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November 14, 2018

By Hand Delivery

Ms. Lora W. Johnson, CMC, LMMC
Clerk of Council
Council of the City of New Orleans
Room 1E09, City Hall
1300 Perdido Street
New Orleans, LA 70112

Re: **In Re: 2018 Triennial Integrated Resource Plan of Entergy New Orleans, Inc.**
Docket No. UD-17-03

Dear Ms. Johnson:

Entergy New Orleans, LLC ("ENO") respectfully submits its November 28, 2018 Technical Meeting Materials in the above referenced Docket. Please file an original and two copies into the record in the above referenced matter, and return a date-stamped copy to our courier.

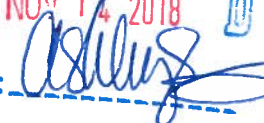
Should you have any questions regarding the above, I may be reached at (504) 576-2984. Thank you for your assistance with this matter.

Sincerely,

Harry M. Barton

HMB/bkd
Enclosures

cc: Official Service List (via email)

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NOV 14 2018
BY: 

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CERTIFICATE OF SERVICE

Docket No. UD-17-03

I hereby certify that I have served the required number of copies of the foregoing report upon all other known parties of this proceeding, by the following: electronic mail, facsimile, overnight mail, hand delivery, and/or United States Postal Service, postage prepaid.

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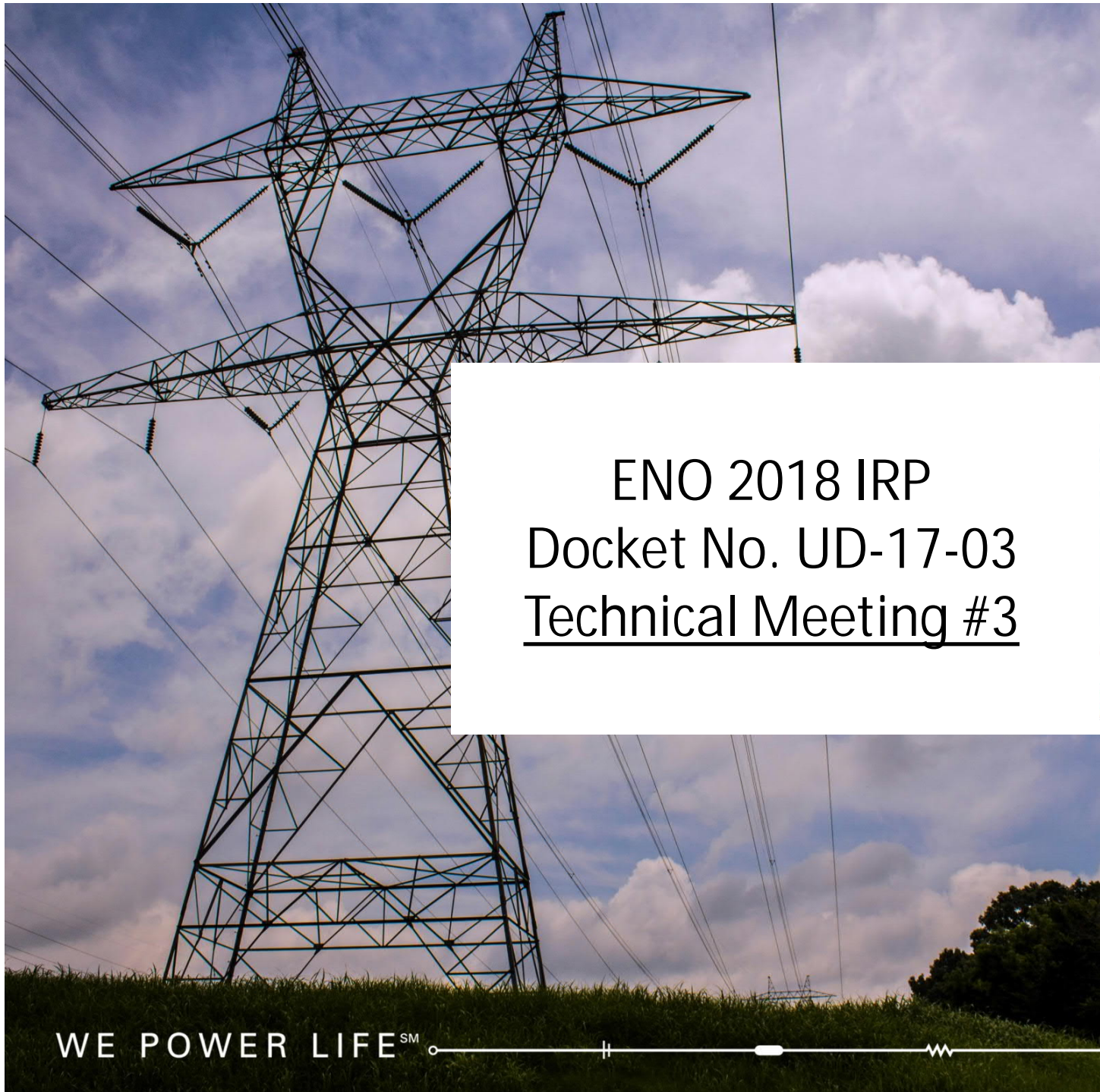
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New Orleans, Louisiana, this 14th day of November, 2018.



Harry M. Barton



WE POWER LIFESM



ENO 2018 IRP
Docket No. UD-17-03
Technical Meeting #3



November 28, 2018

Goals and Agenda of Technical Meeting #3

Goals

- As described in the Initiating Resolution (R-17-430), the main purpose of this meeting is for ENO, the Advisors, and Intervenors to finalize the Planning Scenarios and Strategies, lock down all of the IRP inputs, provide the results of the DSM Potential Studies, and engage in an initial discussion regarding scorecard metrics.

Agenda

1. Planning Scenarios and Strategies—Discussion and Decision
2. Navigant DSM Potential Study Results—Presentation by Navigant
3. Scorecard Metrics—Initial Discussion

Technical Meeting #2—Follow Ups

- DSM Input Files
 - HSPM workpapers and supporting files for Navigant Study
 - ENO provided to Advisors and Intervenors on 10/1/18
 - Requirements for Aurora input files necessary to model Optimal study results in IRP
 - Call to discuss w/ENO, Advisors, and Optimal on 10/18/18
 - DSM Program Input files from Optimal
 - Provided by Optimal on 11/13/18
- Proposed Planning Scenarios
 - Information on DER assumptions in ENO load forecasts
 - ENO provided on 10/17/18
 - Intervenors to develop proposed Scenario #4
 - Consensus Stakeholder Scenario provided by AAE on 11/13/18
- Proposed Planning Strategies
 - Intervenors to develop proposed Strategy #4
 - Notes on strategy ideas provided by AAE on 11/13/18

Section 1

Planning Scenarios and Strategies

Proposed Planning Scenarios – Assumptions

	Scenario 1 (Moderate Change)	Scenario 2 (Customer Driven)	Scenario 3 (Policy Driven)	Scenario 4 (Stakeholder)
Peak Load & Energy Growth	Medium	Low	High	Low
Natural Gas Prices	Medium	Low	High	High
Market Coal & Legacy Gas Deactivations	60 years	55 years	50 years	50 years
Magnitude of Coal & Legacy Gas Deactivations ¹	17% by 2028 57% by 2038	31% by 2028 73% by 2038	46% by 2028 76% by 2038	46% by 2028 76% by 2038
MISO Market Additions Renewables / Gas Mix	34% / 66%	25% / 75%	50% / 50% ²	50%/50% ²
CO ₂ Price Forecast	Medium	Low	High	High (start 2022)

1. "Magnitude of Coal & Legacy Gas Deactivation" driven by "Market Coal and Legacy Gas deactivation" assumptions (e.g. 55 Years; 31%/73%) for BP19
2. Includes storage to support market LMPs

ENO Proposed Planning Strategies--Assumptions

	Strategy 1 ¹	Strategy 2 ²	Strategy 3 ³
Objective	Least Cost Planning	0.2/2% DSM Goal	Renewables, Storage & DSM Alternatives
Capacity Portfolio Criteria and Constraints	Meet 12% Long-term Planning Reserve Margin (PRM) target using least-cost resource portfolio	Include a portfolio of DSM programs that meet the Council's stated 2% goal	Meet peak load need + 12% PRM target using DSM, solar, and battery resources
Description	Assess demand- and supply-side alternatives to meet projected capacity needs with a focus on total relevant supply costs	Assess portfolio of DSM programs that meet Council's stated 0.2/2% goal along with consideration of additional supply-side alternatives	Assess demand- and supply-side alternatives to meet projected capacity needs with a focus on adding solar and batteries
DSM Input Case	Navigant Base	Navigant 2%	To be discussed

