). The differences shown in Table 3-33 are not statistically significant.

Table 3-33 Percent of Customers Making Improvements by Program Awareness

Program Awareness	*Percent Making Improvements*
Aware of Programs (n = 26)	46%
Not aware of Programs (n = 236)	39%

Figure 3-17 summarizes the types of efficient equipment and home improvements customers reported making. By far, LED purchases were most common. Some of these purchases may have been program discounted bulb purchases because awareness of discounts is often low. Additionally, some of the customers who reported installing efficient air conditioners may have installed standard efficiency units which in comparison to an old unit would be much more efficient.

Figure 3-17 Summary of Efficient Equipment Purchases and Improvements (n = 59)



3.6.5.3 Energy Efficiency Attitudes and Interest

Table 3-34 summarizes interest in different types of benefits that could result from making home improvements. Overall, customers equally value efficiency, comfort, and health and safety.

Table 3-34 Interest in Different Types of Energy Efficiency Benefits

Benefit	1 (Not at all interested)	2	3	4	5 (Very interested)	Average
Increase efficiency (n =158)	11%	5%	10%	23%	50%	3.96
Improve comfort (n = 160)	8%	6%	13%	24%	50%	4.02
Improve health and safety (n = 160)	6%	4%	15%	20%	55%	4.14

Attitudes towards energy efficiency are summarized in Table 3-35. For each item listed, respondents rated their agreement with the item on a five-point agreement scale. The percent agreement shown is the share of respondents who provided a rating of four or five. The key points are:

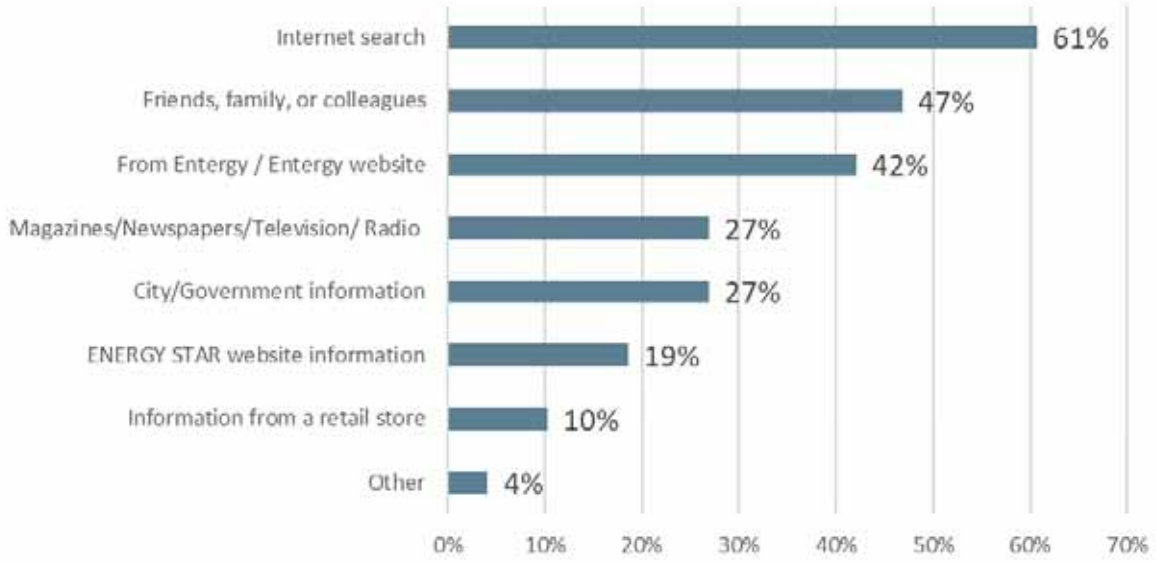
- Most customers think that managing energy use is important.
- Perceived lack of resources and feeling uninformed about energy efficiency present somewhat greater barriers than the belief that improving efficiency means sacrificing comfort.

Table 3-35 Attitudes Towards Energy Efficiency

Attitude	Percent Agreement
Importance of Energy Efficiency	
I am not concerned about the amount of energy used in my home. (n= 162)	10%
It is important to save energy to preserve the environment. (n= 163)	85%
Barriers	
I don't have the resources I need to reduce the amount of energy I am using. (n= 152)	36%
It is possible to save energy without sacrificing comfort by being energy efficient. (n= 160)	78%
I don't feel that I am well informed on ways to save energy. (n= 161)	32%
Intentions	
I intend to reduce my household energy use in the next 12 months. (n= 155)	47%

Internet searches and friends, family members, and colleagues were the most often mentioned sources of information where customers would seek to find information on reducing their energy costs. Entergy was also cited as a source by 42% of customers.

Figure 3-18 Where Customers would Look to Find Information on Reducing Energy Costs



Entergy was also viewed as a trustworthy source of information on tips and rebates by 69% of customers (Table 3-36).

Table 3-36 Trustworthiness as a Source of Information on Energy Savings Information

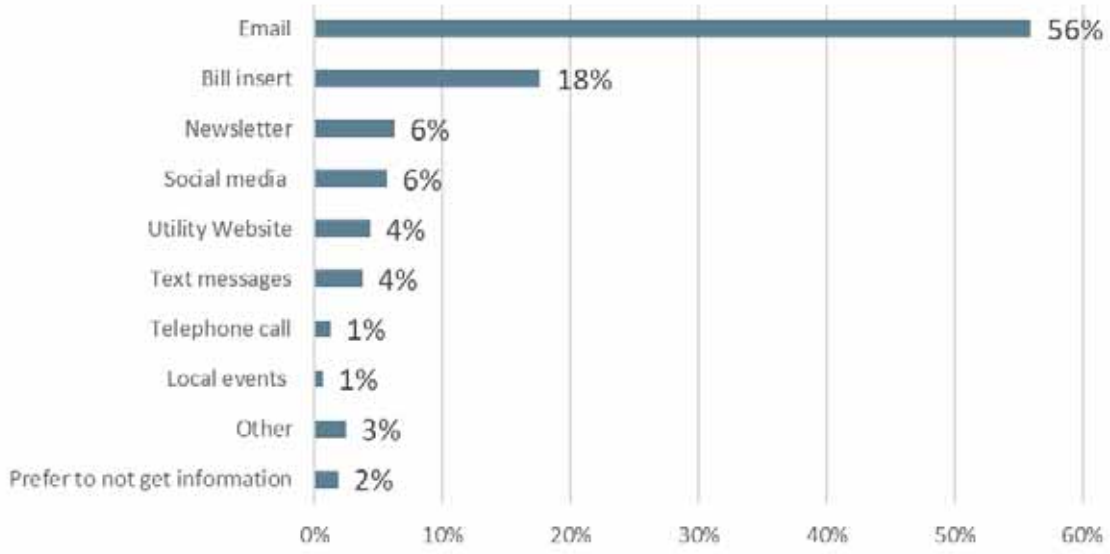
Response	Percent (n = 131)
Very untrustworthy	15%
Somewhat untrustworthy	17%
Somewhat trustworthy	47%
Very trustworthy	22%

Seventy-one percent of customers were moderately or very interested in additional information on energy saving tips and rebate programs (Table 3-37). In terms of preferred means of receiving information from Entergy, 56% preferred to receive information by email and 18% through a bill insert. Other sources were preferred by fewer than 10% of respondents.

Table 3-37 Interest in Additional Information on Tips and Rebate Programs

Response	Percent (n = 163)
Not at all interested	12%
Slightly interested	17%
Moderately interested	33%
Very interested	38%

Figure 3-19 Preferred Means of Receiving Information from Entergy on Rebates (n = 159)



3.6.5.4 Summary of Nonparticipant Findings

The key nonparticipant survey findings are:

- Relatively few of nonparticipating customers (16%) reported that they were aware that Entergy offered rebates for energy efficiency improvements. Among those aware that Entergy provides rebates, awareness was higher among HVAC rebates, LED discounts, and the direct load control program than for other offerings.
- Nonparticipants most often learned of the rebates through direct communication from Entergy (e.g., emails, bill inserts). In comparison to program participants, nonparticipants were much less likely to report learning of the program through their social networks. The difference may suggest that customers who learn of the

program through social networks are more likely to participate than customers who learn through other means.

- Customers equally value energy efficiency benefits, comfort improvements, and health and safety improvements when making home improvements. This suggests that messaging about rebated measures should focus on all three benefits.
- Customers are more convinced that making efficiency improvements do not come at the cost of reduced comfort than they are convinced that they have the resources and knowledge to improve energy efficiency. Consequently, the portfolio offerings that provide information and rebates to assist customers with saving energy address the most important barriers.
- Entergy is viewed as a somewhat or very trusted source for energy efficiency by about two-thirds of customers, but the majority of these viewed Entergy as "somewhat trustworthy." Consistent with the findings that participants are more likely to learn of the Entergy offerings through social networks than nonparticipants, these findings indicate that while Entergy is an important source of information, leveraging customers' social networks may be key to motivating program participation.

3.7 Key Findings and Conclusions

The key findings and conclusions of the evaluation of the program are as follows:

- **The program expected savings met its goals in Algiers and New Orleans.**
- **Overall the program tracking data included appropriate measure names and classifications and was free of errors.** However, during the development of the sample for the survey of nonparticipant covers, the Evaluator learned that the program had difficulty integrating past participation.
- **The marketing approach is broad and uses multiple channels to increase program awareness.** Word of mouth through social networks appears to be a key driver of activity for the residential programs. Energy wise outreach is extensive with attendance at 100 – 120 events a year. Energy wise is reporting useful metrics to Aptim to monitor effectiveness.
- **Marketing activities are tracked but there are some challenges to monitoring marketing effectiveness.** Staff indicated that marketing effectiveness is tracked, but that this is easier for some channels such as social media from which they get analytics that indicates reach, whereas other channels such as postcard mailers are more difficult to track.
- **Social networks are key drivers of program activity.** Survey results indicate that word of mouth is key to driving program awareness, that is, 69% of participants learned of the program through friends, family members, or colleagues.
- **Participants were satisfied with the program.** Most participants, 93%, indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as four or five on a five-point satisfaction scale.

- **Participation process is working well for most participants.** Survey results indicate that few participants had issues with the program participation process and nearly all found the assessment report to be helpful. A few participants, however, indicated that they had not implemented major measures at the time of the survey because they were waiting on program follow up. Review of the data indicated that these customers did have major measures installed, but the time between initial participation and the last measure ranged from two to six months.
- **Interviews with program staff and trade allies indicate that residential trade ally management processes are generally effective**. Trade allies receive training on program processes, and they found this training useful. Additionally, no significant communication issues with the implementation contractor were noted. Two issues raised by some trade allies where:
  - A preference for more information regarding the status of referrals to the program.
  - Not all trade allies were aware of the availability of program marketing material, but they were interested in having them.

3.8 Recommendations

The Evaluators' recommendations are as follows:

- **Review data collection and tracking procedures to fully capture program activity including assessments performed.**
- **To the extent practical, continue to work towards integrating program activity from the prior cycle with data from the current cycle.** A comprehensive view of participation will provide information useful to understanding how well the program has reached different customer groups.
- **Continue to develop a means of tracking marketing effectiveness to manage future marketing budgets.** One approach is to collect data on the source of program awareness on the intake application.
- **Develop a strategy to provide greater transparency into the trade ally referral process.** This information may increase trade ally's confidence that their efforts to develop work will result in project work.
- **Continue to promote awareness of program marketing materials with trade allies.** Not all trade allies were aware of these materials and this awareness is developed through ongoing communication and training.
- **Review processes for completing major measure work after installation of direct install and assessments to mitigate customer concerns about the lack of program follow up on the implementation of measures.** Some time constraints may be unavoidable due to contractor workloads, but this may be offset by regular communication with participants about the status of their project.

4. Low Income Audit and Weatherization

4.1 Program Description

The Low Income Audit and Weatherization Program (LIA&Wx) targets and offers comprehensive weatherization services to qualified low-income, single-family homes and low-rise, multi-family dwellings of four or fewer units. The LIA&Wx program is intended to be primarily implemented through local participating trade allies who provide energy efficiency upgrades available to income qualifying customers. The Program's objective is to educate customers on how they are using energy, identify opportunities for energy savings specific to their home, and prioritize a wide range of energy conservation measures that will allow them to save energy immediately.

The LIA&Wx program provides customers with household incomes of 200% the federal poverty level with home energy upgrades at low or no cost.. The Program offers these customers a free home energy assessment through a qualified and participating trade ally.

A change made to the LIA&Wx program is that documentation that substantiates that the customer meets the program income requirements is not required. Staff noted that they believe the contractors are still collecting this information and that customers are vetted through a series of qualifying questions, but the collection of it and questions are not stated in the program implementation plan.

A total of 521 households participated in LIA&Wx, Table 4-1 summarizes the total number of homes a measure was installed in and/or performed at, total measures installed/performed and the expected kWh and peak kW savings by measure.

Table 4-1 Summary of Measures and Expected Savings – New Orleans

Measure	***Number of Measures***	***Expected kWh Savings***	***Expected kW Savings***
AC/HP Tune ups	45	35,797	12.71
Aerators	26	857	0.09
Air Sealing	52	9,721	3.25
Duct Sealing	220	624,372	166.69
Insulation 0-30	91	808,739	207.22
Insulation 5-30	1	2,857	0.52
LED Lighting	6,076	170,116	30.74
Pipe Wrap	3	279	0.03
Showerheads	53	17,402	1.81
Smart Thermostats	53	82,687	0.00
Programmable Thermostats	1	701	0.00
Total:	**6,621**	**1,753,528**	**423.06**

Table 4-2 Summary of Measures and Expected Savings – Algiers

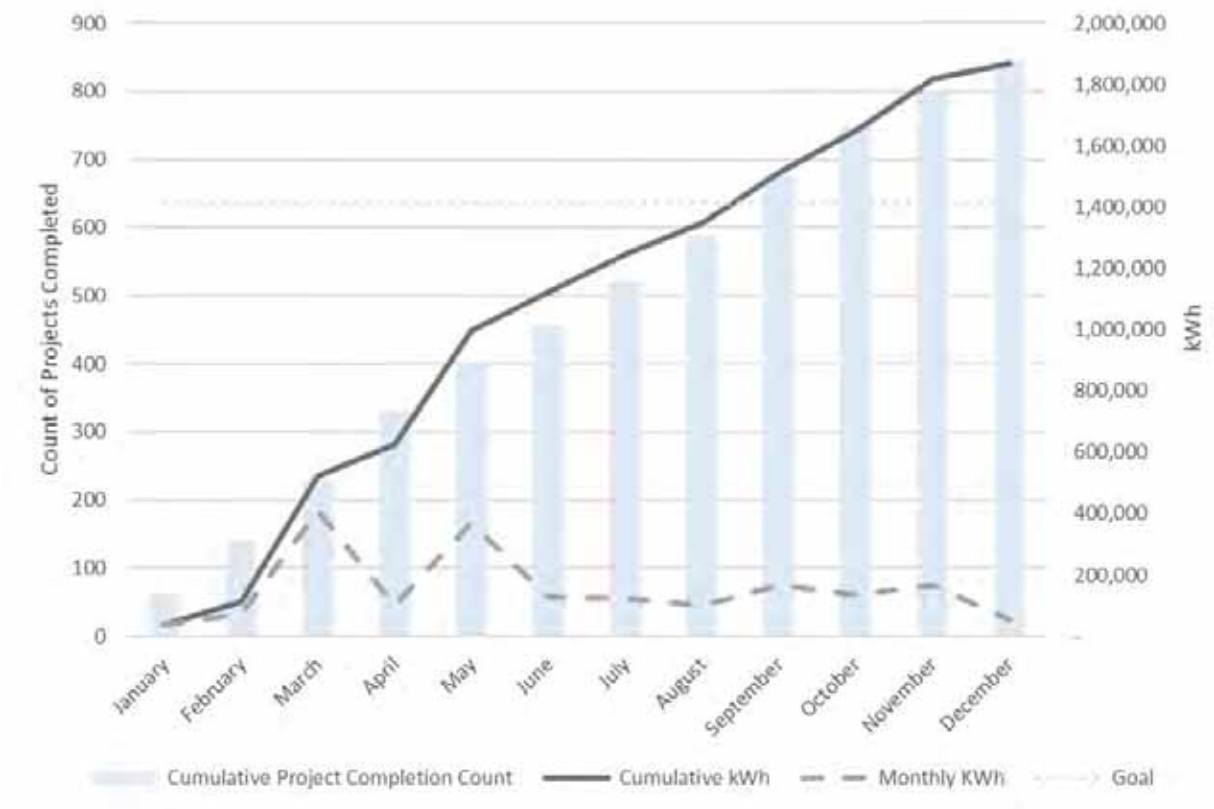
Measure	Number of Measures	Expected kWh Savings	Expected kW Savings
AC/HP Tune ups	3	2,448	0.89
Aerators	4	230	0.02
Air Sealing	1	57	0.03
Duct Sealing	30	68,494	20.48
Insulation 0-30	2	13,464	3.56
Insulation 5-30	1	5,281	0.96
LED Lighting	806	21,571	4.17
Pipe Wrap	0	0	0.00
Showerheads	5	1,808	0.19
Smart Thermostats	1	1,554	0.00
Total	**853**	**114,907**	**30.30**

In PY7 316 projects summing to 1,045,084 kWh were completed during the abbreviated nine-month program year. Normalizing these figures to 12 months (a full program year) yields an expected 421 projects summing 1,393,445 kWh. The PY8 program ran for a full 12 months surpassing normalized PY7 figures with an increase in expected kWh savings of 34.1%, while average dwelling kWh savings rose by 8.4%. Table 4-3 compares program years.

Table 4-3 Participation and Expected Savings by Program Year

PY	Count Homes	Expected kWh per Home
PY6	265	6,003
PY7 (nominal)	316	3,307
PY7 (normalized)	421	3,307
PY8	521	3,586

Figure 4-1 Program Performance over PY8



The program goals and achievement of the goals is summarized below.

Table 4-4 LIA&Wx Summary of kWh Goal Achievement

Operating Company	*Verified Net kWh*	*kWh Goal*	*% of Goal Attained*	*Verified kW*	*kW Goal*	*% of Goal Attained*
ENO	1,907,136	1,316,362	144.88%	470.94	285.11	165.18%
Algiers	121,880	98,072	124.28%	31.87	21.1	151.04%

4.2 Impact Savings Calculation Methodology

Evaluation of the LIA&Wx included the following:

- Surveys with participants;
- Interviews with program staff;
- Interviews with program trade allies; and
- On-site testing and data collection.

Impact savings were calculated using methods and inputs in the New Orleans TRM v1.0 and incorporated results from on-site testing where appropriate. PY8 major savings components are duct sealing, insulation and LEDs. Impact methodologies for LIA&Wx are the same as described for HPwES, described in section 3.2, M&V Methodology.

However due to the high kWh saving contribution of ceiling insulation to the LIA&Wx program, its savings calculation methods are discussed below.

4.3 Verified Savings by Measure

4.3.1 Ceiling Insulation

4.3.1.1 Ceiling Insulation Savings Multipliers

Methods for calculating he deemed savings values for ceiling insulation came from the New Orleans TRM, section B.4.2. Deemed savings multipliers were developed through EnergyGauge, a simulation software program. Multiple equipment configurations were simulated in in developing savings values denominated in deemed savings per CFM50 of air leakage rate reduction. Table 4-5 shows the deemed savings multipliers for New Orleans.

Table 4-5 Deemed Savings Multiplier for R-30[19]

Ceiling Insulation Base R-Value	AC/Gas Heat kWh (/ sq. ft.)	AC/Electric Resistance kWh (/ sq. ft.)	Heat Pump kWh (/ sq. ft.)	AC Peak Savings (kW) (/ sq. ft.)
0 to 4	2.3451	5.9291	3.6430	0.0016
5 to 8	1.1392	3.1249	1.8749	0.0005
9 to 14	0.6446	1.8343	1.1072	0.0003
15 to 22	0.3402	1.0027	.6018	0.0001

4.3.1.2 Ceiling Insulation Savings Results

Verified savings for this measure are provided in Table 4-6 and Table 4-7.

Table 4-6 Expected and Realized Attic Insulation Savings – R0 to R30

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
New Orleans	808,739	839,855	103.8%	207.22	226.45	109.28%
Algiers	13,464	13,210	98.1%	3.56	3.56	100.00%
Total	**822,203**	**853,065**	**103.8%**	**210.79**	**230.01**	**109.1%**

Table 4-7 Expected and Realized Attic Insulation Savings – R5 to R30

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
New Orleans	2,859	2,700	94.4%	0.52	0.43	82.69%
Algiers	5,281	4,990	94.5%	0.96	0.80	83.33%
Total	**8,139**	**7,690**	**94.5%**	**1.48**	**1.23**	**83.11%**

19 TRM Table 66, page B-97

Minor differences in realization can be attributed to rounding in ex ante and clerical errors in ex ante data.

4.3.2 Infiltration/Air Sealing Savings

Details about M&V Impact methodologies for LIA&Wx Air Infiltration are the same as described for HPwES, described in section 3.3.1.

Table 4-8 Expected and Realized Air Sealing Savings – New Orleans

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	-	-	N/A	-	-	N/A
Electric Resistance	9,664	29,313	303.3%	3.22	9.53	296.0%
Air Source Heat Pump	57	317	556.1%	0.03	0.15	500.0%
Total	**9,721**	**29,630**	**304.8%**	**3.25**	**9.68**	**297.8%**

Table 4-9 Expected and Realized Air Sealing Savings - Algiers

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	-	-	N/A	-	-	N/A
Electric Resistance	57	57	99.8%	0.03	0.03	100.0%
Air Source Heat Pump	-	-	N/A	-	-	N/A
Total	**57**	**57**	**99.8%**	**0.03**	**0.03**	**100.0%**

Ten projects did not have test in/test out data for CFM reductions and could not be analyzed and were given a 100% realization rate.

Ex ante calculations assumed heat pump heating for five projects, however the home heating type was determined to be electric resistance. One project used gas heating, but was determined to be electric resistance. While small variations in realization can be attributed to differences in rounding, The Evaluators were able unable to reasonably recreate ex ante savings calculations for 17 projects. Using correct methodology, these homes' realization rates ranged from -100.4% to 17400.0% before M&V adjustments. Nineteen projects had expected savings lower than 100 kWh, with two projects claiming 1 kWh of savings each. Below-expected verified leakage is a secondary driver of the high realization rate, without which overall realization would be 103.7%, rather than 304.8%.

4.3.3 Duct Sealing Savings

Details about M&V Impact methodologies for LIA&Wx Duct Sealing are the same as described for HPwES, described in section 3.3.2.

Table 4-10 Expected and Realized Duct Sealing Savings – New Orleans

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	152,878	162,529	106.3%	71.33	76.45	107.2%
Electric Resistance	471,494	509,583	108.1%	95.36	101.72	106.7%
Air Source Heat Pump	-	-	N/A	-	-	N/A
Total	**624,372**	**672,112**	**107.6%**	**166.69**	**178.17**	**106.9%**

Table 4-11 Expected and Realized Duct Sealing Savings - Algiers

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	27,055	26,471	97.8%	11.42	12.45	109.0%
Electric Resistance	41,439	49,421	119.3%	9.06	9.82	108.4%
Air Source Heat Pump	-	-	N/A	-	-	N/A
Total	**68,494**	**75,892**	**110.8%**	**20.48**	**22.27**	**108.7%**

Three projects did not see a significant enough reduction to results in kWh savings. Ex ante calculations assumed electric resistance heat for five projects, however the home heating type was determined to be gas. Ex ante calculations in two projects which incorrectly assumed the opposite. The Evaluators were able unable to reasonably recreate ex ante savings calculations for four projects. Using correct methodology, these homes' realization rates ranged from 82% to 137% before M&V adjustments.

4.3.4 LED Lighting Savings

The savings resulting from applying TRM algorithms and deemed savings parameters are summarized in HPwES, Section 3.3.3.

Table 4-12 Expected and Realized LED Savings – New Orleans

Lamp Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
LED A-Type Lamp	146,698	149,034	101.6%	25.88	25.90	100.1%
LED Directional Lamp	23,418	23,418	100.0%	4.86	4.86	100.0%
Total	**170,116**	**172,454**	**101.4%**	**30.74**	**30.76**	**100.1%**

Table 4-13 Expected and Realized LED Savings - Algiers

Lamp Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
LED A-Type Lamp	19,445	19,602	100.8%	3.73	3.73	100.0%
LED Directional Lamp	2,125	2,125	100.0%	0.44	0.44	100.0%
Total	**21,570**	**21,727**	**100.7%**	**4.17**	**4.17**	**100.0%**

Minor differences in realization can be attributed to rounding in ex ante and clerical errors in ex ante data.

The savings resulting from applying TRM algorithms and deemed savings parameters are summarized in HPwES, section 3.3.4.

4.4 Verified Gross Savings

Realized savings is presented by program channel in Table 4-14 and Table 4-15.

Table 4-14 Gross Realization Summary – New Orleans

Measure	Expected kWh Savings	Verified kWh	kWh Realization Rate	Expected kW	Verified kW	kW Realization Rate
AC/HP Tune ups	35,796	38,226	106.8%	12.71	13.59	106.9%
Aerators	857	857	100.0%	0.09	0.09	100.0%
Air Sealing	9,721	29,630	304.8%	3.37	9.81	291.1%
Duct Sealing	624,372	672,112	107.6%	166.69	178.17	106.9%
Insulation 0-30	808,739	876,165	108.3%	207.22	236.25	114.0%
Insulation 5-30	2,857	2,700	94.5%	0.52	0.43	82.7%
LED Lighting	170,116	172,453	101.4%	30.74	30.76	100.1%
Pipe Wrap	279	279	100.0%	0.03	0.03	100.0%
Showerheads	17,402	17,402	100.0%	1.81	1.81	100.0%
Programmable Thermostats	701	701	100.0%	0.00	0.00	N/A
Smart Thermostats	82,687	96,611	116.8%	0.00	0.00	N/A
Total:	**1,753,527**	**1,907,13**	**108.8%**	**423.18**	**470.94**	**111.3%**

Table 4-15 Gross Realization Summary – Algiers

Measure	Expected kWh Savings	Verified kWh	kWh Realization Rate	Expected kW	Verified kW	kW Realization Rate
AC/HP Tune ups	2,448	2,355	96.2%	0.89	0.84	94.4%
Aerators	230	230	100.0%	0.02	0.02	100.0%
Air Sealing	57	57	100.0%	0.03	0.03	100.0%
Duct Sealing	68,494	75,892	110.8%	20.48	22.27	108.7%
Insulation 0-30	13,464	13,210	98.1%	3.56	3.56	100.0%
Insulation 5-30	5,281	4,990	94.5%	0.96	0.80	83.3%
LED Lighting	21,571	21,727	100.7%	4.17	4.17	100.0%
Showerheads	1,808	1,808	100.0%	0.19	0.19	100.0%
Smart Thermostats	1,554	1,611	103.7%	0.00	0.00	N/A
Total:	**114,907**	**121,880**	**106.1%**	**30.29**	**31.87**	**105.2%**

4.5 Net Savings Results

The NTG ratio for the LIA&Wx Program was assumed to be 100% in line with common practice for estimation of low-income program net savings.

Table 4-16 and Table 4-17 summarize the program net kWh savings and peak kW demand reduction impacts of the LIA&Wx Program.[20]

Table 4-16 LIA&Wx Summary of Verified Net Savings

Utility	Expected kWh Savings	Verified Gross kWh Savings	Free Ridership	Spillover	Verified Net kWh Savings	Net to Gross Ratio
ENO	1,753,527	1,907,136	0%	0%	1,907,136	100%
Algiers	114,907	121,880	0%	0%	121,880	100%
Total	**1,868,434**	**2,029,016**	**0%**	**0%**	**2,029,016**	**100%**

Table 4-17 LIA&Wx Summary of Verified Net Peak Demand Reductions

Utility	Expected Peak kW Reductions	Verified Gross Peak kW Reductions	Free Ridership	Spillover	Verified Net Peak kW Reductions	Net to Gross Ratio
ENO	423.18	470.94	0%	0%	470.94	100%
Algiers	30.29	31.87	0%	0%	31.87	100%
Total	**453.47**	**502.81**	**0%**	**0%**	**502.81**	**100%**

4.6 Process Evaluation Findings

4.6.1 Summary of Program Participation

Table 4-18 summarizes program activity. As shown, 78% of customers received direct install measures and 62% received major measures. Forty-two percent of customers received both direct install and major measures.

The tracking data indicated that 82% of customers received an assessment. This is likely an undercount reflecting incomplete data since the program design is such that participation begins with an assessment.

Table 4-18 Share of Customers Receiving Measures and Assessments

Number of Participants	Percent Receiving Direct Install Measures	Percent Receiving Major Measures	Percent Receiving Direct Install and Major Measures	Percent Receiving an Assessment	Average Expected Savings per Participant
521	78%	62%	42%	82%	3,586

As shown in Table 4-19, insulation and duct sealing accounted for most of the program savings. The incentive dollars per kWh saved for direct install measures is shown as 0 because incentive dollars were not recorded with project records.

20 Net savings estimates were based on all survey respondents and the same value was applied to ENO and Algiers projects.

Table 4-19 Summary of Measures Installed

Measure	Expected kWh Savings	Incentives Paid	Number of Participants	Percent of Expected Savings	Incentive Dollars per kWh Saved
Insulation	830,342	$108,119	95	44.4%	$0.13
Duct sealing	692,886	$228,393	232	37.1%	$0.33
Lighting	191,686	$0	401	10.3%	$0.00
Smart thermostat	84,241	$13,750	50	4.5%	$0.16
AC tune-up	38,245	$7,200	43	2.0%	$0.19
Showerhead	19,210	$0	58	1.0%	$0.00
Air sealing	9,778	$172	55	0.5%	$0.02
Faucet aerator	1,087	$0	25	0.1%	$0.00
Programable thermostat	701	$80	1	0.0%	$0.11
Pipe wrap	279	$0	3	0.0%	$0.00

4.6.2 Program Goals, Design, and Delivery

Many of the same procedures and processes discussed in for the Home Performance with ENERGY STAR Program in Section 3.6.2 are applicable to the LIA&Wx Program and are not repeated here. The findings discussed below are those specific to the LIA&Wx Program.

The Energy Smart LIA&Wx program provides low-income customers with a free home energy audit and energy-saving products. As with HPwES, Franklin performs the energy assessments to maintain more control over the process and the measure recommendations customers receive. Staff noted that some trade allies probably prefer to conduct the energy assessments themselves, which was expressed by some trade allies (see Section 6.6.3).

4.6.2.1 Program Goals

Entergy New Orleans and Franklin both indicated the LIA&Wx program is performing well and the expected savings exceeded its goals for both Algiers and New Orleans. Entergy New Orleans and Franklin staff reported the LIA&Wx program has had good participation in PY8 in New Orleans, but that meeting participation goals in Algiers is more challenging.

Program staff described the LIA&Wx as one of the “best residential programs so far.” Staff indicated there are many residential customers in the service territory who can qualify for the program and it is an attractive program for contractors. There are no barriers to reaching low-income customers.

4.6.2.2 Program Design

The program is available to residential customers within Entergy’s service territory who meet the income qualification, which is 200 percent of the federal poverty level.

Key strengths of the program identified is that this program targets households who could not otherwise afford the measures installed in their home. Participants can save money on their utility bill and this helps build stronger relationships in the community between low income residents and Entergy.

4.6.2.3 Marketing and Outreach

In addition to the general residential portfolio marketing discussed in section 3.6.2.3. The program does outreach at senior centers and food pantries to educate residents about the LIA&Wx program. Staff reported that trade allies are also very active in outreach to solicit additional participants.

4.6.3 Trade Ally Feedback

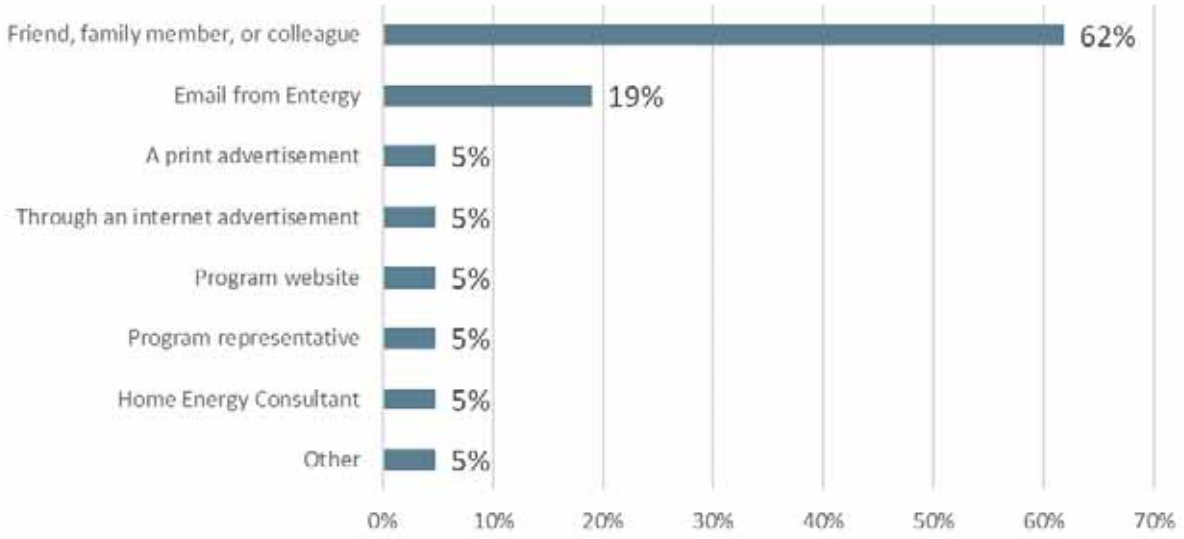
Trade ally feedback findings are summarized in Section 6.6.33

4.6.4 Participant Feedback

4.6.4.1 How Customers Learned of the Program

Figure 4-2 summarizes how survey respondents learned of the program. As shown, word of mouth was by far the most common source of awareness. Another important source was emails sent by Entergy (19%).

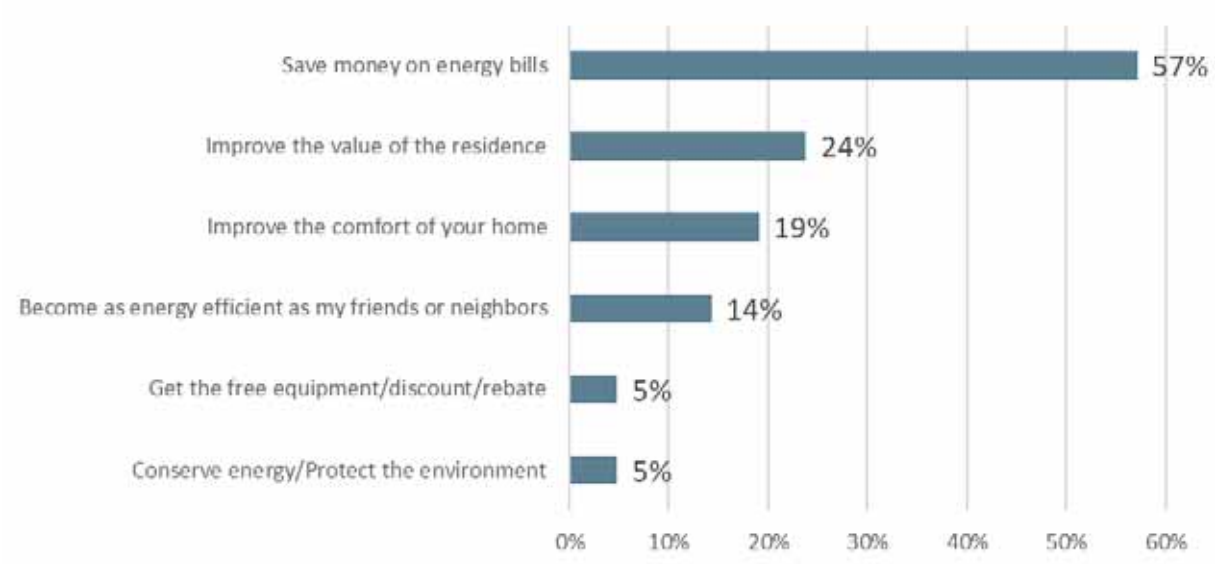
Figure 4-2 Sources of Program Awareness (n = 21)



4.6.4.2 Motivations for Participating

A majority of respondents (57%) decided to participate in the program to save money on their energy bills (see Figure 4-3). Other motivations of importance were to increase the value of the residence (24%), increase the comfort of the home (19%), and to become as efficient as friends and neighbors.

Figure 4-3 Motivations for Participating (n =22)



4.6.4.3 Home Assessment Feedback

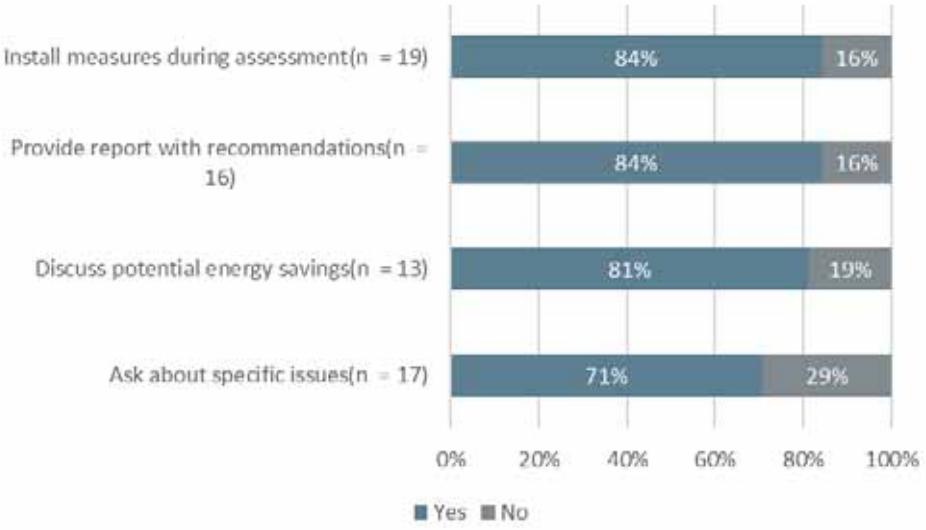
Table 4-20 shows that nearly all respondents (92%) thought that scheduling the home energy assessment was very easy.

Table 4-20 Ease of Scheduling the Assessment

Response	*Percent (n = 13)*
5 (Very easy)	92%
4	0%
3	8%
2	0%
1 (Very difficult)	0%

Figure 4-4 summarizes participants responses to a series of questions about the actions taken by the assessor during the assessment. As shown, 84% stated that the assessor installed measures during the assessment. Eighty-four percent also stated that the assessor provided a report with recommendations and 81% stated that the assessor discussed potential energy savings. Lastly, 71% reported that the assess or asked the participant any particular issues they noticed with their home.

Figure 4-4 Participant Reports of the Actions Taken by Assessor



Respondents that received the report largely felt that the report was helpful to them, as shown in Table 4-21. One respondent provided a low rating of the report's helpfulness.

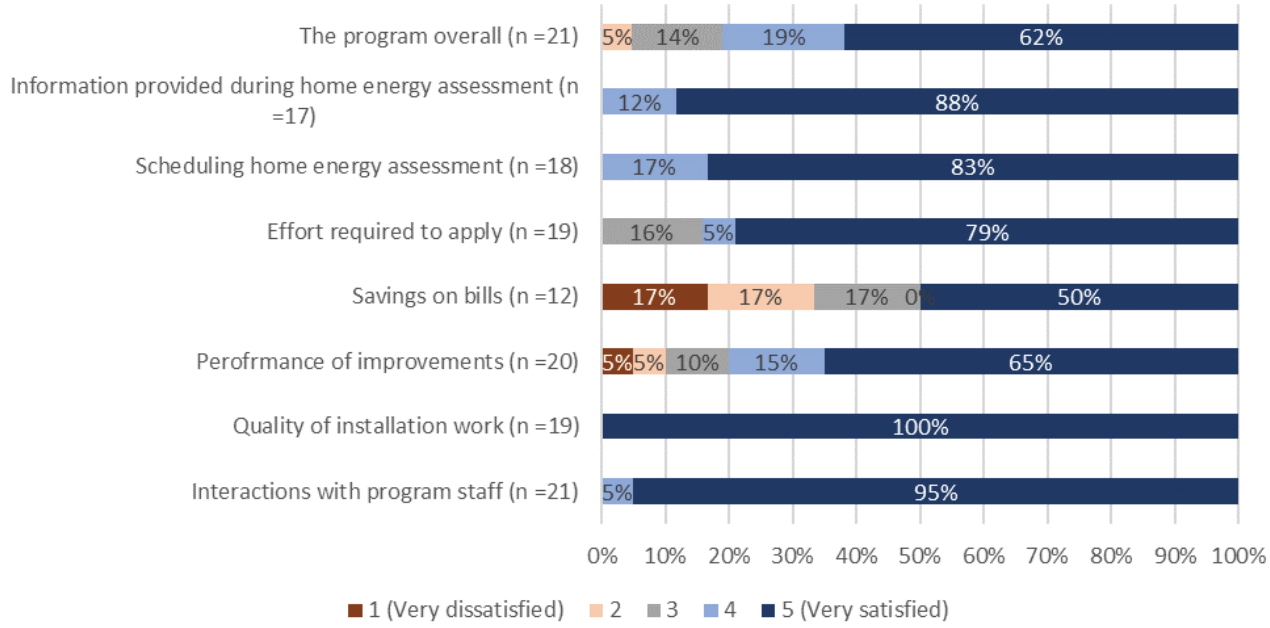
Table 4-21 Helpfulness of Assessment Report

Response	***Percent (n = 16)***
5 (Very helpful)	81%
4	13%
3	0%
2	6%
1 (Not at all helpful)	0%

4.6.4.4 Participant Satisfaction

Figure 4-5 summarizes participant satisfaction with the program overall and various aspects of it. As shown, satisfaction was generally high. Eighty-one percent rated their satisfaction with the program overall as a four or a five on a five-point scale. The aspects of the program that participants were most satisfied with where the interactions they had with program staff and the quality of the installation work. The aspects that they were least satisfied with were the savings they have observed on their bills and the performance of the improvements made.

Figure 4-5 Participant Satisfaction



Two respondents who reported dissatisfaction stated that the primary sources of dissatisfaction were that they did not save as much energy as they hoped, and that the thermostat installed had broken.

Table 4-22 summarizes participant satisfaction with Entergy overall. Seventy-six percent rated their satisfaction highly, that is, as a four or a five on a five-point scale. One respondent reported being very dissatisfied.

Table 4-22 Satisfaction of Entergy as an Electricity Service Provider

Response	***Percent (n = 21)***
5 (Very satisfied)	62%
4	14%
3	19%
2	0%
1 (Very dissatisfied)	5%

4.7 Key Findings and Conclusions

The key findings and conclusions of the evaluation of the program are as follows:

- **Overall the program tracking data included appropriate measure names and classifications and was free of errors.** However, review of the data indicated that home assessments are inconsistently tracked. The data showed that a minority of participants received a home energy assessment. Additionally, during the development of the sample for the survey of nonparticipant covers, the Evaluator learned that the program had difficulty integrating past participation.

- **The share of customers receiving direct install measures appears low.** Twenty-two percent of participants did not receive direct install measures which should have been installed during the energy assessment. Although some customers will likely refuse measures, the share indicates potential to increase direct install measures in low-income residences.
- **Multiple channels used to promote the program.** Staff discussed multiple channels used to promote residential programs. In addition to these, staff engaged in outreach at senior centers and food pantries. Staff also reported that trade allies were active in promoting the program. Word of mouth was by far the most the common way that customers learned of the program followed by email communication from Entergy.
- **Most participants were satisfied with the program.** Eighty-one percent of participants indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as four or five on a five-point satisfaction scale. Approximately one-third of participants indicated dissatisfaction with the realized energy savings, however, this number represented four respondents because several did not rate their satisfaction with the savings. The expected savings for all but one of these respondents was greater than the program average of 3,586 kWh.
- **Participation process is working well for customers.** Few customers identified any issues with scheduling assessments and most found the assessment report to be helpful.

4.8 Recommendations

The Evaluators' recommendations are as follows:

- **Review data collection and tracking procedures to fully capture program activity including assessments performed.**
- **Review direct install procedures.** The 78% installation rate of direct install measures suggest there may be opportunities to increase the number of customers receiving these measures. Additionally, tracking reasons for not installing measures will help staff monitor the issue.
- **Review how savings expectations are communicated to customers.** Four customers indicated dissatisfaction with the program savings. All but one of these customers had higher than average savings for the program.
- **Remove programmable thermostats from the program.** These measures are not included in the New Orleans TRM, nor are they included in the Arkansas TRM as they are outdated technology for the residential sector. Without an appropriate measure study, the savings are speculative and unreliable, and measure studies have historically found that the savings are highly-dependent upon idiosyncratic program factors such as installation quality by the trade ally and preexisting customer behavior surrounding the management of their thermostat, with there being a possible risk of increased energy use if participants have low home occupancy. The Energy Smart portfolio of programs should endeavor to install smart thermostats within programs such as LIA&Wx.

5. Energy Smart for Multifamily

5.1 Program Description

The Energy Smart for Multifamily (Multifamily) Program was introduced in PY7. The program is designed to promoted energy efficiency in the multifamily sector by offering home energy walkthrough assessments and deeper energy assessments to multifamily customers. Incentives are provided to contractors for installation of pre-approved measures. The program has the same design elements as HPwES, but targets homes with two or more attached dwelling units. Any property with more than one meter is considered a multifamily property. Staff noted this definition conforms well to the types of housing stock in New Orleans that has a large share of duplex housing and comparatively fewer large apartment complexes. This channel was developed to work towards overcoming the "split incentive" barrier to multifamily program participation; multifamily dwelling units have historically been underserved as owners are often unwilling to make significant investments in energy efficiency when the utility bill is paid by tenants. . Staff indicated that there is not a low income channel for multifamily tenants and the program manager said that they requested that this channel be added to the program.

A total of 504[21] households participated in the Multifamily program, Table 5-1 summarizes the total number of homes a measure was installed in and/or performed at, total measures installed/performed and the expected kWh and peak kW savings by measure.

[21] This total does not equal the sum of the "Number of Homes" column in Table 3-1,

Measure	*Number of Measures Distributed*	*Expected kWh Savings*	*Expected kW Savings*	*Percent of Program Savings (by kWh)*
AC/HP Tune ups	96	75,619	27.38	2.7%
Aerators	32	848	0.09	0.0%
Air Sealing	140	155,612	50.59	5.6%
Duct Sealing	57	1,210,153	321.36	43.3%
Insulation	12	98,978	26.21	3.5%
LED Lighting	11,925	354,379	65.56	12.7%
Power Strips	231	64,915	6.88	2.3%
Showerheads	39	11,752	1.22	0.4%
Smart Thermostats	135	203,970	0.00	7.3%
Home Energy Savings Kits	4,272	619,440	97.40	22.2%
Total:	**16,939**	**2,795,666**	**596.69**	

Table 3-2 and **Error! Reference source not found.** due to individual residences receiving multiple measures.

Table 5-1 Summary of Measures and Expected Savings – New Orleans

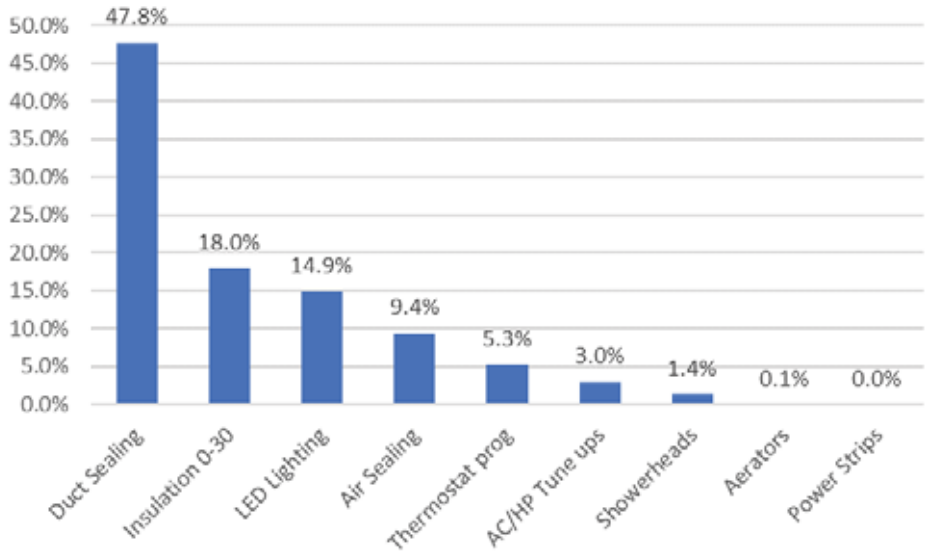
Measure	Count of Measures Distributed	Expected kWh Savings	Expected kW Savings	Percent of kWh Contribution
AC/HP Tune ups	31	25,024	9.1	3.1%
Aerators	24	707	0.1	0.1%
Air Sealing	54	78,030	25.3	9.8%
Duct Sealing	150	378,130	100.6	47.3%
Insulation 0-30	27	150,682	39.9	18.8%
LED Lighting	4,288	116,812	23.4	14.6%
Power Strips	1	307	0.0	0.0%
Showerheads	41	10,848	1.1	1.4%
Programmable Thermostats	56	39,041	0.0	4.9%
Total:	**4,672**	**799,581**	**199.53**	

Table 5-2 Summary of Measures and Expected Savings – Algiers

Measure	Count of Measures Distributed	Expected kWh Savings	Expected kW Savings	Percent of kWh Contribution
Aerators	4	106	0.01	0.3%
Air Sealing	1	804	0.26	2.2%
Duct Sealing	6	21,263	4.25	58.2%
LED Lighting	298	8,088	1.57	22.1%
Showerheads	3	678	0.07	1.9%
Programmable Thermostats	8	5,610	0.00	15.3%
Total:	**320**	**36,549**	**6.16**	

Below, Figure 5-1 illustrates overall program contribution my measure.

Figure 5-1 Contribution by measure



In PY7 372 projects summing to 1,218,180 kWh were completed during the abbreviated nine month program year. Normalizing these figures to 12 months (a full program year) yields an expected 496 projects summing 1,624,239 kWh. The PY8 program ran for a full 12 months surpassing normalized PY7 figures with as decrease in expected kWh savings of 48.5%, and average dwelling kWh savings fell by 38.9%. Comparisons are shown below in Table 5-3 below:

Table 5-3 Program Year Comparison[22]

PY	# Participants	Expected kWh	Expected kWh per Home
PY7 (nominal)	261	343,424	1,316
PY7 (adjusted)	348	457,898	1,316
PY8	504	836,131	1,659

Below, Figure 5-2 illustrates the differences in program kWh savings contributions between PY7 and PY8.

[22] Figures adjusted to reflect 9-month PY7 program period.

Figure 5-2 PY7 and PY8 Measure Contribution Comparison

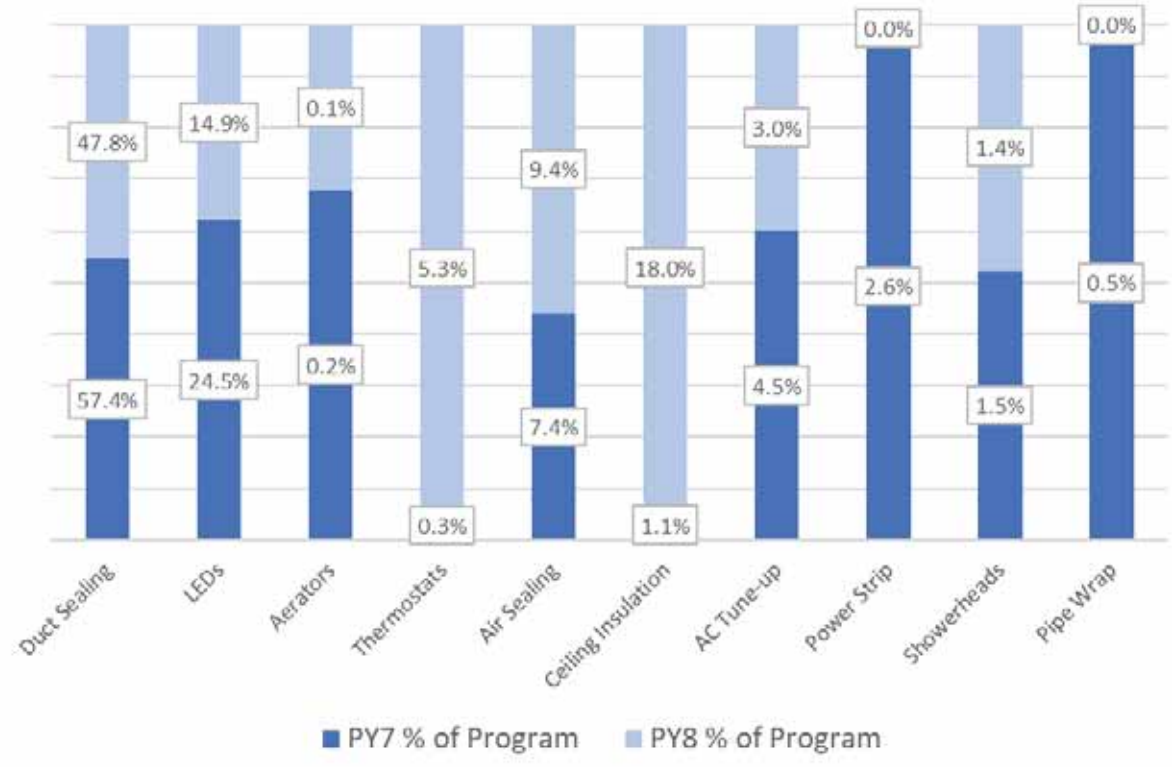
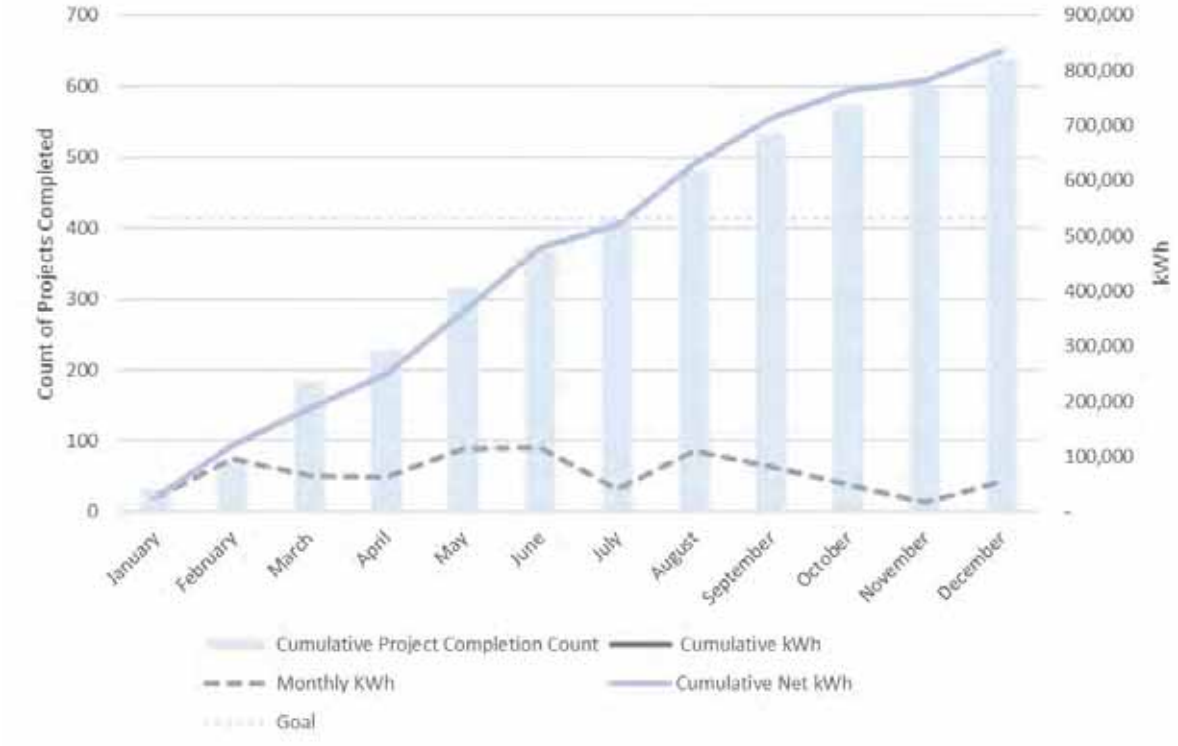


Figure 5-3 Program Performance Over Time



Total verified savings and percentage of goals for the Multifamily Program are summarized in Table 5-4.

Table 5-4 Multifamily Summary of kWh Goal Achievement

Operating Company	Verified Net kWh	kWh Goal	% of Goal Attained	Verified kW	kW Goal	% of Goal Attained
ENO	742,057	493,311	150.4%	195.41	96.58	202.3%
Algiers	31,077	37,633	82.6%	8.71	7.4	117.7%

5.2 Impact Savings Calculation Methodology

Impact methodologies for Multifamily are the same as for HPwES, described 3.2 M&V Methodology.

5.3 Verified Savings by Measure

5.3.1 Infiltration/Air Sealing Savings

Details about M&V Impact methodologies for Multifamily Air Infiltration are the same as described for HPwES, section 3.3.1.

Table 5-5 Expected and Realized Air Sealing Savings – New Orleans

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	4,272	1,809	42.3%	1.38	1.46	105.8%
Electric Resistance	73,758	94,134	127.6%	23.91	30.70	128.4%
Air Source Heat Pump	-	-	N/A	-	-	N/A
Total	**78,030**	**95,943**	**123.0%**	**25.29**	**32.16**	**127.2%**

Table 5-6 Expected and Realized Air Sealing Savings – Algiers

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	-	-	N/A	-	-	N/A
Electric Resistance	804	937	116.5%	0.26	0.31	119.2%
Air Source Heat Pump	-	-	N/A	-	-	N/A
Total	**804**	**937**	**116.5%**	**0.26**	**0.31**	**119.2%**

The Evaluators were not able to reasonably recreate ex ante savings calculations for five projects.

5.3.2 Duct Sealing Savings

Details about M&V Impact methodologies for Multifamily Duct Sealing are the same as described for HPwES, section 3.3.2.

Table 5-7 Expected and Realized Duct Sealing Savings – New Orleans

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	92,700	97,120	104.8%	43.08	45.68	106.0%
Electric Resistance	285,431	295,529	103.5%	57.55	58.99	102.5%
Air Source Heat Pump	-	-	N/A	-	-	N/A
Total	**378,131**	**392,649**	**103.8%**	**100.63**	**104.67**	**104.0%**

Table 5-8 Expected and Realized Duct Sealing Savings – Algiers

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	-	-	N/A	-	-	N/A
Electric Resistance	21,263	22,505	105.8%	4.25	4.49	105.6%
Air Source Heat Pump	-	-	N/A	-	-	N/A
Total	**21,263**	**22,505**	**105.8%**	**4.25**	**4.49**	**105.6%**

Ex ante calculations assumed electric resistance heat for one project, however the home heating type was determined to be natural gas. The Evaluators were able unable to reasonably recreate ex ante savings calculations for eight homes. Using the TRM v1.0 methodology, these homes' realization rates ranged from -34% to 236% before M&V adjustments.

5.3.3 Ceiling Insulation Savings

M&V Impact methodologies for Multifamily Ceiling Insulation are consistent with those in the New Orleans TRM v1.0, section B.4.2., Ceiling Insulation as well as section 4.3.1 of this report.

Table 5-9 Expected and Realized Ceiling Insulation Savings – New Orleans

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Electric Resistance	150,682	147,842	98.1%	39.90	39.90	100.00%
Total	**150,682**	**147,842**	**98.1%**	**39.90**	**39.90**	**100.00%**

There were no insulation projects in the Algiers territory during PY8.

Verified kWh savings for all insulation projects is 98.1% using correct savings calculation methodology and inputs. The slight variation between expected and realized savings is likely due to rounded inputs in ex ante calculations.

5.3.4 LED Lighting Savings

The savings resulting from applying TRM algorithms and deemed savings parameters are summarized in HPwES, section 3.3.3.

Table 5-10 Expected and Realized LED Savings – New Orleans

Lamp Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
LED A-Type Lamp	101,093	101,443	100.3%	20.15	20.13	99.9%
LED Directional Lamp	15,719	15,719	100.0%	3.26	3.26	100.0%
Total	**116,812**	**117,162**	**100.3%**	**23.41**	**23.39**	**99.9%**

Table 5-11 Expected and Realized LED Savings - Algiers

Lamp Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
LED A-Type Lamp	7,005	7,067	100.9%	1.35	1.35	100.1%
LED Directional Lamp	1,083	1,083	100.0%	0.22	0.22	100.0%
Total	**8,088**	**8,150**	**100.8%**	**1.57**	**1.57**	**100.0%**

5.4 Verified Gross Savings

Realized savings is presented by program channel in Table 5-12 and Table 5-13.

Table 5-12 Gross Realization Summary – New Orleans

Measure	Expected kWh Savings	Verified kWh	kWh Realization Rate	Expected kW	Verified kW	kW Realization Rate
AC/HP Tune ups	25,024	25,189	100.7%	9.06	8.96	98.9%
Aerators	707	707	100.0%	0.07	0.07	100.0%
Air Sealing	78,030	95,943	123.0%	25.29	32.16	127.2%
Duct Sealing	378,130	392,649	103.8%	100.63	104.67	104.0%
Insulation 0-30	150,682	147,843	98.1%	39.90	39.90	100.0%
LED Lighting	116,812	117,162	100.3%	23.41	23.39	99.9%
Power Strips	307	307	100.0%	0.03	0.03	100.0%
Showerheads	10,848	10,848	100.0%	1.13	1.13	100.0%
Thermostat prog	39,041	38,817	99.4%	0.00	0.00	N/A
Total:	**799,581**	**829,465**	**103.7%**	**199.53**	**210.31**	**105.4%**

Table 5-13 Gross Realization Summary – Algiers

Measure	Expected kWh Savings	Verified kWh	kWh Realization Rate	Expected kW	Verified kW	kW Realization Rate
Aerators	106	106	100.0%	0.01	0.01	100.0%
Air Sealing	804	937	116.5%	0.26	0.31	119.2%
Duct Sealing	21,263	22,505	105.8%	4.25	4.49	105.6%
LED Lighting	8,088	8,150	100.8%	1.57	1.57	100.0%

Showerheads	678	678	100.0%	0.07	0.07	100.0%
Thermostat prog	5,610	5,384	96.0%	0.00	5.38	N/A
Total:	**36,549**	**37,760**	**103.3%**	**6.16**	**11.84**	**192.2%**

5.5 Estimation of Net Savings

Participant survey responses were used to estimate the net energy impacts of the program. The program net savings are equal to gross savings, less savings associated with free ridership, plus participant spillover savings. The methodology used is described in detail in 2.2.4.

To estimate program-level free ridership, the Evaluator calculated free ridership scores for major and direct install measures, weighted by the participants' gross energy savings and demand reductions. The major and direct install measure free ridership ratios were used to factor the program verified gross savings for the two measure types to estimate free ridership.

A spillover ratio was developed by dividing the total energy savings and demand reductions resulting from spillover measures by the total gross energy savings and demand reductions for the sample of survey respondents.

5.6 Net Savings Results

Figure 5-4 summarizes the distribution of free ridership scores by measure type. As shown, free ridership was somewhat lower for major measures and low overall. The difference in free ridership between the Multifamily Program and HPwES may be because the multifamily residents were, on average, lower socio-economic status. While large number of survey respondents declined to provide information on their income, participants in the HPwES program tended to have higher levels of education (41% of multifamily participants held four-year or graduate degrees, compared to 68% of HPwES participants).

Figure 5-4 Distribution of Free-rider Scores

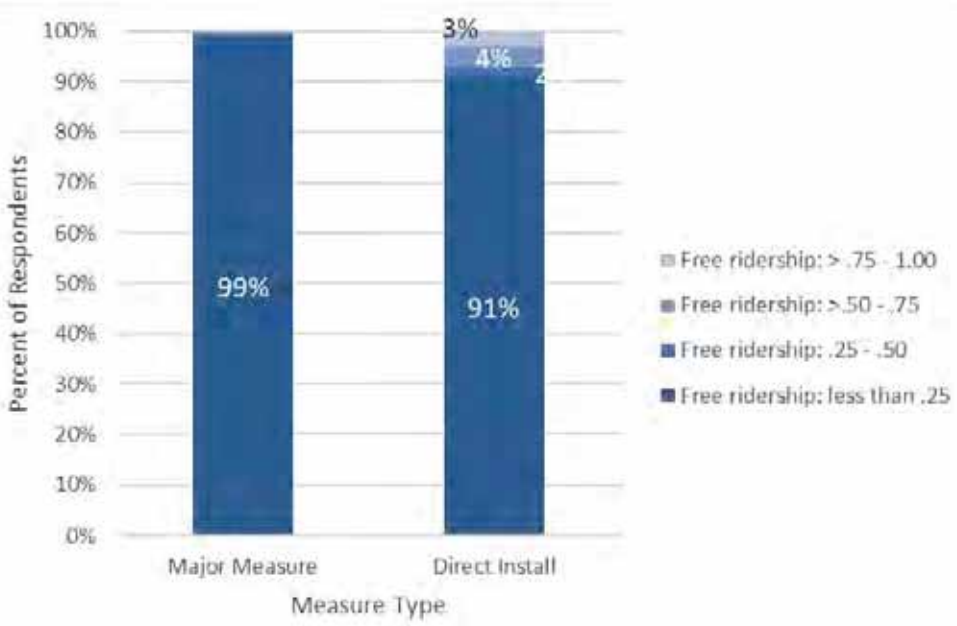


Table 5-14 and Table 5-15 summarize the program net kWh savings and peak kW demand reduction impacts of the Multifamily Program.

Table 5-14 Multifamily Summary of Verified Net Savings

Utility	Expected kWh Savings	Verified Gross kWh Savings	Free Ridership	Spillover	Verified Net kWh Savings	Net to Gross Ratio
ENO	799,581	829,465	87,407	0	742,057	89.5%
Algiers	36,549	37,760	6,683	0	31,077	82.3%
Total	**836,130**	**867,225**	**94,090**	**0**	**773,134**	**89.2%**

Table 5-15 Multifamily Summary of Verified Net Peak Demand Reductions

Utility	Expected Peak kW Reductions	Verified Gross Peak kW Reductions	Free Ridership	Spillover	Verified Net Peak kW Reductions	Net to Gross Ratio
ENO	199.53	210.31	14.90	0	195.41	92.9%
Algiers	6.16	11.84	3.13	0	8.71	73.6%
Total	**205.69**	**222.15**	**18.03**	**0**	**204.12**	**91.9%**

Net to gross ratios in above tables represent overall ratios, accounting for both major and DI measures. Individually, major measure NTG is 97.66% and DI is 57.16%

5.7 Process Evaluation Findings

5.7.1 Summary of Program Participation

This section summarizes findings from the analysis of the program tracking data provided by the implementation contractor.

Table 5-16 summarizes the program activity. As shown, 422 customers received program services – 81% received direct install measures and 55% installed major measures. Thirty-six percent of customers received direct install and major measures.

Data indicated 1% received an assessment, which most likely reflects inconsistent tracking of customers' receipt of an assessment.

Table 5-16 Share of Customers Receiving Measures and Assessments

Number of Participants	Percent Receiving Direct Install Measures	Percent Receiving Major Measures	Percent Receiving Direct Install and Major Measures	Percent Receiving an Assessment	Average Expected Savings per Participant
422	81%	55%	36%	1%	1,981

Duct sealing accounted for about one-half of program savings (Table 5-17) and was the major measure most commonly implemented.

Table 5-17 Summary of Measures Installed

Measure	Expected kWh Savings	Incentives Paid	Number of Participants	Percent of Expected Savings	Incentive Dollars per kWh Saved
Duct sealing	399,393	$50,643	150	47.8%	$0.13
Insulation	150,682	$9,974	27	18.0%	$0.07
Lighting	124,900	$0	299	14.9%	$0.00
Air sealing	78,834	$30,973	55	9.4%	$0.39
Programable thermostat	44,651	$5,120	62	5.3%	$0.11
AC tune-up	25,024	$3,875	29	3.0%	$0.15
Showerhead	11,526	$0	43	1.4%	$0.00
Faucet aerator	813	$0	26	0.1%	$0.00
Smart powerstrips	307	$0	1	0.0%	$0.00

5.7.2 Program Goals, Design, and Delivery

Many of the same procedures and processes discussed in for the Home Performance with ENERGY STAR Program in Section 6.6.2 applicable to the Multifamily Program and are not repeated here. The findings discussed below are those specific to the Multifamily Program.

5.7.2.1 Program Goals

Entergy and Franklin both indicated the MF is performing "exceptional" and exceeded its overall goal for PY8. However, expected savings for Algiers fell short by about 1,000 kWh of the 37,633 kWh goal for that area.

5.7.2.2 Program Design

The Energy Smart MF program offers residents in multifamily properties an opportunity to save energy by participating in a home audit and having measures installed. Properties are qualified to participate if there are two or more meters within the same building.

Participation is initiated by completing an online property assessment request form. The form must be completed by the building owner and not the tenant. There is also a webpage with frequently asked questions (FAQs), which provides answers to residential customers about the MF program.

In PY8, duplexes were added to the MF program. In the past, multifamily services were focused on buildings with four or more units. Units with fewer than four units previously did not qualify for the program. Because there is a significant number of duplexes within the New Orleans' housing stock, this building type has contributed significantly to PY8 savings. Furthermore, program staff indicate that they were focused on duplexes because of a concern that most of the larger complexes, which were characterized as "low hanging fruit," received services in prior program years.

There were no other significant changes to the design of the Energy Smart for Multifamily (MF) program for PY8.

5.7.2.3 Alternative Program Designs

The Multifamily Program as-currently-designed encompasses dwelling retrofits and forwards common area projects to the Small Commercial Program. In other states, these two submarkets are combined into one program offering, allowing for "one-stop shopping" on the part of multifamily owners and management companies. Examples of this approach can be seen in programs such as:

- **Commonwealth Edison[23]:** In-dwelling lighting and low flow devices are bundled with common area improvements for lighting and thermostats.

[23] https://www.comed.com/WaysToSave/ForYourBusiness/Pages/MultiFamilyProperty.aspx

- **Public Service Co. New Mexico[24]:** Comprehensive retrofits for common areas are offered, including lighting, HVAC, pool pump VFDs, envelope improvements, and common area laundry equipment. Enhanced incentives are offered (10% increase) if occupants are certified as low-income, with this 10% pro-rated if the building is partially occupied by low income (for example, if the building has 40% low income tenant occupancy, there is a 4% incentive bonus for the project).
- **Austin Energy[25]:** Common area offerings include solar shading, cool roofs, central water heating and HVAC, and a new construction model-based incentive.

The integrated offering has been identified in program benchmarking by ACEEE as a program best-practice, resulting in long-term reduced levelized costs for energy savings[26]

5.7.3 Trade Ally Feedback

Trade ally feedback findings are summarized in Section 3.6.3.

5.7.4 Participant Feedback

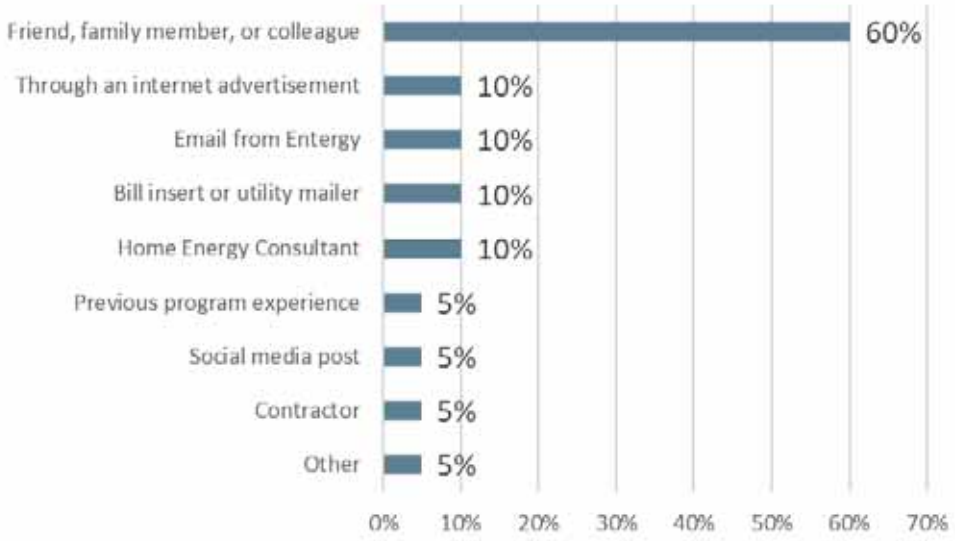
The Evaluators surveyed 20 program participants. Seventy-seven percent of survey respondents owned their residence.

5.7.4.1 How Customers Learned of the Program

Figure 5-5 summarizes how participants learned of the program. Word of mouth was the most frequently reported source of program awareness (cited by 60% of respondents). Other less common sources – each cited by 10% of respondents – included internet advertisement, email from Entergy, bill insert or utility mailer, and a home energy consultant.

[24] https://pnmmultifamily.files.wordpress.com/2019/02/pnm-meep_2019-participant-handbook_final20190214.pdf
[25] https://savings.austinenergy.com/rebates/multifamily/multifamily-featured2
[26] https://aceee.org/sites/default/files/publications/researchreports/e13n.pdf

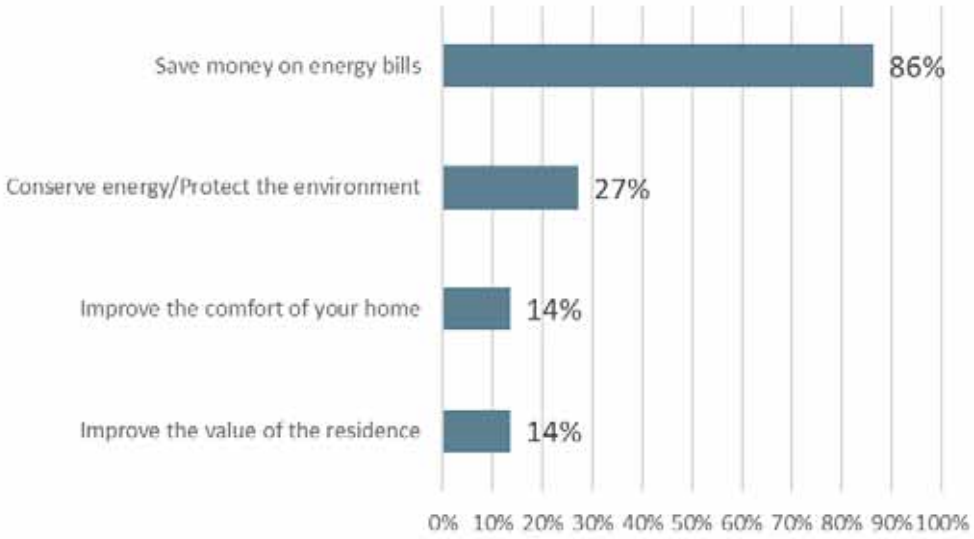
Figure 5-5 Sources of Program Awareness (n = 20)



5.7.4.2 Motivations for Participating

Eighty-six percent of respondents reported that they participated to save money on their energy bills (see Figure 5-6). Twenty-seven percent also reported that they were motivated to conserve energy or protect the environment.

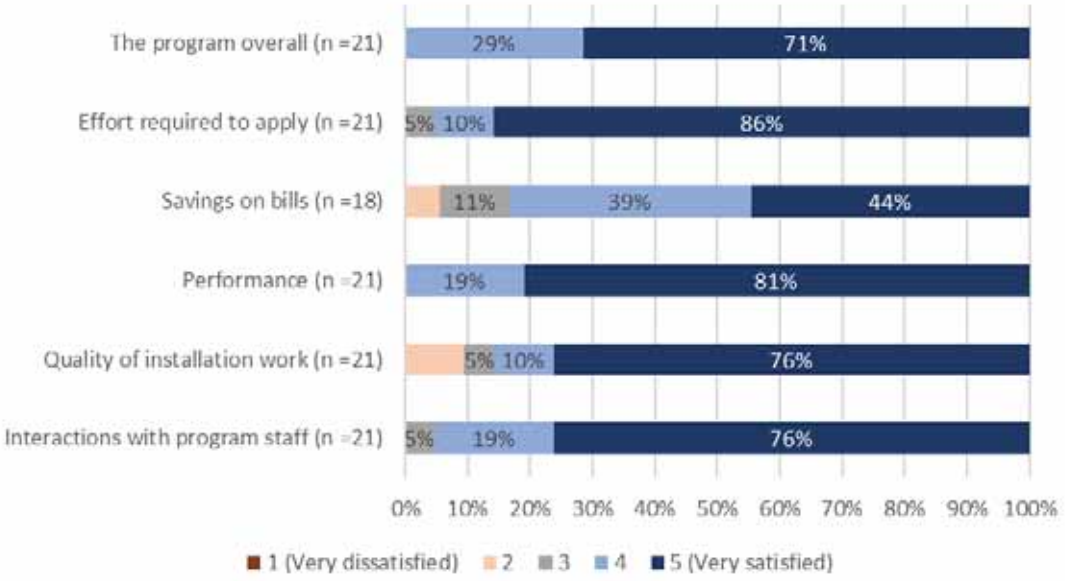
Figure 5-6 Motivations for Participating (n = 22)



5.7.4.3 Participant Satisfaction

As shown in Figure 5-7, all respondents indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as four or five on a five-point satisfaction scale. Two aspects of the program that one or two respondents indicated dissatisfaction with were savings on energy bills and the quality of the installation work performed.

Figure 5-7 Participant Satisfaction



One respondent elaborated that they were dissatisfied because the contractor did not communicate as quickly as they could have to complete the work expeditiously.

Table 5-18 summarizes satisfaction with Entergy as participants service providers. As shown, 81% rated their satisfaction as a four or a five on the five-point satisfaction scale.

Table 5-18 Satisfaction of Entergy as an Electricity Service Provider

Response	***Percent (n = 21)***
5 (Very satisfied)	62%
4	19%
3	10%
2	5%
1 (Very dissatisfied)	5%

5.8 Key Findings and Conclusions

The key findings and conclusions of the evaluation of the program are as follows:

- **The program is producing savings, albeit for a target market that may not have been originally intended.** The program focused exclusively on dwellings with 2-4 units in PY8, and the Evaluators found that 77% of survey respondents owned their residence (compared to 75% within HPwES). Functionally, the MF program in PY8 served as an extension of HPwES, targeting a market sector that is largely similar to the general market targeted by HPwES. With an initial program design to overcome the split-incentive barrier between owners and renters, the

outcome of 77% of program participants being homeowners would appear to be out-of-scope.

- **Overall the program tracking data included appropriate measure names and classifications and was free of errors.** However, review of the data indicated that home assessments are inconsistently tracked. The data showed that 1% of participants received a home energy assessment, which given the program design that includes a home energy audit for all participants, is likely a substantial undercount.
- **The share of customers receiving direct install measures was somewhat low.** Nineteen percent of participants did not receive direct install measures which should have been installed during the energy assessment. Although some customers will likely refuse measures, the share indicates potential to increase direct install measures in multifamily properties.
- **Multiple marketing channels are used to promote the program.** Staff noted that multiple marketing channels used to promote residential programs, including the multifamily program. Despite this broad outreach effort, word of mouth was the most common source of program awareness. Internet advertisements, emails from Entergy, and bill inserts, or utility mailers were each cited by 10% of respondents.
- **Program has focused on duplexes and triplexes.** The implementation contractor staff indicated that the program has focused on duplexes and triplexes. Staff believe that most of the larger complexes have previously received services through the program.
- **All participants were satisfied with the program.** All participants indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as four or five on a five-point satisfaction scale. Two respondents did report some dissatisfaction with the work performed.
- **Participation process is working well for customers.** Few customers identified any issues with scheduling assessments and most found the assessment report to be helpful.

5.9 Recommendations

The Evaluators' recommendations are as follows:

- **Design the program to cohesively include dwelling and common-area retrofits, allowing for "one-stop shopping" for landlords and property management companies.** At present time, a multifamily landlord or manager would need to go through two separate programs (Multifamily and Small Commercial) in order to complete a comprehensive retrofit of their premise. Program administrators should consider broadening the scope of the Multifamily Program to include common areas within the same application process.
- **Consider different incentive levels for condo owners.** Condo owners that apply for the program should receive incentives that align with HPwES; they do not need to necessarily be funneled in to HPwES as there are marketing synergies when reaching out to condo owners and apartment renters, but program incentives

should align with program goals, with a higher incentive offering when the split-incentive barrier for owners versus tenants needs to be overcome.

- **Review data collection and tracking procedures to capture all assessments performed.**
- **Review direct install procedures.** The 82% installation rate of direct install measures suggest there may be opportunities to increase the number of customers receiving these measures. Additionally, tracking reasons for not installing measures will help staff monitor the issue.
- **Remove programmable thermostats from the program.** These measures are not included in the New Orleans TRM, nor are they included in the Arkansas TRM as they are outdated technology for the residential sector. Without an appropriate measure study, the savings are speculative and unreliable, and measure studies have historically found that the savings are highly-dependent upon idiosyncratic program factors such as installation quality by the trade ally and preexisting customer behavior surrounding the management of their thermostat, with there being a possible risk of increased energy use if participants have low home occupancy. The Energy Smart portfolio of programs should endeavor to install smart thermostats within programs such as MF.

6. Green Light Direct Install

6.1 Program Description

The Green Light Direct Install (GLDI) Program provides direct installation of compact fluorescent lamps (CFLs) and light emitting diodes (LEDs) in participating residences. The GLDI Program is intended to reduce residential energy use through the one-for-one replacement of incandescent lamps with energy efficient CFLs and LEDs.

Residential customers in New Orleans Parish are eligible for the program. There is no limit on the number of bulbs that can be installed in a residence so long as they replace incandescent lamps.

Installation is completed by volunteers, which have included student groups and local charities. Installation is tracked by-resident and by-installing volunteer group.

6.2 Evaluation Scope

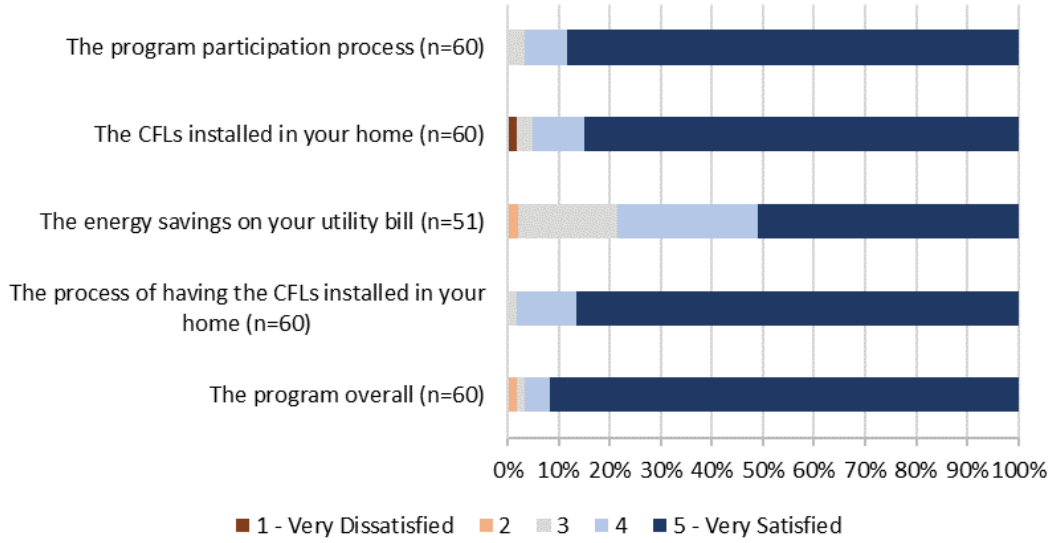
The GLDI Program has received comprehensive impact and process evaluations in PY5 and PY6.The evaluations provided estimates of in-service rates for installed lighting, benchmarks against other direct install programs, and strategic recommendations for program improvement. In the initial review of the PY8 program, the Evaluators concluded that the GLDI program did not warrant more than a brief overview of program activity. The rationales for this are as follows:

Limited program scope. In PY8, the program provided 76,840 expected kWh savings, comprising 0.26% of the Energy Smart portfolio. In comparison, in PY5 the program was 5.48% of portfolio savings.

Coverage of program measures in New Orleans TRM. All measures installed in GLDI have deemed savings provided in the New Orleans TRM, with usage estimates based on the New Orleans lighting metering study conducted in the PY6 evaluation.

Past evaluations showed high satisfaction metrics. As seen in the figure below, the GLDI program has high participant satisfaction. The Evaluators did not find operational issues with the program that warranted further review in PY8.

Figure 6-1 GLDI Participant Satisfaction – PY6



6.3 Expected Savings and Program Participation

In PY8, a total of 3,341 lamps were installed through the program; 2,951 in the ENO territory and 390 in the Algiers territory. The tables below summarize the total measures installed and the expected kWh and kW savings.

Table 6-1 Summary of Measures and Expected Savings – New Orleans

Measure	*Total Quantity of Measures*	*Total Expected kWh Savings*	*Total Expected kW Savings*
23 Watt CFL A-Type Lamp	241	8,914	1.82
20 Watt CFL A-Type Lamp	390	9,407	1.95
16 Watt LED A-Type Lamp	2	83	0.02
13 Watt CFL A-Type Lamp	1211	25,661	5.33
8.5 Watt LED A-Type Lamp	284	6,228	1.29
14 Watt CFL Candelabra Lamp	165	3,071	0.64
9 Watt CFL Candelabra Lamp	658	14,424	2.96
Total:	**2,951**	**67,788**	**14.01**

Table 6-2 Summary of Measures and Expected Savings - Algiers

Measure	Total Quantity of Measures	Total Expected kWh Savings	Total Expected kW Savings
23 Watt CFL A-Type Lamp	58	1,948	0.39
20 Watt CFL A-Type Lamp	37	893	0.19
13 Watt CFL A-Type Lamp	161	3,413	0.71
8.5 Watt LED A-Type Lamp	31	769	0.16
14 Watt CFL Candelabra Lamp	69	1,284	0.27
9 Watt CFL Candelabra Lamp	34	745	0.15
Total	**390**	**9,052**	**1.87**

Table 6-3 below displays lamp types by service territory.

Table 6-3 Lamps by Territory and Type

Territory	Lamps	CFLs	LEDs
New Orleans	2,951	2,665	286
Algiers	390	359	31
Total	**3,341**	**3,024**	**317**

Expected program savings has continued to decrease from PY6. See Table 6-4 for comparisons.

Table 6-4 Program Year Comparisons

Year	Lamps Distributed	% LEDs	Expected kWh Savings
PY6	8,178	0.00%	136,989
PY7	4,770	28.76%	116,016
PY8	3,341	9.49%	76,840
Difference	**-29.96%**	**N/A**	**-33.77%**

Distribution percentages of lamps between New Orleans and Algiers did not change.

Total verified savings and percentage of goals for the GLDI Program are summarized in Table 6-5 separated by program.

Table 6-5 GLDI Savings Goals & Attainment by Service Area

Utility	kWh goal	Net Realized kWh	Percentage of kWh goal realized	kW goal	Net Realized kW	Percentage of kW goal realized
ENO	167,958	61,170	36.4%	27.62	12.66	45.9%
Algiers	97,542	8,155	8.4%	16.00	1.69	10.6%
Total	**265,500**	**69,325**	**26.1%**	**43.62**	**14.35**	**32.9%**

6.4 Gross Impact Savings Calculation Methodology

For equipment and retrofits rebated through the PY8 GLDI Program, calculation methodologies were performed using section B.5 of the New Orleans TRM. Calculations used to analyze the program are described in this section.

6.4.1 Savings Calculations

6.4.1.1 Deemed Energy and Demand Savings

Table 6-6 ENERGY STAR® CFLs – Deemed Savings Per Lamp[27]

Minimum Lumens	Maximum Lumens	Incandescent Equivalent 1st Tier EISA 2007 (Wbase)	CFL Wattage	kWh/Lamp	kW/Lamp
310	749	29	10	13.88	0.0029
750	1,049	43	14	21.19	0.0044
1,050	1,489	53	20	24.12	0.0050
1,490	2,600	72	26	33.62	0.0069

Table 6-7 ENERGY STAR® Omnidirectional LEDs – Deemed Savings Per Lamp[28]

Minimum Lumens	Maximum Lumens	Incandescent Equivalent 1st Tier EISA 2007 (Wbase)	LED Wattage	kWh/Lamp	kW/Lamp
310	749	29	7	16.04	0.00333
750	1,049	43	9	24.79	0.00514
1,050	1,489	53	12	29.89	0.00620
1,490	2,600	72	15	41.56	0.00862

6.4.1.2 Energy and Demand Savings Calculation

Both candelabra CFLs distributed through the program are exempt from EISA. Their per unit savings was calculated as follows:

$$kWhsavings = ((Wbase - Wpost)/1000) \times Hours \times ISR \times IEFE$$

$$kWsavings = ((Wbase - Wpost)/1000) \times CF \times ISR \times IEFD$$

Where,

Wbase = Baseline watts (Based on EISA standard see Table 6-8)

Wpost = Installed watts

27 New Orleans TRM V1.0, Table 83, page B-116.

28 New Orleans TRM V1.0, Table 105, page B-138.

Hours = Annual hours of use, 819.43[29]

IEFE = Energy Interactive Factor, .91

ISR = In Service Rate, the percentage of CFLs installed, 0.9630

CF = Summer Peak Coincidence Factor, 12.74%

IEFD = Interactive Effects Factor, 1.21

1000 = W/kW conversion

Table 6-8 Baseline Wattage for Specialty, EISA Exempt Lamps

Minimum Lumens	Maximum Lumens	Incandescent Equivalent (W_{base})
310	749	40
750	1,049	60
1,050	1,489	75
1,490	2,600	100

6.5 Verified Savings

Realized savings are presented by utility and measure type in tables Table 6-9 and Table 6-10.

Table 6-9 Verified Gross Savings – New Orleans

Measure	Ex Ante kWh Savings	Ex Post kWh Savings	kWh Realization Rate	Ex Ante kW Savings	Ex Post kW Savings	Peak kW Realization Rate
23 Watt CFL A-Type	8,914	8,103	90.9%	1.82	1.66	90.8%
20 Watt CFL A-Type	9,407	9,407	100.0%	1.95	1.95	100.0%
16 Watt LED A-Type	83	83	100.0%	0.02	0.02	100.2%
13 Watt CFL A-Type	25,661	25,661	100.0%	5.33	5.33	100.0%
8.5 Watt LED A-Type	6,228	7,040	113.0%	1.29	1.46	113.2%
14 Watt CFL Candelabra	3,071	3,071	100.0%	0.64	0.63	98.4%
9 Watt CFL Candelabra	14,424	14,602	101.2%	2.96	3.02	102.0%
Total	**67,788**	**67,967**	**100.3%**	**14.01**	**14.07**	**100.4%**

29 Hours based on a residential lighting study done as part of development of the New Orleans TRM.

30 Developed form PY5 and PY6 survey responses.

Table 6-10 Verified Gross Savings – Algiers

Measure	Ex Ante kWh Savings	Ex Post kWh Savings	kWh Realization Rate	Ex Ante kW Savings	Ex Post kW Savings	Peak kW Realization Rate
23 Watt CFL A-Type	1,948	1,950	100.1%	0.39	0.39	100.00%
20 Watt CFL A-Type	893	892	99.9%	0.19	0.19	100.00%
13 Watt CFL A-Type	3,413	3,412	100.0%	0.71	0.71	100.00%
8.5 Watt LED A-Type	769	768	99.9%	0.16	0.16	100.00%
14 Watt CFL Candelabra	1,284	1,284	100.0%	0.27	0.27	100.00%
9 Watt CFL Candelabra	745	755	101.3%	0.15	0.15	100.00%
Total	**9,052**	**9,061**	**100.1%**	**1.87**	**1.87**	**100.20%**

Small savings deviation is likely the result of rounding errors in program tracking data. However, the Evaluators were unable to reasonably recreate ex ante savings estimates for nine 23W CFLs and (45) 8.5W LED A-lamps. These savings values could not be attributed to possible rounding errors in input or summations in tracking data: The nine 23W CFLs received a 27.12% realization rate and the (45) 8.5W LEDs received a realization rate of 368.65%.

Table 6-11 Expected and Deemed Savings Values for 23W CFL and 8.5W LEDs

Efficient Equipment Description	Expected kWh Savings	Current kW Reduction	Expected kWh Savings per Unit	Expected kW Savings per Unit	Deemed kWh Savings per Unit	Deemed kW Savings per Unit
23 Watt CFL A-Type Lamp	1,116	0.23	123.96	0.02570	33.62	0.00690
8.5 Watt LED A-Type Lamp	303	0.06	6.72	0.00138	24.79	0.00514

The difference in program savings as a result of these values is 813 kWh for the CFLs and -813 kWh for the LEDs, suggesting that an error was made in ex ante calculations.

6.6 Estimation of Net Savings

The Evaluators established a NTGR based on primary research in PY6. The Evaluators surveyed 60 participants and estimated a NTGR of 90%. This NTGR was applied to the PY8 participants.

