Entergy

Entergy Services, Inc.
639 Loyola Avenue 70113-3125
P.O. Box 61000
New Orleans, LA 70161-1000
Tel 504 576 6571
Fax 504 576 5579

Timothy S. Cragin
Assistant General Counsel
Legal Services - Regulatory

March 3, 2015

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

Re: *In Re*: Examination of Opportunities for and Effects of Consumer-Based Renewable Technologies in the City Of New Orleans
(Docket No. UD-13-02)

Dear Ms. Johnson:

Enclosed please find an original and three copies of Entergy New Orleans, Inc.'s and Entergy Louisiana, LLC's Initial Report and Comments 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.

Thank you for your assistance with this matter.

Sincerely,

Timothy S. Cragin

TSC:jsw
Enclosures

cc: Official Service List UD-13-02 *(via electronic mail)*

BEFORE THE

COUNCIL OF THE CITY OF NEW ORLEANS

IN RE: EXAMINATION OF OPPORTUNITIES FOR AND EFFECTS OF CONSUMER-BASED RENEWABLE TECHNOLOGIES IN THE CITY OF NEW ORLEANS	)))))	**DOCKET NO. UD-13-02**

ENTERGY NEW ORLEANS, INC.'S AND ENTERGY LOUISIANA, LLC'S INITIAL REPORT AND COMMENTS

Entergy New Orleans, Inc. ("ENO") and Entergy Louisiana, LLC[1] ("ELL") with respect to the Council of the City of New Orleans' ("Council") jurisdictional service area of ELL in the Fifteenth Ward of the City of New Orleans (commonly known as "Algiers") (ENO and ELL are collectively referred to as the "Companies"), respectfully submit their initial report and comments ("Initial Report") in response to Paragraph 4 of Council Resolution R-14-364, adopted on September 4, 2014, which states:

> Issues of costs and benefits related to all other renewable technologies, including but not limited to, consumer-installed renewable distributed generation resources and associated rate impact and rate design issues such as (but not limited to) net metering and feed-in tariffs shall be considered in Council Docket UD-13-02. The Companies are directed, within 180 days from the adoption of this Resolution, to make a filing in Docket UD-13-02 with the Council explaining in detail the Companies' current treatment of such resources, the physical and rate impacts such resources have on the Entergy System and ratepayers, and any proposed changes to the treatment of such resources, along with an analysis of the impact of such proposed changes. After such a filing has been made, the

[1] Currently, New Orleans electric customers on the east bank of the Mississippi River are served by Entergy New Orleans, Inc. ("ENO"), whereas New Orleans electric customers on the west bank of the Mississippi River who live in Algiers take electric service from Entergy Louisiana, LLC ("ELL"). ENO and ELL have filed an application with the Council seeking approval of a transaction whereby specified ELL assets located in Algiers would be transferred to ENO and Algiers electric customers would be served by ENO rather than ELL (the "Algiers Transaction"). Council Docket No. UD-14-02. The Algiers Transaction is designed to realize regulatory and corporate alignment benefits by consolidating electric service in New Orleans in a single utility under the oversight of a single retail regulator, the Council, in place of the current division of service between ENO and ELL.

Companies, Advisors, and Intervenors will work collaboratively to develop a procedural schedule to address that filing.

Given the extensive material presented in this Initial Report, the Companies begin by providing an Executive Summary. The remainder of the report includes the following sections: background information, a discussion of net energy metering ("NEM") policy and billing, growth of NEM in New Orleans, solar photovoltaic ("PV") adoption drivers, utility rate design and the potential for cost shifting to occur, potential options to address cost shifting under NEM, and the Companies' general recommendations for consideration by the Council Advisors, other stakeholders, and the Council.