1 Least Cost Strategy – required by IRP Rules Sec. 7(D)1

2 Policy Goal Strategy – required by IRP Rules Sec. 7(D)3

3 Proposed Consensus/Reference Strategy – required by IRP Rules Sec. 7(D)2

Intervenor Planning Strategy Notes (11/13/18)

	Council DSM Strategy	Strategies for Consideration	
Portfolio Criteria & Constraints	Optimal DSM Program	Renewables Replacement (ENO Scenario 3)	Distributed/ Resilience Scenario 4 (Stakeholder)
Description	Stakeholders believe ENO must run Optimal plan similar to ENO's proposed "Strategy 2" to get clear picture of the impact of Optimal's program on its own.	Over course of time horizon, all deactivated ENO fossil assets are replaced with renewable energy resources and Demand Side Management.	<p>Priority on significant resources distributed in Orleans Parish, including microgrids/smart grid technology. Intended to build a resilient distribution level system that also provides every day reliable energy services to residents /businesses. Customer sited/owned resources are a priority.</p> <p>This strategy acknowledges and attempts to capture ENO's "smart cities" and grid modernization upgrades described in Council Dockets UD-18-01 and UD-18-07</p>
DSM input	Optimal Program level DSM	Optimal Program level DSM	Optimal Program Level DSM + higher DR (per AEMA letter)

Intervenors did not find firm consensus, on a "stakeholder strategy" considering a lack of clarity on ENO's strategy inputs, including DSM input. Many Intervenors are interested in the strategies above, but are unsure how the priorities are developed as inputs for Aurora modeling.

Section 2
DSM Potential Study Results
(Separate Deck for Navigant Presentation)

Section 3
Scorecard Metrics
(Separate Excel File with Draft Scorecard Format)

Section 4

Timeline and Next Steps

Current Timeline

Description	Target Date	Status
Public Meeting #1- Process Overview	September 2017	✓
Technical Meeting #1 Material Due	January 2018	✓
Technical Meeting #1	January 2018	✓
Technical Meeting #2 Material Due	August 2018	✓
Technical Meeting #2	September 14, 2018	✓
Technical Meeting #3 Material Due	November 14, 2018	✓
Technical Meeting #3	November 28, 2018	✓
IRP Inputs Finalized	December 7, 2018	-
Optimized Portfolio Results Due	April 8, 2019	-
Technical Meeting #4 Material Due	April 2019	-
Technical Meeting #4	April 2019	-
File IRP Report	July 2019	-
Public Meeting #2 Material Due	July 2019	-
Public Meeting #2 - Present IRP Results	August 2019	-
Public Meeting #3 Material Due	August 2019	-
Technical Meeting #5 Material Due	August 2019	-
Public Meeting #3 - Public Response	September 2019	-
Technical Meeting #5	September 2019	-
Intervenors and Advisors Questions & Comments Due	September 2019	-
ENO Response to Questions and Comments Due	October 2019	-
Advisors File Report	December 2019	-

ENO 2018 IRP
DSM POTENTIAL STUDY

TECHNICAL MEETING #3

NOVEMBER 28, 2018



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POTENTIAL STUDY OBJECTIVES

- Provide transparent approach, assumptions, and results
- Provide information on EE and DR market adoption based on level of programmatic spend, payback acceptance, and marketing efforts
- Provide estimates of EE and DR potential
- Provide information to be used for:
 - ENO's IRP analysis
 - Assessing long-term energy conservation goals & targets
 - Considering modifications to existing programs and establishing new energy efficiency and conservation programs or initiatives, including behavior-based programs

OUTLINE

- Potential Study Results
 - Energy Efficiency
 - Demand Response
- Benchmark Review
- Discussion
- Appendix: Methods and Approach

OUTLINE

- Results Summary
 - EE Potential
 - DR Potential
- Benchmark Review
- Discussion
- Appendix: Methods and Approach

EE POTENTIAL – CASES

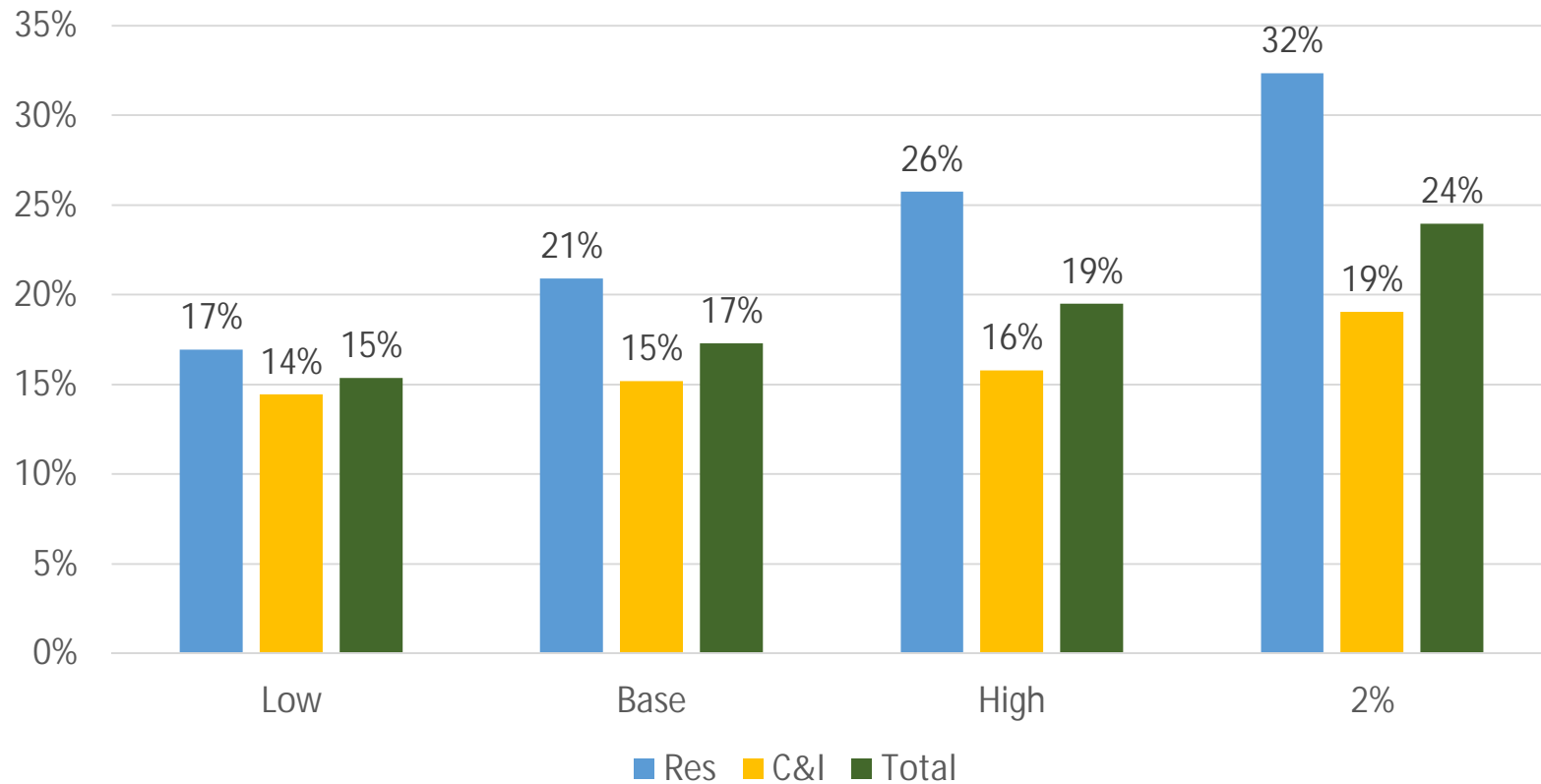
- **Base case:** Reflects current program spend targets with incentives on average at 50% of incremental measure cost (IMC)
- **Low case:** Uses the same inputs as the base case except incentives are at 25% of IMC
- **High case:** Uses the same inputs as the base case except incentives are at 75% of IMC
- **2% case:** Achieve a 2% reduction during the forecast period with a 0.2% ramp year over year starting in the first modeled year (2018). The following model parameters were modified for this case:
 - Increased marketing factor through 2021
 - Increased incentive percent of incremental measure cost from 50% in 2018 then ramping up to 100% in 2024 (and maintaining 100% in remaining years)
 - Ramped down TRC Ratio threshold from 1.0 in 2018 to 0.87 in 2022 and remaining years