6.6.1 Net Savings Results

Table 6-12 and Table 6-13 summarize the ex post net kWh and kW achieved through the GLDI Program.

Table 6-12 GLDI Summary of Ex Post Net kWh Savings

Service Territory	Expected kWh Savings	Realized Gross kWh Savings	Free Ridership	Realized Net kWh Savings	Net to Gross Ratio
ENO	67,788	67,967	6,797	61,170	90%
Algiers	9,052	9,061	906	8,155	90%
Total	**76,840**	**77,028**	**7,703**	**69,325**	**90%**

Table 6-13 GLDI Summary of Ex Post Net Peak kW Reductions

Service Territory	Expected kW Reductions	Realized Gross kW Reductions	Free Ridership	Realized Net kW Reductions	Net to Gross Ratio
ENO	14.01	14.07	1.41	12.66	90%
Algiers	1.87	1.87	0.19	1.69	90%
Total	**15.88**	**15.94**	**1.59**	**14.35**	**90%**

6.7 Lifetime Savings

Table 6-14 and Table 6-15 present the lifetime kWh and peak kW savings attributable to lamps distributed through the PY8 GLDI program:

Table 6-14 ENO Lifetime Savings

Measure	Lifetime kWh
9W CFL Candelabras	39,666
14W CFL Candelabras	109,616
13W CFL	40,192
20W CFL	13,101
23W CFL	63,273
8.5W LED	58,099
16W LED	920
Total:	**324,867**

Table 6-15 Algiers Lifetime Savings

Measure	Lifetime kWh
9W CFL Candelabras	8,749
14W CFL Candelabras	14,580
13W CFL	3,813
20W CFL	5,478
23W CFL	3,267
8.5W LED	6,702
Total:	**42,589**

7. Residential Lighting and Appliances

7.1 Program Description

7.1.1 Base Program Activities and Measures

The Residential Lighting and Appliances (RLA) Program provides Point of Purchase discounts for light emitting diodes (LEDs) through participating retailers, as well as mail-in rebates (downstream rebates) for refrigerators, window ACs, pool pumps, and heat pump water heaters. A complete list of eligible items is listed below:

- Light Emitting Diodes (LEDs);
- ENERGY STAR Pool Pumps;
- ENERGY STAR refrigerators;
- ENERGY STAR Window ACs; and
- ENERGY STAR Heat Pump Water Heaters.

7.1.2 Lighting Giveaway

During the course of the PY8 program, program implementors held lighting giveaway events in addition to normal program activities. The giveaways consisted of 40,634 9W LED A-lamps and 4,400 11W A-lamps, for a total of 45,034 lamps distributed. This program component is responsible for 15.8% of expected savings.

The tables below summarize the total number of measures distributed through the program and expected savings.

Table 7-1 Summary of Measures and Expected Savings – New Orleans

Measure	*Total Quantity of Measures*	*Total Expected kWh Savings*	*Total Expected kW Savings*
Lighting Buydown	11,728	4,019,375	820.49
Lighting Giveaway	36,514	630,930	129.59
Refrigerators	87	4,849	1.11
Window ACs	56	4,367	2.89
Pool Pumps	5	9,300	1.40
HPWHs	3	4,151	0.00
Total	**48,393**	**4,672,972**	**955.48**

Table 7-2 Summary of Measures and Expected Savings - Algiers

Measure	Total Quantity of Measures	Total Expected kWh Savings	Total Expected kW Savings
Lighting Buydown	216	91,835	19.03
Lighting Giveaway	8,520	142,077	29.15
Refrigerators	11	613	0.14
Window ACs	1	79	0.05
Total:	**8,748**	**234,604**	**48.37**

Stores carrying bought-down lighting grew from four stores in PY7 to 16 stores in PY8:

Table 7-3 Store Participation per Year

Store Type	Count PY7	Count PY8
Dollar Store / Discount Store	1	6
Membership Store	1	1
Big Box Retail Store	-	6
Big Box Construction Store	1	2
Hardware Store	1	1
Total	**4**	**16**

In PY7 the RLA program expected to save 2,862,687 kWh during the abbreviated nine month program year. Normalizing these figures to 12 months (a full program year) yields an expected 3,816,916 kWh. The PY8 program ran for a full 12 months surpassing normalized PY7 figures with an increase in expected kWh savings of 26.6%.
Table 7-4 and

Table 7-5compare program years.

Table 7-4 Participation and Expected Savings by Program Year

PY	Expected kWh	Percentage Difference
PY7 (nominal)	2,862,687	
PY7 (normalized)[31]	3,816,916	26.6%
PY8[32]	4,907,576	

[31] PY7 was an abridged year, lasting only nine months. Figures presented here are normalized to represent a full program year (12 months).
[32] Shown without HES Kits. Including data from HESKs, PY total household count is 5,543 and savings per home is 652 kWh.

Table 7-5 Measure Type and Count Installed by Program Year[33]

Measure	Expected kWh PY8	Expected kWh PY7 (normalized)[1]	Expected kWh PY7 (nominal)
Lighting Buydown	4,111,210	3,797,946	2,848,460
Lighting Giveaway	773,007	0	0
Refrigerators	5,462	4,751	3,564
Window ACs	4,445	5,569	4,176
Pool Pumps	9,300	4,960	3,720
HPWHs	4,151	3,690	2,767

Total verified savings and percentage of goals for the RLA Program are detailed in Table 7-6.

Table 7-6 Savings Goals by Utility

Utility	Net Realized kWh	kWh goal	Percent of kWh goal realized	Net Realized kW	kW goal	Percent of kW goal realized
ENO	3,615,618	3,503,824	103.19%	776.76	735.98	105.54%
Algiers	214,659	264,768	81.07%	44.54	55.8	79.81%

7.2 M&V Methodology

Electricity and peak demand reductions of the PY8 RLA program were estimated using the New Orleans TRM 1.0

Evaluation of the RLA Program included the following:

- Updating pool pump calculations to reflect ENERGY STAR parameters by drive type and horsepower;
- Review of program tracking and recreation of deemed savings calculations;
- Interviews with program staff; and
- Review of program Memoranda of Understanding (MOU).

[33] Figures adjusted to reflect 9-month PY7 program period.

For equipment and retrofits rebated through the PY8 RLA Program, calculation methodologies were performed as described in the New Orleans TRM. Measure-specific impact methodology and results are discussed below.

7.2.1 LEDs

Methods for calculating he deemed savings values for LEDs came from the New Orleans TRM, sections B.5.1.7. Calculation of Deemed Savings, B.5.3. ENERGY STAR® Directional LEDs and B.5.4. ENERGY STAR® Omni-Directional LEDs.

7.2.1.1 Deemed Savings

Table 7-7. ENERGY STAR® Omnidirectional LEDs – Deemed Savings Per Lamp[34]

Minimum Lumens	*Maximum Lumens*	*Incandescent Equivalent 1st Tier EISA 2007 (Wbase)*	*LED Wattage*	*kWh/Lamp*	*kW/Lamp*
310	749	29	7	16.04	0.00333
750	1,049	43	9	24.79	0.00514
1,050	1,489	53	12	29.89	0.00620
1,490	2,600	72	15	41.56	0.00862

34 TRM Table 105, page B-138

7.2.1.2 Calculated Savings

Table 7-8 ENERGY STAR® Directional LEDs – Reflector Lamps Baseline Watts[35]

Lamp Type (a)	Incandescent Equivalent (Pre-EISA) (b)	WattsBase (Post-EISA) (c)
PAR20	50	35
PAR30	50	35
R20	50	45
PAR38	60	55
BR30	65	EXEMPT
BR40	65	EXEMPT
ER40	65	EXEMPT
BR40	75	65
BR30	75	65
PAR30	75	55
PAR38	75	55
R30	75	65
R40	75	65
PAR38	90	70
PAR38	120	70
R20	≤ 45	EXEMPT
BR30	≤ 50	EXEMPT
BR40	≤ 50	EXEMPT
ER30	≤ 50	EXEMPT
ER40	≤ 50	EXEMPT

Table 7-9 ENERGY STAR® Directional LEDs –Baseline Watts for EISA-Exempt Lamps36

Minimum Lumens	Maximum Lumens	Incandescent Equivalent (Wbase)
310	749	40
750	1,049	60
1,050	1,489	75
1,490	2,600	100

35 TRM Table 98, page B-131

36 TRM Table 99, page B-IJ

7.2.1.3 LED Buydown Savings Results

The savings resulting from applying TRM algorithms and deemed savings parameters are summarized in Table 7-10 and

Table 7-10 Expected and Realized LED Savings – New Orleans

Location Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Discount Store #1	51,186	55,158	107.8%	10.60	11.44	107.9%
Discount Store #2	66,314	76,022	114.6%	13.74	15.77	114.7%
Discount Store #3	63,822	69,752	109.3%	13.22	14.46	109.4%
Discount Store #4	54,809	66,748	121.8%	11.35	13.84	121.9%
Discount Store #6	83,600	93,135	111.4%	17.32	19.31	111.5%
Big Box Retail Store #1	5,871	5,173	88.1%	1.22	1.07	87.7%
Big Box Retail Store #3	28,891	28,710	99.4%	5.98	5.95	99.5%
Big Box Retail Store #4	118,961	118,143	99.3%	24.66	24.50	99.4%
Membership Store	536,453	804,707	150.0%	107.80	166.81	154.7%
Hardware Store	404,762	440,214	108.8%	83.87	91.24	108.8%
Big Box Construction Store #1	537,225	568,125	105.8%	110.40	116.88	105.9%
Big Box Construction Store #2	2,020,876	2,198,002	108.8%	410.67	447.73	109.0%
Big Box Retail Store #6	46,604	46,455	99.7%	9.66	9.64	99.8%
Total	**4,019,375**	**4,570,344**	**113.7%**	**820.49**	**938.64**	**114.4%**

Table 7-11 Expected and Realized LED Savings – Algiers

Location Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Discount Store #5	43,395	45,014	103.7%	8.99	9.33	103.8%
Big Box Retail Store #2	4,081	3,669	89.9%	0.85	0.76	89.4%
Big Box Retail Store #5	44,359	44,507	100.3%	9.19	9.23	100.4%
Total	**91,835**	**93,190**	**101.5%**	**19.03**	**19.32**	**101.5%**

Data provided to the Evaluators by contained multiple savings estimates for identical lamps. Fifty seven line items had realization rates within 2% of 100% (98%-102%). These likely different from ex ante calculations by way of rounding errors. For example: 31 9W A-lamps were expected to provide 757.2 kWh in savings. Dividing 757.2 by 31 units yields 24.43 kWh expected savings per lamp. TRM-deemed savings for this lamp is 24.79 kWh per lamp, yielding 24.79*31= 768.49 kWh in total, and a 101.5% realization rate.

The remaining 73 lines items differed between 198% and -53% of expected savings. The remining items have per-unit savings values which did not originate from the TRM and could not be reasonably recreated. Further, 2,800 packages (totaling 10,328 lamps) did not have sufficient information to properly identify and calculate savings with.

7.2.2 Window Air Conditioner Calculations

7.2.2.1 Deemed Energy Savings

Window air conditioner savings was calculated using the following:

Table 7-12 Window Air Conditioner – Baseline and Efficiency Levels[37]

Reverse Cycle?	Louvered Sides?	Capacity	Baseline CEER	Efficient CEER	kWh	kW
No	Yes	< 8,000	11.0	12.1	46.4	0.0445
		≥ 8,000 and < 14,000	10.9	12.0	74.2	0.0453
		≥ 14,000 and < 20,000	10.7	11.8	118.8	0.0470
		≥ 20,000	9.4	10.3	171.5	0.0501
	No	< 8,000	10.0	11.0	51.0	0.0490
		≥ 8,000	9.6	10.6	78.8	0.0530
Yes	Yes	< 20,000	9.8	10.8	113.7	0.0509
		≥ 20,000	9.3	10.2	190.3	0.0511
	No	< 14,000	9.3	10.2	83.7	0.0511
		≥ 14,000	8.7	9.6	146.9	0.0581

Table 7-13 Window AC Realization Summary

Measure	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	kW Realization Rate
New Orleans	4,367	4,167	95.4%	2.89	2.60	90.0%
Algiers	79	74	93.7%	0.05	0.05	100.0%
Total	**4,445**	**4,242**	**95.4%**	**2.94**	**2.65**	**90.1%**

Ex ante Calculations used a deemed savings values of 78.8 kWh and 0.053 kW to estimate savings. The Evaluators used the methods described above, resulting in high realization rates.

7.2.3 ENERGY STAR® Pool Pump Calculations

7.2.3.1 Deemed Energy Savings

ENERGY STAR® Pool Pump savings was calculated using the deemed savings from the New Orleans TRM, section B.1.8.

[37] TRM v1.0, page B-70.

Table 7-14 ENERGY STAR® Variable Speed Pool Pumps – Deemed Savings Values38

Pump HP	kW Savings	kWh Savings
0.5	0.24	1,713
0.75	0.28	1,860
1	0.36	2,063
1.5	0.47	2,465
2	0.52	2,718
2.5	0.57	2,838
3	0.72	3,364

Table 7-15 Pool Pumps Realization Summary

Measure	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	kW Realization Rate
New Orleans	9,300	14,629	157.3%	1.40	2.95	210.7%
New Orleans	**9,300**	**14,629**	**157.3%**	**1.40**	**2.95**	**210.7%**

Ex ante savings for all pool pumps was 1,860 kWh and 0.28kW, which assumes all pumps are rated for 0.75 horsepower. Actual horsepower ranged from 1.65 to 2.7HP, resulting in the high realization rate. There were no PY8 pool pump measures in the Algiers territory.

7.2.4 ENERGY STAR® Refrigerator Calculations

7.2.4.1 Deemed Energy Savings

ENERGY STAR® Refrigerator savings was calculated using the deemed savings from the New Orleans TRM, section B.1.4. After verifying model configurations and features, deemed savings were assigned to each unit using TRM Table 9: Formulas to Calculate the ENERGY STAR® Refrigerator Criteria[39].

38 TRM table 16, page B-37

39 Pages B-16 to B-19

Table 7-16 ENERGY STAR® Refrigerator Realization Summary

Measure	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	kW Realization Rate
New Orleans	4,849	5,662	116.8%	1.11	1.31	118.0%
Algiers	613	703	114.7%	0.14	0.16	114.7%
Total	**5,462**	**6,365**	**116.5%**	**1.25**	**1.47**	**117.6%**

Ex ante Calculations used a deemed savings values of 56 kWh and 0.0128 kW to estimate savings. The Evaluators used the methods described above, resulting in high realization rates.

7.2.5 Heat Pump Water Heater Calculations

7.2.5.1 Deemed Energy Savings

HPWH savings was calculated using the deemed savings from the New Orleans TRM, section B.2.1. After verifying model specifications deemed savings were assigned to each unit using TRM Table 23: Deemed kWh Savings for Water Heater Replacement[40] and Table 24: Deemed kW Savings for Water Heater Replacement.

Table 7-17 HPWH Realization Summary

Measure	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	kW Realization Rate
New Orleans	4,151	5,480	132.0%	0.0003	0.4805	160166.7%
New Orleans	**4,151**	**5,480**	**132.0%**	**0.0003**	**0.4805**	**160166.7%**

Ex ante Calculations used a deemed savings values of 1,354 kWh and 0.0001 kW to estimate savings. The Evaluators used the methods described above, resulting in high realization rates. There were no PY8 HPWH measures in the ENO territory.

7.2.5.2 Verified Gross Savings by Measure

Table 7-18 and Table 7-19 summarize the savings from the RLA Program.

40 Page B-43

Table 7-18 kWh and Peak kW Realization Summary – New Orleans

Measure	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	kW Realization Rate
Lighting Buydown	4,019,375	4,570,344	113.7%	820.49	938.64	114.4%
Lighting Giveaway	630,930	925,328	146.7%	129.58	191.87	148.1%
Refrigerators	4,849	5,662	116.8%	1.11	1.31	118.0%
Window ACs	4,367	4,167	95.4%	2.89	2.60	90.0%
Pool Pumps	9,300	14,629	157.3%	1.40	2.95	210.7%
HPWHs	4,151	5,480	132.0%	0.0003	0.4805	160166.7%
Total	**4,672,972**	**5,525,610**	**118.2%**	**955.48**	**1,137.85**	**119.1%**

Table 7-19 kWh and Peak kW Realization Summary - Algiers

Measure	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	kW Realization Rate
Lighting Buydown	91,835	93,190	101.5%	19.03	19.32	101.5%
Lighting Giveaway	142,077	213,506	150.3%	29.15	44.27	151.9%
Refrigerators	613	703	114.7%	0.14	0.16	114.3%
Window ACs	79	74	93.7%	0.05	0.05	100.0%
Total:	**234,604**	**307,473**	**131.1%**	**48.37**	**63.80**	**131.9%**

7.3 Estimation of Net Savings

The following sections describe the approach used to estimate net savings for the lighting and appliance components of the RLA Program.

7.3.1 Lighting Component

The Evaluators attempted to estimated NTG for upstream bulbs using a price response model, wherein a regression is developed to estimate the relationship between price and quantity sold. The Evaluators used a negative binomial model to account for the right-skewed relationship between prices and quantities. Due to data limitations, model results were highly sensitive and unreliable, thus the Evaluators opted to use the previous years; lighting NTG ratio to determine net savings for the lighting component. These results are consistent with other lighting programs in the region and similar to those nationwide.

7.3.2 Appliance Component

Participant survey responses were used to estimate free ridership for ENERGY STAR refrigerators and room air conditioners, and participant spillover for the program. The methodology used is described in detail in Section 5.2.4, Estimation of Net Savings.

A literature review was performed for ENERGY STAR pool pumps and heat pump water heaters. Table 7-20 and Table 7-21 summarize the free ridership findings for these two measures. The Evaluators applied the average free ridership ratio.

Table 7-20 Free Ridership Findings for Heat Pump Water Heaters

Program Year	State	Free Ridership Estimate
2015-2016	WY	18%
2015	MO	19%
2012	IL	14%
Average		**17%**

Table 7-21 Free Ridership Findings for Pool Pumps

Program Year	State	Free Ridership Estimate
2014	MI	0%
2015	MI	0%
2018	TX	7%
2017	NV	30%
2016	CO	20%
Average		**11%**

7.3.3 Net Savings Results

7.3.3.1 Lighting Component

The free ridership rate for LEDs is 33%. This value was applied to all lighting bought down through the program. To estimate NTG for lighting giveaways, the Evaluators used income data from the US Census Bureau to assign average income by New Orleans zip code and assign low income areas, then used the list of giveaway locations by zip code to develop weighted NTG assignments. Non-low income lighting received NTG values consistent with those developed above, while the low income light portions of the lighting were given the stipulated 100% NTG. Combined results are presented below.

Table 7-22 Summary of Verified Net Savings – Lighting Component

Utility	Expected kWh Savings	Verified Gross kWh Savings	Free Ridership	Spillover	Verified Net kWh Savings	Net to Gross Ratio
ENO	4,650,305	5,495,671	1,903,239	-	3,592,432	65.4%
Algiers	233,912	306,696	92,447	-	214,249	69.9%
Total	**4,884,217**	**5,802,367**	**1,995,686**	**-**	**3,806,681**	**65.6%**

Table 7-23 Summary of Verified Net Peak Demand Reductions – Lighting Component

Utility	Expected Peak kW Reductions	Verified Gross Peak kW Reductions	Free Ridership	Spillover	Verified Net Peak kW Reductions	Net to Gross Ratio
ENO	950.07	1,130.51	359.10	-	771.41	68.2%
Algiers	48.18	63.59	19.17	-	44.42	69.9%
Total	**998.25**	**1,194.10**	**378.27**	**-**	**815.83**	**68.3%**

The Evaluators conducted a literature review of recent NTG studies completed for residential lighting as a secondary check for the reasonableness of the estimates of the RLA Program. Table 7-24 summarizes the benchmark values identified. The NTG ratio estimated for ENO is within reasonably boundaries of the average values found in regional evaluations in 2017 (the most recent year with publicly-available reporting to compare current findings against).

Table 7-24 Residential Lighting NTG Benchmarks

Utility	EM&V Contractor	Program Year	Net to Gross
SWEPCO Arkansas	ADM Associates	2017	57.7%
Ameren Missouri	The Cadmus Group	2017	71.0%
Oklahoma Gas & Electric	ADM Associates	2017	75.5%
Public Service Company of New Mexico	Evergreen Economics	2017	64.0%
Entergy Arkansas	TetraTech	2017	73.0%
Mean Value of Benchmark Utilities			**68.2%**
Entergy New Orleans Value			**68.3%**

7.3.3.2 Appliance Component

Table 7-25 summarizes the free ridership findings for refrigerators, window air conditioners, pool pumps and HP water heaters.

Table 7-25 Summary of Free Ridership Self-Reported Net to Gross

Measure	Net to Gross
ENERGY STAR refrigerator	51.6%
ENERGY STAR window air conditioner	63.1%
ENERGY STAR Pool Pumps	89.2%
Heat Pump Water Heaters	83.6%

One respondent reported installing an ENERGY STAR dishwasher that qualified as spillover.

Free ridership for the appliance component of the program was estimated by applying the measure-level free ridership to the measure savings. Program level spillover was estimated by applying a ratio of the survey respondent reported spillover savings to the

total verified gross savings for survey respondents to the program gross savings. values.[41]

Table 7-26 and Table 7-27 summarize the appliances portions of net kWh savings and peak kW demand reduction impacts of the RLA Program.

Table 7-26 Summary of Verified Net Savings – Appliance Component

Utility	Expected kWh Savings	Verified Gross kWh Savings	Free Ridership	Spillover	Verified Net kWh Savings	Net to Gross Ratio
ENO	22,667	29,939	6,935	181	23,186	77.4%
Algiers	692	777	372	5	410	52.8%
Total	**23,359**	**30,716**	**7,307**	**186**	**23,596**	**76.8%**

Table 7-27 Summary of Verified Net Peak Demand Reductions – Appliance Component

Utility	Expected Peak kW Reductions	Verified Gross Peak kW Reductions	Free Ridership	Spillover	Verified Net Peak kW Reductions	Net to Gross Ratio
ENO	5.40	7.34	2.03	0.04	5.35	72.9%
Algiers	0.19	0.21	0.10	0.00	0.11	54.1%
Total	**5.60**	**7.55**	**2.13**	**0.05**	**5.46**	**72.3%**

7.3.3.3 Total Net Savings

Table 7-28 Verified Net Savings – New Orleans

Measure Category	Expected Gross kWh	Verified Gross kWh	Verified Net kWh	Expected Gross kW	Verified Gross kW	Verified Net kW
Lighting	4,672,972	5,525,610	1,910,174	181	3,615,618	65.4%
Appliances	234,604	307,473	92,819	5	214,659	69.8%
Total	**4,907,576**	**5,833,083**	**2,002,993**	**186**	**3,830,277**	**65.7%**

Table 7-29 Verified Net Savings – Algiers

Measure Category	Expected Gross kWh	Verified Gross kWh	Verified Net kWh	Expected Gross kW	Verified Gross kW	Verified Net kW
Lighting	955.48	1,137.85	361.13	0.04	776.76	68.3%
Appliances	48.37	63.80	19.26	0.00	44.54	69.8%
Total	**1,003.85**	**1,201.65**	**380.398**	**0.05**	**821.30**	**68.3%**

41 Net savings estimates were based on all survey respondents and the same value was applied to ENO and Algiers projects.

7.4 Process Evaluation Findings

7.4.1 Summary of Program Participation

Table 7-30 summarizes the program activity by measure type. Nearly all program savings were from midstream lighting measures.

Table 7-30 Summary of Measures Installed

Measure	Expected kWh Savings	Incentives Paid	Number of Participants	Percent of Expected Savings	Incentive Dollars per kWh Saved
Lighting	4,884,218	$381,343	NA	99.5%	$0.08
ENERGY STAR pool pump	9,300	$1,500	4	0.2%	$0.16
ENERGY STAR refrigerator	5,573	$5,000	99	0.1%	$0.90
ENERGY STAR window air conditioner	4,334	$2,750	47	0.1%	$0.63
Heat pump water heater	4,151	$1,200	3	0.1%	$0.29

7.4.2 Program Goals, Design, and Delivery

7.4.2.1 Program Goals and Design

In addition to midstream LED lighting discounts, the program offers rebates on ENERGY STAR appliances. The rebate amounts are summarized in Table 7-31.

Table 7-31 Appliance Rebates

Measure	Rebate Amount
ES Refrigerators	$50
ES Window AC	$50
ES Heat Pump Water Heaters	$400
ES Pool Pumps	$300

Franklin staff indicated the RLA is "resourced appropriately" and implemented plans to ensure that the savings goal for PY8 was met. Several program staff noted the program was "underperforming" and "slow to roll out" in the first part of the year compared to other programs, but that it can "move quickly" to meet goals. As with many of the residential programs, RLA struggles in Algiers because of the small territory.

> *"The first half of the year was not great. We held the program back a little bit in New Orleans, we can hit goal in a pretty short amount of time if we work with certain retailers." – Program staff.*

One issue identified during the interviews was the lack of "big box stores" within the Algiers territory. Additionally, leakage is a greater risk for the Algiers area. Program staff have worked to increase the number of retailers participating in the program in Algiers, specifically "mom and pop" stores, and increasing the products incented in the existing retailers. Staff indicated at the time of the interview they were working to get the program in the Dollar Tree and Walmart in Algiers. Franklin staff noted the program is currently in

Costco, Dollar Tree, Walmart, Rouses, Home Depot, and Lowes. They also stated they strive to incent products in different types of stores and locations. This helps the program reach a variety of residential customers in diverse locations. Staff also indicated they incentivize a wide variety of lighting types to meet customer needs.- Franklin did not believe any lighting products should be discontinued and they are paying close attention to 2020 lighting standards. They want to ensure they adjust their measure mix and are line with the new standards.

Staff noted that lack of awareness among customers is a challenge to high participation. Franklin staff indicated they would like to create an online marketplace for residential customers in addition to the brick and mortar stores. Staff believe that an online store would be more accessible to residential customers within the Entergy New Orleans territory. They also are exploring the idea of an instant rebate option, where there would be a QR code on the customer's phone to use.

A key strength of the program noted by staff is that there is "low level of effort" required for participation when compared to other energy efficiency programs. It was also noted this program is a cost-effective method for obtaining savings. The program provides residential customers with an easy way to participate in an energy savings program with little commitment.

7.4.2.2 Quality Control Processes

Quality assurances for this program include verifying point of sale data against invoicing, periodic checks to ensure shelves are restocked and that stocked items are not broken. They also match retail data to their triparty agreement. Staff did indicate this was a challenge in PY8.

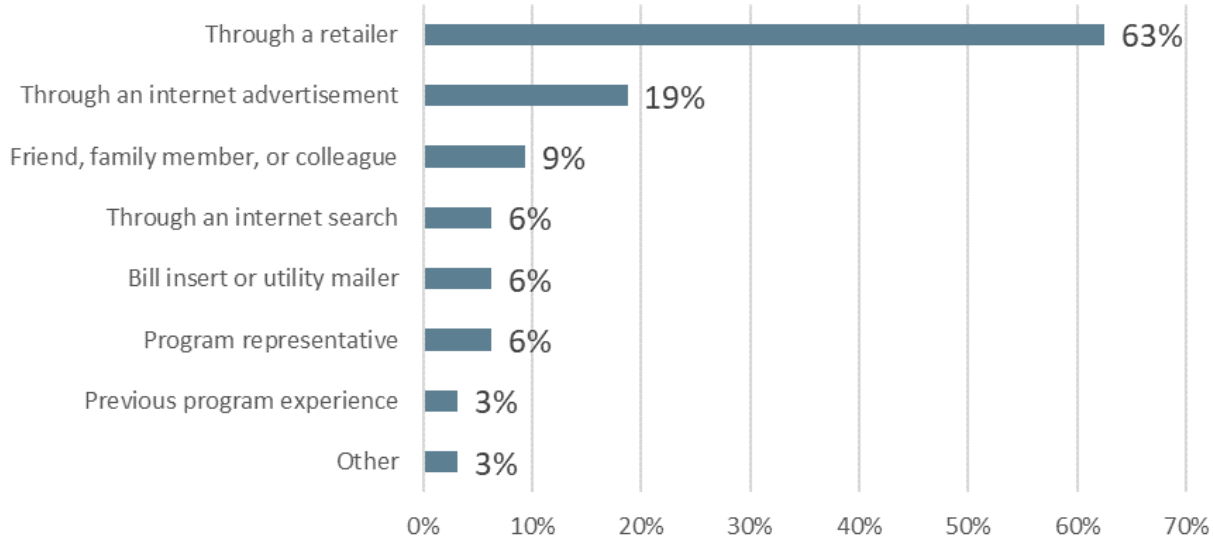
> *"This a reason for our slower performance. We had several retailers make changes and did not communicate it to us, it delayed us claiming the savings we could report. It is my understanding this is typical for these types of programs. We are going through some learning pains. We are looking to better align with each of them, if it is season. We are getting more proactive with our communication and understanding when they are going to make changes." – Program staff*

7.4.3 Participant Feedback

7.4.3.1 How Customers Learned of the Program

Many customers learned of the program rebates from a retailer (63%). Internet advertisements were also a common source of awareness –19% of participants reported learning of the program through this means.

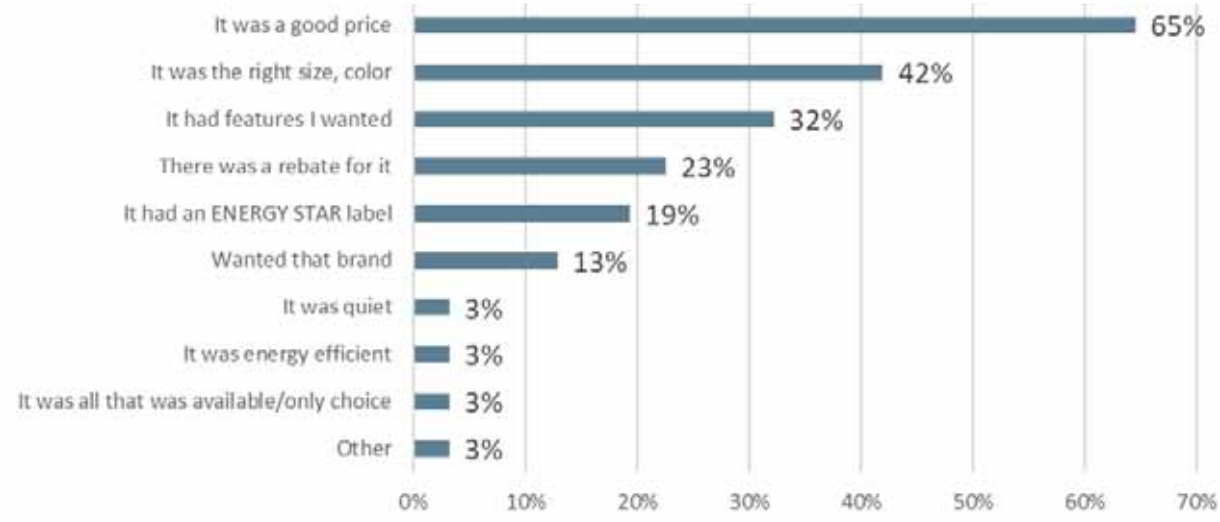
Figure 7-1 Source of Program Awareness (n = 32)



7.4.3.2 Product Decision

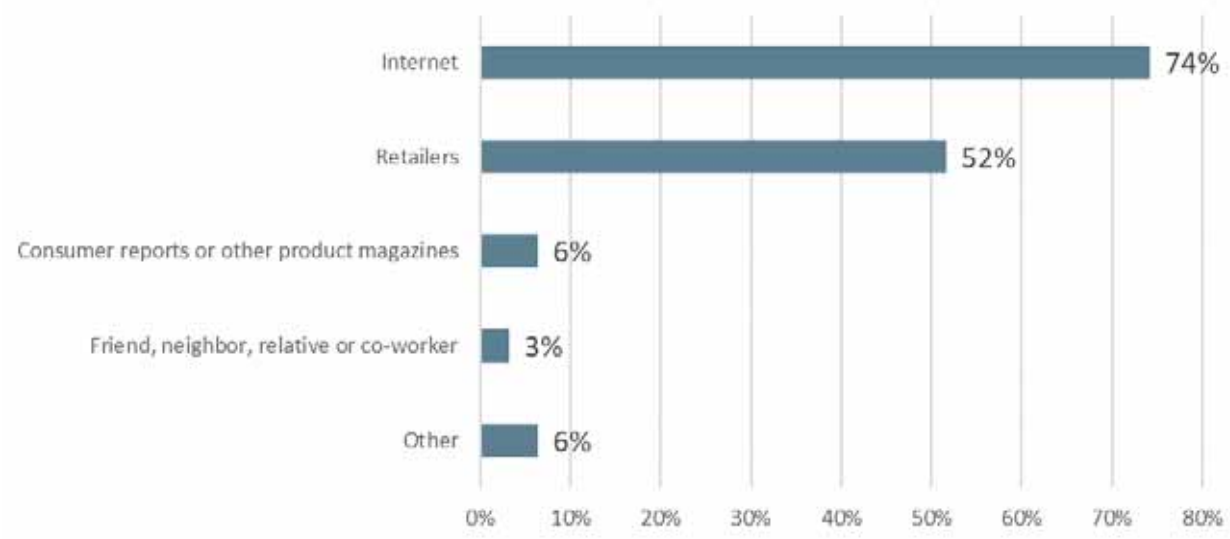
Customers reported a variety of reasons for selecting the rebated equipment, and commonly, multiple reasons. As shown, 65% of respondents indicated that the price of the product was an important factor. Considerations of size and color was also commonly reported (42% stated this as a factor) and the availability of desired features was another (stated by 32%). The available rebate was cited by 23% of respondents. Factors related to the equipment being ENERGY STAR qualified (cited by 19%) or energy efficient in general (3%) were also provided.

Figure 7-2 Reason for Selecting the Rebated Equipment (n = 31)



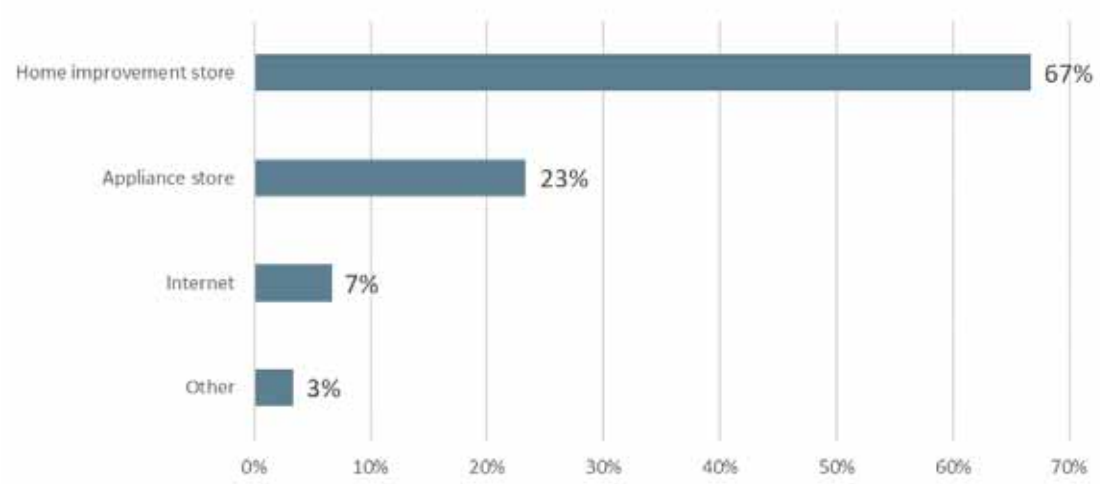
The internet was the primary source for information about the rebated equipment (cited by 74% of respondents), followed by retailers (cited by 52%) of respondents.

Figure 7-3 Source of Information for the Rebated Equipment (n = 31)



Two-thirds of participants reported purchasing the equipment from a home improvement store. Another quarter purchased it from an appliance store.

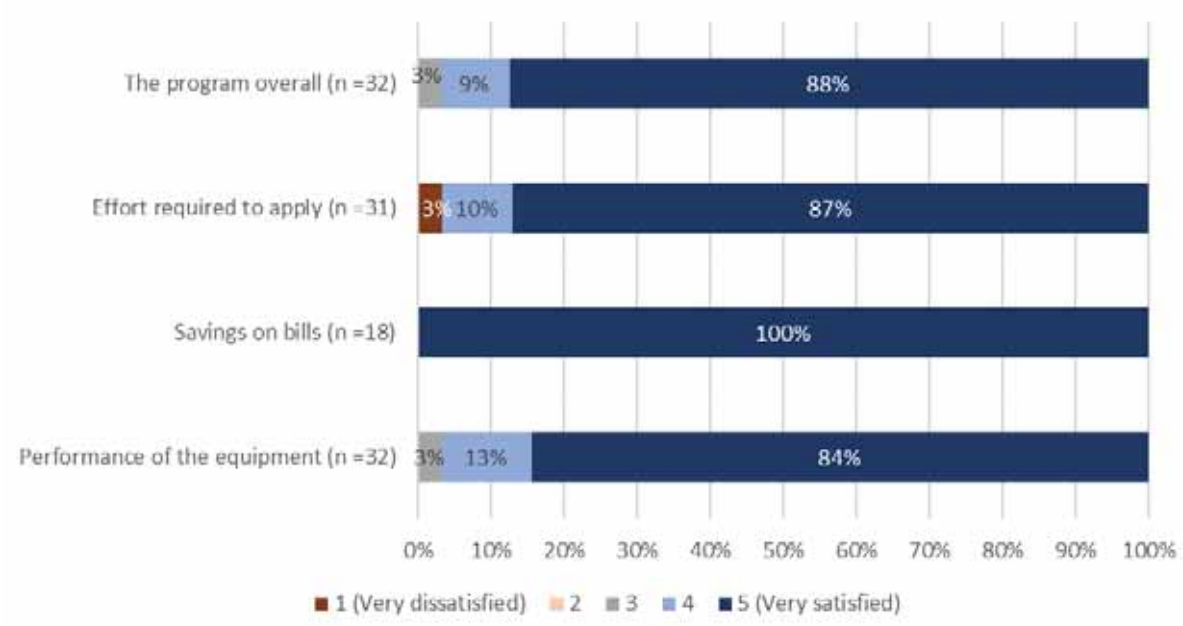
Figure 7-4 Where Rebated Equipment was Purchased From (n = 30)



7.4.3.3 Participant Satisfaction

Program participants were satisfied with the program overall. Ninety-seven percent indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as four or five on a five-point satisfaction scale.

Figure 7-5 Participant Satisfaction



The one respondent who was dissatisfied with the application effort reported that they were dissatisfied because it was "very difficult" and that there was confusion with the retailer on how much the rebate was worth and how to claim it.

Ninety-seven percent of respondents reported that they were somewhat or very satisfied with Entergy as their electrical service provider.

Table 7-32 Satisfaction of Entergy as an Electricity Service Provider

Response	***Percent (n = 32)***
5 (Very satisfied)	91%
4	6%
3	3%
2	0%
1 (Very dissatisfied)	0%

7.5 Shelving Inventory

During September of 2018 the Evaluators conducted inspections of stores carrying lighting and appliances discounted through the PY8. Nine stores were visited in total: six 'discount' stores, one medium-sized hardware store and two big-box hardware stores. During the inspections careful shelf-level inventories were collected for lighting and appliance offerings which offered program rebates or could be substituted for program-rebated items. Findings are detailed in this section.

7.5.1 Lighting

7.5.1.1 Discount Stores

The six discount stores visited by the Evaluators contained small and nearly identical inventories. For brevity, they are presented grouped together:

Table 7-33 Lighting Inventory in Discount Stores

Lamp Type	Sum of Number of Units	Lumen Range	Proportion of Total	Percent Program-Rebated
A Type	2,340	320-1,490	47.1%	77.2%
Flood Light/Directional	687	530-650	13.8%	13.5%
Globe	143	370-380	2.9%	0.0%
Candelabra	1,732	350-560	34.9%	9.3%
3-way	62	N/A	1.2%	0.0%

All bulbs carried by these stores were the same brand.

All discount stores had program promotional signage on display.

7.5.1.2 Hardware Store

The second type of store the Evaluators visited was a medium-sized hardware store. The store carried two types of Maxlite brand A-type lamps: one rated at 800 lumens (20 units in stock) and the second rated at 480 lumens (34 units in stock). Both lamps were marked down through the program and had prominent signage indicating so.

Table 7-34 Lighting Inventory in Hardware Store

Lamp Type	Sum of Number of Units	Lumen Range	Proportion of Total	Percent Program-Rebated
A Type	725	5-650	21.8%	41.4%
Flood/Directional	333	250-800	11.2%	18.7%
Globe	148	200-3,000	24.7%	8.4%
Candelabra	522	250-1,600	41.1%	30.1%

One lamp had an ENERGY STAR Logo.

The Evaluators could find no visible program-related signage in the store.

7.5.1.3 Big Box Construction Store #1

Table 7-35 Lighting Inventory in Big Box Construction Store #1

Lamp Type	Sum of Number of Units	Lumen Range	Proportion of Total	Percent Program-Rebated
A Type	2,211	100-7,800	49.0%	41.4%
Flood/Directional	669	220-3,000	14.8%	18.7%
Globe	355	39-1,260	7.9%	8.4%
Candelabra	1,133	35-640	25.1%	30.1%
3-way	87	N/A	1.9%	0.0%

One lamp type had an ENERGY STAR Logo.

The Evaluators could find no visible program-related signage in the store.

7.5.1.4 Big Box Construction Store #2

Table 7-36 Lighting Inventory in Big Box Construction Store #2

Lamp Type	Sum of Number of Units	Lumen Range	Proportion of Total	Percent Program-Rebated
A Type	1,573	40-3880	38.8%	3.9%
Flood Light/Directional	1,062	150-1750	26.2%	4.1%
Globe	514	145-1050	12.7%	0.0%
Candelabra	902	16-11200	22.3%	0.0%

Ninety-three lamp types had an ENERGY STAR Logo.

The Evaluators could find no visible program-related signage in the store.

7.5.2 Appliances

In addition to collecting lighting data at a participating construction supply store, the Evaluators also collected relevant data on appliances which were rebated through the program, as well as substitute, non-rebated appliances which could also be purchased.

Table 7-37 Appliance Inventory in Big Box Construction Store #1

Appliance Type	Sum of Number of Units	Count of Brands Offered	Count of Models Offered	Percent ENERGY STAR-Certified	Program-Related Signage on Display
Air Conditioner	2	1	2	0.0%	No
Freezer	5	1	1	0.0%	No
Mini Refrigerator	7	1	5	57.1%	No
Pool Pump	1	1	1	0.0%	No
Refrigerator	14	3	N/A	71.4%	Yes
Water Heater	30	2	3	13.9%	No

7.6 Key Findings and Conclusions

The key findings and conclusions of the evaluation of the program are as follows:

- **Program savings goals were not met.** Staff cited the overall size of the territory as a challenge and the lack of big box stores in Algiers as challenges to meeting the savings goal in that area.
- **Overall the program tracking data included appropriate measure names and classifications and was free of errors.**
- **Multiple marketing channels were used to promote the program.** Staff discussed multiple channels used to promote residential programs. Customers are primarily learning of the rebates at a retail location or through internet advertisements; two-thirds of respondents learned of the rebates through a retailer and about one-fifth learned of the rebates through an internet advertisement. The internet and retailers were also most commonly cited as sources of information about the rebated equipment.
- **Most participants were satisfied with the program.** Ninety-seven percent of participants indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as four or five on a five-point satisfaction scale.
- **The rebate participation process is working well for customers.** Ninety-seven percent of participants indicated that they were somewhat or very satisfied with the effort to apply for the rebate by rating their satisfaction as four or five on a five-point satisfaction scale.

7.7 Recommendations

The Evaluators' recommendations are as follows:

- **Consider adding additional rebated appliances.** Although not likely to be a high-volume measure, ENERGY STAR dehumidifiers should be considered. A typical rebate level is $25.

8. Residential Heating and Cooling

8.1 Program Description

The Residential Heating & Cooling (RH&C) Program provides financial incentives to encourage residential customers to improve the efficiency of their HVAC systems. Incentives are provided for a tune-up of the system and for HVAC system replacements.

Tune-ups are provided by a qualified technician and involve testing the performance of the unit before and after measures are implemented. Typical measures implemented as part of the tune-up procedure include air flow correction; cleaning of the indoor blower, evaporator coils, condenser coils; and correction of refrigerant charge.

Incentives are provided for replacement of air conditioning systems and heat pump systems. Incentives for air conditioner replacements range from $50 to $150, depending on the size and SEER of the new unit. Incentives for ducted heat pumps range from $150 to $250, depending on size and SEER of the new unit. Ductless heat pumps may receive incentives ranging from $250 to $500 depending on the size of the unit. The AC Tune-Up program now uses a paper-based processes rather than the electronic tools used in the program in prior years. Savings are based on deemed values.

Data provided by Aptim/Franklin showed a total of 850[42] customers participated in the Residential Heating & Cooling Program; 943 tune-ups, 726 duct sealings, three ductless heat pumps and five AC/HP replacements. These projects were expected to provide a combined savings of 2,245,602 kWh and 779.41 kW.

Below, Table 8-1 and Table 8-2 summarize the total number of measures conducted and distributed through the program and overall expected savings:

Table 8-1 Summary of Measures and Expected Savings – New Orleans

Measure	*Total Quantity of Measures*	*Total Expected kWh Savings*	*Total Expected peak kW Savings*	*Percent of Program Savings (by kWh)*
Duct Sealing	679	1,397,338	478.94	66.6%
Tune up	875	671,409	242.52	32.0%
Ductless HP	3	17,709	1.42	0.8%
Heat Pump	2	9,553	0.95	0.5%
Central AC	2	2,591	1.12	0.1%
Total	**1,561**	**2,098,600**	**724.95**	**100.0%**

[42] Individual dwellings, designated my address/meter number. Each dwelling may receive multiple measures, or multiples of the same measure. Examples: A house may receive duct sealing and a tune up, or a house with multiple central AC units may receive a tune up on each unit.

Table 8-2 Summary of Measures and Expected Savings -Algiers

Measure	Total Quantity of Measures	Total Expected kWh Savings	Total Expected Peak kW Savings	Percent of Program Savings (by kWh)
Duct Sealing	48	92,649	34.78	62.4%
Tune up	68	53,585	19.40	37.0%
Central AC	1	768	0.28	0.5%
Total	**117**	**147,002**	**54.46**	**100.0%**

New to PY8 are ductless heat pumps. In PY8 the program efforts shifted away from AC tune-ups towards duct sealing, with 63.5% of kWh savings coming from duct sealing in PY8, up from 33.2% in PY7. Tune up savings decreased to 35.2%m down from 66.3% in PY7.

In PY7 372 projects summing to 1,218,180 kWh were completed during the abbreviated nine-month program year. Normalizing these figures to 12 months (a full program year) yields an expected 496 projects summing 1,624,239 kWh. The PY8 program ran for a full 12 months surpassing normalized PY7 figures with an increase in expected kWh savings of 38.3%, however average dwelling kWh savings fell by 19.3%. Comparisons are shown below in Table 5-3 below:

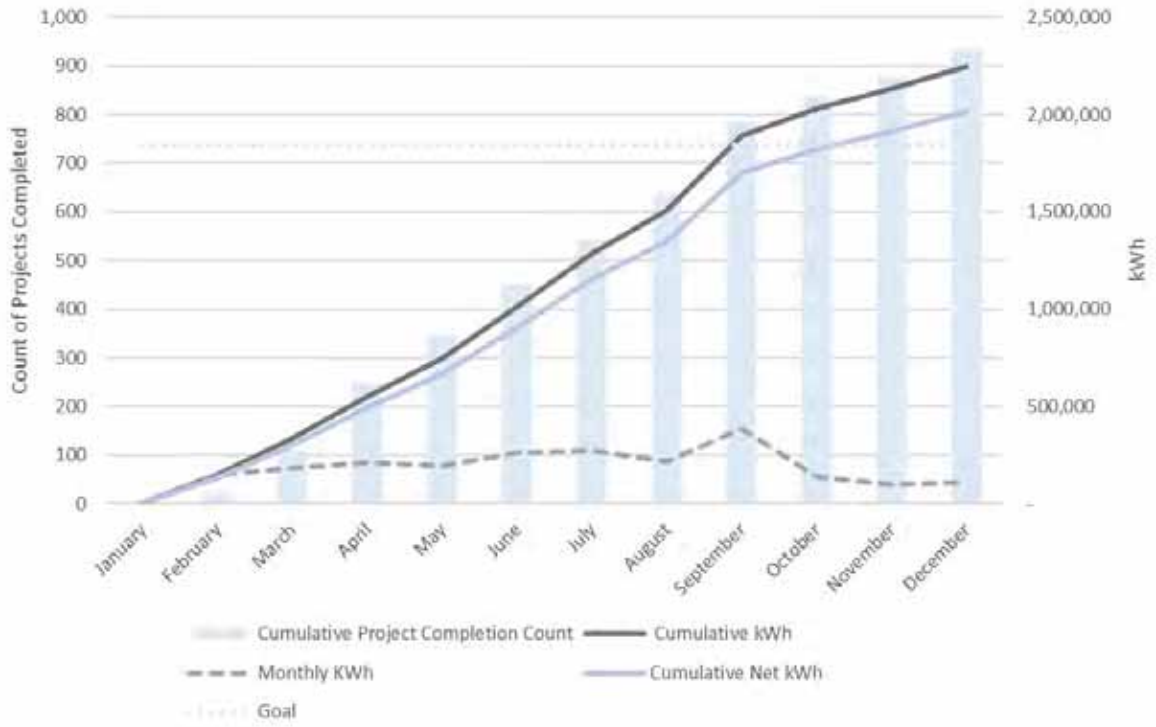
Table 8-3 Program Year Comparison[43]

PY	# Participants	Expected kWh	Expected kWh per Home
PY6	1,048	2,342,703	2,235
PY7 (nominal)	372	1,218,180	3,275
PY7 (adjusted)	496	1,624,239	3,275
PY8	850	2,245,602	2,642

Below Figure 8-1 illustrates program performance over PY8.

[43] Figures adjusted to reflect 9-month PY7 program period.

Figure 8-1 Program Performance Over PY8



Total verified savings and percentage of goals for the Residential Heating & Cooling Program are summarized in Table 8-4.

Table 8-4 Savings Goals & Attainment by Utility

Utility	*Net Realized kWh*	*kWh goal*	*Percent of kWh goal realized*	*Net Realized kW*	*kW goal*	*Percent of kW goal realized*
ENO	2,063,575	1,711,475	120.57%	712.66	536.11	132.93%
Algiers	143,064	133,532	107.14%	52.66	40.2	131.00%

8.2 M&V Methodology

Evaluation of the Residential Heating & Cooling Program included the following:

- Surveys with participants;
- Interviews with program staff;
- Interviews with program trade allies; and
- On-site testing and data collection.

Verified savings were calculated using methods and inputs in the New Orleans TRM 1.0 and incorporated results from on-site testing where appropriate. The following section discusses savings calculation methods for these measure in detail.

8.2.1 Central Air Conditioner Tune-Up Savings Calculations

Central Air Conditioner Tune-Up savings was calculated using the following savings algorithms from the New Orleans TRM, section B.3.6.

8.2.1.1 CAC Tune-Up Energy Savings Calculations

Deemed savings was calculated using test-in and test-out efficiency data:

$$kW_{Savings} = CAP_c \times 1{,}000\,{}^{W}/_{kW} \times \left(\frac{1}{EER_{pre}} - \frac{1}{EER_{post}}\right) \times \%CF$$

$$kWh_{Savings\_Cooling} = CAP_c \times 1{,}000\,{}^{W}/_{kW} \times \left(\frac{1}{EER_{pre}} - \frac{1}{EER_{post}}\right) \times EFLH_C$$

Where,

CAPc = Cooling capacity (in BTU)

EERpre = Efficiency of the equipment prior to tune-up

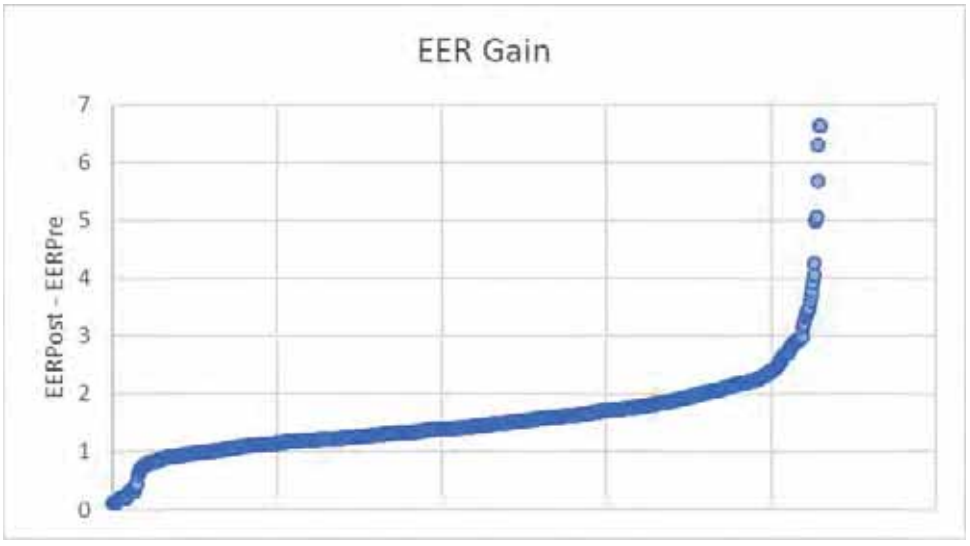
EERpost= Nameplate efficiency of the existing equipment

EFLHc = Equivalent Full-Load Cooling Hours (1,637)

%CF = Peak Coincidence Factor (.77)

Figure 8-2 below shows the efficiency gains from each unit tuned up.

Figure 8-2 EER Gain



8.2.1.2 On-site visits

During onsite verifications and testing, one task was to verify that an AC tune-up had been performed on units indicated in PY8 program tracking data. All 45 units inspected were confirmed to have been recently tuned up.

8.2.1.3 CAC Tune-Ups Results

Resulting gross savings are summarized in Table 8-5.

Table 8-5 CAC Tune-Up Savings Summary

Territory	Expected kWh	Realized kWh	kWh Realization Rate	Expected kW	Realized kW	Peak kW Realization Rate
New Orleans	671,409	789,399	117.6%	242.52	280.04	115.5%
Algiers	53,585	60,248	112.4%	19.40	21.42	110.4%
Total	**724,994**	**849,647**	**117.2%**	**261.92**	**301.47**	**115.1%**

Three projects did not see a significant enough improvement to result in kWh savings. Forty four projects included post BTUh values below 100. These values ranged from nine to 86, averaging 10.10. Four hundred and forty projects (47.9%) showed higher test-out values than nameplate capacity data. Nameplate data was used in ex post calculations.

The program implementer applied fixed deemed savings values as follows:

- Up to 2.5 tons cooling capacity: 544 kWh. These represent 9.0% of the population (by count).
- Greater than 2.5 tons or cooling capacity: 816 kWh These represent 91.0% of the population. Ex ante calculations

The Evaluators calculated savings based on algorithms and inputs found in section B.3.6 of the New Orleans TRM, resulting in higher ex post savings.

Overall kWh realization for CAC and HP tune-ups is 117.2% and overall kW realization is 115.1%.

8.2.2 Central AC Replacement

The PY8 Residential Heating & Cooling Program rebated three central air conditioners. The Evaluators calculated savings for all replacements as NC/normal replacement with the current minimum code as baseline: 14 SEER and 11.8 EER. Methods for calculating he deemed savings came New Orleans TRM, section B.3.1. Central Air Conditioner Replacement. Deemed per-unit kWh and kW savings were applied to all units installed during PY8.

8.2.2.1 Deemed Energy Savings

Table 8-6 High Efficiency Central AC Deemed kWh [44]

Efficiency	kWh Saved per Ton	Average Tons	kWh if Tonnage Unknown
15 SEER	93.54	3.65	341.43
16 SEER	175.39	3.65	640.18
17 SEER	247.61	3.65	903.79
18 SEER	311.81	3.65	1,138.10
19 SEER	369.25	3.65	1,347.76
20 SEER	420.94	3.65	1,536.44
21 SEER	467.71	3.65	1,707.16

Table 8-7 High Efficiency Central AC Deemed kW [45]

Efficiency	kWh Saved per Ton	Average Tons	kWh if Tonnage Unknown
12 EER	0.0131	3.65	0.0476
13 EER	0.0723	3.65	0.2638
14 EER	0.1231	3.65	0.4491
15 EER	0.1671	3.65	0.6097
16 EER	0.2056	3.65	0.7503
17 EER	0.2395	3.65	0.8743
18 EER	0.2697	3.65	0.9845

8.2.2.2 CAC Replacement Results

Resulting gross savings are summarized in Table 8-8.

Table 8-8 CAC Savings Summary

Measure	Expected kWh	Realized kWh	kWh Realization Rate	Expected kW	Realized kW	Peak kW Realization Rate
New Orleans	2,591	1,789	69.1%	1.12	0.43	38.4%
Algiers	768	526	68.5%	0.28	0.22	78.6%
Total	**3,359**	**2,315**	**68.9%**	**1.40**	**0.65**	**46.4%**

The Evaluators were unable to recreate ex ante savings estimates using TRM methods. Overall kWh realization for HVAC replacements is 69.9% and overall kW realization is 46.5%.

8.2.3 Heat Pump Replacement

The PY8 Residential Heating & Cooling Program rebated two central heat pumps. The Evaluators calculated savings for all replacements as NC/normal replacement with the current minimum code as baseline: 14 SEER, 11.8 EER and 8.2 (split) 8.0 (packaged) HSPF. Methods for calculating he deemed savings came New Orleans TRM, section

[44] TRM Table 42, page B-67

[45] TRM Table 43, page B-67

B.3.3. Heat Pump Replacement. Deemed per-unit kWh and kW savings were applied to both units installed during PY8.

8.2.3.1 Deemed Energy Savings

Table 8-9 High Efficiency Heat Pump Deemed kWh Cooling [46]

Efficiency	kWh Saved per Ton	Average Tons	kWh if Tonnage Unknown
15 SEER	93.54	3.65	341.43
16 SEER	175.39	3.65	640.18
17 SEER	247.61	3.65	903.79
18 SEER	311.81	3.65	1,138.10
19 SEER	369.25	3.65	1,347.76
20 SEER	420.94	3.65	1,536.44
21 SEER	467.71	3.65	1,707.16

Table 8-10 High Efficiency Heat Pump Deemed kW Cooling [47]

Efficiency	kWh Saved per Ton	Average Tons	kWh if Tonnage Unknown
12 EER	0.0131	3.65	0.0476
13 EER	0.0723	3.65	0.2638
14 EER	0.1231	3.65	0.4491
15 EER	0.1671	3.65	0.6097
16 EER	0.2056	3.65	0.7503
17 EER	0.2395	3.65	0.8743
18 EER	0.2697	3.65	0.9845

Table 8-11 High Efficiency Heat Pump Deemed kWh Heating [48]

Efficiency	kWh Saved per Ton	Average Tons	kWh if Tonnage Unknown
15 SEER	93.54	3.65	341.43
16 SEER	175.39	3.65	640.18
17 SEER	247.61	3.65	903.79
18 SEER	311.81	3.65	1,138.10
19 SEER	369.25	3.65	1,347.76
20 SEER	420.94	3.65	1,536.44
21 SEER	467.71	3.65	1,707.16

8.2.3.2 Heat Pump Replacement Results

Resulting gross savings are summarized in Table 8-8.

46 TRM Table 47, page B-74

47 TRM Table 48, page B-74

48 TRM Table 49, page B-75

Table 8-12 Heat Pump Savings Summary

Utility	Expected kWh	Realized kWh	kWh Realization Rate	Expected kW	Realized kW	Peak kW Realization Rate
New Orleans	9,553	6,568	68.8%	0.95	0.58	61.1%
Algiers	0	0	N/A	0	0	N/A
Total	**9,553**	**6,568**	**68.8%**	**0.95**	**0.58**	**61.0%**

There were no heat pump replacements in Algiers territory. The Evaluators were unable to recreate ex ante savings estimates using TRM methods. Overall kWh realization for HVAC replacements was 68.8% and overall kW realization was 61.0%.

8.2.4 Ductless Heat Pump

The PY8 Residential Heating & Cooling Program rebated three ductless heat pumps. The Evaluators calculated savings for all replacements as NC/normal replacement with the current minimum code as baseline: 14 SEER, 11.8 EER and 8.2 (split) 8.0 (packaged) HSPF. Methods for calculating he deemed savings values came the New Orleans TRM, section B.3.5. Ductless Heat Pump. Deemed per-unit kWh and kW savings were applied to all units installed during PY8.

8.2.4.1 Deemed Energy Savings

Table 8-13 Ductless HP Deemed kWh[49]

	kWh Per Ton	kW per Ton	Average Tons	kWh per Unit	kW per Unit
New Construction and Normal Replacement	825	.0606	2.28	1,881	.1382
Early Replacement – Heat Pump	1,039	.1025	2.28	2,370	.2337

8.2.4.2 Ductless HP Replacement Results

Resulting gross savings are summarized in Table 8-14.

Table 8-14 Ductless HP Savings Summary

Utility	Expected kWh	Realized kWh	kWh Realization Rate	Expected kW	Realized kW	Peak kW Realization Rate
New Orleans	17,709	16,032	90.5%	1.42	1.18	83.0%
Algiers	0	0	N/A	0	0	N/A
Total	**17,709**	**16,032**	**90.5%**	**1.42**	**1.18**	**82.7%**

There were no ductless heat pumps in Algiers territory. The Evaluators were unable to recreate ex ante savings estimates using TRM methods. Overall kWh realization for HVAC replacements was 82.2% and overall kW realization was 82.2%.

[49] TRM Table 54, page B-82

8.2.5 Duct Sealing

Duct sealing savings was calculated using the following savings algorithms from the New Orleans TRM, section B.3.7.

8.2.5.1 Cooling Savings (Electric):

$$kWh_{savings,C} = \frac{(DL_{pre} - DL_{post})\ x\ EFLH_C\ x\ (h_{out}\rho_{out}\ - h_{in}\rho_{in})\ x\ 60}{1{,}000\ x\ SEER}$$

Where:

DL_{pre} = Pre-improvement duct leakage at 25 Pa (ft3/min)

DL_{post} = Post-improvement duct leakage at 25 Pa (ft3/min)

ΔDSE = Assumed improvement in distribution system efficiency = 5% = 0.05

$EFLH_C$= Equivalent Full Load Hours. (1,637)

h_{out}= Outdoor design specific enthalpy (Btu/lb) See Table 8-15.

h_{in} = Indoor design specific enthalpy (Btu/lb.) See Table 8-15.

Table 8-15 Deemed Savings Values for Duct Sealing Calculations

Parameter	Value
EFLHC	1,637
HDD	1,349
h_{out}	40
h_{in}	30
ρ_{in}	.076
P_{out}	.074
SEER	13

ρ_{out}= Density of outdoor air at 95°F = 0.0740 (lb/ft3)50

ρ_{in} = Density of conditioned air at 75°F = 0.0756 (lb./ft3)4

60 = Constant to convert from minutes to hours

CAP = Cooling capacity (Btu/hr)

$1{,}000$ = Constant to convert from W to kW

$SEER$ = Seasonal Energy Efficiency Ratio of existing system (Btu/W·hr)

Default value for SEER = 13

TRM EFLHc were developed during analysis of the PY6 pilot load control program, which involved logging residential air conditioner and heat pump operation in New Orleans. This monitoring data was analyzed via regression, which produced EFLHc of 1,637 based upon direct metering for a sample of New Orleans residential air conditioners.

50 ASHRAE Fundamentals 2009, Chapter 1: Psychometrics, Equation 11, Equation 41, Table 2

As an example, assume the duct leakage before sealing was measured at 360 CFM and the leakage after sealing was 90 CFM. Using the SEER value of 11.5, the annual savings would be:

kWh per year = (360-90) x 1,637 x (40x0.0076 – 30x0.074) x 60 / (1000 x 11.5) = 1,891 kWh per year.

8.2.5.2 Heating Savings (Electric Resistance):

$$kWh_{savings,H} = \frac{\left(DL_{pre} - DL_{post}\right) x\ 60\ x\ HDD\ x\ 24\ x\ 0.018}{3{,}412}$$

Where:

DL_{pre}= Pre-improvement duct leakage at 25 Pa (ft3/min)

DL_{post}= Post-improvement duct leakage at 25 Pa (ft3/min)

ΔDSE = Assumed improvement in distribution system efficiency = 5% = 0.05

60 = Constant to convert from minutes to hours

HDD = Heating degree days (1,349)

24 = Constant to convert from days to hours

0.018 = Volumetric heat capacity of air (Btu/ft3°F)

EFLHH = Equivalent full load heating hours

CAP = Heating capacity (Btu/hr)

3,412 = Constant to convert from Btu to kWh

8.2.5.3 Demand Savings (Cooling):

$$kW_{savings,C} = \frac{kWh_{savings,C}}{EFLH_C}\ x\ CF$$

Where:

$kWh_{savings,C}$ = Calculated kWh savings for cooling

$EFLH_C$ = Equivalent full load cooling hours

CF = Coincidence factor = 0.7751

8.2.5.4 Incorporating Onsite findings

Data from 47 RH&C and 51 other program onsite verification and measurements performed by the Evaluators was incorporated into deemed duct sealing savings calculations. Details of this are described in Section 6.22.5. Field Data Collection. The resulting factor used to discount lower-than-expected post leakage is -14.1%.

51 Developed through direct monitoring during the development of the New Orleans TRM

The savings resulting from applying TRM algorithms and deemed savings parameters, plus the application of field results are summarized in Table 8-16 and Table 8-17.

8.2.5.5 Duct Sealing Results

Table 8-16 Expected and Realized Duct Sealing Savings – New Orleans

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	753,815	794,271	105.4%	342.74	373.60	109.0%
Electric Resistance	643,523	687,403	106.8%	136.20	137.84	101.2%
Air Source Heat Pump	-	-	N/A	-	-	N/A
Total	**1,397,338**	**1,481,674**	**106.0%**	**478.94**	**511.44**	**106.8%**

Table 8-17 Expected and Realized Duct Sealing Savings - Algiers

Heating Type	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected Peak kW Savings	Realized Peak kW Savings	Peak kW Realization Rate
Natural Gas Furnace	62,146	63,992	103.0%	28.31	30.10	106.3%
Electric Resistance	30,503	35,264	115.6%	6.47	7.04	108.8%
Air Source Heat Pump	-	-	N/A	-	-	N/A
Total	**92,649**	**99,256**	**107.1%**	**34.78**	**37.14**	**106.8%**

One project did not see a significant enough reduction to result in kWh savings. Ex ante calculations assumed electric resistance heat for 13 projects, however the home heating type was determined to be natural gas. Conversely, seven projects incorrectly assumed the opposite. One home did not have heating type listed, but ex ante calculations suggested it to be heated by electric resistance. The Evaluators were able unable to reasonably recreate ex ante savings calculations for two projects. Using correct methodology, these homes' realization rates were 119% and 259% before M&V adjustments. Overall kWh realization for duct sealing is 106.1% and overall kW realization is 106.8%.

8.3 Savings Results

Verified savings are summarized in Table 8-18 and Table 8-19.

Table 8-18 Realization Summary – New Orleans

Measure	Expected kWh	Realized kWh	kWh Realization Rate	Expected kW	Realized kW	Peak kW Realization Rate
Duct Sealing	1,397,338	1,481,674	106.0%	478.94	511.44	106.8%
Tune up	671,409	789,399	117.6%	242.52	280.04	115.5%
Ductless HP	17,709	16,031	90.5%	1.42	1.18	83.1%
Heat Pump	9,553	6,568	68.8%	0.95	0.58	61.1%
Central AC	2,591	1,789	69.0%	1.12	0.43	38.4%
Total	**2,098,600**	**2,295,461**	**109.4%**	**724.95**	**793.67**	**109.5%**

Table 8-19 Realization Summary - Algiers

Measure	Expected kWh	Realized kWh	kWh Realization Rate	Expected kW	Realized kW	Peak kW Realization Rate
Duct Sealing	92,649	99,256	107.1%	34.78	37.14	106.8%
Tune up	53,585	60,248	112.4%	19.40	21.42	110.4%
Central AC	768	525	68.5%	0.28	0.22	78.6%
Total	**147,002**	**160,029**	**108.9%**	**54.46**	**58.78**	**107.9%**

8.4 Estimation of Net Savings

Participant survey responses were used to estimate the net energy impacts for the Residential Heating and Cooling Program. The methodology used is described in detail in Section 2.2.4.

Survey responses were obtained from participants who received incentives for duct sealing and air conditioner tune-ups. These two measures accounted for 98.6% of the program savings. The net savings results for these measures were applied to central air conditioners, heat pumps, and ductless heat pumps.

The free ridership results are summarized in Table 8-20. As shown free ridership was higher for tune-ups than for duct sealing.

Table 8-20 Summary of Measure Level Free Ridership Results

Measure	Free Ridership
Duct sealing	4%
Tune-up	21%

As shown in Table 8-21, participant who reported having regular tune-ups (approximately one-third of participants) also had higher levels of free ridership. The program may reduce

free ridership risk by developing strategies to target customers who do not have a regular air conditioner maintenance schedule.

Table 8-21 Tune-Up Free Ridership by Whether or Not Participants had Regular Tune-Ups

Regular Tune Ups	Number of Respondents	Average Free Ridership
Yes	22	35%
No/Don't know	41	14%

8.4.1 Net Savings Results

The results of the net savings analysis are presented below in Table 8-22 and Table 8-23.

Table 8-22 Summary of Verified Net Savings

Utility	Expected kWh Savings	Verified Gross kWh Savings	Free Ridership	Verified Net kWh Savings	Net to Gross Ratio
ENO	2,098,600	2,295,461	231,887	2,063,575	89.9%
Algiers	147,002	160,029	16,965	143,064	89.4%
Total	**2,245,602**	**2,455,490**	**248,852**	**2,206,639**	**89.9%**

Table 8-23 Summary of Verified Net Peak Demand Reductions

Utility	Expected Peak kW Reductions	Verified Gross Peak kW Reductions	Free Ridership	Verified Net Peak kW Reductions	Net to Gross Ratio
ENO	724.95	793.67	81.01	712.66	89.8%
Algiers	54.46	58.78	6.12	52.66	89.6%
Total	**779.41**	**852.45**	**87.13**	**765.32**	**89.8%**

Net to gross ratios in above tables represent overall ratios, accounting for duct sealing, Tune-ups and other measures. Individually, duct NTG is 95.64%, tune-ups is 79.10% and other measures is 90.23%.

8.5 Process Evaluation Findings

8.5.1 Summary of Program Participation

This section summarizes findings from the analysis of the program tracking data provided by the implementation contractor.

Table 8-24 summarizes the PY8 program activity by measure. As shown, duct sealing and air sealing accounted for most of the program savings. HVAC replacements accounted for a little over 1% of program savings.

Table 8-24 Summary of Measures Installed

Measure	Expected kWh Savings	Incentives Paid	Number of Participants	Percent of Expected Savings	Incentive Dollars per kWh Saved
Duct sealing	1,489,987	$251,544	651	63.6%	$0.17
AC tune-up	724,995	$137,075	840	35.2%	$0.19
Ductless heat pump	18,477	$1,250	3	0.7%	$0.07
Heat pump	9,553	$450	2	0.4%	$0.05
Central air conditioner	3,358	$500	3	0.1%	$0.15

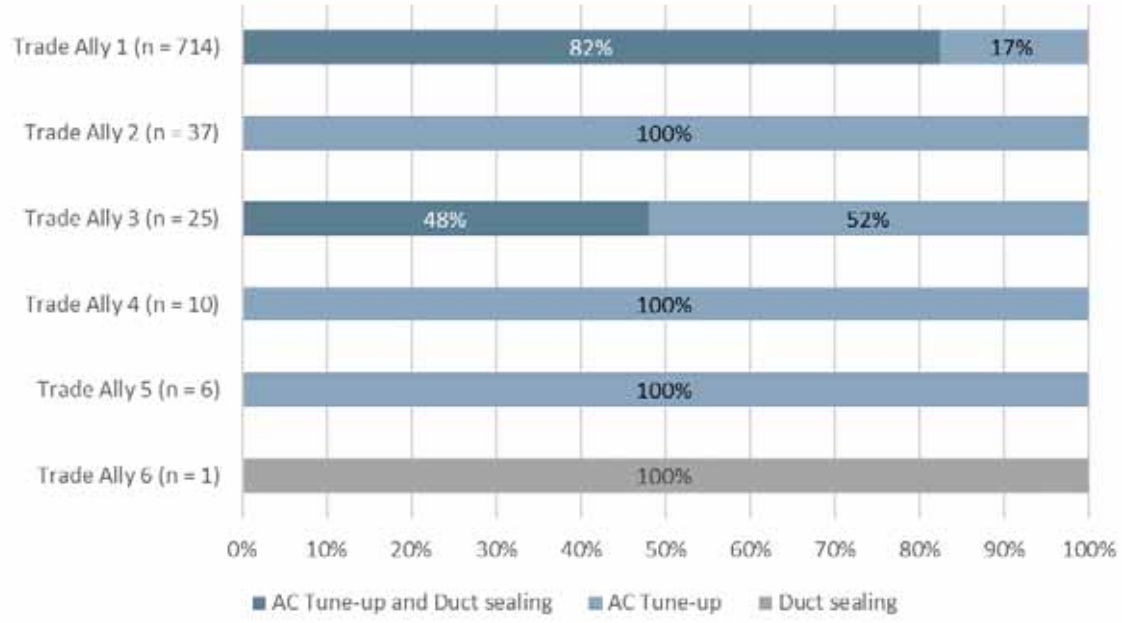
As shown in Table 8-25 projects that involved AC tune-ups and duct sealing were most frequently implemented. These projects provided an average expected savings of 3,150 kWh.

Table 8-25 Summary of Project Types Completed

Measure	Share of Participating Homes	Average Expected Savings (kWh)
AC tune-up + Duct sealing	76.0%	3,115
AC tune-up	22.7%	884
Duct sealing	0.4%	2,291
Ductless heat pump	0.4%	4,427
Central air conditioner	0.2%	1,119
Heat pump	0.2%	4,776
Central air conditioner + Duct sealing	0.1%	3,115

Figure 8-3 summarize trade ally projects by the type of project implemented. One trade ally was much more active than others with 714 completed projects. Moreover, 82% of the projects implemented by this trade ally include both AC tune-up and duct sealing measures.

Figure 8-3 Trade Ally Company Share of Savings



8.5.2 Program Goals, Design, and Delivery

8.5.2.1 Program Goals

Entergy New Orleans and Franklin staff reported that the Residential Heating and Cooling (RH&C) Program participation was strong in PY8. There were no immediate concerns raised about the performance of this program during interviews and the expected savings exceeded the program goals for both Algiers and New Orleans.

Nearly all program savings result from AC tune-ups and duct sealing. Franklin indicated a barrier to participation in the HVAC rebate portion of the program is the high cost of replacing HVAC equipment. The average cost of high efficiency equipment is about $12,000 and the rebate is $150 – $250, which may not influence a customer's decision significantly.

8.5.2.2 Program Design

There were no significant changes to the program design of the RH&C Program in PY8. The RH&C Program provides a rebate to residential customers who replace their central air conditioning units or heat pumps with more energy efficient units. The program also provides rebated AC tune-ups and duct sealing.

The HVAC replacement rebates are tiered such that rebates are higher for more efficient equipment (see Figure 8-4). Customers interested in participating in the program must use an approved trade ally. A list of approved trade allies is provided on the website.

Figure 8-4 HVAC Replacement Rebate Amounts

Central Air Conditioner

Efficiency Level	Rebate
SEER>16	$50 if the system has ECM
16≧SEER>17	$100 per System*
17≧SEER<18	$125 per System*
SEER≧18	$150 per System*

*Additional $50 rebate if the system has ECM.

Air Source Heat Pump

Efficiency Level	Rebate
16≧SEER>17 8.5≧HSPF>9.0	$150 per System
17≧SEER>18 8.5≧HSPF>9.0	$175 per System
SEER≧18 8.5≧ HSPF>9.0	$200 per System
16≧SEER>17 HSPF≧9.0	$200 per System
17≧SEER>18 HSPF≧9.0	$225 per System
SEER≧18 HSPF≧9.0	$250 per System

Mini-Split (Ductless) Heat Pump

Efficiency Level	Rebate
SEER≧18 HSPF≧9.0 (Replaced Unit: Heat Pump OR AC with Electric Furnace)	$250 per System
SEER≧18 HSPF≧9.0 (Replaced Unit: Heat Pump)	$500 per System

The marketing team has created and promoted the use of co-branded marketing collateral for trade ally use in the field. These co-branded brochures assist with outreach and promotion among trade allies. The RH&C Program is also promoted on the circuit newsletters and the Energy Smart Scorecards, when it is seasonally appropriate.

8.5.2.3 Marketing and Outreach

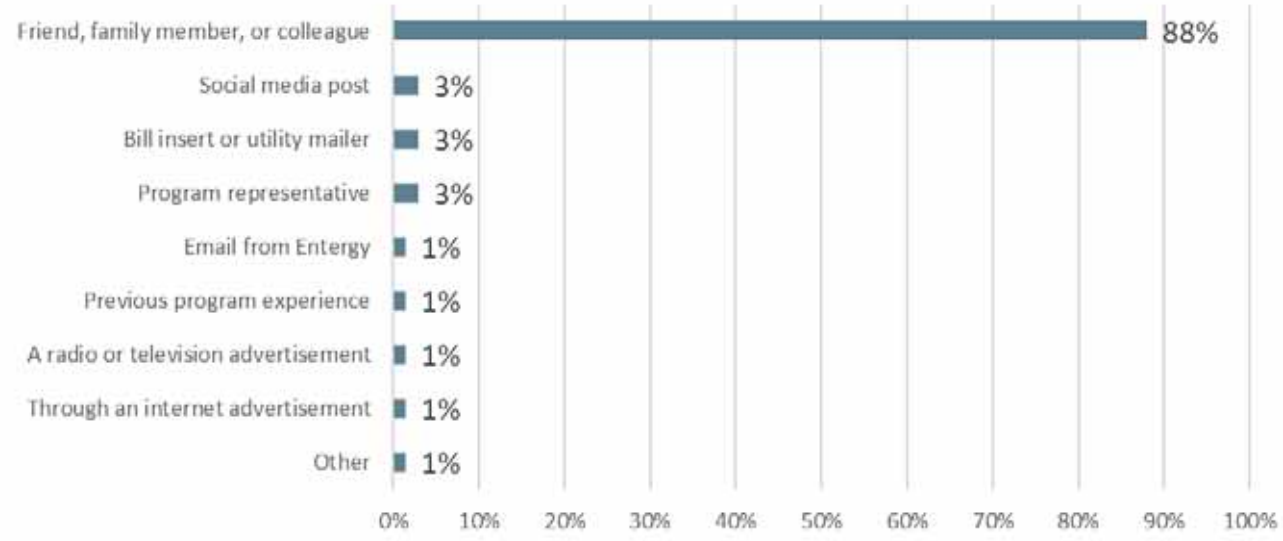
The marketing approach and activities are discussed in section 3.6.2.3. A difference noted by staff is that marketing of the tune-ups increases during warmer months when ambient temperatures are high enough to perform the tune-ups.

8.5.3 Participant Feedback

8.5.3.1 How Customers Learned of the Program

Word of mouth was by far the most common source of program awareness as shown in Figure 8-5.

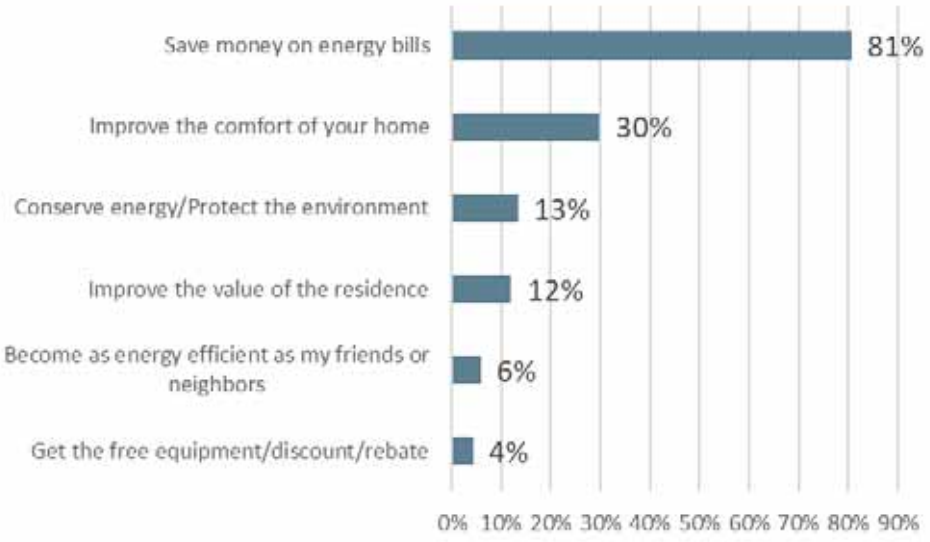
Figure 8-5 Source of Program Awareness



8.5.3.2 Motivations for Participating and HVAC Purchase Decision

Figure 8-6 shows that saving money on energy bills (cited by 81%) was the most commonly cited motivation to participate. Other motivators included improving home comfort (30%), conserving energy/protecting the environment (13%), and improving the value of the residence (12%).

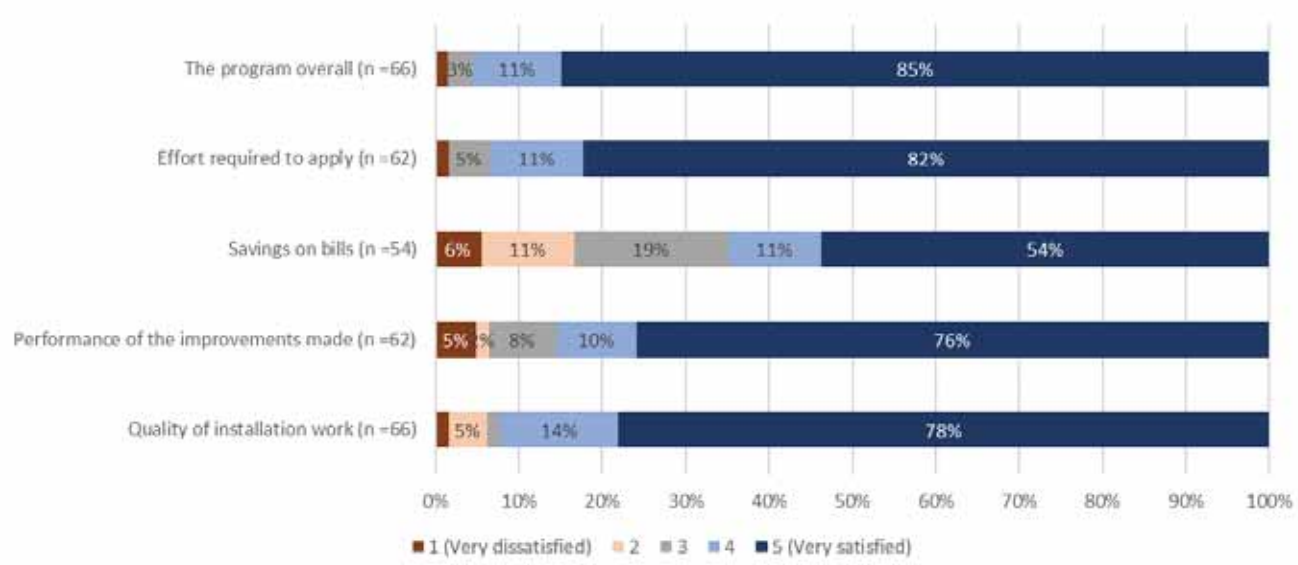
Figure 8-6 Reasons for Participating in the Program



8.5.3.3 Participant Satisfaction

Ninety-six percent of respondents indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as four or five on a five-point satisfaction scale (Figure 8-7). Although most respondents were satisfied with the program, 17% reported dissatisfaction with their energy savings.

Figure 8-7 Participant Satisfaction



Dissatisfaction with the energy savings was also noted in the open-ended responses given for dissatisfaction (see Table 8-26). Other reasons given included issues with contractors and heating/cooling problems.

Table 8-26 Summary of Reasons for Dissatisfaction

Reason for Dissatisfaction	Number of Responses	Examples of Comments
Lack of savings	5	"no saving on monthly bill" "bills are not going down"
Contractor issue	2	"contractor dropped glue on clients floor doing duct work"
Heating/cooling problems	2	"problems with heating inside home"

Seventy-three percent were satisfied with Entergy as their electricity service provider (Table 8-27).

Table 8-27 Satisfaction of Entergy as an Electricity Service Provider

Response	Percent (n = 64)
5 (Very satisfied)	64%
4	9%
3	11%
2	6%
1 (Very dissatisfied)	9%

8.5.4 Early Replacement Findings

To assess the potential of an early replacement of HVAC systems program option, the Evaluator included questions in the participant and nonparticipant surveys on customer willingness to replace their air conditioner under three conditions. Customers were asked to provide an estimate of how much they would pay for an air conditioner replacement under these scenarios:

- Assume that your current air conditioner is working and that a new more efficient air conditioner would save you $175 a year in utility costs. What is the most you would be willing to pay to replace your air conditioner?
- Now, assume that your air conditioner is not working and would cost $500 to have it repaired. What is the most you would be willing to pay to replace your air conditioner with a new more efficient air conditioner that would save you $175 a year in utility costs?
- Now, assume that your air conditioner is working but you need to replace your broken heating system. What is the most you would be willing to pay to replace your air conditioner with a new more efficient air conditioner that would save you $175 a year in utility costs?

Several respondents indicated that they did not how likely they would be to replace their system under these conditions. The responses for those that did provide an estimate is shown in Figure 8-8. The orange line in the chart marks the median amount participants would be willing to pay. As shown, there were several respondents who indicated that they would not pay anything for a replacement, and most respondents would not pay more than $3000.

Another finding of note that can be seen in the chart is that there is little difference in the amount participants would be willing to pay across the three conditions. Review of the data found that of respondents who provided a willingness to pay estimate for each of the three conditions (n = 75), 16% indicated a different amount for each of the three conditions and 44% indicated the same willingness to pay for each of the three conditions.

Figure 8-8 Distributions of Willingness to Pay Responses

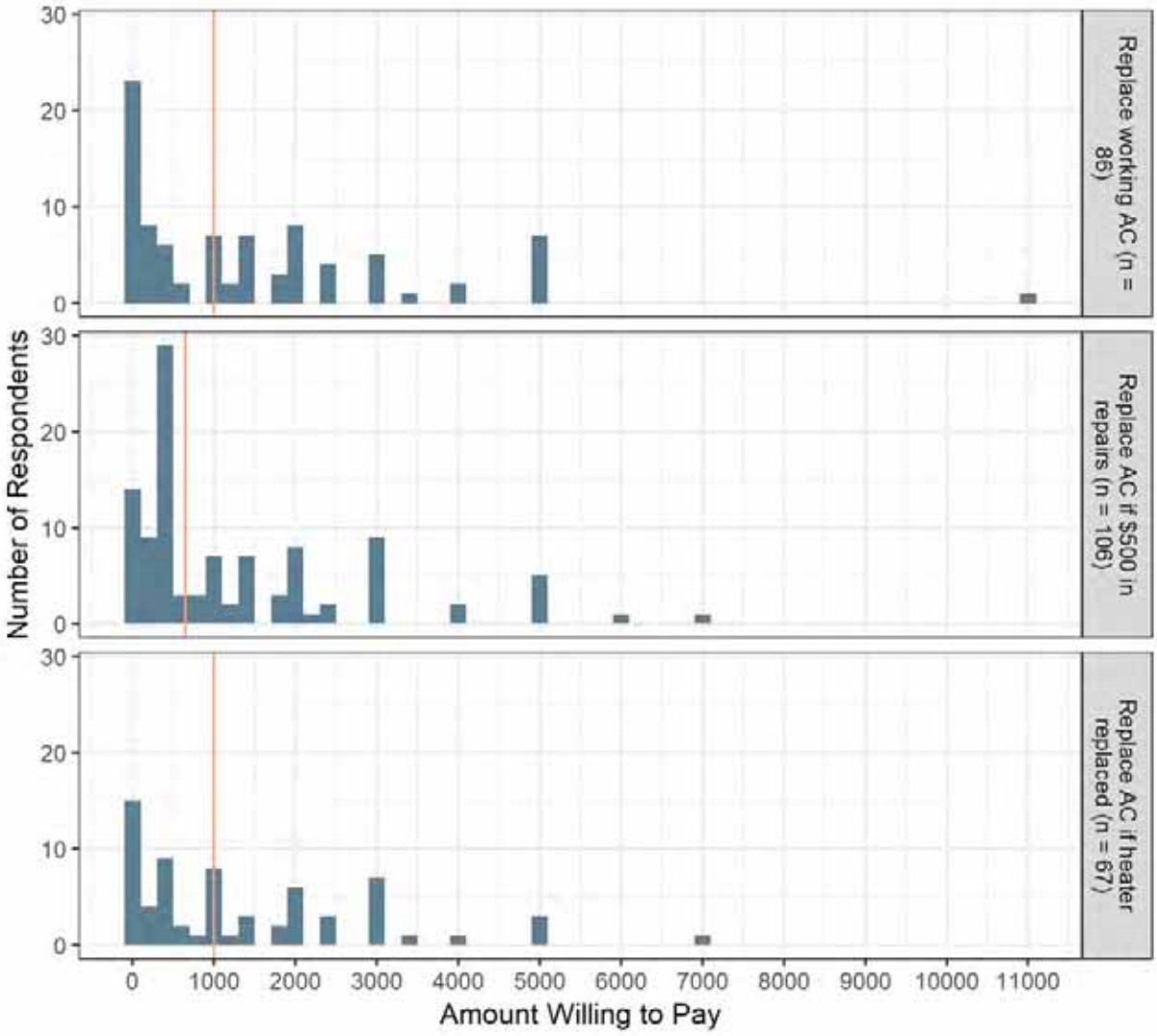


Table 8-28 and Table 8-29 provide additional summaries of respondents' willingness to pay to replace their AC system with a more efficiency system under the three conditions. As shown in Table 8-28, between, 24% and 18% of respondents indicated that they would not pay anything to replace their AC system under the three conditions.

As shown in Table 8-29, among those willing to pay some amount to replace their system, the median amount customers were willing to pay was between $1,000 and $1,500. Additionally, very few customers reported a willingness to pay more than $5,000 for an early replacement.

Table 8-28 Summary of Willingness to Pay

Replacement Condition	Number of Respondents	Percent Willing to Pay for Replacement	Percent Willing to Pay More than $5000	Median Amount Willing to Pay	Median Payback Period
Replace working AC	86	76%	1%	$1,000	5.7
Replace AC if $500 in repairs	106	88%	2%	$650	3.7
Replace AC if heater replaced	67	82%	1%	$1,000	5.7

Table 8-29 Summary of Willingness to Pay (Excluding those Unwilling to Pay)

Replacement Condition	Number of Respondents	Percent Willing to Pay More than $5000	Median Amount Willing to Pay	Median Payback Period
Replace working AC	65	2%	$1,500	8.6
Replace AC if $500 in repairs	93	2%	$1,000	5.7
Replace AC if heater replaced	55	2%	$1,200	6.9

Counterintuitively, respondents indicated that they were willing to pay more to replace a system that required $500 in repairs than to replace a system that was functioning. This result appears to be driven by the 33 respondents who indicated that they would pay the same amount to replace the system as to repair it (i.e., $500). With those responses removed, the median amount customers would be willing to pay was equal to $1,500 for both the working AC and AC in need of $500 in repair conditions.

The key summary points from the findings are:

- Willingness to pay did not vary significantly in the replacing working AC, replacing AC in need of $500 in repairs, and the replacing AC if the heating system fails conditions.
- The highest median amount customers were willing to pay was $1,500.
- Between 1-2% of customers indicated a willing to pay more than $5000 for an early replacement. This value varied little between replacement conditions.

8.5.5 HVAC Tune-Up Practices

Nonparticipant survey respondents who had functioning central air conditioning units (n = 130) provided information on their HVAC tune-up practices and their experience with contractor's assessment of their duct systems while performing system tune-ups. The key findings are:

- 50% of customers reported that they had a system tune-up performed by a heating and cooling contractor in the past year.
- 55% of participants who received tune-ups reported that the contractor also assessed their duct system for leakage.

- Few of these respondents (12%) reported that the contractor they worked with recommended sealing their ducts. Of those that did not receive a recommendation to seal their ducts, 50% had central air conditioning system that was at least 10 years old – a finding that suggest that leaking duct systems may be under detected.
- Of the three respondents that did receive this recommendation, one reported that they also received a recommendation to apply for rebate.

The findings suggest that while customers seeking HVAC tune-ups is somewhat common, the share of duct systems that are inspected for leakage is less common and receipt of a recommendation to seal ducts is even less so. Customers may infrequently receive recommendations because their ducts are not leaky or because the inspection procedures failed to detect ducts in need of repair. The age of systems that were not recommended to seal leaks suggests that under detection of leaky duct systems may be a factor in customers not receiving duct sealing recommendations.