1.0 Executive Summary

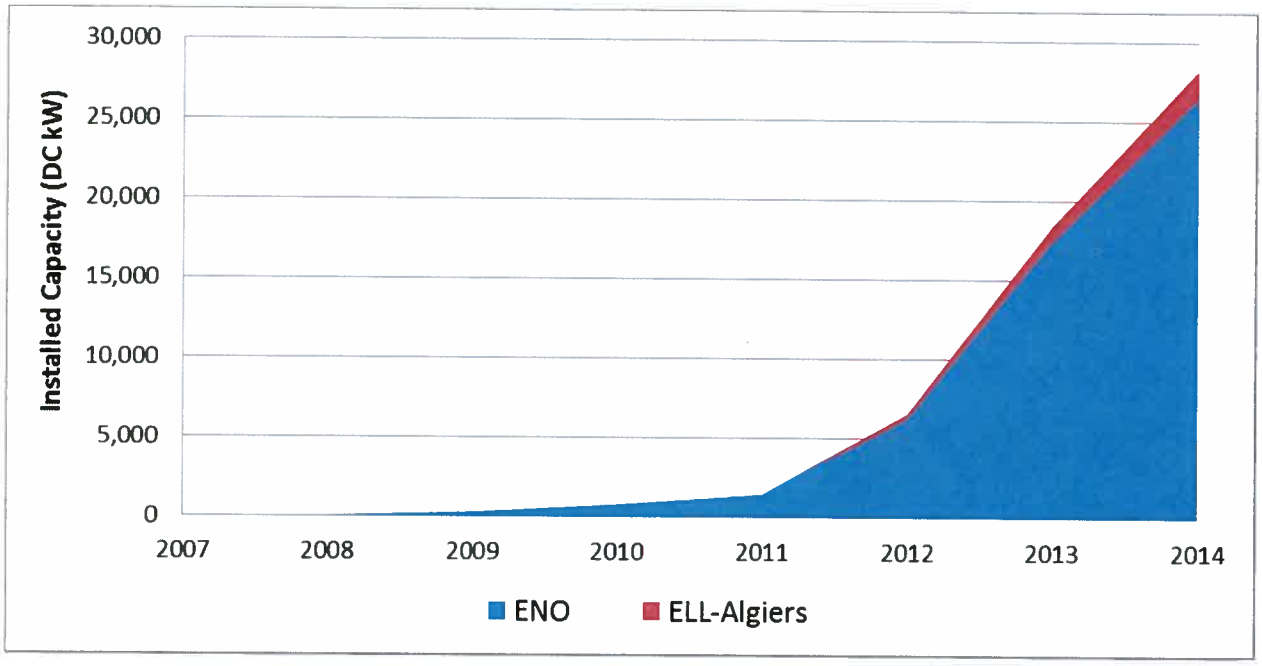
Consistent with federal and state law, the Companies fundamentally support an individual customer's choice, as well as legal right, to install self-generation equipment (regardless of generation technology) and to be treated on a non-discriminatory basis with respect to grid interconnection. Since the late 1970s, federal, state, and local policymakers have developed and implemented a number of different rules, initiatives, and incentive mechanisms to foster greater adoption of certain generation technologies, particularly ones that use renewable resources like the sun, wind, and other natural forces to produce electricity.

One of those state and locally-implemented incentive mechanisms, NEM billing, relies upon traditional utility rate design, a long-standing method that primarily utilizes volumetric (¢/kWh) charges to recover a utility's (typically fixed) infrastructure and operating costs (excluding fuel). Under NEM billing, a customer with self-generation that is net metered is able to produce electricity "behind the meter" for their own consumption, but also use the grid as a "free battery" during hours in which the output from the net metered customer's generator

exceeds the customer's load (*i.e.*, the customer is physically putting electricity back onto the grid). The use of the utility grid as a free battery comes in the form of the net metered customer being able to use that "stored" electricity later in the day (*e.g.*, at night) when their solar PV system is not producing electricity yet the customer still has electric load.