EE POTENTIAL – INCREMENTAL ENERGY SAVINGS AS % OF SALES

Year	Base	Low	High	2%
2018	0.8%	0.7%	0.9%	0.8%
2019	0.8%	0.7%	0.9%	1.0%
2020	0.8%	0.7%	0.9%	1.2%
2021	0.9%	0.8%	1.0%	1.4%
2022	0.9%	0.8%	1.0%	1.6%
2023	0.9%	0.8%	1.0%	1.8%
2024	0.9%	0.8%	1.1%	2.0%
2025	1.0%	0.8%	1.1%	2.0%
2026	1.0%	0.8%	1.1%	2.0%
2027	1.0%	0.9%	1.1%	1.9%
2028	1.0%	0.9%	1.2%	1.6%
2029	1.0%	0.9%	1.1%	1.4%
2030	1.0%	0.9%	1.2%	1.2%
2031	1.0%	0.8%	1.1%	1.0%
2032	0.9%	0.8%	1.0%	0.8%
2033	0.8%	0.8%	0.9%	0.7%
2034	0.8%	0.7%	0.8%	0.5%
2035	0.7%	0.7%	0.8%	0.4%
2036	0.7%	0.6%	0.7%	0.4%
2037	0.6%	0.6%	0.6%	0.3%
Total	17.3%	15.3%	19.5%	24.0%
Average	0.87%	0.77%	0.98%	1.2%

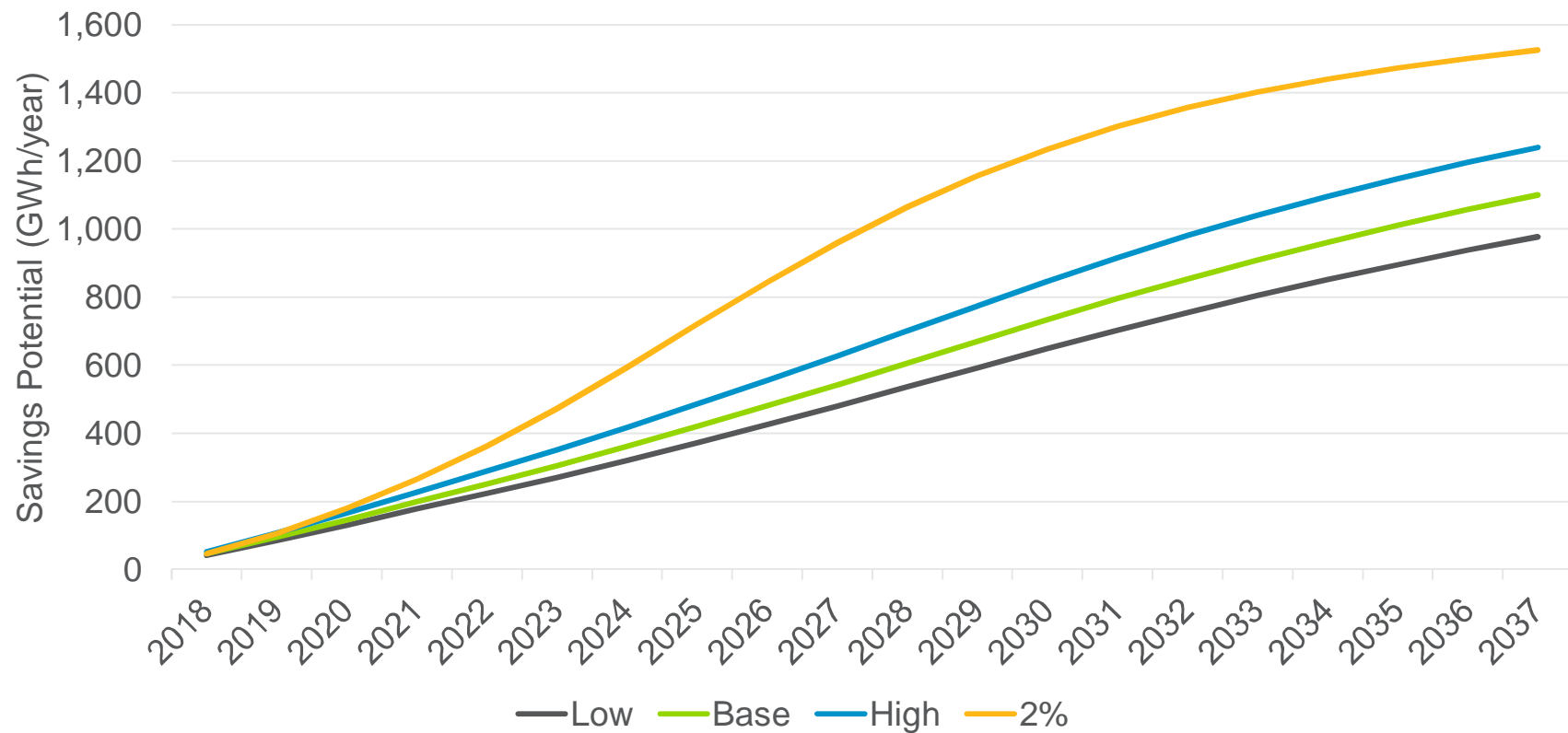
- Model forecasts that 2% is achieved in years 2024-2026
- Average yearly savings over the time horizon ranges from 0.77% in the low case to 1.2% in the 2% case
- In future years, 2% case falls below base case when most of the measures are adopted, depleting the remaining pipeline