Regarding program trade ally practices, three interviewed program trade allies indicated they always inspect a customer's duct system for leakage when completing a tune-up. Two indicated they use a duct leakage tester and the other indicated they use the tester and conduct a visual inspection. Two trade allies stated they always recommend customers seal their ducts and receive a rebate from Entergy.

8.6 Key Findings and Conclusions

The key findings and conclusions of the evaluation of the program are as follows:

- **The program exceeded its savings goals.** The program exceeded its savings goals for New Orleans and Algiers. Most of the program savings resulted from air conditioner tune-up and duct sealing measures. One active trade ally company completed 90% of the program projects during the year.
- **Multiple marketing channels used to promote the program.** Staff discussed multiple channels used to promote residential programs. Staff noted that marketing of the tune-ups increases during the warmer months of the year. Despite these efforts, survey responses indicate that most customers learned of the program from friends, family, or colleagues (88%).
- **Overall program satisfaction was high.** Ninety-six percent of participants rated their satisfaction as a four or a five on a five-point satisfaction scale. One aspect of the program where satisfaction was lower was with the realized energy savings – 17% of respondents reported dissatisfaction with their energy savings.
- **There is little interest in early replacement of HVAC systems.** Residential program participants and nonparticipants provided feedback on their willingness to pay for early replacement of air conditioner units. The findings indicated that the amount customers would be willing to pay to replace an air conditioner unit did not vary significantly if the unit was fully operational, if the unit required $500 in repairs, or if the customer needed to replace a broken furnace. Additionally, between 1-2% of customers across these conditions were willing to spend more than $5,000 on the early replacement of an HVAC system, suggesting that an early replacement

program offer would have to provide very high rebate levels to generate much interest.

- **Performance of HVAC tune-ups is relatively common, but recommendations to seal ducts are not.** Approximately 50% of program participants reported that they had had their system tuned up in the past year by a heating and cooling contractor. Contractors reportedly inspected ducts for about half of these participants, but 12% received a recommendation to seal ducts. The finding suggests that duct sealing is underperformed in nonprogram projects.

8.7 Recommendations

The Evaluators' recommendations are as follows:

- **Develop strategies to increase uptake of HVAC system replacements.** A limited number of replacements were installed during PY8. Approaches include increasing incentive levels and increased outreach to distributors and installing contractors.
- **Review how savings expectations are communicated to customers for tune-up and duct sealing projects.** The program project impact on utility bills was the one aspect of the program with a higher rate of dissatisfaction. This dissatisfaction may arise from customer's expectations for cost savings compared to what they observe in their monthly charges.
- **Review how savings expectations are communicated to customers for tune-up and duct sealing projects.** The program project impact on utility bills was the one aspect of the program with a higher rate of dissatisfaction. This dissatisfaction may arise from customer's expectations for cost savings compared to what they observe in their monthly charges.

9. Energy Smart School Kits and Education

9.1 Program Description

The Energy Smart School Kits and Education (SK&E) Program provides classroom education on energy use and saving energy, energy efficiency kits to students, and adult outreach activities to promote energy efficiency and the rebates and discounts offered by Entergy through the Energy Smart Programs.

The School Kits component of the program includes a 45 to 90-minute presentation given by program staff to 5th, 6th, or 7th grade students. The presentation focuses on energy use the importance of conservation. Students also receive an energy efficiency kit that contains the following items:

- Four 9W LEDs and two 15W LEDs;
- Two low-flow faucet aerators;
- One low-flow showerhead;
- A flow-rate bag for measuring the flow rate of faucets and showers; and
- A flyer included in the kit that describes the kit items and their benefits.

The adult outreach activities are intended to educate the Companies' customers about energy efficiency and the Entergy Energy Smart efficiency programs. The outreach activities include:

- Presentations at neighborhood groups and churches;
- Attendance at fairs and festivals; and
- Hosting tables at public events and public buildings.

The adult outreach component also provides energy efficiency retrofits to nonprofits. The primary goal of the retrofits is to inform the membership of energy saving opportunities by demonstrating the benefits of efficient technologies.

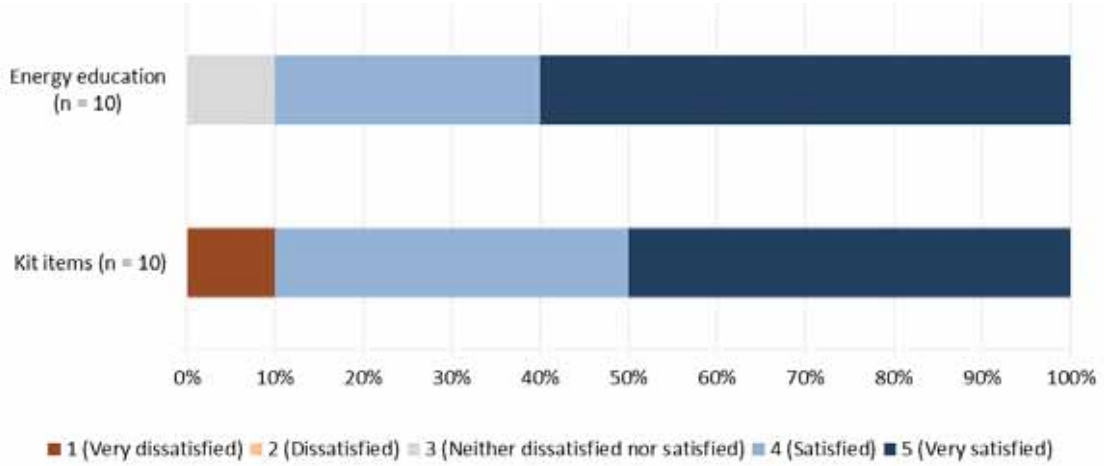
9.2 Evaluation Scope

The SK&E Program has received comprehensive impact and process evaluations in PY5 and PY6. The evaluations provided free ridership estimates, discussions of program satisfaction and strategic recommendations for program improvement. In the initial review of the PY8 program, the Evaluators concluded that the SK&E program did not warrant more than a brief overview of program activity. The rationales for this are as follows:

- **Limited program scope.** In PY7, the program provided 848,848 expected kWh savings, comprising 1.75% of the Energy Smart portfolio.

- **Coverage of program measures in New Orleans TRM.** All measures installed in SK&E have deemed savings provided in the New Orleans TRM, with lighting usage estimates based on the New Orleans lighting metering study conducted in the PY6 evaluation and average hot water heater setpoints collected during the PY6 evaluation.
- **Past evaluations showed high satisfaction metrics.** As seen in the figure below, the SK&E program has high participant satisfaction. The Evaluators did not find operational issues with the program that warranted further review in PY7.

Figure 9-1 Satisfaction with the Energy Education and Kits Contents



9.3 Expected Savings and Program Participation

During PY7 the program was only implemented during one half of the school year, resulting in only 1,500 kits being distributed throughout 14 schools. During PY8 kits were administered year-round with a total of 3,640 kits distributed among 49 schools. Kit contents were identical to the previous years' offerings. Figure 9-2 below illustrates kit distribution by month and cumulatively.

Figure 9-2 Kit Distribution Over Program Year

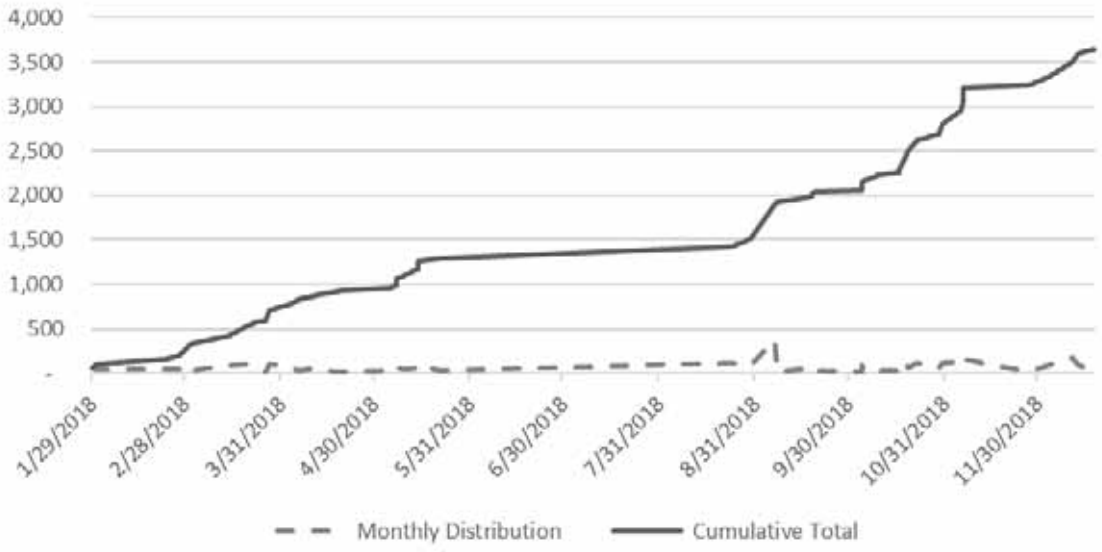


Table 9-1 below summarizes the total number of kits distributed and expected kWh and kW savings per territory.

Table 9-1 Summary of Measures and Expected Savings

Service Territory	Total Number of Kits	Total Expected kWh Savings	Total Expected kW Savings
New Orleans	207	48,272	5.71
Algiers	3,433	800,576	94.75
Total	**3,640**	**848,848**	**100.46**

Total verified savings and percentage of goals for the SK&E Program are summarized in Table 9-2.

Table 9-2 SK&E Savings Goals by Utility

Service Territory	kWh goal	Net Realized kWh	Percentage of kWh goal realized	kW goal	Net Realized kW	Percentage of kW goal realized
ENO	546,782	635,448	116.2%	74.49	74.26	99.7%
Algiers	136,695	38,316	28.0%	18.55	4.48	24.2%

9.4 Impact Calculation Methodology

Electricity savings and peak demand reductions of the PY8 SK&E Program were estimated using the New Orleans TRM 1.0. Measure-specific tables are provided below.

9.4.1 Savings Calculations

Table 9-3 ENERGY STAR® Omnidirectional LEDs – Deemed Savings Per Lamp[52]

Minimum Lumens	Maximum Lumens	Incandescent Equivalent 1st Tier EISA 2007 (W_{base})	LED Wattage	kWh/Lamp	kW/Lamp
310	749	29	7	16.04	0.00333
750	1,049	43	9	24.79	0.00514
1,050	1,489	53	12	29.89	0.00620
1,490	2,600	72	15	41.56	0.00862

Table 9-4 Faucet Aerators – Deemed Savings[53]

Efficient GPM Rating	kWh	kW
1.5 GPM	26.53	.0028
1.0 GPM	44.22	.0046

Table 9-5 Low Flow Showerhead Retrofit Deemed Energy Savings[54]

1.5 GPM Showerhead		
Water gal. saved /year/showerhead @ 1.5 GPM	2,860	
$T_{\_Supply}$	74.8°F	
$T_{\_Mixed}$	105.0°F	
Water heater EF (excluding standby losses)	0.98 (Electric Resistance) / 2.2 (Heat Pump)	
Energy Savings	Electric: 226 kWh	Heat Pump: 101 kWh
Demand Savings	Electric: 0.0235 kW	Heat Pump: 0.0105 kW

9.4.2 In-Service Rate Findings

Kits were distributed along with a survey form to be filled out by students and parents, then returned. The forms included questions regarding which measures had been installed in the home as well as home characteristics. This information was used to determine in-service rates of each measure provided, and the prevalence of electric water heating in homes as a whole. Table 9-6 presents the ISRs found in the PY6 and PY7 evaluations. Across all measures, ISRs increased in comparison to PY7. The most notable improvements were in lighting (increasing from a range of 60%-62% to 72%-75%) and bathroom aerators (increasing from 32% to 47%). This improvement in ISR accounts for 14.9% of PY7 program savings.

[52] New Orleans TRM V1.0, Table 105, page B-138.
[53] New Orleans TRM V1.0, Table 33, page B-54.
[54] New Orleans TRM V1.0, Table 38, page B-60.

Table 9-6 SK&E Summary of In-Service and Water Heating Type Rates

Item	PY6	PY7	PY8
13W CFL / 9W LED	60%	72%	70%
18W CFL / 15W LED	62%	75%	77%
Bathroom Aerator 1.5	32%	47%	47%
Kitchen Aerator 1.5	42%	46%	47%
Showerhead	58%	64%	64%
Electric Water heating	55%	47%	59%

9.5 Verified Savings by Measure

During program administration, the implementation team consulted with the Evaluators on final savings calculations methodologies, resulting in 100% kWh and kW realization rates for all measures.

Table 9-7 Verified Gross Savings – New Orleans

Measure	Ex Ante kWh Savings	Ex Post kWh Savings	kWh Realization Rate	Ex Ante kW Savings	Ex Post kW Savings	Peak kW Realization Rate
9W LED	236,611	236,611	100.00%	31.75	31.75	100.00%
15W LED	218,517	218,517	100.00%	27.01	27.01	100.00%
Kitchen Aerator	25,340	25,340	100.00%	2.67	2.67	100.00%
Bathroom Aerator	25,165	25,165	100.00%	2.65	2.65	100.00%
Showerhead	294,943	294,943	100.00%	30.67	30.67	100.00%
Total	**800,576**	**800,576**	**100.00%**	**94.75**	**94.75**	**100.00%**

Table 9-8 Verified Gross Savings – Algiers

Measure	Ex Ante kWh Savings	Ex Post kWh Savings	kWh Realization Rate	Ex Ante kW Savings	Ex Post kW Saving	Peak kW Realization Rate
9W LED	14,267	14,267	100.00%	1.91	1.91	100.00%
15W LED	13,176	13,176	100.00%	1.63	1.63	100.00%
Kitchen Aerator	1,528	1,528	100.00%	0.16	0.16	100.00%
Bathroom Aerator	1,517	1,517	100.00%	0.16	0.16	100.00%
Showerhead	17,784	17,784	100.00%	1.85	1.85	100.00%
Total	**48,272**	**48,272**	**100.00%**	**5.71**	**5.71**	**100.00%**

9.6 Estimation of Net Savings

The Evaluators established NTG ratios based on primary research completed in PY5 and PY6. In total, 43 program participants completed the survey for the 2015 and 2016 evaluations. The Evaluators surveyed 43 parent/guardian participants and estimated

NTG ratios for each of the kit's measures. These NTG ratios were applied to the PY8 participants.

9.6.1 Measure Level Free Ridership Results

Table 9-9 summarizes the average free ridership scores by measure. The results presented show free ridership highest for LEDs. This indicates that a higher percentage of participants are more familiar with energy efficient lighting measures.

Table 9-9 SK&E Average Free Ridership by Measure

Measure	*Average Free Ridership*
Bathroom Aerator 1.5 GPM	13%
Kitchen Aerator 1.5 GPM	13%
Showerhead	11%
9W LED	33%
15W LED	22%[55]

9.6.2 Impact of EISA Phase II on Program Savings

When EISA Phase II takes effect, the savings from the 9W LED will decline by 68% and the savings from the 15W LED will decline 52%. If this code were in effect in 2018, program savings would be reduced by 38% as a result. Program administrators should plan for this decline and address it with possible new measures for the school kit:

- **Advanced Power Strips:** Though these will have an in-service penalty in this type of distribution, they are cost-effective measures which also provide an opportunity for the program to educate students about "vampire loads" (i.e., the passive power drain from consumer electronics).
- **Hot Water Restrictor Valves:** These come in both automatic and manual configurations, with both functioning to cut water use from the shower prior to reaching temperature. The manual version of the restrictor valve can be installed alongside a low flow showerhead, or a showerhead can be included instead which has this functionality integrated.

9.7 Net Savings Results

Free ridership for the program was estimated by applying measure level free ridership to verified gross kWh savings and peak kW reductions. As seen in Table 9-10, the overall Net-to-Gross ratio for this program was 78%.

[55] Based on PYs 5 and 6 18W CFL responses.

Table 9-10 SK&E Summary of Verified Net Savings

Service Territory	Expected kWh Savings	Verified Gross kWh Savings	Free Ridership	Verified Net kWh Savings	Net to Gross Ratio
ENO	800,576	800,576	165,127	635,448	79%
Algiers	48,272	48,272	9,957	38,316	79%
Total	**848,848**	**848,848**	**175,084**	**673,764**	**79%**

Table 9-11 SK&E Summary of Verified Net Peak Demand Reductions

Service Territory	Expected Peak kW Reductions	Verified Gross Peak kW Reductions	Free Ridership	Verified Net Peak kW Reductions	Net to Gross Ratio
ENO	94.75	94.75	20.49	74.26	78%
Algiers	5.71	5.71	1.24	4.48	78%
Total	**100.46**	**100.46**	**21.73**	**78.74**	**78%**

9.8 Lifetime Savings

Table 9-12 and Table 9-13 present the lifetime kWh and peak kW savings attributable to lamps distributed through the PY7 SK&E program:

Table 9-12 ENO Lifetime Savings

Measure	Lifetime kWh
9W LED	939,038
15W LED	867,226
Kitchen Aerator	201,137
Bathroom Aerator	199,748
Showerhead	2,341,070
Total	**4,548,219**

Table 9-13 Algiers Lifetime Savings

Measure	Lifetime kWh
9W LED	56,621
15W LED	52,291
Kitchen Aerator	12,128
Bathroom Aerator	12,044
Showerhead	141,160
Total	**274,245**

9.9 Recommendations

The Evaluators' recommendation for the SK&E Program is as follows:

- **Plan long-term for a non-lighting kit redesign.** It is a popular program, and there is at this time no evidence to suggest that it faces issues with saturation. The program design should be revisited in advance of EISA Phase II code enforcement however, as that code taking effect will curtail the savings potential for this program significantly.
- **Include informational materials about online utility energy savings calculators and free home energy assessments.** Ten percent of survey respondents reported awareness of other Energy Smart efficiency programs. Including program materials about other residential programs or directing them to the NOLA Energy Smart website can help raise awareness of other residential programs offered by the Utility.
- **Unless significantly expanded, move SK&E to a schedule of one evaluation per program cycle.** The program provides modest savings using well-established estimates from the New Orleans TRM. The Evaluators recommend reviewing this program once in each three-year program cycle. During this period, if further primary data is not collected by program administrators, the program can use the following stipulated metrics:
    - ISR(Lighting): 72%
    - ISR (Aerators): 46%
    - ISR (Showerheads): 64%
    - NTGR (Overall): 78%

  The program should be revisited for evaluation in PY10.

10. Scorecard Behavioral Program

10.1 Program Description

The program provides tailored reports to residential households. These reports include:

- Comparisons of households' current energy use to their past use;
- Comparison of energy use to similar homes in the area; and
- Tips on how households can reduce their energy use, as well as information on Entergy New Orleans' energy efficiency programs.

The Energy Smart Scorecard Behavioral Pilot Program was administered by Accelerated Innovations ("AI") on behalf of Entergy New Orleans ("ENO") under the direction of the New Orleans City Council. This program implemented a Pilot wave in PY2017 and another wave in PY2018.

The Pilot was designed to assess the potential for administering a full-scale behavioral program in future program years. The Pilot was open to all ENO households who elected to participate. Households that elected to participate received an Energy Smart Score once a month. The score card provided information on the customer's home energy use and tips for saving energy and is designed to generate quantifiable behavioral savings that cannot be feasibly attained through standard energy efficiency efforts. The program differs from standard energy conservation marketing efforts in that it provides customized reports to households, comparing their billed energy use to homes in their area with similar energy consumption. The comparison is intended to leverage social norming effects; this is a long-known behavioral science tenet that individuals desire to be at a similar or better level than their peers, and thus, the report drives high users to reduce their energy consumption[56]. HER was first introduced to Entergy New Orleans' households in February 2017.

The Pilot is an opt-in design. In this experimental design, households can choose to opt-in to receiving home energy reports. Due to shortfalls in Pilot participant recruitment, it was concluded that the program could benefit from being changed to an opt-out design after the Pilot ended.

The additional wave implemented in PY8 is an opt-out design. This wave was separated into two groups: an initial group and a supplemental group. The initial group was supplemented with the supplemental group in order to increase the treatment group size and potential savings. The recipients of an educational home energy report (Treatment Group) were chosen at the outset of program implementation and were sent reports comparing their energy use to that of their neighbors. They will continue to receive reports unless they contact ENO to request discontinuation.

The implementors attempted to analyze the opt-in program, but due to the lack of a randomized control trial and unmanageable behavioral differences, the evaluators were

[56] Davis, Matt. 2011. *Behavior and Energy Savings: Evidence from a Series of Experimental Interventions*. Environmental Defense Fund.

unable to create a statistically valid model. This report analyzes the data collected during the opt-out portion of the program.

10.2 Impact Evaluation Methodology

The impact evaluation approach for this program is as follows:

1) Energy savings are estimated via regression modeling; and
2) Excess savings from other-program-participation by the treatment group are accounted for and netted out of the program savings from the home energy reports program.

10.2.1 Savings Calculation Methodologies

10.2.1.1 Data

The data used in this study was comprised of household monthly billing reads supplied by Accelerated Innovations ("AI").

As part of the data cleaning, the following observations were removed to create the sample used in the regression analyses:

- Observations with fewer than 10 days or more than 90 days in the billing cycle; these observations were removed because long and short bills can be an indication of an issue in the recording of energy use. In past evaluations, the inclusion range was 20-40 days. The Evaluators broadened this range as abnormal billing reads may not be randomly distributed; long billing cycles are more common among rural populations.
- Observations outside of the evaluation period: the 12-month pre-program period and the 5- and 7- month post-program period.
- Observations with less than 9 out of 12 valid pre-program period monthly billing data.
- Observations with less than 3 out of 12 valid post-program period monthly billing data.
- Outliers, which are defined as observations with a daily kWh usage higher 10 times the group median daily kWh usage; these observations were removed because very high observations of energy use can have an outsize impact on the regression results biasing the estimate of savings.

10.2.1.1.1 Participant Data

The dataset included monthly billing reads for 24,994 and 25,015 unique participating households in the initial and supplemental opt-out groups, respectively. The raw participant dataset contained records spanning from December 2016 to January 2019. The analysis requires that all households have complete billing data during the pre and

post periods. Households with incomplete data were removed, leaving 24,265 and 23,986 households in each group in the final analysis, respectively.

10.2.1.1.2 Control Group

The analysis was supplemented by use of a control group. AI provided a dataset of non-participant dwellings that were part of the randomized control trial the Evaluators created prior to PY2018 opt-out wave implementation. The dataset included monthly billing reads for the controls across the pre- and post-reporting timeframe.

Reports were delivered over a seven-month period from May 4, 2018 to December 31, 2018 for the initial group and over a five-month from July 16, 2018 to December 31, 2018 for the supplemental group. A summary of data used in this analysis is provided in Table 10-1:

Table 10-1 Time Periods Data Summary

Group	Data Point	Data Interval
Initial	Pre-installation	May 1, 2017 – April 31, 2018
	Post-installation	June 1, 2018 –December 31, 2018
Supplemental	Pre-installation	July 1, 2017 – June 31, 2018
	Post-installation	August 1, 2018 –December 31, 2018

Table 10-2 summarizes the total number of households from the raw data provided and total number of households utilized in the analysis.

Table 10-2 Treatment and Control Group Totals

Group	Raw		Analysis	
	Treatment	Control	Treatment	Control
Initial	24,994	9,994	24,265	9,680
Supplemental	25,015	9,992	23,986	9,627

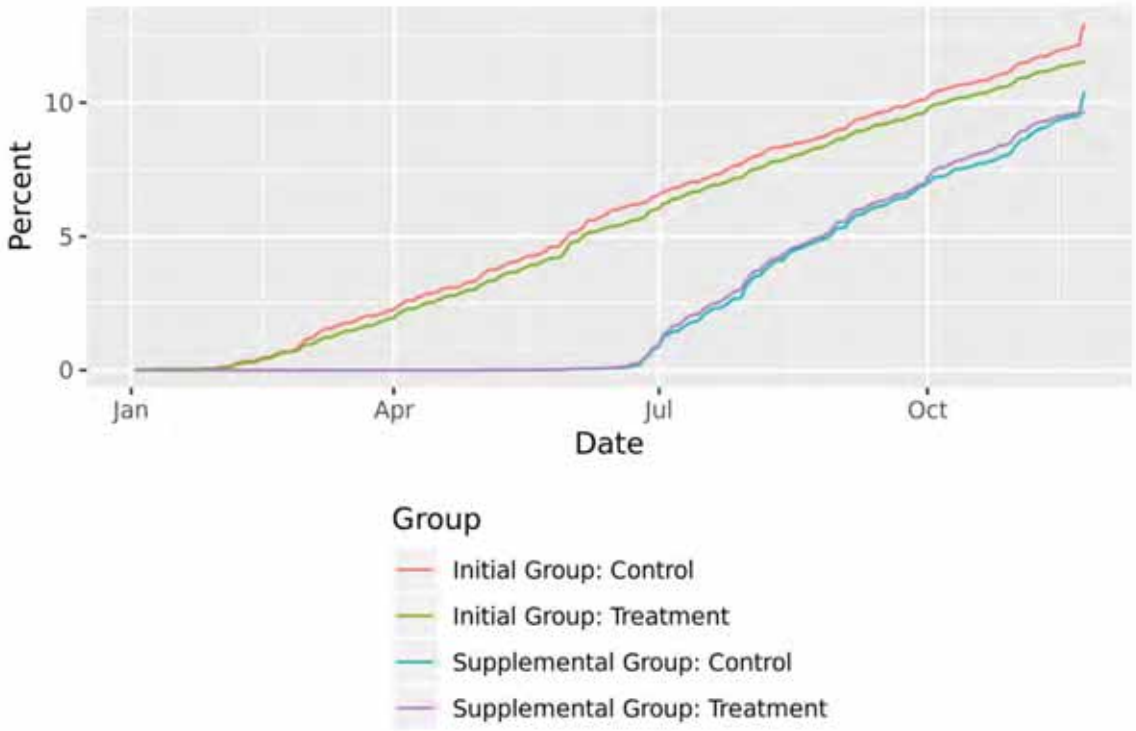
10.2.1.2 Attrition

The tracking of treatment and control households can be affected by either move-outs or opt-outs (known collectively as ‘attrition’).

10.2.1.2.1 Move-Outs

When an inhabitant moves, that household cannot be retained, as the inhabitant/address link has been broken. The evaluation timespan for that household ends on the move out date. If a household’s final bill was before November 2018 it was considered a move out household. Figure 10-1 displays the cumulative level of both treatment and control move outs over the program life by month, wave and treatment/control status.

Figure 10-1 Program Move-Out Rate



From the program's onset until November 2018, the Initial treatment group experienced a 11.53% move out rate and the Initial control group experienced a 12.96% move out rate. The Supplemental treatment group experienced a 9.64% move out rate while the Supplemental control group experienced a 10.40% move out rate.

10.2.1.2.2 Opt-Ins

Households can opt-in to receive the mailings at any time. Households that received scorecards despite being designated as a control household were counted as opt-in customers. In addition, households that received score cards although they were not part of the randomized control trial were also considered opt-ins. There were 35 opt-ins for the initial group and 39 opt-ins for the supplemental group.

10.2.1.3 Difference-in-Differences Specification

The analysis was performed in R, an open-source statistics package. The regression method used for this analysis is a Post-Program Regression (PPR) model. This approach did not include any weather normalization calculations. It is the sum of the monthly differences in the available months in both the pre- and post-period. This model does not include weather as it is not intended to be used for forecasting, but rather as a measurement of relative change between treatment and control groups before and after delivery of the energy comparison reports.

Post-Program Regression Model

$$ADC_{kt} = \sum_{J} \beta_{1j} Month_{jt} + \sum_{J} \beta_{2j} Month_{jt} \cdot ADClag_{kt} + \beta_3 Participant_k + \varepsilon_{kt},$$

Where,

ADC_{kt} = The average daily consumption in kWh for customer k during billing cycle t. This is the dependent variable in the model;

$Month_{jt}$ = A binary variable taking a value of 1 when j=t and 0 otherwise;

$ADClag_{kt}$ = Customer k's energy use in the same calendar month of the pre-program year as the calendar month of month t;

$Participant_k$ = A binary variable indicating whether customer k is in the participant group (taking a value of 1) or in the control group (taking a value of 0);

ε_{kt} = The cluster-robust error term for customer k during billing cycle t. Cluster- robust errors account for heteroscedasticity and autocorrelation at the customer level.

10.2.2 Double Counting Analysis

Measurement of savings from behavioral programs needs to account for other program savings to ensure that the Entergy New Orleans' residential portfolio is not double counting any savings.

The first step in this process is to cross-reference the account numbers and addresses for each treatment and control group customer with all other program participation in the study period. AI provided the Evaluators with all other program tracking data, and the datasets were cross-referenced by address. This resulted in a total "other program kWh" per-group.

It is important in this analysis to normalize the effects to the number of households in the group. The control group is less than half the size of the treatment group. By comparing this on a per-household basis, we normalize to the reality of mismatched treatment and control group population sizes.

The double count savings (calculated separately for each wave) is as follows:

Equation 10-1 Double Counting Specification

$$Double\ Counting = \left(\frac{OP\ kWh}{Household_{Treatment}} - \frac{OP\ kWh}{Household_{Control}}\right) \times \#\ Accounts_{Treatment}$$

Where,

$$\frac{OP\ kWh}{Household_{Treatment}} = Other\ program\ kWh\ per\ household\ in\ the\ treatment\ group$$

$$\frac{OP\ kWh}{Household_{Control}} = Other\ program\ kWh\ per\ household\ in\ the\ control\ group$$

$$\#\ Accounts_{Treatment} = Total\ accounts\ in\ the\ treatment\ group$$

Further discussion of the double counting analysis as well detailed results can be found in Appendix C: Behavioral Analysis Support.

10.3 Impact Evaluation Results

10.3.1 Opt-in Biased Groups

The opt-in group initiated in PY2017 has been removed from the PY2018 analysis due to unmanageable bias between the treatment group and the post-hoc control group. The post-hoc control group was created using Propensity Score Matching, which matches the pre-treatment average daily usage values between the treatment group and non-participant customers. The matched control group was developed at eight times the size of the treatment group. The average daily usage match was successful, however, the model output as well as the double counting analysis portrayed that the groups still contained bias. Several models were used to estimate savings, and many of them resulted in non-significant savings or significant negative savings. That is, some models displayed the treatment group used more energy in the post-period than the control group in the post-period. This result is highly unlikely and due to selection bias.

The double counting analysis showed that, although the control group was eight times larger than the treatment group, both groups portrayed very similar total kWh savings in other programs. Therefore, the treatment group seems to be disproportionately more engaged in energy efficiency improvements than the control group. It is also likely that the treatment group is therefore more knowledgeable in terms of energy efficiency than the control group, leading to large behavioral differences in the post-period. Table 10-13shows the details of the attempted analysis.

10.3.2 Opt-out Model Output

The output from the Post Program Regression model was used to report savings estimates for the program. The model had an adjusted R-squared value of 0.753 for the initial group and 0.739 for the supplemental group. The main coefficient from the model is summarized in Table 10-3.

Table 10-3 Model Coefficient Summary

Group	*Regression Term*	*Term*	*Pilot*	
			Coefficient	*t-statistic*
Initial	δ	Trmt1*Post1	-0.7096	-10.22
Supplemental	δ	Trmt1*Post1	-0.3553	-8.44

The difference-in-differences model δ coefficient summarizes the change in daily kWh usage between the control and treatment group in the post-period. To extrapolate a single customer's projected annual kWh savings, the Evaluators simply multiply this coefficient

by 365 days per year. The sign of the coefficient (negative) means that the treatment group used, on average, 0.7096 less kWh for the initial group and 0.3553 less kWh for the supplemental group per day in the post-period than the control group in the post-period, having controlled for pre-period usage and weather. This means the treatment group used 259 and 130 kWh per year less than they would have if they had not participated in the program, respectively. The model predicts approximately 1.17% and 1.15% decreased energy use from this energy efficiency program during the 2018 program year.

Additional details of the model output are provided in Appendix C: Behavioral Analysis Support.

10.3.3 Savings Summary Before Double Counting Analysis

Overall savings for each group before adjusting for double counting are summarized in Table 10-4 and Table 10-5. For the initial group, overall verified savings before accounting for energy saving measures from other programs was 0.7096 per household per day; 259 kWh over a one-year period; or 171 kWh over the 241 days of program implementation in PY2018. For the supplemental group, overall verified savings before accounting for energy saving measures from other programs was 0.3553 per household per day; 130 kWh over a one-year period; or 60 kWh over the 168 days of program implementation in PY2018. Because the intervention date for both groups was mid-year (May 2018 and July 2018), savings are extrapolated to the number of days the program has been implemented, not to a full calendar year. Thus, the actual savings are the annual savings reduced by 46% and 66%. Actual PY2018 savings are displayed in the tables below.

Table 10-4 Initial Group Overall Savings Summary

Variable	Value
Number of Treatment Households	24,994
Savings as a Percent of Annual Use	1.17%
Average Daily Savings per Customer (kWh)	0.7096
Average Annual Savings per Customer (kWh)	171
Verified Net Savings (MWh)	4,214.8

Table 10-5 Supplemental Group Overall Savings Summary

Variable	Value
Number of Treatment Households	25,015
Savings as a Percent of Annual Use	1.15%
Average Daily Savings per Customer (kWh)	0.3553
Average Annual Savings per Customer (kWh)	60
Verified Net Savings (MWh)	1,466.3

10.4 Double Counting Findings

Savings estimates for HER must also consider savings resulting from other programs. The Evaluators examined program tracking data from Entergy New Orleans' Assisted Home Performance with ENERGY STAR (LIA&Wx), Home Performance with ENERGY STAR (HPwES), Multifamily (MF), and Residential Heating and Cooling (RHC) programs, and savings claimed by these programs were netted out of HER savings estimates to avoid double-counting of the same savings.

10.4.1 Double Counting Results

Table 10-6 summarizes the results of the double count analysis. Detailed results can be found in Table 10-6.

Table 10-6 Double Count Results

Group	Participants	Other-Program kWh per-Account			Double-Count (kWh)
		Treatment	Control	Difference	
Initial	24,994	25.33	25.27	0.06	1,479
Supplemental	25,015	11.72	11.83	-0.11	-2,632

The analysis showed that external programs were responsible for 0.06 and -0.11 additional kWh savings in treatment homes (as compared to the control group), for the initial and supplemental group, respectively.

10.5 Adjusted Final Savings

Table 10-7 summarizes the final verified net savings in the initial and supplemental groups. The final verified net savings, after accounting for double count savings, is 4,212.3 MWh and 1,466.3 in PY2018 for the initial and supplemental groups, respectively.

Table 10-7 Savings Summary Statistics

Variable	*Initial*	*Supplemental*	*Total*
Number of Treatment Households	24,994	25,015	50,009
Number of Control Households	9,991	9,990	19,981
Percent Savings	1.17%	1.15%	
90% Confidence Interval	[0.97%, 1.34%]	[0.91%, 1.35%]	
Average Daily Savings per Customer (kWh)	0.7096	0.3553	
Standard Error	0.07	0.04	
90% Confidence Interval	[0.5955, 0.8238]	[0.2861, 0.4245]	
Verified Net Savings Before Double Count Adjustment (MWh)	4,218,085	1,463,419	5,677,504
90% Confidence Interval	[3,534, 4,890]	[1,181, 1,752]	
Savings Double Count in Other Energy Efficiency Programs (kWh) [57]	1,479	-2,632	-1,153
Final Verified Net Savings (kWh)	**4,212,606**	**1,466,051**	**5,678,657**
New Orleans	*3,624,922*	*1,308,486*	*4,933,408*
Algiers	*587,684*	*157,565*	*745,249*

Results for the program show that energy use in treatment homes is 5,678,658 kWh lower when compared with the control group. No kWh savings can be attributed to the Pilot as it is unable to be properly evaluated.

10.6 Process Evaluation Findings

10.6.1 Program Goals, Design, and Delivery

This section summarizes the findings of the interview conducted with Accelerated Innovations (AI) program staff for the purposes of gaining insight into program structure, identifying program objectives, and assessing the extent to which there are future opportunities for program improvement for the Energy Smart Scorecard program.

This section highlights the key points from interviews with the vice president of marketing at AI. The roles and responsibilities of program staff did change since the previous interviews conducted earlier in 2018.

[57] These amounts are used to adjust the realized savings to account for energy savings measure implemented through other residential energy efficiency programs. A negative value indicates less of an effect (decreased consumption) from these programs as compared to the control group and thus their savings is subtracted to account for the difference. A positive value means the opposite.

10.6.1.1 Program Design and Goals

The Energy Smart Scorecard program (hereafter, Scorecard) was initially piloted as an opt-in design and is a digitally-based behavioral program that provides an electronic version of a home energy report. The Scorecard program transitioned to an opt-out model in May of PY8, with five full months of operation during the program year. When the program transitioned to an opt-out model, ADM randomly selected 25,000 customers with the highest usage and a valid email address to place into the treatment group. The control group was comprised of 10,000 customers who did not receive a scorecard. After two months, program staff decided to increase the treatment group to 50,000 because of low open rates and savings. Program staff assumed this would help increase the open rates and exposure of the scorecards.

In PY8, Aptim took over the overall management of the communication with ENO. The overall execution of the program and distribution of the Scorecards has been exclusively remote for AI staff. AI's responsibilities have been mainly checking in monthly on various metrics and plans for the program.

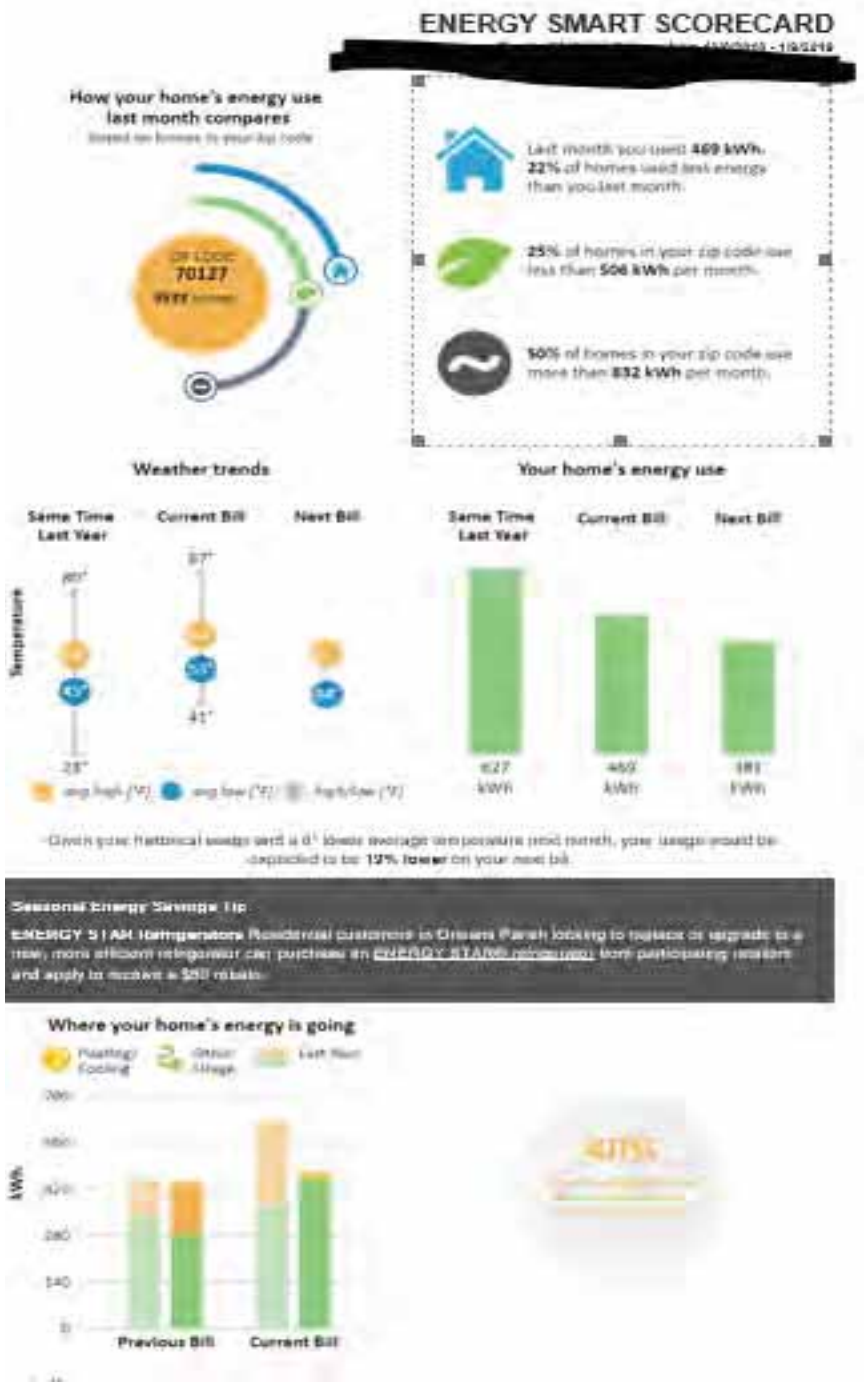
Staff was unsure if the program would hit the savings target for PY8 due to a shortened program year. AI staff reported they have observed an increase in savings in the five months since the program transitioned to an opt-out model. They believed that once the program is operational for one full year, there should an increased trend in savings.

10.6.1.2 Scorecard Updates

Scorecards are now delivered within a couple days of customers receiving their billing statement, which was cited as a program improvement. Program staff also reported they adapted the tips to ensure they were consistent with all the Energy Smart marketing. The reports now include more accurate data, which potentially makes the scorecard more relevant to customers who receive a report. The tips are also more relevant to New Orleans customers (i.e., they include information that is relevant to the region, style of homes, and the climate). Program staff believe that timing the delivery of the report with the billing cycle and the accuracy of the data helps customers identify what may be contributing to higher utility bills.

An example of the Scorecard is presented in Figure 10-2. The home energy usage comparison section provides the customer with information about their home energy usage compared to homes in their zip code. The report also provides the user with information about weather trends and home energy use (last year's, current bill, and future bill). Also found in the Scorecard is a season energy saving tip and cross-promotions of other Energy Smart programs. The new template includes a bar chart which provides a breakdown of usage (heating/cooling and other usage), along with the usage from the previous month and the current one.

Figure 10-2 Energy Smart Revised Scorecard Template



10.6.1.3 Participation

Program staff measures and monitors the opt-out rates with the Scorecard. AI staff stated they are only tracking open rates and not engagement, as it would take development time and additional budget to build additional metrics for engagement. They stated that Entergy is comfortable with reporting only the open rate.

The average open rate per month is approximately 16%, ranging from 15 to 18%. AI staff has observed an increasing open rate each consecutive month. The opt-out rates have been consistently below 3% each month. The bounce rate has been under 5%.

There has been some effort to increase open rates among the treatment group. AI has proposed various ideas (e.g., more enticing and dynamic messaging, raffles, prizes/incentives) to increase open rates, but none have been implemented due to lack of development time and funding.

Staff noted that behavioral program, in general, can be challenged with public perception issues. If customers do not trust the utility, then a behavioral program can suffer in terms of participation and engagement. Staff are also challenged to find ways to encourage customers to understand the purpose of a behavioral program, which seeks to assist customers and provide them more control over their energy usage.

10.6.1.4 Marketing and Outreach

The marketing responsibilities for the program were scaled down significantly and there were not any new initiatives. Since the transition to opt-out, social media is the only marketing activity for the program. AI staff indicated they contributed to limited social media messaging and circuit newsletters. There was an email campaign to inform customers of the new Scorecard template.

The Scorecard program also discontinued the outreach events. AI stated the program partners still pass out brochures or talk about the Scorecard program but that the outreach is passive rather than direct outreach.

10.6.1.5 Communication

There have been some changes to the communication structure. Entergy has requested for a point person from the Energy Smart team to provide updates about the program. This change occurred during the summer of PY8. The current communication between AI, Aptim, and ENO was described as “very simple and streamlined”, with fewer meetings.

AI no longer directly communicates with Entergy’s marketing team. There are, however, periodic marketing meetings, in which Aptim provides a status update of each program in the portfolio and AI provides the updates to the Aptim team lead.

10.6.1.6 Data and Quality Control Processes

There were no changes to the tracking and reporting system for the Scorecard program and no concerns or improvements were voiced during the interview. All the metrics for the program have remained the same since the program scaled up. AI staff believes that while the program has scaled up, they find managing the data less challenging because customers do not log into the portal. AI is no longer required to track portal usage since transitioning from an opt-in model.

There were no significant changes to the quality assurance and control procedures. AI staff indicated they have been “diligent” with their testing procedures to maintain their SOC certification.

10.6.1.7 PY9 Changes

AI program staff indicated they implemented most of the recommendations from ADM but could not implement those that were not possible or out of their control. They stated the recommendations were appropriate and actionable.

By the end of 2018, all customers with a registered email address will be receiving a Scorecard (i.e., all those customers will be placed in the treatment group). The treatment group will expand from 50,000 to over 100,000 customers by the end of December 2018. The control group will be everyone else who does not open or receive a monthly Scorecard.

In 2019, ENO will begin installing AMI meters for residential customers. As part of this process, the company will also roll out a new Customer Engagement Platform that will be used to distribute a new version of the Scorecard. Customers who receive the new Scorecard from ENO will not receive the current Scorecard delivered by AI. This change will also entail reductions to AI's budget and savings goals as the number of customers they contact decreases.

10.6.2 Participant Feedback

10.6.2.1 Customer Impression of Energy Smart Scorecards

Table 10-8 summarizes the number of reports that respondents recalled their household receiving. The majority of respondents recalled receiving 1 – 6 reports in 2018.

Table 10-8 Recalled Number of Reports Received in 2018

Number Recalled	*Percent (n = 44)*
1-3	25%
4-6	43%
7-9	7%
10-12	25%

Most respondents (79%) found the information provided on their home energy use in the Scorecard to be "very" or "somewhat easy" to understand (see Table 10-9).

Table 10-9 Ease of Understanding Information Presented in Scorecard

Response	*Percent (n = 58)*
Very difficult	0%
Somewhat difficult	9%
Neither difficult nor easy	12%
Somewhat easy	31%
Very easy	48%

Seventy-three percent of respondents reported that the accuracy of the energy use comparisons was somewhat or very accurate (Table 10-10).

Table 10-10 Perceived Accuracy of Information

Response	Percent (n = 41)
Very inaccurate	7%
Somewhat inaccurate	20%
Somewhat accurate	63%
Very accurate	10%

Table 10-11 and Table 10-12 summarizes respondents' perceptions of their home energy use as compared to their neighbors. As shown, 54% thought that their home used more energy than their neighbors. In comparison, 30% of 2017 participants thought they used more energy than their neighbors.[58] The difference between the years likely reflects the change in the study design; 2017 participants enrolled voluntarily and in 2018 a sample of customers with high energy use received the home energy reports.

Table 10-11 Perceptions of Home Energy Use Compared to Neighbors

Response	Percent (n = 54)
Significantly higher	11%
Somewhat higher	43%
About the same	22%
Somewhat lower	20%
Significantly lower	4%

Table 10-12 Perceptions of Efficiency of Home Compared to Neighbors

Response	Percent (n = 55)
Very energy efficient	9%
Somewhat energy efficient	9%
Average	40%
Somewhat energy inefficient	33%
Very energy inefficient	9%

Sixty percent of respondents reported that the recommendations provided were somewhat or very useful. As shown in Table 10-14, respondents most commonly reported that the recommendations were not useful because they were already taking the recommended actions or that they were concerned that taking the action would reduce comfort.

[58] The difference is statistically significant, p = .02.

Table 10-13 Usefulness of Recommendations Provided

Response	Percent (n = 40)
Very useful	30%
Somewhat useful	30%
Slightly useful	35%
Not at all useful	5%

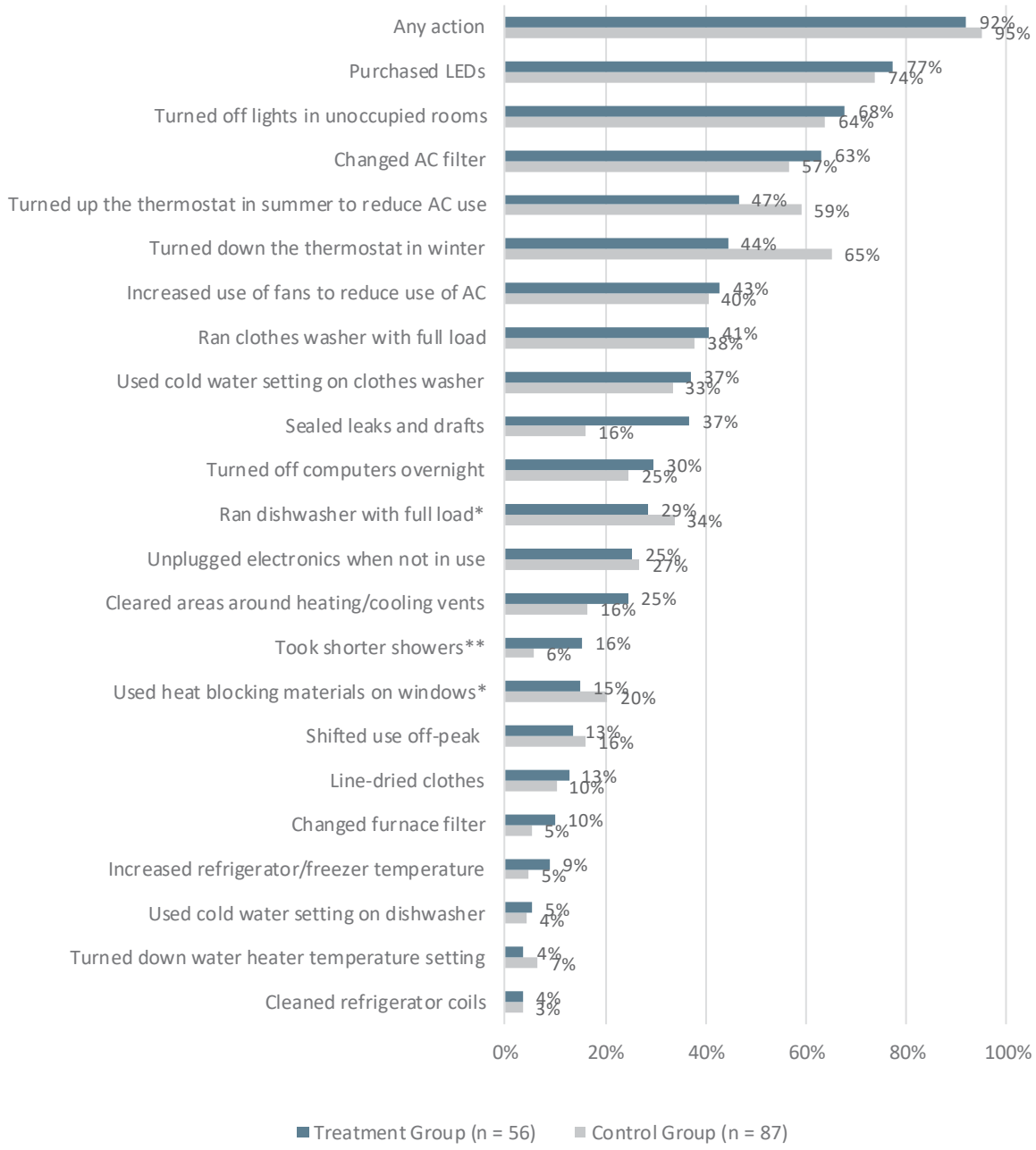
Table 10-14 Reasons why Recommendations were not Useful

Response	Percent (n = 15)
I was already doing the things recommended	53%
Taking the recommended actions would make the home less comfortable	40%
They didn't make sense for my home	13%
Some other reason	13%

10.6.2.2 Energy Saving Tips

Figure 10-3 summarizes the actions taken by customers in the treatment and control groups. As shown, there were not any clear significant differences between the self-reported actions taken by members of the treatment and control groups. Commonly taken actions by both groups were the purchase of LEDs and turning off lights in unoccupied rooms.

Figure 10-3 Energy Smart Scorecard Actions Taken by Households



* p < .10
** p < .05

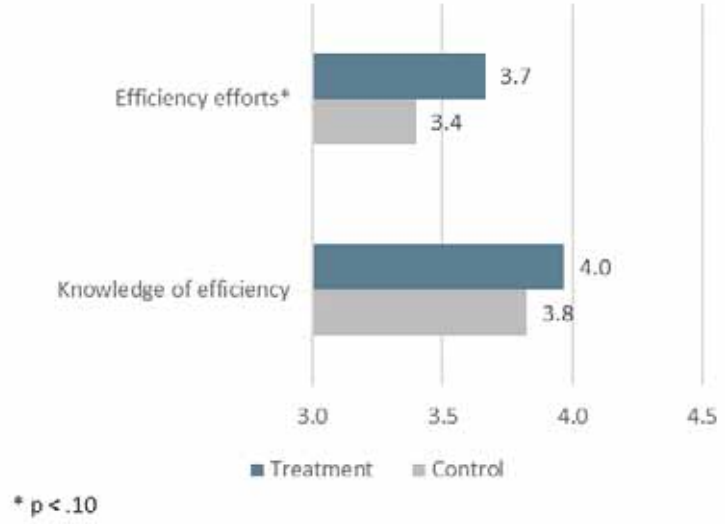
Table 10-15 summarizes the motivations for households to save energy in their home. Most customers in both the treatment and control groups reported that reducing electricity costs were a motivation in acting to save energy. Environmental concerns were another motivation for both groups.

*Table 10-15 Customer Motivation to Save Electricity**

Response	Treatment Group (n = 56)	Control Group (n = 89)
Reduce electricity costs / reduce electric bill	95%	99%
Conservation / good for environment	50%	62%
Make my usage more similar to my neighbors	5%	0%
Other	0%	1%

Survey respondents rated the extent of their efficiency efforts and knowledge of energy efficiency using a five-point scale. As shown in Figure 10-4, treatment group customers reported greater efforts made to save energy. The treatment group also reported that their knowledge of energy efficiency was greater, but the difference was not statistically significant.

Figure 10-4 Average Ratings of Efficiency Efforts and Knowledge of Energy Efficiency

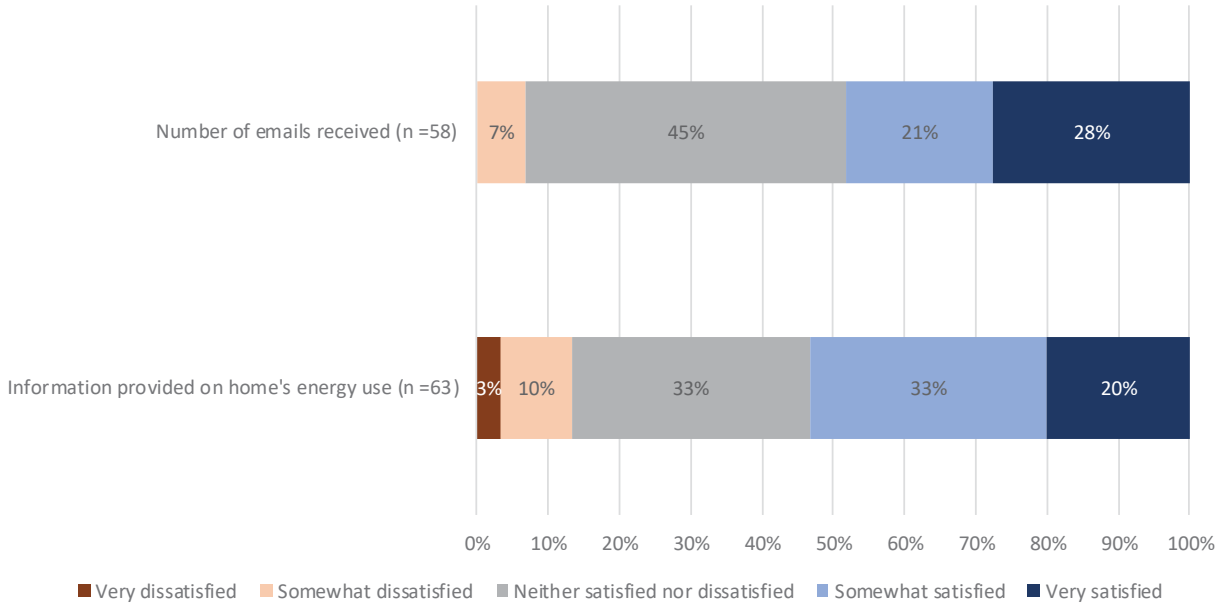


10.6.2.3 Satisfaction

Figure 10-5 summarizes satisfaction with the information provided on their homes' energy use and the number of emails they receive. Forty-nine percent reported that they were somewhat or very satisfied with the number of emails. Similarly, 53% were somewhat or very satisfied with the information provided on their homes' energy use.

A few respondents reported dissatisfaction with these aspects of these programs. Most of these respondents indicated that they were dissatisfied with their energy costs.

Figure 10-5 Satisfaction among Entergy Households Related to Energy Smart Scorecard



Ratings of satisfaction with Entergy as their electric service provider were similar for treatment and control group customers (see Table 10-16). Around 50% of respondents reported that they were somewhat or very satisfied with Entergy.

Table 10-16 Satisfaction of Entergy as an Electricity Service Provider

Response	***Treatment Group (n = 63)***	***Control Group (n = 106)***
Very dissatisfied	10%	6%
Somewhat dissatisfied	14%	20%
Neither satisfied nor dissatisfied	21%	22%
Somewhat satisfied	25%	31%
Very satisfied	30%	22%

10.7 Key Findings and Conclusions

The key findings and conclusions of the evaluation of the program are as follows:

- **Statistically valid savings estimates accounted for 1.17% and 1.15% of annual use for the initial group and supplemental group, respectively.** On average, participants in the initial group saved 156 kWh in PY2018 and participants in the supplemental group saved 52 kWh in PY2018 as compared to the respective control group. This accounts for approximately 1.17% and 1.15% of total annual electricity use (with 90% confidence between 0.97% and 1.34% kWh annual savings for the initial group and between 0.91% and 1.35% for the supplemental group).

- **Net Evaluated Savings resulted in 5,679 MWh savings for the Entergy New Orleans HER program opt-out households.** Double counting analysis resulted in a double counting savings of 1.5 MWh and -2.6 MWh, respectively, subtracted from the gross savings of 5,678 MWh. This results in a net overall savings of 5,769 MWh.
- **The treatment and control groups for the opt-in group in PY2018 are not evaluable due to the following:**
    - **The post-hoc control group does not satisfactorily match the customer behaviors of the program participants**. Although Propensity Score Matching allows the average kWh per day for each month in the pre-period, this matching method does not include any other customer characteristics as input. Therefore, the control and treatment groups may have different behaviors, but coincidentally matched in average kWh per day. This behavioral mismatch is most evident by the large difference in savings from other programs between each group. Although the control group was eight times larger than the treatment group, each group saved about the same amount of energy from other programs, which means the treatment group is disproportionately more efficient, and therefore, inherently different than the control group.
    - **The differences in household behavior cannot be explicitly controlled for using billing and measure data.** The aggregate of these behavior changes leads the selected control group to match the average daily kWh usage of the treatment group in the pre-period, but not the behavior of the treatment group, and therefore, not the average daily kWh usage of the treatment group in the post-period.
    - **The treatment group suffered from self-selection bias.** The type of households that opt in to an energy efficiency program may be the type of households that would have reduced their energy use even without the program. Survey responses indicated that the treatment group is largely comprised of households which were extremely energy efficient before the program.
- **The program transitioned from an opt-in to an opt-out model.** PY8 was the first year that the program transitioned to an opt-out model. In the new model, a treatment group of randomly selected customers with higher energy usage was selected for the treatment group. Opt-out rates were low (below 3% each month).
- **The delivery and design of the Scorecard were changed for PY8.** The program has focused on improving the accuracy of the data to increase the relevance to customers. Additionally, tips were adapted to coordinate with the overall marketing strategy for the portfolio. The delivery of the reports was also timed so that customers received them after receiving their energy bill to increase the relevance of the report to customers.

- **Open rates are somewhat low.** The open rates of the emails are somewhat low at 16% which reduces the efficacy of the intervention. Staff has considered strategies for improving the open rates but has not tested any due to budget and time constraints.
- **Most participants found the information about their energy use to be accurate and the information easy to understand.** Seventy-three percent of respondents reported that the information about their home was somewhat or very accurate and 79% thought it was somewhat or very easy to understand.
- **Approximately one-half of customers were satisfied with the number of emails they received, and the information provided on their homes.** These rates of satisfaction are lower than for the rebate programs but not unexpected for an opt-out program.
- **Survey results indicate that treatment customers are making more effort to be energy efficiency than control group customers.** These results provide support to the impact that the program is having. However, the rates of taking specific behavioral actions were similar for the treatment and control groups.
- **Program staff and households provided positive feedback about the Scorecard program.** Program staff were optimistic about the program and excited to begin scaling up the program. Seventy-five percent of households were satisfied with the number of emails and 61% were satisfied with the information provided. Survey findings were generally positive with households who appear engaged and interested to learn more about energy efficiency.
- **The pilot phase of the program could not be evaluated in PY2018 due to inherent bias between treatment and control groups.** The groups were matched in the pre-period for average daily kWh usage, but still displayed signals of bias in disproportionate other program savings between the control and treatment groups. A simple t-test between the treatment and control group total other program kWh savings results in a statistically significant difference at the 95% confidence interval.
- **The program transitioned from an opt-in to an opt-out model for PY8.** The Scorecard program scaled up with an opt-out approach – there were two treatment groups of 25,000 residential households who received a monthly home energy report and two control groups of 10,000 who did not receive an energy report. The "initial" treatment and control group were initiated in May 2018 while the "supplemental" group was initiated in July 2018. All other Entergy New Orleans residential households are still be able to sign up to participate in the program.
- **The program recently implemented a new wave of treatment customers in December 2018 using customers already assigned to a previous wave control or treatment group.** The billing data shows there were 42,042 households added to a new wave between December 27, 2018 and January 7, 2019. Of those households, 15,210 (36%) were households that were already designated as a control or treatment household in the initial or supplemental group. Unlike previous waves, the implementors did not contact the Evaluators to create

a randomized control trial for this new wave, nor were they informed of the additional wave until January of 2019. It is unclear if the implementors created an RCT for this wave, however, there are current control customers reassigned as treatment customers in this new wave. This hinders the previous waves from retaining statistically valid control-treatment group comparison by eliminating a large portion of the control customers. The evaluators recommend creating a randomized control trial for any future waves using customers that are not assigned to any current or previous treatment or control groups, even if they have opted out.

- **Households found the scorecards easy to understand and the recommendations useful.** Seventy-three percent of respondents indicated that the information was somewhat or very easy to understand and 68% reported that the tips were somewhat or very useful. Additionally, 51% of participants reported that they acted on one of the tips provided. A large portion of respondents were motivated to reduce electricity costs and usage.
- **A significant portion of survey respondents either did not believe or know if the energy usage information provided in a scorecard was accurate.** A finding from the evaluation of the 2017 program was that 21% of households believed that the information provided on the comparison homes was somewhat or very inaccurate. While the majority of survey participants found the information accurate, those who did not were four times less likely to act on an energy saving tip.

10.8 Recommendations

The Evaluators' recommendations are as follows:

- **For all future waves of the Home Energy Report Program, it is recommended that a randomized control trial (RCT) be created before the onset of the program.** This pre-created control group will allow more reliable analysis results due to significantly decreased self-selection bias. Selection bias is thought to have played a large part in the Pilot's unexpected negative savings result. In addition, 15,210 households in the control or treatment groups were recruited for a new wave starting on December 27, 2018. This will likely cause a bias in the PY9 evaluation; the control and treatment groups in the initial and supplemental groups may no longer match due a differing control sample. After removing these additional wave customers from the previous waves, the initial group control household group will drop from 9,994 to 2,286 and the supplemental group control household group will drop from 9,992 to 2,506. This reduces the control groups by approximately 75%. Due to this change, the Evaluators will likely use a treatment-only model to estimate savings.
- **Send program participants energy-saving information for the upcoming month.** The Pilot of this program had sent out home energy reports detailing ways to save energy for the month that had just passed, leaving participants with decreased potential for savings.

- **Develop a quality assurance (QA) process for monthly scorecard review.** As the program reaches more households, it will be advantageous to create a QA process to ensure content and data is accurate prior to sending monthly scorecards. A QA process could potentially mitigate the risk of households receiving inaccurate data or scorecards sent with content errors. Without a QA process, it is possible households will receive scorecards they find inaccurate or filled with errors, which could lead to disengagement with the reports.
- **Track and monitor future marketing efforts.** By creating a system to track and monitor marketing and outreach efforts, program staff will be able to determine what activities are most effective at reaching households and how to best use limited resources. If social media is used to market the program, explore gathering analytics (e.g., Facebook's Insights) to gauge engagement and consider paying to promote posts to reach a larger audience.
- **Continue marketing for household opt-in participants.** The opt-in group initiated in the PY2017 Pilot could not be evaluated due to biased group comparison between the treatment and post-hoc control group. For PY2019, the Evaluators recommend continuing the same marketing efforts made in the Pilot. The Evaluators will implement a "variance in adoption" model recommended in the CPUC white paper on opt-in behavior programs[59]. This model requires opt-in customers with varying opt-in start dates and therefore require consistent marketing efforts. As marketing efforts for opt-ins ceased when the program moved to an opt-out design, the Evaluators were unable to implement the variance in adoption model for PY2017 and for PY2018.
- **Create a system to monitor customer satisfaction with scorecards and track implementation of saving tips.** To achieve the highest energy savings potential, it is important that households are implementing monthly savings tips. The program could consider surveying program participants quarterly to gather feedback on the reports. Program staff could also embed a survey link in the portal system to gather ongoing customer feedback. Additionally, conducting focus groups to gain better insight into how households perceive Scorecards may lead to design improvements. Some households may not understand the contents of a report and a focus group or survey may lend information to improve content and data provided to households. Additionally, allowing households to select tips in the portal that they will implement would allow households and program staff to track which tips are selected and of interest to households and reinforce the energy saving behavior[60].
- **Provide a link to information on how home comparisons were developed.** Twenty-one percent of survey respondents believed that the comparison of their homes energy usage to other homes was very inaccurate (4%) or somewhat

[59] California Public Utilities Commission – Energy Division. (2014). Evaluating Opt-in Behavior Programs: Issues, Challenges, and Recommendations [White paper].

[60] Individuals who commit to behaviors tend to engage in the behavior.

Cialdini, R. (2009). Influence: The psychology of persuasion. HarperCollins: New York, NY.

inaccurate (17%). It might be beneficial to provide more detailed explanation of the Scorecard for households interested in how usage and comparisons are calculated.

- **Continue to build community awareness of the Energy Smart Scorecard program.** Program staff should continue efforts to build awareness of the program to encourage more residential households to participate. This could include additional marketing and outreach efforts, refer-a-friend campaign, and/or working with local leaders to increase buy-in.
- **Establish regularly scheduled meetings and reporting requirements.** Entergy and Accelerated Innovations (AI) should consider a standing meeting to establish a regular cadence of communication as the program moves into the second and third year. In addition, it may be beneficial to create period reporting requirements for the implementing vendor (i.e., quarterly reports with enrollment and year-to-date energy saving estimates).
- **Consider using the report to strategically promote rebate programs or measures.** Although the rebate program savings would not be attributed to the behavioral program, the reports could be leveraged to promote underperforming programs or measures or for seasonal promotion of measures such as AC tune-ups in the spring and refrigerator rebates in advance of holiday weekends.
- **Develop strategies to increase the number of program participants who complete profile information about their homes to ensure accurate comparisons.** Staff noted that they encouraged households to complete profile information about their homes that would allow for comparisons to homes of similar size, but that a minority of homes took this step. The Evaluators suggest the following recommendations to address this: 1) Include a statement and link on the home energy reports of households who have not completed their profiles indicating that better information on their homes' energy use can be provided if they complete their profile; and 2) Explore the potential use of third-party data vendors such as Experian or Axciom as sources of data on customer characteristics such as household size.
- **Explore opportunities to engage households with their data and scorecard.** Some survey respondents were interested in more detailed information about their home energy usage data. It may be advantageous for program staff to explore platforms that provide customers an opportunity to engage more with data (i.e., moving from a PDF version of a report to an interactive website). Review of the PY8 scorecard provided in a planning document indicates that staff have made the scorecard more interactive.
- **Continue to explore ways to increase open rates.** The email open rates may increase over time as customers become accustomed to receiving the emailed reports. Nevertheless, the program's effectiveness is dependent on customers viewing and acting on the information provided in the reports. Improvements in open rates should lead to increased program savings.

11. EasyCool Direct Load Control

The Direct Load Control ("DLC") Program was administered by Franklin Energy Services ("Franklin Energy") on behalf of Entergy New Orleans under the direction of the New Orleans City Council. The program recruited 592 residential customers comprising 731 air conditioners or heat pump units. Control switches were installed on these units in order to control their operation during Utility-called events during the course of the cooling season. The control strategies employed were fixed cycling. In such a strategy, a duty cycle is selected *a priori* and all participants have their air conditioner limited to a maximum of this duty cycle[61].

The goals of this evaluation are to:

- **Review current strategies in context of their role in the future Energy Smart portfolio**
- **Assess the effectiveness of varying control strategies.** The program used a 50% cycling strategy. This evaluation summarizes the impacts.
- **Evaluate the sensitivity to baseline specification.** We analyzed events according to four baseline schemes:
  - Three of five days;
  - Three of eight days;
  - Three of 10 days; and
  - Five of 10 days.

11.1 Program Review

The EasyCool Direct Load Control ("DLC") Program uses one-way communication switches to impose fixed cycling on residential air conditioners. The program, while successful in providing callable demand reductions, is a design based on a lack of advanced metering infrastructure (AMI), and is seen internally by ENO staff as a "legacy system" that will be maintained but not expanded going forward. It is the intent of ENO to transition their demand response offerings more towards smart thermostat setback. This aligns with current industry trends, as seen in the expansion of smart thermostat setback programs by utilities such as Entergy Arkansas, Public Service Company of Oklahoma, Salt River Project, and among the California Investor-owned Utilities.

[61] For example, a 33% duty cycle cap would limit controlled air conditioners to running for 20 minutes in an event hour.

The transition to smart thermostat-based demand response will introduce numerous benefits:

1. **Reduced equipment cost.** The Bring Your Own Thermostat (BYOT) model entails customers that already have a smart thermostat enrolling in a DLC program. This will preclude the need to expend program funds on DLC switches.
2. **Increased customer satisfaction.** Through incentivizing smart thermostat installation, program participants will receive a device that provides ancillary benefits such as improved HVAC scheduling and ability to remotely control their air conditioner. This will improve customer experience with the programs as the DLC switches in the legacy system do not provide ancillary customer benefits.
3. **Improved curtailment capacity.** Industry standard curtailment temperature setbacks are between 4 and 6 degrees. With fixed cycling, the highest temperature increase observed over a four-hour event has been 3 degrees, with many events showing only a 1-degree increase. By specifying the temperature setback, the curtailment capacity per-home will increase significantly.

The three years of administration of the DLC program provide valuable data as to the HVAC load of likely program participants, and will allow for detailed and accurate planning of the reductions achievable with a 4-6 degree curtailment from a smart thermostat-based load control program going forward.

In PY8 the program recruited 592 residential customers comprising 731 air conditioners or heat pump units. The control strategies employed were fixed cycling. In such a strategy, a duty cycle is selected *a priori* and all participants have their air conditioner limited to a maximum of this duty cycle[62].

11.2 M&V Methodology

11.2.1 Household Recruitment

ADM was provided participation lists by Franklin Energy, from which we recruited households to participate in the metering component of the study. Recruited households were compensated with a $50 Visa gift card upon completion of the metering and successful collection of the equipment. All four events had differing meter deployment. Table 11-1 summarizes the number of meters deployed each event after filtering for valid logger data.

[62] For example, a 33% duty cycle cap would limit controlled air conditioners to running for 20 minutes in an event hour.

Table 11-1 Meter Deployment

Event Date	Percent Deployed
7/23/2018	58
8/7/2018	84
8/15/2018	82
9/13/2018	81
9/18/2018	81

11.2.2 Data Collection

The assessment of load reductions was based on data collected for a sample of 88 central air conditioning units. ADM field staff took one-time power measurements of the CAC unit's compressor and air handler to determine its kW load and installed loggers to monitor indoor temperature and run time of the CAC compressor.

Information collected on the characteristics of each monitored unit included the following:

- Btu/hr. cooling capacity
- Rated unit efficiency, size, make and model
- Number of AC zones

Data on the power performance of sample unit was supplemented by also taking one-time readings of the following:

- Electrical input
- Dry bulb temperatures
- Relative humidity

Monitoring equipment was installed to measure the run time of the air conditioning system. A time-of-use motor logger was installed either in the condensing unit control compartment or in the disconnect switch box feeding the unit. By sensing the AC field generated by the current draw of the compressor, the logger could record the dates and times of each event when the compressor was turned on or off. Indoor temperature and humidity loggers were used to collect data on ambient and indoor air conditions.

11.2.3 Calculation Methodology

Our approach in analyzing the demand reductions from the DLC events was to calculate baseline load based on prior-day averaging. This approach is as follows:

- First, the average load from the baseline days specified is collected for each hour of the event. For example, in a 3-of-5 baseline, we would examine the load data from the last five non-event, non-holiday weekdays and take the mean values of the three highest loads.

- Second, we then compare loads for the hour prior to the event. This is used to create a prior-hour adjustment factor. This corrects the baseline to align with the weather and load demonstrated on the event day.

The events were analyzed using the following baseline criteria:

- 3-of-5
- 3-of-8
- 3-of-10
- 5-of-10

The reductions are calculated in terms of kW per ton of cooling capacity.

11.3 Events

Table 11-2 summarizes the dates and times of events as well as the control strategy applied.

Table 11-2 Event Summary

Date	Event Time	Control Strategy
7/23/2018	2:00 PM - 6:00 PM	50% Cycling
8/7/2018	2:00 PM - 6:00 PM	50% Cycling
8/15/2018	2:00 PM - 6:00 PM	50% Cycling
9/13/2018	2:00 PM - 6:00 PM	50% Cycling
9/18/2018	2:00 PM - 6:00 PM	50% Cycling

11.3.1 Event Summary Baselines

Table 11-3 through Table 11-6 summarize the event load reductions in terms of kW/Ton for each baseline specification.

Table 11-3 Event Performance — 3-out-of-5 Baseline

Date	Hour 1	Hour 2	Hour 3	Hour 4
7/23/2018	0.189389	0.194971	0.175633	0.167322
8/7/2018	0.060116	0.106258	0.110191	-
8/15/2018	0.205744	0.259795	0.293737	0.314286
9/13/2018	0.157232	0.134922	0.144053	0.167118
9/18/2018	0.128406	0.165528	0.161246	0.171454

Table 11-4 Event Performance — 3-out-of-8 Baseline

Date	Hour 1	Hour 2	Hour 3	Hour 4
7/23/2018	0.246094	0.212987	0.179310	0.144143
8/7/2018	0.098957	0.221640	0.251274	-
8/15/2018	0.205744	0.259795	0.293737	0.314286
9/13/2018	0.157483	0.120814	0.110368	0.093777
9/18/2018	0.128406	0.165528	0.161246	0.171454

Table 11-5 Event Performance — 3-out-of-10 Baseline

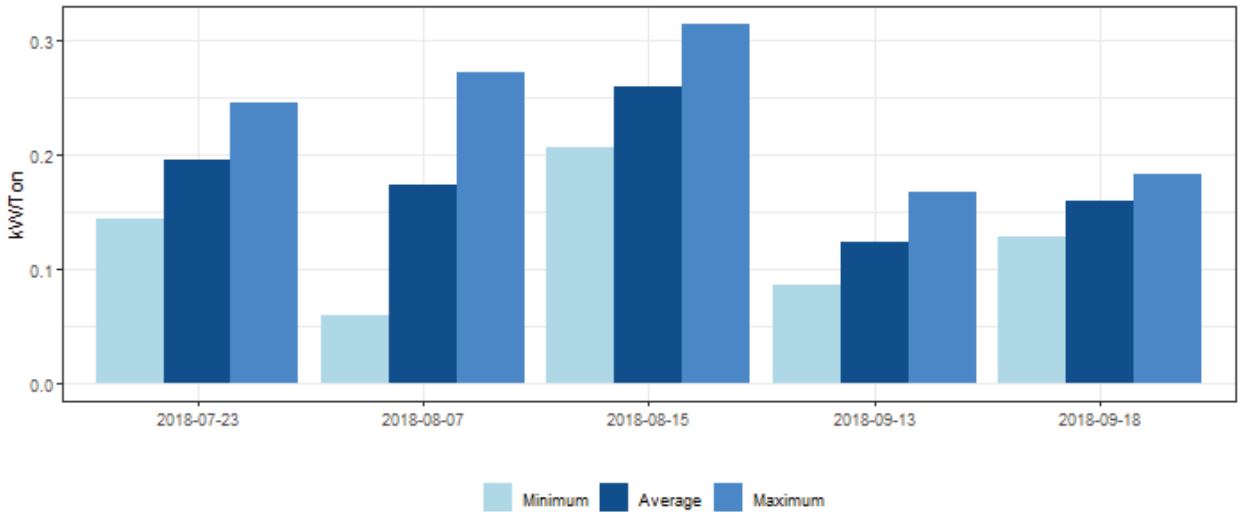
Date	Hour 1	Hour 2	Hour 3	Hour 4
7/23/2018	0.246094	0.212987	0.179310	0.144143
8/7/2018	0.111354	0.245048	0.272176	-
8/15/2018	0.221153	0.258048	0.285374	0.300106
9/13/2018	0.157483	0.120814	0.110368	0.093777
9/18/2018	0.128406	0.165528	0.161246	0.171454

Table 11-6 Event Performance — 5-out-of-10 Baseline

Date	Hour 1	Hour 2	Hour 3	Hour 4
7/23/2018	0.229881	0.223643	0.201458	0.175680
8/7/2018	0.110268	0.225550	0.261694	-
8/15/2018	0.207443	0.239009	0.238140	0.257231
9/13/2018	0.148382	0.100543	0.085956	0.085798
9/18/2018	0.144005	0.175916	0.183511	0.176908

Figure 11-1 summarizes the spread of load reductions for each hour of each event when comparing all four baseline specifications. Load reductions vary significantly, especially for lower-performing events. All events had positive load reductions during the course of the system event.

Figure 11-1 Variation in Load Reduction from Baseline Specification



11.3.2 Event Load Profiles

Figure 11-2 through Figure 11-6 present the kW/ton load profiles for the analyzed events. These are provided for illustrative purposes and use the three-of-five baseline data.

Figure 11-2 Event 1 Load Profile

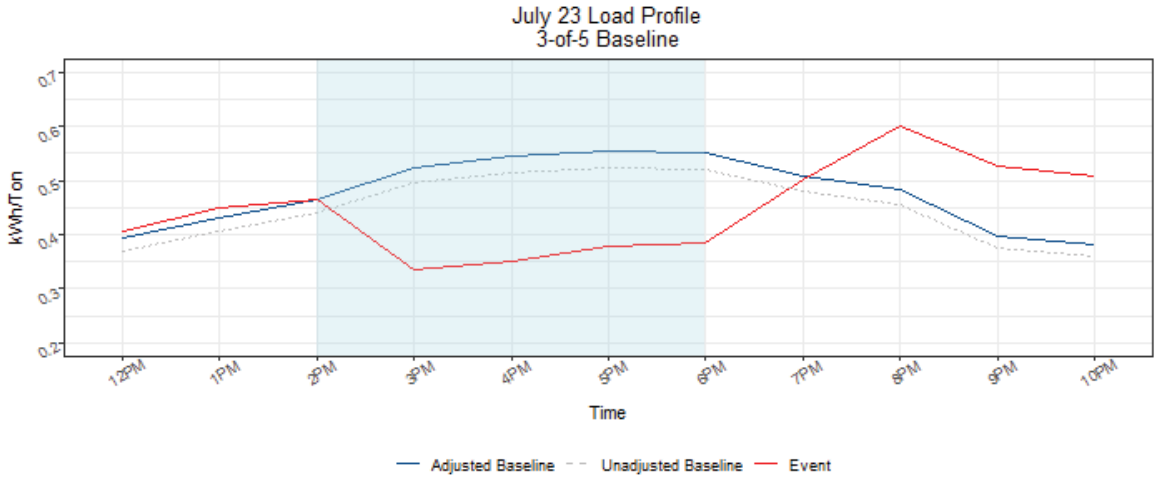


Figure 11-3 Event 2 Load Profile

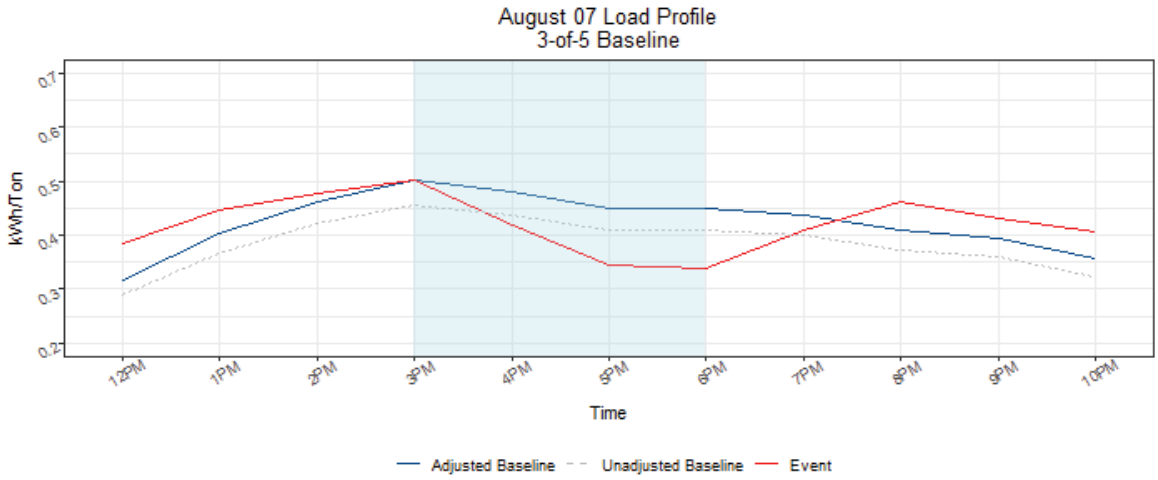


Figure 11-4 Event 3 Load Profile

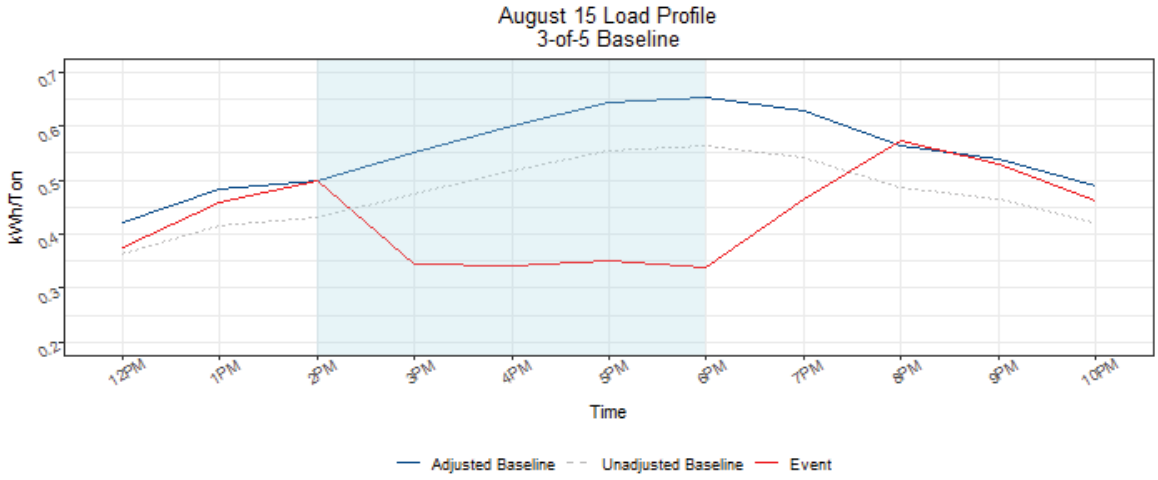


Figure 11-5 Event 4 Load Profile

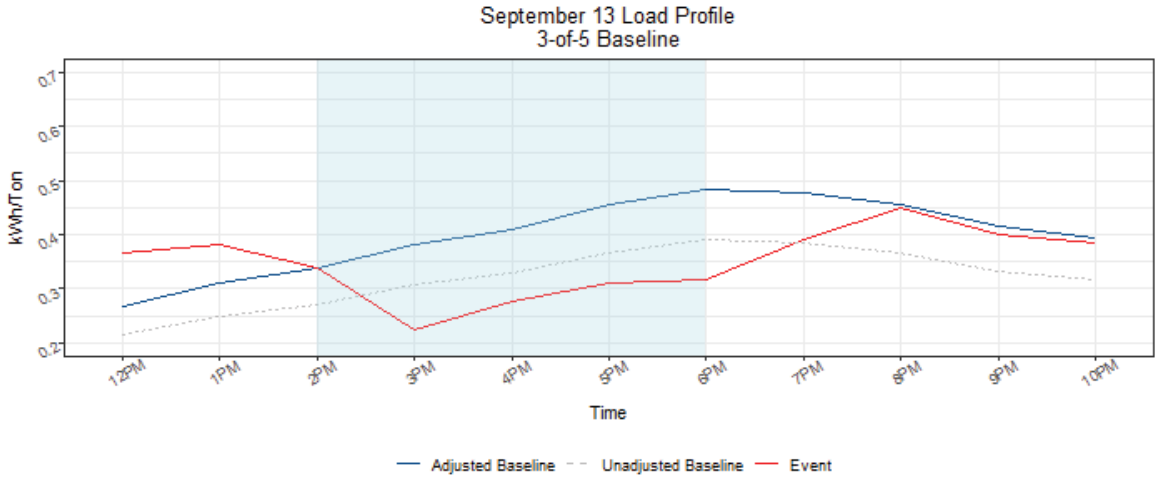
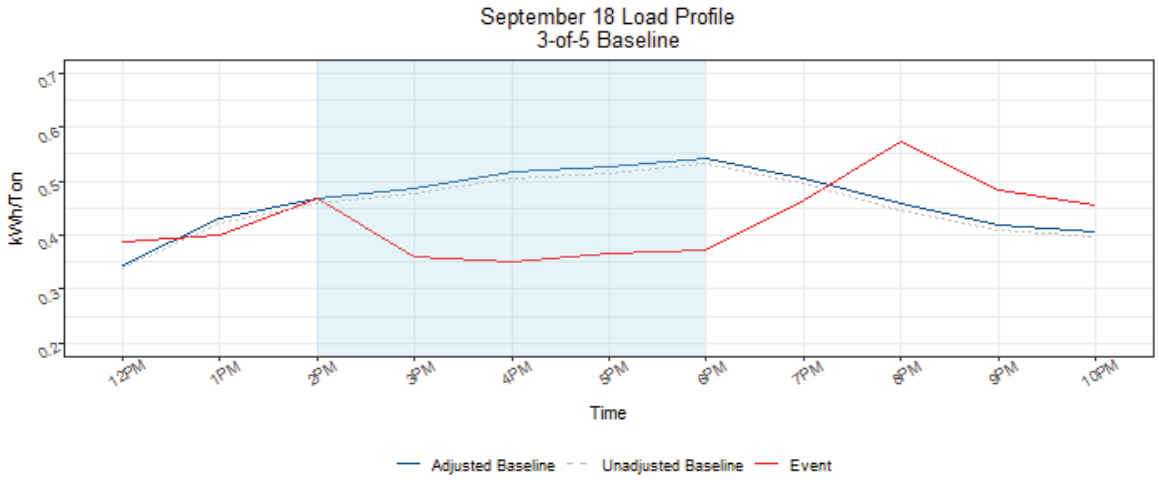


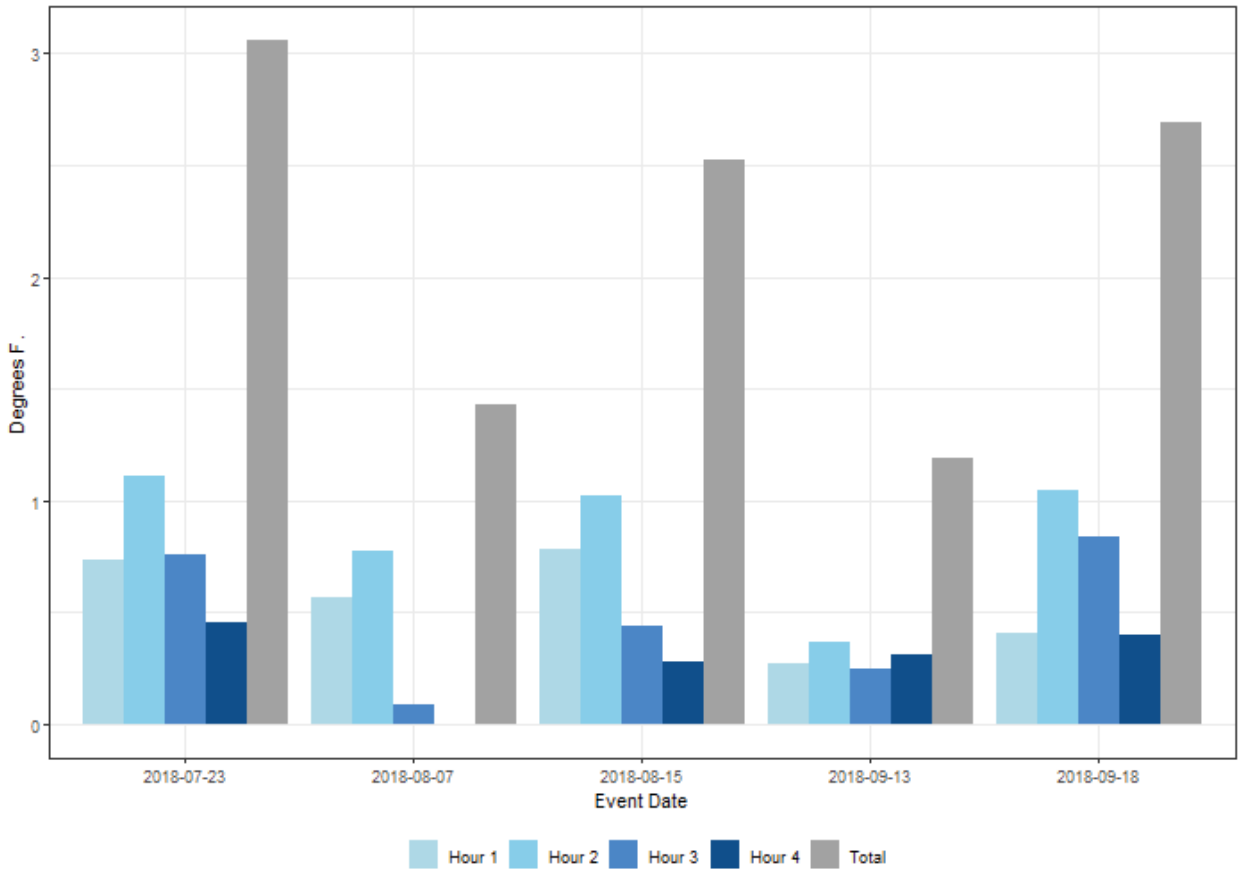
Figure 11-6 Event 5 Load Profile



11.4 Indoor Temperature

The Evaluators monitored indoor temperature in the sampled residences in order to assess the effects of the program on home comfort. The temperature increases are presented in Figure 11-7. The average temperature increase in a residence over the course of a system event was 2.17 degrees Fahrenheit. Overall, the temperature increase over the events is lower than usual. Typically, programs that use a thermostat setback method display a 4-6 degrees Fahrenheit increase in temperature.

Figure 11-7 Temperature Increase During DLC Events



11.5 Realized Savings

The Evaluators applied the 3-of-5 baseline[63] in assessing final kW demand reductions from the DLC pilot. The average unit capacity is 3.33 tons cooling. Figure 11-7 presents the average savings per ton, per event and the extrapolation to program-level savings.

Table 11-7 DLC Results

Average Reduction per Event per Ton (kW)	*Average Reduction for all Events per ton (kW)*	*Average Tonnage*	*Total Program Participation (Units)*	*Total Demand Reduction (kW)*
0.16998	0.84990	3.332	731.00	2,070.17

The average event kW/Ton savings was 0.17 kW/ton or 0.566 kW/unit), the average program kW/Ton savings was 0.85 kW/ton or 2.83 kW/unit) and the average savings per unit per event was 0.5664 kW. By service territory, realized peak kW reductions are:

- **ENO:** 1,967.02 kW

[63] Consistent with previous years.