While NEM billing is available for a number of different qualifying renewable energy-producing technologies, the reality in New Orleans (and across most the U.S. for that matter) is that every NEM installation involves a solar PV system that converts sunlight to direct current ("DC") electricity that is further converted to alternating current ("AC") electricity using an inverter. The recent growth of solar PV in the U.S. over the past few years is remarkable and even more so in the New Orleans metropolitan area when compared to the size of ENO and ELL-Algiers. The following chart shows the rapid growth of rooftop solar PV that is net metered in New Orleans since the Council's NEM policy was adopted.

Figure 1: Growth of Rooftop Solar PV Capacity in New Orleans.



There are a number of different adoption drivers for solar PV including rapidly falling equipment and installation costs, regulatory policies such as NEM billing, availability of generous federal and state tax credits and related policies, and new business models such as third-party ownership leasing. From a penetration perspective, ENO and ELL-Algiers are among the leaders in the U.S. when comparing on a basis such as the percentage of homes with rooftop solar PV systems that are net metered.

There are various benefits that arise from greater adoption of customer-owned rooftop solar PV systems. Such benefits can include avoided energy costs (fuel and purchased power), avoided generation capacity costs,[2] and avoided pollution and CO_2 emissions from conventional fossil fuel generation sources.[3] There are also potential distribution system impacts that may occur with higher penetration levels of NEM systems in New Orleans. The Companies have thus far not identified any negative reliability impacts on circuits with higher NEM penetration levels although they continue to monitor high penetration circuits. In order to better understand potential impacts in downtown network grids, the Companies worked with an LSU research team from the Department of Electrical and Computer Engineering. The result of that effort was a report issued by LSU team in December 2013 that described modeling that was performed to evaluate various protection schemes that could be employed in downtown network grids with intermittent renewable resources such as rooftop solar.

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[2] There continues to be debate as to what level of generation capacity costs are able to be offset. Based on research that ENO conducted with the National Renewable Energy Lab ("NREL") and other stakeholders, it appears that solar PV in New Orleans would receive an approximate 25 - 30% credit towards meeting utility peak load; in other words, maximum solar PV output occurs around noon when the sun is at its zenith with ENO and ELL-Algiers typically peaking in the 4 – 7 p.m. timeframe when solar PV output is much lower relative to its nameplate capacity.

[3] While avoided CO_2 emissions is clearly a benefit resulting from increased solar PV adoption, it should be emphasized that there is still no federal or state policy that explicitly values avoided CO_2 emissions.

Setting aside potential benefits and reliability concerns, the installation of net metered solar PV systems when overlaid upon traditional utility rate design that emphasizes volumetric (¢/kWh) charges to recover a utility's (typically fixed) costs poses a serious and growing concern. Namely, that utility infrastructure and other related costs are being unfairly shifted to non-net metered customers. This occurs because a net metered customer is able to lower their monthly utility bill (often substantially), yet the fixed utility infrastructure and operating costs involved with serving that net metered customer do not disappear. Instead, those fixed costs are ultimately shifted to non-net-metered customers in the form of higher rates. This stands in direct contrast to the treatment afforded to customer-owned generators that do not qualify for NEM and instead are required by federal law to be compensated for energy they deliver to the grid at the utility's avoided cost. There are two other forms of cost shifting that are important to note and are addressed further below, but are less significant than the shifting of cost that results from current rate design. Namely, the Companies currently charge $50 and $75 upfront for a residential and commercial net meter installation, respectively, whereas the actual costs associated with installing a new net meter are higher. Additionally, the Companies over time have had to add staff largely dedicated to managing net metering applications and ensuring timely installations of appropriate metering. However, these added administrative costs have been and continue to be borne by all of the Companies' customers as opposed to only those customers that request net metering. Given that the number of net metering installations continues to grow significantly and that there are possible upcoming changes to state and federal tax policies that could affect future installation levels, the Companies have not yet performed a detailed analysis to estimate the level of cost shifting that will occur over the 25-yr plus lifetime that these net metered installations will be in place.