EE POTENTIAL – CUMULATIVE POTENTIAL SAVINGS RELATIVE TO SALES FORECAST, 2037

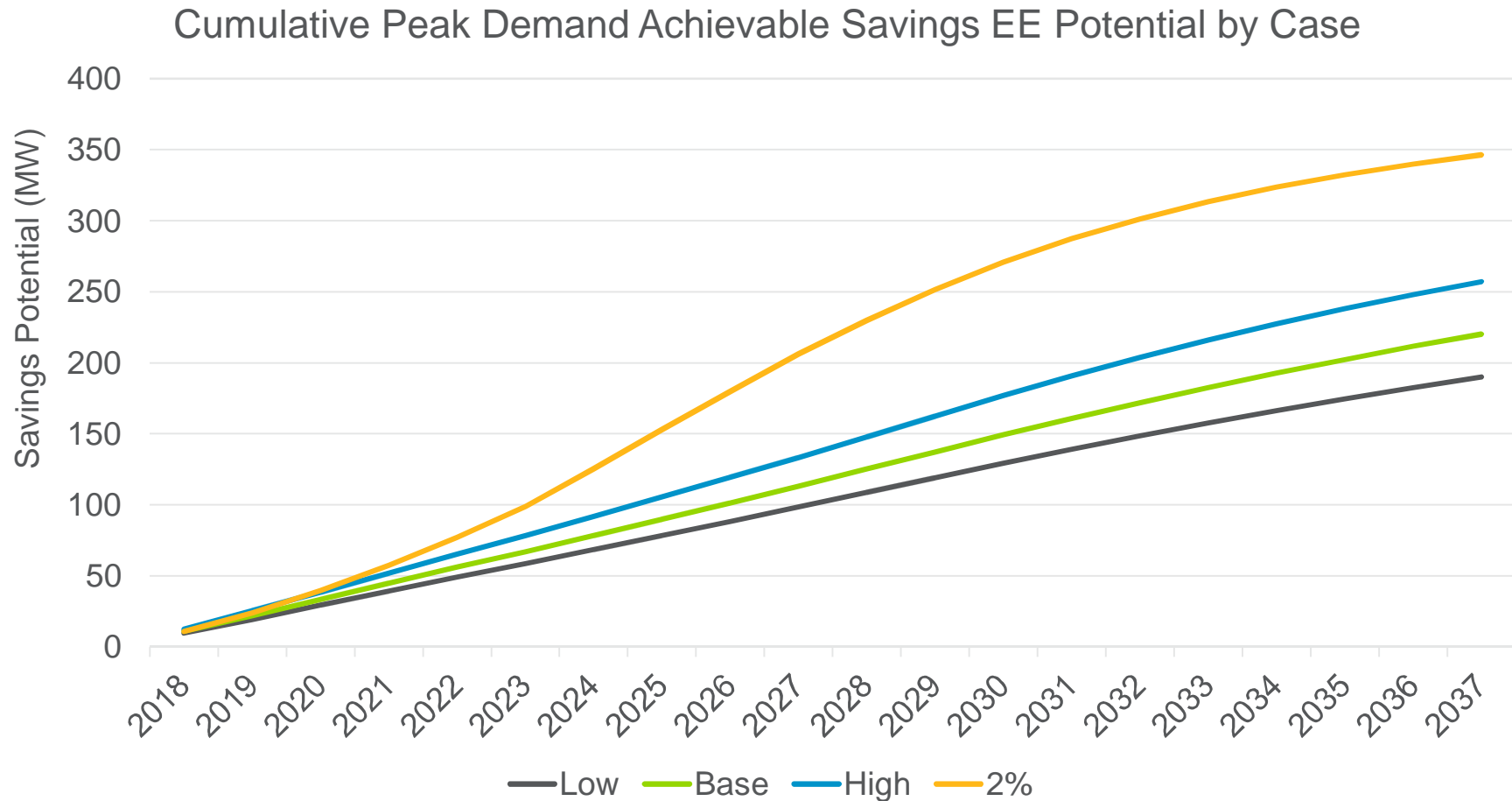


EE POTENTIAL – ENERGY SAVINGS OVER TIME

Cumulative Energy Achievable Savings EE Potential by Case

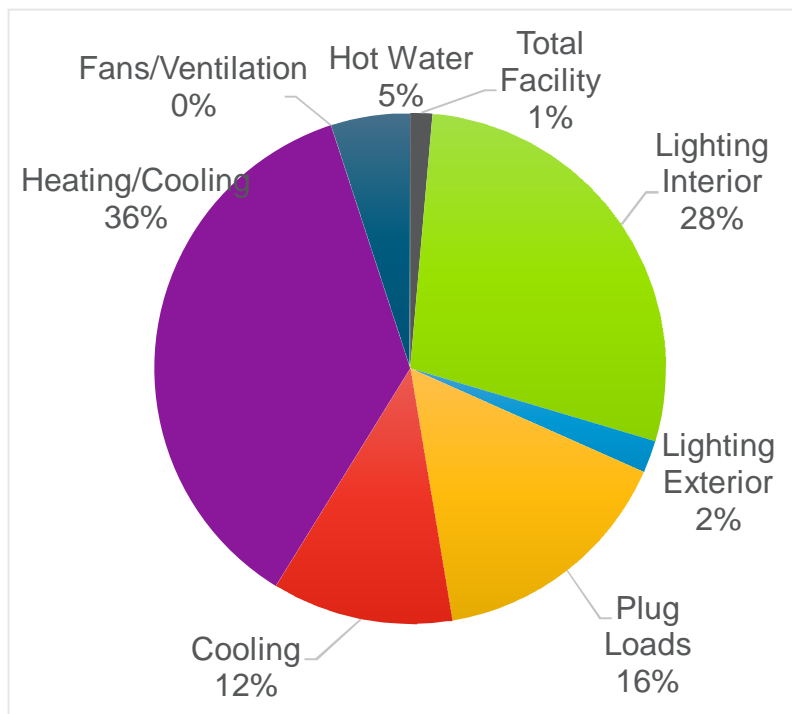


EE POTENTIAL – DEMAND SAVINGS OVER TIME

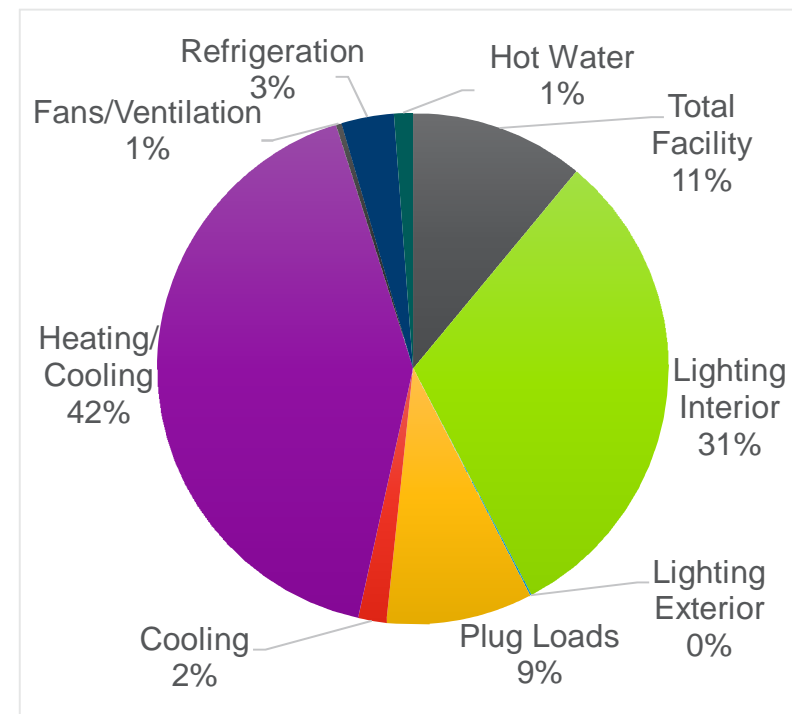


EE POTENTIAL – SAVINGS BY SECTOR AND END-USE

Residential Electric Energy Achievable Potential End-Use Breakdown (%, GWh)



C&I Electric Energy Achievable Potential End-Use Breakdown (%, GWh)



EE POTENTIAL – SAVINGS BY MEASURE, 2037

Residential Measures	% of Total Savings	C&I Measure	% Total Savings
Central AC Tune-Up	14%	Retro commissioning	15%
Duct Sealing	11%	Interior 4 ft LED	13%
Ceiling Insulation	10%	AC/HP Equipment	8%
Wall Insulation	10%	AC and Heat Pump Tune-Up	8%
New Refrigerator	8%	LED Fixture - Interior	6%
Omni-Directional LEDs	8%	Smart Thermostats	6%
Ductless Heat Pump	7%	Controls Occ Sensor	6%
ENERGY STAR Directional LEDs	4%	Building Automation System	4%
Window Film	3%	Interior LED High Bay	4%
Fridge & Freezer Removal	3%	Fan and Pump Optimization	3%
High Efficiency Windows	3%	Window Film	3%
Advanced Power Strips	3%	Demand Control Ventilation	3%
		LED Screw-in Interior	3%

These measures make up 80% of the total savings for each sector

EE POTENTIAL – PROGRAM COSTS AND TRC COMPARISON

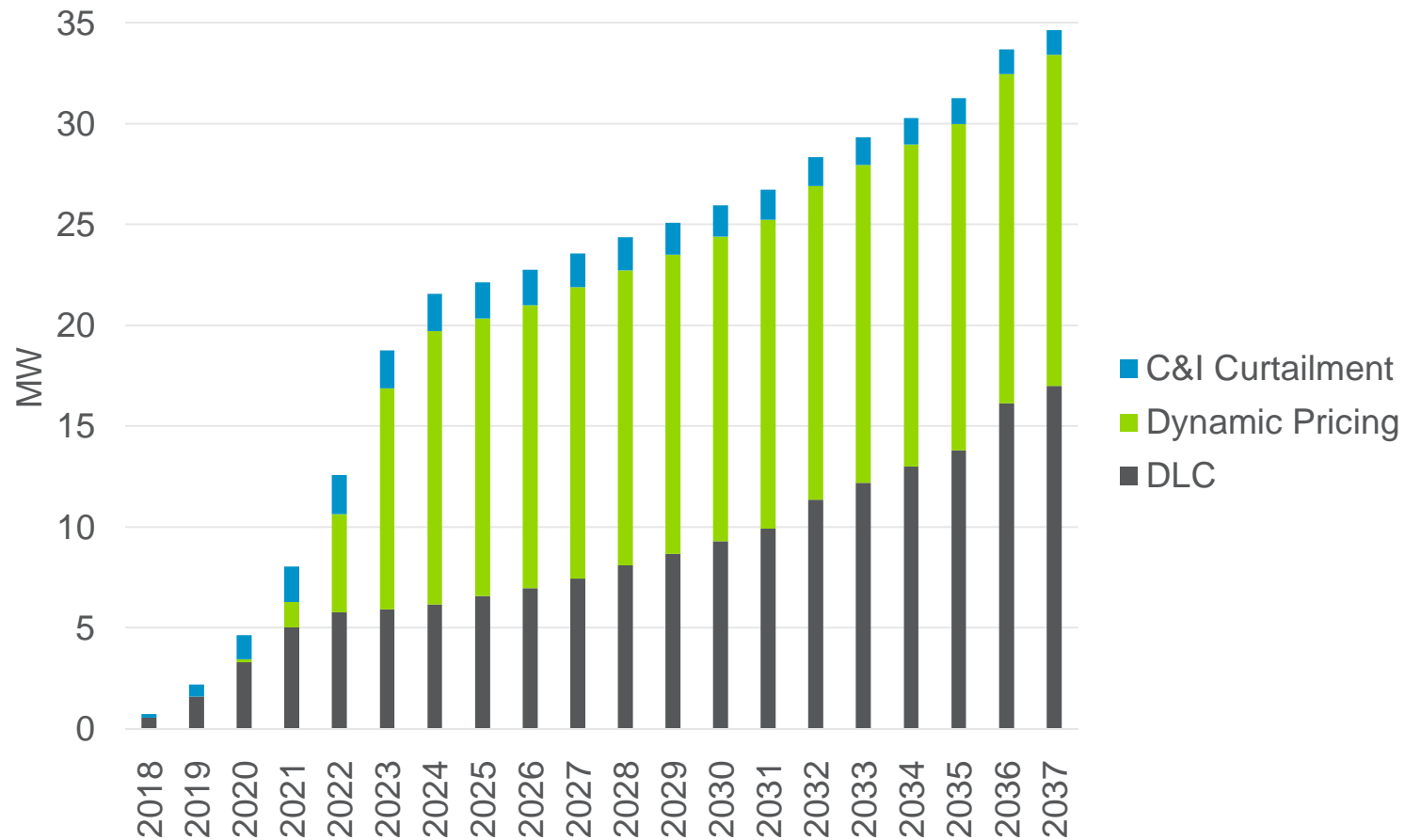
	Navigant		Optimal	
	Base	2%	Program	Max Achievable
Total (\$Millions)	\$389	\$960	\$434	\$864
TRC	1.7	1.4	3.2	3.0