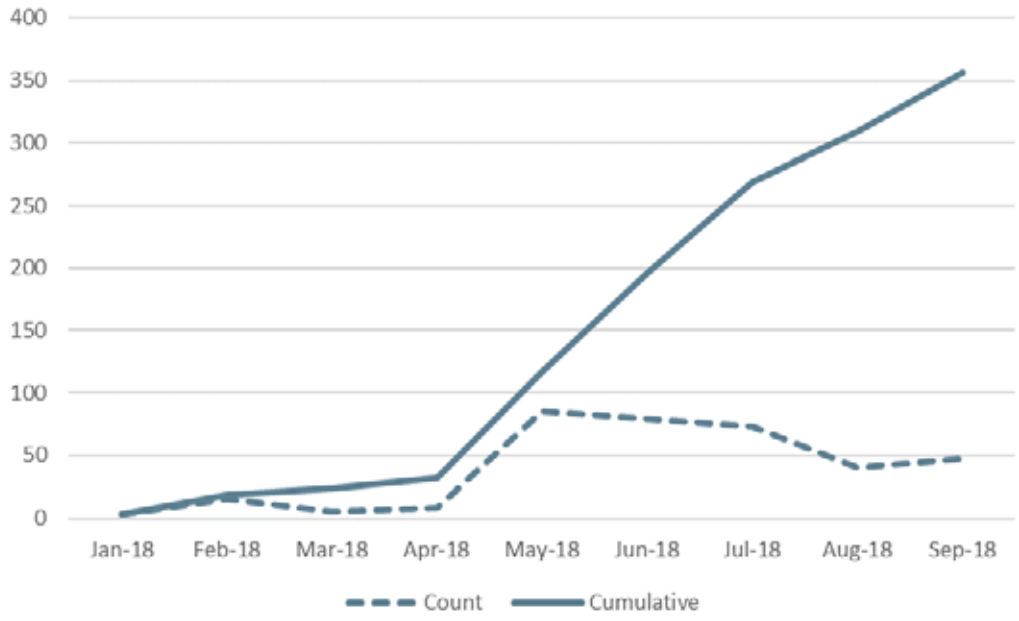
- **Algiers:** 103.15 kW

11.6 Process Evaluation Findings

11.6.1 Summary of Program Participation

The Evaluators reviewed data provided by the program implementation contractor that included enrollments through the end of September 2018. As of that time, 731 meters were installed. The monthly and cumulative installations are displayed in Figure 11-8.

Figure 11-8 Summary of Meter Installations January – September 2018



11.6.2 Program Goals, Design, and Delivery

11.6.2.1 Program Goals

At the time of the interview, Entergy and Franklin staff indicated the EasyCool Program was starting to ramp up due to the warmer season but was behind where it needed to be. Program staff stated the program needed to "pick up the pace." The PY8 goal for the EasyCool Program was to install 1,875 devices. The program was trending below this goal at the end of September with 731 devices installed at that time.

Franklin staff described the challenges that the EasyCool Program struggles with, particularly customer awareness and understanding the purpose of the program. Franklin described EasyCool Program being in a "virgin market", as the EasyCool Program has not been around for a long time.

One staff member stated they believed the program may be "intimidating" to customers because it entails allowing the utility to control their cooling during the hottest days. They also wondered if the annual incentive of $40 was enough to generate enough buy-in among residential customers.

During the year, staff ramped-up marketing efforts to increase the number of subscriptions. The program is working with marketing staff to engage residential customers in a variety of ways and educate them about the benefits of participating. Program staff is working to market the program in multiple channels to increase participation. They are working on a video to educate customers about the program. Staff did indicate there is currently a backlog because of the push to increase participation and were bringing on additional personnel to assist with the program.

11.6.2.2 Program Design

The EasyCool Program is offered to all residential customers in the Orleans Parish except for those who reside in mobile homes, apartments, and those "customers on dynamic or time of use rates." Entergy's EasyCool Program utilizes switches placed on customers AC units and not by Wi-Fi connected thermostats. The Energy Smart website has a page dedicated to frequently asked questions (FAQs), including a section related to the EasyCool Program.

Once a customer signs up to participate in the program, a switch will be installed on the unit. Participants do not get an advanced notification if their system is being cycled, rather they can look at the switch on the unit to see if the light is red or yellow, which indicates if the unit is cycling.

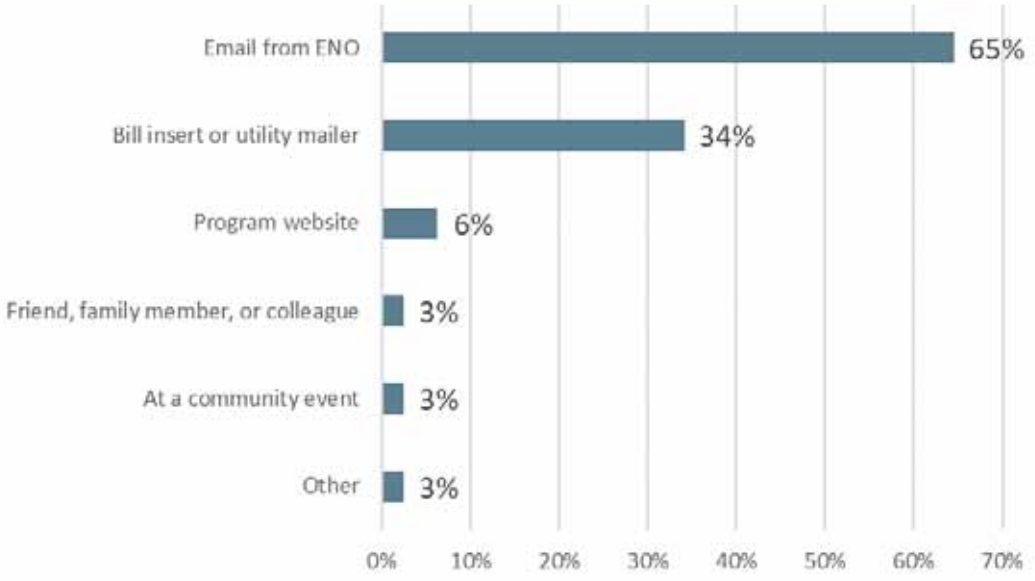
Staff noted that they do notify the call center when events occur, and customers can contact Entergy to opt out of an event. Customers can opt out of two events and still receive the incentive payment of $40.

11.6.3 Participant Feedback

11.6.3.1 How Customers Learned of the Program

Figure 11-9 summarizes how participants learned of the program. As shown, information from Entergy, either an email (65%) or a bill insert or mailer (34%), were the most common ways of learning about the program.

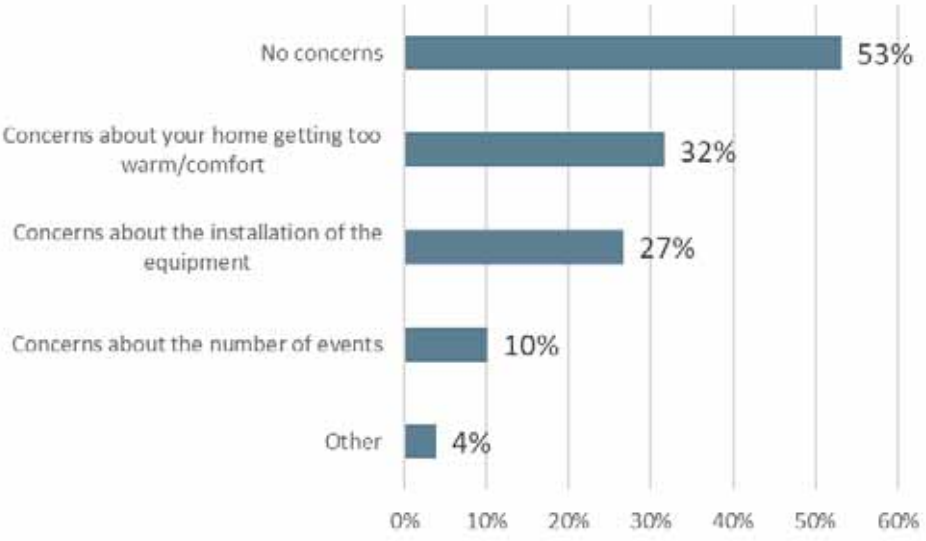
Figure 11-9 Source of Program Awareness



11.6.3.2 Barriers to Participation

About one-half of participants stated that they did not have concerns with participating (Figure 11-10). Concerns commonly mentioned by other participants were about home comfort (32%) and the installation of equipment (27%).

Figure 11-10 Initial Concerns about Participating



Thirty-eight respondents reported that there was additional information that they would have liked to have had at the time of enrollment. The information these respondents sought is summarized in Table 11-8. As shown, additional information on the temperature and comfort impacts during events was most frequently noted. Additionally, six respondents wanted more information on the goals and benefits of the program. Several

of these comments specifically spoke to additional information on the benefits of the program to Entergy and the regions energy needs.

Table 11-8 Additional Information Participants Would Like to Have

Type of Information	Number of Responses	Examples of Comments
Temperature/comfort impacts	7	*"Real life data demonstrating the temperature differences"* *"Concerns about keeping house cool in extremely hot weather"*
Goals/benefits of the program	6	*"Discuss the purpose of the program"* *"I would like know more about the program. What are the benefits in participating in the program? What is Entergy looking for?"*
Bill/ energy impacts	4	*"Whether it would affect my billing"* *"Average annual savings on utilities"*
More information on how the device worked	3	*"Frequency of reports regarding activity interacting with the AC system. "* *"More info on how the cycling works and how often and then maybe a monthly report of my cycles"*
How to know if device was switched on	2	*"How would I know it was actually working?"*
Impact on warranty/AC equipment	2	*"How might this effect equipment warranty"* *"How would this installation impact the capacitor?"*
More information on scheduling and installation process	2	*"Clearer scheduling information, i.e. who would be calling and from what number."*
How to unenroll/Opt-out of an event	2	*"How to unenroll/Opt-out of an event"*
Information on other programs	1	*"How do I do programs like this more?"*
Historical frequency of events	1	*"Historical frequency of events."*
Testimonials	1	*"Perhaps testimonials from other participants"*
Trouble shooting information	1	*"A trouble shooting guide to A/C malfunctions."*

11.6.3.3 Participation Process

All but one respondent reported that they did not have any difficulty enrolling in the program. The time to have the device scheduled was relatively short, within two weeks, after applying for most participants (75%).

Table 11-9 Wait Time for Install After Applying

Response	Percent (n = 64)
About a week	45%
1 to 2 weeks	30%
2 to 4 weeks	20%
4 to 6 weeks	2%
More than 6 weeks	3%

Eighty-eight percent of respondents indicated that the number of events was equal to what they expected or fewer than what they expected.

Table 11-10 Number of Events as Compared to Expectations

Response	Percent (n = 35)
More events than what you expected	11%
The number of events was about what you expected	54%
Fewer events than what you expected	34%

Thirty-nine percent of respondents reported that they were home during an event. Another 46% said they did not know if they were home, which may suggest that the events had minimal impact for some of these respondents.

Customers who indicated that they were home during one or more events were asked to rate their home comfort during the events. As shown, 30% did not notice a change in comfort during the event, and another 20% said the home was only slightly uncomfortable during the events. However, 23% indicated that the home was very uncomfortable and another 27% said that the home was moderately uncomfortable.

Table 11-11 Perceived Comfort During Events

Response	Valid Percent (n = 30)
Very uncomfortable	23%
Moderately uncomfortable	27%
Slightly uncomfortable	20%
Or that you did not notice a change in comfort	30%

Although 50% of participants reported discomfort during events, most participant indicated that they would likely continue to participate in the next year (see Table 11-12).

Table 11-12 Likelihood of Participating in the Next Year

Response	Valid Percent (n = 79)
1 (Not at all likely)	5%
2	5%
3	4%
4	5%
5 (Very likely)	81%

The few respondents who indicated that they were unlikely to participate in the next year were asked what program change would encourage them to participate again. The most commonly mentioned change was an increase in the incentive payment, however, this was only cited by four respondents indicating that increasing the incentive payment would likely have minimal impact on continued participation. It is also noteworthy that a single respondent reported they would continue their participation if their air conditioner ran more during events.

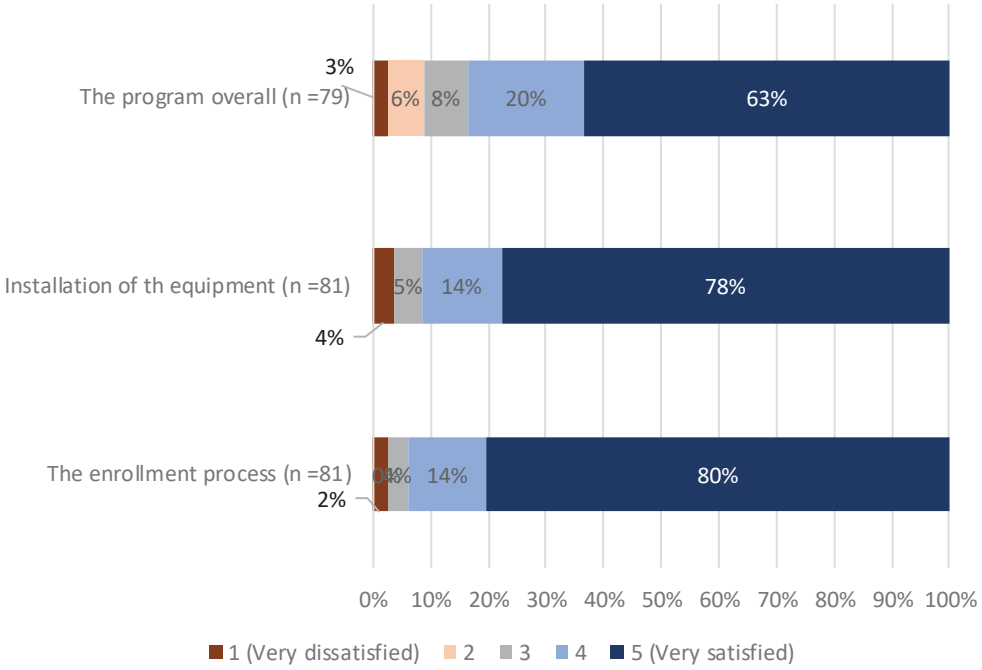
Table 11-13 Changes that Would Motivate Continuing Participation

Response	Count
The incentive payment would have to increase	4
Nothing – I would not participate again	2
My air conditioner would have to run more during events to keep it cooler	1
Other	1

11.6.3.4 Participant Satisfaction

As shown in Figure 11-11, most participants (83%) indicated that they were somewhat or very satisfied with the program overall by rating their satisfaction as a four or five on a five-point scale.

Figure 11-11 Participant Satisfaction



11.7 Key Findings and Conclusions

The key findings and conclusions of the evaluation of the program are as follows:

- **Both ENO and Algiers met their savings goals, but the Program did not meet its installation goal.** The number of devices installed through EasyCool fell below the goal of 1,875 device installations.
- **Staff reported that the multiple channels are used to market the program**. Communications from the utility were the most common sources of information; 65% of customers received an email from Entergy and 34% received a bill insert or mailer from Entergy.
- **Enrollment process is working well.** Three-quarters of customers reported that their device was installed within two weeks of scheduling the appointment. Additionally, most customers were satisfied with the enrollment process (94%) and the installation of the equipment (92%).
- **The number of events called was appropriate.** The number of events called aligned with most customers' expectations. Eighty-eight percent of customers reported that the number of events was equal to or fewer than what they expected.
- **Some customers experienced discomfort, but this is unlikely to impact participation**. One-half of customers at home during an event were very or moderately uncomfortable during the events. The level of discomfort may have been a result of the cycling strategy or the duration of the events. Despite the reported discomfort, 86% reported that they were somewhat or very likely to participate in the following year. Furthermore, of the eight customers who indicate

they may not participate again, one indicated that they would stay in the program if the air conditioner ran more during events.

- **Most participants were satisfied with the program.** Eighty-three percent of participants were satisfied with the program overall.

11.8 Recommendations

The Evaluators' recommendations are as follows:

- **Continue with the current cycling strategy.** Few participants indicated they were likely to leave the program because of comfort issues.
- **Continue to find ways to increase participation.** The primary barriers to participation in load control programs that involve installing cycling switches on compressors stem from uncertainty about the potential comfort impacts, perceived lack of control over the AC unit, and perceived risks of damage to the air conditioning equipment. Some tactics to reduce these barriers include:
  - Consider providing advance notice of events and making it clear on the FAQ and other materials that notice will be provided. Customers generally prefer to receive notice of demand response events. Because staff indicated concerns that advance notice would increase opt outs, an approach to consider is to pilot the advance notice with a random subset of participants and assess the impact on opting out.
  - Provide information on the number of events likely to occur in the year. Uncertainty about the impact of participation on home comfort may be magnified if customers do not have information on the number of events that will occur during a year. Consider providing a typical number of events and/or a cap on the maximum number of events that will be called.
  - Help customers see the "bigger picture." A theme from the responses of additional information that participants were seeking is that they want to understand what the benefits of the program are. While the website presents information on this, consider providing information on how reducing peak loads decreases the need for additional generation and the environmental benefits stemming from that.
  - Consider limiting peak events to less than four hours. The program will be more appealing to customers if there the duration of events is shorter because it will reduce the risk of discomfort. However, the length of events needs to be consistent with system peak loads and should not be shortened if doing so will not reduce system peaks.
  - Consider a customer referral bonus. Personal referrals are generally considered more trustworthy than other sources of information. A referral bonus will leverage customers experiences with the program, which were largely positive.

12. Small Commercial Solutions

12.1 Program Description

The ENO and Algiers Small Commercial Solutions Program (SCS) offers enhanced incentives to small business owners to help overcome the first-cost barrier that small businesses face in adopting energy efficiency improvements. By offering enhanced financial incentives, the program generates significant cost-effective energy savings for small businesses using added market-segmented strategies that encourage the adoption of diverse efficiency measures in target sub-sectors.

The SCS Program is designed to provide small business owners with energy efficiency information and develop awareness of energy/non-energy benefits of energy efficiency. The information helps small business customers invest in energy efficient technologies and help overcome high "first costs." It is intended to increase the awareness of the latest energy efficient technologies available to ENO and Algiers small business customers. Through the SCS Program, a network of contractors was developed that work with small business customers. The Program provides the tools and training for contractors to quantify the energy savings and incentives for small business customers.

Data provided by Aptim showed that during PY8, there were 186 project components among 130 sites. These projects were expected to provide a combined savings of 7,374,272 kWh and 877.83 kW. Count of projects, expected kWh and kW savings for the SCS Program are summarized in Table 12-1.

Table 12-1 Savings Expectations by Utility

Utility	*Count of Project Sites*[64]	*Expected kWh Savings*	*Expected kW Savings*	*Site Visit Sample Size*
ENO	119	6,948,619	834.64	14
Algiers	11	425,653	43.19	0
Total	**130**	**7,374,272**	**877.83**	**14**

Table 12-2 Savings Expectations by Program Component ENO

Program Component	*Count of Project Components*[65]	*Expected kWh Savings*	*Expected kW Savings*
Prescriptive	27	170,246	33.28
Custom	159	6,778,373	801.36
Total	**186**	**6,948,619**	**834.64**

[64] Independent projects, which contain all project components associate with said project.
[65] Many projects contain multiple components within the same project number. These numbers represent the total number of components.

Table 12-3 Savings Expectations by Program Component Algiers

Program Component	Count of Project Components	Expected kWh Savings	Expected kW Savings
Prescriptive	5	79,027	6.01
Custom	14	346,626	37.18
Total	**19**	**425,653**	**43.19**

In PY8 program savings were comprised almost entirely of lighting measures, with 0.8% of expected savings coming from non-lighting measures.

Table 12-4 Savings Expectations by Program Measure Category

Program Component	Count of Project Components	Expected kWh Savings	Expected kW Savings
HVAC	3	12,120	4.18
Lighting	196	7,318,639	868.73
Refrigeration	6	43,513	4.92
Total	**205**	**7,374,272**	**877.83**

Table 12-5 Savings Expectations by Measure Type

Program Component	Program Component	Count of Projects	Expected kWh Savings	Expected kW Savings	Percent Savings (kWh)
Lighting	Non-Linear LED Fixture	150	5,973,937	663.85	81.01%
	Linear Tube LED Fixture	33	1,228,415	190.39	16.66%
	LED A-Type Lamp	10	92,656	8.89	1.26%
	On/Off Daylight Sensor	2	17,840	3.92	0.24%
	On/Off Occupancy Sensor	1	5,791	1.68	0.08%
Refrigeration	ECM Motor for Refrigeration	6	43,513	4.92	0.59%
HVAC	Packaged / Rooftop Unit	3	12,120	4.18	0.16%
Total		**205**	**7,374,272**	**877.83**	**100.00%**

In PY7 46 projects summing to 2,264,029 kWh and 286.90 kW were completed during the abbreviated nine-month program year. Normalizing these figures to 12 months (a full program year) yields an expected 61 projects summing 3,018,705 kWh and 382.53 kW. The PY8 program ran for a full 12 months surpassing normalized PY7 figures with an increase in expected kWh savings of 4,355,567 kWh and 495.30 kW, with average project kWh savings growing by 14.6%. Comparisons are shown below in Table 12-6 below.

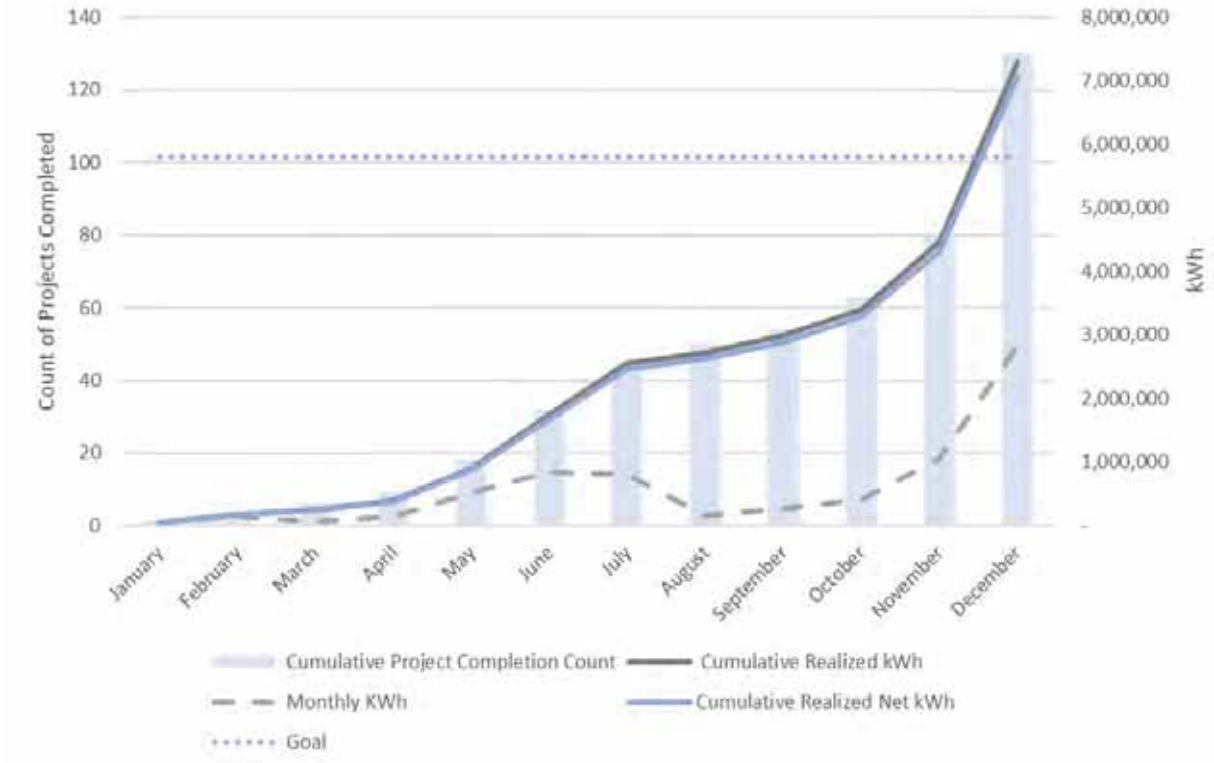
Table 12-6 Small Business Program Participation Summary Comparison

Project Year	# Projects	Expected kWh	kWh per Project
PY5	191	4,011,430	21,002
PY6	156	3,152,283	20,207
PY7 (nominal)	46	2,264,029	49,218
PY7 (normalized)	61	3,018,705	49,487
PY8	130	7,374,272	56,725

For comparison, PY6 and normalized PY7 kWh savings were averaged and compared with PY8 expected savings:

- Expected kWh savings have increased by 139.0%;
- Expected kW program savings have increased by 163.1%; and
- Per-project savings has increased from an average of 34,874 to 56,725 kWh and 4.05 to 6.75 kW, representing 68.2% and 66.8% increases, respectively.

Figure 12-1 Program Ex Ante Savings (kWh) by Measure Start-Up Month



Total verified savings and percentage of goals for the SCS Program are summarized in Table 12-7.

Table 12-7 SCS Savings Goals by Utility

Utility	kWh goal	Realized Net kWh	Percent of kWh Goal Met	kW goal	Realized Net kW	Percent of kW Goal Met
ENO	5,309,288	6,650,306	125.26%	1,013.63	783.87	77.33%
Algiers	484,792	404,881	83.52%	97.79	41.42	42.36%

12.2 M&V Methodology

Evaluation of the SCS Program requires the following:

- Stratified Random Sampling (as detailed in section 2.2.1.3 Stratified Sampling and by selecting large saving sites with certainty.
- Review of deemed savings parameters for prescriptive projects;
- On-site verification;
- Interviewing of program participants and trade allies.

To approach the impact evaluation, data was collected through review of program materials and on-site inspections were performed to inform savings calculations. Based on data provided by Aptim, sample designs were developed for on-site data collection for the impact evaluation. Sample sizes were determined that provide savings estimates for the program with ±10% precision at the 90% confidence level.

The on-site inspections were used to verify installations and to determine any changes to the operating parameters since the measures were first installed. The Evaluators verified that TRM lighting hours of operation had been correctly assigned by space type. Projects were deemed analyzed using the methods described in the New Orleans TRM 1.0, section C.6.2 and 3, Lighting Controls and Lighting Efficiency. Specific algorithms for lighting savings and an explanation of deemed inputs are below.

12.2.1 Lighting Savings Calculations

$$kWh_{savings} = \sum \left(\left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times AOH \times IEF_E$$

$$kW_{savings} = \sum \left(\left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times CF \times IEF_D$$

Where:

Nfixt(i),pre = Pre-retrofit number of fixtures of type i

Nfixt(i),post = Post-retrofit number of fixtures of type i

Wfixt(i),pre = Rated wattage of pre-retrofit fixtures of type i (Standard Wattage Table, Appendix E pages C-323 to C-475)

Wfixt(i),post = Rated wattage of post-retrofit fixtures of type i (Appendix E)

CF = Peak demand coincidence factor (TRM Table 227, pages C-294 to C-295)

AOH = Annual operating hours for specified space type (TRM Table 227, pages C-294 to C-295)

IEFD = Interactive effects factor for demand savings (TRM Table 228, page C-296)

IEFE = Interactive effects factor for energy savings (TRM Table 228, page C-296)

12.2.2 Sample Design

Sampling for evaluation of ENO and Algiers' SCS program was developed using the Stratified Random Sampling procedure detailed in section 2.2.1.3 Stratified Sampling. This procedure provides 90% confidence and +/- 10% precision with a significantly reduced sample than simple random sampling would require by selecting the highest saving facilities with certainty, thereby minimizing the variance that non-sampled sites can contribute to the overall results. The population and sample include both utilities pooled. However, savings in this report are presented for each utility individually as well as aggregated.

The participant population for the SCS was divided into four strata. Table 12-8 summarizes the strata boundaries and sample frames for the SCS and Table 12-9summarizes expected savings for of both the sample and population.

Table 12-8 Small Business Program Sample Design

	Stratum 1	***Stratum 2***	***Stratum3***	***Stratum 4***	***Stratum 5***	***Totals***
Strata boundaries (kWh)	< 20,000	20,001 - 50,000	50,001 - 100,000	100,001 - 200,000	> 200,001	
Number of projects	38	44	31	10	7	**130**
Total kWh savings	403,193	1,345,024	2,136,760	1,443,193	2,046,102	**7,374,272**
Average kWh Savings	10,610	30,569	68,928	144,319	292,300	**56,725**
Standard deviation of kWh savings	5,263	7,874	13,496	28,512	65,969	**69,791**
Coefficient of variation	0.496	0.258	0.196	0.256	0.226	**1.230**
Final design sample	3	3	3	2	3	**14**

Table 12-9 Expected Savings for Sampled and Non-Sampled Projects by Stratum

Stratum	***Sample Expected Savings***	***Total Expected Savings***
1	31,081	403,193
2	88,966	1,345,024
3	208,821	2,136,760
4	312,104	1,443,193
5	1,022,915	2,046,102
Total	**1,663,887**	**7,374,272**

The achieved sampling precision was ±9.93% at 90% confidence. The population and sample include both utilities pooled. However, savings in this report are presented for each utility individually as well as aggregated.

12.3 Gross Impact Findings

12.3.1 Small Business Site-Level Realization

Sites chosen within each stratum were visited in order to verify installation of rebated measures and to collect data needed for calculation of ex post verified savings. The realization rates for sites within each stratum were then applied to the non-sampled sites within their respective stratum. Table 12-11 presents realization at the stratum level, with Table 12-10 presenting results at the site level.

Table 12-10 Summary of kWh Savings for Small Business Program by Sample Stratum

Stratum	Sample Expected kWh Savings	Sample Realized kWh Savings	Realization Rate
1	31,081	29,293	94.25%
2	88,966	93,171	104.73%
3	208,821	154,577	74.0%
4	312,104	295,716	94.75%
5	1,022,915	1,022,149	99.93%

Table 12-11 shows the expected and realized energy savings for the program by project.

Table 12-11 Expected and Realized Savings by Sampled Project

Project ID(s)	Facility Type	Expected kWh Savings	Realized kWh Savings	Realization Rate
SN8-018	Retail	7,123	7,123	100.0%
SN8-012	Gas Station and Convenience Store	7,325	7,325	100.0%
SN7-036	Brewery	16,633	15,207	91.4%
SN8-023	Retail	23,054	23,054	100.0%
SN8-020	Storage	32,310	32,310	100.0%
SN8-013	Retail/Food	33,602	33,602	100.0%
SN8-017	Drugstore	56,295	56,295	100.0%
SN8-026	Restaurant	67,971	67,971	100.0%
SN7-037	Brewery	84,555	80,854	95.6%
SN8-072	Parking Structure	120,104	120,105	100.0%
SN8-021	Airport Storage/Service	192,000	185,954	96.9%
SN8-022	Airport Storage/Service	293,695	292,929	99.7%
SN8-014	Airport Storage/Service	307,858	307,858	100.0%
SN8-078	Public Park	421,362	421,362	100.0%
	Total	**1,663,887**	**1,651,949**	**99.3%**

Within our M&V sample, the distribution of projects by trade ally was as follows:

- Trade ally #1: 6 projects
- Trade ally #3: 3 projects
- Other trade allies: 5 projects

Trade Ally 1 had 99.5% realization within sampled projects. Trade Ally 2 had 100.0% realization across three projects. Other trade allies averaged 97.6% realization across

five projects. This may be due to lack of experience with the program and after-the-fact corrections that were warranted.

12.3.2 Small Business Program-Level Realization

Using the realization rates presented in Table 12-11, the Evaluators extrapolated results from sampled sites to non-sampled sites in developing program-level savings estimates. Table 12-12 presents results by stratum.

Table 12-12 Small Business Program-Level Realization by Stratum

Stratum	# Sites	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected kW Savings	Realized kW Savings	kW Realization Rate
1	38	403,193	384,695	95.4%	48.64	46.94	96.5%
2	44	1,345,024	1,345,030	100.0%	145.29	145.29	100.0%
3	31	2,136,760	2,098,882	98.2%	270.50	264.27	97.7%
4	10	1,443,193	1,415,238	98.1%	224.03	215.99	96.4%
5	7	2,046,102	2,044,572	99.93	189.37	168.79	89.1%
Total	**130**	**7,374,272**	**7,288,417**	**98.84%**	**877.83**	**841.28**	**95.84%**

Table 12-13 Small Business Program-Level Realization by Utility

Utility	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected kW Savings	Realized kW Savings	kW Realization Rate
ENO	6,948,619	6,870,151	98.9%	834.64	799.05	95.7%
Algiers	425,653	418,266	98.3%	43.19	42.23	97.8%
Total	**7,374,272**	**7,288,417**	**98.8%**	**877.83**	**841.28**	**95.8%**

12.3.3 Small Business Realization by Contractor

One third of expected savings came from a single trade ally, while an additional third came from two trade allies. The Evaluators extrapolated results from the program into savings by project contractor trade ally. The results are presented below in Table 12-14.

Table 12-14 Savings by Contractor

Contractor	Percent of kWh Savings	Expected kWh	Realized kWh	kWh Realization Rate	Expected Peak kW	Realized Peak kW	Peak kW Realization Rate
Lighting Contractor #1	37.5%	2,768,175	2,747,041	99.2%	300.14	271.03	90.3%
Lighting Contractor #2	22.9%	1,691,089	1,677,879	99.2%	251.05	248.61	99.0%
Lighting Contractor #3	11.3%	834,858	819,926	98.2%	33.02	32.29	97.8%
Other Contractors	28.2%	2,080,151	2,043,570	98.2%	293.62	289.36	98.5%

12.3.4 Small Business – Causes of Savings Deviations

For illustrative purposes, the Evaluators have summarized these adjustments and others in Table 12-15.

Table 12-15 Small Business – Causes of Variance in Savings

Project ID	Expected kWh	Realized kWh	Realization Rate	Causes of Variance in Savings
SN7-036	16,633	15,207	91.4%	Warehouse. Ex ante savings estimates were based on 6,188 AOH with a .86 CF, which were custom calculations that over rid deemed AOH. On site, the evaluators gathered the operation schedule of the lighting and calculated only 5,658 AOH and a 1.0 CF. These figures were used to calculate the verified savings estimates, leading to the low kWh and high kW realization rates.
SN7-037	84,555	80,854	95.6%	Warehouse/Restaurant. An erroneous peak kW reduction resulted 0.10 kW to lighting controls on seven exterior fixtures. The fixtures do not operate during peak times and thus no peak kW savings can be attributed to them. kWh savings are reduced by the fact that several lamps in ex ante calculations used non-EISA compliant baselines and were changed for ex post calculations. These non-EISA compliant baselines were part of ex ante calculations which required further corrections to input assumptions: The majority of these lamps were located in the "bar" area (with three located on the building exterior) and ex ante calculations did not include energy or demand interactive factors for these lamps. Finally, no kW savings from these lamps was counted in project documentation, the result was an underreporting of 5.74 kW, which was included in ex post calculations and resulted in the high kW realization rate.
SN8-021	192,000	185,954	96.9%	Aviation Storage/Offices. During the on site M&V visit the Evaluators found that eight of the wall pack fixture had either not been installed or were not operational, lowering the kWh realization rate.
SN8-022	293,695	292,929	99.7%	Aviation Storage/Services. Ex ante calculations erroneously listed fixtured as controlled by "Daylighting Control – ON/OFF" and calculated and additional .90 adjustment factor on top of existing NDL hours. On site, the Evaluators verified that the fixtures were operated via photocell and that NDL hour (4,319) were appropriate. This slightly reduced kWh savings. .

Key issues identified in site-level analyses include:

- **Erroneous reduction in peak coincidence of 0.26 for lighting controls.** For three sampled sites, ex ante kW calculations assumed additional sensor savings for any item that had lighting controls associated with it. For example: Assume an exterior lighting project, whose fixtures were previously controlled by photosensors and thus operating 4,319 hours annually. NLD operation precludes operation during peak times. However, when "Photosensor" controls were indicated in the

ex ante calculator for said line item, a 0.26 reduction in PCF would automatically be included in ex ante savings calculations.

Additionally, project SN8-022 was affected by a similar error: kWh estimates included erroneous additional kWh savings associated with the addition of sensors, though not were installed as part of the project.

The Evaluators believe that this is an oversite from developing calculators to comply with TRM v1.0 section C.6.2.5.: Lighting Controls, Calculation of Deemed Savings. When applied in that scenario calculations are carried our correctly. The Evaluators recommend this error be fixed in implementor lighting calculators to prevent overestimation of savings.

- **Rounding error between project documentation and program tracking.** During the final review process, the Evaluators contacted the implementors regarding three sites whose site-level kW estimates differed from those listed in program tracking. It was determined that these were the result of rounding errors, specifically that project documents and calculators supplied 2+ digits after a decimal place, but program tracking data rounded to the nearest whole number. The Evaluators suggest the process be updated as to avoid this systematic error.

12.4 Net Impact Findings

Participant survey responses were used to estimate the net energy impacts for the Small Commercial Solutions Program. The methodology used is described in detail in Section 2.2.3.

12.4.1 Net Savings Results

Eleven projects implemented by 10 participants were assessed for free ridership. These eleven projects accounted for 17% of the program energy savings. Of the eleven projects, all but one was found to not be free rider projects.

No participants reported qualifying spillover measures.

Table 12-16 and Table 12-17 summarize the verified net kWh savings and peak kW demand reduction, which respectively equal 96.8% and 98.1% of gross program savings.

Table 12-16 Summary of Net Ex Post kWh Savings

Utility	*Expected kWh Savings*	*Verified Gross kWh Savings*	*Free Ridership*	*Spillover*	*Verified Net kWh Savings*	*Net to Gross Ratio*
ENO	6,948,619	6,870,151	219,845	0	6,650,306	96.8%
Algiers	425,653	418,266	13,385	0	404,881	96.8%
Total	**7,374,272**	**7,288,417**	**233,230**	**0**	**7,055,187**	**96.8%**

Table 12-17 Summary of Ex Post Net Peak kW Reductions

Utility	Expected Peak kW Reductions	Verified Gross Peak kW Reductions	Free Ridership	Spillover	Verified Net kW Savings	Net to Gross Ratio
ENO	834.64	799.05	15.18	0	783.87	98.1%
Algiers	43.19	42.23	0.80	0	41.43	98.1%
Total	**877.83**	**841.28**	**15.98**	**0**	**825.30**	**98.1%**

12.5 Process Evaluation Findings

12.5.1 Summary of Program Participation

Table 12-18 summarizes program participation by measure type. The program provides incentives for prescriptive measures per piece of equipment installed, and for customer measures that provide incentives based on expected energy savings. As shown below, custom incentive projects accounted for most program activity. The reason why most of the savings are the result of custom projects is that the program limits prescriptive lighting incentives to lighting controls and screw-in LED lamps.

The implementation contractor stated that they considered adding additional prescriptive lighting incentives as for linear LEDs with the goal of reducing administrative work associated with savings calculations such for program staff and trade allies. However, the program has since decided against adding additional prescriptive incentives because:

- Trade allies have not provided feedback suggesting this as a necessary change;
- The custom savings calculations provide greater alignment between incentive dollars and energy savings because they incorporate project specific factors such as hours of use; and
- There is the potential for trade ally backlash because deemed incentive and savings estimates would not be reflective of project specific factors.

Table 12-18 Program Activity by Measure Type

Measure Incentive Type	Measure Type	Expected Savings (kWh)	Number of Participants	$ per kWh in Expected Savings
Prescriptive	Lighting	190,447	18	$0.04
Prescriptive	Refrigeration ECM	28,845	4	$0.11
Prescriptive	Lighting controls	23,630	3	$0.13
Prescriptive	Packaged/rooftop unit HVAC	6,351	2	$0.17
Custom	Lighting	7,104,561	114	$0.13
Custom	Refrigeration ECM	14,668	2	$0.08
Custom	Packaged/rooftop unit HVAC	5,769	1	$0.12

Table 12-19 shows the number of measure types installed at locations. As shown, most customers received a single measure type.

Table 12-19 Number of Measure Types Installed at Location

Number of Measures Installed at Location*	Number of Participants
1	124
2	1
*Locations defined by account numbers	

Twenty-one trade allies completed projects during the program year. As is typically the case, relatively few accounted for most program savings. In PY8, 62% percent of expecting savings resulted from projects completed by three trade allies (see Table 12-20).

Table 12-20 Summary of Trade Ally Participation

Trade Ally	Expected Savings (kWh)	Percent of Expected Savings	Number of Participants	Average Project Size
Trade ally 1	2,768,175	38%	19	145,693
Trade ally 2	1,691,089	23%	25	67,644
Trade ally 3	834,858	11%	30	27,829
Trade ally 4	326,139	4%	2	163,070
Trade ally 5	269,974	4%	6	44,996
Trade ally 6	217,314	3%	6	36,219
Trade ally 7	207,551	3%	3	69,184
Trade ally 8	168,388	2%	3	56,129
Trade ally 9	163,629	2%	2	81,814
Trade ally 10	122,076	2%	3	40,692
All 11 other trade allies	605,079	8%	26	23,272

12.5.2 Program Goals, Design, and Delivery

12.5.2.1 Program Goals

Entergy staff indicated that the Small Commercial Solutions (SCS) program is in a "good spot" and performed well in PY8. Entergy and Aptim staff reported the SCS program has experienced adequate participation in PY8 in New Orleans, but the program struggles in Algiers. The PY8 savings goal for Algiers was 484,792 kWh and for New Orleans was 5,309,288 kWh. The expected savings exceeded goals for the program overall, although expected savings fell short of the Algiers goal by about 59,138 kWh.

Aptim staff indicated they are examining the challenges and potential barriers to participating in the SCS program. Staff indicated they provided training to local restaurants and based on those conversations, they felt there are barriers for small businesses to participate. To get additional commercial customers involved in the program, the pre-approval process was removed for projects with expected incentives under $5,000. Additional ideas discussed with Aptim staff included a small business direct install component to the SCS program and sending kits to small business owners.

The marketing staff placed advertisements in various local publications and met with the chamber of commerce members and placed program information in the chamber's newsletters. In addition to these efforts, there has been increased collaboration between the Energy Smart program and city officials. The staff has also developed case studies for use in outreach efforts. One staff person noted that while the program has been around for seven years, there is still room to improve in increasing general awareness.

12.5.2.2 Program Design

The SCS program provides incentives to Entergy New Orleans small business customers who complete projects with program-qualifying high efficiency equipment through prescriptive and custom rebates. This program is designed for facilities with a peak demand of less than 100 kW and available to all Entergy commercial customers. There is a full list of all prescriptive measures available on the Energy Smart website, along with the incentive amounts associated with specific measures. The website provides the visitor with a simplified figure to outline the steps to begin a project (Figure 12-2).

Figure 12-2 Small Business Participation Process

During PY8 the pre-approval requirement was removed for projects with less than $5,000 in expected incentives. Project incentive dollars were spread across a large number of projects with the largest project accounting for 5% of the incentive budget. In PY8, 17% of the program incentives were paid on 78 projects with incentive payments below $5,000. Removing pre-approval for projects below this threshold is an acceptable level of risk. Beginning September 17th, a bonus of $0.03/kWh was made available to all custom measures completed by 12/31/2018. Program staff also indicated they plan to increase the incentive caps for non-lighting projects, effective Jan 1, 2019, and will launch Small Business Direct Install in Q2 of PY9.

12.5.2.3 Marketing and Outreach

The Evaluators interviewed a project lead and marketing/communication specialist from Aptim. Their responsibilities include overseeing marketing, outreach and customer service of the Energy Smart commercial programs. The Aptim marketing team also provides guidance and approvals for the residential marketing team at Franklin.

Aptim is responsible for marketing all the commercial programs, including the Large and Small Commercial and Industrial programs. Entergy approves all creative materials once developed. Adjustments to the budget have been made for PY9 to accommodate more direct marketing and outreach activities.

A diverse range of tactics was used to promote the program in PY8. Primary marketing activities for the Energy Smart commercial programs in PY8 included:

- Three print ads focused on commercial businesses;

- Presentations with City of New Orleans partners and Chamber of Commerce;
- Trade ally marketing and promotion to clients;
- Updating and changing marketing collateral;
- Social Media marketing;
- Trade ally marketing; and
- Outreach efforts.

The Energy Smart program launched a new website in PY8. Within the website, there is a page dedicated to the commercial programs, which provides useful information about participation in the programs including the process and a form to sign up for updates.

Aptim staff tracks marketing efforts for the SCS program with spreadsheets, however, have since migrated all marketing, outreach and training tracking to a SharePoint site accessible by all Energy Smart staff. Staff tracks outreach events, marketing initiatives, materials used, and updates on marketing campaigns.

The Aptim marketing team has been working to refine the marketing message for commercial customers. In the past, the message included what services and technical assistance can be offered through the program, but program staff found that was not translating to completed projects. They have worked to refresh materials by cutting text and creating more visually appealing collateral. Staff also noted that marketing materials did not have a call-to-action and they are working to include those in the future.

Trade allies have the option of co-branding marketing materials for their use. Trade allies work closely with Aptim and Entergy to develop materials which include both entities branding and logos. There is an approval process for co-branding.

12.5.2.4 Communication

The communication structure for the SCS program is discussed in Section 6.6.2.4.

Program partners, such as Green Coast, do not participate in the bi-weekly meetings. Green Coast indicated they have a stakeholder roundtable once per quarter and hold bi-weekly meetings with Aptim. Ad hoc communication occurs, as needed.

12.5.3 Project Eligibility Review

The Evaluators reviewed the projects rebated in PY8 to determine if the SCS was the appropriate program track. Key findings from this review are as follows:

- **Five projects totaling 1,157,706 kWh were for publicly owned facilities.** These projects would be more appropriately funneled into the Publicly Funded Institutions program.
- **Nineteen projects totaling 736,353 kWh were for corporate chain locations.** This excludes franchise restaurants. These customers have a decision-making process that does not align with small businesses and does not warrant a higher project incentive.

In total, 25% of program savings were from organizations that do not have decision-making practices or financial constraints typically associated with small businesses and received a larger incentive than may be appropriate for organizations of their type.

In addition, the current kW threshold defines a customer as small business if they have "peak demand < 100 kW"[66]. This is a threshold that could erroneously give a false positive if an organization's load is heavily off-peak. An example of this could include a corporate-owned parking lot, which would demonstrate peak kW of less than 100, but could have connected load significantly higher than 100 kW off-peak once the lighting turns on at night. The basis for classification as a small business should be on connected load observed at any point in the day, so as to properly assign customers with large nighttime loads to the appropriate program.

12.5.4 Trade Ally Feedback

The trade ally network was noted as one of the greatest strengths of the SCS program. The Evaluators contacted a total of 19 commercial trade allies requesting their participation in a phone interview to describe their experience with the Energy Smart program. A total of eight commercial trade allies completed the phone interview. The interviewed trade allies have participated in the Large C&I, Small Commercial, and Publicly Funded Institutions Programs. Trade allies experience and time with the program varied widely, with some only being an active trade ally for two months and others who had been with the program since its initial launch.

The Evaluators also contacted 41 non-responding trade allies to complete an online survey that included questions like those used in the open-ended interviews and 10 trade allies responded. Five of those who completed the online survey indicated they had not yet completed projects with Energy Smart. Those five responses were included in the first section ("inactive trade allies") and excluded from the rest of the summary.

The key findings of the two data collection efforts are summarized below.

12.5.4.1 Inactive Trade Allies

There were five trade allies that indicated they had not yet completed a project with the Energy Smart program. The issues they faced to completing projects were:

- Two trade allies indicated they did not know how to get started with the program or that they were confused about the process.
- One trade ally stated they had not received any projects from Aptim yet. This individual is likely also confused about the program process since Aptim does not assign commercial projects to trade allies.
- Two trade allies reported they had projects in process or were waiting on approval.

Going forward, trade allies will be required to participate in order to remain an ally with Energy Smart. Aptim will be working to engage registered, but inactive trade allies in PY9,

[66]https://www.energysmartnola.info/wp-content/uploads/2019/02/ENO_Commercial_Application_2019_fillable.pdf

and removing those that are not participating. More training and development is planned for PY9 and beyond to engage trade allies and spur participation

12.5.4.2 Perceived Program Improvements

Several trade allies provided responses that suggest the program operations have improved. Improvements noted include:

- The implementation team is easy to work with and is responsive.
- Funding is consistently available during the year.
- The program no longer requires photographs to document projects, which has streamlined the application process.

12.5.4.3 Marketing and Promotion of Energy Smart with Customers

All trade allies noted they promote Energy Smart with their clients and many leverage program-provided materials. The marketing and sales approaches described varied and included using cost calculators, social media (Facebook), word of mouth and newsletters While all commercial trade allies promote Energy Smart with their customers, 23% use Energy Smart materials in their marketing approach. Energy Smart no longer does commercial assessments, as they had a low correlation to projects. Instead, the program is focusing on direct customer outreach to identify projects and provide application assistance.

Trade allies reported using the following materials in their marketing efforts:

- Energy Smart marketing collateral (some is co-branded);
- Audit, energy analysis, and payback analysis findings; and
- Trade ally specific brochures and collateral.

All trade allies interviewed indicated they promote high efficiency equipment when working with clients.

About one-half of the interviewed trade allies thought that ENO could be more effective in promoting the business programs. In general, trade allies indicated that greater outreach efforts would benefit the program. Suggestions to improve the promotion of Energy Smart to commercial customers included:

- Use of bill inserts;
- Increase the amount of advertising;
- Educate Entergy service representatives about the program;
- Utilize digital marketing;
- Provide information about rebates to national accounts; and
- Engage decision-makers more often.

One trade ally summed up the state of awareness this way:

> *"Aptim has done a pretty good job getting the name out there and in NOLA there is a big buildings workshop that they are promoting. Buildings Energy Challenge,*

getting the name out a little more. For our small commercial customers, they have not really heard the program that much. People downtown in building operators are familiar. Savvy customers know the program. Even if they have heard about it, they only know the lighting."

12.5.4.4 Trade Ally Customer Recruitment Effort and Customer Measure Adoption

Among those interviewed, all stated they recommend high efficiency equipment either "all of the time" or "most of the time." The only situations where that would happen would be if cost is a primary concern for the customer or if it is "not worth it to the client financially," even with an incentive.

Sixty-nine percent of trade allies indicated there are times they install qualifying equipment without applying for an incentive (one person skipped this question and three stated no). For some, it was more reflective of when the program used to run out of funds quickly. Others indicated the customer did not want to fill out paperwork or want to wait on the project to begin. One stated some customers do not believe in the legitimacy of the program.

Trade allies indicated that return on investment, saving on utility costs, and Entergy rebates are the strongest motivators for clients to adopt energy efficiency measures. Trade allies reported that the rate at which customers choose to not install high efficiency equipment options ranged from never to 80% of the time, with most reporting about 50%. Reasons that customers choose not to install the high efficiency options are the cost is too high, the rebate is low, the customer has not bought into energy efficiency, a competitor may provide a lower bid, not wanting to replace working equipment, do not believe there are savings to be had, or have concerns about future maintenance costs.

In their experience, trade allies have found that smaller businesses and those that do not operate long hours are the least likely to install high efficiency equipment. Specific business types named were smaller grocery stores, schools, institutional facilities, doctor offices, and businesses that lease space. Businesses that run 24 hours and are large consumers are those most likely to adopt high efficiency equipment. Specific business types named were gas stations, parking garages, and corporate entities that have sustainability goals. One trade ally suggested that businesses that have older building engineers are also less likely to adopt efficient equipment options compared to businesses with younger decision makers.

12.5.4.5 Prescriptive Incentives

Four trade allies indicated there are prescriptive measures for which the incentive amount is too low for customers to adopt (one trade ally indicated they do not use the prescriptive side because of the "difficulty", other comments: "nearly impossible", "limits the true potential of the program" and "time consuming when building a lot of proposals").

Measures that were suggested among interviewed trade allies to add the prescriptive list included chillers, reflective roof spray, and building and lighting controls (note that the program does offer prescriptive incentives for lighting controls).

"We haven't really used the prescriptive measures much, I do think they [incentives] are kind of low. I don't have specific examples of what is low. If you are changing out large equipment, their dollars per ton are somewhat low

compared to what you can save. If we go the custom route, it is more advantageous."

12.5.4.6 Training and Communication

Fifty-four percent of trade allies received training from Aptim, and they all indicated it was either "somewhat" or "very effective". A few trade allies provided suggestions for improving the training, which included sending materials in advance to trainees, additional peer learning opportunities, and develop webinars for those who have been with the program or are "tech savvy" to save time.

Seventy-seven percent of trade allies indicated they have communicated with Aptim. Among those, all reported communication with the implementer as timely and thorough. No suggestions were provided to improve communication.

12.5.4.7 Successes and Suggestions from Trade Allies

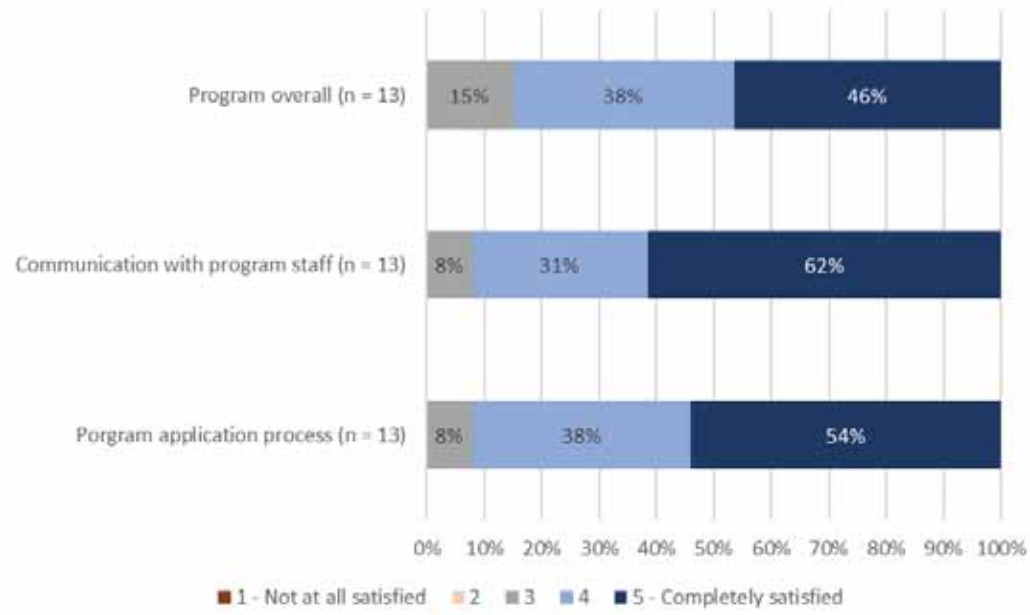
Commercial trade allies were satisfied with the Energy Smart programs and the implementation team. Eighty-five percent of interviewed trade allies indicated they were either "satisfied" or "completely satisfied" with the program overall (see Figure 12-3). Below are some verbatim responses when asked what works well about the Energy Smart programs.

"It gives a lot of opportunity for people who need help and they never knew about it. A lot of businesses have financial difficulty and they do not realize the changes that they can make and how Entergy can provide incentives."

"The overall process is much easier to navigate. The new implementers are much more willing to work with you throughout the process. It is a much more receptive feeling I get. "

"I think their consistency has been appreciated from our perspective. I thought when Aptim took over it was going to change drastically but it didn't. It helped us to continue to offer and apply for those rebates and not have to start from scratch."

Figure 12-3 Satisfaction among Trade Allies



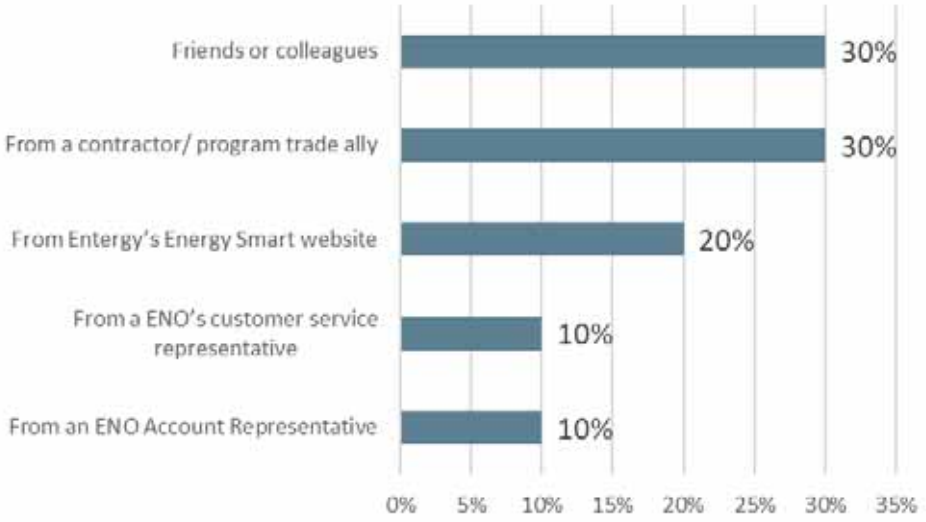
Commercial trade allies provided suggestions to improve the role contractors play, information sharing and the program overall. Most trade allies were satisfied with the current structure for information sharing, however, a few suggestions were to allow trade allies to generate a report like there were able to in the past and create a digital form to share information about a project. Other suggestions provided included: combining the prescriptive and custom calculator into one; reduce the "bugs" associated with the SharePoint document and move towards something like an online application to submit project information; increase incentives for lightbulbs; streamline pre-approval step to reduce the waiting period before equipment orders can be placed; and develop materials that describe everyone's role from utility to implementer to evaluator.

12.5.5 Participant Feedback

12.5.5.1 How Customers Learned of the Program

Word of mouth and a program contractor or trade ally were the two most frequently reported sources of program awareness (see Figure 12-4). As shown, Entergy staff and the program website were also ways in which participants learned of the program.

Figure 12-4 Source of Program Awareness (n = 10)



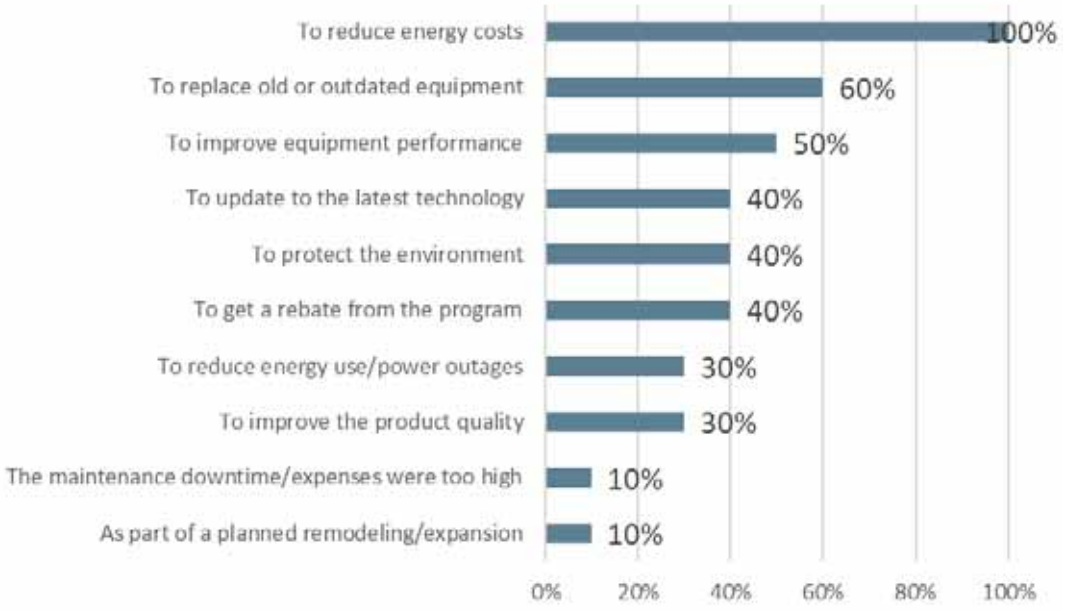
Of note when examining the sources of program awareness is that there was no participation driven by higher-cost types of marketing (such as media advertisement). Sources of awareness were in many cases no-cost (word of mouth, trade ally outreach) or low-cost (Energy Smart website, internal program staff)[67].

12.5.5.2 Motivations for Participating

Figure 12-5 shows that all participants were motivated to complete their program project to reduce their energy costs. Other frequently mentioned motivations were replacing old or outdated equipment, improve equipment performance, update to the latest technology, protect the environment, and get the program rebate.

[67] We note "no-cost" as "no marginal cost"; there were expenses associated with developing a trade ally network but their ongoing efforts are not a program cost.

Figure 12-5 Reasons for Completing the Project (n = 10)



12.5.5.3 Program Participation

Survey responses to a series of questions on the customers experience with the participation process indicate that the process is straight forward and smooth from the perspective of program participants.

Sixty percent of respondents reported that they worked on their application (see Table 12-21). Additionally, multiple participants reported getting assistance from a contractor (50%) or an equipment vendor (30%). Moreover, all program participants stated that they knew where to get additional assistance with the application.

Table 12-21 Parties that Worked on Program Application

Response	Percent (n = 10)
Yourself	60%
A contractor	50%
Another member of your company	30%
An equipment vendor	30%

As shown in Table 12-22, all customers indicated that the instructions on how to completely the application were clear.

Table 12-22 Clarity of Instruction on How to Complete the Application

Response	Percent (n = 6)
5 (Completely clear)	67%
4	33%
3	0%
2	0%
1 (Not at all clear)	0%

Most participants reported that the incentive payment went to their contractor (Table 12-23). The one respondent who indicated that their organization received the payment stated that the payment was received in a relatively short time of two to four weeks.

Table 12-23 Who Received Payment

Response	Percent (n = 9)
My organization received payment	11%
The payment went to the contractor	89%

All respondents reported that the incentive amount was about what they were expecting (Table 12-24).

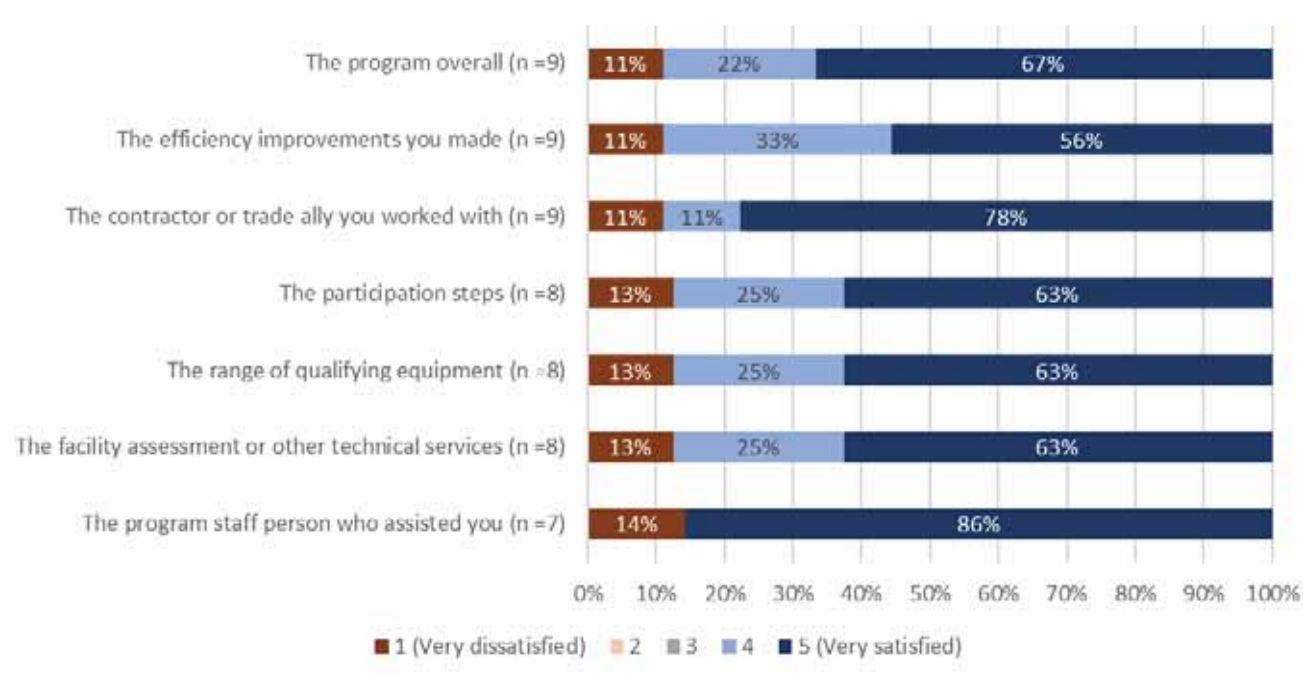
Table 12-24 Incentive Amount as Compared to Expectation

Response	Percent (n = 9)
It was much less	0%
It was somewhat less	0%
It was about the amount expected	100%
It was somewhat more	0%
It was much more	0%

12.5.5.4 Participant Satisfaction

Figure 12-6 summarizes participant satisfaction with the program overall and various aspects of it. As shown, satisfaction levels were generally high – 89% of participants rated their satisfaction with the program overall as a four or a five on a five-point scale. One respondent reported dissatisfaction with all rated aspects of the program.

Figure 12-6 Participant Satisfaction



All respondents reported that they were satisfied with Entergy (Table 12-25). Additionally, all respondents also stated that their participation in the program either somewhat or greatly increased their satisfaction with Entergy (Table 12-26).

Table 12-25 Satisfaction with Entergy

Response	***Percent (n = 9)***
5 (Very satisfied)	67%
4	33%
3	0%
2	0%
1 (Very dissatisfied)	0%

Table 12-26 Program Impact on Satisfaction with Entergy

Response	***Percent (n = 9)***
Greatly increased your satisfaction with Entergy	67%
Somewhat increased your satisfaction with Entergy	33%
Did not affect your satisfaction with Entergy	0%
Somewhat decreased your satisfaction with Entergy	0%
Greatly decreased your satisfaction with Entergy	0%

The likelihood of participants recommending the program to someone else is summarized in Table 12-27. As shown, all respondents indicated they were likely to recommend the program or already had recommended it.

Table 12-27 Likelihood of Recommending the Program

Response	Percent (n = 10)
Already have	20%
5 (Very likely)	70%
4	10%
3	0%
2	0%
1 (Very unlikely)	0%

12.6 Key Findings and Conclusions

The key findings and conclusions of the evaluation of the program are as follows:

- **Erroneous reduction in peak coincidence of 0.26 for lighting controls.** For three sampled sites, ex ante kW calculations assumed additional sensor savings for any item that had lighting controls associated with it. For example: Assume an exterior lighting project, whose fixtures were previously controlled by photosensors and thus operating 4,319 hours annually. NLD operation precludes operation during peak times. However, when "Photosensor" controls were indicated in the ex ante calculator for said line item, a 0.26 reduction in PCF would automatically be included in ex ante savings calculations.

  Additionally, project SN8-022 was affected by a similar error: kWh estimates included erroneous additional kWh savings associated with the addition of sensors, though not were installed as part of the project.

  The Evaluators believe that this is an oversite from developing calculators to comply with TRM v1.0 section C.6.2.5.: Lighting Controls, Calculation of Deemed Savings. When applied in that scenario calculations are carried our correctly. The Evaluators recommend this error be fixed in implementor lighting calculators to prevent overestimation of savings.

- **Rounding error between project documentation and program tracking.** During the final review process, the Evaluators contacted the implementors regarding three sites whose site-level kW estimates differed from those listed in program tracking. It was determined that these were the result of rounding errors, specifically that project documents and calculators supplied 2+ digits after a

decimal place, but program tracking data rounded to the nearest whole number. The Evaluators suggest the process be updated as to avoid this systematic error.

- **The program met its overall goal but fell short of the goal for Algiers.** Meeting savings goals for Algiers has been a challenge for the program over the last few years. Staff is aware of the issue and is reviewing program participation and outreach processes to identify any barriers they can address to increase participation including reducing the need for preapproval for all projects.
- **The program has a limited marketing budget and is largely trade ally driven, but friends and colleagues and the program awareness were other means customers learned of the program.** Survey responses indicate that trade allies and friends and colleagues were the most common sources of program awareness, followed by the program website. Staff reported that commercial programs were promoted through a wide range of channels including print ads, presentations, and social media. Additionally, marketing materials and co-branding opportunities are available to trade allies. Staff track marketing activities and are developing a more formal tracking system.
- **Trade allies are engaged with the program.** There are many trade allies active in the program relative to its size. Twenty-one trade allies completed projects during PY8, although as is often the case, relatively few contributed disproportionately to the program savings. Trade ally feedback provided during interviews was also positive.
- **Trade allies noted multiple barriers to efficiency improvements.** In addition to issues related to costs, trade ally discussions of barriers to customers adoption of efficiency measures include distrust of savings opportunities, concern over future maintenance costs, or that customers have not "bought into energy efficiency."
- **Program participants were satisfied with the program.** All survey respondents rated their satisfaction as a four or a five on a five-point satisfaction scale.
- **An outsized share of program participation is custom.** Over two-thirds of the projects are custom. This is due to a restricted fixture list, as well as findings from trade allies that projects pay a higher rebate when taken through the custom path.

12.7 Recommendations

The Evaluators' recommendations are as follows:

- **Redesign prescriptive incentives to reduce use of the custom project track.** The custom track should be limited to projects that fall outside of TRM-eligible measures and TRM-specified facility types. If trade allies are using the custom track in excess, it may be indicative of an improperly designed prescriptive equipment list. Efforts which contribute to this could include:
    - **Expand the prescriptive list to include linear LEDs.** Such a list could restrict eligibility to fixtures listed by ENERGY STAR or DLC.
    - **Reexamine PY8 projects to calculate prescriptive versus custom incentive amounts, and adjust prescriptive incentives to align with the**

custom values. If the same project provided a larger incentive with custom inputs, then the program should adjust prescriptive mitigate this effect. Moving more projects to the prescriptive track will reduce administration costs and allow an increased number of projects to complete in the program at the same budget level, while not negatively affecting savings.

- **Specify projects as "prescriptive", "partially prescriptive", or "custom".** To "partially prescriptive" would entail when a project uses custom wattage inputs (due to use of a non-standard lighting fixture) but uses TRM parameters for hours of use or peak coincidence. "Custom" would be limited to cases when facility-specific hours of use or peak coincidence factors are applied.

- **Revise program eligibility to specify "<100 kW connected load", rather than "<100 kW peak demand".** The current criterion allows for small business incentives to pay to large commercial customers if their load is heavily off-peak. If allowable under current rate-setting rules, expand this to aggregate facilities with multiple premises in order to set incentives appropriate for the project decision-maker's financial constraints.
- **Revise the prescriptive lighting calculator to correctly calculate peak kW savings from lighting controls.**
- **Correct rounding errors when importing project-level documentation to program-level tracking.**
- **Reduce administrative burden associated with preapproval.** For projects where multiple locations of the same facility are installing the same or similar retrofit, use one project as a proof-of-concept for preapproval. There are projects where multiple locations complete the same or similar retrofit, and after reviewing one, the others should go forward without an additional preapproval required.
- **Add downloadable marketing materials to the website such as flyers and case studies developed by the program.** The website was a commonly mentioned source of program awareness. The addition of marketing materials that address barriers to efficiency identified such as savings potential and maintenance costs of efficient equipment may improve customer receptivity to efficiency projects.
- **Conduct more detailed QA/QC review on new contractors.** The Evaluators found that on average, low-volume trade allies had lower gross realization rates than the two higher-volume trade allies in the sample. Program staff should flag a higher percent of low-volume trade ally projects for review, in order to ensure that they are complying with program rules and to forestall realization rate shortfalls.

13. Large Commercial and Industrial

13.1 Program Description

The Large Commercial & Industrial Solutions Program (Large C&I) provides financial incentives and technical services to encourage nonresidential customers with greater than 100 kW peak demand to implement energy saving measures. The C&I Program is designed to help this customer segment overcome barriers to energy improvement, such as higher first-cost of efficiency equipment and a lack of technical knowledge or resources.

The incentives provided are summarized below in Table 13-1.

Table 13-1 Large C&I Summary of Program Incentives

Measure	*Incentive*
Lighting	$0.10 per kWh Saved
Non-Lighting	$0.12 per kWh Saved
Custom Bonus	Additional $0.03/kWh for custom lighting and non-lighting projects completed by 12/31/2018.

Data provided by APTIM showed that during PY8, there were 90 projects in New Orleans and three projects in Algiers. These projects were expected to provide a combined savings of 19,377,054 kWh and 2,199.47 kW. Count of projects, expected kWh and kW savings for the Large C&I Program are summarized in Table 13-2.

Table 13-2 Savings Expectations by Utility

Utility	*Count of Projects*[68]	*Expected kWh Savings*	*Expected kW Savings*
ENO	90	18,874,699	2,169.94
Algiers	3	502,355	29.53
Total	**93**	**19,377,054**	**2,199.47**

[68] Independent projects, which contain all project components associate with said project.

Table 13-3 Savings Expectations by Program Component ENO

Program Component	Count of Project Components	Expected kWh Savings	Expected kW Savings
Prescriptive	22	803,665	173.53
Custom	110	18,071,034	1,996.41
Total	**132**[69]	**18,874,699**	**2,169.94**

Table 13-4 Savings Expectations by Program Component Algiers

Program Component	Count of Project Components	Expected kWh Savings	Expected kW Savings
Prescriptive	0	-	-
Custom	3	502,355	29.53
Total	**3**	**502,355**	**29.53**

During PY8 there has been a continuing focus on increasing the adoption of non-lighting measures. While staff noted that lighting was still a common project type, steps had been taken to increase adoption of non-lighting measures and that the program had some success in developing non-lighting projects. Lighting projects accounted for 68.3% of expected savings, and HVAC and Motors projects accounted for 29.4% of overall savings. The development of non-lighting projects was facilitated by assistance from Green Coast Enterprises, which has assisted customers with the implementation building automation projects. Additionally, APTIM have engaged in outreach to non-lighting trade allies, namely, with larger national companies that have the capacity to implement non-lighting projects. Another planned program development is additional training provided to facility management. Staff noted that they were currently working on a training plan for the 2019 program year.

Table 13-5 Savings Expectations by Measure Category

Program Component	Count of Project Components	Expected kWh Savings	Expected kW Savings	Percent Savings (kWh)
HVAC	24	4,450,343	158.29	23.0%
Lighting	101	13,227,460	1,784.71	68.3%
Refrigeration	1	29,110	-	0.2%
Motors	7	1,248,012	81.50	6.4%
Process	2	422,129	174.97	2.1%
Total	**135**	**19,377,054**	**2,199.47**	**100.0%**

[69] Many projects contain multiple components within the same project number. These numbers represent the total number of components.

Table 13-6 Savings Expectations by Measure Type

Program Component	Project Component	Count of Projects	Expected kWh Savings	Expected kW Savings	Percent Savings (kWh)
Lighting	Non-Linear LED Fixture	77	11,367,260	1,505.97	58.7%
	Linear Tube LED Fixture	14	1,293,785	151.8	6.7%
	LED A-Type Lamp	7	473,565	120.93	2.4%
	7-12W LED Screw-in	1	21,646	4.8	0.1%
	On/Off Occupancy Sensor	1	66,030	-	0.3%
	Occupancy Sensor (controlling < 500W)	1	5,174	1.2	0.0%
HVAC	HVAC Controls / EMS	13	2,877,713	40.44	14.9%
	Chiller Control Optimization	4	996,795	61.66	5.1%
	Packaged / Rooftop Unit	1	224,157	-	1.2%
	Air Cooled Chiller	2	211,378	49.19	1.1%
	VFD for Fan	3	113,546	7	0.6%
	VFD for Chiller	1	26,754	-	0.1%
Motors	VFD for Pump	6	1,167,813	75.99	6.0%
	Efficient Pumps	1	80,199	5.51	0.4%
Process	Optimizing Process Cooling	2	422,129	174.97	2.2%
Refrigeration	Controls	1	29,110	-	0.2%
	Total	**135**	**19,377,054**	**2,199.47**	**100.0%**

In PY7 42 projects summing to 9,829,550 kWh and 1,366.35 kW were completed during the abbreviated nine month program year. Normalizing these figures to 12 months (a full program year) yields an expected 56 projects summing 13,106,067 and 1,821.80 kW. The PY8 program ran for a full 12 months surpassing normalized PY7 figures with an increase in expected kWh savings of 6,270,987 kWh and 833.12 kW. Comparisons are shown below in Table 13-7 below:

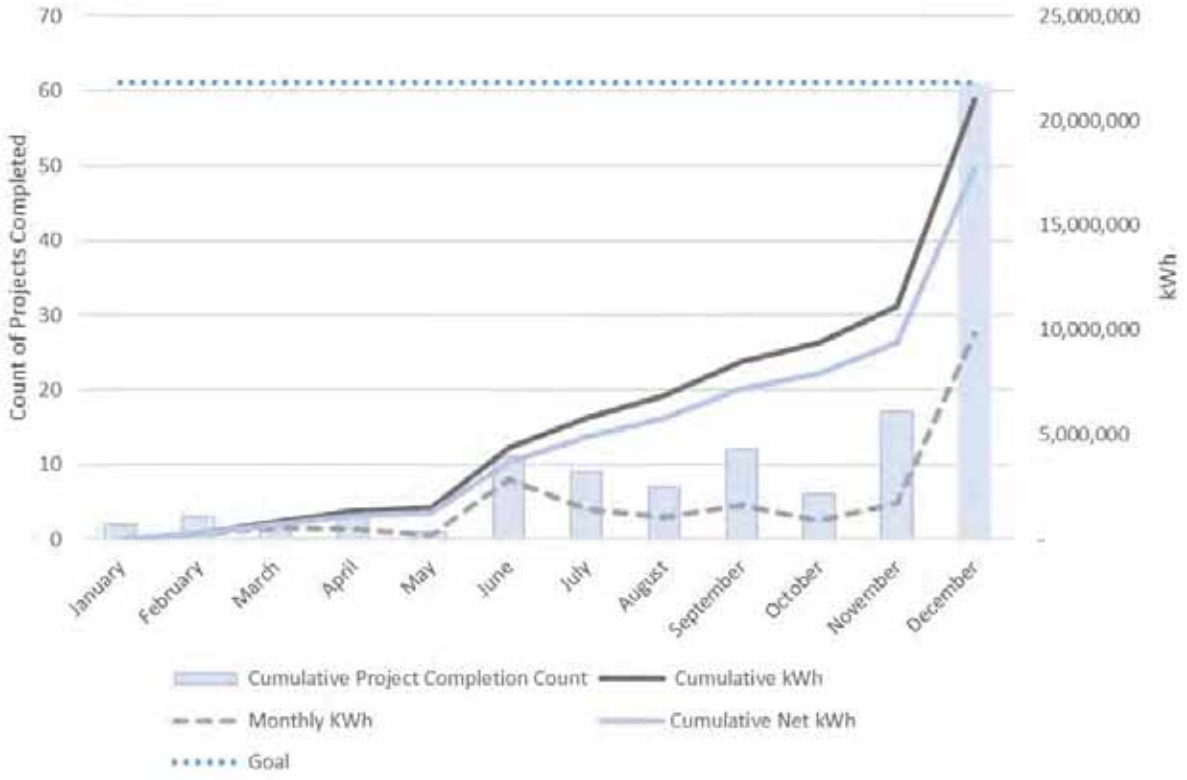
Table 13-7 Large C&I Program Participation Summary Comparison

Project Year	# Projects	Expected kWh	kWh per Project	% Non-Lighting
PY5	46	9,807,855	213,214	35.60%
PY6	41[70]	12,282,310	299,569	16.80%
PY7 (nominal)	42	9,829,550	234,037	34.00%
PY7 (normalized)	56	13,106,067	234,037	34.00%
PY8	135	19,377,054	143,534	31.74%

For comparison, PY6 and normalized PY7 kWh savings were averaged and compared with PY8 expected savings: Expected kWh savings have increased by 52.6%.

[70] In PY6 a single site accounted for 4,469,510 lighting kWh or 36.4% of total program savings. This site and its associated savings were removed from these figures to present a more representative comparison.

Figure 13-1 Timing & Participation Summary



Total verified savings and percentage of goals for the Large C&I Program are summarized in Table 13-8.

Table 13-8 Large C&I Savings Goals by Utility

Utility	*kWh goal*	*Realized Net kWh*	*Percent of kWh goal realized*	*kW goal*	*Realized Net kW*	*Percent of kW goal realized*
ENO	21,047,929	15,526,872	73.77%	3,459.45	1,928.70	55.75%
Algiers	766,112	411,884	53.76%	113.72	24.56	21.60%

13.2 M&V Methodology

Evaluation of the Large C&I Program requires the following:

- Stratified Random Sampling (as detailed in section (as detailed in section 2.2.1.3 Stratified Sampling) and by selecting large saving sites with certainty.
- On-site verification;
- Interviewing of program participants and trade allies.

The on-site inspections were used to verify installations and to determine any changes to the operating parameters since the measures were first installed. Energy savings was estimated using proven techniques, including engineering calculations using industry standards to determine energy savings. Methods for evaluating lighting measures are described in the Small Commercial Solutions Chapter, section 12.2 M&V Methodology.

13.2.1 Large C&I Program Sample Design

Sampling for evaluation of ENO and Algiers' Large C&I program was developed using the Stratified Random Sampling procedure detailed in section 12.2.1.3 Stratified Sampling. This procedure provides 90% confidence and +/- 10% precision with a significantly reduced sample than simple random sampling would require by selecting the highest saving facilities with certainty, thereby minimizing the variance that non-sampled sites can contribute to the overall results. Table 13-9 summarizes the total participation in the PY8 Large C&I Program.

Table 13-9 PY8 Large C&I Program Participation and Sampling Summary

Utility	*# Projects*	*Expected kWh*	*Expected Peak kW*	*# Sites in Population*	*Site Visit Sample Size*
ENO	132	18,874,699	2,169.94	90	15
Algiers	3	502,355	29.53	3	1
Total	**135**	**19,377,054**	**2,199.47**	**93**	**16**

The participant population was divided into four strata. Table 13-10 summarizes the strata boundaries and sample frames for the program and Table 13-11 summarizes expected savings of both the sample and population. The achieved sampling precision was ±8.51% at 90% confidence. The population and sample include both utilities pooled. However, savings in this report are presented for each utility individually as well as aggregated.

Table 13-10 Large C&I Program Sample Design

	Stratum 1	*Stratum 2*	*Stratum3*	*Stratum 4*	*Stratum 5*	*Totals*
Strata boundaries (kWh)	< 130,000	130,001 - 280,000	280,001 - 390,000	390,001 - 455,000	> 455,001	
Number of projects	38	25	15	8	7	**93**
Total kWh savings	2,341,096	4,974,567	4,858,556	3,297,092	3,905,743	**19,377,054**
Average kWh Savings	61,608	198,983	323,904	412,136	557,963	**208,355**
Standard deviation of kWh savings	37,813	44,696	35,487	28,512	131,242	**162,595**
Coefficient of variation	0.614	0.225	0.11	0.039	0.235	**0.780**
Final design sample	5	4	3	2	2	**16**

Table 13-11 Expected Savings for Sampled and Non-Sampled Projects by Stratum

Stratum	Sample Expected Savings	Total Expected Savings
1	301,847	2,341,096
2	803,465	4,974,567
3	929,015	4,858,556
4	804,678	3,297,092
5	1,283,004	3,905,743
Total	**4,122,009**	**19,377,054**

13.2.2 Large C&I Parallel Path Savings

During the program year, projects expected to save more than 500,000 kWh or 100 kW, or those involving unusual technology were brought to Evaluators before program approval. These projects included the following technologies and energy savings measures:

- Water filtration systems;
- Replacing a chiller with a VFD controlled unit;
- VFDs on HVAC fan units;
- Exhaust fan sensing technology to reduce fan run speed and reduce MAU heating and cooling energy;
- BAS equipment schedule controls;
- Trane Trace energy models; and
- NEO (Net Energy Optimizer).

Aptim and the Evaluators held monthly conference calls to discuss project details, eligibility and savings methodology before project approval. Upon project completion final documents were reviewed to verify instructions had been carried out, ensuring a 100% realization rate for these projects. During PY8 the Evaluators examined a total of 36 projects, responsible for 5,896,327 kWh and 457.70 kW, or 30.4% of the kWh total.

13.3 Gross Impact Findings

13.3.1 Large C&I Site-Level Realization

Sites chosen within each stratum were visited in order to verify installation of rebated measures and to collect data needed for calculation of ex post verified savings. The realization rates for sites within each stratum were then applied to the non-sampled sites within their respective stratum. Table 13-11 presents realization at the stratum level.

Table 13-12 Summary of kWh Savings for Large C&I Program by Sample Stratum

Stratum	Sample Expected kWh Savings	Sample Realized kWh Savings	Realization Rate
1	301,847	292,275	96.8%
2	803,465	743,895	92.6%
3	929,015	929,016	100.0%
4	804,678	804,678	100.0%
5	1,283,004	1,268,891	98.9%

Table 13-13 shows the expected and realized energy savings for the program by project.

Table 13-13 Expected and Realized Savings by Sampled Project

Project ID(s)	Facility Type	Expected kWh Savings	Realized kWh Savings	Realization Rate
LN8-012	Religious	13,922	13,901	99.8%
LN8-010	Religious	15,324	15,324	100.0%
LN8-029	University	73,235	73,235	100.0%
LN7-058	Outpatient Healthcare	93,434	83,883	89.8%
LN7-061	Hotel	105,932	105,932	100.0%
LN8-003	Large Office Building	175,630	171,139	97.4%
LN7-059	Manufacturing with Offices	185,470	131,999	71.2%
LN8-021	Hotel	194,019	192,411	99.2%
LN8-013	Hotel	248,346	248,346	100.0%
LN7-040	Hotel	290,187	290,187	100.0%
LA7-002	Retirement Home	294,449	294,449	100.0%
LN8-004	Large Office Building	344,379	344,380	100.0%
LN7-018	Large Office Building	396,471	396,471	100.0%
LN7-057	Large Office Building	408,207	408,207	100.0%
LN8-011	Hotel	460,563	446,450	96.9%
LN8-028	Big Box Retail	822,441	822,441	100.0%
Total		**4,122,009**	**4,038,755**	**98.0%**

13.3.2 Large C&I Program-Level Realization

Using the realization rates presented in Table 13-14, the Evaluators extrapolated results from sampled sites to non-sampled sites in developing program-level savings estimates. Table 13-15 presents results by stratum.

Table 13-14 Large C&I Program-Level Realization by Stratum

Stratum	# Sites	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected kW Savings	Realized kW Savings	kW Realization Rate
1	38	2,341,095	2,266,858	96.83%	340.44	331.68	97.42%
2	25	4,974,567	4,605,745	92.59%	524.89	512.77	97.69%
3	15	4,858,556	4,858,558	100.00%	375.62	375.62	100.00%
4	8	3,297,092	3,297,092	100.00%	420.22	420.15	99.98%
5	7	3,905,744	3,862,780	98.90%	538.30	533.94	99.19%
Total	**93**	**19,377,054**	**18,891,033**	**97.49%**	**2,199.47**	**2,174.16**	**98.85%**

Table 13-15 presents results by utility.

Table 13-15 Large C&I Program-Level Realization by Utility

Utility	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected kW Savings	Realized kW Savings	kW Realization Rate
ENO	18,874,699	18,402,858	97.50%	2,169.94	2,146.82	98.93%
Algiers	502,355	488,175	97.18%	29.53	27.34	92.58%
Total	**19,377,054**	**18,891,033**	**97.49%**	**2,199.47**	**2,174.16**	**98.85%**

13.3.3 Large C&I Realization by Contractor

The Evaluators extrapolated results from the program into savings by project contractor trade ally. A single lighting trade ally constituted 21.8% of expected kWh savings and averaged a 99.2% realization rate. The other 32 lighting, HVAC, refrigeration and process trade allies each contributed less than 10% each to the overall kWh total, with the average kWh contribution per trade ally being 3.0% of the kWh total. Peak kW contributions were similar.

13.3.4 Large C&I – Causes of Savings Deviations

The Evaluators have summarized these adjustments and others in Table 13-16 for illustrative purposes.

Table 13-16 Large C&I – Causes of Variance in Savings

Project ID	Expected kWh	Realized kWh	Realization Rate	Causes of Variance in Savings
LN8-012	13,922	13,901	99.8%	Religious. The Evaluators adjusted the proposed motor efficiency from 89.7% to 89.5% based on the actual nameplate data.
LN7-058	93,434	83,883	89.8%	Outpatient Healthcare. Implementors used customs hours (as opposed to deemed) in ex ante calculations. Prior to the retrofit, lighting in most areas was left on continuously. During the retrofit, occupancy sensors were installed to control 64.2% (by post-retrofit connected load) of the lighting. An appropriate deemed reduction of 30% was used in ex ante savings calculations, however lighting operation taken from photo-loggers left on site, showed a far greater reduction in operation due to the sensors: a 90.7% reduction vs a 30%

Project ID	Expected kWh	Realized kWh	Realization Rate	Causes of Variance in Savings
				reduction. Additionally, the Evaluators found that one set of exterior fixtures operates continuously, as opposed to non-daylight hours claimed in ex ante calculations. These adjustments would result in a >100% realization rate, however they are offset by four factors: ■ First, ex ante calculations assumed gas heating, however on site the Evaluators determined all interior areas were heated with electric resistant systems. ■ Second, one area was found to operate 2,087 hours annually, rather than 8,760, assumed in ex ante calculations. ■ Third, "Café" area hours were assumed to be continuous in ex ante calculations but were determined to be 2,087 during the onsite visit. ■ Finally, ex ante calculations assumed that "Exit" signs operated 3,386 hours annually, instead of continuously, as required by law. When combined, these factors bring the kWh realization rate down below 100%.
LN8-003	175,630	171,139	97.4%	Large Office building. Supply fan 2 was not replaced, so the Evaluators used the efficiency rating of the existing fan to calculate ex post savings.
LN7-059	185,470	131,999	71.2%	Manufacturing with Offices. Ex ante calculations assumed deemed AOH of 2,417, 5,740 and 4,728 for the Warehouse, Manufacturing and Office areas, respectively. The Evaluators used lighting operating hours extrapolated from photo-logging equipment left on site to develop estimates of 2,543, 5,638 and 2,042 for these respective areas. While Warehouse and Manufacturing areas remained close to deemed estimates, the verified Office areas AOH were less than 50% of the deemed estimates, leading to a low kWh realization rate for those areas. Also, ex ante calculations assumed gas heating for all interior spaces, however during the M&V visit the Evaluators found that the building was heated by electric resistance heating. ER heating kWh factors are used in ex post calculations, reducing verified kWh estimates.
LN8-021	194,019	192,411	99.2%	Hotel. During the verification visit the Evaluators found that only four (of ten) lamps had been installed in the elevator lobby area. This adjustment decreased both kWh and kW savings. Also, ex ante peak kW calculations included a .26 coincidence factor, However the exterior lamps operated only during non-daylight hours and thus their verified savings was calculated using a 0% CF, resulting in a slightly low kW realization rate.
LN8-011	460,563	446,450	96.9%	Hotel. The Evaluators verified the installation and collected trending data. The realized savings adjusted the fan energy savings to use a 2.7 value as the exponent with the fan affinity law instead of a 3 exponent.

Key issues identified in site-level analyses include:

- **Erroneous peak coincidence reduction of 0.26.** For two sampled sites, ex ante kW calculations assumed additional sensor savings for any item that had lighting controls associated with it. For example: Assume an exterior lighting project, whose fixtures were previously controlled by photosensors and thus operating 4,319 hours annually. NLD operation precludes operation during peak times. However, when "Photosensor" controls were indicated in the ex ante calculator for said line item, a 0.26 reduction in PCF would automatically be included in ex ante savings calculations.

  The Evaluators believe that this is an oversight from developing calculators to comply with TRM v1.0 section C.6.2.5.: Lighting Controls, Calculation of Deemed Savings. When applied in that scenario calculations are carried our correctly. The Evaluators recommend this error be fixed in implementor lighting calculators to prevent overestimation of savings.

13.4 Net Impact Findings

Participant survey responses were used to estimate the net energy impacts for the Large Commercial Solutions Program. The methodology used is described in detail in Section 5.2.4.

13.4.1 NTG FIndings

Figure 13-2 is a plot of project energy savings against free ridership score. As shown, there was not a strong relationship between energy savings and free ridership. However, the two projects identified as full free riders had relatively small energy savings.