In a nutshell, the Council's current NEM rules are economically inefficient in that they incentivize customers to make decisions that do not reflect cost of service principles. The Companies generally support cost-based rates and continue to be concerned that the Companies' non-net-metered customers are being financially harmed by the continued proliferation of self-generation that benefits from the current NEM billing regime.

The Companies further believe that it would be appropriate at this time for the Council to consider adopting one or more of the alternatives proposed in this report. The alternatives presented are fair, just, and reasonable to both NEM customers who are being subsidized and to the broader group of current customers without self-generation equipment who are incurring higher costs each year as a result. As for the timing of any changes to the Council's NEM rules, and the applicability of any such changes to existing NEM customers, the Companies are open to a dialogue with the Council, its Advisors, and other stakeholders.

2.0 Background

In the aftermath of Congress passing the Public Utility Regulatory Policies Act ("PURPA") in November 1978, several state utility regulators[4] adopted NEM policies that allowed small, typically renewable, electric generators to "roll over" any energy (kWh) credit to the next billing month, or be paid for the excess energy they produce similar to the treatment afforded to "Qualifying Facilities" or "QFs". By the early 2000s, roughly 22 U.S. states had adopted formal NEM policies including the State of Louisiana.[5] The Energy Policy Act of 2005

[4] Minnesota, Arizona, Idaho, and Massachusetts are credited with adopting such policies between 1980 and 1983.

[5] Louisiana Revised Statute 51:3061 enacted 2003: "The legislature hereby finds and declares that: (1) Net energy metering encourages the use of renewable energy resources and renewable energy technologies. Increasing the consumption of renewable energy resources promotes the wise use of Louisiana's natural energy resources to meet a growing energy demand, increases Louisiana's use of indigenous energy fuels and fosters investment in emerging renewable technologies to stimulate economic development and job creation in the state. (2) Louisiana should actively encourage the manufacture of new technologies through promotion of emerging energy

amended PURPA by adding a federal standard for NEM to be instituted by states and utilities. Specifically, PURPA Section 111(d)(11) states:

> Each electric utility shall make available upon request net metering service to any electric consumer that the electric utility serves. For purposes of this paragraph, the term 'net metering service' means service to an electric consumer under which electric energy generated by that electric consumer from an eligible on-site generating facility and delivered to the local distribution facilities may be used to offset electric energy provide by the electric utility to the electric consumer during the applicable billing period.

The Council first adopted a NEM policy and related rules in May 2007,[6] which were similar to rules adopted by the Louisiana Public Service Commission ("LPSC") in November 2005[7] that have since been amended on several occasions. In general, Council Resolution No. R-07-132 requires the Companies to provide NEM equipment and billing services to customers with self-generation equipment that produce electricity using qualifying technologies and/or fuels (solar, wind, hydro, geothermal, or biomass; fuel cells and microturbines using renewable fuels also qualify). Under current Louisiana law, NEM is available for residential systems up to 25 kilowatts (kW) in capacity, and commercial and agricultural systems up to 300 kW in capacity.[8]

3.0 NEM Billing

NEM is effectively a billing mechanism, although there can be differences between how various regulators handle specific billing mechanics. Under the Council's NEM rules, a customer interested in NEM must execute an application and interconnection agreement to

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technologies. Net energy metering could help to further attract energy technology manufacturers, providing a foothold for these technologies in the Louisiana economy, and easier customer access to these technologies.

[6] Council Resolution No. R-07-132; Resolution Adopting Net Energy Metering Rules for New Orleans.