DR POTENTIAL – PROGRAM TYPES INCLUDED IN THE ANALYSIS

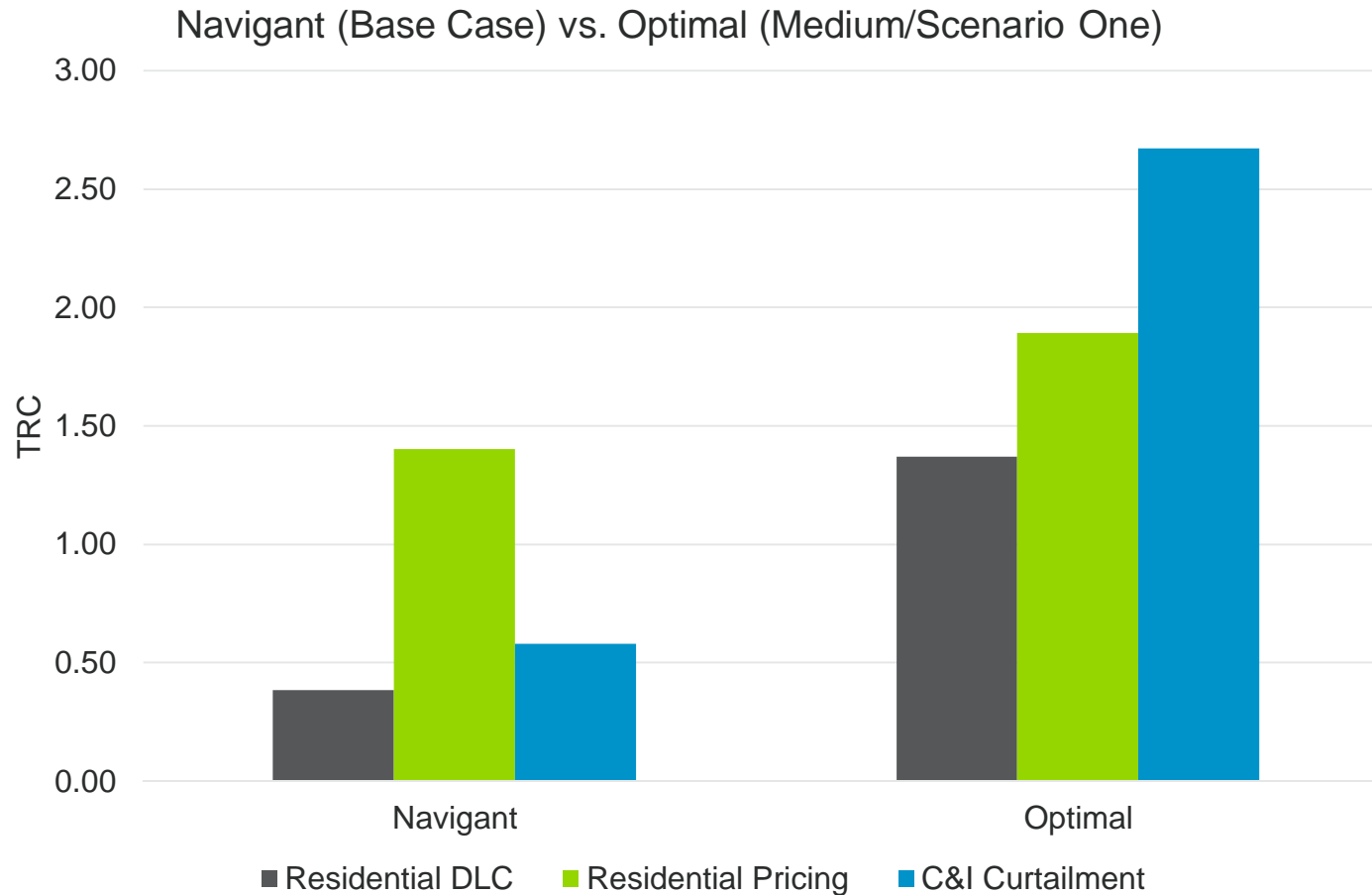
DR Option	Characteristics	Eligible Customer Classes	Targeted/Controllable End Uses and/or Technologies
DLC ✓ Load control switch ✓ Thermostat	Control of water heating/cooling load using either a load control switch or PCT	Residential Small C&I	Cooling, water heating
C&I curtailment ✓ Manual ✓ Auto-DR enabled	Firm capacity reduction commitment \$/kW payment based on contracted capacity plus \$/kWh payment based on energy reduction during an event	Large C&I	Various load types including HVAC, lighting, refrigeration, and industrial process loads
Dynamic pricing* ✓ Without enabling technology ✓ With enabling technology	Voluntary opt-in dynamic pricing offer, such as CPP	All customer classes	All

*Navigant did not include TOU rates in the DR options mix because this study only includes event-based dispatchable DR options. TOU rates lead to a permanent reduction in the baseline load and are not considered a DR option.