Figure 13-2 Plot of Project Energy Savings and Free Ridership Score

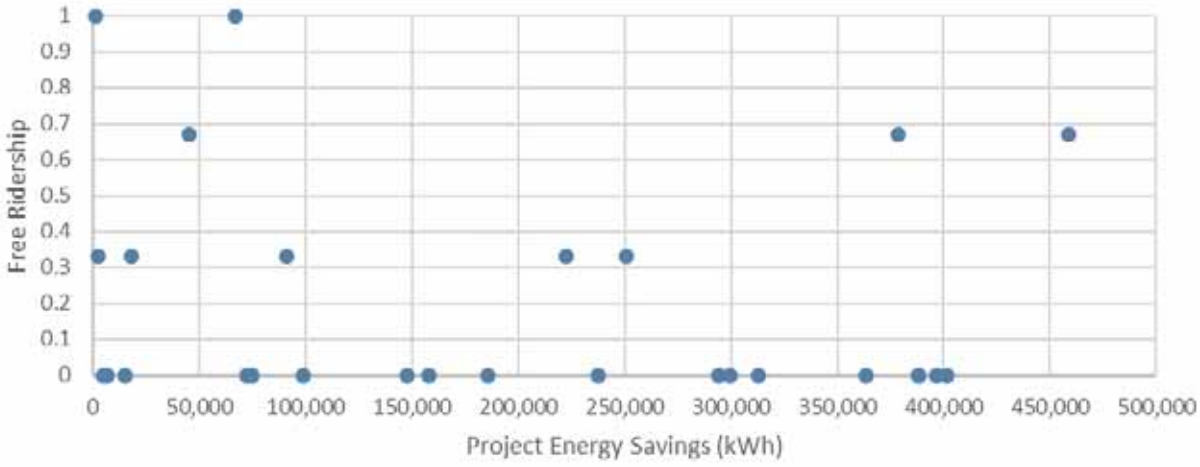
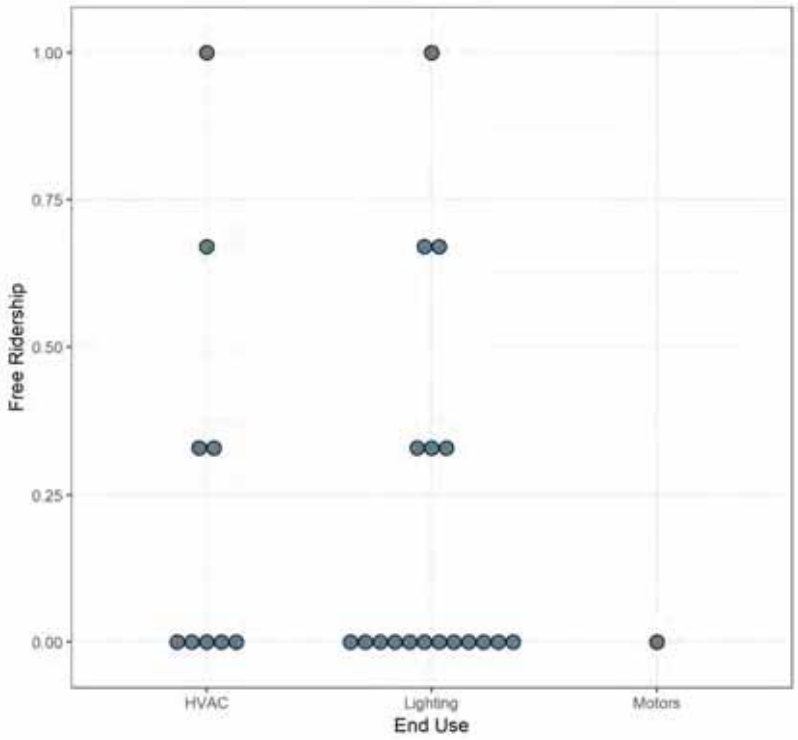


Figure 13-3 is a plot of free ridership scores by project end-use type. As shown in the plot, there was not a strong relationship between free ridership and the end-use type.

Figure 13-3 Plot of Free Ridership by Project End-Use Type



One respondent reported installing lighting measures that qualified as program spillover.

The Evaluators conducted a literature review of recent NTG studies completed for large commercial and industrial programs as a secondary check for the reasonableness of the estimates of the ENO Large C&I Program. Table 13-17 summarizes the benchmark values identified. The NTG ratio estimated for ENO is within reasonably boundaries of the average values found in regional evaluations in 2017 (the most recent year with publicly-available reporting to compare current findings against).

Table 13-17 Large C&I NTG Regional Benchmarking

Utility	*EM&V Contractor*	*Program Year*	*Net to Gross*
SWEPCO Arkansas	ADM Associates	2017	93.0%
Ameren Missouri	ADM Associates	2017	98.7%
Oklahoma Gas & Electric	ADM Associates	2017	85.7%
Public Service Company of New Mexico	Evergreen Economics	2017	71.2%
Entergy Arkansas	TetraTech	2017	93.0%
		Mean Value of Benchmark Utilities	**88.3%**
		Entergy New Orleans Value	**84.4%**

13.4.2 Net Savings Results

Net kWh savings totaled to 15,699,087 kWh and equal 84.4% of gross program savings. Net kW reductions totaled 2,015.42 kW and equal 89.8% of realized gross program savings.

Table 13-18 and Table 13-19 summarize the realized net kWh savings and peak kW demand reductions of the program. Net kWh savings totaled to 15,842,095 kWh and equal 84.4% of gross program savings. Net kW reductions totaled 1,944.23 kW and equal 89.8% of realized gross program savings.

Table 13-18 Summary of Net Ex Post kWh Savings

Utility	Expected Gross kWh Savings	Realized Gross kWh Savings	Free Ridership	Spillover	Realized Net kWh Savings	Net to Gross Ratio
ENO	18,874,699	18,402,858	2,914,488	38,503	15,526,872	84.4%
Algiers	502,355	488,175	77,313	1,021	411,884	84.4%
Total	**19,377,054**	**18,891,033**	**2,991,801**	**39,524**	**15,938,756**	**84.4%**

Table 13-19 Summary of Ex Post Net Peak kW Reductions

Utility	Expected Gross Peak kW Reductions	Realized Gross Peak kW Reductions	Free Ridership	Spillover	Realized Net kW Savings	Net to Gross Ratio
ENO	2,169.94	2,146.82	226.03	7.91	1,928.70	89.8%
Algiers	29.53	27.34	2.88	0.10	24.56	89.8%
Total	**2,199.47**	**2,174.16**	**228.91**	**8.01**	**1,953.26**	**89.8%**

13.5 Process Evaluation Findings

13.5.1 Summary of Program Participation

Table 13-20 summarizes program savings by measure type. As discussed in the Small Commercial Solutions chapter, custom savings are much higher than prescriptive savings because prescriptive incentives are offered for lighting measures.

Table 13-20 Program Activity by Measure Type

Measure Incentive Type	Measure Type	Expected Savings (kWh)	Number of Participants	$ per kWh in Expected Savings
Prescriptive	Lighting	732,461	18	$0.05
Prescriptive	Lighting controls	71,204	2	$0.15
Custom	Lighting	12,423,795	55	$0.11
Custom	HVAC controls / EMS	2,877,713	12	$0.12
Custom	Pump VFD	1,167,813	6	$0.13
Custom	Chiller optimization	996,795	4	$0.14
Custom	Process improvement	422,129	2	$0.12
Custom	Packaged/rooftop unit HVAC	224,157	1	$0.12
Custom	Chiller	211,378	2	$0.13
Custom	HVAC VFD	140,300	4	$0.13
Custom	Efficient pump	80,199	1	$0.12
Custom	Refrigeration controls	29,110	1	$0.14

As shown in Table 13-21, 10 of the 78 projects (13%) were multi-measure projects.

Table 13-21 Number of Measure Types Installed at Location

Number of Measures Installed at Location*	Number of Participants
1	68
2	10

*Locations defined by account numbers

A large number of trade allies, 36, completed projects through the program in PY8 (Table 13-22). Moreover, the savings and number of projects completed were distributed across a large number of trade allies, although the two most active trade allies accounted for about one-third of program savings.

Table 13-22 Summary of Trade Ally Participation

Trade Ally	Expected Savings (kWh)	Percent of Expected Savings	Number of Participants	Average Project Size
Trade ally 1	4,230,849	22%	16	264,428
Trade ally 2	1,912,237	10%	10	191,224
Trade ally 3	1,591,532	8%	7	227,362
Trade ally 4	1,256,917	6%	3	418,972
Trade ally 5	1,178,730	6%	5	235,746
Trade ally 6	1,133,450	6%	2	566,725
Trade ally 7	999,009	5%	5	199,802
Trade ally 8	808,254	4%	2	404,127
Trade ally 9	638,812	3%	2	319,406
Trade ally 10	520,368	3%	4	130,092
All 26 other trade allies	5,106,896	26%	32	159,590

13.5.2 Program Goals, Design, and Delivery

Many of the same procedures and processes discussed regarding the Small Commercial Solutions Program in Section 12.3.2. are applicable to the Large C&I Program and are not repeated here. The findings discussed below are those specific to the Large C&I Program.

13.5.2.1 Program Goals

Entergy New Orleans and Aptim both indicated the Large C&I is functioning well. The PY8 savings goal for Algiers is 766,112 kWh and New Orleans is 21,047,929 kWh. These goals represent an increase from PY7, and expected savings fell short of the goals for both Algiers and New Orleans.

Although the program did not reach its savings goal, Entergy staff indicated that Aptim "hit PY8 full speed ahead" and has seen positive results this year. Aptim has built up the commercial project pipeline, which resulted in more projects earlier in the program year.

13.5.2.2 Program Design and Barriers to Participation

The Large Commercial and Industrial (Large C&I) program provides incentives to Entergy New Orleans commercial customers who complete projects with program-qualifying high efficiency equipment through prescriptive and custom rebates. There is a full list of all prescriptive measures available on the Energy Smart website, along with the incentive amounts associated with specific measures. C&I customers can download the prescriptive incentive calculator from the website to assist with projects. Incentives are capped for non-lighting and lighting projects at $50,000. There were no significant changes to the program design of the PFI for PY8. However, on 9/17/2018 program implementors began offering and additional $0.03/kWh for custom lighting and non-lighting projects completed by 12/31/2018.

Aptim staff did not believe there were any barriers to participating in the Large C&I program. They did indicate they have a new engineer staff member who built additional technical calculators, with feedback from trade allies. There were issues for those trying to calculate their energy savings and as a result, Aptim invested time in building tools to provide that assistance to help more customers participate in the program and ensure accurate savings estimates. Staff believes the incentive calculators are more user friendly and they have provided training on how to use the calculator. The engineering team continues to explore any custom measures that can be transferred to prescriptive.

In previous program years, the prior implementer administered the program differently and project funds were used up quickly. Aptim noted there are still contractors who are not aware of this change and believe funds are exhausted so do not bother applying for projects. Aptim is communicating to trade allies that the process for the program has changed to prevent depletion of budget. APTIM also noted that additional feedback from customers and trade allies indicated to them that due to the quick depletion of funding in the past, customers did not want to continue participating. However, customers are now viewing the program and process more positively because funds are available and their projects can be implemented and funded without the risks they faced in the past.

In November 2018 Aptim launched the Retro-Commissioning (RCx) program for C&I customers. Additionally, incentive caps for non-lighting projects have been increased from $50k to $100k for PY9.

13.5.2.3 Marketing and Outreach

There was an outreach effort to large users to get them to commit to projects during PY8. This activity included the placement of advertisements in local publications, email blasts, direct customer outreach and attendance at outreach events. Aptim staff also met with the chamber of commerce members and placed program information in the chamber's newsletters. The staff has also developed case studies for outreach. One staff noted that while the program has been around for seven years, not everyone is aware of it.

Staff stated that they have been focused on:

> *"A lot of awareness building, in the beginning, trying to generate more momentum. Now we are seeing a lot of that. Trying to get the skills out to trade allies, who are in the field, on the C&I side. We are still dealing with contractors who are accustomed to the old version of the program when funds ran out in a couple months. We are working to educate them that the program is year-round now. Our goals and budget are bigger, so we are seeing more participation. Getting the word out about Energy Smart and there is money available is to them."*

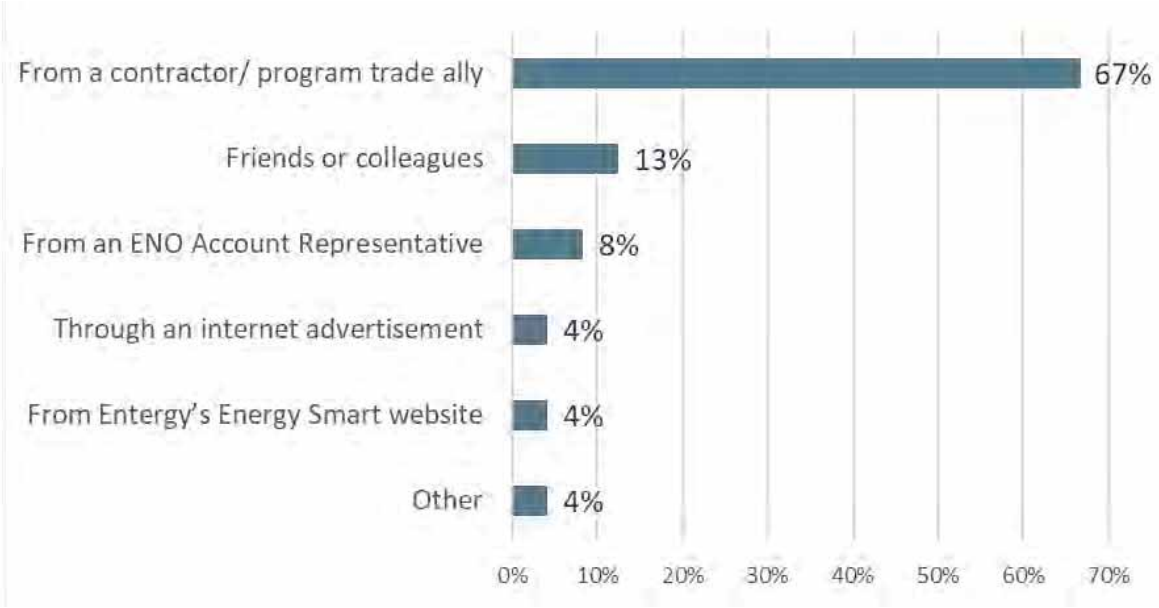
In PY8, Aptim staff engaged in outreach efforts to a higher education cohort. During these meetings, there was a discussion about training on building controls, how to get decision makers on board with a project, and the overall process of figuring out what program works best for their current needs.

13.5.3 Participant Feedback

13.5.3.1 How Customers Learned of the Program

Two-thirds of respondents learned of the program from a contractor or trade ally (Figure 13-4). Friends or colleagues (13%) and an ENO account representative (8%) were other ways that participants learned of the program.

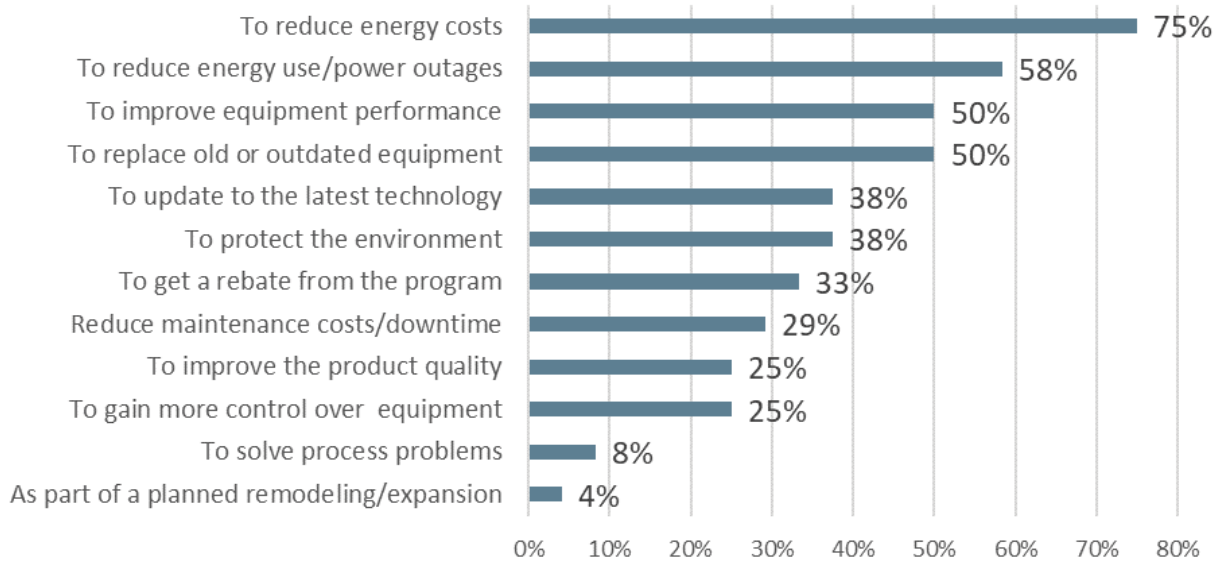
Figure 13-4 Source of Program Awareness



13.5.3.2 Motivations for Participating

Figure 13-5 shows that 75% of participants were motivated to complete their program project to reduce their energy costs. Other frequently mentioned motivations were to reduce energy use (58%), improve equipment performance (50%), replace old outdated equipment (50%), update to the latest technology (38%), protect the environment (38%), and to get a rebate from the program (33%).

Figure 13-5 Reasons for Completing the Project



13.5.3.3 Program Participation

Survey responses to a series of questions on the customers experience with the participation process indicate that most participants reported little difficulty or challenges with the process.

Sixty-seven percent of respondents reported that they worked on their application (see Table 13-23). Additionally, multiple participants reported getting assistance from a contractor (58%) or an equipment vendor (33%). Moreover, all program participants stated that they knew where to get additional assistance with the application.

Table 13-23 Parties that Worked on Program Application

Response	Percent (n = 24)
Yourself	67%
A contractor	58%
An equipment vendor	33%
Another member of your company	29%
A designer or architect	4%

As shown in Table 13-24, 86% of customers indicated that the instructions on how to complete the application were clear. Two customers provided additional information on a perceived lack of clarity of the instructions. One customer indicated that the “prescriptive calculation” was unclear. The other respondent said that several individuals were involved in completing the application, which made it cumbersome. It was not clear from the comment whether the several individuals involved were in reference to program staff or others.

Table 13-24 Clarity of Instruction on How to Complete the Application

Response	Percent (n = 14)
5 (Completely clear)	57%
4	29%
3	7%
2	7%
1 (Not at all clear)	0%

About half of respondents said the incentive payment went to their organization (Table 13-25). Sixty-six percent of respondents who indicated that their organization received the payment stated that the payment was received in a relatively short time (four weeks or less) (Table 13-26). One respondent indicated a somewhat longer period of five to six weeks and one stated that it took more than eight weeks.

Table 13-25 Who Received Payment

Response	Percent (n = 23)
My organization received payment	48%
The payment went to the contractor	52%

Table 13-26 Time to Receive Incentive

Response	Percent (n = 9)
Less than 2 weeks	22%
2-4 weeks	44%
5-6 weeks	22%
7-8 weeks	0%
More than 8 weeks	12%

Seventy-one percent of respondents reported that the incentive amount was about what they were expecting (Table 13-27). Seventeen percent indicated that the incentive amount was less than what they were expecting and 12% said it was more.

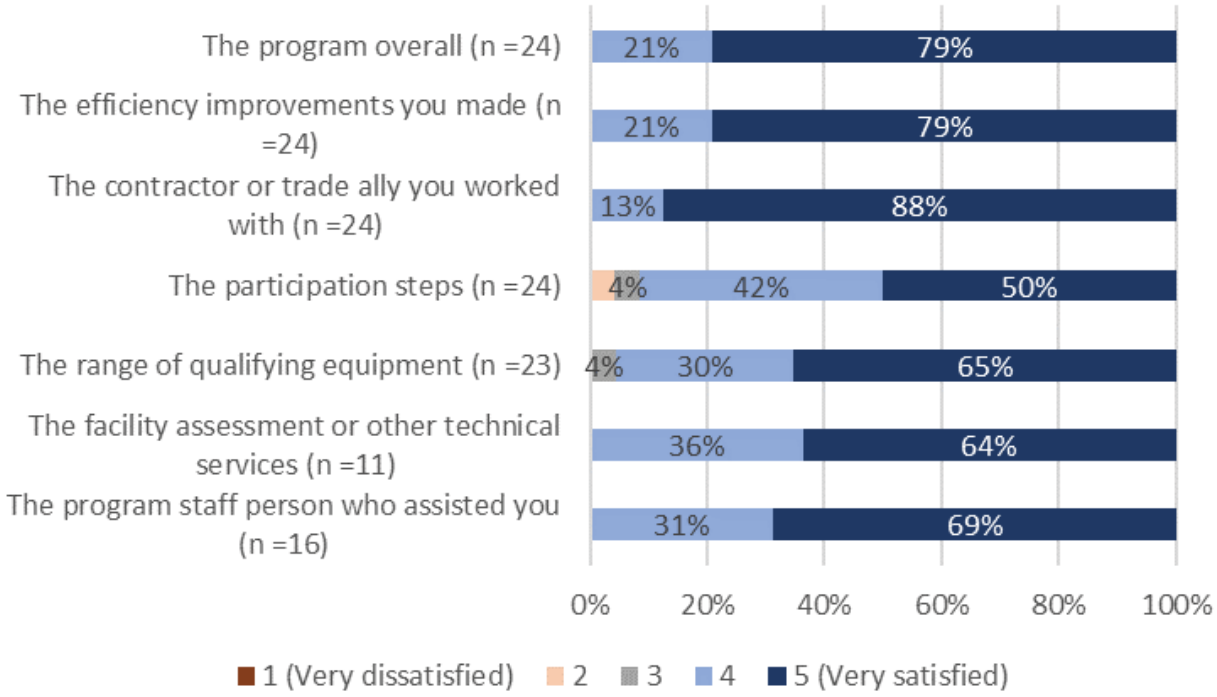
Table 13-27 Incentive Amount as Compared to Expectation

Response	Percent (n = 24)
It was much less	4%
It was somewhat less	13%
It was about the amount expected	71%
It was somewhat more	4%
It was much more	8%

13.5.3.4 Participant Satisfaction

Figure 13-6 summarizes participant satisfaction with the program overall and various aspects of it. As shown, satisfaction levels were generally high – all participants rated their satisfaction with the program overall as a four or a five on a five-point scale. One respondent was somewhat dissatisfied with the steps required. The individual noted that there were several steps and it took a fair amount of coordination with the contractor. This individual also noted that they were not familiar with energy efficiency language.

Figure 13-6 Participant Satisfaction



Eighty-two percent reported that they were satisfied with Entergy (Table 13-28). Additionally, 79% of respondents also stated that their participation in the program either somewhat or greatly increased their satisfaction with Entergy Table 13-29.

Table 13-28 Satisfaction with Entergy

Response	Percent (n = 22)
5 (Very satisfied)	55%
4	27%
3	9%
2	5%
1 (Very dissatisfied)	5%

Table 13-29 Program Impact on Satisfaction with Entergy

Response	Percent (n = 24)
Greatly increased your satisfaction with Entergy	50%
Somewhat increased your satisfaction with Entergy	29%
Did not affect your satisfaction with Entergy	21%
Somewhat decreased your satisfaction with Entergy	0%
Greatly decreased your satisfaction with Entergy	0%

The likelihood of participants recommending the program to someone else is summarized in Table 13-30. As shown, 96% of respondents indicated they were likely to recommend the program or already had recommended it.

Table 13-30 Likelihood of Recommending the Program

Response	Percent (n = 23)
Already have	39%
5 (Very likely)	48%
4	9%
3	4%
2	0%
1 (Very unlikely)	0%

13.5.4 Compressed Air Potential

This section presents findings from the results of participant survey questions on compressed air equipment at their facilities. The results presented here are from the aggregated responses from surveys of participants in the three nonresidential programs (Large C&I, Small Business, and Publicly Funded Institutions). It should be noted that none of the 10 Small Business Program participants reported that they had compressed air equipment at their facilities. Nine participants in the Large C&I Program did have this equipment and the Publicly Funded Institutions Program participant who completed the survey also indicated the presence of compressed air equipment.

Table 13-31 summarizes the information provided on the presence of compressed air by building type. Twenty-four percent of respondents indicated that they had compressed air equipment in their facility. This included all the participating industrial/manufacturing

buildings, as well as a colleges/universities, a hotel/motel, a K-12 school, and both of the participating office buildings.

Table 13-31 Presence of Compressed Air by Business Type

Building Type	Percent with Compressed Air
College / University (n = 1)	100%
Hotel/Motel (n = 3)	33%
Industrial/Manufacturing (n = 4)	100%
K-12 School (n = 7)	14%
Office (n = 2)	100%
Religious worship (n = 6)	0%
Retail (n = 6)	0%
Warehouse (n = 4)	0%
Parking lot (n = 2)	0%
Athletic facility (n = 2)	0%
Long term care (n = 2)	0%
Mixed commercial (n = 2)	0%
Other (n = 1)	100%
Total (n = 42)	24%

13.5.4.1 Compressor Type

Table 13-32 summarizes the types of compressed air equipment reported by survey respondents. Overall, a small share of respondents reported utilizing efficient compressed air system components.

- Energy efficient variable speed air compressors (14%) were less commonly used than other less efficient types of air compressors.
- Fourteen percent of respondents reported that they used efficient low pressure drop filters in their compressed air system.
- Fourteen percent of respondents reported that their systems had efficient no-loss condensate drains.
- Of the six respondents that reported using blow-off nozzles, none reported using high efficiency nozzles.
- Twenty percent of respondents who had an air dryer indicated that they used high efficiency cycling refrigerated dryers.

Table 13-32 Summary of Compressed Air Equipment Types

Component	Type	Percent
Compressor type (n = 7)	Variable speed	14%
	Modulating	57%
	Load/unload	29%
Filter type (n = 7)	Low pressure drop	14%
	Standard coalescing	57%
	Both	29%
Condensate Drain type (n = 7)	No-loss condensate	14%
	Open valve	71%
	Timer	14%
Blow-off nozzle type (n = 6)	High efficiency	0%
	Standard	100%
Air dryer type (n = 5)	High efficiency cycling refrigerated dryer (thermal mass, variable speed, or digital scroll)	20%
	Standard non-cycling refrigerated dryer	80%
	Heatless desiccant dryer with purge	20%

13.5.4.2 Compressed Air Efficiency Improvements

Table 13-33 summarizes the actions that respondents took in the past two years to improve the efficiency of their compressed air system. All respondents reported that they had identified and repaired leaks. The other actions were less frequently reported.

Table 13-33 Actions to Improve Compressed Air Efficiency in Past Two Years

Response	Percent (n = 6)
Identified and repaired leaks	100%
Reduced/eliminated blow off air	33%
Installed new air compressor controls	17%
Eliminated purge air	17%

13.5.4.3 Compressed Air Efficiency Improvements

Respondents reported on the likelihood of making energy efficiency improvements if an incentive was available that covered 50% of the project cost. As shown, 70% of respondents rated their likelihood of making improvements as 8 or higher.

Table 13-34 Likelihood of Installation if Incentive Covered 50% of Project Cost

Response	Percent (n = 10)
10 (Extremely likely)	30%
9	20%
8	20%
7	10%
6	0%
5	10%
4	0%
3	0%
2	0%
1	0%
0 (Not at all likely)	10%

Respondents who indicated that they were somewhat to not at all likely to make compressed air efficiency improvements if Entergy provided an incentive most frequently stated that the would hesitate to complete a project unless there were significant energy savings or that they did not know enough about saving energy with compressed air.

Table 13-35 Reasons for Not Making Efficiency Improvements

Response	Percent (n = 3)
Energy savings would not be enough to be worth the trouble	67%
Don't know enough about saving energy with compressed air systems	33%

Overall, the key findings from the compressed air survey responses are that:

- About 25% of commercial participants in the Energy Smart programs have compressed air equipment. Of the 35 sampled, 9 were in Large C&I and 1 in PFI.
- Most of these sites have systems with inefficiency components.
- Businesses are currently engaged in leak identification and repair.
- Most respondents would be likely to make the improvements if an incentive covering 50% of the cost was provided.

13.6 Key Findings and Conclusions

The key findings and conclusions of the evaluation of the program are as follows:

- **Erroneous reduction in peak coincidence of 0.26 for lighting controls.** For two sampled sites, ex ante kW calculations assumed additional sensor savings for any item that had lighting controls associated with it. For example: Assume an exterior lighting project, whose fixtures were previously controlled by photosensors and thus operating 4,319 hours annually. NLD operation precludes operation during peak times. However, when "Photosensor" controls were indicated in the

ex ante calculator for said line item, a 0.26 reduction in PCF would automatically be included in ex ante savings calculations.

The Evaluators believe that this is an oversite from developing calculators to comply with TRM v1.0 section C.6.2.5.: Lighting Controls, Calculation of Deemed Savings. When applied in that scenario calculations are carried our correctly. The Evaluators recommend this error be fixed in implementor lighting calculators to prevent overestimation of savings.

- **The program did not meet its savings goals, however, the number of projects increased significantly over the prior year.** Staff indicated that the budget process has been improved so that funding remains available during the year, but that not all trade allies are aware of this yet. Staff is continuing to communicate this to trade allies.
- **Program activity is largely trade ally-driven.** Two thirds of survey respondents learned of the program from a trade ally. Relatively few respondents learned of the program from an Energy Smart representative (8%) or other means.
- **Trade allies are engaged with the program.** There are many trade allies active in the program relative to its size. Thirty-six trade allies completed projects during PY8, and savings were widely distributed across them.
- **Trade allies noted multiple barriers to efficiency improvements.** In addition to issues related to costs, trade ally discussions of barriers to customers adoption of efficiency measures include distrust of savings opportunities, concern over future maintenance costs, or that customers have not “bought into energy efficiency.”
- **Program participants were satisfied with the program.** All survey respondents rated their satisfaction as a four or a five on a five-point satisfaction scale.
- **Survey results suggest there is potential for compressed air efficiency projects in large commercial facilities.** Twenty-four percent of respondents reported that they had compressed air and a minority had efficient systems with variable speed compressors, low-pressure drop filters, no-loss condensate drains, high efficiency blow-off nozzles, and high efficiency cycling refrigerated dryer. Overall, customers expressed interest in incentives to improve the efficiency of their compressed air systems.

13.7 Recommendations

The Evaluators’ recommendations are as follows:

- **The Evaluators recommend the prescriptive lighting calculator be revised to correctly calculate peak kW savings where sensors are involved.**
- **Work to further engage Entergy account representatives.** Account representatives are a key asset in driving large commercial customer activity. Eight percent of respondents reported that they learned of the program from Entergy

account representatives and a trade ally suggested that better education of Entergy service representatives as a means of improving the program. Increased contact and collaboration with the program implementer and training on how the program can help their customers manage energy costs may increase participation.

- **Focus on educating customers on compressed air savings.** Compressed air projects represent a source of potential future energy savings. Educating customers and identifying contractors that provide compressed air services may help drive future program savings. This can start with high-return compressed air improvements such as leak repair or no-air-loss drains.
- **Improve QA surrounding space heating type for lighting retrofits.** The Evaluators found multiple projects where the application stated gas space heating and the on-site inspection found electric resistance. This is a QA metric that should be formally included in program trade ally assessments completed by Aptim, as a "false positive" for gas heating when a building uses electric resistance can increase savings by over 20%.

14. Publicly Funded Institutions

14.1 Program Description

The Publicly Funded Institutions Program (PFI) provides financial incentives and technical services to encourage publicly funded customers. The PFI Program is designed to help this customer segment overcome barriers to energy improvement, such as higher first-cost of efficiency equipment and a lack of technical knowledge or resources.

The incentives provided are summarized below in Table 14-1.

Table 14-1 Publicly Funded Institutions Summary of Program Incentives

Measure	*Incentive*
Lighting	$0.10 per kWh Saved
Non-Lighting	$0.12 per kWh Saved
Custom Bonus	Additional $0.03/kWh for custom lighting and non-lighting projects completed by 12/31/2018.

Data provided by Aptim showed that during PY8, there were 20 project components among 17 sites. These projects were expected to provide a combined savings of 2,898,984 kWh and 208.52 kW. Count of projects, expected kWh and kW savings for the PFI Program are summarized in Table 14-1.

Table 14-2 Savings Expectations by Utility

Utility	*Count of Projects*[71]	*Expected kWh Savings*	*Expected kW Savings*
ENO	24	2,669,244	221.02
Algiers	1	229,740	(12.50)
Total	**25**	**2,898,984**	**208.52**

Table 14-3 Savings Expectations by Program Component ENO

Program Component	*Count of Project Components*[72]	*Expected kWh Savings*	*Expected kW Savings*
Prescriptive	6	28,041	9.70
Custom	18	2,641,203	211.32
Total	**24**	**2,669,244**	**221.02**

[71] Independent projects, which contain all project components associate with said project.

[72] Many projects contain multiple components within the same project number. These numbers represent the total number of components.

Table 14-4 Savings Expectations by Program Component Algiers

Program Component	Count of Project Components	Expected kWh Savings	Expected kW Savings
Custom	1	229,740	(12.50)
Total	**1**	**229,740**	**(12.50)**

Table 14-5 Savings Expectations by Program Measure Category

Program Component	Count of Project Components	Expected kWh Savings	Expected kW Savings
HVAC	4	996,500	42.94
Lighting	21	1,902,484	165.58
Total	**25**	**2,898,984**	**208.52**

Table 14-6 Savings Expectations by Measure Type

Program Component	Program Component	Count of Projects	Expected kWh Savings	Expected kW Savings	Percent Savings (kWh)
Lighting	Linear Tube LED Fixture	4	1,049,156	95.30	36.19%
	Non-Linear LED Fixture	11	825,287	60.58	28.47%
	Occupancy Sensor (controlling < 500W)	3	19,595	6.80	0.68%
	Occupancy Sensor (controlling >= 500W)	3	8,446	2.90	0.29%
HVAC	HVAC Controls / EMS	4	996,500	42.94	34.37%
Total		**25**	**2,898,984**	**208.52**	**100.00%**

In PY7, three projects summing to 814,317 kWh and 0.00 kW were completed during the abbreviated nine month program year. Normalizing these figures to 12 months (a full program year) yields an expected 61 projects summing 1,085,756 kW. The PY8 program ran for a full 12 months surpassing normalized PY7 figures with an increase in expected kWh savings of 2,898,984 kWh and 208.52 kW. Comparisons are shown below in Table 14-7:

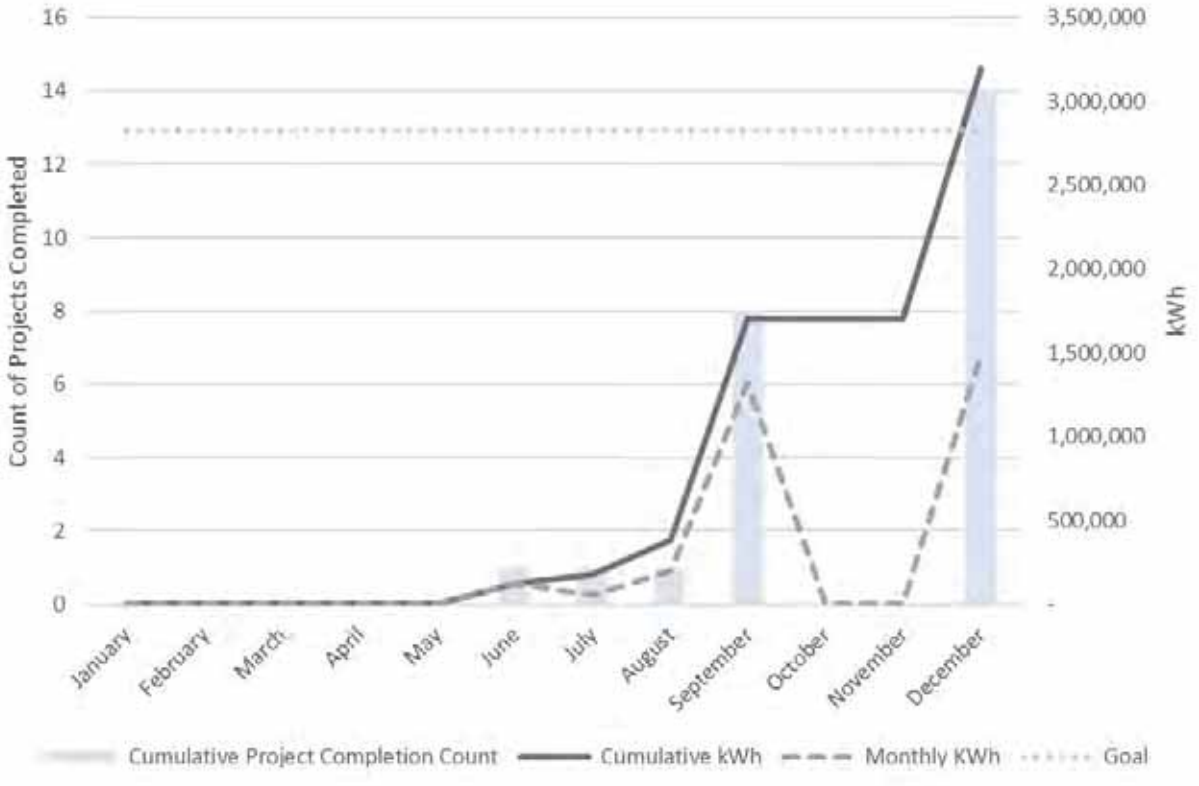
Table 14-7 Savings Expectations by Measure Type

Program Component	Program Component	Count of Projects	Expected kWh Savings	Expected kW Savings	Percent Savings (kWh)
Lighting	Linear LED Tube	4	1,049,156	95.30	36.19%
	LED Fixture	11	825,287	60.58	28.47%
Controls	Controls	6	28,041	9.70	0.97%
HVAC	HVAC Controls / EMS	4	996,500	42.94	34.37%
Total		**25**	**2,898,984**	**208.52**	**100.00%**

Table 14-8 Publicly Funded Institutions Participation Summary Comparison

Project Year	# Projects	Expected kWh	kWh per Project
PY7 (nominal)	3	814,317	271,439
PY7 (normalized)	4	1,085,756	271,439
PY8	20	2,898,984	144,949

Figure 14-1 Program Ex Ante Savings (kWh) by Measure Start-Up Month



Total realized savings and percentage of goals for the PFI program are summarized in Table 14-2.

Table 14-9 PFI Goals by Utility

Utility	kWh goal	Realized Net kWh	Percent of kWh goal realized	kW goal	Realized Net kW	Percent of kW goal realized
ENO	2,606,103	2,797,902	107.36%	371.49	147.04	39.58%
Algiers	219,669	101,790	46.34%	34.03	40.32	118.48%

14.2 M&V Methodology

Evaluation of the PFI Program requires the following:

- Stratified Random Sampling (as detailed in section 2.2.1.3 Stratified Sampling.) and by selecting large saving sites with certainty.
- On-site verification;
- Interviewing of program participants and trade allies.

The on-site inspections were used to verify installations and to determine any changes to the operating parameters since the measures were first installed. Energy savings was estimated using proven techniques, including engineering calculations using industry standards to determine energy savings. Methods for evaluating lighting measures are described in the Small Commercial Solutions Chapter, section 12.1 M&V Methodology.

14.2.1 PFI Program Sample Design

Sampling for evaluation of ENO and Algiers' PFI program was developed using the Stratified Random Sampling procedure detailed in 2.2.1.3 Stratified Sampling. This procedure provides 90% confidence and +/- 10% precision with a significantly reduced sample than simple random sampling would require by selecting the highest saving facilities with certainty, thereby minimizing the variance that non-sampled sites can contribute to the overall results. Table 14-10 summarizes the total participation in the PY8 PFI Program.

Table 14-10 PY8 PFI Program Participation and Sampling Summary

Utility	# Projects	Expected kWh	Expected Peak kW	# Sites in Population	Site Visit Sample Size
ENO	24	2,669,244	221.02	19	9
Algiers	1	229,740	(12.50)	1	0
Total	**25**	**2,898,984**	**208.52**	**20**	**9**

The participant population was divided into four strata. Table 14-11 summarizes the strata boundaries and sample frames for the program Table 14-12 summarizes expected savings for of both the sample and population. The achieved sampling precision was ±8.03% at 90% confidence. The population and sample include both utilities pooled. However, savings in this report are presented for each utility individually as well as aggregated.

Table 14-11 PFI Program Sample Design

	Stratum 1	Stratum 2	Stratum3	Stratum 4	Stratum 5	Totals
Strata boundaries (kWh)	< 58,000	58,001 - 180,000	180,001 - 300,000	300,001 - 455,000	> 455,001	
Number of projects	6	8	3	2	1	**20**
Total kWh savings	144,673	742,566	718,095	747,527	546,122	**2,898,984**
Average kWh Savings	24,112	92,821	239,365	373,764	546,121	**144,949**
Standard deviation of kWh savings	20,048	22,320	42,596	28,512	N/A	**147,063**
Coefficient of variation	0.831	0.240	0.178	0.020	0.000	**1.015**
Final design sample	**3**	**3**	**1**	**1**	**1**	**9**

Table 14-12 Expected Savings for Sampled and Non-Sampled Projects by Stratum

Stratum	Sample Expected Savings	Total Expected Savings
1	102,765	144,674
2	267,847	742,566
3	202,405	718,095
4	368,507	747,527
5	546,122	546,122
Total	**1,487,646**	**2,898,984**

14.3 Gross Impact Findings

14.3.1 PFI Site-Level Realization

Sites chosen within each stratum were visited in order to verify installation of rebated measures and to collect data needed for calculation of ex post verified savings. The realization rates for sites within each stratum were then applied to the non-sampled sites within their respective stratum. Table 14-13 presents realization at the stratum level.

Table 14-13 Summary of kWh Savings for PFI Program by Sample Stratum

Stratum	Sample Expected kWh Savings	Sample Realized kWh Savings	Realization Rate
1	102,764	109,113	106.2%
2	267,847	267,848	100.0%
3	202,405	202,405	100.0%
4	368,507	367,579	99.7%
5	546,122	546,122	100.0%

Table 14-14 shows the expected and realized energy savings for the program by project.

Table 14-14 Expected and Realized Savings by Sampled Project

Project ID(s)	Facility Type	Expected kWh Savings	Realized kWh Savings	Realization Rate
PN8-018	High School	11,535	11,535	100.0%
PN8-008	University	34,086	34,086	100.0%
PN8-011	University	57,143	63,492	111.1%
PN8-007	University	58,721	58,721	100.0%
PN8-016	Airport Services	95,446	95,446	100.0%
PN8-014	Airport Services	113,680	113,680	100.0%
PN8-006	University	202,405	202,405	100.0%
PN8-009	University	368,507	367,579	99.7%
PN8-012	University	546,122	546,122	100.0%
Total		**1,487,646**	**1,493,066**	**100.4%**

14.3.2 PFI Program-Level Realization

Using the realization rates presented in Table 14-14, the Evaluators extrapolated results from sampled sites to non-sampled sites in developing program-level savings estimates. Table 14-15 presents results by stratum.

Table 14-15 PFI Program-Level Realization by Stratum

Stratum	# Sites	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected kW Savings	Realized kW Savings	kW Realization Rate
1	6	144,673	144,673	100.00%	20.93	18.84	90.01%
2	8	742,566	742,567	100.00%	92.53	76.41	82.58%
3	3	718,095	718,096	100.00%	(4.81)	(16.03)	333.26%
4	2	747,527	745,645	99.75%	55.21	60.03	108.73%
5	1	546,122	546,122	100.00%	44.66	44.93	100.61%
Total	**20**	**2,898,984**	**2,897,102**	**99.94%**	**208.52**	**184.17**	**88.32%**

Table 14-16 presents results by utility.

Table 14-16 PFI Program-Level Realization by Utility

Utility	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected kW Savings	Realized kW Savings	kW Realization Rate
ENO	2,669,244	2,667,362	99.93%	221.02	196.67	88.98%
Algiers	229,740	229,740	100.00%	(12.50)	(12.50)	100.00%
Total	**2,898,984**	**2,897,102**	**99.94%**	**208.52**	**184.17**	**88.32%**

14.3.3 PFI – Causes of Savings Deviations

For illustrative purposes, the Evaluators have summarized these adjustments and others in Table 14-17.

Table 14-17 PFI – Causes of Variance in Savings

Project ID	Expected kWh	Realized kWh	Realization Rate	Causes of Variance in Savings
PN8-009	368,507	367,579	99.7%	University. A total of 17 line items had lighting which were located in an "Education: College/university" deemed space. Deemed hours of operation had been overridden from 3,577 to 8,760, however the peak CF remained .69, when it should also have been changed to 1.00 to reflect the continuous lighting operation. During the on site visit the Evaluators found that lights in the restrooms were connected to functioning occupancy sensors. These occupancy sensors were not included in the project or ex ante calculations, so lighting hours were decreased by 30% when performing ex ante calculations. Peak kW reductions for exterior lighting, which was controlled by photocell, included and erroneous .26 CF. The correct value should have been 0.

Key issues identified in site-level analyses include:

- **Erroneous reduction in peak coincidence of 0.26 for lighting controls.** For five sampled sites, ex ante kW calculations assumed additional sensor savings for any item that had lighting controls associated with it. For example: Assume an exterior lighting project, whose fixtures were previously controlled by photosensors and thus operating 4,319 hours annually. NLD operation precludes operation during peak times. However, when "Photosensor" controls were indicated in the ex ante calculator for said line item, a 0.26 reduction in PCF would automatically be included in ex ante savings calculations.

  The Evaluators believe that this is an oversite from developing calculators to comply with TRM v1.0 section C.6.2.5.: Lighting Controls, Calculation of Deemed Savings. When applied in that scenario calculations are carried our correctly. The Evaluators recommend this error be fixed in implementor lighting calculators to prevent overestimation of savings.

- **Peak coincidence factors do not correspond to default-overridden custom hours of operation.** When deemed hours are overridden in ex ante calculators said hours are used in ex ante calculations, however the deemed peak coincidence factor is still applied. In Project PN8-009 a total of 17 line items had lighting which were located in an "Education: College/university" deemed space. Deemed hours of operation had been overridden from 3,577 to 8,760, however the peak CF remained .69, when it should have been 1.00 to reflect the continuous lighting operation.

14.4 Net Impact Findings

Participant survey responses were used to estimate the net energy impacts for the Publicly Funded Institutions Program. The methodology used is described in detail in Section 5.2.4.

14.4.1 Net Savings Results

One of the five program participants responded to the survey. This respondents project accounted for 32% of program energy savings. The respondent was found to not be a free rider. The respondent did not report any spillover measures.

Table 14-18 and Table 14-19 summarize the realized net kWh savings and peak kW demand reductions of the program. Net kWh savings totaled to 2,899,69 kWh and 187.36 kW, and equal 100% of gross program savings.

Table 14-18 Summary of Net Ex Post kWh Savings

Utility	Expected Gross kWh Savings	Realized Gross kWh Savings	Free Ridership	Spillover	Realized Net kWh Savings	Net to Gross Ratio
ENO	2,669,244	2,667,362	-	-	2,667,362	100.0%
Algiers	229,740	229,740	-	-	229,740	100.0%
Total	**2,898,984**	**2,897,102**	**-**	**-**	**2,897,102**	**100.0%**

Table 14-19 Summary of Ex Post Net Peak kW Reductions

Utility	Expected Gross Peak kW Reductions	Realized Gross Peak kW Reductions	Free Ridership	Spillover	Realized Net kW Savings	Net to Gross Ratio
ENO	221.02	196.67	-	-	196.67	100.0%
Algiers	(12.50)	(12.50)	-	-	(12.50)	100.0%
Total	**208.52**	**184.17**	**-**	**-**	**184.17**	100.0%

14.5 Process Evaluation Findings

14.5.1 Summary of Program Participation

Table 14-20 summarizes the expected savings and number of participants by measure type. HVAC measures generated approximately one-third of program savings.

Table 14-20 Program Activity by Measure Type

Measure Incentive Type	Measure Type	Expected Savings (kWh)	Number of Participants	$ per kWh in Expected Savings
Prescriptive	Lighting controls	28,041	3	$0.09
Custom	Lighting	1,874,443	14	$0.11
Custom	HVAC controls / EMS	996,500	4	$0.11

Table 14-21 shows that three participants completed projects with two measures.

Table 14-21 Number of Measure Types Installed at Location

Number of Measures Installed at Location*	Number of Participants
1	14
2	3

*Locations defined by account numbers

Table 14-22 summarizes trade activity for the program. Activity was distributed across multiple trade allies.

Table 14-22 Summary of Trade Ally Participation

Trade Ally	Expected Savings (kWh)	Percent of Expected Savings	Number of Participants	Average Project Size
Trade ally 1	1,673,228	58%	10	167,323
Trade ally 2	691,501	24%	3	230,500
Trade ally 3	493,424	17%	2	246,712
Trade ally 4	29,295	1%	1	29,295
Trade ally 5	11,535	<1%	1	11,535

14.5.2 Program Goals, Design, and Delivery

Many of the same procedures and processes discussed regarding the Small Commercial Solutions Program in Section 12.3.2 are applicable to the PFI Program and are not repeated here. The findings discussed below are those specific to the PFI Program.

14.5.2.1 Program Goals

The Publicly Funded Institutions (PFI) program targets projects that involve publicly funded buildings or government entities. Entergy and Aptim have subcontracted with Green Coast Enterprises (GCE) to aid with project development and provide technical services. GCE has established relationships with city officials and other government entities. GCE has worked with the City of New Orleans, under various contracts, since 2013.

The expected savings of the PFI Program exceeded the program goals for Algiers and New Orleans. The success in achieving the goals was attributed to multiple factors:

- Staff were focused on developing a project in Algiers;
- Some of the PY8 projects rolled over form PY7 when they were initially developed; and
- There were additional word-of-mouth referrals as opposed to projects, reducing the dependence on staff-initiated projects.

Staff noted that while most projects in PY7 were completed at schools, PY8 saw increased engagement by the City of New Orleans. The City completed multiple projects in PY8 and continues to have a "substantial pipeline of projects." Further, a new deputy director at the Mayor's office has placed a priority on establishing a revolving fund for projects that increase energy efficiency in city buildings. The development of these projects has been facilitated by program partner GCE, which has assisted the City of New Orleans with their approach to property management through GIS mapping and benchmarking of buildings in New Orleans to prioritize energy efficiency upgrades. GCE believes there is a "good stock of building they need to work through." In addition to local municipalities, there are some federal buildings in the Entergy territory, but the program has not yet worked with federal agencies.

Program staff indicated the program has a tremendous prospect to save public institutions energy in New Orleans.

> *"In a time that people are paying attention to their utility bill, it has not been a hard sell to get people interested in the program. The PFI program is really establishing a relationship between Entergy and public institutions to help them keep their utility costs down. Everyone benefits from it in the long term." – Program staff*

14.5.2.2 Program Design and Barriers to Participation

There were no significant changes to the program design of the PFI for PY8. However, on 9/17/2018 program implementors began offering and additional $0.03/kWh for custom lighting and non-lighting projects completed by 12/31/2018.

Program staff indicated the biggest barrier and challenge for this program is the procurement process. Government entities can be required to go through a bidding process when projects meet a certain threshold. GCE has pushed for a request for qualification (RFQ) process for these entities rather than a request for proposal (RFP) process which is what is in place now. An RFQ system would allow for preapproved contractors and a committee of five people to review projects. GCE believes this would decrease the procurement time for projects.

Trade allies interviewed by the Evaluator echoed this sentiment. Among those trade allies who have public sector clients, most indicated there are challenges for them to install efficient equipment such as the bid/approval process, bureaucratic "red tape", and being in front of the "right people". As one trade ally noted,

> *"A lot of times for us it cannot be a direct sale, they have to bid it out. That opens the process up to someone saying you don't need all that. Sometimes they have to get a project engineer and we lose control at that point."*

Some trade allies believe the program is designed well but most do not complete projects with this program due to the challenges noted above. One trade ally thought that the

incentives may be too low for public institutions to justify the cost. Suggestions offered to improve this program included building more awareness within the public sector that this program is available and cultivating more connections with the right people who can authorize the work.

GCE noted that another challenge is the timing of the program calendar year and how that aligns with government timelines. For instance, schools have different calendar years and may not be able to complete a project within the timeframe of the program year. Projects may get "rushed" as a result.

Thirty-eight percent of the trade allies interviewed had public sector clients. Among those trade allies who have public sector clients, most indicated there are challenges for them to install efficient equipment, like the bid/approval process, bureaucratic "red tape", "decision processes for more expensive options", and being in front of the "right people".

> *"A lot of times for us it cannot be a direct sale, they have to bid it out. That opens the process up to someone saying you don't need all that. Sometimes they have to get a project engineer and we lose control at that point."*

Some trade allies believed the program is designed well but most do not complete projects with this program due to the challenges noted above. One trade ally believed the incentives are too low for public institutions to justify the cost. Suggestions offered to improve this program included building more awareness within the public sector that this program is available and cultivating more connections with the right people who can authorize the work.

14.5.2.3 Marketing and Outreach

Outreach efforts for the PFI programs have included lunch and learn opportunities, held in coordination with Aptim. These events provide an opportunity for PFI program staff to educate government entities about what projects may be available to them and begin the conversation about energy efficiency upgrades. GCE is available at these meetings to provide technical assistance and talk with building engineers. The attendance has ranged from four to fifteen people.

GCE has also focused on outreach to schools and higher education entities. Staff noted that they have engaged with two local universities. Staff also engaged in outreach to charter schools including a lunch and learn session in September. GCE has established relationships with charter school operators and district staff. They have done annual building inspections of the charters and performed benchmarking studies with them. GCE noted that the charter system is decentralized and creates a "split incentive problem" because the district owns the properties, but the charter school operators pay the utility bills. To complete projects with the charters, the school works both with charter operators and the district. Who GCE works with depends on the type of measure – larger capital projects go through the district, whereas other improvements such as installing building operating systems or upgrading lighting in a gym, are developed through working with the charter school staff.

14.5.2.4 Quality Control Processes

There have not been any significant changes to the quality control procedures in PY8. GCE provides verification services for the program. Verification visits are completed after

project implementation and staff checks if the installed measures match the work scope. They also take photos to document the completed work.

14.5.3 Participant Feedback

One participant in the Publicly Funded Institutions Program completed the survey. This respondent did not indicate any issues with the participation process and was satisfied with the program overall.

14.6 Key Findings and Conclusions

The key findings and conclusions of the evaluation of the program are as follows:

- **Erroneous reduction in peak coincidence of 0.26 for lighting controls.** For five sampled sites, ex ante kW calculations assumed additional sensor savings for any item that had lighting controls associated with it. For example: Assume an exterior lighting project, whose fixtures were previously controlled by photosensors and thus operating 4,319 hours annually. NLD operation precludes operation during peak times. However, when "Photosensor" controls were indicated in the ex ante calculator for said line item, a 0.26 reduction in PCF would automatically be included in ex ante savings calculations.

  The Evaluators believe that this is an oversite from developing calculators to comply with TRM v1.0 section C.6.2.5.: Lighting Controls, Calculation of Deemed Savings. When applied in that scenario calculations are carried our correctly. The Evaluators recommend this error be fixed in implementor lighting calculators to prevent overestimation of savings.

- **Peak coincidence factors do not correspond to default-overridden custom hours of operation.** When deemed hours are overridden in ex ante calculators said hours are used in ex ante calculations, however the deemed peak coincidence factor is still applied. In Project PN8-009 a total of 17 line items had lighting which were located in an "Education: College/university" deemed space. Deemed hours of operation had been overridden from 3,577 to 8,760, however the peak CF remained .69, when it should have been 1.00 to reflect the continuous lighting operation.
- **The PFI Program met its savings goals for the year**. Staff indicated that projects in the pipeline and increased word-of-mouth referrals contributed to the increase in program activity. That said, the program implementation team has been active in developing projects and working with the City of New Orleans, local universities, and charter schools. These services include benchmarking, assistance with planning, and assistance with the bid process.
- **Marketing and outreach efforts included lunch and learn events and individual outreach to public organizations.**

- **Government procurement processes create a barrier to participation.** Both program staff and trade allies noted that procurement process requirements present a barrier to participation. Responses from interviewed trade allies suggest that because of these types of barriers, they are reluctant to pursue working with government entities.

14.7 Recommendations

The Evaluators' recommendations are as follows:

- **Work with public sector entities towards an RFQ process instead of an RFP process.** With a pre-qualified list and price-point, projects could be processed more quickly. This may entail establishing different thresholds based on project size.
- **If an RFQ process can be put in place, work towards providing centralized energy advisory services for public institutions, reducing the risk faced by trade allies of developing a project but losing it to another bidder.** ENO has included funding for an energy advisor service in its most recent filing. This energy advisor can serve a valuable role in PFI, as they could help public institutions develop projects for a fixed fee paid by the program, which can then be put out to "quick bid" to a list of preapproved contractors from the RFQ process.
- **Highlight public sector retrofits in general Energy Smart marketing.** Beyond the PFI program, retrofits at high-visibility institutions in the PFI program could spark interest among other customer sectors.

15. Appendix A: Site Reports

15.1 Small Business Program

SN7-036

Project Number SN7-036

Program Small Business

Project Background

The participant is a brewery that received incentives from Entergy New Orleans for retrofitting energy efficient lighting in a warehouse area. On-site, the Evaluators verified the participant had installed:

- (42) 10w LEDs w/non-int. ballasts replaced (42) 4' 2-lamp T8 VHLOs

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Warehouse: Refrigerated	(none)	5,658[73]	1.00	1.00	1.00[1]

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
F32T8 to LED10W	42	42	74	10	5,658	16,633	15,207	1.00	91.4%
					Total	**16,633**	**15,207**		**91.4%**

[73] Based upon hours of operation recorded during the M&V site visit.

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
F32T8 to LED10W	42	42	74	10	1.00	2.30	2.69	1.00	117.0%
					Total	**2.30**	**2.69**		**117.0%**

Results

The kWh realization rate for project SN7-036 is 91.4%, and the kW realization rate is 117.0%.

Ex ante savings estimates were based on 6,188 AOH with a .86 CF. On site, the Evaluators gathered the operation schedule of the lighting and calculated only 5,658 AOH and a 1.0 CF. These figures were used to calculate the verified savings estimates, leading to the low kWh and high kW realization rates.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
F32T8 to LED10W	15,207	2.69	91.4%	117.0%
Total	**15,207**	**2.69**	**91.4%**	**117.0%**

SN7-037

Project Number SN7-037

Program Small Business

Project Background

The participant is a brewery with attached restaurant that received incentives from Entergy New Orleans for retrofitting energy efficient lighting in their manufacturing and dining areas, as well as outdoors. On-site, the Evaluators verified the participant had installed:

- (17) Edison lamps replaced (17) 40W incandescents
- (27) PAR30 LEDS replaced (27) 60W incandescents
- (78) PAR38 LEDS replaced (78) 75W incandescents
- (3) EP38 LED reflector lamps replaced (3) 130W incandescents
- (25) 72w LEDs w/non-int. ballasts replaced (23) 4' 2-lamp HO T12s
- (8) 32w LEDs w/non-int. ballasts replaced (8) 5' 2-lamp T5HOs
- (34) 24w LEDs w/non-int. ballasts replaced (31) 4' 2-lamp T12HOs
- (7) 55w LEDs w/non-int. ballasts replaced (7) 450w metal halides
- (4) 16w LEDs w/non-int. ballasts replaced (4) 2' 2-lamp T12 20ws
- (3) 32w LEDs w/non-int. ballasts replaced (3) 4' 4-lamp T5s
- (6) 36w LEDs w/non-int. ballasts replaced (6) 8’ 1-lamp T12s
- (2) 24w LEDs w/non-int. ballasts replaced (2) 4' 2-lamp T12HOs

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM, described in section 15.2 M&V Methodology of this report. Custom and Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Leisure Dining/Sit-Down Restaurant	Gas	2,676	1.09	1.20	0.81
Exterior	None	4,319	1.00	1.00	0.00
Warehouse: Non-Refrigerated	None	5,824	1.00	1.00	0.77
Warehouse: Refrigerated	None	5,824	1.25	1.25	0.84
Office	Gas	5,159	1.20	1.20	0.77
Food Service: Sit-Down Restaurant	Gas	5,824	1.20	1.20	0.81

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
I40/1 to Edison Light Bulb LEDA19S1000037448	17	17	40	4	2,676	1,592	1,785	1.09	112.1%
I60/1 to PAR30 LED 10.5 Watts ELY11D-2PSS40	27	27	55	11	2,676	3,757	3,505	1.09	93.3%
I75/1 to LED13PAR38/830/FL45/10YV/RP2	78	78	55	13	2,676	12,732	9,556	1.09	75.1%
I130/1 to EP38-4001	3	3	72	20	2,676	883	417	1.00	47.2%
F82T12-HO to LED72W	25	23	160	72	5,824	13,651	13,651	1.00	100.0%
F52GPHL/2-H to LED32W	8	8	180	32	5,824	8,620	8,620	1.25	100.0%
F42EHS to LED24W	34	31	135	24	5,824	22,399	22,400	1.00	100.0%
MH450/1-L to LED55W	7	7	486	55	5,096	15,963	15,963	1.00	100.0%
F22SS to LED16W	4	4	50	16	5,159	765	765	1.09	100.0%
F44GPL/2-H to LED32W	3	3	126	32	5,824	1,790	1,790	1.09	100.0%
F81T12 to LED36W	6	6	69	36	5,824	1,257	1,257	1.09	100.0%
F42EHS to LED24W	2	2	135	24	4,731	1,145	1,145	1.09	100.0%
Total						**84,554**	**80,854**		**95.6%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEFD	Realization Rate
	Base	Post	Base	Post					
I40/1 to Edison Light Bulb LEDA19S1000037448	17	17	40	4	0.81	0.00	0.59	1.20	N/A
I60/1 to PAR30 LED 10.5 Watts ELY11D-2PSS40	27	27	55	11	0.81	0.00	1.17	1.20	N/A
I75/1 to LED13PAR38/830/FL45/10YV/RP2	78	78	55	13	0.81	0.00	3.18	1.20	N/A
I130/1 to EP38-4001	3	3	72	20	0.81	0.00	0.13	1.00	N/A
F82T12-HO to LED72W	25	23	160	72	0.77	1.80	1.80	1.00	100.0%
F52GPHL/2-H to LED32W	8	8	180	32	0.84	1.24	1.24	1.25	100.0%
F42EHS to LED24W	34	31	135	24	0.77	2.95	2.96	1.00	100.3%
MH450/1-L to LED55W	7	7	486	55	0.26	0.10	0.78	1.00	780.0%
F22SS to LED16W	4	4	50	16	0.77	0.12	0.13	1.20	108.3%
F44GPL/2-H to LED32W	3	3	126	32	0.81	0.27	0.27	1.20	100.0%
F81T12 to LED36W	6	6	69	36	0.81	0.19	0.19	1.20	100.0%
F42EHS to LED24W	2	2	135	24	0.81	0.22	0.22	1.20	100.0%
Total						**6.89**	**12.66**		**183.7%**

Results

The kWh realization rate for project SN8-014 is 95.6%, and the kW realization rate is 183.7%. Ex ante calculations assumed an erroneous kW reduction resulted 0.10 kW to lighting controls on seven exterior fixtures. The fixtures do not operate during peak times and thus no peak kW savings can be attributed to them. While adjusting AOH of lighting fixtures, the Evaluators also update peak CF values to correspond with actual lighting operation, raising realized kW estimates.

Several lamps in ex ante calculations used non-EISA compliant baselines and were changed for ex post calculations. These non-EISA compliant baselines were part of ex ante calculations which required further corrections to input assumptions. Calculations for 125 lamps located in the “bar” area did not include energy or demand interactive

factors for these lamps nor were any peak kW reductions from these lamps was counted in project documentation, the result was an underreporting of 5.74 kW, which was included in ex post calculations and resulted in the high kW realization rate.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
I40/1 to Edison Light Bulb 4W	1,785	0.59	112.1%	N/A
I60/1 to PAR30 LED 10.5W	3,505	1.17	93.3%	N/A
I75/1 to PAR38 LED 13W	9,556	3.18	75.1%	N/A
I130/1 to LED reflector 20W	417	0.13	47.3%	N/A
F82T12-HO to LED72W	13,651	1.80	100.0%	100.0%
F52GPHL/2-H to LED32W	8,620	1.24	100.0%	100.0%
F42EHS to LED24W	22,400	2.96	100.0%	100.3%
MH450/1-L to LED55W	15,963	0.78	100.0%	780.0%
F22SS to LED16W	765	0.13	100.0%	108.3%
F44GPL/2-H to LED32W	1,790	0.27	100.0%	100.0%
F81T12 to LED36W	1,257	0.19	100.0%	100.0%
F42EHS to LED24W	1,145	0.22	100.0%	100.0%
Total	80,854	12.66	95.6%	183.7%
Total	**80,854**	**12.66**	**95.6%**	**183.7%**

SN8-012

Project Number SN8-012

Program Small Business

Project Background

The participant is a gas station that received incentives from Entergy New Orleans for retrofitting energy efficient lighting outdoors. On-site, the Evaluators verified the participant had installed:

- (8) 150w LEDs w/non-int. ballasts replaced (8) 320w metal halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Exterior	(none)	4,319	1.00	1.00	0.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH320 to LED150W	8	8	362	150	4,319	7,325	7,325	1.00	100.0%
					Total	**7,325**	**7,325**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH320 to LED150W	8	8	362	150	0.00	0.00	0.00	1.00	N/A
					Total	**0.00**	**0.00**		**N/A**

Results

The kWh realization rate for project SN8-012 is 100%, and there are no kW savings applicable for exterior spaces.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH320 to LED150W	7,325	0.00	100.0%	N/A
Total	**7,325**	**0.00**	**100.0%**	**N/A**

SN8-013

Project Number SN8-013

Program Small Business

Project Background

The participant is a fast food restaurant that received incentives from Entergy New Orleans for retrofitting energy efficient lighting outdoors. On-site, the Evaluators verified the participant had installed:

- (10) 300w LEDs w/non-int. ballasts replaced (10) 1000w metal halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Exterior	(none)	4,319	1.00	1.00	0.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED300W	10	10	1,078	300	4,319	33,602	33,602	1.00	100.0%
					Total	**33,602**	**33,602**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED300W	10	10	1,078	300	0.00	0.00	0.00	1.00	N/A
					Total	**0.00**	**0.00**		**N/A**

Results

The kWh realization rate for project SN8-013 is 100%, and there are no kW savings applicable for exterior spaces.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH1000 to LED300W	33,602	0.00	100.0%	N/A
Total	**33,602**	**0.00**	**100.0%**	**N/A**

SN8-014

Project Number SN8-014

Program Small Business

Project Background

The participant is an aircraft hangar at an aviation facility that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoors and outdoors. On-site, the Evaluators verified the participant had installed:

- (36) 230w LEDs w/non-int. ballasts replaced (33) 1000w metal halides
- (11) 90w LEDs w/non-int. ballasts replaced (11) 250w metal halides
- (6) 25w LEDs w/non-int. ballasts replaced (6) 1-lamp 42w CFL multi 4-pins
- (5) 70w LEDs w/non-int. ballasts replaced (5) 175w metal halides
- (6) 250w LEDs w/non-int. ballasts replaced (6) 1000w metal halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Custom and Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Non-Warehouse Storage (Generic)	(none)	8,760	1.00	1.00	0.84
Exterior	(none)	4,319	1.00	1.00	0.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED230W	36	33	1,078	230	8,760	273,470	273,470	1.00	100.0%
MH250 to LED90W	11	11	288	90	4,319	9,407	9,407	1.00	100.0%
CFM42W to LED25W	6	6	46	25	4,319	544	544	1.00	100.0%
MH175 to LED70W	5	5	208	70	4,319	2,980	2,980	1.00	100.0%
MH1000 to LED250W	6	6	1,078	250	4,319	21,457	21,457	1.00	100.0%
					Total	**307,858**	**307,858**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED230W	36	33	1,078	230	0.84	26.10	26.10	1.00	100.0%
MH250 to LED90W	11	11	288	90	0.00	0.00	0.00	1.00	N/A
CFM42W to LED25W	6	6	46	25	0.00	0.00	0.00	1.00	N/A
MH175 to LED70W	5	5	208	70	0.00	0.00	0.00	1.00	N/A
MH1000 to LED250W	6	6	1,078	250	0.00	0.00	0.00	1.00	N/A
					Total	**26.10**	**26.10**		**100.0%**

Results

The kWh realization rate for project SN8-014 is 100%, and the kW realization rate is 100%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH1000 to LED230W	273,470	26.10	100.0%	100.0%
MH250 to LED90W	9,407	0.00	100.0%	N/A
CFM42W to LED25W	544	0.00	100.0%	N/A
MH175 to LED70W	2,980	0.00	100.0%	N/A
MH1000 to LED250W	21,457	0.00	100.0%	N/A
Total	**307,858**	**26.10**	**100.0%**	**100.0%**

SN8-017

Project Number SN8-017

Program Small Business

Project Background

The participant is a drug store that received incentives from Entergy New Orleans for retrofitting energy efficient lighting outdoors. On-site, the Evaluators verified the participant had installed:

- (3) 87w LEDs w/non-int. ballasts replaced (3) 400w metal halides
- (4) 171w LEDs w/non-int. ballasts replaced (2) 400w metal halides
- (3) 171w LEDs w/non-int. ballasts replaced (1) 400w metal halides
- (3) 171w LEDs w/non-int. ballasts replaced (1) 400w metal halides
- (3) 171w LEDs w/non-int. ballasts replaced (1) 400w metal halides
- (3) 171w LEDs w/non-int. ballasts replaced (1) 400w metal halides
- (2) 171w LEDs w/non-int. ballasts replaced (1) 400w metal halides
- (2) 171w LEDs w/non-int. ballasts replaced (1) 400w metal halides
- (3) 171w LEDs w/non-int. ballasts replaced (1) 400w metal halides
- (7) 29w LEDs w/non-int. ballasts replaced (7) 100w metal halides
- (8) 29w LEDs w/non-int. ballasts replaced (8) 100w metal halides
- (5) 25w LEDs w/non-int. ballasts replaced (5) 100w metal halides
- (2) 25w LEDs w/non-int. ballasts replaced (2) 100w metal halides
- (6) 25w LEDs w/non-int. ballasts replaced (6) 100w metal halides
- (2) 25w LEDs w/non-int. ballasts replaced (2) 100w metal halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Exterior	(none)	4,368	1.00	1.00	0.26

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH400 to LED87W	3	3	453	87	4,368	4,797	4,797	1.00	100.0%
MH400 to LED171W	4	2	453	171	4,368	6,421	6,421	1.00	100.0%
MH400 to LED171W	3	1	453	171	4,368	5,189	5,189	1.00	100.0%
MH400 to LED171W	3	1	453	171	4,368	5,189	5,189	1.00	100.0%
MH400 to LED171W	3	1	453	171	4,368	5,189	5,189	1.00	100.0%
MH400 to LED171W	3	1	453	171	4,368	5,189	5,189	1.00	100.0%
MH400 to LED171W	2	1	453	171	4,368	3,210	3,210	1.00	100.0%
MH400 to LED171W	2	1	453	171	4,368	3,210	3,210	1.00	100.0%
MH400 to LED171W	3	1	453	171	4,368	5,189	5,189	1.00	100.0%
MH100 to LED29W	7	7	124	29	4,368	2,905	2,905	1.00	100.0%
MH100 to LED29W	8	8	124	29	4,368	3,320	3,320	1.00	100.0%
MH100 to LED25W	5	5	124	25	4,368	2,162	2,162	1.00	100.0%
MH100 to LED25W	2	2	124	25	4,368	865	865	1.00	100.0%
MH100 to LED25W	6	6	124	25	4,368	2,595	2,595	1.00	100.0%
MH100 to LED25W	2	2	124	25	4,368	865	865	1.00	100.0%
					Total	**56,295**	**56,295**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH400 to LED87W	3	3	453	87	0.26	0.29	0.29	1.00	100.0%
MH400 to LED171W	4	2	453	171	0.26	0.39	0.39	1.00	100.0%
MH400 to LED171W	3	1	453	171	0.26	0.31	0.31	1.00	100.0%
MH400 to LED171W	3	1	453	171	0.26	0.31	0.31	1.00	100.0%
MH400 to LED171W	3	1	453	171	0.26	0.31	0.31	1.00	100.0%
MH400 to LED171W	3	1	453	171	0.26	0.31	0.31	1.00	100.0%
MH400 to LED171W	2	1	453	171	0.26	0.19	0.19	1.00	100.0%
MH400 to LED171W	2	1	453	171	0.26	0.19	0.19	1.00	100.0%
MH400 to LED171W	3	1	453	171	0.26	0.31	0.31	1.00	100.0%
MH100 to LED29W	7	7	124	29	0.26	0.18	0.18	1.00	100.0%
MH100 to LED29W	8	8	124	29	0.26	0.20	0.20	1.00	100.0%
MH100 to LED25W	5	5	124	25	0.26	0.13	0.13	1.00	100.0%
MH100 to LED25W	2	2	124	25	0.26	0.05	0.05	1.00	100.0%
MH100 to LED25W	6	6	124	25	0.26	0.16	0.16	1.00	100.0%
MH100 to LED25W	2	2	124	25	0.26	0.07	0.07	1.00	100.0%
					Total	**3.40**	**3.40**		**100.0%**

Results

The kWh realization rate for project SN8-017 is 100.0%, and the kW realization rate is 100.0%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH400 to LED87W	4,797	0.29	100.0%	100.0%
MH400 to LED171W	6,421	0.39	100.0%	100.0%
MH400 to LED171W	5,189	0.31	100.0%	100.0%
MH400 to LED171W	5,189	0.31	100.0%	100.0%
MH400 to LED171W	5,189	0.31	100.0%	100.0%
MH400 to LED171W	5,189	0.31	100.0%	100.0%
MH400 to LED171W	3,210	0.19	100.0%	100.0%
MH400 to LED171W	3,210	0.19	100.0%	100.0%
MH400 to LED171W	5,189	0.31	100.0%	100.0%
MH100 to LED29W	2,905	0.18	100.0%	100.0%
MH100 to LED29W	3,320	0.20	100.0%	100.0%
MH100 to LED25W	2,162	0.13	100.0%	100.0%
MH100 to LED25W	865	0.05	100.0%	100.0%
MH100 to LED25W	2,595	0.16	100.0%	100.0%
MH100 to LED25W	865	0.07	100.0%	100.0%
Total	**56,295**	**3.40**	**100.0%**	**100.0%**

SN8-018

Project Number SN8-018

Program Small Commercial

Project Background

The participant is a retail store that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoors and outdoors. On site, the Evaluators verified that the following had been installed:

- (31) 36W LED - Non-Int. Ballasts replaced (31) 4' 2-Lamp T8s
- (1) 300W LED - Non-Int. Ballasts replaced (1) 1000W Metal Halides
- (3) 75W LED - Non-Int. Ballasts replaced (3) 150W 1-Lamp Halogens

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Retail: Other	ER	4,312	.87	1.20	.90
Exterior	(none)	4,319	1.00	1.00	.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
F32T8 to LED36W	31	31	60	36	4,312	2,791	2,791	0.87	100.0%
MH1000 to LED300W	1	1	1,078	300	4,319	3,360	3,360	1.00	100.0%
H150 to LED75W	3	3	150	75	4,319	972	972	1.00	100.0%
					Total	**7,123**	**7,123**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
F32T8 to LED36W	31	31	60	36	0.90	0.80	0.80	1.20	100.0%
MH1000 to LED300W	1	1	1,078	300	0.00	0.00	0.00	1.00	N/A
H150 to LED75W	3	3	150	75	0.00	0.00	0.00	1.00	N/A
					Total	**0.80**	**0.80**		**100.0%**

Results

The kWh realization rate for project SN8-018 is 100.0%, and the kW realization rate is 100.0%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
F32T8 to LED36W	2,791	0.80	100.0%	100.0%
MH1000 to LED300W	3,360	0.00	100.0%	N/A
H150 to LED75W	972	0.00	100.0%	N/A
Total	**7,123**	**0.80**	**100.0%**	**100.0%**

SN8-020

Project Number SN8-020

Program Small Business

Project Background

The participant is a storage facility that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoors. On-site, the Evaluators verified the participant had installed:

- (13) 26w LEDs w/non-int. ballasts replaced (13) 4' 2-lamp T12s
- (16) 26w LEDs w/non-int. ballasts replaced (16) 4' 2-lamp T12s
- (13) 26w LEDs w/non-int. ballasts replaced (13) 4' 2-lamp T12s
- (13) 26w LEDs w/non-int. ballasts replaced (13) 4' 2-lamp T12s
- (18) 26w LEDs w/non-int. ballasts replaced (18) 4' 2-lamp T12s
- (24) 26w LEDs w/non-int. ballasts replaced (24) 4' 2-lamp T12s
- (16) 26w LEDs w/non-int. ballasts replaced (16) 4' 2-lamp T12s

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Custom and Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Corridor/Hallway/Stairwell	HP	8,760	1.02	1.20	0.90

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
F42T12 to LED26W	13	13	58	26	8,760	3,717	3,717	1.02	100.0%
F42T12 to LED26W	16	16	58	26	8,760	4,575	4,575	1.02	100.0%
F42T12 to LED26W	13	13	58	26	8,760	3,717	3,717	1.02	100.0%
F42T12 to LED26W	13	13	58	26	8,760	3,717	3,717	1.02	100.0%
F42T12 to LED26W	18	18	58	26	8,760	5,147	5,147	1.02	100.0%
F42T12 to LED26W	24	24	58	26	8,760	6,862	6,862	1.02	100.0%
F42T12 to LED26W	16	16	58	26	8,760	4,575	4,575	1.02	100.0%
					Total	**32,310**	**32,310**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
F42T12 to LED26W	13	13	58	26	0.90	0.45	0.45	1.20	100.0%
F42T12 to LED26W	16	16	58	26	0.90	0.55	0.55	1.20	100.0%
F42T12 to LED26W	13	13	58	26	0.90	0.45	0.45	1.20	100.0%
F42T12 to LED26W	13	13	58	26	0.90	0.45	0.45	1.20	100.0%
F42T12 to LED26W	18	18	58	26	0.90	0.62	0.62	1.20	100.0%
F42T12 to LED26W	24	24	58	26	0.90	0.83	0.83	1.20	100.0%
F42T12 to LED26W	16	16	58	26	0.90	0.55	0.55	1.20	100.0%
					Total	**3.90**	**3.90**		**100.0%**

Results

The kWh realization rate for project SN8-020 is 100%, and the kW realization rate is 100%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
F42T12 to LED26W	3,717	0.45	100.0%	100.0%
F42T12 to LED26W	4,575	0.55	100.0%	100.0%
F42T12 to LED26W	3,717	0.45	100.0%	100.0%
F42T12 to LED26W	3,717	0.45	100.0%	100.0%
F42T12 to LED26W	5,147	0.62	100.0%	100.0%
F42T12 to LED26W	6,862	0.83	100.0%	100.0%
F42T12 to LED26W	4,575	0.55	100.0%	100.0%
Total	**32,310**	**3.90**	**100.0%**	**100.0%**

SN8-021

Project Number SN8-021

Program Small Business

Project Background

The participant is an aviation storage/services facility with offices that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoors and outdoors. On site, the Evaluators verified that the following had been installed:

- (2) 150w LEDs w/non-int. ballasts replaced (3) 1000w metal halides
- (2) 113w LEDs w/non-int. ballasts replaced (2) 400w metal halides
- (2) 90w LEDs w/non-int. ballasts replaced (2) 250w metal halides
- (12) 22w LEDs w/non-int. ballasts replaced (4) 2-lamp 42w CFL multi 4-pins
- (5) 20w LEDs w/non-int. ballasts replaced (5) 2' 2-lamp T8s
- (11) 18w LEDs w/non-int. ballasts replaced (11) 1-lamp 42w CFL multi 4-pins
- (14) 18w LEDs w/non-int. ballasts replaced (14) 1-lamp 42w CFL multi 4-pins
- (9) 18w LEDs w/non-int. ballasts replaced (9) 1-lamp 42w CFL multi 4-pins
- (8) 18w LEDs w/non-int. ballasts replaced (8) 1-lamp 42w CFL multi 4-pins
- (7) 9w led - int. ballasts replaced (7) 65w 1-lamp halogens
- (28) 6w led - int. ballasts replaced (28) 50w 1-lamp halogens
- (12) 22w LEDs w/non-int. ballasts replaced (12) 2-lamp 42w CFL multi 4-pins
- (15) 28w LEDs w/non-int. ballasts replaced (15) 4' 2-lamp T8s
- (6) 42w LEDs w/non-int. ballasts replaced (2) 4' 3-lamp T8s
- (4) 30w LEDs w/non-int. ballasts replaced (4) 1-lamp T8 u-tubes
- (7) 42w LEDs w/non-int. ballasts replaced (7) 4' 3-lamp T8s
- (6) 20w LEDs w/non-int. ballasts replaced (3) 3' 4-lamp T8s
- (6) 38w LEDs w/non-int. ballasts replaced (3) 3' 4-lamp T8s
- (3) 4' 6-Lamp T8s were de-lamped

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM, described in section 15.2 M&V Methodology of this report. Custom and Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Exterior	(none)	4,319	1.00	1.00	0.00
Office	Gas	8,760	1.09	1.20	0.85
Restroom (Generic)	Gas	8,760	1.09	1.20	0.85
Non-Warehouse Storage (Generic)	Gas	8,760	1.09	1.20	0.85

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED150W	3	2	1,078	150	4,319	12,672	12,672	1.00	100.0%
MH250 to LED45W	0	0	288	45	4,319	4,198	0	1.00	0.0%
MH400 to LED113W	2	2	453	113	4,319	2,937	2,937	1.00	100.0%
MH250 to LED90W	2	2	288	90	4,319	1,710	1,710	1.00	100.0%
MH100 to LED17W	0	0	124	17	4,319	1,849	0	1.00	0.0%
CFM42W to LED22W	4	12	93	22	4,319	466	466	1.00	100.0%
F17T8 to LED20W	5	5	33	20	4,319	281	281	1.00	100.0%
CFM42W to LED10W	11	11	46	10	8,760	3,781	3,781	1.09	100.0%
CFM42W to LED10W	14	14	46	10	8,760	4,812	4,812	1.09	100.0%
CFM42W to LED10W	9	9	46	10	8,760	3,094	3,094	1.09	100.0%
CFM42W to LED10W	8	8	46	10	8,760	2,750	2,750	1.09	100.0%
H65 to LEDINT9W	7	7	65	9	8,760	3,743	3,743	1.09	100.0%
H50 to LEDINT6W	28	28	50	6	8,760	11,764	11,764	1.09	100.0%

CFM42W to LED22W	12	12	93	22	8,760	8,135	8,135	1.09	100.0%
F32T8 to LED28W	15	15	58	28	8,760	4,297	4,297	1.09	100.0%
F32T8 to LED42W	2	6	85	42	8,760	-783	-783	1.09	100.0%
FU31T8/6 to LED30W	4	4	59	30	8,760	1,108	1,108	1.09	100.0%
F32T8 to LED42W	7	7	85	42	8,760	2,874	2,874	1.09	100.0%
F25T8 to LED20W	3	6	88	20	8,760	1,375	1,375	1.09	100.0%
F25T8 to LED28W	3	6	88	28	8,760	917	917	1.09	100.0%
CFM42W to LED22W	7	7	93	22	8,760	4,746	4,746	1.09	100.0%
MH400 to LED152W	40	40	453	152	8,760	105,470	105,470	1.00	100.0%
F32T8 to LED42W	7	7	85	42	8,760	2,874	2,874	1.09	100.0%
F32T8 to LED42W	6	6	85	42	8,760	2,463	2,463	1.09	100.0%
F32T8 to LED1W	3	0	170	1	8,760	4,467	4,467	1.00	100.0%
					Total	**192,000**	**185,954**		**96.9%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED150W	3	2	1,078	150	0.00	0.00	0.00	1.00	N/A
MH250 to LED45W	0	0	288	45	0.00	0.00	0.00	1.00	N/A
MH400 to LED113W	2	2	453	113	0.00	0.00	0.00	1.00	N/A
MH250 to LED90W	2	2	288	90	0.00	0.00	0.00	1.00	N/A
MH100 to LED17W	0	0	124	17	0.00	0.00	0.00	1.00	N/A
CFM42W to LED22W	4	12	93	22	0.00	0.00	0.00	1.00	N/A
F17T8 to LED20W	5	5	33	20	0.00	0.00	0.00	1.00	N/A
CFM42W to LED10W	11	11	46	10	0.85	0.40	0.40	1.20	100.0%
CFM42W to LED10W	14	14	46	10	0.85	0.52	0.52	1.20	100.0%
CFM42W to LED10W	9	9	46	10	0.85	0.33	0.33	1.20	100.0%
CFM42W to LED10W	8	8	46	10	0.85	0.29	0.29	1.20	100.0%
H65 to LEDINT9W	7	7	65	9	0.85	0.40	0.40	1.20	100.0%
H50 to LEDINT6W	28	28	50	6	0.85	1.26	1.26	1.20	100.0%
CFM42W to LED22W	12	12	93	22	0.85	0.87	0.87	1.20	100.0%
F32T8 to LED28W	15	15	58	28	0.85	0.46	0.46	1.20	100.0%
F32T8 to LED42W	2	6	85	42	0.85	-0.08	-0.08	1.20	100.0%
FU31T8/6 to LED30W	4	4	59	30	0.85	0.12	0.12	1.20	100.0%
F32T8 to LED42W	7	7	85	42	0.85	0.31	0.31	1.20	100.0%
F25T8 to LED20W	3	6	88	20	0.85	0.15	0.15	1.20	100.0%
F25T8 to LED28W	3	6	88	28	0.85	0.10	0.10	1.20	100.0%
CFM42W to LED22W	7	7	93	22	0.85	0.51	0.51	1.20	100.0%

MH400 to LED152W	40	40	453	152	0.85	10.26	10.26	1.00	100.0%
F32T8 to LED42W	7	7	85	42	0.85	0.31	0.31	1.20	100.0%
F32T8 to LED42W	6	6	85	42	0.85	0.26	0.26	1.20	100.0%
F32T8 to LED1W	3	0	170	1	0.85	0.43	0.43	1.00	100.0%
					Total	**16.90**	**16.90**		**100.0%**

Results

The kWh realization rate for project SN8-021 is 96.9%, and the kW realization rate is 100.0%. During the on site M&V visit the Evaluators found that eight of the wall pack fixture has either not been installed or were not operational, slightly lower the kWh realization rate.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH1000 to LED150W	12,672	0.00	100.0%	N/A
MH250 to LED45W	0	0.00	0.0%	N/A
MH400 to LED113W	2,937	0.00	100.0%	N/A
MH250 to LED90W	1,710	0.00	100.0%	N/A
MH100 to LED17W	0	0.00	0.0%	N/A
CFM42W to LED22W	466	0.00	100.0%	N/A
F17T8 to LED20W	281	0.00	100.0%	N/A
CFM42W to LED18W	3,781	0.40	100.0%	100.0%
CFM42W to LED18W	4,812	0.52	100.0%	100.0%
CFM42W to LED18W	3,094	0.33	100.0%	100.0%
CFM42W to LED18W	2,750	0.29	100.0%	100.0%
H65 to LEDINT9W	3,743	0.40	100.0%	100.0%

H50 to LEDINT6W	11,764	1.26	100.0%	100.0%
CFM42W to LED22W	8,135	0.87	100.0%	100.0%
F32T8 to LED28W	4,297	0.46	100.0%	100.0%
F32T8 to LED42W	-783	-0.08	100.0%	100.0%
FU31T8/6 to LED30W	1,108	0.12	100.0%	100.0%
F32T8 to LED42W	2,874	0.31	100.0%	100.0%
F25T8 to LED20W	1,375	0.15	100.0%	100.0%
F25T8 to LED38W	917	0.10	100.0%	100.0%
CFM42W to LED22W	4,746	0.51	100.0%	100.0%
MH400 to LED152W	105,470	10.26	100.0%	100.0%
F32T8 to LED42W	2,874	0.31	100.0%	100.0%
F32T8 to LED42W	2,463	0.26	100.0%	100.0%
F32T8 to LED1W	4,468	0.43	100.0%	100.0%
Total	**185,954**	**16.90**	**96.9%**	**100.0%**

SN8-022

Project Number SN8-022

Program Small Business

Project Background

The participant is an airport service/storage facility that received incentives from Entergy New Orleans for retrofitting energy efficient lighting in their warehouse and warehouse exterior. On-site, the Evaluators verified the participant had installed:

- (35) 230w LEDs w/non-int. ballasts replaced (35) 1000w metal halides
- (6) 250w LEDs w/non-int. ballasts replaced (6) 1000w metal halides
- (5) 17w LEDs w/non-int. ballasts replaced (5) 1-lamp 42w CFL multi 4-pins
- (4) 17w LEDs w/non-int. ballasts replaced (4) 75w 1-lamp halogens
- (8) 15w LEDs w/non-int. ballasts replaced (8) 300w 1-lamp halogens

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Non-Refrigerated Warehouse	(none)	8,760[74]	1.00	1.00	1.00[2]
Exterior	(none)	4,319	1.00	1.00	0.00

[74] Verified continuous operation.

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED230W	35	35	1,078	230	8,760	259,997	259,997	1.00	100.0%
MH1000 to LED250W	6	6	1,078	250	4,319	22,105	21,457	1.00	97.1%
CFM42W to LED17W	5	5	46	17	4,319	663	626	1.00	94.4%
H75 to LED17W	4	4	75	17	4,319	1,031	1,002	1.00	97.2%
H300 to LED15W	8	8	300	15	4,319	9,899	9,847	1.00	99.5%
					Total	**293,695**	**292,929**		**99.7%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED230W	35	35	1,078	230	1.00	22.82	29.68	1.00	130.1%
MH1000 to LED250W	6	6	1,078	250	0.00	1.29	0.00	1.00	N/A
CFM42W to LED17W	5	5	46	17	0.00	0.04	0.00	1.00	N/A
H75 to LED17W	4	4	75	17	0.00	0.06	0.00	1.00	N/A
H300 to LED15W	8	8	300	15	0.00	0.59	0.00	1.00	N/A
					Total	**24.80**	**29.68**		**119.7%**

Results

The kWh realization rate for project SN8-013 is 99.7%, and the peak kW realization rate is 119.7%. Ex ante calculations erroneously listed fixtured as controlled by "Daylighting Control – ON/OFF" and calculated and additional .90 adjustment factor on top of existing NDL hours. On site, the Evaluators verified that the fixtures were operated via photocell and that NDL hours (4,319) were appropriate. This slightly reduced kWh savings. The Evaluators also increased the peak CF of interior fixtures from 0.77 to 1.00 to account for the continuous lighting operation. This adjustment is responsible for the high kW realization rate.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH1000 to LED230W	259,997	29.68	100.0%	130.1%
MH1000 to LED250W	21,457	0.00	97.1%	N/A
CFM42W to LED17W	626	0.00	94.5%	N/A
H75 to LED17W	1,002	0.00	97.2%	N/A
H300 to LED15W	9,847	0.00	99.5%	N/A
Total	**292,929**	**29.68**	**99.7%**	**119.7%**

SN8-023

Project Number SN8-023

Program Small Business

Project Background

The participant is a retailer that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoors. On site, the Evaluators verified that the following had been installed:

- (1) 12w LEDs w/non-int. ballasts replaced (1) 4' 1-lamp T8s
- (51) 24w LEDs w/non-int. ballasts replaced (51) 4' 2-lamp T8s
- (6) 36w LEDs w/non-int. ballasts replaced (6) 4' 3-lamp T8s
- (42) 48w LEDs w/non-int. ballasts replaced (42) 4' 4-lamp T8s
- (3) 24w LEDs w/non-int. ballasts replaced (3) 4' 2-lamp T8s
- (2) 24w LEDs w/non-int. ballasts replaced (2) 4' 2-lamp T8s

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Retail: Other	Gas	4,312	1.09	1.20	0.90

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
F32T8 to LED12W	1	1	31	12	4,312	89	89	1.09	100.0%
F32T8 to LED24W	51	51	58	24	4,312	8,150	8,150	1.09	100.0%
F32T8 to LED36W	6	6	85	36	4,312	1,382	1,382	1.09	100.0%
F32T8 to LED48W	42	42	112	48	4,312	12,634	12,634	1.09	100.0%
F32T8 to LED24W	3	3	58	24	4,312	479	479	1.09	100.0%
F32T8 to LED24W	2	2	58	24	4,312	320	320	1.09	100.0%
					Total	**23,054**	**23,054**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
F32T8 to LED12W	1	1	31	12	0.90	0.02	0.02	1.20	100.0%
F32T8 to LED24W	51	51	58	24	0.90	1.88	1.88	1.20	100.0%
F32T8 to LED36W	6	6	85	36	0.90	0.32	0.32	1.20	100.0%
F32T8 to LED48W	42	42	112	48	0.90	2.90	2.90	1.20	100.0%
F32T8 to LED24W	3	3	58	24	0.90	0.11	0.11	1.20	100.0%
F32T8 to LED24W	2	2	58	24	0.90	0.07	0.07	1.20	100.0%
					Total	**5.30**	**5.30**		**100.0%**

Results

The kWh realization rate for project SN8-023 is 100.0%, and the kW realization rate is 100.0%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
F32T8 to LED12W	89	0.02	100.3%	100.0%
F32T8 to LED24W	8,150	1.88	100.0%	100.0%
F32T8 to LED36W	1,382	0.32	100.0%	100.0%
F32T8 to LED48W	12,634	2.90	100.0%	100.0%
F32T8 to LED24W	479	0.11	100.1%	100.0%
F32T8 to LED24W	320	0.07	99.9%	100.0%
Total	**23,054**	**5.30**	**100.0%**	**100.0%**

SN8-026

Project Number SN8-026

Program Small Business

Project Background

The participant is a restaurant that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoors and outdoors. On site, the Evaluators verified that the following had been installed:

- (155) 9w led - int. ballasts replaced (155) 65w 1-lamp halogens
- (7) 6w led - int. ballasts replaced (7) 50w 1-lamp halogens
- (33) 7w led - int. ballasts replaced (33) 40w 1-lamp halogens
- (16) 5w led - int. ballasts replaced (16) 40w 1-lamp halogens
- (31) 9w led - int. ballasts replaced (31) 43w 1-lamp halogens
- (71) 42w LEDs w/non-int. ballasts replaced (71) 4' 3-lamp T8s
- (4) 30w LEDs w/non-int. ballasts replaced (4) 1-lamp T8 u-tubes
- (19) 28w LEDs w/non-int. ballasts replaced (19) 4' 2-lamp T8s

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Custom and Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEFE	IEFD	CF
Food Service: Sit-Down Restaurant	ER	2,192	0.87	1.20	0.67
Restroom (Generic)	ER	3,516	0.87	1.20	0.90
Food Prep (Generic)	ER	5,543	0.87	1.20	0.81
Corridor/Hallway/Stairwell	ER	5,233	0.87	1.20	0.90
Exterior	(none)	4,319	1.00	1.00	0.00
Bar Area	ER	2,676	0.87	1.20	0.81
Non-Warehouse Storage	ER	4,207	0.87	1.20	0.77

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
H65 to LEDINT9W	46	46	65	9	4,731	10,603	10,603	0.87	100.0%
H65 to LEDINT9W	4	4	65	9	3,516	685	685	0.87	100.0%
H50 to LEDINT6W	7	7	50	6	4,731	1,268	1,268	0.87	100.0%
H65 to LEDINT9W	3	3	65	9	4,731	691	691	0.87	100.0%
H40 to LEDINT7W	3	3	40	7	4,731	407	407	0.87	100.0%
H65 to LEDINT9W	2	2	65	9	4,731	461	461	0.87	100.0%
H40 to LEDINT5W	6	6	40	5	4,731	864	864	0.87	100.0%
H43 to LEDINT9W	6	6	43	9	5,543	984	984	0.87	100.0%
H65 to LEDINT9W	10	10	65	9	5,543	2,701	2,701	0.87	100.0%
F32T8 to LED42W	5	5	85	42	5,543	1,037	1,037	0.87	100.0%
FU31T8/6 to LED30W	3	3	59	30	5,543	420	420	0.87	100.0%
H65 to LEDINT9W	3	3	65	9	4,731	691	691	0.87	100.0%
H40 to LEDINT7W	2	2	40	7	4,731	272	272	0.87	100.0%
F32T8 to LED42W	4	4	85	42	4,731	708	708	0.87	100.0%
FU31T8/6 to LED30W	1	1	59	30	5,233	132	132	0.87	100.0%
F32T8 to LED28W	1	1	58	28	5,233	137	137	0.87	100.0%
F32T8 to LED42W	11	11	85	42	5,543	2,281	2,281	0.87	100.0%
F32T8 to LED28W	4	4	58	28	5,543	579	579	0.87	100.0%
H43 to LEDINT9W	8	8	43	9	5,543	1,312	1,312	0.87	100.0%
F32T8 to LED42W	6	6	85	42	5,233	1,175	1,175	0.87	100.0%
FU31T8/6 to LED30W	2	2	59	30	5,233	264	264	0.87	100.0%

H65 to LEDINT9W	6	6	65	9	4,319	1,451	1,451	1.00	100.0%
H40 to LEDINT7W	2	2	40	7	4,319	285	285	1.00	100.0%
H65 to LEDINT9W	21	21	65	9	4,731	4,840	4,840	0.87	100.0%
H65 to LEDINT9W	33	33	65	9	4,731	7,606	7,606	0.87	100.0%
H40 to LEDINT5W	6	6	40	5	4,731	864	864	0.87	100.0%
H40 to LEDINT7W	23	23	40	7	5,233	3,456	3,456	0.87	100.0%
H65 to LEDINT9W	8	8	65	9	3,516	1,370	1,370	0.87	100.0%
H65 to LEDINT9W	7	7	65	9	4,319	1,693	1,693	1.00	100.0%
H43 to LEDINT9W	12	12	43	9	4,319	1,762	1,762	1.00	100.0%
H43 to LEDINT9W	2	2	43	9	2,676	158	158	0.87	100.0%
H65 to LEDINT9W	2	2	65	9	2,676	261	261	0.87	100.0%
H65 to LEDINT9W	8	8	65	9	5,543	2,160	2,160	0.87	100.0%
F32T8 to LED42W	6	6	85	42	5,543	1,244	1,244	0.87	100.0%
F32T8 to LED28W	1	1	58	28	5,543	208	208	1.25	100.0%
H43 to LEDINT9W	6	6	43	9	5,543	984	984	0.87	100.0%
F32T8 to LED42W	3	3	85	42	4,207	472	472	0.87	100.0%
H40 to LEDINT7W	1	1	40	7	3,516	101	101	0.87	100.0%
F32T8 to LED28W	1	1	58	28	4,207	110	110	0.87	100.0%
F32T8 to LED42W	5	5	85	42	5,543	1,037	1,037	0.87	100.0%
F32T8 to LED28W	1	1	58	28	5,543	208	208	1.25	100.0%
F32T8 to LED42W	4	4	85	42	4,207	630	630	0.87	100.0%
F32T8 to LED28W	4	4	58	28	5,233	546	546	0.87	100.0%
F32T8 to LED28W	2	2	58	28	5,233	273	273	0.87	100.0%
F32T8 to LED42W	24	24	85	42	5,233	4,698	4,698	0.87	100.0%
F32T8 to LED28W	4	4	58	28	5,543	831	831	1.25	100.0%
F32T8 to LED28W	1	1	58	28	5,233	137	137	0.87	100.0%

H65 to LEDINT9W	6	6	65	9	5,233	1,530	1,530	0.87	100.0%
H40 to LEDINT5W	4	4	40	5	5,233	637	637	0.87	100.0%
H43 to LEDINT9W	3	3	43	9	5,543	492	492	0.87	100.0%
F32T8 to LED56W	1	1	112	56	5,233	255	255	0.87	100.0%
					Total	**67,971**	**67,971**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
H65 to LEDINT9W	46	46	65	9	0.81	2.63	2.50	1.20	95.1%
H65 to LEDINT9W	4	4	65	9	0.90	0.25	0.24	1.20	96.0%
H50 to LEDINT6W	7	7	50	6	0.81	0.31	0.30	1.20	96.8%
H65 to LEDINT9W	3	3	65	9	0.81	0.17	0.16	1.20	94.1%
H40 to LEDINT7W	3	3	40	7	0.81	0.10	0.10	1.20	100.0%
H65 to LEDINT9W	2	2	65	9	0.81	0.11	0.11	1.20	100.0%
H40 to LEDINT5W	6	6	40	5	0.81	0.21	0.20	1.20	95.2%
H43 to LEDINT9W	6	6	43	9	0.81	0.22	0.20	1.20	90.9%
H65 to LEDINT9W	10	10	65	9	0.81	0.57	0.54	1.20	94.7%
F32T8 to LED42W	5	5	85	42	0.81	0.27	0.21	1.20	77.8%
FU31T8/6 to LED30W	3	3	59	30	0.81	0.11	0.08	1.20	72.7%
H65 to LEDINT9W	3	3	65	9	0.81	0.17	0.16	1.20	94.1%
H40 to LEDINT7W	2	2	40	7	0.81	0.07	0.06	1.20	85.7%
F32T8 to LED42W	4	4	85	42	0.81	0.22	0.17	1.20	77.3%
FU31T8/6 to LED30W	1	1	59	30	0.90	0.04	0.03	1.20	75.0%

F32T8 to LED28W	1	1	58	28	0.90	0.04	0.03	1.20	75.0%
F32T8 to LED42W	11	11	85	42	0.81	0.60	0.46	1.20	76.7%
F32T8 to LED28W	4	4	58	28	0.81	0.15	0.12	1.20	80.0%
H43 to LEDINT9W	8	8	43	9	0.81	0.29	0.26	1.20	89.7%
F32T8 to LED42W	6	6	85	42	0.90	0.36	0.28	1.20	77.8%
FU31T8/6 to LED30W	2	2	59	30	0.90	0.08	0.06	1.20	75.0%
H65 to LEDINT9W	6	6	65	9	0.00	0.09	0.00	1.00	0.0%
H40 to LEDINT7W	2	2	40	7	0.00	0.02	0.00	1.00	0.0%
H65 to LEDINT9W	21	21	65	9	0.81	1.20	1.14	1.20	95.0%
H65 to LEDINT9W	33	33	65	9	0.81	1.89	1.80	1.20	95.2%
H40 to LEDINT5W	6	6	40	5	0.81	0.21	0.20	1.20	95.2%
H40 to LEDINT7W	23	23	40	7	0.90	0.87	0.82	1.20	94.3%
H65 to LEDINT9W	8	8	65	9	0.90	0.51	0.48	1.20	94.1%
H65 to LEDINT9W	7	7	65	9	0.00	0.10	0.00	1.00	0.0%
H43 to LEDINT9W	12	12	43	9	0.00	0.11	0.00	1.00	0.0%
H43 to LEDINT9W	2	2	43	9	0.81	0.07	0.07	1.20	100.0%
H65 to LEDINT9W	2	2	65	9	0.81	0.13	0.13	1.20	100.0%
H65 to LEDINT9W	8	8	65	9	0.81	0.46	0.44	1.20	95.7%
F32T8 to LED42W	6	6	85	42	0.81	0.33	0.25	1.20	75.8%
F32T8 to LED28W	1	1	58	28	0.81	0.04	0.03	1.25	75.0%
H43 to LEDINT9W	6	6	43	9	0.81	0.22	0.20	1.20	90.9%
F32T8 to LED42W	3	3	85	42	0.77	0.16	0.12	1.20	75.0%
H40 to LEDINT7W	1	1	40	7	0.90	0.04	0.04	1.20	100.0%
F32T8 to LED28W	1	1	58	28	0.77	0.04	0.03	1.20	75.0%
F32T8 to LED42W	5	5	85	42	0.81	0.27	0.21	1.20	77.8%

F32T8 to LED28W	1	1	58	28	0.81	0.04	0.03	1.25	75.0%
F32T8 to LED42W	4	4	85	42	0.77	0.21	0.16	1.20	76.2%
F32T8 to LED28W	4	4	58	28	0.90	0.16	0.13	1.20	81.3%
F32T8 to LED28W	2	2	58	28	0.90	0.08	0.06	1.20	75.0%
F32T8 to LED42W	24	24	85	42	0.90	1.43	1.11	1.20	77.6%
F32T8 to LED28W	4	4	58	28	0.81	0.16	0.12	1.25	75.0%
F32T8 to LED28W	1	1	58	28	0.90	0.04	0.03	1.20	75.0%
H65 to LEDINT9W	6	6	65	9	0.90	0.38	0.36	1.20	94.7%
H40 to LEDINT5W	4	4	40	5	0.90	0.16	0.15	1.20	93.8%
H43 to LEDINT9W	3	3	43	9	0.81	0.11	0.10	1.20	90.9%
F32T8 to LED56W	1	1	112	56	0.90	0.08	0.06	1.20	75.0%
					Total	**16.58**	**14.52**		**87.7%**

Results

The kWh realization rate for project SN8-026 is 100.0%, and the kW realization rate is 87.7%.

Ex ante kW calculations erroneously assumed additional sensor savings for almost all spaces (W_{post} x $Quantity_{post}$ x IEF_d x 0.26/1000). There are no sensors associated with the site, thus no savings can be attributed to them. This correction represents a 12.8% reduction in verified kW. In addition to calculating operating hours, the Evaluators also calculated the peak CF for these areas. The results were 0.67 for most indoor areas and 1.00 for seven of the areas. Ex ante calculations used higher values; 0.77, 0.81 or 0.90, depending upon the area. The verified CFs were used in ex post calculations, reducing the verified kW savings.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
H65 to LEDINT9W	36,745	8.04	100.0%	92.9%

H50 to LEDINT6W	1,268	0.30	100.0%	96.0%
H40 to LEDINT7W	4,521	1.02	100.0%	93.0%
H40 to LEDINT5W	2,366	0.55	100.0%	94.1%
H43 to LEDINT9W	5,692	0.83	100.0%	82.8%
F32T8 to LED42W	13,281	2.97	100.0%	77.0%
FU31T8/6 to LED30W	816	0.17	100.0%	72.4%
F32T8 to LED28W	3,028	0.58	100.0%	76.9%
F32T8 to LED56W	255	0.06	100.0%	77.0%
Total	**67,971**	**14.52**	**100.0%**	**87.7%**

SN8-072

Project Number SN8-072

Program Small Business

Project Background

The participant is a parking facility that received incentives from Entergy New Orleans for retrofitting energy efficient lighting. On site, the Evaluators verified that the following had been installed:

- (73) 24W LED - Non-Int. Ballasts replaced (73) 4' 2-Lamp T8s
- (46) 24W LED - Non-Int. Ballasts replaced (46) 4' 2-Lamp T8s
- (45) 24W LED - Non-Int. Ballasts replaced (45) 4' 2-Lamp T8s
- (49) 24W LED - Non-Int. Ballasts replaced (49) 4' 2-Lamp T8s
- (44) 24W LED - Non-Int. Ballasts replaced (44) 4' 2-Lamp T8s
- (7) 150W LED - Non-Int. Ballasts replaced (7) 1000W Metal Halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Parking Garage	(none)	7,884	1.00	1.00	1.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
F32T8 to LED24W	73	73	58	24	7,884	19,567	19,568	1.00	100.0%
F32T8 to LED24W	46	46	58	24	7,884	12,331	12,331	1.00	100.0%
F32T8 to LED24W	45	45	58	24	7,884	12,063	12,063	1.00	100.0%
F32T8 to LED24W	49	49	58	24	7,884	13,135	13,135	1.00	100.0%
F32T8 to LED24W	44	44	58	24	7,884	11,794	11,794	1.00	100.0%
MH1000 to LED150W	7	7	1,078	150	7,884	51,214	51,214	1.00	100.0%
					Total	**120,104**	**120,105**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
F32T8 to LED24W	73	73	58	24	1.00	2.47	2.47	1.00	100.0%
F32T8 to LED24W	46	46	58	24	1.00	1.56	1.56	1.00	100.0%
F32T8 to LED24W	45	45	58	24	1.00	1.53	1.53	1.00	100.0%
F32T8 to LED24W	49	49	58	24	1.00	1.67	1.67	1.00	100.0%
F32T8 to LED24W	44	44	58	24	1.00	1.50	1.50	1.00	100.0%
MH1000 to LED150W	7	7	1,078	150	1.00	6.50	6.50	1.00	100.0%
					Total	**15.23**	**15.23**		**100.0%**

Results

The kWh realization rate for project SN8-072 is 100.0%, and the kW realization rate is 100.0%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
F32T8 to LED24W	19,568	2.47	100.0%	100.0%
F32T8 to LED24W	12,331	1.56	100.0%	100.0%
F32T8 to LED24W	12,063	1.53	100.0%	100.0%
F32T8 to LED24W	13,135	1.67	100.0%	100.0%
F32T8 to LED24W	11,794	1.50	100.0%	100.0%
MH1000 to LED150W	51,214	6.50	100.0%	100.0%
Total	**120,105**	**15.235**	**100.0%**	**100.0%**

SN8-078

Project Number SN8-078

Program Small Business

Project Background

The participant is a public park that received incentives from Entergy New Orleans for retrofitting energy efficient lighting outdoors. On site, the Evaluators verified that the following had been installed:

- (72) 250W LED - Non-Int. Ballasts replaced (72) 1500W Metal Halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Exterior	(none)	4,319	1.00	1.00	0.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH1500 to LED250W	72	72	1,605	250	4,319	421,362	421,362	1.00	100.0%
					Total	**421,362**	**421,362**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH1500 to LED250W	72	72	1,605	250	0.00	25.37	0.00	1.00	0.0%
					Total	**25.37**	**0.00**		**0.0%**

Results

The kWh realization rate for project SN8-078 is 100.0%, and the kW realization rate is 0.0%. Ex ante kW savings were calculated using a peak CF of .26, which is used in the calculation of savings related to lighting controls. Site documents indicate that these controls were present only for pre-retrofit lighting and were not associated with new fixtures. Further, in both instances the fixtures only operate during non-daylight hours, there are no peak kW savings.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH1500 to LED250W	421,362	0.00	100.0%	0.0%
Total	**421,362**	**0.00**	**100.0%**	**0.0%**

LA7-002

Project Number LA7-002

Program Large CI

Project Background

The participant is a retirement home that received incentives from Entergy New Orleans for optimizing their chiller plant controls and recommissioned their secondary pump. The chiller and secondary pump operated at a constant volume and were retrofit with VFDs and controls to vary the pump and chiller speeds to meet demand loads. On-site, the Evaluators verified the participant had installed:

- Chiller optimization controls
- Secondary pump VFD

Calculation Parameters

Savings were calculated using a Trane Trace energy model to predict the savings associated with retrofitting the chiller controls and a VFD on the secondary pump. The energy model results are shown in Table A below.

Table A, Energy Model Results

Measure	Baseline Energy (kWh/yr)	Proposed Energy (kWh/yr)	Savings (kWh/yr)	Percent Savings
Cooling Tower VFD	2,252,691	1,958,242	88,644	3.94%
Secondary Pump VFD	2,252,691	2,164,047	206,898	9.18%
Combined	**4,505,382**	**4,122,289**	**295,542**	**6.56%**

Savings Calculations

Savings are calculated using the following formulas:

$$kWh_{Savings} = Baseline\ Energy\ Usage - Proposed\ Energy\ Usage$$

Table B, Savings Calculations

Measure	Expected kWh Savings	Realized kWh Savings	Realization Rate
Cooling Tower VFD	88,644	88,644	100.0%
Secondary Pump VFD	205,805	205,805	100.0%
Total	**294,449**	**294,449**	**100.0%**

Results

The kWh realization rate for project LA7-001 is 100%. The Evaluators verified the provided energy model and utility trending data. The provided model did not match the utility bills directly since the energy model was only developed to estimate the chiller system and the facility does not have any submetering available. The Evaluators attempted a billing regression but the uncertainty was too high because the realized savings were less than 10% of the total energy consumption.

Table C, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
Cooling Tower VFD	88,644	-	100.0%	-
Secondary Pump VFD	205,805	-	100.0%	-
Total	**294,449**	**-**	**100.0%**	**-**

LN7-018

Project Number LN7-018

Program Large CI

Project Background

The participant is a large office building that received incentives from Entergy New Orleans for replacing a 1,232 ton chiller. Savings for the chiller replacement will be achieved by the new units using less energy to provide the same amount of cooling energy. On-site, the Evaluators verified the participant had implemented:

- Installed a 1,232 ton centrifugal water cooled chiller

Calculation Parameters

Savings were calculated using the method detailed in the New Orleans TRM section C.3.3., Air and Water Cooled Chillers.

Table A, Chiller Parameters

Capacity	Efficiency Baseline		Efficiency Installed		CF	EFLH cooling
	Full Load	**IPLV**	**Full Load**	**IPLV**		
1232 Tons	0.570	0.539	0.539	0.322	0.84	1,483

Savings Calculations

Savings are calculated using the following formulas:

$$kWh_{savings} = CAP \times EFLH_C \times (\eta_{base} - \eta_{post})$$

$$kW_{Savings} = CAP \times (\eta_{base} - \eta_{post}) \times CF$$

Where:

CAP Rated equipment cooling capacity of the installed unit

$EFLH_C$ Cooling effective full load hours

$Hours$ Operating hours for each bin range from trending data

η_{base} Energy efficiency of the baseline equipment

η_{post} Nameplate energy efficiency of the installed unit

*Note: use the full-load efficiency (kW/ton) for kW savings and IPLV (kW/ton) for kWh.

CF Coincidence factor

Table B, Savings Calculations

Measure	*Expected kWh Savings*	*Realized kWh Savings*	*kWh Realization Rate*	*Expected kW Savings*	*Realized kW Savings*	*kW Realization Rate*
Chiller Replacement	396,471	396,471	100.0%	32.00	32.00	100.0%
Total	**396,471**	**396,471**	**100.0%**	**32.00**	**32.00**	**100.0%**

Results

The kWh realization rate for project LN7-018 is 100.0%.

Table C, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
Chiller Replacement	396,471	32.00	100.0%	100.0%
Total	**396,471**	**32.00**	**100.0%**	**100.0%**

LN7-040

Project Number LN7-040

Program Large CI

Project Background

The participant received incentives from Entergy New Orleans for replacing 184 guest room PTAC units with more efficient units and optimizing savings on 186 guest room PTAC units with a building energy management system, occupancy sensors, and VFDs on the pumps. The installed system will require the guest card reader to be inserted in order to operate the thermostat controls. On-site, the Evaluators verified the participant had implemented:

- Efficient PTAC units
- Occupancy Sensors
- Pump VFDs
- EMS Controls
- Guest Room Energy Management System

Calculation Parameters

PTAC units

Savings were calculated using a Trane Trace energy model to predict the savings associated with retrofitting the efficient units, Occupancy sensors, VFDs and EMS controls. The energy model results are shown in Table A below.

Table A, Energy Model Results

Measure	*Baseline Energy (kWh/yr)*	*Proposed Energy (kWh/yr)*	*Savings (kWh/yr)*	*Percent Savings*
PTAC Upgrade and Optimization	1,103,936	879,779	224,157	20.3%
Total	**1,103,936**	**879,779**	**224,157**	**20.3%**

Guest Room Energy Management Controls

Savings were calculated using a prescriptive deemed savings based on the number of units will controls implemented.

Savings Calculations

Savings are calculated using the following formulas:

PTAC units:

$$kWh_{Savings} = Baseline\ Energy\ Usage - Proposed\ Energy\ Usage$$

Guest Room Energy Management Controls:

$$kWh_{Savings} = \#\ of\ units\ \times Savings\ per\ unit$$

Table B, Deemed Savings Parameters

Measure	*# of Units*	*Savings per Unit*	*Savings*
Guest Room Energy Management Controls	186	355	66,030

Table C, Savings Calculations

Measure	*Expected kWh Savings*	*Realized kWh Savings*	*Realization Rate*
PTAC Upgrade and Optimization	224,157	224,157	100.0%
Guest Room Energy Management Controls	66,030	66,030	100.0%
Total	**290,187**	**290,187**	**100.0%**

Results

The kWh and kW realization rate for project LN07-040 is 100%. The Evaluators verified the provided energy model and utility trending data. The Evaluators attempted a billing regression analysis with energy usage and outside weather, but the energy savings were too small to be able to achieve any statistically relevant results.

Table D, Verified Gross Savings & Realization Rates

Measure	*Verified*			
	kWh Savings	*kW Savings*	*kWh Realization Rate*	*kW Realization Rate*
PTAC Optimization	224,157	-	100.0%	-
Guest Room Energy Management Controls	66,030	-	100.0%	
Total	**290,187**	**-**	**100.0%**	**-**

LN7-057

Project Number LN7-057

Program Large CI

Project Background

The participant received incentives from Entergy New Orleans for replacing three cooling tower units with VFD fan controls and retrofitting a DDC controller for capacity controls. On-site, the Evaluators verified the participant had implemented:

- Three Marley Cooling Cell units with 30 HP fan motors with VFD controls
- A DDC controller setup with an outside air reset schedule

Calculation Parameters

Savings were calculated using a Trane Trace energy model to predict the savings associated with replacing the cooling towers and retrofitting system demand controls. The changes to the energy model between the baseline and proposed were changing the cooling equipment heat rejection from constant speed cooling tower to an optimized VFD control and the cooling equipment chilled water controls from constant setpoint to a reset curve based on outside air temperature. The energy model results are shown in Table A below.

Table A, Energy Model Results

Measure	*Baseline Energy (kWh/yr)*	*Proposed Energy (kWh/yr)*	*Savings (kWh/yr)*	*Percent Savings**
Cooling Tower Replacement and DDC Controls	2,383,940	1,975,733	408,207	17.1%
Total	**2,383,940**	**1,975,733**	**408,207**	**17.1%**

*Percent savings are related to the total cooling load only

Savings Calculations

Savings are calculated using the following formulas:

$$kWh_{Savings} = Baseline\ Energy\ Usage - Proposed\ Energy\ Usage$$

Table B, Savings Calculations

Measure	*Expected kWh Savings*	*Realized kWh Savings*	*Realization Rate*	*Expected kW Savings*	*Realized kW Savings*	*Realization Rate*
Cooling Tower Replacement and DDC Controls	408,207	408,207	100.0%	169.00	169.00	100.0%
Total	**408,207**	**408,207**	**100.0%**	**169.00**	**169.00**	**100.0%**

Results

The kWh realization rate for project LN7-057 is 100.0% and kW realization rate is 100.0%. The Evaluators verified the provided energy model and utility trending data. The provided model did not match the utility bills, the energy model may not model the whole facility, or any unconditioned spaces that would not affect the cooling tower energy usage.

Table C, Verified Gross Savings & Realization Rates

Measure	*Verified*			
	kWh Savings	*kW Savings*	*kWh Realization Rate*	*kW Realization Rate*
Chiller Optimization	408,207	169.00	100.0%	100.0%
Total	**408,207**	**169.00**	**100.0%**	**100.0%**

LN7-058

Project Number LN7-058

Program Large C&I

Project Background

The participant is an outpatient healthcare office space that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoors and outdoors, as well as installing occupancy sensors to control portions of the newly-installed lighting. On-site, the Evaluators verified the participant had installed:

- (6) 17W LED - Non-Int. Ballast replaced (8) 70W HPS;
- (19) 20W LED - Non-Int. Ballast replaced (19) 4' 2-Lamp T8;
- (2) 20W LED - Non-Int. Ballast replaced (3) 4' 2-Lamp HO T12;
- (45) 20W LED - Non-Int. Ballast replaced (45) 4' 2-Lamp T8;
- (17) 20W LED - Non-Int. Ballast replaced (19) 4' 2-Lamp T8;
- (14) 24W LED - Non-Int. Ballast replaced (14) 4' 4-Lamp T8;
- (24) 21W LED - Non-Int. Ballast replaced (24) 90W 1-Lamp Halogen;
- (1) 23W LED - Non-Int. Ballast replaced (2) 2' 2-Lamp T5;
- (8) 21W LED - Non-Int. Ballast replaced (8) 90W 1-Lamp Halogen;
- (4) 17W LED - Non-Int. Ballast replaced (4) 100W Mercury Vapor;
- (82) 20W LED - Non-Int. Ballast replaced (82) 4' 2-Lamp T8;
- (5) 27W LED - Non-Int. Ballast replaced (5) 4' 2-Lamp HO T12;
- (18) 3W LED “Exit” signs replaced (18) 40W incandescent signs; and
- Occupancy sensors controlling a total of (139) fixtures.

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Custom and Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Exterior	(none)	4,319	1.00	1.00	0.00
Health Care: Out-Patient	ER	8,760[75]	.87	1.20	1.00[1]
Health Care: Out-Patient	ER	313[1]	.87	1.20	0.09[1]
Health Care: Out-Patient	ER	1,076[1]	.87	1.20	0.28[1]
Health Care: Out-Patient	ER	2,087[1]	.87	1.20	0.00[1]
Health Care: Out-Patient	ER	3,386[1]	.87	1.20	0.77[1]
Parking Garage	(none)	8,760[1]	1.00	1.00	1.00[1]
Parking Garage	(none)	6,132	1.00	1.00	0.70

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		AOH Pre	AOH Post	Expected kWh Savings	Realized kWh Savings	IEFE	Realization Rate
	Base	Post	Base	Post						
HPS70 to LED17W	8	6	95	17	8,760	8,760	2,842	5,764	1.00	202.8 %
F32T8 to LED20W	9	9	58	20	8,760	313	3,781	3,929	0.87	103.90%
F42T12-HO to LED20W	2	1	58	20	8,760	313	974	879	0.87	90.20%
F32T8 to LED20W	10	10	58	20	8,760	313	4,201	4,366	0.87	103.90%

[75] Calculated using photo-logging equipment left one site to monitor lighting operation and/or interviews with facility staff regarding lighting operating hours.

F42T12-HO to LED20W	1	1	58	20	8,760	313	420	437	0.87	104.0%
F32T8 to LED24W	9	9	58	24	8,760	8,760	2,922	2,332	0.87	79.80%
F32T8 to LED29W	2	2	58	29	8,760	1,076	720	830	0.87	115.3%
F32T8 to LED24W	2	2	58	24	8,760	1,076	787	839	0.87	106.60%
F32T8 to LED29W	2	1	58	29	8,760	1,076	914	857	0.87	93.80%
F32T8 to LED24W	2	2	58	24	8,760	1,076	787	839	0.87	106.60%
F32T8 to LED24W	4	4	58	24	8,760	8,760	1,299	1,036	0.87	79.80%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED24W	1	1	58	24	8,760	1,076	393	420	0.87	106.9%
F32T8 to LED24W	1	1	58	24	8,760	8,760	325	259	0.87	79.70%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED24W	2	2	58	24	8,760	1,076	787	839	0.87	106.60%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED24W	10	10	58	24	8,760	8,760	3,246	2,591	0.87	79.80%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED24W	2	2	58	24	8,760	1,076	787	839	0.87	106.60%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED24W	4	4	58	24	8,760	8,760	1,299	1,036	0.87	79.80%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED24W	2	2	58	24	8,760	1,076	787	839	0.87	106.60%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%

F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED24W	4	4	58	24	8,760	8,760	1,299	1,036	0.87	79.80%
F32T8 to LED29W	1	1	58	29	8,760	1,076	360	415	0.87	115.3%
F32T8 to LED24W	2	2	58	24	8,760	1,076	787	839	0.87	106.60%
F32T8 to LED29W	2	1	58	29	8,760	1,076	914	857	0.87	93.80%
F32T8 to LED24W	9	9	112	24	2,087	2,087	7,562	1,438	0.87	19.00%
H90 to LED21W	9	9	90	21	2,087	2,087	5,930	1,128	0.87	19.00%
F32T8 to LED24W	5	5	112	24	2,087	2,087	4,201	799	0.87	19.00%
H90 to LED21W	1	1	90	21	8,760	1,076	719	666	0.87	92.6%
F14T5 to LED23W	2	1	33	23	8,760	8,760	411	329	0.87	80.0%
H90 to LED21W	14	14	90	21	4,319	4,319	4,172	4,172	1.00	100.00%
H90 to LED45W	8	8	90	45	4,319	4,319	1,555	1,555	1.00	100.00%
MV100 to LED17W	4	4	125	17	4,319	4,319	1,866	1,866	1.00	100.00%
F32T8 to LED27W	82	82	58	27	8,760	6,132	28,086	28,086	1.00	100.00%
F42T12 to LED27W	5	5	58	27	8,760	6,132	1,713	1,713	1.00	100.00%
I40 to LED3W	18	18	40	3	8,760	8,760	2,271	5,076	0.87	223.50%
						Total	**93,434**	**83,883**		**89.8%**

Table C Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF_{pre}	CF_{post}	Expected kW Savings	Realized kW Savings	IEFD	Realization Rate
	Base	Post	Base	Post						
HPS70 to LED17W	8	6	95	17	1.00	1.00	0.00	0.66	1.00	N/A
F32T8 to LED20W	9	9	58	20	1.00	0.09	0.37	0.61	1.20	164.9%
F42T12-HO to LED20W	2	1	58	20	1.00	0.09	0.09	0.14	1.20	155.6%
F32T8 to LED20W	10	10	58	20	1.00	0.09	0.41	0.68	1.20	165.9%

F42T12-HO to LED20W	1	1	58	20	1.00	0.09	0.04	0.07	1.20	175.0%
F32T8 to LED24W	9	9	58	24	1.00	1.00	0.28	0.37	1.20	132.1%
F32T8 to LED29W	2	2	58	29	1.00	0.28	0.07	0.12	1.20	171.4%
F32T8 to LED24W	2	2	58	24	1.00	0.28	0.08	0.12	1.20	150.0%
F32T8 to LED29W	2	1	58	29	1.00	0.28	0.09	0.13	1.20	144.4%
F32T8 to LED24W	2	2	58	24	1.00	0.28	0.08	0.12	1.20	150.0%
F32T8 to LED24W	4	4	58	24	1.00	1.00	0.13	0.16	1.20	123.1%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%
F32T8 to LED24W	1	1	58	24	1.00	0.28	0.04	0.06	1.20	150.0%
F32T8 to LED24W	1	1	58	24	1.00	1.00	0.03	0.04	1.20	133.3%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%
F32T8 to LED24W	2	2	58	24	1.00	0.28	0.08	0.12	1.20	150.0%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%
F32T8 to LED24W	10	10	58	24	1.00	1.00	0.31	0.41	1.20	132.3%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%
F32T8 to LED24W	2	2	58	24	1.00	0.28	0.08	0.12	1.20	150.0%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%
F32T8 to LED24W	4	4	58	24	1.00	1.00	0.13	0.16	1.20	123.1%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%
F32T8 to LED24W	2	2	58	24	1.00	0.28	0.08	0.12	1.20	150.0%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.03	0.06	1.20	200.0%

F32T8 to LED24W	4	4	58	24	1.00	1.00	0.13	0.16	1.20	123.1%
F32T8 to LED29W	1	1	58	29	1.00	0.28	0.04	0.06	1.20	150.0%
F32T8 to LED24W	2	2	58	24	1.00	0.28	0.08	0.12	1.20	150.0%
F32T8 to LED29W	2	1	58	29	1.00	0.28	0.09	0.13	1.20	144.4%
F32T8 to LED24W	9	9	112	24	0.00	0.00	0.73	0.00	1.20	0.0%
H90 to LED21W	9	9	90	21	0.00	0.00	0.56	0.00	1.20	0.0%
F32T8 to LED24W	5	5	112	24	0.00	0.00	0.40	0.00	1.20	0.0%
H90 to LED21W	1	1	90	21	1.00	0.28	0.07	0.10	1.20	142.9%
F14T5 to LED23W	2	1	33	23	1.00	1.00	0.04	0.05	1.20	125.0%
H90 to LED21W	14	14	90	21	0.00	0.00	0.00	0.00	1.00	N/A
H90 to LED45W	8	8	90	45	0.00	0.00	0.00	0.00	1.00	N/A
MV100 to LED17W	4	4	125	17	0.00	0.00	0.00	0.00	1.00	N/A
F32T8 to LED27W	82	82	58	27	1.00	0.70	3.21	3.21	1.00	100.0%
F42T12 to LED27W	5	5	58	27	1.00	0.70	0.20	0.20	1.00	100.0%
I40 'Exit' signs to LED3W 'Exit' signs	18	18	40	3	0.77	0.77	0.60	0.62	1.20	103.3%
				Total			**8.90**	**9.58**		**107.6%**

Results

The kWh realization rate for project LN7-058 is 89.8% while the kW realization rate is 107.6%. Prior to the retrofit, lighting in most areas was left on continuously. During the retrofit, occupancy sensors were installed to control 64.2% (by post-retrofit connected load) of the lighting. An appropriate deemed reduction of 30% was used in ex ante savings calculations, however lighting operation taken from photo-loggers left on site, showed a far greater reduction in operation due to the sensors: a 90.7% reduction vs a 30% reduction. Additionally, the Evaluators found that one set of exterior fixtures operates continuously, as opposed to non-daylight hours claimed in ex ante calculations. These adjustments would result in a >100% realization rate, however they are offset by four factors:

- First, ex ante calculations assumed gas heating, However on site the Evaluators determined all interior areas were heated with ER systems.

- Second, one area was found to operate 2,087 hours annually, rather than 8,760, assumed in ex ante calculations.
- Third, “Café” area hours were assumed to be continuous in ex ante calculations but were determined to be 2,087 during the onsite visit.
- Finally, ex ante calculations assumed that “Exit” signs operated 3,386 hours annually, instead of continuously, as required by law. When combined, these factors bring the kWh realization rate down below 100%.

Ex ante calculations assumed a deemed peak coincidence factor for all continuously-operating fixtures. The Evaluators increased this value to 1.00 to account for the continuous operation. In addition to using photo-logging data to calculate the AOH reductions due to the occupancy sensors, the Evaluators also calculated the reductions in peak CFs and applied them to calculations. These greater-than-expected reductions increased verified kW savings.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
HPS70 to LED17W	5,764	0.66	202.80%	N/A
F32T8 to LED20W	3,929	0.61	103.90%	164.9%
F42T12-HO to LED20W	879	0.14	90.20%	155.6%
F32T8 to LED20W	4,366	0.68	103.90%	165.9%
F42T12-HO to LED20W	437	0.07	104.0%	175.0%
F32T8 to LED24W	2,332	0.37	79.80%	132.1%
F32T8 to LED29W	830	0.12	115.3%	171.4%
F32T8 to LED24W	839	0.12	106.60%	150.0%
F32T8 to LED29W	857	0.13	93.80%	144.4%
F32T8 to LED24W	839	0.12	106.60%	150.0%
F32T8 to LED24W	1,036	0.16	79.80%	123.1%
F32T8 to LED29W	415	0.06	115.3%	200.0%
F32T8 to LED29W	415	0.06	115.3%	200.0%

F32T8 to LED29W	415	0.06	115.3%	200.0%
F32T8 to LED24W	420	0.06	106.9%	150.0%
F32T8 to LED24W	259	0.04	79.70%	133.3%
F32T8 to LED29W	415	0.06	115.20%	200.0%
F32T8 to LED29W	415	0.06	115.20%	200.0%
F32T8 to LED24W	839	0.12	106.60%	150.0%
F32T8 to LED29W	415	0.06	115.20%	200.0%
F32T8 to LED24W	2,591	0.41	79.80%	132.3%
F32T8 to LED29W	415	0.06	115.20%	200.0%
F32T8 to LED24W	839	0.12	106.60%	150.0%
F32T8 to LED29W	415	0.06	115.3%	200.0%
F32T8 to LED29W	415	0.06	115.3%	200.0%
F32T8 to LED24W	1,036	0.16	79.80%	123.1%
F32T8 to LED29W	415	0.06	115.3%	200.0%
F32T8 to LED24W	839	0.12	106.60%	150.0%
F32T8 to LED29W	415	0.06	115.3%	200.0%
F32T8 to LED29W	415	0.06	115.3%	200.0%
F32T8 to LED24W	1,036	0.16	79.80%	123.1%
F32T8 to LED29W	415	0.06	115.3%	150.0%
F32T8 to LED24W	839	0.12	106.60%	150.0%
F32T8 to LED29W	857	0.13	93.80%	144.4%
F32T8 to LED24W	1,438	0.00	19.00%	0.0%
H90 to LED21W	1,128	0.00	19.00%	0.0%
F32T8 to LED24W	799	0.00	19.00%	0.0%
H90 to LED21W	666	0.10	92.6%	142.9%
F14T5 to LED23W	329	0.05	79.8%	125.0%

H90 to LED21W	4,172	0.00	100.00%	N/A
H90 to LED45W	1,555	0.00	100.00%	N/A
MV100 to LED17W	1,863	0.00	100.00%	N/A
F32T8 to LED27W	28,086	3.21	100.00%	100.0%
F42T12 to LED27W	1,713	0.20	100.00%	100.0%
I40 to LED3W	5,076	0.62	223.50%	103.3%
Total	**83,883**	**9.58**	**89.8%**	**107.6%**

LN7-059

Project Number LN7-059

Program Large C&I

Project Background

The participant is a manufacturing and warehouse space with offices that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoors and outdoors. On-site, the Evaluators verified the participant had installed:

- (1) 30w LEDs w/non-int. ballasts replaced (1) 4' 2-lamp T12s
- (16) 96w LEDs w/non-int. ballasts replaced (16) 400w metal halides
- (20) 96w LEDs w/non-int. ballasts replaced (4) 400w metal halides
- (1) 32w LEDs w/non-int. ballasts replaced (1) 4' 4-lamp T8s
- (32) 32w LEDs w/non-int. ballasts replaced (32) 4' 4-lamp T8s
- (121) 32w LEDs w/non-int. ballasts replaced (121) 4' 4-lamp T8s
- (4) 32w LEDs w/non-int. ballasts replaced (4) 4' 4-lamp T8s
- (8) 32w LEDs w/non-int. ballasts replaced (8) 4' 4-lamp T8s
- (6) 32w LEDs w/non-int. ballasts replaced (6) 4' 4-lamp T8s
- (4) 32w LEDs w/non-int. ballasts replaced (4) 4' 4-lamp T8s
- (2) 26w LEDs w/non-int. ballasts replaced (2) 2-lamp T12s
- (37) 32w LEDs w/non-int. ballasts replaced (37) 4' 4-lamp T8s
- (2) 26w LEDs w/non-int. ballasts replaced (2) 2-lamp T12s
- (16) 40w LEDs w/non-int. ballasts replaced (16) 4' 4-lamp T8s
- (56) 32w LEDs w/non-int. ballasts replaced (56) 4' 2-lamp T8s
- (1) 26w LEDs w/non-int. ballasts replaced (1) 2-lamp T12s
- (21) 32w LEDs w/non-int. ballasts replaced (21) 4' 4-lamp T8s
- (13) 32w LEDs w/non-int. ballasts replaced (13) 4' 3-lamp T8s
- (7) 26w LEDs w/non-int. ballasts replaced (7) 2-lamp 20w CFL quads
- (6) 32w LEDs w/non-int. ballasts replaced (6) 4' 2-lamp T12s
- (7) 26w LEDs w/non-int. ballasts replaced (4) 2-lamp 20w CFL quads
- (1) 90w LEDs w/non-int. ballasts replaced (1) 360w hpss
- (6) 60w LEDs w/non-int. ballasts replaced (6) 360w hpss

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM, described in section 15.2 M&V Methodology of this report. Custom and Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Warehouse: Non-Refrigerated	ER	2,543[76]	1.00	1.20	0.69[1]
Manufacturing	ER	5,515[1]	.87	1.20	0.82[1]
Manufacturing	ER	5, 638[1]	.87	1.20	0.82[1]
Manufacturing	ER	6,022[1]	.87	1.20	0.83[1]
Office (attached to other facility)	ER	2,042[1]	.87	1.20	0.48[1]
Exterior	(none)	4,319	1.00	1.00	0.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
F42T12 to LED30W	1	1	58	30	2,543	74	62	0.87	83.8%
MH400 to LED96W	16	16	453	96	2,543	15,048	12,637	0.87	84.0%
MH400 to LED96W	20	4	453	96	2,543	22,857	19,194	0.87	84.0%
F32T8 to LED32W	1	1	112	32	2,543	211	177	0.87	83.9%
F32T8 to LED32W	32	32	112	32	2,543	16,018	5,664	0.87	35.4%
F32T8 to LED32W	121	121	112	32	5,515	60,564	46,446	0.87	76.7%
F32T8 to LED32W	4	4	112	32	2,042	2,002	568	0.87	28.4%
F32T8 to LED32W	8	8	112	32	5,638	4,004	3,139	0.87	78.4%
F32T8 to LED32W	6	6	112	32	5,638	3,003	2,354	0.87	78.4%

[76] Calculated using photo-logging equipment left one site to monitor lighting operation.

F32T8 to LED32W	4	4	112	32	5,638	2,002	1,570	0.87	78.4%
FU2T12 to LED26W	2	2	60	26	5,638	425	334	0.87	78.6%
F32T8 to LED32W	37	37	112	32	6,022	18,520	15,508	0.87	83.7%
FU2T12 to LED26W	2	2	60	26	6,022	425	356	0.87	83.8%
F32T8 to LED40W	16	16	112	40	5,638	7,208	5,650	0.87	78.4%
F32T8 to LED32W	56	56	58	32	2,042	7,504	2,586	0.87	34.5%
FU2T12 to LED26W	1	1	60	26	2,042	175	60	0.87	34.3%
F32T8 to LED32W	21	21	112	32	2,042	8,658	2,984	0.87	34.5%
F32T8 to LED32W	13	13	85	32	2,042	3,551	1,224	0.87	34.5%
CFQ20W to LED26W	7	7	46	26	2,042	721	249	0.87	34.5%
F42T12 to LED32W	6	6	58	32	2,042	804	277	0.87	34.5%
CFQ20W to LED26W	7	4	46	26	2,042	1,123	387	0.87	34.5%
HPS360 to LED90W	1	1	414	90	4,319	1,399	1,399	1.00	100.0%
HPS360 to LED60W	6	6	414	60	4,319	9,174	9,174	1.00	100.0%
					Total	**185,470**	**131,999**		**71.2%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
F42T12 to LED30W	1	1	58	30	0.69	0.03	0.02	1.00	66.7%
MH400 to LED96W	16	16	453	96	0.69	5.28	3.93	1.00	74.4%
MH400 to LED96W	20	4	453	96	0.69	8.02	5.96	1.00	74.3%
F32T8 to LED32W	1	1	112	32	0.69	0.07	0.06	1.00	85.7%
F32T8 to LED32W	32	32	112	32	0.69	2.24	2.11	1.20	94.2%

F32T8 to LED32W	121	121	112	32	0.82	8.46	9.48	1.20	112.1%
F32T8 to LED32W	4	4	112	32	0.48	0.28	0.18	1.20	64.3%
F32T8 to LED32W	8	8	112	32	0.82	0.56	0.63	1.20	112.5%
F32T8 to LED32W	6	6	112	32	0.82	0.42	0.47	1.20	111.9%
F32T8 to LED32W	4	4	112	32	0.82	0.28	0.31	1.20	110.7%
FU2T12 to LED26W	2	2	60	26	0.82	0.06	0.07	1.20	116.7%
F32T8 to LED32W	37	37	112	32	0.83	2.59	2.93	1.20	113.1%
FU2T12 to LED26W	2	2	60	26	0.83	0.06	0.07	1.20	116.7%
F32T8 to LED40W	16	16	112	40	0.82	1.01	1.13	1.20	111.9%
F32T8 to LED32W	56	56	58	32	0.48	1.35	0.83	1.20	61.5%
FU2T12 to LED26W	1	1	60	26	0.48	0.03	0.02	1.20	66.7%
F32T8 to LED32W	21	21	112	32	0.48	1.55	0.96	1.20	61.9%
F32T8 to LED32W	13	13	85	32	0.48	0.64	0.39	1.20	60.9%
CFQ20W to LED26W	7	7	46	26	0.48	0.13	0.08	1.20	61.5%
F42T12 to LED32W	6	6	58	32	0.48	0.14	0.09	1.20	64.3%
CFQ20W to LED26W	7	4	46	26	0.48	0.20	0.12	1.20	60.0%
HPS360 to LED90W	1	1	414	90	0.00	0.00	0.00	1.00	N/A
HPS360 to LED60W	6	6	414	60	0.00	0.00	0.00	1.00	N/A
					Total	**33.40**	**29.84**		**89.3%**

Results

The kWh realization rate for project SN7-059 is 71.2%, while the kW realization rate is 89.3%. Ex ante calculations assumed deemed AOH of 2,417, 5,740 and 4,728 for the Warehouse, Manufacturing and Office areas, respectively. The Evaluators used lighting operating hours stated by the site contact as well as data extrapolated from photo-logging equipment left on site to develop estimates of 2,543, 5,638 and 2,042 for these respective areas. While Warehouse and Manufacturing areas remained close to deemed estimates, the verified Office areas AOH were less than 50% of the deemed estimates, leading to a low kWh realization rate for those areas. Also, ex ante calculations assumed gas heating for all interior spaces, however during the M&V visit the Evaluators found that the building was heated by electric resistance heating. ER heating kWh factors are used in ex post calculations, reducing verified kWh estimates. In addition to measuring AOH, data from photo-logging equipment was also used to develop peak CFs for the three aforementioned areas; the Warehouse factor was updated from .77 to .69 and the Manufacturing factor was updated from .73 to .83. In addition to the difference in expected vs verified Office AOH, Evaluators found that the peak CF was closer to .48 than .77, diminishing realized peak kW reductions for that area. Finally, ex ante calculations assumed conditioned Warehouse areas, however on site the Evaluators learned that this particular area was not conditioned, leading to a lower verified kW savings estimate.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
F42T12 to LED30W	62	0.02	83.7%	66.7%
MH400 to LED96W	12,637	3.93	84.0%	74.4%
MH400 to LED96W	19,194	5.96	84.0%	74.3%
F32T8 to LED32W	177	0.06	83.9%	85.7%
F32T8 to LED32W	5,664	2.11	35.4%	94.2%
F32T8 to LED32W	46,446	9.48	76.7%	112.1%
F32T8 to LED32W	568	0.18	28.4%	64.3%
F32T8 to LED32W	3,139	0.63	78.4%	112.5%

F32T8 to LED32W	2,354	0.47	78.4%	111.9%
F32T8 to LED32W	1,570	0.31	78.4%	110.7%
FU2T12 to LED26W	334	0.07	78.5%	116.7%
F32T8 to LED32W	15,508	2.93	83.7%	113.1%
FU2T12 to LED26W	356	0.07	83.8%	116.7%
F32T8 to LED40W	5,650	1.13	78.4%	111.9%
F32T8 to LED32W	2,586	0.83	34.5%	61.5%
FU2T12 to LED26W	60	0.02	34.5%	66.7%
F32T8 to LED32W	2,984	0.96	34.5%	61.9%
F32T8 to LED32W	1,224	0.39	34.5%	60.9%
CFQ20W to LED26W	249	0.08	34.5%	61.5%
F42T12 to LED32W	277	0.09	34.5%	64.3%
CFQ20W to LED26W	387	0.12	34.5%	60.0%
HPS360 to LED90W	1,399	0.00	100.0%	N/A
HPS360 to LED60W	9,174	0.00	100.0%	N/A
Total	**131,999**	**29.84**	**71.2%**	**89.3%**

LN7-061

Project Number LN7-061

Program Large CI

Project Background

The participant is a hotel that received incentives from Entergy New Orleans for installing VFDs on condenser water pumps and retrofitting controls on the chillers to allow for variable condenser water flow. The existing equipment operated with a constant speed condenser pump. The proposed system will change the condenser water pump speed based on cooling demand. On-site, the Evaluators verified the participant had implemented:

- Chiller optimization controls
- Condenser water pump VFD

Calculation Parameters

Savings were calculated using a Trane Trace energy model to predict the savings associated with retrofitting the chiller controls and VFDs on the condenser pump. The energy model results are shown in Table A below.

Table A, Energy Model Results

Measure	*Baseline Energy (kWh/yr)*	*Proposed Energy (kWh/yr)*	*Savings (kWh/yr)*	*Percent Savings*
Central Plant Optimization	1,263,957	1,158,025	105,932	8.38%
Total	**1,263,957**	**1,158,025**	**105,932**	**8.38%**

Savings Calculations

Savings are calculated using the following formulas:

$$kWh_{Savings} = Baseline\ Energy\ Usage - Proposed\ Energy\ Usage$$

Table B, Savings Calculations

Measure	*Expected kWh Savings*	*Realized kWh Savings*	*Realization Rate*
Central Plant Optimization	105,932	105,932	100.0%
Total	**105,932**	**105,932**	**100.0%**

Results

The kWh realization rate for project LN7-061 is 100%. The Evaluators verified the provided energy model and utility trending data. The provided model did not match the utility bills directly since the energy model was only developed to estimate the chiller system and the facility does not have any submetering available. The provided model estimates the energy usage for the central plant which will show the variability in energy usage between winter and summer months. This energy model central plant energy usage profile is very similar to the variation in energy usage from the utility data which means the energy model is most likely accurate to the actual facility usage.

The Evaluators attempted a billing regression, but the uncertainty was too high because the realized savings were less than 10% of the total energy consumption.

Table C, Verified Gross Savings & Realization Rates

Measure	***Verified***			
	kWh Savings	***kW Savings***	***kWh Realization Rate***	***kW Realization Rate***
Central Plant Optimization	105,932	-	100.0%	-
Total	**105,932**	**-**	**100.0%**	**-**

LN8-003

Project Number LN8-003

Program Large CI

Project Background

The participant is a large office building received incentives from Entergy New Orleans for installing VFDs on the air handling fan motors on 17 floors. Nine are 25 hp and eight are 20 hp fan motors and will be controlled to maintain static pressure by reducing the motor speed. On-site, the Evaluators verified the participant had implemented:

- VFDs on seventeen fan motors, (9) 25-HP and (8) 20-HP
- VFD controls to modulate to static pressure

Calculation Parameters

Savings were calculated using a bin analysis comparing the outside air temperature to an estimated % airflow. Savings are achieved by the difference in motor power between using a VFD and the motor pressure fan curve efficiency.

Table A below shows the bin analysis parameters used in the savings calculations described in the next section.

Table A, Unit Parameters

Temperature Bin Range	*Total Hours*	*Fan Operating Hours*	*Airflow %*	*Baseline kW*	*Proposed kW*
95 and above	8	8	100%	325.1	334.1
90-95	131	113	97%	304.2	294.8
85-90	556	425	94%	284.1	258.2
80-85	1266	744	91%	284.1	258.2
75-80	1747	702	88%	264.9	224.5
70-75	983	449	85%	264.9	224.5
65-70	901	361	82%	246.5	193.4
60-65	1046	394	60%	180.8	97.1
55-60	618	247	60%	180.8	97.1

50-55	536	200	60%	180.8	97.1
45-50	346	187	60%	180.8	97.1
40-45	295	133	60%	180.8	97.1
35-40	237	73	60%	180.8	97.1
30-35	62	22	60%	180.8	97.1
25-30	28	11	60%	180.8	97.1
20 and below	0	0	60%	180.8	97.1

The % airflow estimate to outside air temperature was confirmed using trending data from the chiller and local weather data.

Savings Calculations

Savings are calculated using the following formulas:

$$kWh_{Savings} = \sum_{TempBin} (kW_{base} - kW_{prop}) \times hours_{bin}$$

$$kW_{fan} = kW_{max} \times (A + B \times \%speed + C \times \%speed^2)$$

$$kW_{max} = \frac{HP \times 0.746 \times LF}{\eta_{motor} \times \eta_{VFD}}$$

$$kW_{Savings} = kW_{peak,pre} - kW_{peak,post}$$

Where:

kW_{fan} Motor power demand based on the percentage of expected airflow

$hour_{bin}$Hours for each 5 degree temperature bin based on the TMY3 weather data

$hours_{total}$Total annual operating hours

HP Nameplate fan motor Horsepower

LF Load Factor

η_{motor} Nameplate fan motor efficiency

η_{VFD} VFD power efficiency

$A, B, and\ C$Fan curve coefficients to estimate motor fan power

kW_{peak}Average power demand during peak period of weekdays between 3-6 PM

Table B, Savings Calculations

Measure	*Expected kWh Savings*	*Realized kWh Savings*	*kWh Realization Rate*	*Expected kW Savings*	*Realized kW Savings*	*kW Realization Rate*
VFDs	175,630	171,139	97.4%	2.90	27.97	964.5%
Total	**175,630**	171,139	**97.4%**	**2.90**	**27.97**	**964.5%**

Results

The kWh and kW realization rate for project LN8-003 is 97.4% and 964.5% respectively. The Evaluators used the same methodology and assumptions stated in the ex-ante calculations for the energy savings. The motor on supply fan 2 was not changed, thus the efficiency did not change, resulting in a slightly low realization rate.

LN8-004

Project Number LN8-004

Program Large C&I

Project Background

The participant is a large office building that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoor. On-site, the Evaluators verified the participant had installed:

- (300) 30w LEDs w/non-int. ballasts replaced (300) 1-lamp T8 u-tubes
- (313) 30w LEDs w/non-int. ballasts replaced (313) 1-lamp T8 u-tubes
- (260) 30w LEDs w/non-int. ballasts replaced (260) 4'2-lamp T12s
- (177) 30w LEDs w/non-int. ballasts replaced (177) 1-lamp T8 u-tubes
- (336) 30w LEDs w/non-int. ballasts replaced (336) 4'2-lamp T12s
- (325) 30w LEDs w/non-int. ballasts replaced (325) 1-lamp T8 u-tubes
- (306) 30w LEDs w/non-int. ballasts replaced (306) 1-lamp T8 u-tubes
- (328) 30w LEDs w/non-int. ballasts replaced (328) 1-lamp T8 u-tubes
- (276) 30w LEDs w/non-int. ballasts replaced (276) 1-lamp T8 u-tubes
- (305) 30w LEDs w/non-int. ballasts replaced (305) 1-lamp T8 u-tubes
- (2) 28w LEDs w/non-int. ballasts replaced (2) 4' 3-lamp T8s
- (5) 28w LEDs w/non-int. ballasts replaced (5) 4' 3-lamp T8s

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM, described in section 15.2 M&V Methodology of this report. Custom and Deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Office	ER	4,643[77]	0.87	1.20	.69[1]

[77] Deemed AOH for an office space such as this are 5,159, However the building (and all fixtures in this analysis) employ daylight-sensing lighting controls. The stimulated control factor for this type of sensor is 0.90, resulting in 4,643. These adjusted hours were used in both ex ante and ex post calculations. A similar adjustment was made to the peak CF.

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
FU31T8/6 to LED30W	300	300	59	30	4,643	35,144	35,144	0.87	100.0%
FU31T8/6 to LED30W	313	313	59	30	4,643	36,667	36,667	0.87	100.0%
FU2ILL to LED30W	260	260	59	30	4,643	30,458	30,458	0.87	100.0%
FU31T8/6 to LED30W	177	177	59	30	4,643	20,735	20,735	0.87	100.0%
FU2ILL to LED30W	336	336	59	30	4,643	39,361	39,361	0.87	100.0%
FU31T8/6 to LED30W	325	325	59	30	4,643	38,072	38,072	0.87	100.0%
FU31T8/6 to LED30W	306	306	59	30	4,643	35,846	35,846	0.87	100.0%
FU31T8/6 to LED30W	328	328	59	30	4,643	38,424	38,424	0.87	100.0%
FU31T8/6 to LED30W	276	276	59	30	4,643	32,332	32,332	0.87	100.0%
FU31T8/6 to LED30W	305	305	59	30	4,643	35,729	35,729	0.87	100.0%
F32T8 to LED28W	2	2	85	28	4,643	461	461	0.87	100.0%
F32T8 to LED28W	5	5	85	28	4,643	1,151	1,151	0.87	100.0%
					Total	**344,380**	**344,380**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
FU31T8/6 to LED30W	300	300	59	30	0.26	2.71	2.71	1.20	100.0%
FU31T8/6 to LED30W	313	313	59	30	0.26	2.83	2.83	1.20	100.0%
FU2ILL to LED30W	260	260	59	30	0.26	2.35	2.35	1.20	100.0%
FU31T8/6 to LED30W	177	177	59	30	0.26	1.60	1.60	1.20	100.0%
FU2ILL to LED30W	336	336	59	30	0.26	3.04	3.04	1.20	100.0%
FU31T8/6 to LED30W	325	325	59	30	0.26	2.94	2.94	1.20	100.0%
FU31T8/6 to LED30W	306	306	59	30	0.26	2.77	2.77	1.20	100.0%
FU31T8/6 to LED30W	328	328	59	30	0.26	2.97	2.97	1.20	100.0%
FU31T8/6 to LED30W	276	276	59	30	0.26	2.50	2.50	1.20	100.0%
FU31T8/6 to LED30W	305	305	59	30	0.26	2.76	2.76	1.20	100.0%
F32T8 to LED28W	2	2	85	28	0.26	0.04	0.04	1.20	100.0%
F32T8 to LED28W	5	5	85	28	0.26	0.09	0.09	1.20	100.0%
					Total	**26.60**	**26.60**		**100.0%**

Results

The kWh realization rate for project SN8-004 is 100%, and the kW realization rate is 100.0%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
FU31T8/6 to LED30W	35,144	2.71	100.0%	100.0%
FU31T8/6 to LED30W	36,667	2.83	100.0%	100.0%
FU2ILL to LED30W	30,458	2.35	100.0%	100.0%
FU31T8/6 to LED30W	20,735	1.60	100.0%	100.0%
FU2ILL to LED30W	39,361	3.04	100.0%	100.0%
FU31T8/6 to LED30W	38,072	2.94	100.0%	100.0%
FU31T8/6 to LED30W	35,846	2.77	100.0%	100.0%
FU31T8/6 to LED30W	38,424	2.97	100.0%	100.0%
FU31T8/6 to LED30W	32,332	2.50	100.0%	100.0%
FU31T8/6 to LED30W	35,729	2.76	100.0%	100.0%
F32T8 to LED28W	461	0.04	100.0%	100.0%
F32T8 to LED28W	1,151	0.09	100.0%	100.0%
Total:	**344,380**	**26.60**	**100.0%**	**100.0%**

LN8-010

Project Number LN8-010

Program Large CI

Project Background

The participant is a religious gathering building that received incentives from Entergy New Orleans for installing a Building Automation System (BAS) to control the chillers, pumps and air handling units. The existing system controllers are malfunctioning and do not allow the schedule to be altered. The new system will allow the facility to adjust the controllers to reflect building occupancy and the added sensors will alleviate moisture problems being experienced. On-site, the Evaluators verified the participant had implemented:

- Building Automation System (BAS)
- Temperature setpoint schedules

Calculation Parameters

Savings were calculated using a Trane Trace energy model to predict the savings associated with retrofitting the chiller controls and VFDs on the condenser pump. The energy model results are shown in Table A below.

Table A, Energy Model Results

Measure	Baseline Energy (kWh/yr)	Proposed Energy (kWh/yr)	Savings (kWh/yr)	Percent Savings
HVAC Controls	274,658	259,334	15,324	5.6%
Total	**274,658**	**259,334**	**15,324**	**5.6%**

Savings Calculations

Savings are calculated using the following formulas:

$$kWh_{Savings} = Baseline\ Energy\ Usage - Proposed\ Energy\ Usage$$

Table B, Savings Calculations

Measure	Expected kWh Savings	Realized kWh Savings	Realization Rate
HVAC Controls	15,324	15,324	100.0%
Total	**15,324**	**15,324**	**100.0%**

Results

The kWh realization rate for project LN8-010 is 100%. The Evaluators verified the energy model output data and utility trending data. The provided model estimated higher usage than the provided energy bills which means the energy model was not properly calibrated. This is fine because the bills show a nearly five times greater usage in the peak summer months than the winter months. This means the cooling system was most likely locked into a low cooling setpoint that caused the system to overcool the space during the summer months and even a small improvement to the setpoint schedule could have a large savings impact.

The Evaluators attempted a billing regression, but the uncertainty was too high because the realized savings were less than 10% of the total energy consumption.

Table C, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
HVAC Controls	15,324	-	100.0%	-
Total	**15,324**	**-**	**100.0%**	**-**

LN8-011

Project Number LN8-011

Program Large CI

Project Background

The participant is a hotel that received incentives from Entergy New Orleans for installing VFDs on nine exhaust fans used in the kitchen space. The existing equipment operated continuously at a constant speed with make-up air units heating and cooling the ventilation air. The proposed system will allow the exhaust fans to reduce speed based on the setpoint parameters. Savings for this project will come from the reduced fan energy operating at part load and reduced air conditioning energy from the reduced exhaust airflow. On-site, the Evaluators verified the participant had implemented:

- Exhaust fan VFDs

Calculation Parameters

Savings for this measure are realized by three components: fan, heating and cooling energy reduction. The space is a kitchen that uses the exhaust fans to ventilate the cooking fumes. The system equalizes the space pressurization by supply the same flow of conditioned outside air. Reducing the exhaust volume will also reduce the amount of conditioned air required to the space.

The fan part load runtimes were verified with the provided trending data.

Savings Calculations

Savings are calculated using the following formulas:

Exhaust Fans:

$$Fan\ Savings = Baseline\ Usage - Proposed\ Usage$$

$$Baseline\ Usage = Hours \times Fan\ HP \times 0.746 \div Efficiency \times Load\ Factor$$

$$Proposed\ Usage = \sum Hours \times \%runtime \times Part\ Load\ kW$$

$$Part\ Load\ kW = Fan\ HP \times \%RPM^{2.7} \div Efficiency$$

$$Demand\ savings = Fan\ Savings \div Hours$$

Where:

Hours= Annual operating hours, 8,760

Fan HP= Total rated fan horsepower, 79.5

Efficiency= Fan system efficiency, 87.5%

Load Factor= Fan baseline load factor, 90%

Table A, Variable Exhaust Volume

% RPM	% Runtime	Hours	Part Load kW
100%	5%	438	67.8
90%	25%	2,190	51.0
80%	25%	2,190	37.1
70%	15%	1,314	25.9
60%	10%	876	17.1
50%	0%	-	10.4
40%	0%	-	5.7
30%	20%	1,752	2.6
20%	0%	-	0.9
10%	0%	-	0.1

Heating Interactive Savings:

$$Heating\ Savings = Baseline\ Heating\ Energy - Proposed\ Heating\ Energy$$

$$Heating\ Energy = \frac{Net\ Heat\ Load \times Estimation\ Factor}{Efficiency \times 3.41}$$

Where:

Net Heat Load= Estimated heating load based on space parameters, calculated using online calculator at https://fishnick.com/ventilation/oalc/

Table B, Heating Parameters

Pre Net Exhaust Volume	Post Net Exhaust Volume	Winter Building Temp	Pre Net Heat Load	Post Net Heat Load	System Efficiency	Estimation Factor
46,250	32,375	68	2,299,230	1,609,461	95%	50%

Cooling Interactive Savings:

$$Cooling\ Savings = Baseline\ Cooling\ Energy - Proposed\ Cooling\ Energy$$

$$Cooling\ Energy = \frac{Net\ Cool\ Load \times Estimation\ Factor}{COP \times 3.41}$$

$$Demand\ savings = Cooling\ Savings \div Hours$$

Where:

Net Cool Load= Estimated cooling load based on space parameters, calculated using online calculator at https://fishnick.com/ventilation/oalc/

Table C, Cooling Parameters

Pre Net Exhaust Volume	Post Net Exhaust Volume	Summer Building Temp	Pre Net Cool Load	Post Net Cool Load	System COP	Estimation Factor
46,250	32,375	72	4,926,658	3,448,661	4.0	50%

Table D, Savings Results

Measure	Expected kWh Savings	Realized kWh Savings	Realization Rare
Exhaust Fans	299,922	285,809	95.3%
Heating Interaction	106,462	106,462	100.0%
Cooling Interaction	54,179	54,179	100.0%
Total	**460,563**	**446,450**	**96.9%**

Results

The kWh realization rate for project LN8-011 is 96.9%. The Evaluators verified the installation and provided trending data. The realized savings adjusted the fan energy savings to use a 2.7 value as the exponent with the fan affinity law instead of a 3 exponent. There are no claimed or realized demand savings.

Table E, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
Exhaust Fan VFDs	446,450	45.0	96.9%	66.2%
Total	**446,450**	**45.0**	**96.9%**	**66.2%**

LN8-012

Project Number LN8-012

Program Large CI

Project Background

The participant is a religious gathering building that received incentives from Entergy New Orleans for replacing a nonfunctioning cooling tower with a cooling tower that exceeds the federal standard requirements. Since the old unit was not functioning properly this is considered replacement on burnout or new construction so the existing unit will not be used as the baseline unit for energy savings. On-site, the Evaluators verified the participant had implemented:

- Installed a Baltimore Aircoil Cooling Tower Model # XES15E-1285-09HN

Calculation Parameters

Savings were calculated using the installed cooling tower heat rejection fan and the federal standard unit required along with the TRM EFLH for cooling. Savings are achieved by the difference in motor energy usage between the installed unit and the federal standard minimum efficiency unit. The following table shows the parameters used in the savings calculations. The $EFLH_c$ value used is the value for schools in the TRM since there was no $EFLH_c$ for assembly or religious buildings that would have been more appropriate.

Table A, Unit Parameters

Measure	Baseline HP	Installed HP	Baseline Eff	Installed Eff	EFLHc
Cooling Tower	11.8	5	86.7%	89.5%	2,329

Savings Calculations

Savings are calculated using the following formulas:

$$kWh = \left[\left(HP * \frac{0.746}{Eff}\right)_{base} - \left(HP * \frac{0.746}{Eff}\right)_{post}\right] \times EFLHc$$

$$kW = \left[\left(HP * \frac{0.756}{Eff}\right)_{base} - \left(HP * \frac{0.756}{Eff}\right)_{post}\right]$$

Where:

HP_{post} Motor nameplate horsepower of the installed cooling tower fan

HP_{base} ASHRAE 90.1 2007 building code minimum efficiency

Eff_{post} Motor nameplate efficiency

Eff_{base} U.S. Department of Energy premium efficiency motor efficiency

EFLHcEstimated Full Load Hours for cooling

Table B, Savings Calculations

Measure	Expected kWh Savings	Realized kWh Savings	kWh Realization Rate	Expected kW Savings	Realized kW Savings	kW Realization Rate
Cooling Tower	13,922	13,901	99.8%	5.90	5.97	101.2%
Total	**13,922**	**13,901**	**99.8%**	**5.90**	**5.97**	**101.2%**

Results

The kWh and kW realization rate for project LN8-012 is 99.8% and 99.8% respectively. The Evaluators adjusted the proposed motor efficiency from 89.7% to 89.5% based on the actual nameplate data.

Table C, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
Cooling Tower	13,901	5.97	99.8%	101.2%
Total	**13,901**	**5.97**	**99.8%**	**101.2%**

LN8-013

Project Number LN8-013

Program Large C&I

Project Background

The participant is a hotel that received incentives from Entergy New Orleans for retrofitting energy efficient lighting in its parking structure. On-site, the Evaluators verified the participant had installed:

- (18) 30w LEDs w/non-int. ballasts replaced (18) 150w hpss
- (141) 30w LEDs w/non-int. ballasts replaced (141) 175w metal halides
- (1) 45w LEDs w/non-int. ballasts replaced (1) 400w metal halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. The site used a mixture of Custom and Deemed savings parameters as shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Parking Structure	(none)	8,760	1.00	1.00	1.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
HPS150 to LED30W	18	18	188	30	8,760	24,913	24,913	1.00	100.0%
MH175 to LED30W	141	141	208	30	8,760	219,858	219,858	1.00	100.0%
MH400 to LED45W	1	1	453	45	8,760	3,575	3,575	1.00	100.0%
					Total	**248,346**	**248,346**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
HPS150 to LED30W	18	18	188	30	1.00	2.84	2.84	1.00	100.0%
MH175 to LED30W	141	141	208	30	1.00	25.15	25.10	1.00	99.8%
MH400 to LED45W	1	1	453	45	1.00	0.41	0.41	1.00	100.0%
					Total	**28.40**	**28.35**		**99.8%**

Results

The kWh and kW realization rates for project SN8-013 are both 100.00%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
HPS150 to LED30W	24,913	2.84	100.0%	100.0%
MH175 to LED30W	219,858	25.10	100.0%	99.8%
MH400 to LED45W	3,575	0.41	100.0%	100.0%
Total	**248,346**	**28.35**	**100.0%**	**99.8%**

LN8-021

Project Number LN8-021

Program Large C&I

Project Background

The participant is a hotel that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoors and outdoors. On-site, the Evaluators verified the participant had installed:

- (2) 24w LEDs w/non-int. ballasts replaced (2) 4' 2-lamp T12s
- (11) 24w LEDs w/non-int. ballasts replaced (11) 4' 2-lamp T8s
- (272) 48w LEDs w/non-int. ballasts replaced (272) 4' 4-lamp T8s
- (12) 45w LEDs w/non-int. ballasts replaced (12) 175w metal halides
- (10) 105w LEDs w/non-int. ballasts replaced (10) 400w metal halides
- (8) 24w LEDs w/non-int. ballasts replaced (8) 4' 2-lamp T8s
- (14) 48w LEDs w/non-int. ballasts replaced (14) 4' 4-lamp T8s
- (1) 70w LEDs w/non-int. ballasts replaced (1) 400w metal halides
- (3) 60w LEDs w/non-int. ballasts replaced (3) 400w metal halides
- (5) 24w LEDs w/non-int. ballasts replaced (5) 4' 2-lamp T12s

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. The site used a mixture of Custom and Deemed savings parameters as shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Parking Structure	(none)	7,884	1.00	1.00	1.00
Exterior	(none)	4,319	1.00	1.00	0.0

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
F42T12 to LED24W	2	2	58	24	7,884	536	536	1.00	100.0%
F32T8 to LED24W	11	11	58	24	7,884	2,949	2,949	1.00	100.0%
F32T8 to LED48W	272	272	112	48	7,884	137,245	137,245	1.00	100.0%
MH175 to LED45W	12	12	208	45	7,884	15,421	15,421	1.00	100.0%
MH400 to LED105W	10	10	453	105	4,319	15,030	15,030	1.00	100.0%
F32T8 to LED24W	8	8	58	24	7,884	2,144	2,144	1.00	100.0%
F32T8 to LED48W	14	14	112	48	7,884	7,064	7,064	1.00	100.0%
MH400 to LED70W	1	1	453	70	4,319	1,654	1,654	1.00	100.0%
MH400 to LED60W	3	3	453	60	7,884	9,295	9,295	1.00	100.0%
F42T12 to LED24W	4	4	58	24	7,884	2,681	1,073	1.00	40.0%
					Total	**194,019**	**192,411**		**99.2%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
F42T12 to LED24W	2	2	58	24	1.00	0.07	0.07	1.00	100.0%
F32T8 to LED24W	11	11	58	24	1.00	0.37	0.37	1.00	100.0%
F32T8 to LED48W	272	272	112	48	1.00	17.41	17.41	1.00	100.0%
MH175 to LED45W	12	12	208	45	1.00	1.96	1.96	1.00	100.0%
MH400 to LED105W	10	10	453	105	0.00	0.90	0.00	1.00	0.0%
F32T8 to LED24W	8	8	58	24	1.00	0.27	0.27	1.00	100.0%
F32T8 to LED48W	14	14	112	48	1.00	0.90	0.90	1.00	100.0%
MH400 to LED70W	1	1	453	70	0.00	0.10	0.00	1.00	0.0%
MH400 to LED60W	3	3	453	60	1.00	1.18	1.18	1.00	100.0%
F42T12 to LED24W	4	4	58	24	1.00	0.34	0.14	1.00	41.2%
					Total	**23.50**	**22.30**		**94.9%**

Results

The kWh realization rate for project LN8-021 is 99.2%, and the kW realization rate is 94.9%. During the verification visit the Evaluators found that only four (of ten) lamps had been installed in the elevator lobby area. This adjustment decreased both kWh and kW savings. Also, ex ante peak kW calculations included a .26 coincidence factor, However the exterior lamps operated only during non-daylight hours and thus their verified savings was calculated using a 0% CF, resulting in a slightly low kW realization rate.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
F42T12 to LED24W	536	0.07	100.0%	100.0%
F32T8 to LED24W	2,949	0.37	100.0%	100.0%
F32T8 to LED48W	137,245	17.41	100.0%	100.0%
MH175 to LED45W	15,421	1.96	100.0%	100.0%
MH400 to LED105W	15,030	0.00	100.0%	0.0%
F32T8 to LED24W	2,144	0.27	100.0%	100.0%
F32T8 to LED48W	7,064	0.90	100.0%	100.0%
MH400 to LED70W	1,654	0.00	100.0%	0.0%
MH400 to LED60W	9,295	1.18	100.0%	100.0%
F42T12 to LED24W	1,073	0.14	40.0%	41.2%
Total	**192,411**	**22.30**	**99.2%**	**94.9%**

LN8-028

Project Number LN8-028

Program Large C&I

Project Background

The participant is a big box construction and home goods store that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoors and outdoors. On site, the Evaluators verified that the following had been installed:

- (513) 108W LED - Non-Int. Ballasts replaced (513) 4' 6-Lamp T5HOs. The new fixtures will be operated by daylighting controls.
- (26) 86W LED - Non-Int. Ballasts replaced (26) 400W Metal Halides
- (9) 67W LED - Non-Int. Ballasts replaced (9) 250W Metal Halides
- (9) 54W LED - Non-Int. Ballasts replaced (9) 250W Metal Halides
- (9) 183W LED - Non-Int. Ballasts replaced (9) 400W Metal Halides
- (9) 134W LED - Non-Int. Ballasts replaced (9) 400W Metal Halides
- (12) 67W LED - Non-Int. Ballasts replaced (12) 4' 4-Lamp T8s

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Retail: Freestanding	Gas	5,616[78]	1.09	1.20	1.00[1]
Exterior	(none)	4,319	1.00	1.00	0.00

[78] Calculated based upon verified hours of operation.

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
F45T5/HO-RW to LED108W	513	502	332	108	5,616	743,887	743,887	1.09	100.0%
MH400 to LED86W	26	26	429	86	4,319	38,517	38,517	1.00	100.0%
MH250 to LED67W	9	9	275	67	4,319	8,085	8,085	1.00	100.0%
MH250 to LED54W	9	9	275	54	4,319	8,590	8,590	1.00	100.0%
MH400 to LED183W	9	9	429	183	4,319	9,562	9,562	1.00	100.0%
MH400 to LED134W	9	9	429	134	4,319	11,467	11,467	1.00	100.0%
F32T8 to LED67W	12	12	112	67	4,319	2,333	2,333	1.00	100.0%
					Total	**822,441**	**822,441**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
F45T5/HO-RW to LED108W	513	502	332	108	0.90	142.30	142.30	1.20	100.0%
MH400 to LED86W	26	26	429	86	0.00	0.00	0.00	1.00	N/A
MH250 to LED67W	9	9	275	67	0.00	0.00	0.00	1.00	N/A
MH250 to LED54W	9	9	275	54	0.00	0.00	0.00	1.00	N/A
MH400 to LED183W	9	9	429	183	0.00	0.00	0.00	1.00	N/A
MH400 to LED134W	9	9	429	134	0.00	0.00	0.00	1.00	N/A
F32T8 to LED67W	12	12	112	67	0.00	0.00	0.00	1.00	N/A
					Total	**142.30**	**142.30**		**100.0%**

Results

Both the kWh and kW realization rates for project LN8-028 are 100%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
F45T5/HO-RW to LED108W	743,887	142.30	100.0%	100.0%
MH400 to LED86W	38,517	0.00	100.0%	N/A
MH250 to LED67W	8,085	0.00	100.0%	N/A
MH250 to LED54W	8,590	0.00	100.0%	N/A
MH400 to LED183W	9,562	0.00	100.0%	N/A
MH400 to LED134W	11,467	0.00	100.0%	N/A
F32T8 to LED67W	2,333	0.00	100.0%	N/A
Total	**822,441**	**142.30**	**100.0%**	**100.0%**

LN8-029

Project Number LN8-029

Program Large C&I

Project Background

The participant is a college that received incentives from Entergy New Orleans for retrofitting energy efficient lighting in a parking structure. On site, the Evaluators verified that the following had been installed:

- (4) 79w LEDs w/non-int. ballasts replaced (4) 250w metal halides
- (16) 79w LEDs w/non-int. ballasts replaced (16) 250w metal halides
- (30) 45w LEDs w/non-int. ballasts replaced (30) 100w metal halides
- (90) 45w LEDs w/non-int. ballasts replaced (90) 100w metal halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and Custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Parking Structure	(none)	8,760	1.00	1.00	1.00
Parking Structure	(none)	4,319	1.00	1.00	0.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH250 to LED79W	4	4	288	79	8,760	7,323	7,323	1.00	100.0%
MH250 to LED79W	16	16	288	79	4,319	14,443	14,443	1.00	100.0%
MH100 to LED45W	30	30	124	45	8,760	20,761	20,761	1.00	100.0%
MH100 to LED45W	90	90	124	45	4,319	30,708	30,708	1.00	100.0%
					Total	**73,235**	**73,235**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH250 to LED79W	4	4	288	79	1.00	0.00	0.84	1.00	N/A
MH250 to LED79W	16	16	288	79	0.00	0.86	0.00	1.00	0.0%
MH100 to LED45W	30	30	124	45	1.00	0.00	2.37	1.00	N/A
MH100 to LED45W	90	90	124	45	0.00	1.84	0.00	1.00	0.0%
					Total	**2.70**	**3.21**		**118.9%**

Results

The kWh realization rate for project SN8-029 is 100.0%, while the kW realization rate is 118.9%. kW calculations were premised on a peak CF of 0.00 for emergency fixtures and 0.26 for non-emergency fixtures. In ex post calculations a CF of 1.0 was applied to emergency fixtures and 0.00 to non-emergency exterior fixtures, resulting in a high overall kW realization rate.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH250 to LED79W	7,323	0.84	100.0%	N/A
MH250 to LED79W	14,443	0.00	100.0%	0.0%
MH100 to LED45W	20,761	2.37	100.0%	N/A
MH100 to LED45W	30,708	0.00	100.0%	0.0%
Total	**73,235**	**3.21**	**100.0%**	**118.9%**

PN8-006

Project Number PN8-006

Program Publicly Funded Institutions

Project Background

The participant is a university that received incentives from Entergy New Orleans for retrofitting energy efficient lighting outdoors. On site, the Evaluators verified that the following had been installed:

- (31) 230w LEDs w/non-int. ballasts replaced (31) 1000w metal halides
- (6) 90w LEDs w/non-int. ballasts replaced (6) 250w metal halides
- (8) 230w LEDs w/non-int. ballasts replaced (8) 1000w metal halides
- (40) 60w LEDs w/non-int. ballasts replaced (40) 2-lamp 55w CFL long twins
- (6) 40w LEDs w/non-int. ballasts replaced (6) 4' 2-lamp T8s
- (52) 17w led - int. ballasts replaced (52) 150w metal halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Custom and deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Exterior	(none)	4,319	1.00	1.00	0.00
Parking Structure	(none)	7,884	1.00	1.00	1.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED230W	31	31	1,078	230	4,319	113,538	113,538	1.00	100.0%
MH250 to LED90W	6	6	288	90	4,319	5,131	5,131	1.00	100.0%
MH1000 to LED230W	8	8	1,078	230	4,319	29,300	29,300	1.00	100.0%
CFT55W to LED60W	40	40	108	60	7,884	15,137	15,137	1.00	100.0%
F32T8 to LED40W	4	4	58	40	7,884	568	568	1.00	100.0%
F32T8 to LED40W*	2	2	58	40	7,884	283	283	1.00	100.0%
MH150 to LEDINT17W	52	52	183	17	4,319	37,282	37,282	1.00	100.0%
F32T8 to LED28W	9	9	58	28	4,319	1,166	1,166	1.00	100.0%
					Total	**202,405**	**202,405**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED230W	31	31	1,078	230	0.00	6.83	0.00	1.00	0.0%
MH250 to LED90W	6	6	288	90	0.00	0.31	0.00	1.00	0.0%
MH1000 to LED230W	8	8	1,078	230	0.00	1.76	0.00	1.00	0.0%
CFT55W to LED60W	40	40	108	60	1.00	1.92	1.92	1.00	100.0%
F32T8 to LED40W	4	4	58	40	1.00	0.07	0.07	1.00	100.0%
F32T8 to LED40W*	2	2	58	40	1.00	0.05	0.04	1.00	80.0%
MH150 to LEDINT17W	52	52	183	17	0.00	2.24	0.00	1.00	0.0%
F32T8 to LED28W	9	9	58	28	0.00	0.07	0.00	1.00	0.0%
					Total	**13.25**	**2.03**		**15.3%**

Results

The kWh realization rate for project PN8-006 is 100.0%, and the kW realization rate is 15.3%.

*On site the Evaluators found that two of the 40W LED fixtures in the parking garage operate continuously. These two lamps were removed and calculated separately from other line items in the area, then their savings added to the total. While recreating the site ex ante savings figures, the Evaluators found that ex ante kW savings had been calculated using and erroneous 0.26 CF. Exterior lights controlled by daylight sensors do not operate during peak hours, thus the peak CF should always be 0.0%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH1000 to LED230W	113,538	0.00	100.0%	0.0%
MH250 to LED90W	5,131	0.00	100.0%	0.0%
MH1000 to LED230W	29,300	0.00	100.0%	0.0%
CFT55W to LED60W	15,137	1.92	100.0%	100.0%
F32T8 to LED40W	568	0.07	99.9%	100.0%
F32T8 to LED40W*	283	0.04	100.3%	105.3%
MH150 to LEDINT17W	37,282	0.00	100.0%	0.0%
F32T8 to LED28W	1,166	0.00	100.0%	0.0%
Total	**202,405**	**2.03**	**100.0%**	**15.3%**

PN8-007

Project Number PN8-007

Program Publicly Funded Institutions

Project Background

The participant is a university that received incentives from Entergy New Orleans for retrofitting energy efficient lighting outside an office building. On-site, the Evaluators verified the participant had installed:

- (28) 73w LEDs w/non-int. ballasts replaced (28) 400w metal halides
- (13) 90w LEDs w/non-int. ballasts replaced (13) 250w metal halides
- (2) 17w led - int. ballasts replaced (2) 175w metal halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Custom and deemed savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Exterior	(none)	4,319	1.00	1.00	0.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH400 to LED73W	28	28	453	73	4,319	45,954	45,954	1.00	100.0%
MH250 to LED90W	13	13	288	90	4,319	11,117	11,117	1.00	100.0%
MH175 to LEDINT17W	2	2	208	17	4,319	1,650	1,650	1.00	100.0%
					Total	**58,721**	**58,721**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH400 to LED73W	28	28	453	73	0.00	2.76	0.00	1.00	0.0%
MH250 to LED90W	13	13	288	90	0.00	0.67	0.00	1.00	0.0%
MH175 to LEDINT17W	2	2	208	17	0.00	0.10	0.00	1.00	0.0%
					Total	**3.53**	**0.00**		**0.0%**

Results

The kWh realization rate for project PN8-007 is 100.0%, and the kW realization rate is 0.0%. The Evaluators found that ex ante kW savings had been calculated using and an erroneous 0.26 CF. Exterior lights controlled by daylight sensors do not operate during peak hours, thus the peak CF should always be 0.0%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH400 to LED73W	45,954	0.00	100.0%	0.0%
MH250 to LED90W	11,117	0.00	100.0%	0.0%
MH175 to LEDINT17W	1,650	0.00	100.0%	0.0%
Total	**58,721**	**0.00**	**100.0%**	**0.0%**

PN8-008

Project Number PN8-008

Program Publicly Funded Institutions

Project Background

The participant is a university that received incentives from Entergy New Orleans for retrofitting energy efficient lighting outdoors. On site, the Evaluators verified that the following had been installed:

- (18) 57W LED - Non-Int. Ballasts replaced (18) 400W Metal Halides
- (4) 17W LED - Int. Ballasts replaced (4) 175W Metal Halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Exterior	(none)	4,319	1.00	1.00	0.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH400 to LED57W	18	18	453	57	4,319	30,786	30,786	1.00	100.0%
MH175 to LEDINT17W	4	4	208	17	4,319	3,300	3,300	1.00	100.0%
					Total	**34,086**	**34,086**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH400 to LED57W	18	18	453	57	0.00	1.85	0.00	1.00	0.0%
MH175 to LEDINT17W	4	4	208	17	0.00	0.25	0.00	1.00	0.0%
					Total	**2.10**	**0.00**		**0.0%**

Results

The kWh realization rate for project PN8-008 is 100.0%, and the kW realization rate is 0.0%. While recreating the site ex ante savings figures, the Evaluators found that ex ante kW savings had been calculated using and erroneous 0.26 CF. Exterior lights controlled by daylight sensors do not operate during peak hours, thus the peak CF should always be 0.0%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH400 to LED57W	30,786	0.00	100.0%	0.0%
MH175 to LEDINT17W	3,300	0.00	100.0%	0.0%
Total	**34,086**	**0.00**	**100.0%**	**0.0%**

PN8-009

Project Number PN8-009

Program Publicly Funded Institutions

Project Background

The participant is a university that received incentives from Entergy New Orleans for retrofitting energy efficient lighting indoors and outdoors. On site, the Evaluators verified that the following had been installed:

- (141) 14w LEDs w/non-int. ballasts replaced (141) 1-lamp 42w CFL multi 4-pins
- (12) 12w LEDs w/non-int. ballasts replaced (12) 150w 1-lamp halogens
- (56) 24w LEDs w/non-int. ballasts replaced (56) 4' 2-lamp T8s
- (15) 14w LEDs w/non-int. ballasts replaced (15) 1-lamp 26w CFL multi 4-pins
- (12) 56w LEDs w/non-int. ballasts replaced (12) 4' 2-lamp T5s
- (8) 12w LEDs w/non-int. ballasts replaced (8) 4' 1-lamp T8s
- (647) 28w LEDs w/non-int. ballasts replaced (647) 4' 2-lamp T8s
- (128) 36w LEDs w/non-int. ballasts replaced (128) 4' 3-lamp T8s
- (6) 12w LEDs w/non-int. ballasts replaced (6) 150w incandescents
- (30) 50w LEDs w/non-int. ballasts replaced (30) 400w metal halides
- (10) 90w LEDs w/non-int. ballasts replaced (10) 400w metal halides
- (1) 105w LEDs w/non-int. ballasts replaced (1) 400w metal halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Education: College/University	Gas	8,760	1.09	1.20	1.00
Restroom (Generic)	Gas	8,760	1.09	1.20	1.00
Office	Gas	5,159	1.09	1.20	0.77
Non-Warehouse Storage (Generic)	Gas	4,207	1.09	1.20	0.77
Corridor/Hallway/Stairwell	Gas	8,760	1.09	1.20	1.00
Exterior	(none)	4,319	1.00	1.00	0.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
CFM42W to LED14W	4	4	46	14	8,760	1,222	1,222	1.09	100.0%
H150 to LED12W	12	12	150	12	8,760	15,812	15,812	1.09	100.0%
CFM42W to LED14W	8	8	46	14	8,760	2,444	2,033	1.09	83.1%
F32T8 to LED24W	8	8	58	24	8,760	2,599	2,368	1.09	91.1%
CFM42W to LED14W	13	13	46	14	8,760	3,972	3,972	1.09	100.0%
CFM42W to LED14W	32	32	46	14	8,760	9,778	9,778	1.09	100.0%
CFM26W to LED14W	15	15	29	14	8,760	2,148	2,148	1.09	100.0%
CFM42W to LED14W	20	20	46	14	8,760	6,111	6,111	1.09	100.0%
CFM42W to LED14W	12	12	46	14	8,760	3,667	3,667	1.09	100.0%
F28T5 to LED56W	12	12	63	56	8,760	802	802	1.09	100.0%
CFM42W to LED14W	16	16	46	14	8,760	4,889	4,889	1.09	100.0%
F32T8 to LED12W	8	8	31	12	8,760	1,451	1,451	1.09	100.0%
CFM42W to LED14W	24	24	46	14	8,760	7,333	7,333	1.09	100.0%
F32T8 to LED28W	80	80	58	28	8,760	22,916	22,916	1.09	100.0%
F32T8 to LED36W	1	1	85	36	5,159	276	276	1.09	100.0%
F32T8 to LED24W	12	12	58	24	5,159	2,294	2,294	1.09	100.0%
F32T8 to LED36W	35	35	85	36	5,159	9,644	9,644	1.09	100.0%
F32T8 to LED24W	12	12	58	24	5,159	2,294	2,294	1.09	100.0%
F32T8 to LED36W	12	12	85	36	5,159	3,307	3,307	1.09	100.0%
F32T8 to LED36W	9	9	85	36	5,159	2,480	2,480	1.09	100.0%
F32T8 to LED36W	8	8	85	36	5,159	2,204	2,204	1.09	100.0%

I150 to LED12W	6	6	150	12	5,159	4,656	4,656	1.09	100.0%
F32T8 to LED36W	6	6	85	36	5,159	1,653	1,653	1.09	100.0%
F32T8 to LED36W	4	4	85	36	5,159	1,102	1,102	1.09	100.0%
F32T8 to LED24W	2	2	58	24	4,207	312	312	1.09	100.0%
F32T8 to LED28W	208	208	58	28	8,760	59,582	59,582	1.09	100.0%
F32T8 to LED28W	6	6	58	28	8,760	1,719	1,719	1.09	100.0%
CFM42W to LED14W	12	12	46	14	8,760	3,667	3,667	1.09	100.0%
F32T8 to LED36W	10	10	85	36	5,159	2,755	2,755	1.09	100.0%
F32T8 to LED36W	21	21	85	36	5,159	5,786	5,786	1.09	100.0%
F32T8 to LED36W	4	4	85	36	5,159	1,102	1,102	1.09	100.0%
F32T8 to LED36W	12	12	85	36	5,159	3,307	3,307	1.09	100.0%
F32T8 to LED24W	12	12	58	24	5,159	2,294	2,294	1.09	100.0%
F32T8 to LED28W	28	28	58	28	5,159	4,724	4,724	1.09	100.0%
F32T8 to LED36W	6	6	85	36	5,159	1,653	1,653	1.09	100.0%
F32T8 to LED28W	320	320	58	28	8,760	91,665	91,665	1.09	100.0%
F32T8 to LED28W	5	5	58	28	8,760	1,432	1,432	1.09	100.0%
F32T8 to LED24W	10	10	58	24	8,760	3,246	2,960	1.09	91.2%
MH400 to LED57W	30	26	453	57	4,319	52,294	52,294	1.00	100.0%
MH400 to LED73W	10	10	453	73	4,319	16,412	16,412	1.00	100.0%
MH400 to LED105W	1	1	453	105	4,319	1,503	1,503	1.00	100.0%
					Total	**368,507**	**367,579**		**99.7%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
CFM42W to LED14W	4	4	46	14	1.00	0.11	0.15	1.20	136.4%
H150 to LED12W	12	12	150	12	1.00	1.37	1.99	1.20	145.3%
CFM42W to LED14W	8	8	46	14	0.90	0.28	0.28	1.20	100.0%
F32T8 to LED24W	8	8	58	24	0.90	0.29	0.29	1.20	100.0%
CFM42W to LED14W	13	13	46	14	1.00	0.34	0.5	1.20	147.1%
CFM42W to LED14W	32	32	46	14	1.00	0.85	1.23	1.20	144.7%
CFM26W to LED14W	15	15	29	14	1.00	0.19	0.27	1.20	142.1%
CFM42W to LED14W	20	20	46	14	1.00	0.53	0.77	1.20	145.3%
CFM42W to LED14W	12	12	46	14	1.00	0.32	0.46	1.20	143.8%
F28T5 to LED56W	12	12	63	56	1.00	0.07	0.1	1.20	142.9%
CFM42W to LED14W	16	16	46	14	1.00	0.42	0.61	1.20	145.2%
F32T8 to LED12W	8	8	31	12	1.00	0.13	0.18	1.20	138.5%
CFM42W to LED14W	24	24	46	14	1.00	0.64	0.92	1.20	143.8%
F32T8 to LED28W	80	80	58	28	1.00	1.99	2.88	1.20	144.7%
F32T8 to LED36W	1	1	85	36	0.77	0.05	0.05	1.20	100.0%

F32T8 to LED24W	12	12	58	24	0.77	0.38	0.38	1.20	100.0%
F32T8 to LED36W	35	35	85	36	0.77	1.58	1.58	1.20	100.0%
F32T8 to LED24W	12	12	58	24	0.77	0.38	0.38	1.20	100.0%
F32T8 to LED36W	12	12	85	36	0.77	0.54	0.54	1.20	100.0%
F32T8 to LED36W	9	9	85	36	0.77	0.41	0.41	1.20	100.0%
F32T8 to LED36W	8	8	85	36	0.77	0.36	0.36	1.20	100.0%
I150 to LED12W	6	6	150	12	0.77	0.77	0.77	1.20	100.0%
F32T8 to LED36W	6	6	85	36	0.77	0.27	0.27	1.20	100.0%
F32T8 to LED36W	4	4	85	36	0.77	0.18	0.18	1.20	100.0%
F32T8 to LED24W	2	2	58	24	0.77	0.06	0.06	1.20	100.0%
F32T8 to LED28W	208	208	58	28	1.00	5.16	7.49	1.20	145.2%
F32T8 to LED28W	6	6	58	28	1.00	0.19	0.22	1.20	115.8%
CFM42W to LED14W	12	12	46	14	1.00	0.41	0.46	1.20	112.2%
F32T8 to LED36W	10	10	85	36	0.77	0.45	0.45	1.20	100.0%
F32T8 to LED36W	21	21	85	36	0.77	0.95	0.95	1.20	100.0%
F32T8 to LED36W	4	4	85	36	0.77	0.18	0.18	1.20	100.0%
F32T8 to LED36W	12	12	85	36	0.77	0.54	0.54	1.20	100.0%

F32T8 to LED24W	12	12	58	24	0.77	0.38	0.38	1.20	100.0%
F32T8 to LED28W	28	28	58	28	0.77	0.78	0.78	1.20	100.0%
F32T8 to LED36W	6	6	85	36	0.77	0.27	0.27	1.20	100.0%
F32T8 to LED28W	320	320	58	28	1.00	7.95	11.52	1.20	144.9%
F32T8 to LED28W	5	5	58	28	1.00	0.16	0.18	1.20	112.5%
F32T8 to LED24W	10	10	58	24	0.90	0.37	0.37	1.20	100.0%
MH400 to LED57W	30	26	453	57	0.00	3.15	0.00	1.00	0.0%
MH400 to LED73W	10	10	453	73	0.00	0.99	0.00	1.00	0.0%
MH400 to LED105W	1	1	453	105	0.00	0.09	0.00	1.00	0.0%
					Total	**34.53**	**39.40**		**114.1%**

Results

The kWh realization rate for project PN8-009 is 99.7%, and the kW realization rate is 114.1%. A total of 17 line items had lighting which were located in an “Education: College/university” deemed space. Deemed hours of operation had been overridden from 3,577 to 8,760, however the peak CF remained .69, when it should have been 1.00 to reflect the continuous lighting operation.