DR POTENTIAL – PEAK REDUCTIONS OVER TIME



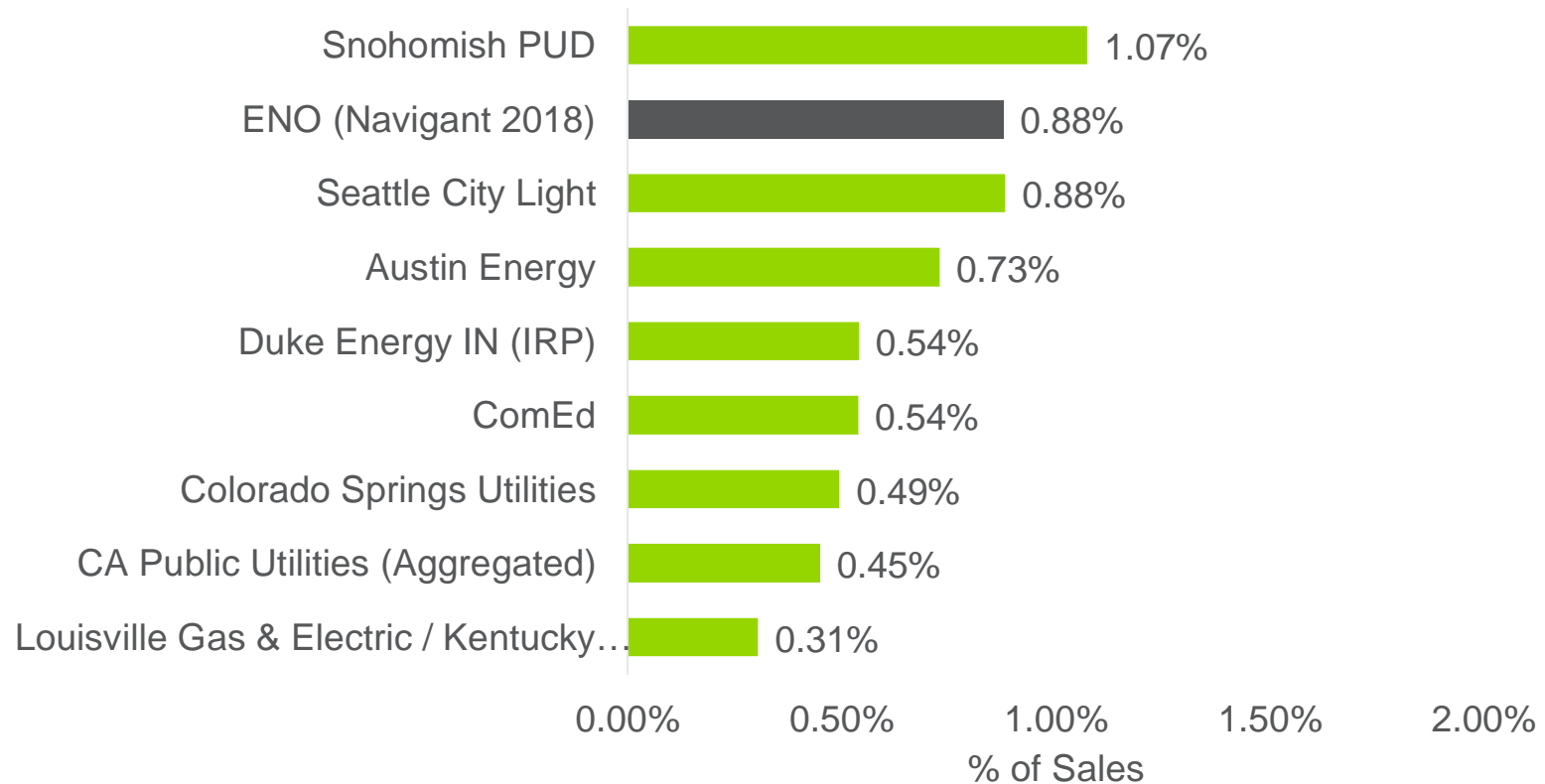
DR POTENTIAL – TRC SUMMARY COMPARISON



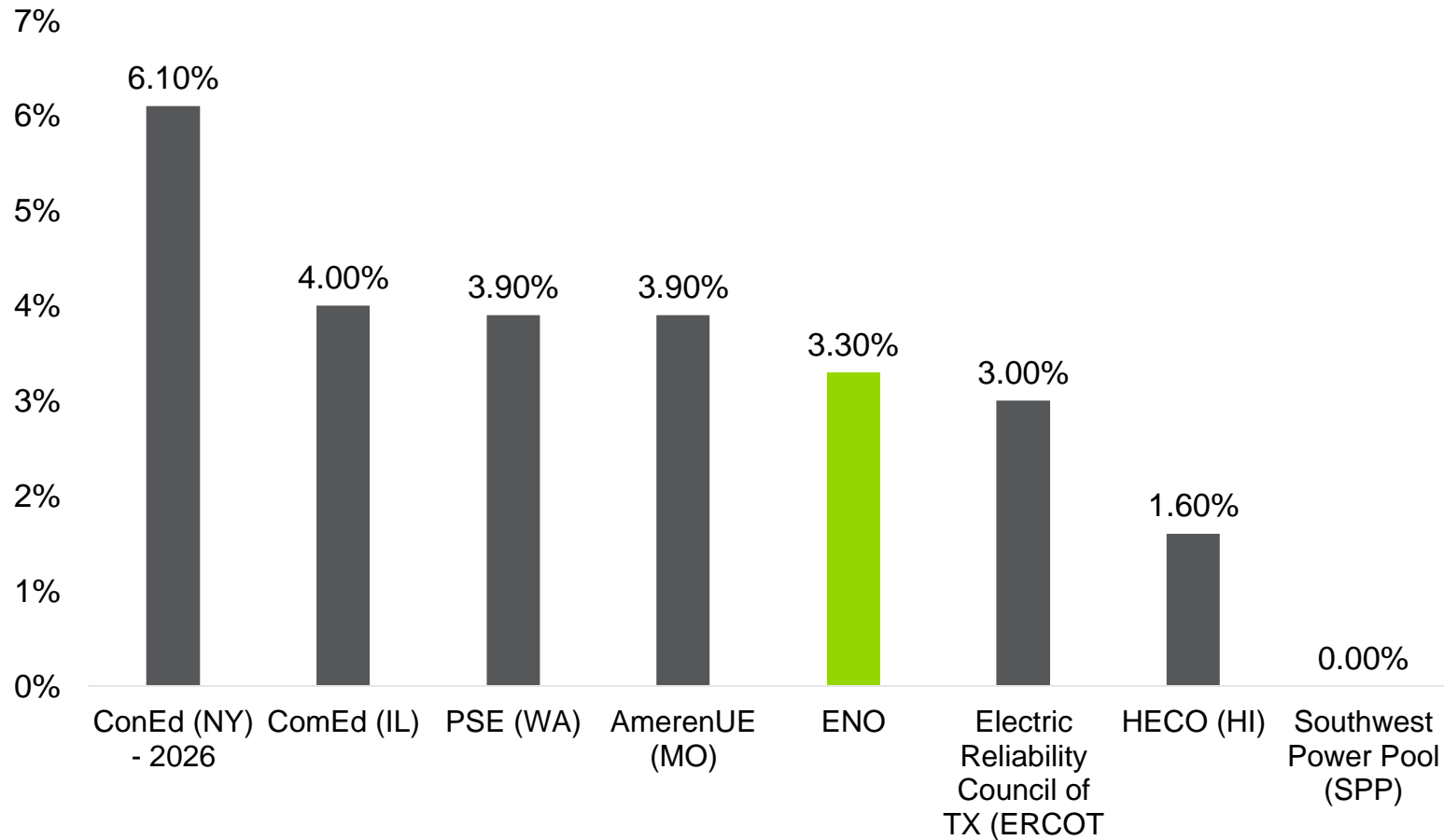
OUTLINE

- Results Summary
 - EE Potential
 - DR Potential
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- Appendix: Methods and Approach

BENCHMARKING – AVERAGE YEARLY EE POTENTIAL SAVINGS RELATIVE TO BASE CONSUMPTION



BENCHMARKING – PEAK DR POTENTIAL SAVINGS RELATIVE TO BASE PEAK DEMAND



OUTLINE

- Results Summary
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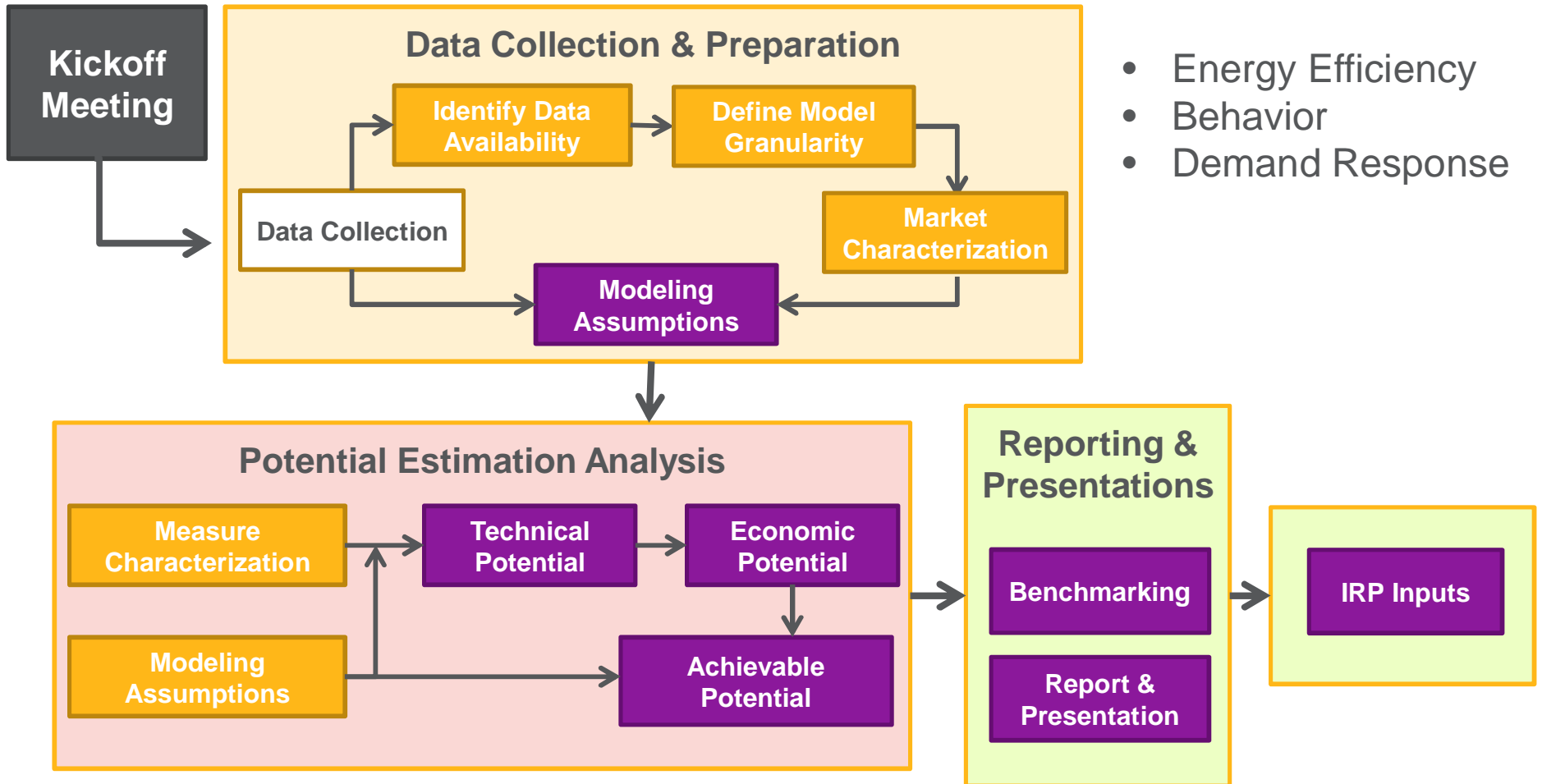
navigant.com