During the on site visit the Evaluators found that lights in the restrooms were connected to functioning occupancy sensors. These occupancy sensors were not included in the project or ex ante calculations, so lighting hours and peak CF were decreased by 30% when performing ex ante calculations. Peak kW reductions for exterior lighting, which was controlled by photocell, included and erroneous .26 CF. The correct value should have been 0.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
CFM42W to LED14W	1,222	0.15	100.0%	141.5%
H150 to LED12W	15,812	1.99	100.0%	145.1%
CFM42W to LED14W	2,033	0.28	83.1%	101.3%
F32T8 to LED24W	2,368	0.29	91.2%	98.7%
CFM42W to LED14W	3,972	0.5	100.0%	145.2%
CFM42W to LED14W	9,778	1.23	100.0%	145.1%
CFM26W to LED14W	2,148	0.27	100.0%	144.9%
CFM42W to LED14W	6,111	0.77	100.0%	145.3%
CFM42W to LED14W	3,667	0.46	100.0%	144.7%
F28T5 to LED56W	802	0.1	100.0%	143.8%
CFM42W to LED14W	4,889	0.61	100.0%	143.9%
F32T8 to LED12W	1,451	0.18	100.0%	143.0%
CFM42W to LED14W	7,333	0.92	100.0%	144.7%
F32T8 to LED28W	22,916	2.88	100.0%	144.9%
F32T8 to LED36W	276	0.05	100.0%	110.4%
F32T8 to LED24W	2,294	0.38	100.0%	100.8%
F32T8 to LED36W	9,644	1.58	100.0%	99.7%
F32T8 to LED24W	2,294	0.38	100.0%	100.8%
F32T8 to LED36W	3,307	0.54	100.0%	99.4%
F32T8 to LED36W	2,480	0.41	100.0%	100.6%
F32T8 to LED36W	2,204	0.36	100.0%	99.4%

I150 to LED12W	4,656	0.77	100.0%	100.6%
F32T8 to LED36W	1,653	0.27	100.0%	99.4%
F32T8 to LED36W	1,102	0.18	100.0%	99.4%
F32T8 to LED24W	312	0.06	100.0%	95.5%
F32T8 to LED28W	59,582	7.49	100.0%	145.0%
F32T8 to LED28W	1,719	0.22	100.0%	113.2%
CFM42W to LED14W	3,667	0.46	100.0%	110.9%
F32T8 to LED36W	2,755	0.45	100.0%	99.4%
F32T8 to LED36W	5,786	0.95	100.0%	99.9%
F32T8 to LED36W	1,102	0.18	100.0%	99.4%
F32T8 to LED36W	3,307	0.54	100.0%	99.4%
F32T8 to LED24W	2,294	0.38	100.0%	100.8%
F32T8 to LED28W	4,724	0.78	100.0%	100.5%
F32T8 to LED36W	1,653	0.27	100.0%	99.4%
F32T8 to LED28W	91,665	11.52	100.0%	144.9%
F32T8 to LED28W	1,432	0.18	100.0%	111.1%
F32T8 to LED24W	2,960	0.37	91.2%	100.8%
MH400 to LED57W	52,294	0.00	100.0%	0.0%
MH400 to LED73W	16,412	0.00	100.0%	0.0%
MH400 to LED105W	1,503	0.00	100.0%	0.0%
Total	**367,579**	**39.40**	**99.7%**	**114.1%**

PN8-011

Project Number PN8-011

Program Publicly Funded Institutions

Project Background

The participant is a university that received incentives from Entergy New Orleans for retrofitting energy efficient lighting in an outdoor parking structure. On site, the Evaluators verified that the following had been installed:

- (151) 60W LED - Non-Int. Ballasts replaced (151) 2-Lamp 55W CFL Long Twins

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Parking Structure	(none)	7,884	1.00	1.00	1.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
CFT55W to LED60W	151	151	108	60	7,884	57,143	57,143	1.00	100.0%
					Total	**57,143**	**57,143**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
CFT55W to LED60W	151	151	108	60	1.00	7.25	7.25	1.00	100.0%
					Total	**7.25**	**7.25**		**100.0%**

Results

The kWh realization rate for project PN8-011 is 100.0%, and the kW realization rate is 100.0%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
CFT55W to LED60W	57,143	7.25	100.0%	100.0%
Total	**57,143**	**7.25**	**100.0%**	**100.0%**

PN8-012

Project Number PN8-012

Program Publicly Funded Institutions

Project Background

The participant is a university that received incentives from Entergy New Orleans for retrofitting energy efficient lighting in a variety of spaces, both indoors and outdoors across the campus. On site, the Evaluators verified that the following had been installed:

- (30) 48W LED - Non-Int. Ballasts replaced (31) 4' 4-Lamp T8s
- (93) 36W LED - Non-Int. Ballasts replaced (93) 4' 3-Lamp T8s
- (144) 45W LED - Non-Int. Ballasts replaced (144) 4' 3-Lamp T8s
- (225) 28W LED - Non-Int. Ballasts replaced (227) 4' 2-Lamp T8s
- (280) 24W LED - Non-Int. Ballasts replaced (281) 4' 2-Lamp T8s
- (30) 42W LED - Non-Int. Ballasts replaced (30) 4' 3-Lamp T8s
- (48) 30W LED - Non-Int. Ballasts replaced (48) 1-Lamp T8 U-Tubes
- (12) 28W LED - Non-Int. Ballasts replaced (12) 4' 3-Lamp T12ESs
- (12) 28W LED - Non-Int. Ballasts replaced (12) 4' 3-Lamp T8s
- (51) 36W LED - Non-Int. Ballasts replaced (51) 4' 2-Lamp T8 44W HOs
- (10) 24W LED - Non-Int. Ballasts replaced (10) 4' 2-Lamp T8 44W HOs
- (4) 30W LED - Non-Int. Ballasts replaced (4) 4' 4-Lamp T8s
- (2) 1W LED - Non-Int. Ballasts replaced (2) 4' 2-Lamp T8s
- (72) 73W LED - Non-Int. Ballasts replaced (72) 400W Metal Halides
- (21) 56W LED - Non-Int. Ballasts replaced (21) 400W Metal Halides
- (113) 18W LED - Non-Int. Ballasts replaced (113) 2-Lamp 26W CFL Multi 4-Pins
- (27) 30W LED - Non-Int. Ballasts replaced (27) 2' 3-Lamp T5s
- (36) 36W LED - Non-Int. Ballasts replaced (36) 4' 3-Lamp T5HOs
- (2) 20W LED - Non-Int. Ballasts replaced (2) 2' 2-Lamp T8s
- (14) 36W LED - Non-Int. Ballasts replaced (14) 4' 2-Lamp T8s
- (4) 30W LED - Non-Int. Ballasts replaced (4) 4' 2-Lamp T8s
- (4) 8W LED - Int. Ballasts replaced (4) 50W 1-Lamp Halogens
- (4) 9W LED - Non-Int. Ballasts replaced (4) 1-Lamp 26W CFL Multi 4-Pins
- (37) 9W LED - Int. Ballasts replaced (37) 65W 1-Lamp Halogens

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Corridor/Hallway/Stairwell	Gas	8,760	1.09	1.2	0.9
Corridor/Hallway/Stairwell	Gas	5,233	1.09	1.2	0.9
Education: College/University	Gas	8,760	1.09	1.2	0.69
Exterior	(none)	5,296	1	1	0.33
Food Prep (Generic)	Gas	8,760	1.09	1.2	0.81
Food Prep (Generic)	Gas	4,931	1.09	1.2	0.81
Food Service: Sit-Down Restaurant	Gas	8,760	1.09	1.2	0.81
Manufacturing	Gas	5,740	1.09	1.2	0.73
Non-Warehouse Storage (Generic)	Gas	4,207	1.09	1.2	0.77
Non-Warehouse Storage (Generic), Med Temp Refrig.	Gas	4,207	1.3	1.3	0.77
Non-Warehouse Storage (Generic)	Gas	8,760	1.09	1.2	0.77
Office	Gas	5,159	1.09	1.2	0.77
Office	Gas	8,760	1.09	1.2	0.77
Office (attached to other facility)	Gas	4,728	1.09	1.2	0.77
Public Assembly	Gas	8,760	1.09	1.2	0.56
Restroom (Generic)	Gas	3,516	1.09	1.2	0.9
Restroom (Generic)	Gas	8,760	1.09	1.2	0.9
Restroom (Generic)	Gas	4,931	1.09	1.2	0.9

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
F32T8 to LED48W	6	5	112	48	8,760	3,784	3,784	1.00	100.0%
F32T8 to LED36W	18	18	85	36	5,159	4,960	4,960	1.09	100.0%
F32T8 to LED45W	4	4	85	45	5,159	900	900	1.09	100.0%
F32T8 to LED48W	4	4	112	48	5,159	1,440	1,440	1.09	100.0%
F32T8 to LED28W	4	2	58	28	5,159	990	990	1.09	100.0%
F32T8 to LED24W	15	15	58	24	5,233	2,909	2,909	1.09	100.0%
F32T8 to LED42W	30	30	85	42	5,740	8,071	8,071	1.09	100.0%
F32T8 to LED48W	2	2	112	48	5,233	730	730	1.09	100.0%
F32T8 to LED24W	8	8	58	24	4,207	1,247	1,247	1.09	100.0%
F32T8 to LED24W	16	15	58	24	5,159	3,194	3,194	1.09	100.0%
F32T8 to LED24W	3	3	58	24	5,159	574	574	1.09	100.0%
F32T8 to LED24W	56	56	58	24	4,207	8,731	8,731	1.09	100.0%
F32T8 to LED24W	1	1	58	24	4,207	156	156	1.09	100.0%
F32T8 to LED48W	4	4	112	48	5,159	1,440	1,440	1.09	100.0%
F32T8 to LED48W	4	4	112	48	5,159	1,440	1,440	1.09	100.0%
F32T8 to LED48W	3	3	112	48	4,207	880	880	1.09	100.0%
F32T8 to LED36W	17	17	85	36	4,207	3,820	3,820	1.09	100.0%
F32T8 to LED36W	12	12	85	36	5,159	3,307	3,307	1.09	100.0%
FU31T8/6 to LED30W	8	8	59	30	3,516	889	889	1.09	100.0%

F32T8 to LED24W	2	2	58	24	3,516	261	261	1.09	100.0%
F40T12/ES to LED28W	12	12	115	28	5,159	5,871	5,871	1.09	100.0%
F32T8 to LED28W	12	12	85	28	5,159	3,846	3,846	1.09	100.0%
FU31T8/6 to LED30W	8	8	59	30	3,516	889	889	1.09	100.0%
F32T8 to LED24W	2	2	58	24	3,516	261	261	1.09	100.0%
F48T8/HO to LED36W	35	35	98	36	4,207	9,951	9,951	1.09	100.0%
F32T8 to LED24W	6	6	58	24	4,207	1,116	1,116	1.30	100.0%
F48T8/HO to LED24W	10	10	98	24	4,207	4,047	4,047	1.30	100.0%
F48T8/HO to LED36W	16	16	98	36	4,728	5,112	5,112	1.09	100.0%
F32T8 to LED30W	4	4	112	30	4,207	1,504	1,504	1.09	100.0%
F32T8 to LED1W	2	2	58	1	4,207	523	523	1.09	100.0%
F32T8 to LED48W	2	2	112	48	4,207	587	587	1.09	100.0%
F32T8 to LED45W	6	6	85	45	5,159	1,350	1,350	1.09	100.0%
F32T8 to LED45W	2	2	85	45	5,159	450	450	1.09	100.0%
F32T8 to LED24W	10	10	58	24	5,159	1,912	1,912	1.09	100.0%
F32T8 to LED24W	14	14	58	24	5,233	2,715	2,715	1.09	100.0%
F32T8 to LED48W	4	4	112	48	5,159	1,440	1,440	1.09	100.0%
F32T8 to LED24W	35	35	58	24	4,207	5,457	5,457	1.09	100.0%
F32T8 to LED24W	7	7	58	24	8,760	2,273	2,273	1.09	100.0%
F32T8 to LED36W	32	32	85	36	8,760	14,972	14,972	1.09	100.0%
F32T8 to LED24W	65	65	58	24	8,760	21,102	21,102	1.09	100.0%
F32T8 to LED48W	2	2	112	48	3,516	491	491	1.09	100.0%
F32T8 to LED24W	8	8	58	24	8,760	2,597	2,597	1.09	100.0%
F32T8 to LED24W	4	4	58	24	4,207	624	624	1.09	100.0%
MH400 to LED73W	72	72	453	73	4,319	118,168	118,168	1.00	100.0%
MH400 to LED56W	21	21	453	56	4,319	36,008	36,008	1.00	100.0%

F32T8 to LED24W	11	11	58	24	8,760	3,571	3,571	1.09	100.0%
CFM26W to LED18W	97	97	51	18	8,760	30,564	30,564	1.09	100.0%
F14T5 to LED30W	15	15	50	30	8,760	2,865	2,865	1.09	100.0%
F14T5 to LED30W	12	12	50	30	8,760	2,292	2,292	1.09	100.0%
F54T5/HO to LED36W	36	36	181	36	8,760	49,843	49,843	1.09	100.0%
F32T8 to LED24W	2	2	58	24	3,516	261	261	1.09	100.0%
FU31T8/6 to LED30W	2	2	59	30	3,516	222	222	1.09	100.0%
F17T8 to LED20W	2	2	33	20	3,516	100	100	1.09	100.0%
F32T8 to LED36W	12	12	85	36	8,760	5,614	5,614	1.09	100.0%
F32T8 to LED36W	2	2	85	36	4,728	505	505	1.09	100.0%
F32T8 to LED24W	1	1	58	24	4,207	156	156	1.09	100.0%
F32T8 to LED45W	34	34	85	45	8,760	12,986	12,986	1.09	100.0%
F32T8 to LED36W	14	14	58	36	4,207	1,412	1,412	1.09	100.0%
F32T8 to LED45W	98	98	85	45	8,760	37,430	37,430	1.09	100.0%
F32T8 to LED30W	4	4	58	30	8,760	1,069	1,069	1.09	100.0%
H50 to LEDINT8W	4	4	50	8	8,760	1,604	1,604	1.09	100.0%
CFM26W to LED9W	4	4	29	9	8,760	764	764	1.09	100.0%
CFM26W to LED18W	16	16	51	18	8,760	5,042	5,042	1.09	100.0%
H65 to LEDINT9W	37	37	65	9	8,760	19,784	19,784	1.09	100.0%
F32T8 to LED28W	223	223	58	28	8,760	63,872	63,872	1.09	100.0%
F32T8 to LED24W	15	15	58	24	8,760	4,870	4,870	1.09	100.0%
FU31T8/6 to LED30W	12	12	59	30	8,760	3,323	3,323	1.09	100.0%
FU31T8/6 to LED30W	18	18	59	30	8,760	4,984	4,984	1.09	100.0%
					Total	**546,122**	**546,122**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
F32T8 to LED48W	6	5	112	48	0.90	0.39	0.39	1.00	100.0%
F32T8 to LED36W	18	18	85	36	0.77	0.81	0.81	1.20	100.0%
F32T8 to LED45W	4	4	85	45	0.77	0.15	0.15	1.20	100.0%
F32T8 to LED48W	4	4	112	48	0.77	0.24	0.24	1.20	100.0%
F32T8 to LED28W	4	2	58	28	0.77	0.16	0.16	1.20	100.0%
F32T8 to LED24W	15	15	58	24	0.90	0.55	0.55	1.20	100.0%
F32T8 to LED42W	30	30	85	42	0.73	1.13	1.13	1.20	100.0%
F32T8 to LED48W	2	2	112	48	0.90	0.14	0.14	1.20	100.0%
F32T8 to LED24W	8	8	58	24	0.77	0.25	0.25	1.20	100.0%
F32T8 to LED24W	16	15	58	24	0.77	0.52	0.52	1.20	100.0%
F32T8 to LED24W	3	3	58	24	0.77	0.09	0.09	1.20	100.0%
F32T8 to LED24W	56	56	58	24	0.77	1.76	1.76	1.20	100.0%
F32T8 to LED24W	1	1	58	24	0.77	0.03	0.03	1.20	100.0%
F32T8 to LED48W	4	4	112	48	0.77	0.24	0.24	1.20	100.0%
F32T8 to LED48W	4	4	112	48	0.77	0.24	0.24	1.20	100.0%
F32T8 to LED48W	3	3	112	48	0.77	0.18	0.18	1.20	100.0%
F32T8 to LED36W	17	17	85	36	0.77	0.77	0.77	1.20	100.0%
F32T8 to LED36W	12	12	85	36	0.77	0.54	0.54	1.20	100.0%
FU31T8/6 to LED30W	8	8	59	30	0.90	0.25	0.25	1.20	100.0%
F32T8 to LED24W	2	2	58	24	0.90	0.07	0.07	1.20	100.0%
F40T12/ES to LED28W	12	12	115	28	0.77	0.69	0.96	1.20	152.4%
F32T8 to LED28W	12	12	85	28	0.77	0.63	0.63	1.20	100.0%

FU31T8/6 to LED30W	8	8	59	30	0.90	0.25	0.25	1.20	100.0%
F32T8 to LED24W	2	2	58	24	0.90	0.07	0.07	1.20	100.0%
F48T8/HO to LED36W	35	35	98	36	0.77	2.01	2.01	1.20	100.0%
F32T8 to LED24W	6	6	58	24	0.77	0.20	0.20	1.30	100.0%
F48T8/HO to LED24W	10	10	98	24	0.77	0.74	0.74	1.30	100.0%
F48T8/HO to LED36W	16	16	98	36	0.77	0.92	0.92	1.20	100.0%
F32T8 to LED30W	4	4	112	30	0.77	0.30	0.30	1.20	100.0%
F32T8 to LED1W	2	2	58	1	0.77	0.11	0.11	1.20	100.0%
F32T8 to LED48W	2	2	112	48	0.77	0.12	0.12	1.20	100.0%
F32T8 to LED45W	6	6	85	45	0.77	0.22	0.22	1.20	100.0%
F32T8 to LED45W	2	2	85	45	0.77	0.07	0.07	1.20	100.0%
F32T8 to LED24W	10	10	58	24	0.77	0.31	0.31	1.20	100.0%
F32T8 to LED24W	14	14	58	24	0.90	0.51	0.51	1.20	100.0%
F32T8 to LED48W	4	4	112	48	0.77	0.24	0.24	1.20	100.0%
F32T8 to LED24W	35	35	58	24	0.77	1.10	1.10	1.20	100.0%
F32T8 to LED24W	7	7	58	24	0.77	0.22	0.22	1.20	100.0%
F32T8 to LED36W	32	32	85	36	0.77	1.45	1.45	1.20	100.0%
F32T8 to LED24W	65	65	58	24	0.77	2.04	2.04	1.20	100.0%
F32T8 to LED48W	2	2	112	48	0.90	0.14	0.14	1.20	100.0%
F32T8 to LED24W	8	8	58	24	0.56	0.18	0.18	1.20	100.0%
F32T8 to LED24W	4	4	58	24	0.77	0.13	0.13	1.20	100.0%
MH400 to LED73W	72	72	453	73	0.00	0.00	0.00	1.00	N/A
MH400 to LED56W	21	21	453	56	0.00	0.00	0.00	1.00	N/A
F32T8 to LED24W	11	11	58	24	0.90	0.40	0.40	1.20	100.0%
CFM26W to LED18W	97	97	51	18	0.81	3.11	3.11	1.20	100.0%
F14T5 to LED30W	15	15	50	30	0.81	0.29	0.29	1.20	100.0%

F14T5 to LED30W	12	12	50	30	0.81	0.23	0.23	1.20	100.0%
F54T5/HO to LED36W	36	36	181	36	0.81	5.07	5.07	1.20	100.0%
F32T8 to LED24W	2	2	58	24	0.90	0.07	0.07	1.20	100.0%
FU31T8/6 to LED30W	2	2	59	30	0.90	0.06	0.06	1.20	100.0%
F17T8 to LED20W	2	2	33	20	0.90	0.03	0.03	1.20	100.0%
F32T8 to LED36W	12	12	85	36	0.77	0.54	0.54	1.20	100.0%
F32T8 to LED36W	2	2	85	36	0.77	0.09	0.09	1.20	100.0%
F32T8 to LED24W	1	1	58	24	0.77	0.03	0.03	1.20	100.0%
F32T8 to LED45W	34	34	85	45	0.90	1.47	1.47	1.20	100.0%
F32T8 to LED36W	14	14	58	36	0.77	0.28	0.28	1.20	100.0%
F32T8 to LED45W	98	98	85	45	0.56	2.63	2.63	1.20	100.0%
F32T8 to LED30W	4	4	58	30	0.56	0.08	0.08	1.20	100.0%
H50 to LEDINT8W	4	4	50	8	0.56	0.11	0.11	1.20	100.0%
CFM26W to LED9W	4	4	29	9	0.56	0.05	0.05	1.20	100.0%
CFM26W to LED18W	16	16	51	18	0.56	0.35	0.35	1.20	100.0%
H65 to LEDINT9W	37	37	65	9	0.69	1.72	1.72	1.20	100.0%
F32T8 to LED28W	223	223	58	28	0.69	5.54	5.54	1.20	100.0%
F32T8 to LED24W	15	15	58	24	0.77	0.47	0.47	1.20	100.0%
FU31T8/6 to LED30W	12	12	59	30	0.77	0.32	0.32	1.20	100.0%
FU31T8/6 to LED30W	18	18	59	30	0.90	0.56	0.56	1.20	100.0%
					Total	**44.66**	**44.93**		**100.6%**

Results

The kWh realization rate for project PN8-012 is 100.3 and the kW realization rate is 100.6%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
F32T8 to LED48W	3,784	0.39	100.0%	100.3%
F32T8 to LED36W	4,960	0.81	100.0%	99.4%
F32T8 to LED45W	900	0.15	100.0%	101.5%
F32T8 to LED48W	1,440	0.24	100.0%	101.5%
F32T8 to LED28W	990	0.16	100.0%	98.4%
F32T8 to LED24W	2,909	0.55	100.0%	99.9%
F32T8 to LED42W	8,071	1.13	100.0%	100.0%
F32T8 to LED48W	730	0.14	100.0%	101.3%
F32T8 to LED24W	1,247	0.25	100.0%	99.5%
F32T8 to LED24W	3,194	0.52	100.0%	99.1%
F32T8 to LED24W	574	0.09	100.0%	95.5%
F32T8 to LED24W	8,731	1.76	100.0%	100.0%
F32T8 to LED24W	156	0.03	100.0%	95.5%
F32T8 to LED48W	1,440	0.24	100.0%	101.5%
F32T8 to LED48W	1,440	0.24	100.0%	101.5%
F32T8 to LED48W	880	0.18	100.0%	101.5%
F32T8 to LED36W	3,820	0.77	100.0%	100.0%
F32T8 to LED36W	3,307	0.54	100.0%	99.4%
FU31T8/6 to LED30W	889	0.25	100.0%	99.8%
F32T8 to LED24W	261	0.07	100.0%	95.3%
F40T12/ES to LED28W	5,871	0.96	100.0%	151.9%

F32T8 to LED28W	3,846	0.63	100.0%	99.7%
FU31T8/6 to LED30W	889	0.25	100.0%	99.8%
F32T8 to LED24W	261	0.07	100.0%	95.3%
F48T8/HO to LED36W	9,951	2.01	100.0%	100.2%
F32T8 to LED24W	1,116	0.20	100.0%	97.9%
F48T8/HO to LED24W	4,047	0.74	100.0%	99.9%
F48T8/HO to LED36W	5,112	0.92	100.0%	100.4%
F32T8 to LED30W	1,504	0.30	100.0%	99.0%
F32T8 to LED1W	523	0.11	100.0%	104.4%
F32T8 to LED48W	587	0.12	100.0%	101.5%
F32T8 to LED45W	1,350	0.22	100.0%	99.2%
F32T8 to LED45W	450	0.07	100.0%	94.7%
F32T8 to LED24W	1,912	0.31	100.0%	98.7%
F32T8 to LED24W	2,715	0.51	100.0%	99.2%
F32T8 to LED48W	1,440	0.24	100.0%	101.5%
F32T8 to LED24W	5,457	1.10	100.0%	100.0%
F32T8 to LED24W	2,273	0.22	100.0%	100.0%
F32T8 to LED36W	14,972	1.45	100.0%	100.1%
F32T8 to LED24W	21,102	2.04	100.0%	99.9%
F32T8 to LED48W	491	0.14	100.0%	101.3%
F32T8 to LED24W	2,597	0.18	100.0%	98.5%
F32T8 to LED24W	624	0.13	100.0%	103.5%
MH400 to LED73W	118,168	0.00	100.0%	N/A
MH400 to LED56W	36,008	0.00	100.0%	N/A
F32T8 to LED24W	3,571	0.40	100.0%	99.0%
CFM26W to LED18W	30,564	3.11	100.0%	100.0%

F14T5 to LED30W	2,865	0.29	100.0%	99.5%
F14T5 to LED30W	2,292	0.23	100.0%	98.6%
F54T5/HO to LED36W	49,843	5.07	100.0%	99.9%
F32T8 to LED24W	261	0.07	100.0%	95.3%
FU31T8/6 to LED30W	222	0.06	100.0%	95.8%
F17T8 to LED20W	100	0.03	100.0%	106.8%
F32T8 to LED36W	5,614	0.54	100.0%	99.4%
F32T8 to LED36W	505	0.09	100.0%	99.4%
F32T8 to LED24W	156	0.03	100.0%	95.5%
F32T8 to LED45W	12,986	1.47	100.0%	100.1%
F32T8 to LED36W	1,412	0.28	100.0%	98.4%
F32T8 to LED45W	37,430	2.63	100.0%	99.8%
F32T8 to LED30W	1,069	0.08	100.0%	106.3%
H50 to LEDINT8W	1,604	0.11	100.0%	97.4%
CFM26W to LED9W	764	0.05	100.0%	93.0%
CFM26W to LED18W	5,042	0.35	100.0%	98.6%
H65 to LEDINT9W	19,784	1.72	100.0%	100.3%
F32T8 to LED28W	63,872	5.54	100.0%	100.0%
F32T8 to LED24W	4,870	0.47	100.0%	99.7%
FU31T8/6 to LED30W	3,323	0.32	100.0%	99.5%
FU31T8/6 to LED30W	4,984	0.56	100.0%	99.3%
Total	**546,122**	**44.93**	**100.0%**	**100.6%**

PN8-014

Project Number PN8-014

Program Publicly Funded Institutions

Project Background

The participant is an airport that received incentives from Entergy New Orleans for retrofitting energy efficient lighting fixtures outdoors. On site, the Evaluators verified that the following had been installed:

- (16) 250W LED - Non-Int. Ballasts replaced (16) 1000W Metal Halides
- (11) 70W LED - Non-Int. Ballasts replaced (11) 400W Metal Halides
- (22) 60W LED - Non-Int. Ballasts replaced (22) 400W Metal Halides
- (2) 17W LED - Non-Int. Ballasts replaced (2) 100W Metal Halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Exterior	(none)	4,319	1.00	1.00	0.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED250W	16	16	1,078	250	4,319	57,218	57,218	1.00	100.0%
MH400 to LED70W	11	11	453	70	4,319	18,196	18,196	1.00	100.0%
MH400 to LED60W	22	22	453	60	4,319	37,342	37,342	1.00	100.0%
MH100 to LED17W	2	2	124	17	4,319	924	924	1.00	100.0%
					Total	**113,680**	**113,680**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED250W	16	16	1,078	250	0.00	3.42	0.00	1.00	0.0%
MH400 to LED70W	11	11	453	70	0.00	1.09	0.00	1.00	0.0%
MH400 to LED60W	22	22	453	60	0.00	2.23	0.00	1.00	0.0%
MH100 to LED17W	2	2	124	17	0.00	0.06	0.00	1.00	0.0%
					Total	**6.80**	**0.00**		**0.0%**

Results

The kWh realization rate for project PN8-014 is 100.0% and the kW realization rate is 0.0%. Peak kW reductions for exterior lighting, which was controlled by photocell, included and erroneous .26 CF. The correct value should have been 0.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH1000 to LED250W	57,218	0.00	100.0%	0.0%
MH400 to LED70W	18,196	0.00	100.0%	0.0%
MH400 to LED60W	37,342	0.00	100.0%	0.0%
MH100 to LED17W	924	0.00	100.0%	0.0%
Total	**113,680**	**0.00**	**100.0%**	**0.0%**

PN8-016

Project Number PN8-016

Program Publicly Funded Institutions

Project Background

The participant is an airport that received incentives from Entergy New Orleans for retrofitting energy efficient lighting and delamping existing fixtures outdoors. On site, the Evaluators verified that the following had been installed:

- (22) 300W LED - Non-Int. Ballasts replaced (22) 1000W Metal Halides
- (11) 400W metal halide lamps were delamped

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Exterior	(none)	4,319	1.00	1.00	0.00

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED300W	22	22	1,078	300	4,319	73,924	73,924	1.00	100.0%
MH400 removed	11	0	453	0	4,319	21,522	21,522	1.00	100.0%
					Total	**95,446**	**95,446**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH1000 to LED300W	22	22	1,078	300	0.00	4.41	0.00	1.00	0.0%
MH400 removed	11	0	453	0	0.00	1.29	0.00	1.00	0.0%
					Total	**5.70**	**0.00**		**0.0%**

Results

The kWh realization rate for project PN8-016 is 100.0%, and the kW realization rate is 0.0%. Lighting is on non-daylight control, however ex ante calculations erroneously attribute peak kW savings to this. Fixtures do not operate during peak hours and thus cannot provide peak kW savings.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH1000 to LED300W	73,924	0.00	100.0%	0.0%
MH400 removed	21,522	0.00	100.0%	0.0%
Total	**95,446**	**0.00**	**100.0%**	**0.0%**

PN8-018

Project Number PN8-018

Program Publicly Funded Institutions

Project Background

The participant is a high school that received incentives from Entergy New Orleans for retrofitting energy efficient lighting. On site, the Evaluators verified that the following had been installed:

- (12) 75W LED - Non-Int. Ballasts replaced (12) 400W Metal Halides

Calculation Parameters

Savings calculations were performed using savings methodology described in section C.6.3 of the New Orleans TRM. Deemed and custom savings parameters applicable to this site are shown below:

Table A, Savings Parameters

Building Type	Heating Type	Annual Hours	IEF_E	IEF_D	CF
Education: K-12	Gas	2,333	1.09	1.20	0.47

Savings Calculations

Table B, Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Annual Operating Hours	Expected kWh Savings	Realized kWh Savings	IEF_E	Realization Rate
	Base	Post	Base	Post					
MH400 to LED75W	12	12	453	75	2,333	11,535	11,535	1.09	100.0%
					Total	**11,535**	**11,535**		**100.0%**

Table C, Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		CF	Expected kW Savings	Realized kW Savings	IEF_D	Realization Rate
	Base	Post	Base	Post					
MH400 to LED75W	12	12	453	75	0.47	2.60	2.56	1.20	98.5%
					Total	**2.60**	**2.56**		**98.5%**

Results

The kWh realization rate for project PN8-018 is 100.0%, and the kW realization rate is 98.5%.

Table D, Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
MH400 to LED75W	11,535	2.56	100.0%	98.5%
Total	**11,535**	**2.56**	**100.0%**	**98.5%**

16. Appendix B: Survey Instruments & Interview Guides

This appendix contains the survey instruments and interview guides used in this evaluation.

16.1 Energy Smart Nonresidential Participant Survey

Client	Entergy New Orleans
Group:	Residential Nonparticipants
Mode:	Telephone

Variable	Definition
ADDRESS	Customer address

EMAIL RECRUITMENT

I am contacting you on behalf of Entergy New Orleans (Entergy).

Entergy is interested in learning how to better design the services they provide to customers to help them save energy. They have found that hearing from customers like you is one of the best ways to improve these services.

Please take a few minutes complete this survey. We will be selecting one person at random from among those that complete the survey to win a $100 Amazon gift card.

We appreciate your time and consideration in completing this survey. Your responses are very important to us!

You can access the survey at:

Your password is:

Thank you.

ADM STAFF Name

ADM Associates / Contractor to Entergy

SCREENING

1. According to our records, Entergy New Orleans provides the electricity service at your residence located at [ADDRESS]. Is that correct?

   1. Yes
   2. No **[TERMINATE/DISQUALIFY]**
   3. The location is not a residence **[TERMINATE/DISQUALIFY]**
   98. Don't know

2. Have you received a rebate or financial incentive from Entergy for installing energy efficient equipment or making energy efficiency improvements at this residence in the last three years?

   1. Yes **[TERMINATE/DISQUALIFY]**

2. No
98. Don't know

PROGRAM AWARENESS

3. Are you aware of any rebates for energy efficient equipment and home improvements or other services offered by Entergy?

   1 Yes
   2 No
   98 Don't know

[DISPLAY IF Q3= 1]

4. What types of equipment rebates or services do you recall hearing about? **[MULTISELECT] [RANDOMIZE 1 – 14]**

   1. Heating and cooling equipment rebates
   2. Appliance rebates such as for ceiling fans, dehumidifiers, pool pumps
   3. Heat pump water heater rebates
   4. Discounts for energy efficient lighting / LEDs
   5. Insulation / air sealing rebates
   6. Smart Wi-Fi thermostats rebates
   8. Home energy assessments
   9. A/C Tune-ups
   10. ENERGY STAR Window A/C rebates
   11. Low-flow showerheads and faucet aerators
   12. Energy Smart Scorecards
   13. Energy Smart EasyCool Program
   14. Energy Smart for Kids Program
   15. Other (Specify)
   98. Don't know

[DISPLAY IF Q3= 1]

5. How did you learn of these rebates or services? **[MULTISELECT] [RANDOMZIE 1 – 13]**

   1. Contractor
   2. Home energy consultant
   3. Program representative
   4. Program website
   5. Friend, family member, or colleague
   6. Bill insert or utility mailer
   7. Email from Entergy
   8. Social media post (e.g., Facebook, Twitter, Flickr)
   9. Through an internet search (e.g., Google search)
   10. Through an internet advertisement
   11. A radio or television advertisement
   12. A print advertisement
   13. Through a retailer
   14. Other (please explain)
   98. Don't know

ENERGY EQUIPMENT PURCHASES AND HOME UPGRADES

6. In the last two years, has your household purchased any energy efficient equipment or make energy efficiency upgrades to your home that would reduce your energy usage?

   1. Yes

2. No
98. Don't know

[DISPLAY Q7 IF Q6 = 1]

7. What purchases or upgrades did you make in the last two years? Please only include purchase or upgrades that would reduce your energy usage. **[MULTISELECT] [RANDOMIZE 1-17]**

   1. Replaced an air conditioner/HVAC unit (AC, heat pump, window unit)
   2. Tuned-up or serviced an air conditioner/HVAC unit
   3. CFLs/compact fluorescent lighting
   4. LED bulbs
   5. ENERGY STAR clothes washer/dyer
   6. ENERGY STAR Dishwasher
   7. ENERGY STAR Refrigerator
   8. ENERGY STAR Freezer
   9. ENERGY STAR pool pump
   10. Programmable thermostat
   11. Smart thermostat / Wi-Fi thermostat / NEST / Ecobee /Lyric
   12. ENERGY STAR water heater
   13. ENERGY EFFICIENT water heater
   14. Solar screens
   15. Efficient/ENERGY STAR electronics
   16. Added insulation (attic insulation, wall insulation, floor insulation)
   17. Solar panels / solar PV
   20. Other (please specify)
   98. Don't know

ENERGY EFFICIENCY KNOWLEDGE, ATTITUDES, AND INTENTIONS

8. On a 5-point scale, where 1 means "Not at all interested" and 5 means "Very interested", how interested are you in making improvements to your home that would:

   [SCALE: 1 (NOT AT ALL INTERESTED) – 5 (VERY INTERESTED), 98 = DON'T KNOW, 99 = REFUSED]

   a. Increase its energy efficiency?
   b. Improve your comfort?
   c. Improve your health and safety?

9. How would you find out ways to reduce your monthly energy bills? **[MULTISELECT] [RANDOMIZE 1 – 8]**

   1. From Entergy / Entergy website
   2. Energy Smart Scorecard
   3. Internet search
   4. City/Government information
   5. ENERGY STAR website information
   6. Friends, family, or colleagues
   7. Information from a retail store
   8. Magazines/Newspapers/Television/ Radio
   9. Other (Please specify)
   98. Don't know

10. How trustworthy is Entergy New Orleans as a source of information about saving energy in your home? Would you say…

1. Very untrustworthy
2. Somewhat untrustworthy
3. Somewhat trustworthy
4. Very trustworthy
98. Don't know

11. How interested are you in getting additional information on energy saving tips and rebate programs offered by Entergy? Would you say…

    1. Not at all interested
    2. Slightly interested
    3. Moderately interested
    4. Very interested
    98. Don't know

12. What would be the best way for Entergy to provide information on rebates for energy saving equipment and improvements?

    1. Email
    2. Utility Website
    3. Bill insert
    4. Telephone call
    5. Text messages
    6. Social media
    7. Newsletter
    8. Local events (e.g., home shows)
    9. Other (Please specify)
    10. None- prefer not to receive information
    98. Don't know

13. Now, I'd like to read you several statements. Please rate your level of agreement or disagreement with these statements on a scale of "1" to "5" where "1" means "Strongly Disagree" and "5" means "Strongly Agree."

    There are no "right" or "wrong" answers, we just want your opinion.

    [SCALE: 1 (STRONGLY DISAGREE) – 5 (STRONGLY AGREE),] [RANDOMIZE ORDER]

    a. I am not concerned about the amount of energy used in my home.

    b. It is important to save energy to preserve the environment.

    c. It is my right to use as much energy as I want.

    d. I don't have the resources I need to reduce the amount of energy I am using.

    e. It is possible to save energy without sacrificing comfort by being energy efficient.

    f. I don't feel that I am well informed on ways to save energy.

    g. I intend to reduce my household energy use in the next 12 months.

SATISFACTION

14. Using a scale where 1 is "Very dissatisfied" and 5 is "Very satisfied, how satisfied are you with Entergy New Orleans as your electricity service provider?

[SCALE: 1 (VERY DISSATISFIED) – 5 (VERY SATISFIED), 98 = DON'T KNOW]

DEMOGRAPHICS/HOME CHARACTERISTICS

The next questions are about your residence. These are anonymous and will be used solely for combining different customers' responses. It is okay to not answer any of these questions.

15. Which of the following best describes your home? Is it a…

    1. Manufactured home
    2. Single-family house detached from any other house
    3. Single family house attached to one or more other houses, for example, duplex, row house, or townhome
    4. Apartment in a building with 2 to 3 units
    5. Apartment in a building with 4 or more units
    6. Other (Specify)
    98. Don't know

16. Do you own, rent, or own and rent to someone else the property located at [ADDRESS]?

    1. Own
    2. Rent
    3. Own and rent to someone else
    98. Don't know

[DISPLAY IF Q16 = 1 OR 3]

17. When was your home built?

    1. Before 1950
    2. 1950 to 1959
    3. 1960 to 1969
    4. 1970 to 1979
    5. 1980 to 1989
    7. 1990 to 1999
    8. 2000 to 2009
    9. 2010 to 2016
    98. Don't know

18. What is the approximate square footage of your home? Your best estimate is fine.

19. What is the main type of heating equipment used to provide heat for your home?

    1. Heat pump
    2. Central forced air furnace
    3. Built-in baseboard heater
    4. Building-in wall heater
    5. Something else (Please specify)
    5. Don't heat my home
    98. Don' know

20. Do you use a central air conditioning system in your home?

    1. Yes
    2. No
    98. Don't know

[DISPLAY IF Q20 = 1]

21. Is the central air conditioning system a heat pump?

    1. Yes

2. No
98. Don't know

[DISPLAY IF Q20 = 1]

22. How old is the central air conditioning system in your home?

    1. Less than 2 years old
    2. 2 to 4 years
    3. 5 to 9 years
    4. 10 to 14 years
    5. 15 to 19 years
    6. 20 or more years old
    98. Don't know

[DISPLAY IF Q20 = 1]

23. Is the central air conditioning currently working and producing cool air?

    1. Yes
    2. No
    98. Don't know

[DISPLAY IF Q20 = 1]

24. In the last year, did you have your central air conditioning system tuned-up by a heating and cooling contractor?

    1. Yes
    2. No
    98. Don't know

[DISPLAY IF Q24 = 1]

25. When you had your A/C tune-up performed, was your duct system checked for any air leakage?

    1. Yes
    2. No
    98. Don't know

[DISPLAY IF Q25 = 1]

26. Did the heating and cooling contractor recommend you seal your ducts?

    1. Yes
    2. No
    98. Don't know

[DISPLAY IF Q26 = 1]

27. Did that professional/contractor recommend applying for an Entergy rebate program for sealing your ducts?

    1. Yes
    2. No
    98. Don't know

[DISPLAY IF Q20 = 1 AND Q22 <> 1 AND Q16 = 1]

28. We would like to know how much you would be willing to pay to replace your air conditioner with a more efficient air conditioner. Assume that your current air conditioner is working and that a new more efficient air conditioner would save you $175 a year in utility costs. What is the most you would be willing to pay to replace your air conditioner with a more efficient air conditioner?

    $ [SMALL TEXT BOX]

[DISPLAY IF Q20 = 1 AND Q22 <> 1 AND Q16 = 1**]**

29. Now, assume that your air conditioner is not working and would cost $500 to have it repaired. What is the most you would be willing to pay to replace your air conditioner with a new more efficient air conditioner that would save you $175 a year in utility costs?

    $ [SMALL TEXT BOX]

[DISPLAY Q30 IF Q20 = 1 AND Q22 <> 1 AND Q16 = 1**]**

30. Now, assume that your air conditioner is working but you need to replace your broken heating system. What is the most you would be willing to pay to replace your air conditioner with a new more efficient air conditioner that would save you $175 a year in utility costs?

    $ [SMALL TEXT BOX]

31. What is the main fuel used for heating your home?

    1. Electricity
    2. Natural Gas
    3. Propane
    4. Something else (Please explain)
    5. Don't heat home
    98. Don't know

32. What fuel does your main water heater use?

    1. Electricity
    2. Natural Gas
    3. Propane
    4. Something else (Please explain)
    98. Don't know

33. Including yourself, how many people currently live in your home year-round?

    1. 1
    2. 2
    3. 3
    4. 4
    5. 5
    6. 6
    7. 7
    8. 8 or more
    98. Don't know

34. Including all money earned from wages, salaries, tips, commissions, workers' compensation, unemployment insurance, child support, or other sources, about how much was your total annual household income before taxes in 2016?

    1. Less than $10,000
    2. $10,000 to less than $20,000
    3. $20,000 to less than $30,000

4. $30,000 to less than $40,000
5. $40,000 to less than $50,000
6. $50,000 to less than $75,000
7. $75,000 to less than $100,000
8. $100,000 to less than $150,000
9. $150,000 to less than $200,000
10. $200,000 or more
98. Don't know

35. What's the highest level of education you've completed?

    1. Less than high school
    2. High school graduate/GED
    3. Associates degree, vocational/technical school, or some college
    4. Four-year college degree
    5. Graduate or professional degree
    98. Don't know

36. We will select one survey respondent at random to win a $100 Amazon gift card. The gift card will be sent by postal mail to the winner.

    If you are selected to win the gift card, the card will be sent to the address below.

    Please correct the address if it is incorrect.

    Name:

    Street Address:

    City:

    State:

    Zip code:

16.2 Energy Smart Residential Participant Survey

Research Topic	Survey Questions
Program awareness and participation decision	Q5 - Q6
Experience with Home Energy Assessment	Q7 - Q16
Appliance HVAC/ Rebate	Q17 - Q18
HVAC Tune-Up Decision	Q20 - Q25
Free Ridership (Major Measures)	Q26- Q35
Free Ridership (Direct Install)	Q36 - Q41
Spillover	Q42 - Q58
Satisfaction	Q61 - Q63

GROUP

Participants in HPwES, LIA&Wx, Multifamily (Tenant Participants), Consumer Products (Appliance Rebates), and Residential Heating and Cooling.

OVERVIEW

Interviewer instructions are shown in all caps enclosed in parentheses, e.g., (INTERVIEWER INSTRUCTION)

Prepopulated variables are shown in all caps enclosed in brackets, e.g., [PREPOPULATED VARIABLE]

Programming instructions are shown in all caps, bold-type, enclosed in brackets, e.g., **[PROGRAMMING INSTRUCTION]**

PREDEFINED VARIABLES

Variable	Definition
CONTACT_NAME	Customer contact first and last name
PHONE	
UTILITY	Utility implementing program
PROJECT_DESC	Description of project
ADDRESS	Street address
PROGRAM_LONG	Long name of the program: Energy Smart Home Performance with Energy Star Program Energy Smart Income-Qualified Weatherization Energy Smart Residential Appliance Program Energy Smart Residential Heating and Cooling Program Energy Smart Multifamily Program

PROGRAM_SHORT	Long name of the program: Home Performance Program Weatherization Program Appliance Program Heating and Cooling Program Multifamily Program
PROGRAM	1 = HPwES 2 = IQW 3 = RLA 4 = RES HEATING AND COOLING 5 = MF
DATE	Date of measures installation
MAJMEAS_QUANT	Count of types of major measures. (e.g., 2 if duct sealing and insulation was implemented)
EFF_MEASURE_1	First selected incentivized measure, referencing efficiency
EFF_MEASURE_2	Second selected incentivized measure, referencing efficiency
MEASURE_NOEFF_1	First selected incentivized measure, not referencing efficiency
MEASURE_NOEFF_2	Second selected incentivized measure, not referencing efficiency
INSTALL_COMPLETE_1	
INSTALLED_COMPLETED_1	
INSTALL_COMPLETE_2	
INSTALLED_COMPLETED_2	
MEASURE_NUM_1/2	1 = ENERGY STAR refrigerator 2 = ENERGY STAR window air conditioner 3 = ENERGY STAR central air conditioner/heat pump 4 = ENERGY STAR heat pump water heaters 5 = ENERGY STAR pool pumps 6 = energy efficient air conditioner tune-up 7 = insulation 8 = air sealing 9 = duct sealing 10 = energy efficient smart strip

	11 = LED light bulbs 12 = high efficiency showerhead 13 = high efficiency faucet aerators 14 = pipe wrap 15 = programmable thermostat 16 = smart thermostat
DI_MEASURE_FLAG	1 if received DI measures, else 0.
DIMEASURE	Description of select DI measure.
DIPOWERSTRIP	1 if selected DI measure is 1, else 0.
DIMEASURE_QUANT	Number of selected DI measures received (e.g., 6 LEDs).
PROGRAM_YEAR	Program year
RECRUIT_VERI	1 to recruit customers for site visits, else 0.
RECRUIT_LOG	1 to recruit customers for lighting loggers, else 0
EFF_MEASURE_1_IDs	
EFF_MEASURE_2_IDs	
DIMEASURE_IDs	

SURVEY INSTRUMENTS

Hello. May I please speak with [CONTACT NAME])?

Hello. My name is _____ and I am calling on behalf of [UTILITY] about your household participating in their [PROGRAM_LONG] Program. Through this program, your household [PROJECT_DESC].

This is not a sales call. We are conducting a study on behalf of [UTILITY] to help them improve the programs they offer their customers.

Are you the person who is most familiar with your household's participation in this program?

(IF NOT RIGHT PERSON) May I have the name and telephone number for the person who would know the most about your household's participation in this program?

Name:

Telephone:

(IF RIGHT PERSON)

May I ask you a few questions?

Thank you.

FAQ

Entergy has hired our firm to evaluate the program. As part of the evaluation, we're talking with customers that participated in the Entergy program to understand their experiences with the program.

(Why are you conducting this study: Studies like this help Entergy better understand customers' need for energy efficiency programs and services)

(Timing: This survey should take about 12 minutes of your time. Is this a good time for us to speak with you? IF NOT, SET UP CALL BACK APPOINTMENT)

(Sales concern: I am not selling anything; we would simply like to learn about your experience with the program. Your responses will be kept confidential and not revealed to anyone unless you grant permission. If you would like to talk with someone from Entergy about this study, feel free to call STAFF CONTACT, the STAFF CONTACT TITLE with Entergy at (504) 670-3527

1. Program records indicate that your household [PROJECT_DESC] through the [PROGRAM_LONG] program at [ADDRESS]. Do you recall this?

    1. Yes
    2. Yes, but information is incorrect
    3. Does not recall receiving measures

[DISPLAY Q2 IF Q1 =2]

2. Please tell me what you think is incorrect about our records.

[DISPLAY Q3 IF Q1 = 3]

3. Is there someone else we should speak with that might know about the energy efficient items your household received through the [PROGRAM_LONG] program?

    1. Yes
    2. No(THANK AND TERMINATE)
    98. DON'T KNOW(THANK AND TERMINATE)
    99. REFUSED(THANK AND TERMINATE)

[DISPLAY Q4 IF Q3 = 1]

4. May I please speak with that person?

    1. Yes (BEGIN SURVEY WITH NEW RESPONDENT)
    2. No (THANK AND TERMINATE)
    98. DON'T KNOW (THANK AND TERMINATE)
    99. REFUSED(THANK AND TERMINATE)

AWARENESS

5. First, I'd like to ask you a few questions about how you heard about the program. I want to inform you that throughout the rest of this survey, I will be using the abbreviated name of the [PROGRAM_LONG] which is also known as the [PROGRAM_SHORT] program.

    How did you learn of the [PROGRAM_SHORT] program? (SELECT ALL THAT APPLY) (DO NOT READ LIST)

    1. Contractor
    2. Home energy consultant
    3. Program representative
    4. Program website
    5. Friend, family member, or colleague
    6. Bill insert or utility mailer
    7. Email from [UTILITY_SHORT]
    8. Social media post (e.g., Facebook, Twitter, Flickr)
    9. Through an internet search (e.g., Google search)
    10. Through an internet advertisement
    11. A radio or television advertisement
    12. A print advertisement

13. Through a retailer
15. Other (please explain)
98. DON'T KNOW
99. REFUSED

[DISPLAY Q6 IF PROGRAM = 1, 2, 4, 5]

6. Why did you decide to participate in the program? (DO NOT READ; SELECT ALL THAT APPLY)

    1. Save money on energy bills
    2. Improve the comfort of your home
    3. Conserve energy/Protect the environment
    4. Improve the value of the residence
    5. Become as energy efficient as my friends or neighbors
    6. Find out if there were any structural problems with my home
    7. Get the free equipment/discount/rebate
    8. Other (VERBATIM)
    98. DON'T KNOW
    99. REFUSED

Home Energy Assessment

[DISPLAY Q7 IF PROGRAM = 1 OR 2]

7. According to our records you received a home energy assessment through the program. Is that correct?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q8 IF Q7 = 1]

8. Were you planning on having an energy assessment of your home BEFORE you learned about the program? (DO NOT READ)

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q9 IF Q7 = 1]

9. I would like to understand your experience with scheduling your home energy assessment. On a scale of 1 to 5, where 1 is "very difficult" and 5 is "very easy," how would you rate the process of scheduling your home energy assessment?

    1. 1 - Very difficult
    2. 2
    3. 3
    4. 4
    5. 5 - Very easy
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q10 IF Q9 < 3]

10. Why do you say that?

[DISPLAY Q11 IF Q7 = 1]

11. When you had your home energy assessment, did the assessor. . . (READ LIST)?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

a) Ask you if there were any specific issues with your home you wanted to address?
b) Provide an energy assessment report with energy efficiency recommendations?
c) Discuss with you the potential energy savings you might achieve by implementing those recommendations in your home?
d) Install energy efficient measures on the day of the assessment?

[DISPLAY Q12 IF 11B)= 1]

12. You confirmed that you received a home energy assessment report as part of your home energy assessment experience. On a scale of 1 to 5, where 1 is "not at all helpful" and 5 is "very helpful," how helpful was that report to you?

    1. 1 - Not at all helpful
    2. 2
    3. 3
    4. 4
    5. 5 - Very helpful
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q13 IF Q12 < 3]

13. Why do you think the home energy assessment report was not helpful?

[DISPLAY Q14 IF PROGRAM = 1 OR 2]

14. Since the assessment, would you say you have completed all of the recommended energy efficiency improvements, completed some of them, or not completed any?

    1. Completed all
    2. Completed some but not all
    3. Have not completed any
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q15 IF Q14 = 2 OR 3]

15. What were the energy efficient improvements recommended to you that you have not implemented?

    [RECORD VERBATIM]

[DISPLAY Q16 IF Q14 = 2 OR 3]

16. What were the primary reasons you have not implemented these improvements? **[MULTISELECT]**

    1. Cost
    2. Do not have time
    3. Waiting for equipment to fail
    4. Do not feel they need to be done/will save energy
    5. Do not own the property
    6. Need more information
    7. Still planning to implement in the future
    8. Other (Please describe)

98. I don't know
99. REFUSED

Appliance/HVAC Rebate Decision

[DISPLAY Q17 IF MEASURE_NUM_1 = 1, 2, 3,4, OR 5] (APPLIANCES OR HVAC)

17. Why did you select this model or type of [MEASURE_1_NOEFF]? **[MULTISELECT]** (DO NOT READ LIST; ASK ANY OTHER REASON ELSE AFTER RESOPNSE)

    1. It was a good price
    2. There was a rebate for it
    3. It costs less to operate it
    4. It's good for the environment
    5. It was all that was available/only choice
    6. The contractor/retailer recommended it
    7. It had features I wanted
    8. It was the right size, color
    9. Wanted that brand
    10. It had an ENERGY STAR label
    11. Other (Please specify)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q18 IF MEASURE_NUM_1 = 1, 2, 3,4, OR 5] (APPLIANCES OR HVAC)

18. When you were deciding to purchase the [MEASURE_1_NOEFF], from where did you get information about what to buy? (DO NOT READ) **[MULTI-SELECT]**

    1. Retailers
    2. Installation contractors
    3. Friend, neighbor, relative or co-worker
    4. Utility
    5. Internet
    6. Consumer reports or other product magazines
    7. Newspaper
    8. Radio
    9. Television
    10. Other (Please specify)
    11. DID NOT LOOK FOR ANY INFORMATION ABOUT WHAT TO BUY
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q19 IF MEASURE_NUM_1 = 1, 2, 3, OR 4] (APPLIANCES ONLY)

19. What type of store, or from what sort of contractor did you purchase the [MEASURE_1_NOEFF]? (DO NOT READ)

    1. Appliance store
    2. Home improvement store
    3. Heating/ cooling contractor
    4. Swimming pool contractor
    5. Local hardware store
    6. Internet
    7. Other (Please specify)
    98. DON'T KNOW
    99. REFUSED

HVAC Tune-Up Decision

[DISPLAY Q20 IF MEASURE_NUM_1= 6 OR MEASURE_NUM_2 = 6]

20. Just to confirm, did you receive an Energy Smart Air-Conditioning Tune-Up as part of your program participation?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q21 IF Q20 = 1]

21. Prior to participating in the program, did you have regular tune-ups conducted by a heating and cooling contractor?

    1. Yes
    2. No
    98. DON'T KNOW
    98. REFUSED

[DISPLAY Q22 IF Q21 = 1]

22. Did you have those tune-ups completed as part of a maintenance agreement or plan?

    1. Yes
    2. No
    98. DON'T KNOW
    98. REFUSED

[DISPLAY Q23 IF Q21 = 1]

23. Did the same company that completed the Energy Smart tune-up perform the tune-ups you had done before receiving the Energy Smart tune-up?

    1. Yes, same company
    2. No, different company
    98. DON'T KNOW
    98. REFUSED

[DISPLAY Q24 IF Q21 = 1]

24. Approximately how often do you get a tune up?

    1. Every year
    2. Once every two years
    3. Three to five years
    4. More than five years
    5. Only as needed for repairs
    6. Other (specify)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q25 IF Q21 <> 1]

25. When, if ever, was your last tune up?

    1. Less than one year ago
    2. 1-2 years ago
    3. 3-5 years ago
    4. More than 5 years ago
    5. Never had a tune up
    98. DON'T KNOW
    99. REFUSED

Free Rideship – Major Measures [DISPLAY PAGE IF MAJMEAS_QUANT > 0 & PROGRAM <> 2 (IQ) and repeat once if majmeas_quant > 1 & PROGRAM <> 2 (IQ)]

[DISPLAY Q26 IF Q7 =1]

26. Was the [EFF_MEASURE_1/2] recommended during the home energy assessment?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

27. Prior to learning about the [PROGRAM_SHORT] Program, did you have plans to [INSTALL_COMPLETE_1/2] the [EFF_MEASURE_1/2]?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q28 IF Q27= 1 AND [MEAUSURE_NUM_1/2= ONE OF 1, 2, 3, 4, 5, 6]]

28. Just to be clear, did you have plans to specifically [INSTALL_COMPLETE_1/2] an [[EFF_MEASURE_1/2] as opposed to a standard efficiency [MEASURE_NOEFF_1/2]?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q29 IF Q7 = 1]

29. How likely is it that you would have [INSTALLED_COMPLETED_1/2] the same [EFF_MEASURE_1/2] if it was not recommended through the home energy assessment? Would you say...

    1. Very likely
    2. Somewhat likely
    3. Neither likely nor unlikely
    4. Somewhat unlikely
    5. Very unlikely
    98. DON'T KNOW
    99. REFUSED

30. Would you have been financially able to [INSTALL_COMPLETE_1/2] the [EFF_MEASURE_1/2] without the financial assistance provided through the program?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

31. How likely is it that you would have [INSTALLED_COMPLETED_1/2] the same [EFF_MEASURE_1/2] if the financial assistance was not available? Would you say...

    1. Very likely
    2. Somewhat likely
    3. Neither likely nor unlikely
    4. Somewhat unlikely
    5. Very unlikely
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q32 IF MEASURE_NUM_1/2 = 3 OR 6]

32. Did the contractor that you worked with provide you with information, marketing material or a recommendation to purchase or install the [EFF_MEASURE_1/2]?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q33 IF Q32 = 1]

33. On a scale where 0 means "not at all influential" and 10 means "extremely influential," how influential was the information, marketing material, or recommendation provided by this contractor in your decision to purchase the [EFF_MEASURE_1/2]?

    1. (Record 0 -10)
    98. DON'T KNOW
    99. REFUSED

34. Did you [INSTALLED_COMPLETED_1/2] the [EFF_MEASURE_1/2] sooner than you would have if the information and financial assistance from the program had not been available?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q35 IF Q34 = 1]

35. When might you have purchased or installed the same [EFF_MEASURE_1/2] if you had not participated in the program? Would you say … (READ LIST)

    1. Within 6 months of when you purchased or installed it
    2. Between 6 months and 1 year
    3. In more than 1 year to 2 years
    4. In 2 to 3 years
    5. In more than 3 years
    6. Never (Do not read)
    98. DON'T KNOW
    99. REFUSED

Free Ridership – DI Measures [DISPLAY PAGE IF di_measure_flag = 1]

36. Had you purchased and installed any [DIMEASURE]s before you received them for free through the program?

    1. Yes
    2. No
    98. DON'T KNOW

99. REFUSED

[DISPLAY Q37 IF Q36 = 2]

37. How familiar were you with [DIMEASURE]s as a technology to save energy before you participated in the [PROGRAM_SHORT] Program? Would you say…

    1. Very unfamiliar
    2. Somewhat unfamiliar
    3. Neither familiar nor unfamiliar
    4. Somewhat familiar
    5. Very familiar
    98. DON'T KNOW
    99. REFUSED

38. Did you have plans to purchase and install an [DIMEASURE] before you learned about the [PROGRAM_SHORT] Program?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q39 IF DIPOWERSTRIP =1]

39. Just to be clear, did you have plans to purchase an energy saving power strip or plans to purchase a standard power strip?

    1. An energy saving power strip
    2. A standard power strip
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q40 IF DIMEASURE_QUANT > 1]

40. How many of the [DIMEASURE]s that you received had you already planned to purchase?

    1. (Record Quantity)
    98. DON'T KNOW
    99. REFUSED

41. If you had not received the free [DIMEASURE], how likely is it that you would have installed them anyway within 12 months of when you received them? Would you say… (READ LIST)

    1. Very likely
    2. Somewhat likely
    3. Neither particularly likely nor unlikely
    4. Somewhat unlikely
    5. Very unlikely
    98. DON'T KNOW
    99. REFUSED

Spillover [DISPLAY IF PROGRAM <> 2]

42. We would like to know if you have installed any additional energy efficient equipment because of your experience with the program that you DID NOT receive an incentive or rebate for.

    Since participating in the [PROGRAM_SHORT] Program, have you installed any ADDITIONAL energy efficient items in a household in [UTILITY]'s service territory without receiving an incentive or rebate?

    1. Yes

2. No
98. DON'T KNOW
99. REFUSED

[DISPLAY Q43 IF Q42 = 1]

43. We would like to know what you purchased and installed because of your experience with the program that you did not get a rebate or discount for.

    Since participating in the program in [YEAR] have you done any of the following? **[MULTISELECT]** (READ LIST)

    1. Installed CFLs (Compact Fluorescent Light bulbs)
    2. Installed LED Light Bulbs
    3. Purchased an ENERGY STAR appliance such as a refrigerator, dishwasher, clothes washer, or clothes dryer
    4. Installed water heater pipe insulation
    5. Installed water Heater jacket, blanket, or insulation
    6. Installed low flow faucet aerators
    7. Installed low flow showerhead
    8. Installed an ENERGY STAR room air conditioner
    9. Installed an energy efficient water heater
    10. Something else
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q44 IF Q42 = 1]

44. Why did you not get a [UTILITY] incentive rebate or discount for that energy saving equipment?

[DISPLAY Q45 IF Q43 = 1]

45. How many CFLs did you purchase and install?

    1. (Record Quantity)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q46 IF Q43 = 2]

46. How many LEDs did you purchase and install?

    1. (Record Quantity)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q47 IF Q43 = 3]

47. What kind of appliance did you purchase? **[MULTISELECT]**

    1. Refrigerator
    2. Freezer
    3. Dishwasher
    4. Clothes washer
    5. Clothes dryer (Is it electric or gas?)
    6. Other (Please describe)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q48 IF Q43 = 3]

48. How do you know it is an energy efficient appliance?

[DISPLAY Q49 IF Q43 = 4]

49. About how many feet of water heater pipe insulation you purchased and installed?

    1. (Record Quantity in feet)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q50 IF Q43 = 6]

50. How many low flow faucet aerators did you install in bathroom sinks?

    1. (Record Quantity)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q51 IF Q43 = 6]

51. How many low flow faucet aerators did you install in kitchen sinks?

    1. (Record Quantity)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q52 IF Q43 = 7]

52. How many low flow shower heads did you install?

    1. (Record Quantity)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q53 IF Q43 = 8]

53. How many ENERGY STAR room air conditioners did you install?

    1. (Record Quantity)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q54 IF Q43 = 8]

54. How many square feet is the room that the ENERGY STAR air conditioner is installed in? (If multiple units installed, ask how many square feet on average are the rooms you installed the air conditioners in)

    1. (Record Quantity)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q55 IF Q43 = 9]

55. How do you know that the water heater you installed is an energy efficient water heater?

    1. (Record Quantity)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q56 IF Q43 =9]

56. What type of water heater did you install? Was it a…

    1. Natural gas storage tank water heater
    2. Electric storage tank water heater

3. Heat pump water heater
4. A natural gas tank less water heater
5. Some other type of water heater (Specify)
98. DON'T KNOW
99. REFUSED

[DISPLAY Q57 IF Q43 = 10]

57. What other energy efficient items did you install?

    1. (Record Quantity)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q58 IF Q43 = 1 - 10]

58. In approximately what month and year did you install the energy efficient items that you did not receive an incentive for?

    1. (Record Month and Year)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q59 IF Q43 = 1 - 10]

59. On a scale of 0 to 10, where 0 represents "not at all important" and 10 represents "extremely important", how important was the experience with the program in your decision to purchase the items you just mentioned?

    1. (Record 0-10)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q60 IF Q43 = 1 - 10]

60. On a scale of 0 to 10, where 0 represents "not at all likely" and 10 represents "extremely likely," how likely would you have been to purchase those additional items if you had not participated in the program?

    1. (Record 0-10)
    98. DON'T KNOW
    99. REFUSED

SATISFACTION

61. These next few questions ask about your satisfaction with several aspects of the program. Using a scale of 1 to 5, where 1 is "very dissatisfied" and 5 is "very satisfied", how would you rate your satisfaction with the following? [RANDOMIZE A-G]

    [SCALE: 1 = 1 (Very dissatisfied), 2 = 2, 3 =3, 4 = 4, 5 = 5 (Very satisfied = 5), 98 = Don't know, 99 = Refused]

    a. [DISPLAY IF PROGRAM = 1, 2, 5] Interactions you had with program staff
    b. [DISPLAY IF PROGRAM = 1, 2, 4, 5] The quality of the installation contractors work
    c. The performance of the equipment installed or the energy efficient improvements that were made
    d. The savings on your monthly utility bills
    e. The effort required for the application process
    f. [DISPLAY IF PROGRAM =1, 2] Scheduling the home energy assessment
    g. [DISPLAY IF PROGRAM =1, 2]] The information provided by the home energy assessment
    h. Overall program experience

[DISPLAY Q62 IF Q61 < 3]

62. Why were you dissatisfied with those aspects of the program you mentioned?

63. Using the same scale, how satisfied are you with [UTILITY] as your electricity service provider?

    [SCALE: 1 = 1 (Very dissatisfied), 2 = 2, 3 =3, 4 = 4, 5 = 5 (Very satisfied = 5), 98 = Don't know, 99 = Refused]

DEMOGRAPHICS AND HOME CHARACTERISTICS

64. I now have a fewquestions about this residence. These are anonymous and will be used solely for the purpose of combining different customers' responses. If you do not want to answer any of these, let me know. It is okay to not answer any of these questions.

    Which of the following best describes this residence? (READ LIST)

    1. Single family detached home
    2. Townhome
    3. Duplex or Triplex
    3. Mobile or manufactured home
    4. Apartment building with 2-4 units
    5. Apartment building with 5-10 units
    6. Apartment building with more than 10 units
    98. DON'T KNOW
    99. REFUSED

65. When was this residence built? (IF RESPONDENT DOES NOT GIVE VERBATIM ANSWER, READ OFF YEAR RANGES UNTIL RESPONDENT INDICATES ONE)

    1. Verbatim____
    2. Before 1970's
    3. 1970's
    4. 1980's
    5. 1990's
    7. 2000-2009
    8. 2010 or newer
    98. DON'T KNOW
    99. REFUSED

66. What is the approximate square footage of this residence? (IF RESPONDENT DOES NOT GIVE VERBATIM ANSWER, READ OFF SIZE RANGES UNTIL RESPONDENT INDICATES ONE)

    1. (VERBATIM)
    2. Less than 1,000
    3. 1,001-1,500
    4. 1,501-2,000
    5. 2,001-2,500
    6. Greater than 2,500
    98. DON'T KNOW
    99. REFUSED

67. Do you own, rent, or own and rent to someone else the property located at [LOCATION]?

    1. Own
    2. Rent

3. Own and rent to someone else
98. DON'T KNOW
99. REFUSED

68. What is the main fuel used for heating your home?

1. Natural gas
2. Electricity
3. Propane
4. Other (VERBATIM)
5. DON'T HEAT THE HOME
98. DON'T KNOW
99. REFUSED

[DISPLAY Q19 IF Q68 <> 5]

69. What is the main type of heating equipment used to provide heat for your home? (READ LIST)

1. Heat pump
2. Central forced air furnace
3. Built-in baseboard heater
4. Building-in wall heater
5. Something else (VERBATIM)
5. DON'T HEAT THE HOME
98. DON'T KNOW
99. REFUSED

[DISPLAY Q20 IF MEASURE_NUM_1/2 <> 3]

70. Do you use a central air conditioning system in your home?

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[DISPLAY Q21 IF Q20 = 1]

71. Is the central air conditioning system a heat pump?

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[DISPLAY Q22 IF Q20 = 1]

72. How old is the central air conditioning system in your home?

1 Less than 2 years old
2 2 to 4 years
3 5 to 9 years
4 10 to 14 years
5 15 to 19 years
6 20 or more years old
98 DON'T KNOW
99 REFUSED

[DISPLAY Q28 IF Q20 = 1 AND Q22 <> 1]

73. We would like to know how much you would be willing to pay to replace your air conditioner with a more efficient air conditioner. Assume that your current air conditioner is working and that a

new more efficient air conditioner would save you $175 a year in utility costs. What is the most you would be willing to pay to replace your air conditioner?

1. [RECORD AMOUNT]
2. WOULD NOT PAY ANYTHING
98. DON'T KNOW
99. REFUSED

[DISPLAY Q29 IF Q20 = 1 AND Q22 <> 1]

74. Now, assume that your air conditioner is not working and would cost $500 to have it repaired. What is the most you would be willing to pay to replace your air conditioner with a new more efficient air conditioner that would save you $175 a year in utility costs?

1. [RECORD AMOUNT]
2. WOULD NOT PAY ANYTHING
98. DON'T KNOW
99. REFUSED

[DISPLAY Q30 IF Q20 = 1 AND Q22 <> 1]

75. Now, assume that your air conditioner is working but you need to replace your broken heating system. What is the most you would be willing to pay to replace your air conditioner with a new more efficient air conditioner that would save you $175 a year in utility costs?

1. [RECORD AMOUNT]
2. WOULD NOT PAY ANYTHING
98. DON'T KNOW
99. REFUSED

76. What type of water heater does this residence have?

1. Natural gas water heater
2. Electric water heater
3. Other (VERBATIM)
98. DON'T KNOW
99. REFUSED

77. Including yourself, how many people currently live in this residence year-round?

1. (RECORD QUANTITY)
98. DON'T KNOW
99. REFUSED

78. Including all money earned from wages, salaries, tips, commissions, workers' compensation, unemployment insurance, child support, or other sources, about how much was your total annual household income before taxes in 2017? (DON'T READ)

    1. LESS THAN $10,000
    2. $10,000 TO LESS THAN $20,000
    3. $20,000 TO LESS THAN $30,000
    4. $30,000 TO LESS THAN $40,000
    5. $40,000 TO LESS THAN $50,000
    6. $50,000 TO LESS THAN $75,000
    7. $75,000 TO LESS THAN $100,000
    8. $100,000 TO LESS THAN $150,000
    9. $150,000 TO LESS THAN $200,000
    10. $200,000 OR MORE
    98. DON'T KNOW
    99. REFUSED

79. What's the highest level of education a person living in your household has completed? (DON'T READ)

    1. Less than high school
    2. High school graduate
    3. Associates degree, vocational/technical school, or some college
    4. Four-year college degree
    5. Graduate or professional degree
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q80 IF RECRUIT_VERI = 1]

80. As part of our evaluation of [UTILITY_SHORT] 's programs, we've been performing site visits to participating homes to gather more information about the measures installed as a result of the program. If selected, you can expect this visit to take approximately one to two hours and you will receive $35 gift card to Rouse's for your participation. Would you be interested in this?

    1. Yes

    (Thank you. We will be selecting customers at random and may contact you in the next couple of weeks to set up a time and day for a visit.)

    2. No

[DISPLAY Q81 IF RECRUIT_LOG = 1]

81. We are also in the process of recruiting customers to participate in a study of their use of the lights in their homes. If selected to participate, we will visit your home and install devices that measure how many hours a day your lights are on. These devices will be installed for six to eight weeks, after which a technician will return to remove them. We are offering a $25 gift card to Rouse's for the visit to install the devices and a second $25 gift card to Rouse's to remove them. The visits to install and remove the devices should each take about 10 minutes.

    Would you be interested in participating in this study?

    1. Yes

        (Thank you. We will be selecting customers at random and may contact you in the next couple of weeks to set up a time and day for a visit.)

    2. No

That is all of the question I have. Thank you for taking the time to speak with me today.

16.3 Energy Smart Multifamily Owner Manager Survey

Research Topic	Survey Questions
How do participants learn of the program?	Q5
What is the motivation for participating?	Q6
Free ridership	Q26 - Q26
Spillover	Q27 - Q
Satisfaction	Q34
Property Characteristics	Q36 - Q43

GROUP

Property Managers/Owner participants in the Multifamily Program.

OVERVIEW

Interviewer instructions are shown in all caps enclosed in parentheses, e.g., (INTERVIEWER INSTRUCTION)

Prepopulated variables are shown in all caps enclosed in brackets, e.g., [PREPOPULATED VARIABLE]

Programming instructions are shown in all caps, bold-type, enclosed in brackets, e.g., **[PROGRAMMING INSTRUCTION]**

PREDEFINED VARIABLES

Variable	Description
UTILITY	Name of the utility
PROGRAM_LONG	Full name of the program
PROGRAM-SHORT	Short name of the program
MEASURES_ALL	Description of all measures installed
DATE	Approximate date of measure installation
PROPERTY_NAME	Name of the property
EFF_MEASURE1/2	Description of major measure for free ridership assessment that references efficiency as appropriate
STAND_MEASURE1/2	Description of major measure for free ridership assessment that does not reference efficiency
INSTALL_COMPLETE1/2	Install or complete (depending on measure)
INSTALLED_COMPLETED1/2	Installed or completed (depending on measure)
WINDOWS	1 if FR measure is windows, else 0

DIMEAS_QUANT	Number of types of direct install measures installed
MAJMEAS_QUANT	Number of types of major measures installed
DIMEASURE1/2/3	Description of direct install measure

Hello. May I please speak with [CONTACT NAME]:?

Hello. My name is _____ and I am calling on behalf of [UTILITY] about the participation of the [PROPERTY] in their [PROGRAM_LONG] program.

Through this program, [MEASURES_ALL] were installed at the property.

This is not a sales call. We are conducting a study on behalf of [UTILITY] to help them improve the programs they offer their customers.

Are you the person who is most familiar with this property's participation in the program, including the decision to complete the project?

(IF NOT RIGHT PERSON) May I have the name and telephone number for the person who would know the most about this property's participation in the program?

Name:

Telephone:

(IF RIGHT PERSON)

May I ask you a few questions?

FAQ

[UTILITY] has hired our firm to evaluate the program. As part of the evaluation, we're talking with property managers and owners that participated in the [UTILITY] program to understand their experiences with the program.

(Why are you conducting this study: Studies like this help [UTILITY] better understand customers' need for energy efficiency programs and services)

(Timing: This survey should take about 15 minutes of your time. Is this a good time for us to speak with you? IF NOT, SET UP CALL BACK APPOINTMENT)

(Sales concern: I am not selling anything; we would simply like to learn about your experience with the program. Your responses will be kept confidential and not revealed to anyone unless you grant permission. If you would like to talk with someone from [UTILITY] about this study, feel free to call Kent Tomlinson with [UTILITY] at (479) 973-2442.

1. Program records indicate that your property implemented [MEASURES_ALL] through the [PROGRAM_SHORT] program around [DATE] at the [PROPERTY_NAME] property. Were you involved in the decision to participate in this program?

    1. Yes **[SKIP TO Q5]**
    2. Yes, but information is incorrect
    3. Not involved in the decision(THANK AND TERMINATE)

[DISPLAY Q2 IF Q1 =2]

2. Please tell me what you think is incorrect about our records.

[DISPLAY Q3 IF Q1 = 3]

3. Is there someone else we could speak with who was involved in the decision to participate in the [PROGRAM_SHORT] program?

    1. Yes
    2. No(THANK AND TERMINATE)
    98. DON'T KNOW(THANK AND TERMINATE)
    99. REFUSED(THANK AND TERMINATE)

[DISPLAY Q4 IF Q3 = 1]

4. May I please speak with that person? (ASK FOR CONTACT INFORMATION IF NOT AVAILABLE)

    1. Yes (BEGIN SURVEY WITH NEW RESPONDENT)
    2. No (THANK AND TERMINATE)
    98. DON'T KNOW (THANK AND TERMINATE)
    99. REFUSED(THANK AND TERMINATE)

AWARENESS AND MOTIVATION FOR PARTICIAPTION

5. Thank you for providing that information. How did you learn about the energy efficiency improvements available through [UTILITY]'s [PROGRAM_SHORT] Program? **[MULTISELECT]** (DO NOT READ)

    1. Program representative
    2. Program website
    3. Friend, family member, or colleague
    4. Through property management group
    5. Referred by a tenant
    6. Bill insert or utility mailer
    7. Email from [UTILITY_SHORT]
    8. Social media post (e.g., Facebook, Twitter, Flickr)
    9. Through an internet search (e.g., Google search)
    10. Through an internet advertisement
    11. A radio or television advertisement
    12. A print advertisement
    13. Other (please explain)
    98. DON'T KNOW
    99. REFUSED

6. What were the main reason(s) for deciding to complete the efficiency improvements at the property? (Select all that apply) **[MULTISELECT]** (DO NOT READ)

    1.Improve tenant comfort and satisfaction
    2.Reduce tenant utility bills
    3.Reduce property utility bills
    4.To take advantage of rebates/no-cost efficiency improvements
    5.To replace old or non-functioning equipment
    6.To make the units more attractive to prospective tenants
    7.Some other reason – please describe: _____
    98. DON'T KNOW
    99.REFUSED

FREE RIDESHIP – MAJOR MEASURES [DISPLAY PAGE IF MAJMEAS_QUANT > 0]

Now I have a few questions about the energy efficiency improvements that were made at the [PROPERTY_NAME] property.

7. Prior to learning about the [PROGRAM_SHORT] Program, did you have plans to [INSTALL/COMPLETE1] the [EFF_MEASURE1]?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q28 IF Q26 = 1 AND STAND_OPT = 1]

8. Just to be clear, did you have plans to specifically [INSTALL/COMPLETE1] the [EFF_MEASURE1] as opposed to standard efficiency [STAND_MEASURE1]?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

9. Was the [EFF_MEASURE1] recommended during an energy assessment of the property?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

10. Would you have been financially able to [INSTALL/COMPLETE1] the [EFF_MEASURE1] without the financial assistance provided through the program?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q11 IF Q10= 2]

11. To confirm, your organization would NOT have allocated the funds to complete a similar energy saving project if the program incentive was not available. Is that correct?

    1. Yes, that is correct.
    2. No, that is not correct.
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q12 IF Q11 = 2]

12. In your own words, can you tell me what your organization would have likely done if the financial incentive was not available from the program?

13. How likely is it that you would have [INSTALLED/COMPLETED1] the same [EFF_MEASURE1] if the financial assistance was not available? Would you say...

    1. Very likely
    2. Somewhat likely
    3. Neither particularly likely nor unlikely
    4. Somewhat unlikely
    5. Very unlikely
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q29 IF Q26 = 1]

14. How likely is it that you would have [INSTALLED/COMPLETED1] the same [EFF_MEASURE1] if it was not recommended through the energy assessment? Would you say...

    1. Very likely
    2. Somewhat likely
    3. Neither particularly likely nor unlikely
    4. Somewhat unlikely
    5. Very unlikely
    98. DON'T KNOW
    99. REFUSED

15. Did you [INSTALL/COMPLETE1] the [EFF_MEASURE1] sooner than you would have if the information and financial assistance from the program had not been available?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q35 IF Q34 = 1]

16. When might you have [INSTALLED/COMPLETED1] the same [EFF_MEASURE1] if you had not participated in the program? Would you say … (READ LIST)

    1. Within 6 months of when you purchased or installed it
    2. Between 6 months and 1 year
    3. In more than 1 year to 2 years
    4. In 2 to 3 years
    5. In more than 3 years
    6. Never (Do not read)
    98. DON'T KNOW
    99. REFUSED

[DISPLAY IF MAJMEAS_QUANT > 1]

17. Our records show that this property also received a rebate or discount from the [UTILITY_SHORT] [PROGRAM_SHORT] for a [EFF_MEASURE2].

    Was the decision making process for that project the same as for the [EFF_MEASURE1] project?

    1. Yes
    2. No **[REPEAT Q26– Q17]**
    98. DON'T KNOW
    99. REFUSED

FREE RIDERSHIP– DIRECT INSTALL MEASURES [DISPLAY PAGE IF DIMEAS_QUANT > 0] [REPEAT FOR UP TO THREE MEASURES]

Now I have a few questions about the energy efficient equipment installed at no cost in the tenant units at the [PROPERTY_NAME] property.

18. Had you purchased and installed any [DIMEASURE1] in tenant units for this property before you received them for free through the program?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

19. Did you have plans to purchase and install any [DIMEASURE1] at the [PROPERTY_NAME] property before you learned about the [PROGRAM_SHORT] Program?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q20 IF Q19 = 1]

20. Did you plan on purchasing and installing the same number of [DIMEASURE1] installed through the program?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q21 IF Q20 = 2]

21. How many of the [DIMEASURE1] that you received through the program had you already planned to purchase and install?

    _____*(Record Quantity)*
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q22 IF Q19 = 1]

22. When do you think you would have purchased and installed those [DIMEASURE1] if they had not been provided for free through the [PROGRAM_SHORT] Program? (READ LIST)

    1. Within 6 months of when you received them
    2. Between 6 months and 1 year
    3. In more than 1 year to 2 years
    4. In 2 to 3 years
    5. In more than 3 years
    6. (Never)
    98. DON'T KNOW
    99. REFUSED

23. Would you have been financially able to install the [DIMEASURE1] if they had not been provided for free through the program?

    1. Yes
    2. No
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q24 IF Q23= 2]

24. To confirm, your organization would NOT have allocated the funds to install the [DIMEASURE1] if they were not provide for free through the program. Is that correct?

    1. Yes, that is correct.
    2. No, that is not correct.
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q25 IF Q24 = 2]

25. In your own words, can you tell me what your organization would have likely done if the [DIMEASURE1] were not available for free from the program?

26. If you had not received the [DIMEASURE1] for free, how likely is it that you would have installed them anyway? Would you say… (READ LIST)

    1. Very likely
    2. Somewhat likely
    3. Neither particularly likely nor unlikely
    4. Somewhat unlikely
    5. Very unlikely
    98. DON'T KNOW
    99. REFUSED

SPILLOVER

27. We would like to know if you have installed any additional energy efficient equipment because of your experience with the program that you DID NOT receive an incentive for.

    Since participating in the [PROGRAM_SHORT] Program has your organization installed any ADDITIONAL energy efficiency measures at this property or at other properties within [UTILITY]'s service territory that did NOT receive incentives through [UTILITY]'s programs?

    1. Yes
    2. No
    98. Don't know
    99. Refused

[DISPLAY Q28 IF Q27 = 1]

28. What additional equipment did you install without receiving a rebate or incentive?

[DISPLAY Q29 IF Q27 = 1]

29. Why didn't you apply for or receive incentives for those items? **[MULTI SELECT]**

    1. Didn't know whether equipment qualified for financial incentives
    2. Equipment did not qualify for financial incentives
    3. Too much paperwork for the financial incentive application
    4. Financial incentive was insufficient
    5. Didn't have time to complete paperwork for financial incentive application
    6. Didn't know about financial incentives until after equipment was purchased
    7. We did apply for an incentive [**SKIP TO SATISFACTION SECTION**]
    8. Other [OPEN ENDED]
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q30 IF Q27 = 1]

30. Using a scale where 0 means "not at all important" and 10 means "very important", how important was your experience with the [PROGRAM_SHORT] Program in your decision to install this equipment?

    _____ *(RECORD 0-10)*
    98. DON'T KNOW
    99. REFUSED

[DISPLAY Q31 IF Q27 = 1]

31. Using a scale where 0 means “definitely would NOT have installed” and 10 means “definitely would have installed”, how likely is it that your organization would have installed this equipment if you had NOT participated in the [PROGRAM_SHORT] Program?

_____ *(RECORD 0-10)*
98. DON’T KNOW
99. REFUSED

[DISPLAY Q32 IF Q30=0,1,2,3 AND Q31=0,1,2,3 OR IF Q30=8,9,10 AND Q31=8,9,10

32. You scored the importance of your program experience to your decision to implement the additional equipment with [Q30 RESPONSE] out of 10 possible points. You ALSO scored the likelihood of implementing the additional equipment if your organization had not participated in the program with [Q31 RESPONSE] out of 10 possible points. Can you please explain the role the program made in your decision to implement this measure?

[OPEN ENDED]

[DISPLAY Q33 IF Q27 = 1]

33. We may want to follow up with someone to get additional details about the equipment that you installed without an incentive. Can you provide me the name, phone number, and email of the person would be best to speak to about the specific details on the equipment that was installed without an incentive?

SATISFACTION

34. Using a scale of 1 to 5, where 1 is "very dissatisfied" and 5 is "very satisfied," how would you rate your satisfaction with the following? [RANDOMIZE ORDER OF A-F]
(RECORD 97 IF NOT APPLICABLE, 98 IF DON'T KNOW, 99 IF REFUSED)

a) Interactions you had with [UTILITY] staff
b) The quality of installation work
c) The process of having the equipment installed
d) The performance of the equipment installed
e) The effort required for the application process
f) The wait-time to receive the services
g) Overall program experience

[DISPLAY Q62 IF Q34 A- G < 3]

35. Why were you dissatisfied with those aspects of the program you mentioned?

[OPEN ENDED]

PROPERTY CHARACTERISTICS

36. I have just a few more questions about the [PROPERTY_NAME] property? Which of the following is the primary fuel type used for space heating the tenant units?

1. Electricity
2. Natural gas
3. Oil
4. Something else (please specify)
98. DON’T KNOW
99. REFUSED

37. Which of the following is the primary fuel type used for water heating the tenant units?

1. Electricity

2. Natural gas
3. Oil
4. Something else (please specify)
98. DON'T KNOW
99. REFUSED

38. Is air conditioning centrally supplied to the tenant units?

1 Yes
2 No
98. DON'T KNOW
99. REFUSED

39. Do tenants pay their own electric bills or are electricity costs included in the rent?

1. Yes, tenant pay their own bills
2. Electricity costs are included as part of the rent
3. There is another type of arrangement (Please describe)
98. DON'T KNOW
99. REFUSED

40. Are any of the units at the [PROPERTY_NAME] property receiving some type of federal, state, or other housing assistance?

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[DISPLAY Q41 IF Q40 = 1]

41. Approximately what percent of the units are receiving housing assistance?

42. Do you or your company own or manage any other properties in [UTILITY]'s service territory that have not participated in an [UTILITY] efficiency program?

1. Yes
2. No
98. DON'T KNOW
99. REFUSED

[DISPLAY Q43 IF Q42 = 1]

43. How many properties?

16.4 Energy Smart Behavioral Survey

GROUP

Customers enrolled in the behavioral program treatment or control group

OVERVIEW

Interviewer instructions are shown in all caps enclosed in parentheses, e.g., (INTERVIEWER INSTRUCTION)

Prepopulated variables are shown in all caps enclosed in brackets,e.g., [PREPOPULATED VARIABLE]

Programming instructions are shown in all caps, bold-type, enclosed in brackets, e.g., **[PROGRAMMING INSTRUCTION]**

PREDEFINED VARIABLES

Variable	Definition
GROUP	1 = Opt-Out Treatment, 2 = Opt-In Treatment, 0 = Opt-Out Control

EMAIL RECRUITMENT

I am contacting you on behalf of Entergy New Orleans (Entergy).

Entergy is interested in learning how to better design the services they provide to customers to help them save energy. They have found that hearing from customers like you is one of the best ways to improve these services.

Please take a few minutes complete this survey. We will be selecting one person at random from among those that complete the survey to win a $100 Amazon gift card.

We appreciate your time and consideration in completing this survey. Your responses are very important to us!

You can access the survey at:

Your password is:

Thank you.

ADM STAFF Name

ADM Associates / Contractor to Entergy

SURVEY INSTRUMENT

[DISPLAY IF GROUP = 1 OR 2]

1. According to our records you received emails with your Energy Smart Scorecard. The Energy Smart Scorecard provides information on your home's energy use and tips on how you can save energy.

Do you recall receiving these emails in 2018?

1. Yes
2. No **[TERMINATE SURVEY]**
98. Don't know **[TERMINATE SURVEY]**

[DISPLAY IF GROUP = 1 OR 2]

2. About how many emails do you recall receiving in 2018?
   1. 1
   2. 2
   3. 3
   4. 4
   5. 5
   6. 6
   7. 7
   8. 8
   9. 9
   10. 10
   11. 11

12. 12

98. Don’t know

[DISPLAY IF GROUP = 2]

3. How did you learn about the Energy Smart Scorecard service?
    1. Email from Entergy
    2. Billboard or poster
    4. Social media (for example, Twitter, Facebook)
    5. A program brochure
    6. A display at an event
    7. Program website
    8. Entergy Customer Care Center
    9. Other (Please specify)
    98. Don't know

[DISPLAY IF GROUP = 1 OR 2]

4. How difficult or easy was it to understand the home energy use information provided in the Energy Smart Scorecard?
    1. Very difficult
    2. Somewhat difficult
    3. Neither difficult nor easy
    4. Somewhat easy
    5. Very easy
    98. Don't know

[DISPLAY Q5 IF Q4 = 1 or 2]

5. What made the information difficult to understand? (Mark all that apply)
    1. Didn’t provide enough detail on home energy use
    2. My homes estimated energy use didn’t seem accurate
    3. Didn’t understand how average household energy use was calculated
    4. Some other reason (Please explain)
    98. Don’t know

[DISPLAY IF GROUP = 1 OR 2]

6. How accurate or inaccurate do you think the comparison of your home's energy to other homes was?

   1. Very inaccurate
   2. Somewhat inaccurate
   3. Somewhat accurate
   4. Very accurate
   98. Don't know

[DISPLAY IF GROUP = 1 OR 2]

7. How would you say your energy use compares to other homes of similar size in your neighborhood? Is your usage…

   1. Significantly higher
   2. Somewhat higher
   3. About the same
   4. Somewhat lower
   5. Significantly lower
   98. Don't know

[DISPLAY IF GROUP = 1 OR 2]

8. How would you say your home compares to your neighbors in terms of energy efficiency? Is your home…

   1. Very energy efficient
   2. Somewhat energy efficient
   3. Average
   4. Somewhat energy inefficient
   5. Very energy inefficient
   98. Don't know

[DISPLAY IF GROUP = 1 OR 2]

9. Do you recall viewing any energy saving tips or recommendations provided in the Energy Smart Scorecard?

   1.Yes

   2.No

   98.Don't know

[DISPLAY Q10 IF Q9 = 1]

10. How useful were the recommendations that were provided?
    1.Very useful
    2.Somewhat useful
    3.Slightly useful
    4.Not at all useful
    98.Don't know

[DISPLAY Q11 IF Q10 = 3 or 4]

11. Why were the recommendations not very useful? (Mark all that apply)
    1.I didn't understand them
    2.They didn't make sense for my home
    3.Condo or rental restricts prevented me from taking the recommended actions
    4.I was already doing the things recommended
    5.Taking the recommended actions would make the home less comfortable
    6.Some other reason (Please explain)
    98.Don't know

12. Entergy is interested in what energy-saving actions their customers have taken.

    In the past 12 months, have you purchased any LED lightbulbs for your home?
    1.Yes
    2.No
    98.Don't know

[DISPLAY Q13 IF Q12 = 1]

13. Did you purchase any of those LED lightbulbs from one of the following retailers? (Select all that apply) **[MULTISELECT]**
    1.The Home Depot
    2.Costco Warehouse
    3.Dollar Tree
    4.Lowes
    5. Walmart

6.The Green Project

7.Rouses Market

0.No, did not purchase LED light bulbs from these retailers

98.Don't know

[DISPLAY Q14 IF Q13 = 1- 7]

14. About how many LED light bulbs did you purchase from those retailers in the past 12 months?

    1.[TEXT BOX]

    98.Don't know

15. Did you take any other actions or make changes to save or conserve energy in the past 12 months?

    1.Yes

    2.No

    98.Don't know

[DISPLAY Q16 IF Q15 = 1]

16. What actions or changes have you made in the past 12 months? (Select all that apply) **[MULTISELECT]**

    1. Turned up the thermostat in summer to reduce AC use
    2. Turned down the thermostat in winter to reduce heating use
    3. Changed AC filter
    4. Changed furnace filter
    5. Cleared areas around heating/cooling vents
    6. Turned off lights in unoccupied rooms
    7. Line-dried clothes
    8. Ran clothes washer with full load
    9. Ran dishwasher with full load
    10. Used cold water setting on clothes washer
    11. Used cold water setting on dishwasher
    12. Unplugged electronics when not in use
    13. Turned off computers overnight
    14. Took shorter showers
    15. Turned down water heater temperature setting
    16. Sealed leaks and drafts
    17. Cleaned refrigerator coils
    18. Increased refrigerator/freezer temperature
    19. Used heat blocking materials on windows / shaded windows during hot daytime
    20. Increased use of fans to reduce use of AC
    21. Shifted use off-peak (e.g., avoided use of laundry/electronics/ during peak time)
    22. Other _____
    98. Don't know

17. Using the scale below, how knowledgeable are you about ways to save energy in your home?

    1. 1 (Not at all knowledgeable)
    2. 2
    3. 3
    4. 4
    5. 5 (Very knowledgeable)
    98. Don't know

18. Using the scale below, how would you rate your household's efforts to save electricity in your home? Using a scale of 1 to 5, with 1 meaning "you have not done anything" and 5 meaning "you have done almost everything you can" to lower your monthly energy bill in your home.

    1. 1 (Have not done anything)
    2. 2
    3. 3
    4. 4
    5. 5 (Done almost everything possible)
    98. Don't know

[DISPLAY Q19 IF Q18 ≥ 3 and Q18 <>98]

19. What motivated you to save electricity in your home? (Select all that apply) **[MULTISELECT]**

    1. Reduce electricity costs / reduce electric bill
    2. Conservation / good for environment
    3. Make my usage more similar to my neighbors
    4. Other (Please specify)
    98. Don't know

[DISPLAY IF GROUP = 1 OR 2]

20. Using the scale below, how satisfied or dissatisfied are you with the following:

    [SCALE: 1 = Very dissatisfied, 2 = Somewhat dissatisfied, 3 = Neither satisfied nor dissatisfied, 4 = Somewhat satisfied, 5 = Very satisfied, 98 = Don't know] [RANDOMIZE ORDER]

    a. The information provided on your home's energy use

    b. The number of emails on your home's energy use that you received

[DISPLAY Q21 IF ANY ROW IN Q20= 1 OR 2]

21. Why are you dissatisfied?

22. Using the scale below, how satisfied or dissatisfied would you say you are with Entergy as your electrical service provider?

    1. Very dissatisfied
    2. Somewhat dissatisfied

3. Neither satisfied nor dissatisfied
4. Somewhat satisfied
5. Very satisfied
98. Don't know/Prefer not to state

23. Which of the following best describes this residence?

1. Single family detached home
2. Townhome
3. Duplex or Triplex
3. Mobile or manufactured home
4. Apartment building with 2-4 units
5. Apartment building with 5-10 units
6. Apartment building with more than 10 units
98. Don't know/Prefer not to state

24. Do you own, rent, or own and rent your home?

1. Own
2. Rent
3. Own and rent to someone else
98. Don't know/Prefer not to state

25. Including yourself, how many people currently live in this residence year-round?

1. (RECORD QUANTITY)
98. Don't know/Prefer not to state

26. Please indicate which range your total household income falls into. Is the total annual income of your household:

1. Less than $10,000
2. $10,000 to less than $20,000
3. $20,000 to less than $30,000
4. $30,000 to less than $40,000
5. $40,000 to less than $50,000
6. $50,000 to less than $75,000
7. $75,000 to less than $100,000
8. $100,000 to less than $150,000
9. $150,000 to less than $200,000
10. $200,000 or more
98. Don't know/Prefer not to state

27. What's the highest level of education you've completed?

1. Did not graduate high school
2. High school graduate

3. Associates degree, vocational/technical school, or some college
4. Four-year college degree
5. Graduate or professional degree
98. Don't know/Prefer not to state

28. What type of heating system does this residence have?

    1. Natural gas heating
    2. Electric heating
    3. Combination of types (Please describe)
    4. Other (Please describe)
    98. Don't know/Prefer not to state

29. What type of water heater does this residence have?

    1. Natural gas water heater
    2. Electric water heater
    3. Other (Please describe)
    98. Don't know/Prefer not to state

30. We will select one survey respondent at random to win a $100 Amazon gift card. The gift card will be sent by postal mail to the winner.

    If you are selected to win the gift card, the card will be sent to the address below.

    Please correct the address if it is incorrect.

    Name:

    Street Address:

    City:

    State:

    Zip code:

16.5 Residential Direct Load Control Online Participant Survey

GROUP

Participants in the direct load control program.

OVERVIEW

Prepopulated variables are shown in all caps enclosed in brackets, e.g., [PREPOPULATED VARIABLE]

Programming instructions are shown in all caps, bold-type, enclosed in brackets, e.g., **[PROGRAMMING INSTRUCTION]**

PREDEFINED VARIABLES

Variable	Definition
UTILITY	Entergy
PRG_YEAR	Program year

SURVEY INSTRUMENTS

AWARENESS

1. How did you learn of the EnergySmart EasyCool Program? (Select all that apply)

    1. Program website
    2. Friend, family member, or colleague
    3. Bill insert or utility mailer
    4. Email from [UTILITY]
    5. Social media post (e.g., Facebook, Twitter, Flickr)
    6. Through an internet search (e.g., Google search)
    7. At a community event
    8. Other (Please explain)
    98. Don't know

2. Did you have any initial concerns about participating in the program? (Select all that apply)

    1. No concerns
    2. Concerns about your home getting too warm/comfort
    3. Concerns about the installation of the equipment
    4. Concerns about the number of events
    5. Other (Please specify)
    98. Don't know

[DISPLAY Q3 IF Q6 < 3]

3. Why did you decide to participate despite those concerns?
4. Thinking back to when you enrolled in the program, what additional information, if any, would you have liked to have had when making your decision to participate?
5. Did you have any difficulty enrolling in the program or scheduling the installation of the equipment?

    1. Yes
    2. No
    98. Don't know

[DISPLAY Q6 IF Q5 = 1]

6. What difficulty did you have?

7. Once you applied for the program, about how long did it take to have the technician install the switch on your cooling unit?

    1. About a week
    2. 1 to 2 weeks
    3. 2 to 4 weeks
    4. 4 to 6 weeks
    5. More than 6 weeks
    98. Don't know

8. How did the number of events that occurred in [PRG_YEAR] compare the number of events you expected?

    1. More events than what you expected
    2. The number of events was about what you expected
    3. Fewer events than what you expected
    98. Don't know

[DISPLAY Q9 IF Q8 = 1 OR 3]

9. How many events were you expecting?

10. Were you at home during any of the events?

    1. Yes
    2. No
    98. Don't know

[DISPLAY Q11 IF Q10 = 1]

11. During the events, would you say the temperature in your home was:

    1. Very uncomfortable
    2. Moderately uncomfortable
    3. Slightly uncomfortable
    4. Or that you did not notice a change in comfort
    98. Don't recall

12. Using a scale where 1 means "not at all likely" and 5 means "very likely, how likely is it that you will participate in the program next year?

    [SCALE: 1 = 1 (Not at all likely), 2 = 2, 3 =3, 4 = 4, 5 = 5 (Very likely= 5), 98 = Don't know]

[DISPLAY Q13 IF Q12 < 4]

13. Why might you not participate in the program next year?

[DISPLAY Q IF Q12 < 4]

14. What would be the most important change that Entergy could make to the program to encourage you to participate again in the future?

    1. My air conditioner would have to run more during events to keep it cooler
    2. The number of events would have to decrease
    3. The incentive payment would have to increase
    4. Other (Please specify)

5. Nothing – I would not participate again
98. Don't know

SATISFACTION

15. These next few questions ask about your satisfaction with several aspects of the program. Using a scale of 1 to 5, where 1 is "very dissatisfied" and 5 is "very satisfied", how would you rate your satisfaction with the following? [RANDOMIZE A-G]

    [SCALE: 1 = 1 (Very dissatisfied), 2 = 2, 3 =3, 4 = 4, 5 = 5 (Very satisfied = 5), 98 = Don't know]

    i. The process of enrolling in the program
    j. The installation of the program equipment
    k. Overall program experience

[DISPLAY Q62 IF Q61 < 3]

16. Why were you dissatisfied with those aspects of the program you mentioned?

17. Using the same scale, how satisfied are you with [UTILITY] as your electricity service provider?

    [SCALE: 1 = 1 (Very dissatisfied), 2 = 2, 3 =3, 4 = 4, 5 = 5 (Very satisfied = 5), 98 = Don't know]

DEMOGRAPHICS AND HOME CHARACTERISTICS

18. I now have a couple of questions about this residence. These are anonymous and will be used solely for the purpose of combining different customers' responses. If you do not want to answer any of these, let me know. It is okay to not answer any of these questions.

    Which of the following best describes this residence?

    1. Single family detached home
    2. Townhome
    3. Duplex or Triplex
    4. Mobile or manufactured home
    5. Apartment building with 2-4 units
    6. Apartment building with 5-10 units
    7. Apartment building with more than 10 units
    98. Don't know

19. When was this residence built?

    1. Before 1970's
    2. 1970's
    3. 1980's
    4. 1990's
    5. 2000-2009
    6. 2010 or newer
    98. Don't know

20. What is the approximate square footage of this residence?

    1. Less than 1,000
    2. 1,001-1,500
    3. 1,501-2,000
    4. 2,001-2,500
    5. Greater than 2,500
    98. Don't know

21. Do you own, rent, or own and rent to someone else the property located at [LOCATION]?

    1. Own
    2. Rent
    3. Own and rent to someone else
    98. Don't know

22. What is the main fuel used for heating your home?

    1. Natural gas
    2. Electricity
    3. Propane
    4. Other (Please describe)
    5. We don't heat the home
    98. Don't know

[DISPLAY Q19 IF Q68 <> 5]

23. What is the main type of heating equipment used to provide heat for your home?

    1. Heat pump
    2. Central forced air furnace
    3. Built-in baseboard heater
    4. Built-in wall heater
    5. Something else (Please describe)
    98. Don't know

24. How old is the central air conditioning system in your home?

    1 Less than 2 years old
    2 2 to 4 years
    3 5 to 9 years
    4 10 to 14 years
    5 15 to 19 years
    6 20 or more years old
    98 Don't know

[DISPLAY Q28 IF Q22 <> 1]

25. We would like to know how much you would be willing to pay to replace your air conditioner with a more efficient air conditioner. Assume that your current air conditioner is working and that a new more efficient air conditioner would save you $175 a year in utility costs. What is the most you would be willing to pay to replace your air conditioner?

[DISPLAY Q29 IF Q22 <> 1]

26. Now, assume that your air conditioner is not working and would cost $500 to have it repaired. What is the most you would be willing to pay to replace your air conditioner with a new more efficient air conditioner that would save you $175 a year in utility costs?

[DISPLAY Q30 IF Q22 <> 1]

27. Now, assume that your air conditioner is working but you need to replace your broken heating system. What is the most you would be willing to pay to replace your air conditioner with a new more efficient air conditioner that would save you $175 a year in utility costs?

28. What type of water heater does this residence have?

    1. Natural gas water heater
    2. Electric water heater
    3. Other (Please describe)
    98. Don't know

29. Including yourself, how many people currently live in this residence year-round?

    1. 1
    2. 2
    3. 3
    4. 4
    5. 5
    6. 6
    7. 7
    8. 8 or more
    98. Don't know

30. Including all money earned from wages, salaries, tips, commissions, workers' compensation, unemployment insurance, child support, or other sources, about how much was your total annual household income before taxes in 2017?

    1. Less than $10,000
    2. $10,000 to less than $20,000
    3. $20,000 to less than $30,000
    4. $30,000 to less than $40,000
    5. $40,000 to less than $50,000
    6. $50,000 to less than $75,000
    7. $75,000 to less than $100,000
    8. $100,000 to less than $150,000
    9. $150,000 to less than $200,000
    10. $200,000 or more
    98. Don't know

31. What's the highest level of education a person living in your household has completed?

    1. Less than high school
    2. High school graduate
    3. Associates degree, vocational/technical school, or some college
    4. Four-year college degree
    5. Graduate or professional degree
    98. Don't know

16.6 Lighting Inventory and Interview Form

Retailer Shelf-Level Inventory Assessment

Retailer name:	
Address:	
Date:	
Onsite ADM employee:	

RETAIL SALES FLOOR INVENTORY FORM

Lighting

Lamp Shape	# of Bulbs/ Package	Base Type	Lumen Range	Price	Energy Guide Annual kWh	Signage about program markdown? Y/N	Energy Star Certified? Y/N	Program Discount? Y/N

Appliances

Make	Model	Energy Star?	Price	Energy Guide Annual kWh	Signage about program markdown	Program Discount? Y/N

Water Heaters

Make	Model	Energy Star?	Price	Energy Guide Annual kWh	Signage about program markdown	Program Discount? Y/N

Refrigerators

Make	Model	Energy Star?	Price	Energy Guide Annual kWh	Signage about program markdown	Program Discount? Y/N

Window AC

Make	Model	Energy Star?	Price	Energy Guide Annual kWh	Signage about program markdown	Program Discount? Y/N

Pool Pump

Make	Model	Energy Star?	Price	Energy Guide Annual kWh	Signage about program markdown	Program Discount? Y/N

AC Repair

Make	Model	Energy Star?	Price	Energy Guide Annual kWh	Signage about program markdown	Program Discount? Y/N

EMPLOYEE INTERVIEW

Please identify or ask for a sales associate who is familiar with the appliances on display to conduct this interview.

A1: Hello, my name is (interviewer name), and I am from ADM Associates, an independent research company conducting a study on behalf of ENO. Do you mind if I ask you a few questions about the appliances on display? It should only take a couple minutes. (If necessary, assure the sales associate that his/her answers will be kept confidential)

Yes01

No02*[Thank and Terminate]*

If A1 = 01: Thank you. I'd like to first start by asking some questions regarding what customers look for when choosing an appliance to purchase. The specific appliances we are interested in for our study are clothes washers, dishwashers, refrigerators, and room air conditioners.

1. In your experience, what characteristics do customers care most about when deciding between different appliance models? *(Do not read. Check all that are mentioned.)*

Price01

Brand02

Features03

Looks/Style04

Warranty05

Energy Efficiency06

Other: _____98

Don't Know99

2. If Q1<>99 and at least four characteristics are mentioned: Of the characteristics you mentioned, can you rank the top three most asked about characteristics that customers consider when deciding between appliance models?

   #1_____01
   #2_____02
   #3_____03
   Don't Know99

   2a) Do you feel that you could provide a customer with an Energy Star qualified appliance that satisfies all of the three characteristics you just mentioned?

   Yes01
   No02
   Don't know99

3. How often do customers ask about energy efficiency when comparing appliance models?

   Very often01

   Often02

   Sometimes03

   Occasionally04

   Almost never05

   Don't Know99

4. If a customer were to ask you to show them an energy efficient appliance model, how would you identify those models? *(Do not read. Check all that are mentioned.)*

   ENERGY STAR label01

   ENERGY GUIDE label02

   Brand/Style/etc.03

   Other:_____99

5. Are you aware that ENO offers rebates for some energy efficient appliances sold at this store?

   Yes01

   No02

   Don't Know99

6. If Q5=01: You mentioned that you are familiar with the ENO rebates. Do you point these rebates out to customers purchasing qualifying appliances?

   Yes01

   No02

   Don't know99

7. If Q5=01: What percentage of your customers would you say are already aware of the rebates being offered by ENO?

   Record Percentage: _____

   Don't know999

8. What is currently the most popular make/model in each category?

   Lighting:_____

   Appliances:_____

   Water Heater:_____

   Refrigerator:_____

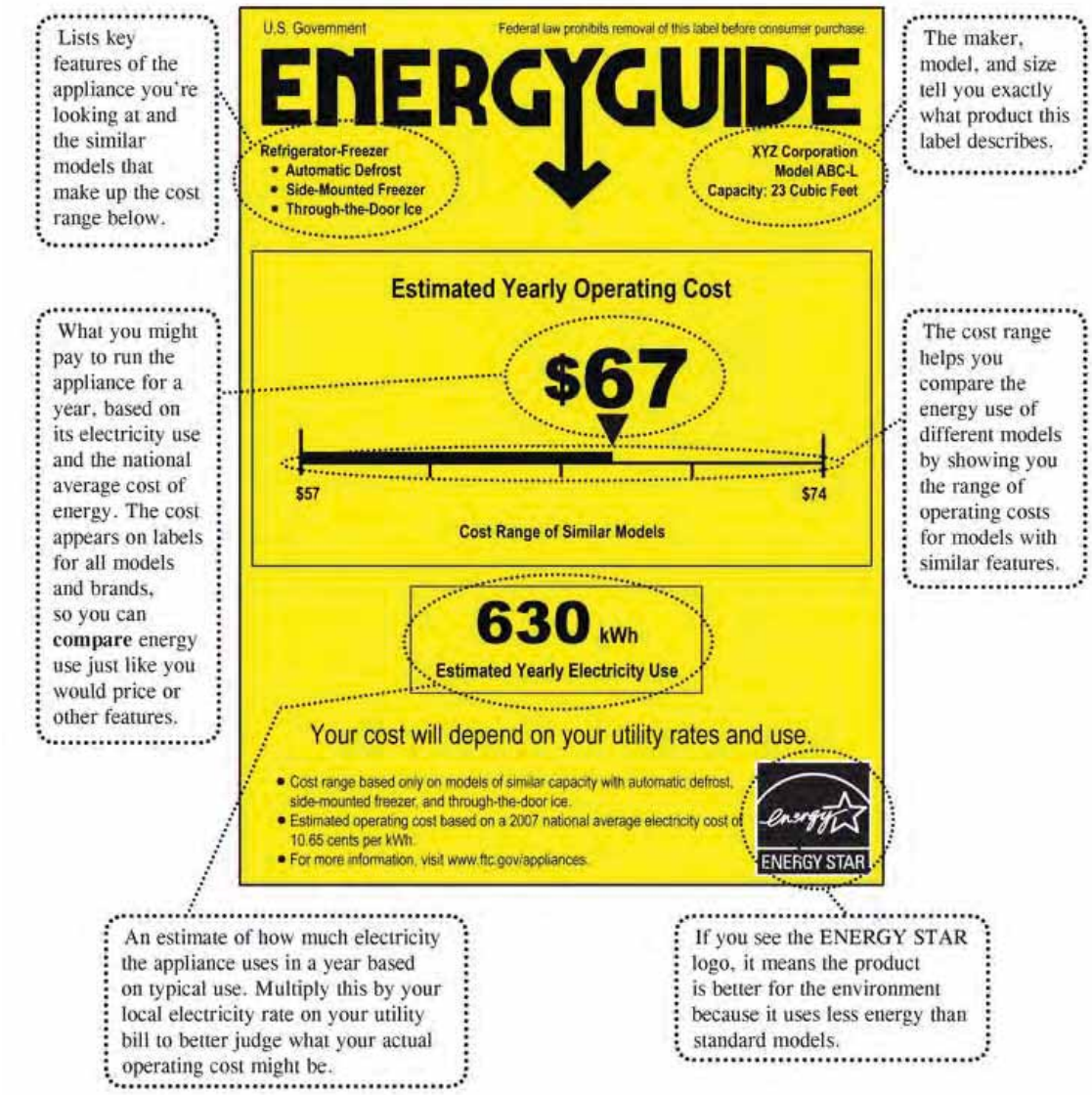
   Window AC:_____

   Pool Pump:_____

   AC Rep:_____

Thank the sales associate for his/her time and terminate interview.

EXAMPLE ENERGYGUIDE TAG



16.7 Residential Non-Participant Survey

Client	Entergy New Orleans
Group:	Residential Nonparticipants
Mode:	Telephone

Variable	Definition
ADDRESS	Customer address

EMAIL RECRUITMENT

I am contacting you on behalf of Entergy New Orleans (Entergy).

Entergy is interested in learning how to better design the services they provide to customers to help them save energy. They have found that hearing from customers like you is one of the best ways to improve these services.

Please take a few minutes complete this survey. We will be selecting one person at random from among those that complete the survey to win a $100 Amazon gift card.

We appreciate your time and consideration in completing this survey. Your responses are very important to us!

You can access the survey at:

Your password is:

Thank you.

ADM STAFF Name

ADM Associates / Contractor to Entergy

SCREENING

1. According to our records, Entergy New Orleans provides the electricity service at your residence located at [ADDRESS]. Is that correct?

    1. Yes
    2. No **[TERMINATE/DISQUALIFY]**
    3. The location is not a residence **[TERMINATE/DISQUALIFY]**
    98. Don't know

2. Have you received a rebate or financial incentive from Entergy for installing energy efficient equipment or making energy efficiency improvements at this residence in the last three years?

    1. Yes **[TERMINATE/DISQUALIFY]**
    2. No
    98. Don't know

PROGRAM AWARENESS

3. Are you aware of any rebates for energy efficient equipment and home improvements or other services offered by Entergy?

    1 Yes
    2 No
    98 Don't know

[DISPLAY IF Q3= 1]

4. What types of equipment rebates or services do you recall hearing about? **[MULTISELECT] [RANDOMIZE 1 – 14]**

    1. Heating and cooling equipment rebates
    2. Appliance rebates such as for ceiling fans, dehumidifiers, pool pumps
    3. Heat pump water heater rebates
    4. Discounts for energy efficient lighting / LEDs
    5. Insulation / air sealing rebates
    6. Smart Wi-Fi thermostats rebates
    8. Home energy assessments
    9. A/C Tune-ups
    10. ENERGY STAR Window A/C rebates
    11. Low-flow showerheads and faucet aerators
    12. Energy Smart Scorecards
    13. Energy Smart EasyCool Program
    14. Energy Smart for Kids Program
    15. Other (Specify)
    98. Don't know

[DISPLAY IF Q3= 1]

5. How did you learn of these rebates or services? **[MULTISELECT] [RANDOMZIE 1 – 13]**

    1. Contractor
    2. Home energy consultant
    3. Program representative
    4. Program website
    5. Friend, family member, or colleague
    6. Bill insert or utility mailer
    7. Email from Entergy
    8. Social media post (e.g., Facebook, Twitter, Flickr)
    9. Through an internet search (e.g., Google search)
    10. Through an internet advertisement
    11. A radio or television advertisement
    12. A print advertisement
    13. Through a retailer
    14. Other (please explain)
    98. Don't know

ENERGY EQUIPMENT PURCHASES AND HOME UPGRADES

6. In the last two years, has your household purchased any energy efficient equipment or make energy efficiency upgrades to your home that would reduce your energy usage?

   1. Yes
   2. No
   98. Don't know

[DISPLAY Q7 IF Q6 = 1]

7. What purchases or upgrades did you make in the last two years? Please only include purchase or upgrades that would reduce your energy usage. **[MULTISELECT] [RANDOMIZE 1-17]**

   1. Replaced an air conditioner/HVAC unit (AC, heat pump, window unit)
   2. Tuned-up or serviced an air conditioner/HVAC unit
   3. CFLs/compact fluorescent lighting
   4. LED bulbs
   5. ENERGY STAR clothes washer/dyer
   6. ENERGY STAR Dishwasher
   7. ENERGY STAR Refrigerator
   8. ENERGY STAR Freezer
   9. ENERGY STAR pool pump
   10. Programmable thermostat
   11. Smart thermostat / Wi-Fi thermostat / NEST / Ecobee /Lyric
   12. ENERGY STAR water heater
   13. ENERGY EFFICIENT water heater
   14. Solar screens
   15. Efficient/ENERGY STAR electronics
   16. Added insulation (attic insulation, wall insulation, floor insulation)
   17. Solar panels / solar PV
   20. Other (please specify)
   98. Don't know

ENERGY EFFICIENCY KNOWLEDGE, ATTITUDES, AND INTENTIONS

8. On a 5-point scale, where 1 means "Not at all interested" and 5 means "Very interested", how interested are you in making improvements to your home that would:

   [SCALE: 1 (NOT AT ALL INTERESTED) – 5 (VERY INTERESTED), 98 = DON'T KNOW, 99 = REFUSED]

   d. Increase its energy efficiency?
   e. Improve your comfort?
   f. Improve your health and safety?

9. How would you find out ways to reduce your monthly energy bills? **[MULTISELECT] [RANDOMIZE 1 – 8]**

   1. From Entergy / Entergy website
   2. Energy Smart Scorecard
   3. Internet search
   4. City/Government information
   5. ENERGY STAR website information
   6. Friends, family, or colleagues
   7. Information from a retail store
   8. Magazines/Newspapers/Television/ Radio

9. Other (Please specify)
98. Don't know

10. How trustworthy is Entergy New Orleans as a source of information about saving energy in your home? Would you say…

    1. Very untrustworthy
    2. Somewhat untrustworthy
    3. Somewhat trustworthy
    4. Very trustworthy
    98. Don't know

11. How interested are you in getting additional information on energy saving tips and rebate programs offered by Entergy? Would you say…

    1. Not at all interested
    2. Slightly interested
    3. Moderately interested
    4. Very interested
    98. Don't know

12. What would be the best way for Entergy to provide information on rebates for energy saving equipment and improvements?

    1. Email
    2. Utility Website
    3. Bill insert
    4. Telephone call
    5. Text messages
    6. Social media
    7. Newsletter
    8. Local events (e.g., home shows)
    9. Other (Please specify)
    10. None- prefer not to receive information
    98. Don't know

13. Now, I'd like to read you several statements. Please rate your level of agreement or disagreement with these statements on a scale of "1" to "5" where "1" means "Strongly Disagree" and "5" means "Strongly Agree."

    There are no "right" or "wrong" answers, we just want your opinion.

    [SCALE: 1 (STRONGLY DISAGREE) – 5 (STRONGLY AGREE),] [RANDOMIZE ORDER]

    h. I am not concerned about the amount of energy used in my home.

    i. It is important to save energy to preserve the environment.

    j. It is my right to use as much energy as I want.

    k. I don't have the resources I need to reduce the amount of energy I am using.

    l. It is possible to save energy without sacrificing comfort by being energy efficient.

    m. I don't feel that I am well informed on ways to save energy.

    n. I intend to reduce my household energy use in the next 12 months.

SATISFACTION

14. Using a scale where 1 is “Very dissatisfied” and 5 is “Very satisfied, how satisfied are you with Entergy New Orleans as your electricity service provider?

[SCALE: 1 (VERY DISSATISFIED) – 5 (VERY SATISFIED), 98 = DON’T KNOW]

DEMOGRAPHICS/HOME CHARACTERISTICS

The next questions are about your residence. These are anonymous and will be used solely for combining different customers’ responses. It is okay to not answer any of these questions.

15. Which of the following best describes your home? Is it a…

    1. Manufactured home
    2. Single-family house detached from any other house
    3. Single family house attached to one or more other houses, for example, duplex, row house, or townhome
    4. Apartment in a building with 2 to 3 units
    5. Apartment in a building with 4 or more units
    6. Other (Specify)
    98. Don’t know

16. Do you own, rent, or own and rent to someone else the property located at [ADDRESS]?

    1. Own
    2. Rent
    3. Own and rent to someone else
    98. Don’t know

[DISPLAY IF Q16 = 1 OR 3]

17. When was your home built?

    1. Before 1950
    2. 1950 to 1959
    3. 1960 to 1969
    4. 1970 to 1979
    5. 1980 to 1989
    7. 1990 to 1999
    8. 2000 to 2009
    9. 2010 to 2016
    98. Don’t know

18. What is the approximate square footage of your home? Your best estimate is fine.

19. What is the main type of heating equipment used to provide heat for your home?

    1. Heat pump
    2. Central forced air furnace
    3. Built-in baseboard heater
    4. Building-in wall heater
    5. Something else (Please specify)
    5. Don’t heat my home
    98. Don’ know

20. Do you use a central air conditioning system in your home?

    1. Yes
    2. No

98. Don't know

[DISPLAY IF Q20 = 1]

21. Is the central air conditioning system a heat pump?

    1. Yes
    2. No
    98. Don't know

[DISPLAY IF Q20 = 1]

22. How old is the central air conditioning system in your home?

    1. Less than 2 years old
    2. 2 to 4 years
    3. 5 to 9 years
    4. 10 to 14 years
    5. 15 to 19 years
    6. 20 or more years old
    98. Don't know

[DISPLAY IF Q20 = 1]

23. Is the central air conditioning currently working and producing cool air?

    1. Yes
    2. No
    98. Don't know

[DISPLAY IF Q20 = 1]

24. In the last year, did you have your central air conditioning system tuned-up by a heating and cooling contractor?

    1. Yes
    2. No
    98. Don't know

[DISPLAY IF Q24 = 1]

25. When you had your A/C tune-up performed, was your duct system checked for any air leakage?

    1. Yes
    2. No
    98. Don't know

[DISPLAY IF Q25 = 1]

26. Did the heating and cooling contractor recommend you seal your ducts?

    1. Yes
    2. No
    98. Don't know

[DISPLAY IF Q26 = 1]

27. Did that professional/contractor recommend applying for an Entergy rebate program for sealing your ducts?

1. Yes
2. No
98. Don't know

[DISPLAY IF Q20 = 1 AND Q22 <> 1 AND Q16 = 1]

28. We would like to know how much you would be willing to pay to replace your air conditioner with a more efficient air conditioner. Assume that your current air conditioner is working and that a new more efficient air conditioner would save you $175 a year in utility costs. What is the most you would be willing to pay to replace your air conditioner with a more efficient air conditioner?

    $ [SMALL TEXT BOX]

[DISPLAY IF Q20 = 1 AND Q22 <> 1 AND Q16 = 1**]**

29. Now, assume that your air conditioner is not working and would cost $500 to have it repaired. What is the most you would be willing to pay to replace your air conditioner with a new more efficient air conditioner that would save you $175 a year in utility costs?

    $ [SMALL TEXT BOX]

[DISPLAY Q30 IF Q20 = 1 AND Q22 <> 1 AND Q16 = 1**]**

30. Now, assume that your air conditioner is working but you need to replace your broken heating system. What is the most you would be willing to pay to replace your air conditioner with a new more efficient air conditioner that would save you $175 a year in utility costs?

    $ [SMALL TEXT BOX]

31. What is the main fuel used for heating your home?

    1. Electricity
    2. Natural Gas
    3. Propane
    4. Something else (Please explain)
    5. Don't heat home
    98. Don't know

32. What fuel does your main water heater use?

    1. Electricity
    2. Natural Gas
    3. Propane
    4. Something else (Please explain)
    98. Don't know

33. Including yourself, how many people currently live in your home year-round?

    1. 1
    2. 2
    3. 3
    4. 4
    5. 5
    6. 6
    7. 7
    8. 8 or more
    98. Don't know

34. Including all money earned from wages, salaries, tips, commissions, workers' compensation, unemployment insurance, child support, or other sources, about how much was your total annual household income before taxes in 2016?

    1. Less than $10,000
    2. $10,000 to less than $20,000
    3. $20,000 to less than $30,000
    4. $30,000 to less than $40,000
    5. $40,000 to less than $50,000
    6. $50,000 to less than $75,000
    7. $75,000 to less than $100,000
    8. $100,000 to less than $150,000
    9. $150,000 to less than $200,000
    10. $200,000 or more
    98. Don't know

35. What's the highest level of education you've completed?

    1. Less than high school
    2. High school graduate/GED
    3. Associates degree, vocational/technical school, or some college
    4. Four-year college degree
    5. Graduate or professional degree
    98. Don't know

36. We will select one survey respondent at random to win a $100 Amazon gift card. The gift card will be sent by postal mail to the winner.

    If you are selected to win the gift card, the card will be sent to the address below.

    Please correct the address if it is incorrect.

    Name:

    Street Address:

    City:

    State:

    Zip code:

16.8 Non-Residential Trade Ally Guide

CLIENT:Entergy New Orleans (ENO)

PROGRAM: Small Business Energy Solutions, Large Commercial & Industrial Solutions, Publicly Funded Institutions

GROUP: Participating trade allies

MODE: Telephone

VariableDefinition

SBES If completed Small Business Energy Solutions projects, 1, otherwise 0

Introduction

Hi, may I please speak with [Trade Ally Name]

My name is ___ and I'm calling, on behalf of Entergy New Orleans. We're talking to Trade Allies who completed projects through ENO's residential and nonresidential energy efficiency program as part of our evaluation of that program.

Our records indicate that you completed some projects through the program in 2018. We would like to include your opinions of the program in our evaluation report.

Entergy plans to use this information to improve the energy efficiency programs and services it offers to its customers. Is now a good time to talk?

(IF NEEDED: The call should take about 20 minutes.)

1. Yes
2. No (CAN YOU SUGGEST A TIME WHEN I CAN CALL YOU BACK?)

99. REFUSED (THANK AND TERMINATE CALL)

Background

First, I would like a little background information on your business.

1. How long have you been an active trade ally with the Entergy New Orleans Energy Smart program?

Recruitment

2. Did you complete any projects when CLEAResult implemented programs?
    a. <*If yes*> How does your experience with CLEAResult compare with the new implementer Franklin Energy (Aptim)?
3. Can you discuss the current process for recruitment and your level of outreach with customers? Would you say it has changed from when CLEAResult implemented the programs? Why?
4. What is your company's marketing or sales approach? Is high efficiency equipment emphasized in your approach?
5. What materials do you use when talking with customers about efficient equipment options and program rebates? Do you use any materials provided by the Energy Smart Program?
6. Do you believe that Entergy does a good job of promoting the Energy Smart programs and encouraging customers to install qualifying equipment?

a. <*If no*> What do you believe Entergy should be doing differently?

Program Participation and Incentives

7. I have a few questions about the prescriptive incentives offered. By prescriptive incentives I mean incentives that are based on the number of units installed, such as the number of lamps installed or the tonnage of HVAC equipment installed.

    a. Are there any prescriptive measures for which incentives are too low to encourage measure adoption?

    b. Should additional measures be added to the prescriptive measure list? What would be the benefit of offering those as prescriptive measures?

8. <*If participated prior to 2017*> Prior to 2017, the program did not offer prescriptive incentives but instead based all incentives on the estimated energy savings. Has the introduction of prescriptive incentives changed the way you promote the program incentives or the types of businesses that complete program projects? Has it changed customer interest in incentives?

9. <*If SBES = 1 and participated prior to 2017*> It is my understanding that small business program trade allies no longer conduct "energy assessments" under the new small business program. I have a few questions regarding that change.

    a. Did you complete energy assessments for small business customers through the Entergy program prior to 2017? (*If needed, at the time the program used a tool called OPEN to complete the assessments*)?

    b. <If yes> Are you currently providing similar information to customers when proposing projects or has it changed now that energy assessments are not a required part of the program? Do you provide customers information, such as energy savings and payback, when proposing projects?

    c. Now that the program no longer requires energy assessments, do you think this change has impacted the types of equipment you recommend? Has it changed customers' interest and/or receptivity to recommended improvements?

10. How often do you recommend high efficiency equipment to your New Orleans customers? Would you say most of the time, some of the time, or not very often?

    a. Why might you not recommend high efficiency equipment?

11. How often do customers choose not to install the recommended high efficiency equipment? What reasons do they give for that?

12. Are there certain types of businesses that are less likely or more likely to install high efficiency equipment than others?

13. Do you ever install program qualifying equipment in New Orleans without applying for a program incentive? Why?

14. Do you have public sector clients in New Orleans?

    a. Are there challenges specific to the public sector that make it more challenging for them to install efficient equipment?

    b. As you may know, Entergy offers a program for publicly funded institutions. How well designed do you think the Entergy program is to encourage energy efficiency in public sector organizations? Do you have any suggestions to improve the program to make it work better for public sector organizations?

15. Does your company provide services to improve compressed air system efficiency for small business such as auto repair facilities or other small industrial facilities?

a. <*If yes*> Can you describe what types of services you provide? Are there any compressed air improvements that you think should be incentivized through the Energy Smart program?

Training and Communication

16. Did you receive any training from Franklin Energy or Aptim regarding Entergy's programs?
    a. <*If yes*> Overall, how effective or useful do you think that training was? Do you have any suggestions for improving the training?
17. Have you contacted Franklin Energy or Aptim with questions about the program or specific types of equipment or projects?
    a. How timely and thorough have you found staff's response to your questions?

Satisfaction and Feedback on program

I just have a few more questions about your satisfaction with the program….

18. What do you think works particularly well about the ENO efficiency programs?
19. On a scale of 1 to 5 where 1 means not at all satisfied, and 5 means completely satisfied, how would you rate the following factors?

    [FOR EACH, 1 = 1 - Not at all satisfied, 2 = 2, 3 = 3, 4 = 4, 5 = 5 - Completely satisfied, 98 = Not Applicable or Don't know]

    a. The program application process
    b. Communication with program staff
    c. The program overall

[DISPLAY Q20 IF ANY Q0 a-d < 3]

20. What are the reasons for your dissatisfaction with those aspects of the program?
21. Finally, I would like to know if you have any suggestions for improving….
    a. The role contractors play in the program?
    b. Information sharing and communication with implementer?
    c. Forms or process for submitting project information?
    d. Ways that the program could help them be more effective or efficient in completing program work?

That concludes my interview. Do you have anything additional you would like to add? Thank you for your time today.

16.9 Residential Trade Ally guide

CLIENT:Entergy New Orleans (ENO)

PROGRAM: Residential Heating and Cooling, HPwES (Home Performance with Energy STAR), Affordable HPwES, Multifamily

GROUP: Participating trade allies

MODE: Telephone

VariableDefinition

MF If worked with Multifamily properties, 1, otherwise 0

AC If worked with AC program, 1, otherwise 0

HPwES If worked with Home Products, 1, otherwise 0

LOW INCOMEIf worked with LIA&Wx, 1, otherwise 0

HVAC If completed HVAC projects, 1, otherwise 0

DUCT SEALINGIf completed duct sealing projects, 1, otherwise 0

AIR SEALINGIf completed air sealing projects, 1, otherwise 0

Introduction

Hi, may I please speak with [Trade Ally Name]

My name is ___ and I'm calling, on behalf of Entergy New Orleans. We're talking to Trade Allies who completed projects through Entergy's residential and nonresidential energy efficiency program as part of our evaluation of that program.

Our records indicate that you completed some projects through the program in 2018. We would like to include your opinions of the program in our evaluation report.

Entergy plans to use this information to improve the energy efficiency programs and services it offers to its customers. Is now a good time to talk?

(IF NEEDED: The call should take about 20 minutes.)

3. Yes
4. No (CAN YOU SUGGEST A TIME WHEN I CAN CALL YOU BACK?)

99. REFUSED (THANK AND TERMINATE CALL)

Background

First, I would like a little background information on your business.

1. How long have you been an active trade ally with the Entergy New Orleans Energy Smart program?

Marketing and Customer Recruitment

2. Did you complete any projects with the CLEAResult implemented programs?
    a. <*If yes*> How does your experience with CLEAResult compare with the new implementer Franklin Energy/Aptim?
3. Does your company promote the Energy Smart program with Entergy customers?

a. What is your approach for doing this?

b. Would you say your level of effort to recruit customers to participate in the program has changed or staid the same from when CLEAResult implemented the program? If changed, why?

c. More generally, how has the current program affect your marketing of the services you provide to Entergy customers?

4. What materials do you use when talking with customers about the program? Did Entergy develop materials specific for the Energy Smart programs and do you use them?

5. Do you believe that Entergy does a good job of promoting the Energy Smart programs and encouraging customers to install qualifying equipment?

a. <*If no*> What do you believe Entergy should be doing differently?

Program Participation and Incentives

[DISPLAY Q6 – Q11 IF MF = 1 OR HPWES = 1 OR LOW INCOME = 1]

6. Can you discuss how the program notifies you to begin a project? Do you have any suggestions for improving that process?

7. When you first visit a site to install the program measures, do you ever identify any changes that need to be made to the work identified by the program?

a. What types of changes do you find? How often does this happen?

b. Do you submit a change order or communicate the change in some other way to program staff?

c. Do you need program approval before making those changes? How responsive are program staff to change orders?

8. We would like to know what your understanding is of the program requirements for the following measures.

a. Are there any limitations on when you can seal a home for leakage based on the pre-work leakage testing? (If needed, is there a minimum or maximum air change per hour rate?)

b. Are there any limitations on when you can seal a home's ducts? (If needed, for example a minimum or maximum pre-work leakage rate)

c. Are you aware of any limits on who how much insulation that can be installed? Is there a maximum R-value?

9. Do you think those restrictions you noted are appropriate or do you think they limit the program's ability to generate energy savings for customers? (Ask for specific issues and recommended changes).

10. Are there any specific types of qualifying program efficiency improvements for which the incentive payments are not high enough to encourage your customers to install it? What type of improvements?

11. How clear is the information on how to complete the program forms and submit project information?

12. Do you complete health and safety checks before installing measures? Do you always do those checks?

13. Do you offer to provide a copy of the hazard disclosure form to customers?

14. When you identify health and safety issues, do you make repairs at the time or offer to return to repair the issues?

Training and Communication

15. Did you receive any training from Franklin Energy or Aptim regarding Entergy's programs?

a. <*If yes*> Overall, how effective or useful do you think that training was? Do you have any suggestions for improving the training?

16. Have you contacted Franklin Energy or Aptim with questions about the program or specific types of equipment or projects?
    a. How timely and thorough have you found staff's response to your questions?

Residential cooling and heating

[DISPLAY Qa THROUGH Q26 IF REPLACEMENT =1]

17. When installing a replacement air conditioner, about what percent of the time do you typically:
    a. Perform a load calculation to determine proper equipment sizing?
    b. Measure for and adjust the airflow level?
    c. Charge the refrigerant to the manufacturer's recommended sub-cooling value?
    d. Perform duct sealing as part of the HVAC installation?
18. When you don't perform a load calculation to determine the equipment sizing, what do you base the recommended size of equipment on?
19. What are the common reasons for not always performing a load calculation? (For example, customer concerns/avoiding call backs, time/cost)
20. Do you ever sell SEER 16 or (higher efficiency) ACs or air source heat pumps in New Orleans without submitting for a rebate? Why?
21. About what percent of customers are aware of the program rebates?
22. When called out to inspect a customer's broken air conditioner, when do you recommend that the customer replace the unit instead of repair it? (Probe for a specific maximum repair cost or equipment age)
23. When replacing a broken heating system for a customer, how often do you recommend that the customer also replace the cooling system as well? Would you say always, sometimes, or never?
24. Why do you recommend installing the new cooling system as well?
25. About what percentage of the time do customers install the new cooling system as well?
26. We are interested in understanding if and when a customer might be willing to replace a functioning AC or heat pump unit or one that needed minor repairs with a more efficient unit. By minor repairs I am referring to repair costs of less than $500.
    a. First, are there any occasions when you might recommend that a customer replace a functioning unit or one with minor repairs with a more efficient new unit?
    b. With the current rebate levels, how likely do you think it is that your customers would replace a working air conditioner or one with minor repairs with a SEER 16 or better unit at the current rebate levels?
    c. How much of a rebate do you think Entergy would need to offer to encourage customers to replace functioning units or those in need of minor repairs with a new efficient unit?
    d. Are there specific types of customers or situations where a customer might be more willing to replace a functioning unit with a new efficient unit?
27. The next few questions are about the role the program plays in On a scale of 0 to 10 where 0 is "not at all important" and 10 is "extremely important," how important was the Energy Smart Program, including

the rebates and information provided through the program, in influencing your level of marketing and selling of energy efficient air conditioners and heat pumps to Entergy customers in 2018?

_____*(Record 0 -10)*

88 Don't know

98 Refused

[DISPLAY Q28 IF Q27 > 2]

28. Please briefly describe the most significant ways in which the program influenced your level of marketing and selling of energy efficient air conditioners and heat pumps to customers during 2018.

_____*(Record Verbatim)*

88 Don't know

98 Refused

29. Thinking about the energy efficient air conditioners and heat pumps projects that you completed as part of the Energy Smart Program in 2018, did the availability of incentives from the program influence the type, quantity, or efficiency level of the items that you recommended to customers? In other words, would you have made different recommendations if the program were not available?

01 Yes

02 No

88 Don't know

98 Refused

[DISPLAY Q30 OF Q29 = 01]

30. Please briefly describe the most significant ways in which the program influenced your decision to recommend energy efficient air conditioners and heat pumps to customers during 2018.

[DISPLAY Q31 THROUGH Q32 IF TUNE-UP=1]

31. According to our records you have completed some air conditioner tune-ups through the Energy Smart program. About what percent of the time do you inspect a customer's duct system for leakage when completing a tune-up?

    a. <*if greater than 0%*> When assessing the duct system, do you usually perform a visual inspection, or do you use a duct leakage tester, or do you do both?

    b. <*if they don't use duct leakage tester*> Does your company own duct leakage testing equipment?

    c. <*if DUCT SEALING = 0*> Did you know that Entergy offers a rebate for duct sealing?

32. Thinking about the times when you believe a customer has leaky ducts, what percent of the time do you recommend that they seal their ducts and receive a rebate from Entergy?

    a. Why might you not recommend that a customer seal their ducts through the Entergy program?

Satisfaction and Feedback on program

I just have a few more questions about your satisfaction with the program….

33. What do you think works particularly well about the Entergy New Orleans efficiency programs?

34. On a scale of 1 to 5 where 1 means not at all satisfied, and 5 means completely satisfied, how would you rate the following factors?

    [FOR EACH, 1 = 1 - Not at all satisfied, 2 = 2, 3 = 3, 4 = 4, 5 = 5 - Completely satisfied, 98 = Not Applicable or Don't know]

    d. Communication with program staff

    e. The program overall

[DISPLAY Q20 IF ANY Q34 a-b < 3]

35. What are the reasons for your dissatisfaction with those aspects of the program?

36. Finally, I would like to know if you have any suggestions for improving….

    a. The role contractors play in the program?

    b. Information sharing and communication with implementer?

    c. Forms or process for submitting project information?

    d. Ways that the program could help them be more effective or efficient in completing program work?

That concludes my interview. Do you have anything additional you would like to add? Thank you for your time today.

17. Appendix C: Behavioral Analysis Support

This appendix contains the survey instruments and interview guides used in this evaluation.

17.1 Regression Output

Table 17-1 Initial Group Model Results

Term	Estimate	Std. Error	t-Value	P-value
(Intercept)	5.701	0.365	15.603**	< .00001
Treatment	-0.71	0.069	-10.224**	< 00001
June	0.985	0.427	2.306**	0.021
July	0.663	0.424	1.564	0.118
August	0.565	0.425	1.330	0.184
September	0.479	0.426	1.124	0.261
October	0.609	0.424	1.437	0.151
November	0.592	0.429	1.380	0.168
December	0.361	0.467	0.774	0.439
Average Pre-usage	1.121	0.006	194.624**	< .00001
Average Pre-usage: June	-0.019	0.007	-2.844**	0.004
Average Pre-usage: July	-0.014	0.007	-2.04**	0.041
Average Pre-usage: August	-0.013	0.007	-1.858*	0.063
Average Pre-usage: September	-0.01	0.007	-1.544	0.123
Average Pre-usage: October	-0.014	0.007	-2.077**	0.038
Average Pre-usage: November	-0.014	0.007	-2.020**	0.043
Average Pre-usage: December	-0.013	0.007	-1.700*	0.089
R-square: .7530 * Significant at 90% confidence ** Significant at 95% confidence				

Table 17-2 Supplemental Group Model Results

Term	Estimate	Std. Error	t-Value	P-value
(Intercept)	0.445	7.183	0.062	0.951
Treatment	-0.355	0.042	-8.443**	< .00001
July	3.201	7.201	0.444	0.657
August	1.766	7.184	0.246	0.806
September	1.624	7.184	0.226	0.821
October	1.604	7.183	0.223	0.823
November	1.569	7.184	0.218	0.827
December	1.747	7.183	0.243	0.808
Average Pre-usage	1.06	0.005	232.476**	< .00001
Average Pre-usage: July	-0.057	0.019	-2.955**	0.003
Average Pre-usage: August	-0.013	0.006	-2.269**	0.023
Average Pre-usage: September	-0.009	0.006	-1.515	0.13
Average Pre-usage: October	-0.009	0.006	-1.503	0.133
Average Pre-usage: November	-0.009	0.006	-1.627	0.104
R-square: .7389 * Significant at 90% confidence ** Significant at 95% confidence				

The R-squares are lower than typically observed for a behavioral program (which are often .85 or higher). However, this is attributable to an abbreviated post-period for report delivery, with the evaluation including only seven and five months for the Initial and Supplemental waves, respectively. It is anticipated that this will improve when there is a full year of data to examine, and the treatment coefficients are significant at the 95% confidence level.

17.2 Double Count Analysis

To avoid double-counting of savings, program savings from other energy efficiency programs due to HER participation must be counted toward either the HER program or the other energy efficiency programs but not both. The double-counted savings, positive or negative, are subtracted from the net savings estimates from the regression analysis to get total verified savings.

Account numbers and address fields were used to identify HER treatment and control participants who had also enrolled in the Home Performance with ENERGY STAR (HPwES), Low Income Audit and Weatherization (LIA&Wx), Multifamily (MF) and Residential Heating and Cooling (RHC) programs. These program savings were categorized as: Building Shell, Energy Kits, HVAC, Lighting, and Water Heating.

Table 17-3 and Table 17-4 detail the 2018 other program savings. In 2018, HVAC aggregated savings were highest for both the initial and supplemental groups.

Table 17-3 2018 Other Program Savings (kWh) by Wave and Treatment Status

Measurement Type	Initial		Supplemental	
	Control	Treatment	Control	Treatment
Appliances	69	1,276	109	1,313
Building Shell	62,247	115,948	26,498	85,889
Energy Kits	7,286	13,495	1,634	4,201
HVAC	157,384	439,238	75,791	172,461
Lighting	25,422	63,107	14,141	29,411
Water Heating	-	99	-	-
Total	**252,508**	**633,136**	**118,173**	**293,275**

By participation, HVAC had the most treatment and control households as detailed in Table 17-4.

Table 17-4 2018 Other Program Participants by Treatment Status

Measurement Type	Initial		Supplemental	
	Control	Treatment	Control	Treatment
Appliances	4	12	6	7
Building Shell	36	68	15	36
Energy Kits	38	88	15	30
HVAC	133	363	77	189
Lighting	92	234	60	126
Water Heating	0	1	0	0

Table 17-5 details the double count calculations.

Table 17-5 Regression Double Count Calculation

Group	Treatment Group	Total Double Count	# Accounts	Avg. Double Count	kWh	MWh
Initial	Control	252,507	9,994	25.33		
	Treatment	633,162	24,994	25.27	1,479	1.5
Supplemental	Control	118,174	25,015	11.72		
	Treatment	293,276	9,992	11.83	-2,632	-2.6

Table 17-6 details the Pilot other program savings. The 2018 data were aggregated by program type and parent program.

Table 17-6 2018 Other Program Savings (kWh) by Treatment Status

Measurement Type	Initial		Supplemental	
	Control	Treatment	Control	Treatment
HVAC (RHC)	67,448	177,933	38,642	89,079
Building Shell (HPwES)	15,816	21,934	3,297	4,771
Energy Kits (HPwES)	5,540	10,006	1,121	3,015
HVAC (HPwES)	51,539	153,858	17,463	37,473
Lighting (HPwES)	14,641	40,376	6,152	14,537
Building Shell (LIA&Wx)	42,941	82,516	15,080	69,269
Energy Kits (LIA&Wx)	797	2,760	513	810
HVAC (LIA&Wx)	27,446	83,613	10,689	26,074
Lighting (LIA&Wx)	5,880	15,610	3,827	7,539
Building Shell (MF)	3,490	11,498	8,121	11,849
Energy Kits (MF)	948	729	-	376
HVAC (MF)	10,871	23,753	8,971	19,704
Lighting (MF)	5,001	7,121	4,162	7,335
Appliances (RLA)	69	1,276	109	1,313
HVAC (RLA)	81	81	27	130
Water Heating (RLA)	-	99	-	-
Total	**252,508**	**633,163**	**118,174**	**293,274**

By participation, HVAC (Residential Heating and Cooling) had the most treatment and control households across the Pilot as detailed in Table 17-7.

Table 17-7 Other Program Participants by Treatment Status

Measurement Type	Pilot		Supplemental	
	Control	Treatment	Control	Treatment
HVAC (RHC)	77	180	45	109
Building Shell (HPwES)	20	40	5	9
Energy Kits (HPwES)	28	68	12	22
HVAC (HPwES)	43	120	17	42
Lighting (HPwES)	47	134	29	57
Building Shell (LIA&Wx)	11	23	5	18
Energy Kits (LIA&Wx)	4	15	3	6
HVAC (LIA&Wx)	20	68	12	26
Lighting (LIA&Wx)	27	71	16	38
Building Shell (MF)	5	5	5	9
Energy Kits (MF)	18	31	16	36
HVAC (MF)	12	24	8	22
Lighting (MF)	18	29	15	31
Appliances (RLA)	4	12	6	7
HVAC (RLA)	3	3	1	5
Water Heating (RLA)	0	1	0	0

17.3 Opt-in Unmatched Group Analysis

17.3.1 Impact Evaluation

The evaluators attempted to complete an evaluation of the opt-in group initiated in PY2017. This group consisted originally of 1,493 control customers. There was no randomized control trial created for this wave, as it was an opt-in design. The

The impact evaluation goal for this program is as follows:

- Energy savings are estimated via regression modeling; and
- Excess savings from other-program-participation by the treatment group are accounted for and netted out of the program savings from the home energy reports program.

17.3.2 Savings Calculation Methodologies

17.3.2.1 Data

The data used in this study was comprised of household monthly billing reads supplied by Accelerated Innovations ("AI").

As part of the data cleaning, the following observations were removed to create the sample used in the regression analyses:

- Observations with fewer than 10 days or more than 90 days in the billing cycle; these observations were removed because long and short bills can be an indication of an issue in the recording of energy use. In past evaluations, the inclusion range was 20-40 days. The Evaluators broadened this range as abnormal billing reads may not be randomly distributed; long billing cycles are more common among rural populations.
- Observations outside of the evaluation period: the 12-month pre- and post-program period.
- Observations with less than 9 out of 12 valid pre-program period monthly billing data.
- Observations with less than 3 out of 12 valid post-program period monthly billing data.
- Outliers, which are defined as observations with a daily kWh usage higher 10 times the group median daily kWh usage; these observations were removed because very high observations of energy use can have an outsize impact on the regression results biasing the estimate of savings.

17.3.2.1.1 Participant Data

The dataset included monthly billing reads for 1,493 unique participating households. The raw participant dataset contained records spanning from September 2011 to January 2019. The analysis requires that all households have complete billing data during the pre and post periods. Households with incomplete data were removed, leaving 885 households in the final analysis.

17.3.2.1.2 Control Group

The analysis was supplemented by use of a control group. AI provided a dataset of non-participant dwellings that were eligible for the Pilot, but did not opt in. The dataset included monthly billing reads for the controls across the pre- and post-reporting timeframe.

The Evaluators used Propensity Score Matching with the nearest matching method to build a post-hoc control group from the non-participant data. A propensity score is a numerical value assigned to each customer; it represents the probability that a customer with certain characteristics will be assigned to the treatment group as opposed to the

control group. Therefore, in this analysis, the propensity score is used to assign the probability of treatment based on a customer's kWh/day value for each of the 12 pre-period months. The propensity score values are then matched to the k-nearest neighbors between each group. This post-hoc control group was matched at a ratio of eight control households for every one treatment customer. This method of matching can be used to reduce selection bias in our post-hoc control group, however, it is not as reliable as an RCT control group.

Reports were delivered over a twelve-month period from January 1, 2018 to December 31, 2018. A summary of data used in this analysis is provided in Table 10-1:

Table 17-8 Time Periods Data Summary

Data Point	Data Interval
Pre-installation	February 1, 2016 – January 31, 2017
Post-installation	January 1, 2018 –December 31, 2018

Table 10-2 summarizes the total number of households from the raw data provided and total number of households utilized in the analysis.

Table 17-9 Treatment and Control Group Totals

Raw		Analysis	
Treatment	Control	Treatment	Control
1,493	177,980	885	7,080

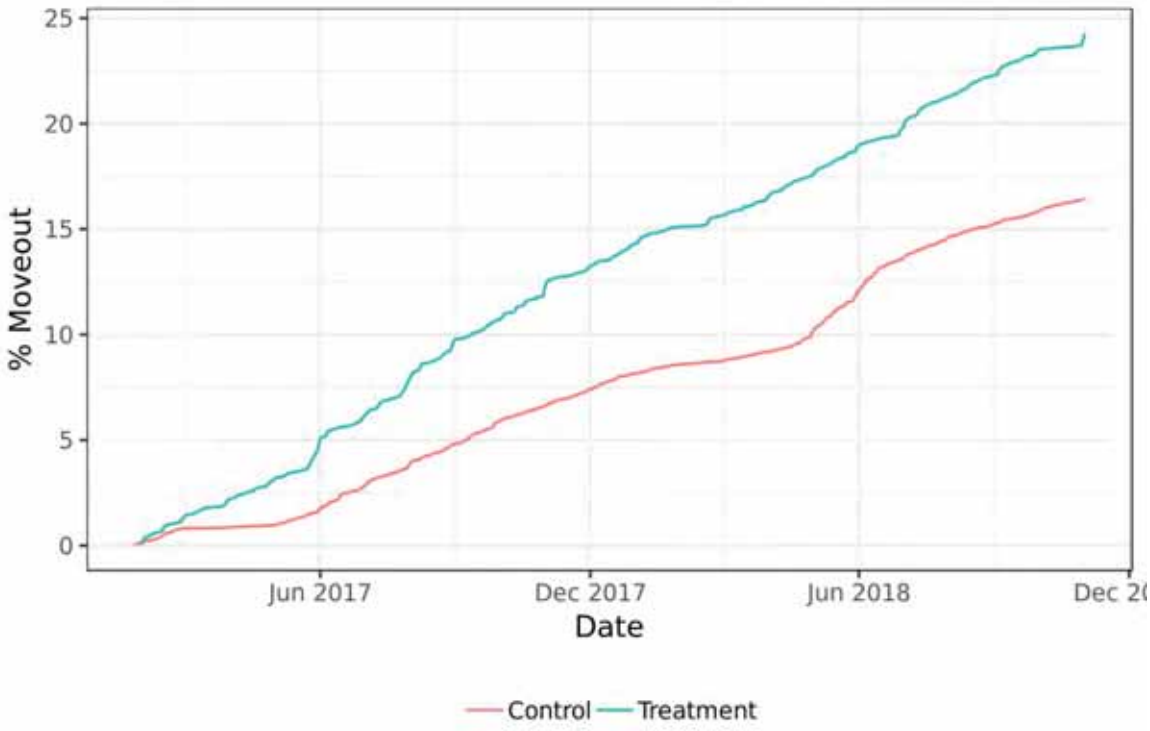
17.3.2.2 Attrition

The tracking of treatment and control households can be affected by either move-outs or opt-outs (known collectively as 'attrition').

17.3.2.2.1 Move-Outs

When an inhabitant moves, that household cannot be retained, as the inhabitant/address link has been broken. The evaluation timespan for that household ends on the move out date. If a household's final bill was before November 2018 it was considered a move out household. Figure 10-1 displays the cumulative level of both treatment and control move outs over the program life by month, wave and treatment/control status.

Figure 17-1 Pilot Move-Out Rate



From the onset until November 2018, the Pilot experienced a 24.27% move out rate for treatment and 16.43% for the control group.

17.3.2.2.2 Opt-outs

Households can opt-in to receive the mailings at any time. While treatment opt-ins are observed, it is not possible to determine who in the control group would have opted in to receiving reports had they been in the treatment group without a randomized control trial, and thus no equivalent modification can be made. The next most reliable way to create a post-hoc control group is with Propensity Score Matching, using daily kWh usage to match treatment households to non-opt-in households.

17.3.2.3 Regression Specifications

The analysis was performed in R, an open-source statistics package. The following regression models were attempted to evaluate this model but failed due to apparent bias between the control and treatment billing data.

- Difference in Difference (DID)
- Post-only (PO)
- Post-Program Regression (PPR)
- Treatment-Only (TO)

17.3.2.4 Ad-hoc Control Group Matching

The Evaluators attempted to create a control group for the opt-in participants using Propensity Score Matching. The following diagrams and tables are the result of matching the treatment group to the control group at a ratio of 1:8. That is, the control group is eight times larger than the treatment group.

Figure 17-2 Unmatched Groups Histogram

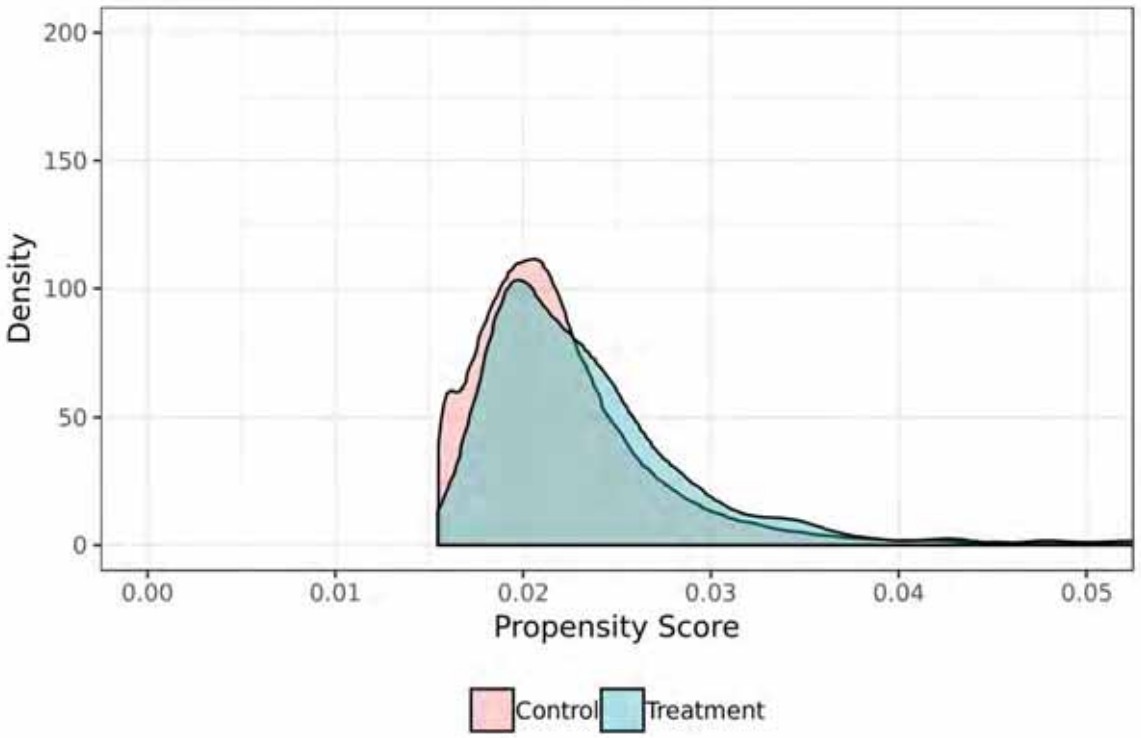


Figure 17-3 Matched Groups Histogram

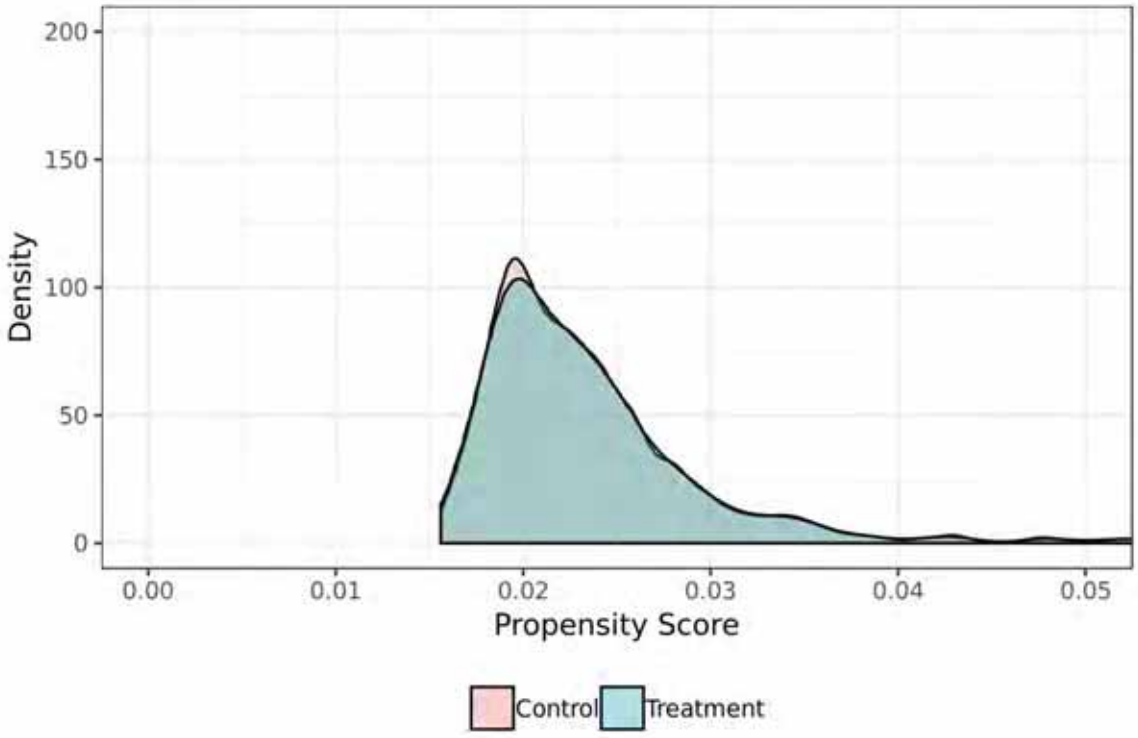


Table 17-10 Average kWh/day After Propensity Score Matching

Billing Month	*Treatment Mean kWh/day Usage*	*Before Matching*		*After Matching*	
		Control Mean kWh/day Usage	*Mean Difference in kWh/day Usage*	*Control Mean kWh/day Usage*	*Mean Difference in kWh/day Usage*
Total Number of Households	**885**	**34,695**		**7,080**	
Spring	45.3	40.1	5.2	45.2	0.1
Summer	29.8	26.6	3.2	29.5	0.3
Fall	56.3	50.2	6.1	56.3	0
Winter	35.3	31.5	3.8	35	0.3

Figure 17-4 displays the unmatched control group and the matched control group. The unmatched control group had an average daily kWh usage of 41 and the matched control group had an average of 37. The post-hoc control group consisted of the highest portion of energy users within the unmatched control group. Therefore, the control group likely had coincidental high usage in the pre-period, for some temporary behavior change, and

switched back to their normal, lower usage behavior in the post-period. A visual representation can be seen in Figure 17-5.

Figure 17-4 Daily kWh - Matched and Unmatched Post-Hoc Control Group

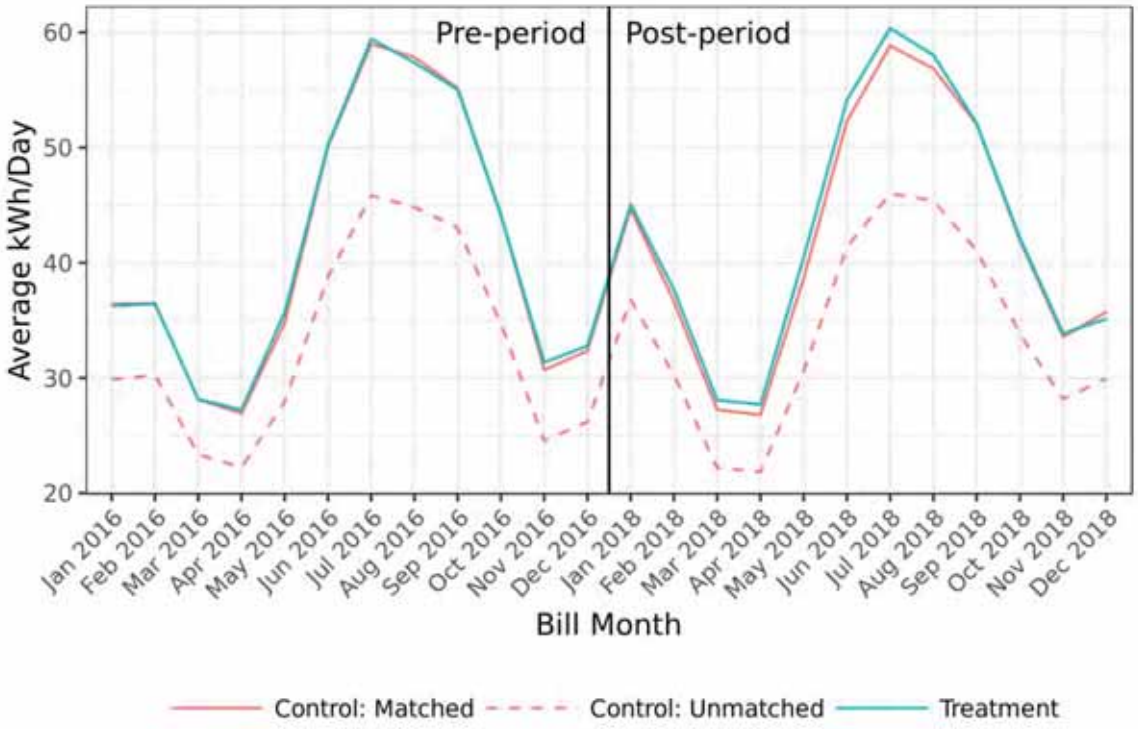
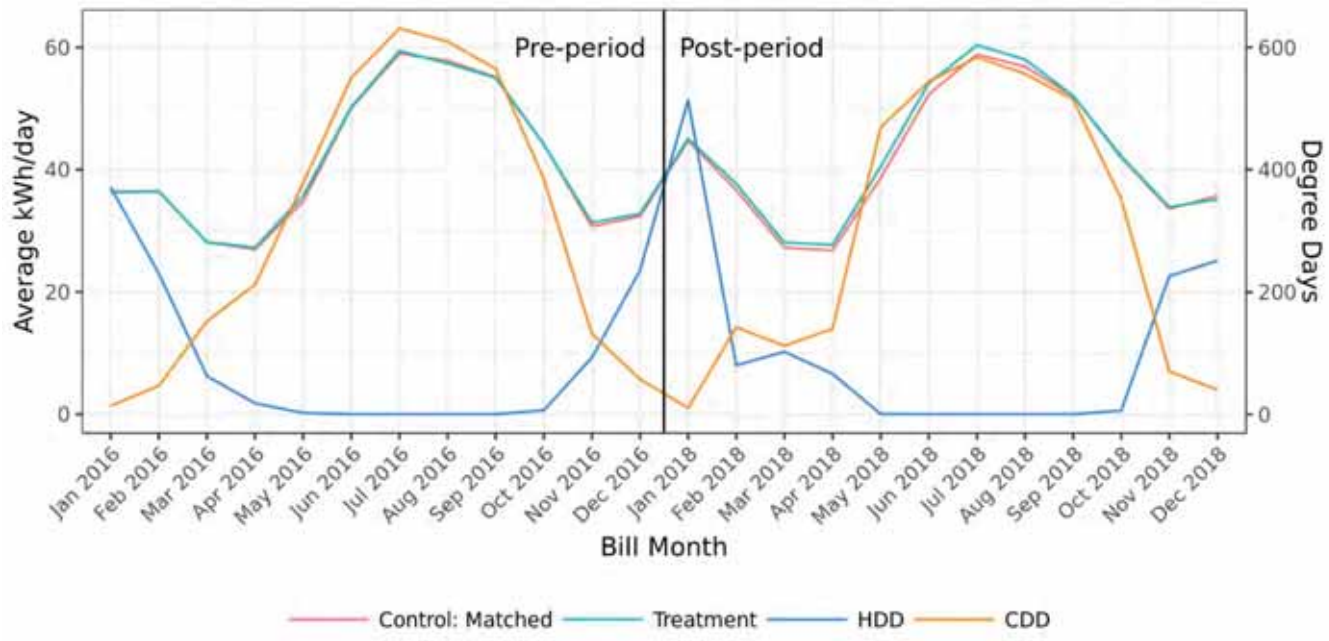


Figure 17-5 Average Daily kWh Between Groups with Weather Data



In Table 17-11, the participation between each group is significantly different. In the treatment group, about 15% of participants also participated in another program. In the control group, less than 2% of households participated in another program.

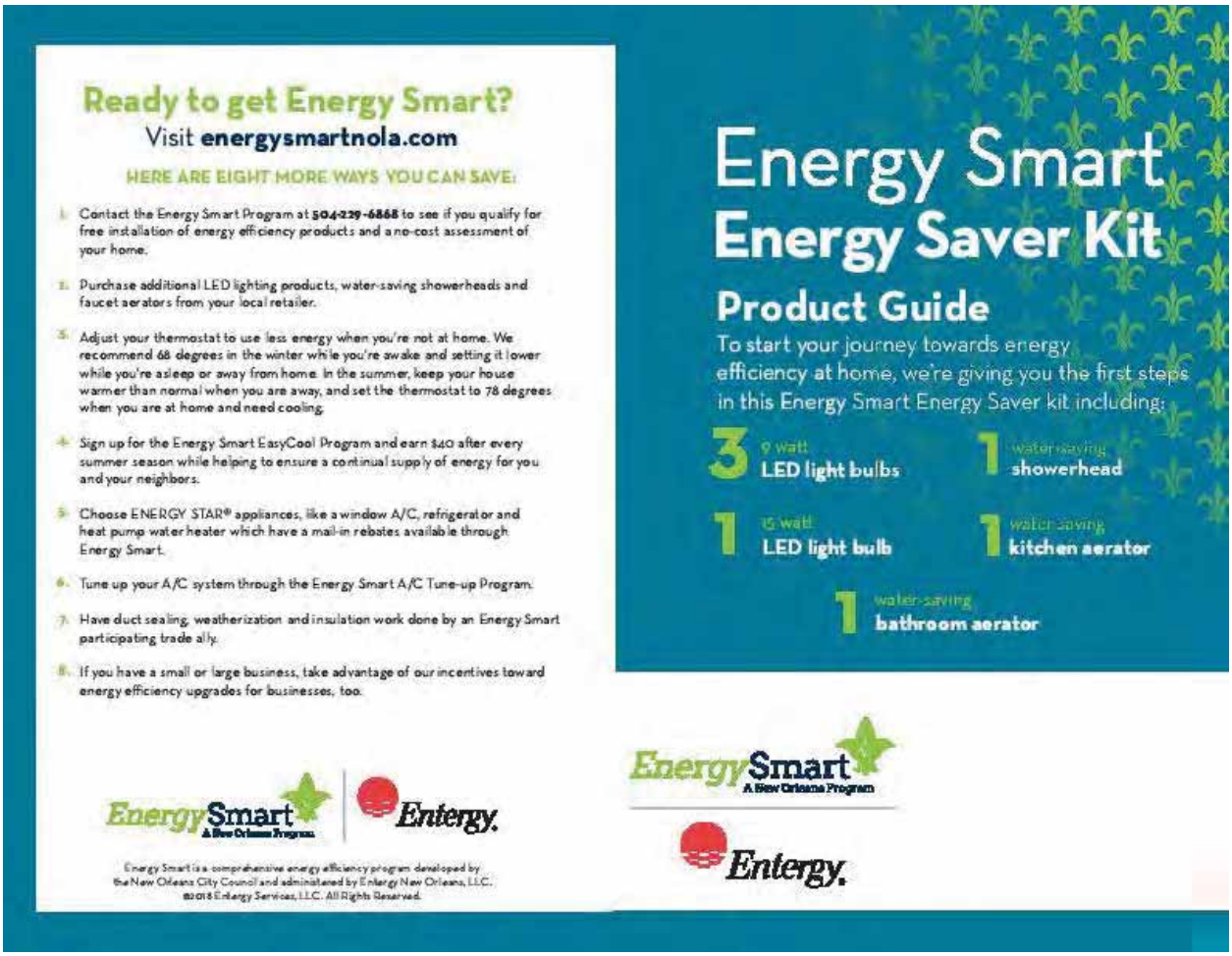
In addition, although the control group is eight times larger than the treatment group, the savings amounted by that group is equal to 160% the savings amounted by the treatment group. A proportional, unbiased group would have a value that is equal to approximately 800% the treatment value.

Table 17-11 Savings in Other Programs

Group	***Number of Participants in Other Programs***	***Number of Participants Total***	***Percentage of Participants in Other Programs***	***kWh Savings***	***kW Savings***
Treatment	133	885	15.03%	76,355	18.61
Control	107	7,080	1.51%	124,737	36.09

The figures and tables above display a large bias between the treatment and control group. The Evaluators are unable to manage this bias and are therefore unable to produce reliable regression model output to estimate savings for this wave.

18. Appendix D: Energy Smart Energy Saver Kit Product Guide



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HERE ARE EIGHT MORE WAYS YOU CAN SAVE:

1. Contact the Energy Smart Program at **504-229-6868** to see if you qualify for free installation of energy efficiency products and a no-cost assessment of your home.
2. Purchase additional LED lighting products, water-saving showerheads and faucet aerators from your local retailer.
3. Adjust your thermostat to use less energy when you're not at home. We recommend 68 degrees in the winter while you're awake and setting it lower while you're asleep or away from home. In the summer, keep your house warmer than normal when you are away, and set the thermostat to 78 degrees when you are at home and need cooling.
4. Sign up for the Energy Smart EasyCool Program and earn $40 after every summer season while helping to ensure a continual supply of energy for you and your neighbors.
5. Choose ENERGY STAR® appliances, like a window A/C, refrigerator and heat pump water heater which have a mail-in rebates available through Energy Smart.
6. Tune up your A/C system through the Energy Smart A/C Tune-up Program.
7. Have duct sealing, weatherization and insulation work done by an Energy Smart participating trade ally.
8. If you have a small or large business, take advantage of our incentives toward energy efficiency upgrades for businesses, too.

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Energy Smart Energy Saver Kit

Product Guide

To start your journey towards energy efficiency at home, we're giving you the first steps in this Energy Smart Energy Saver kit including:

- **3** 9 watt **LED light bulbs**
- **1** water-saving **showerhead**
- **1** 15 watt **LED light bulb**
- **1** water-saving **kitchen aerator**
- **1** water-saving **bathroom aerator**

EnergySmart A New Orleans Program

Entergy.

WHAT IS ENERGY SMART?

Energy Smart helps conserve the amount of energy (from electricity and water) we use at home and at businesses throughout our communities. The small amounts saved add up quickly, as well as help the environment. You can start saving immediately with these complimentary items in your Energy Smart Energy Saver Kit.

Congratulations

You took the first step on your energy efficiency journey with the Energy Smart Energy Saver Kit Program. You've cut down on your energy use and started lowering your energy costs. So why stop now? Call **504-229-6868** to schedule your assessment.

Questions?

For more information, visit **energysmartnola.com**, call **504-229-6868** or email **info@energysmartnola.com.**

And make sure to tell your friends and family that are Entergy New Orleans customers about these energy-saving options.

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LED LIGHT BULBS

Light-emitting diodes, or LEDs, are another great energy saving light source. These bulbs can last for up to 25,000 hours, 15 times longer than incandescents. Standard incandescents use up to 80 percent more energy than energy-efficient LED light bulbs.

WATER-SAVING SHOWERHEAD

A **water-saving showerhead** can save energy by using up to 75 percent less water than most standard showerheads. It provides a powerful, flow rate regardless of water pressure and helps reduce water use in a big way.

WATER-SAVING AERATORS

These **aerators** can be installed on most kitchen and bathroom sink faucets in order to save water and energy. They produce powerful streams of water at a reduced flow rate, regardless of available water pressure. Plus, there's an additional bonus: less energy is required to heat hot water.

19. Appendix E: Cost Benefit Testing

This appendix provides an overview of each programs' participation, verified reduction in peak load, verified kWh savings, annual admin costs, total program costs, as well as a summary of the cost effectiveness analysis.

19.1 Cost Effectiveness Summary

This appendix covers all verified electricity and peak demand savings, and associated program costs incurred in the implementation of the Companies' PY8 energy efficiency portfolio.

The cost-effectiveness of the Companies' PY8 programs was calculated based on reported total spending, verified energy savings, and verified demand reduction for each of the energy efficiency and demand response programs. All spending estimates were provided by the Companies. The methods used to calculate cost-effectiveness are informed by the California Standard Practice Manual.[79]

The demand reduction (kW) and energy savings (kWh) presented throughout this appendix represent savings at the generator by adjusting for line losses.

In order to calculate the cost-effectiveness of each program, measure lives were assigned on a measure-by-measure basis. Incremental costs were taken directly from the program filing documents.

Avoided energy, capacity, and transmission/distribution costs used to calculate cost-effectiveness were provided by the Companies.

The tables below each program included in this analysis, along with the final verified savings estimates, total expenditures, Utility Cost Test (UCT)[80] results, and Total Resource Cost Test (TRC) results.

In addition to UCT and TRC results, results from the Ratepayer Impact Measure (RIM), Participant Cost Test (PCT) and Societal Cost Test (SCT) are included in the body of this appendix.

Based on verified program impacts and spending during PY8, the Companies' overall portfolio is cost-effective based on both the UCT and TRC.

79California Standard Practice Manuel: Economic Analysis of Demand Side Management Programs, October 2001. Available at: http://www.cpuc.ca.gov/NR/rdonlyres/004ABF9D-027C-4BE1-9AE1-CE56ADF8DADC/0/CPUC_STANDARD_PRACTICE_MANUAL.pdf

80 The UCT is also referred to as the Program Administrator Cost Test (PACT).

Table 19-1 Cost-Effectiveness by Program – New Orleans

Program	Net Peak Demand Reduction (kW)	Net Annual Energy Savings (kWh)	Total Program Expenditures	TRC (b/c ratio)	UCT (b/c ratio)
HPwES	588.06	2,529,013	$2,069,458	2.40	2.00
LIA&Wx	470.94	1,907,136			
Multifamily	195.41	742,057			
Green Light New Orleans	12.66	61,170			
Lighting and Appliances	776.76	3,615,618	$535,689	4.57	1.80
Residential Heating & Cooling	712.66	2,063,575	$496,291	3.47	3.77
Energy Smart School Kits	74.26	635,448	$430,052	0.54	0.47
Scorecard Behavioral	0.00	4,933,408	$234,840	4.72	4.72
Direct Load Control	1,967.02	-	$739,304	0.08	0.08
Small Commercial Solutions	783.87	6,650,306	$1,653,188	1.57	1.93
Large C&I	1,928.70	15,526,872	$4,432,253	1.44	1.80
Publicly Funded Institutions	196.67	2,667,362	$730,967	1.51	6.00
Total	**7,707.01**	**41,331,965**	**$11,322,042**	**1.70**	**1.86**

Table 19-2 Cost-Effectiveness by Program - Algiers

Program	Net Peak Demand Reduction (kW)	Net Annual Energy Savings (kWh)	Total Program Expenditures	TRC (b/c ratio)	UCT (b/c ratio)
HPwES	71.16	299,241	$179,744	2.18	1.96
LIA&Wx	31.87	121,880			
Multifamily	8.71	31,077			
Green Light New Orleans	1.69	8,155			
Lighting and Appliances	44.54	214,659	$42,573	3.50	1.36
Residential Heating & Cooling	52.66	143,064	$24,202	3.27	3.26
Energy Smart School Kits	4.48	38,316	$107,512	0.13	0.11
Scorecard Behavioral	0.00	745,249	$39,662	4.22	4.22
Direct Load Control	103.15	-	$54,901	0.06	0.06
Small Commercial Solutions	41.43	404,881	$168,862	0.93	1.13
Large C&I	24.56	411,884	$256,425	0.65	0.75
Publicly Funded Institutions	-12.50	229,740	$65,968	1.16	1.55
Total	**371.75**	**2,648,146**	**$939,849**	**1.18**	**1.23**

19.2 Energy Efficiency Program Results

The Companies' energy efficiency portfolio in PY8 consisted of eleven programs. Total spending in PY8 equaled $11,322,042 for ENO and $935,849 for Algiers ($12,261,891 overall).

19.2.1 Home Performance with ENERGY STAR / LIA&Wx / Multifamily/Green Light NOLA

These programs are filed in aggregate and are combined for cost-effectiveness testing.

Table 19-3 HPwES Benefit/Cost Tests – New Orleans

Metric	*Utility Cost Test*	*Total Resource Cost Test*	*Ratepayer Impact Measure*	*Societal Cost Test*	*Participant Cost Test*
Benefit/Cost Ratio	**2.00**	**2.40**	**0.80**	**3.11**	**5.77**
Total Benefits	$4,134,533	$4,134,533	$4,134,533	$5,353,931	$4,509,638
Total Costs	$2,069,458	$1,720,129	$5,157,178	$1,720,129	$781,887

Table 19-4 HPwES Benefit/Cost Tests - Algiers

Metric	*Utility Cost Test*	*Total Resource Cost Test*	*Ratepayer Impact Measure*	*Societal Cost Test*	*Participant Cost Test*
Benefit/Cost Ratio	**1.96**	**2.18**	**0.76**	**2.74**	**5.10**
Total Benefits	$351,631	$351,631	$351,631	$440,942	$398,897
Total Costs	$179,744	$161,094	$460,543	$161,094	$78,160

19.2.2 Lighting & Appliances

Table 19-5 Lighting & Appliances Benefit/Cost Tests – New Orleans

Metric	*Utility Cost Test*	*Total Resource Cost Test*	*Ratepayer Impact Measure*	*Societal Cost Test*	*Participant Cost Test*
Benefit/Cost Ratio	**1.87**	**4.75**	**0.64**	**5.10**	**54.85**
Total Benefits	$1,002,503	$1,002,503	$1,002,503	$1,076,251	$1,418,725
Total Costs	$535,689	$211,145	$1,574,280	$211,145	$25,864

Table 19-6 Lighting & Appliances Benefit/Cost Tests - Algiers

Metric	*Utility Cost Test*	*Total Resource Cost Test*	*Ratepayer Impact Measure*	*Societal Cost Test*	*Participant Cost Test*
Benefit/Cost Ratio	**1.38**	**3.57**	**0.57**	**3.83**	**152.21**
Total Benefits	$58,936	$58,936	$58,936	$63,240	$89,893
Total Costs	$42,573	$16,529	$104,080	$16,529	$591

19.2.3 Residential Heating & Cooling

Table 19-7 RH&C Benefit/Cost Tests – New Orleans

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**3.77**	**3.47**	**1.07**	**4.47**	**4.59**
Total Benefits	$1,872,010	$1,872,010	$1,872,010	$2,414,828	$1,686,222
Total Costs	$496,291	$540,060	$1,742,060	$540,060	$367,689

Table 19-8 RH&C Benefit/Cost Tests - Algiers

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**3.26**	**3.27**	**1.09**	**4.35**	**5.29**
Total Benefits	$78,923	$78,923	$78,923	$105,064	$65,633
Total Costs	$24,202	$24,159	$72,292	$24,159	$12,410

19.2.4 School Kits & Education

Table 19-9 SE&K Benefit/Cost Tests – New Orleans

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**0.47**	**0.54**	**0.31**	**0.60**	**7.29**
Total Benefits	$202,887	$202,887	$202,887	$227,661	$321,465
Total Costs	$430,052	$378,950	$646,599	$378,950	$44,098

Table 19-10 SE&K Benefit/Cost Tests - Algiers

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**0.11**	**0.13**	**0.10**	**0.15**	**4.07**
Total Benefits	$12,234	$12,234	$12,234	$13,727	$37,443
Total Costs	$107,512	$92,912	$120,569	$92,912	$9,200

19.2.5 Scorecard Behavioral

Table 19-11 Scorecard Behavioral Benefit/Cost Tests – New Orleans

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**4.72**	**4.72**	**0.67**	**5.04**	**N/A**
Total Benefits	$1,108,936	$1,108,936	$1,108,936	$1,184,415	$1,450,142
Total Costs	$234,840	$234,840	$1,645,223	$234,840	$0

Table 19-12 Scorecard Behavioral Benefit/Cost Tests - Algiers

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**4.22**	**4.22**	**0.66**	**4.51**	**N/A**
Total Benefits	$167,518	$167,518	$167,518	$178,920	$219,061
Total Costs	$39,662	$39,662	$252,717	$39,662	$0

19.2.6 Direct Load Control

Table 19-13 EASYCOOL PROGRAM Pilot Benefit/Cost Tests – New Orleans

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**0.08**	**0.08**	**0.08**	**0.08**	**N/A**
Total Benefits	$59,018	$59,018	$59,018	$59,018	$22,120
Total Costs	$739,304	$717,184	$739,304	$717,184	$0

Table 19-14 EASYCOOL PROGRAM Pilot Benefit/Cost Tests - Algiers

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**0.06**	**0.06**	**0.06**	**0.06**	**N/A**
Total Benefits	$3,095	$3,095	$3,095	$3,095	$1,160
Total Costs	$54,901	$53,741	$54,901	$53,741	$0

19.2.7 Small Commercial Solutions

Table 19-15 SCS Benefit/Cost Tests – New Orleans

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**1.93**	**1.57**	**0.66**	**1.82**	**3.15**
Total Benefits	$3,193,443	$3,193,443	$3,193,443	$3,712,788	$4,352,572
Total Costs	$1,653,188	$2,035,665	$4,816,359	$2,035,665	$1,381,485

Table 19-16 SCS Benefit/Cost Tests - Algiers

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**1.13**	**0.93**	**0.53**	**1.08**	**2.34**
Total Benefits	$190,048	$190,048	$190,048	$220,773	$295,389
Total Costs	$168,862	$203,786	$361,441	$203,786	$126,143

19.2.8 Large Commercial & Industrial Solutions

Table 19-17 LCI Benefit/Cost Tests – New Orleans

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**1.80**	**1.44**	**0.66**	**1.69**	**2.86**
Total Benefits	$7,965,137	$7,965,137	$7,965,137	$9,368,686	$10,922,202
Total Costs	$4,432,253	$5,535,342	$12,141,939	$5,535,342	$3,818,712

Table 19-18 LCI Benefit/Cost Tests - Algiers

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**0.74**	**0.64**	**0.41**	**0.75**	**2.26**
Total Benefits	$189,461	$189,461	$189,461	$221,996	$314,706
Total Costs	$256,425	$296,622	$459,216	$296,622	$139,042

19.2.9 Publicly Funded Institutions

Table 19-19 PFI Benefit/Cost Tests – New Orleans

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**6.00**	**1.51**	**0.67**	**1.84**	**3.04**
Total Benefits	$1,505,124	$1,505,124	$1,505,124	$1,836,497	$2,022,816
Total Costs	$730,967	$997,423	$2,235,192	$997,423	$666,140

Table 19-20 PFI Benefit/Cost Tests - Algiers

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**1.55**	**1.16**	**0.52**	**1.40**	**3.09**
Total Benefits	$102,349	$102,349	$102,349	$123,595	$173,489
Total Costs	$65,968	$88,427	$195,527	$88,427	$56,148

19.2.10Whole-Portfolio

Table 19-21 Whole-Portfolio Benefit/Cost Tests – New Orleans

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**1.86**	**1.70**	**0.69**	**2.04**	**3.76**
Total Benefits	$21,005,529	$21,005,529	$21,005,529	$25,193,283	$26,664,963
Total Costs	$11,322,042	$12,370,739	$30,658,317	$12,370,739	$7,085,876

Table 19-22 Whole-Portfolio Benefit/Cost Tests - Algiers

Metric	Utility Cost Test	Total Resource Cost Test	Ratepayer Impact Measure	Societal Cost Test	Participant Cost Test
Benefit/Cost Ratio	**1.23**	**1.18**	**0.55**	**1.40**	**3.79**
Total Benefits	$1,155,050	$1,155,050	$1,155,050	$1,372,475	$1,596,367
Total Costs	$939,849	$976,886	$2,081,901	$976,886	$421,648