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OUTLINE

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METHODOLOGY OVERVIEW



DATA AND MODEL FLOW

Types of Data Inputs

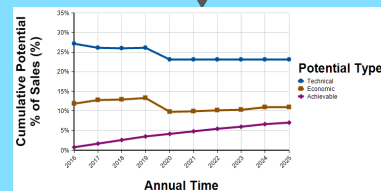
ENO Primary Data Sources:

- Customer characteristics
- Historical loads
- Load forecasts
- New Orleans TRM
- Past program accomplishments
- EM&V study results
- Avoided cost
- Past ENO studies

Secondary Data Sources:

- Equipment stocks
- Floor area estimates
- Additional measure savings and costs

Resource Potential Analysis Tools



Outputs

Types of Potential:
Technical
Economic
Achievable (4 strategies)

Represented by:
ENO Service Territory
Fuel (Electric)
Sector (Res, C&I)
End-Use (Cooling, Lighting, etc.)
Years (2018-2037)

Units
Electric Energy Impact (GWh)
Peak Demand Impact (MW)

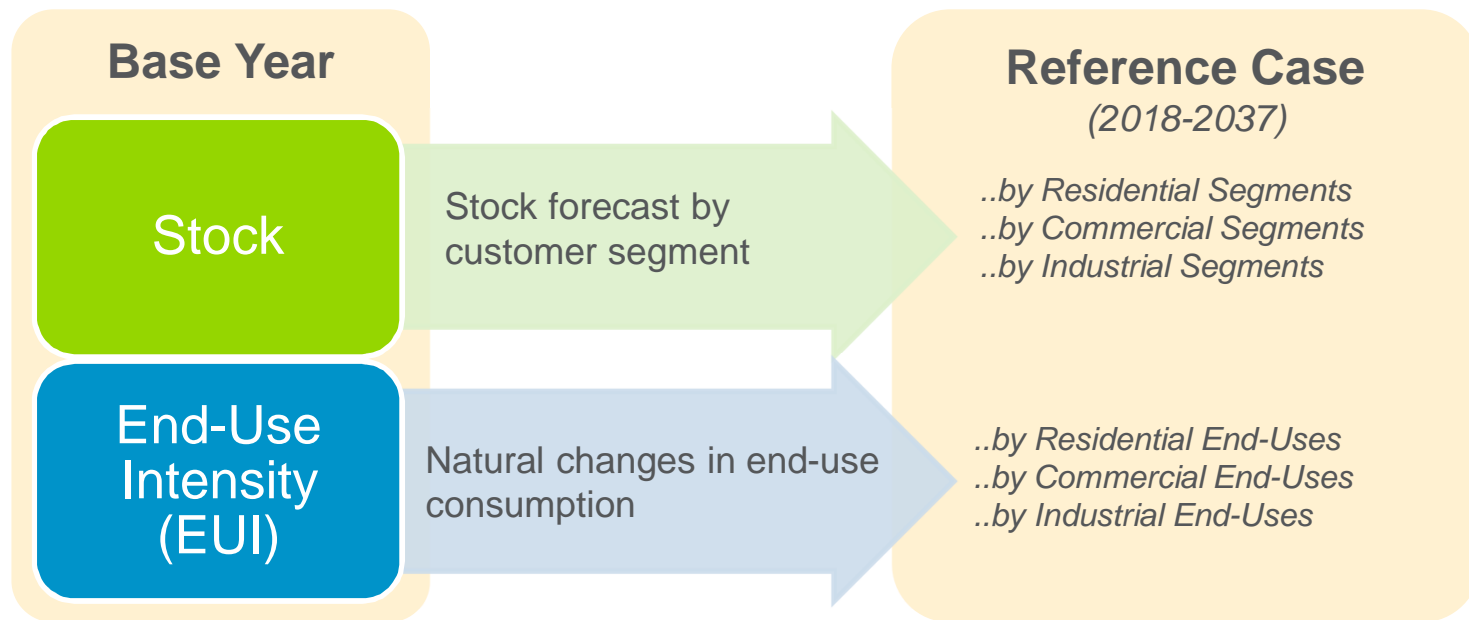
Load Shapes
8760 hourly shapes (for input into ENO's IRP models)

MARKET CHARACTERIZATION

BASE YEAR & REFERENCE CASE ANALYSIS

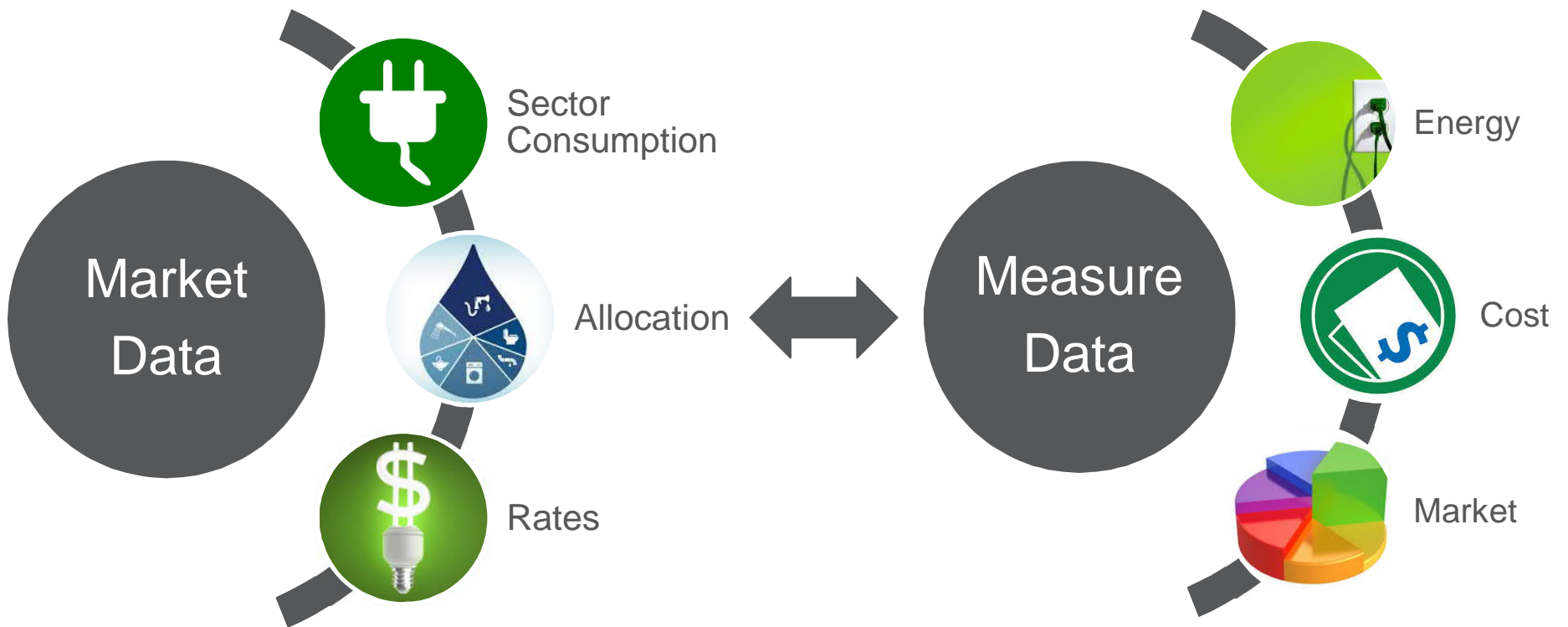
The **base year** analysis is the starting point of the study and represents a profile of energy consumption by ENO's customers

- Base year energy consumption is disaggregated by customer sector, segment, and end-use category, based on data availability
- The base year acts as the foundation to develop a forecast of energy consumption, or **reference case**, which provides the “baseline” for estimating future savings



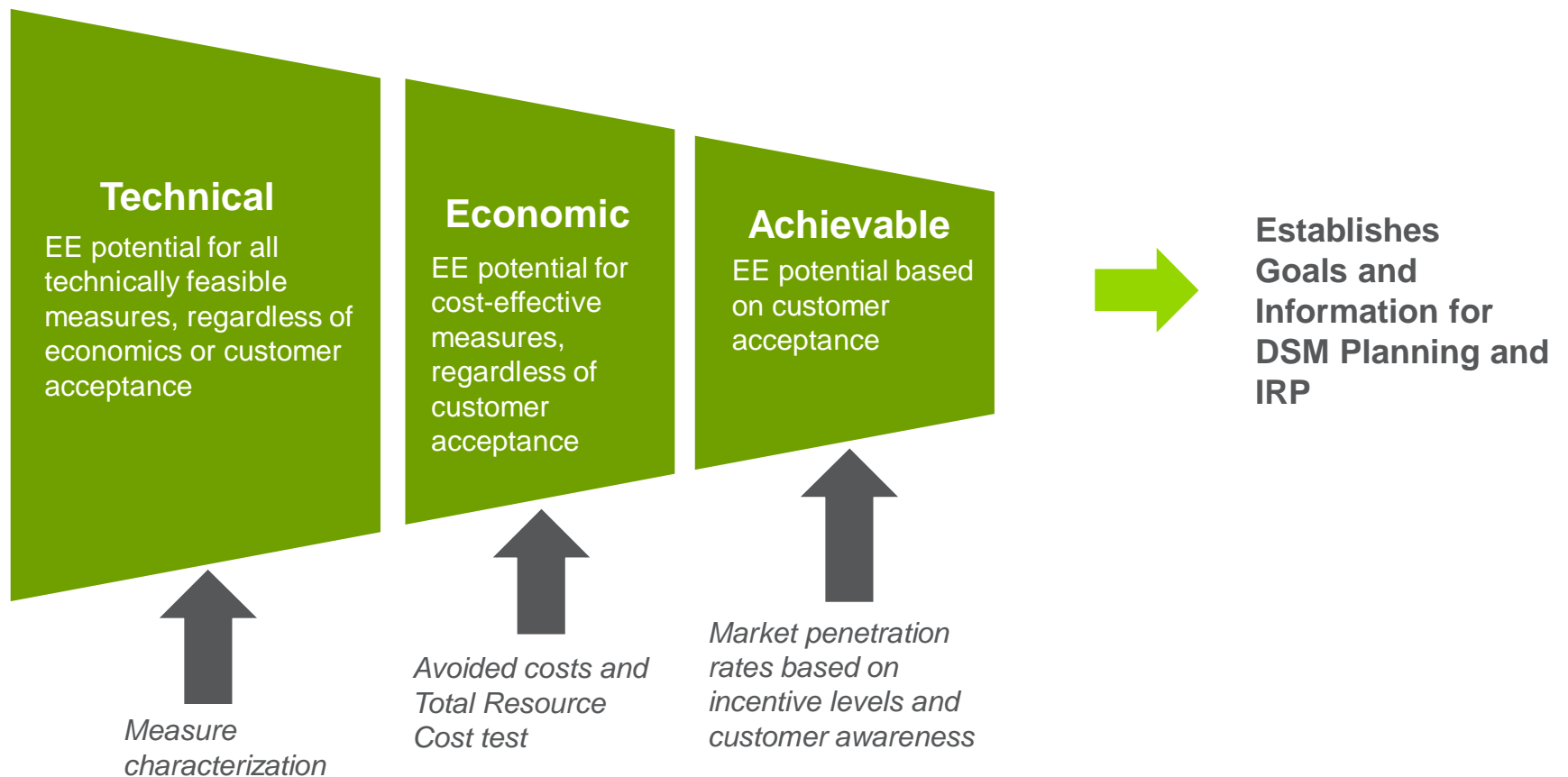
MEASURE CHARACTERIZATION

LINK BETWEEN MARKET AND MEASURE CHARACTERIZATION



ANALYZE TECHNICAL, ECONOMIC & ACHIEVABLE POTENTIAL

Assesses potential energy and demand savings that could ultimately be realized through ENO's energy efficiency programs



Scoring Criteria	Scoring Weight	Scoring Parameters / Descriptions			
		1	4	7	10
Cost and Risk	50.0%				
Expected Value (Average Cost Across Futures)	20.0%	≤ 2.50	2.51 - 5.00	5.01 - 7.50	> 7.50
Downside Risk (Maximum Cost - Expected Cost)	15.0%	≤ 2.50	2.51 - 5.00	5.01 - 7.50	> 7.50
Upside Potential (Expected Value - Lowest Cost)	15.0%	≤ 2.50	2.51 - 5.00	5.01 - 7.50	> 7.50
Operational Flexibility	20.0%				
Flexible Resources (MW of Ramp)	6.7%	≤ 2.50	2.51 - 5.00	5.01 - 7.50	> 7.50
Quick-Start Resources (MW of Quick-Start) ¹	6.7%	≤ 2.50	2.51 - 5.00	5.01 - 7.50	> 7.50
UCAP/ICAP Ratio (UCAP/ICAP)	6.7%	≤ 2.50	2.51 - 5.00	5.01 - 7.50	> 7.50
Environmental Impact	20.0%				
CO2 Intensity (Tons CO2/GWh)	10.0%	≤ 2.50	2.51 - 5.00	5.01 - 7.50	> 7.50
Groundwater Usage (% of Portfolios with Groundwater Usage)	10.0%	< 33%	> 33%	>66%	= 100%
Policy Goals/Sustainability	5.0%				
100% Low Carbon (% of Carbon Free Energy from New Resource)	1.7%	< 33%	> 33%	>66%	= 100%
255 MW Solar Added (Total Solar MW in Portfolio)	1.7%	< 150 MW	> 200MW	>225 MW	≥ 255 MW
3.3% Annual Energy Savings (CAGR over 20 Years)	1.7%	< 1.0%	> 1.0%	>2.0%	≥ 3.3%
Economic Impact	5.0%				
Macroeconomic Factor (To be developed)	5.0%	≤ 2.50	2.51 - 5.00	5.01 - 7.50	> 7.50

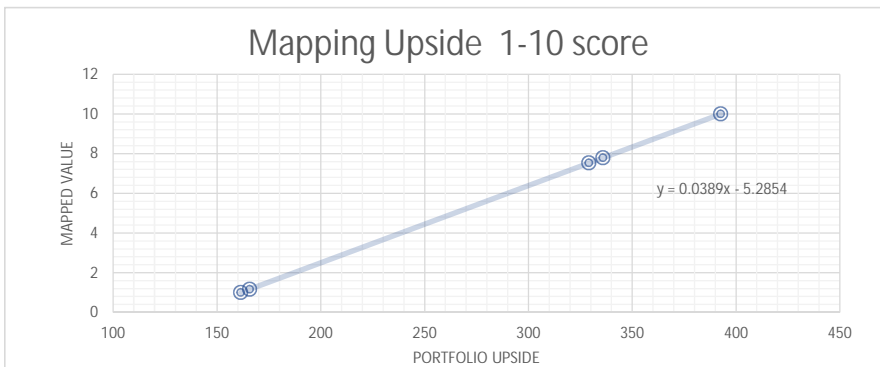
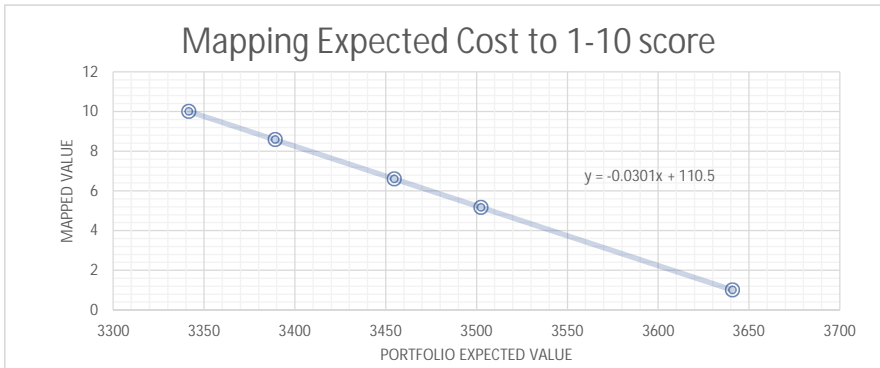
Notes:

1. Quick-Start includes supply and demand side dispatchable
2. Non emitting includes EE

Illustrative Values – For Discussion Purposes Only

Total Cost Data

\$B	S1	S2	S3	S4	EV	Down	Up
P1	3176	3379	3620	3192	3,342	278	166
P2	3516	3060	3892	3089	3,389	503	329
P3	3305	3971	3516	3772	3,641	330	336
P4	3551	3439	3679	3341	3,503	177	162
P5	3593	3062	3457	3707	3,455	252	393
Max					3,641	503	393
Min					3,342	177	162
Slope							
int							



Mapped Scoring

EV Score	Downside score	Upside score
10.0	7.2	1.2
8.6	1.0	7.5
1.0	5.8	7.8
5.2	10.0	1.0
6.6	7.9	10.0
1	1	10
10	10	1
-0.03	-0.03	0.04
111	15	-5

Portfolio Value

	EV	Downside	Upside	Score	Ranks
P1	10	7	1	3.2	3
P2	10	1	7	3.2	2
P3	1	7	10	2.8	5
P4	7	10	1	3.1	4
P5	7	10	10	4.4	1
Weight	20%	15%	15%		