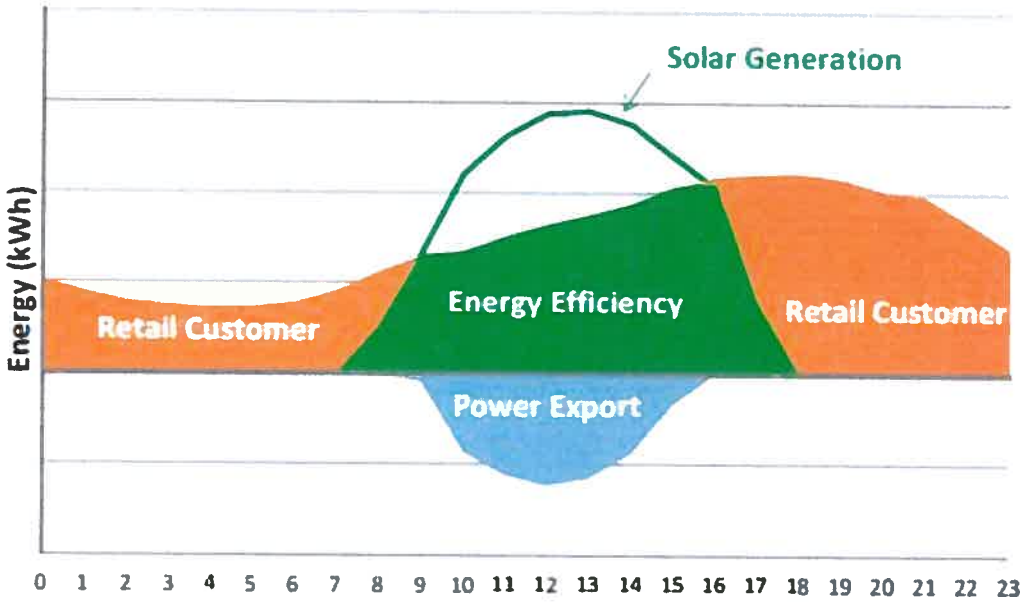
[7] LPSC General Order No. R-27558 dated November 30, 2005.

[8] The Louisiana Legislature passed Act 543 in 2008 to increase the NEM capacity limit from 100 kW to 300 kW for commercial and agricultural use. In September 2009, the Council formally adopted this change and made it effective for customers of the Companies.

facilitate installation of a new, bi-directional net meter that includes two channels. Once the customer completes the interconnection paperwork with the utility, NEM enables the customer to install "behind the meter" equipment to self-generate power to meet their own needs and, when applicable, deliver excess energy (sometimes called "net excess generation" or "excess energy") beyond their own needs to the grid. Channel 1 of the customer's bi-directional meter records net energy flowing from the utility to the customer ("Company to Customer") and Channel 2 records net energy flowing from the customer to the utility ("Customer to Company").

As a policy, NEM is most applicable to intermittent generation sources like solar PV systems, which are frequently sized from a direct current ("DC") capacity perspective in excess of the peak requirements of the customer. The following graphic illustrates a typical day in which solar PV equipment operates during the daytime hours (green line) and produces more energy at mid-day (referred to as "Power Export" in shaded blue) than the consumer is actually using behind the utility's net meter (referred to in the graphic as "Energy Efficiency" in shaded green). During the other hours of the day, the customer's solar PV equipment is not operating and the customer is a "full requirements" retail customer (shaded area in orange) being served by the utility and billed accordingly.

Figure 2: Illustrative Typical Day Under NEM.



Customer Load by Hour in 1 Day

Under the Council's NEM rules, the customer "nets" their self-generation against their utility-provided electricity usage with the monthly billing being based on the accumulated net balance expressed in kWh. If the customer has a positive accumulated balance (*e.g.*, 500 kWh), the customer's monthly bill will be based on that amount. If, instead, the customer has a negative accumulated balance (*e.g.*, -500 kWh), the customer is billed for zero (0) kWh of energy usage and is able to carry over the 500 kWh to the following month. By contrast, some jurisdictions limit the amount of energy (kWh) that can be carried over or require a customer to forfeit any "unused" excess energy at the end of each month or year to prevent customers from over-sizing their solar PV equipment relative to their annual energy needs.

Before elaborating further on NEM billing, it is important to provide context. Electric utilities are hugely capital-intensive businesses with a significant amount of fixed costs. An electric utility's fixed costs mainly include operation and maintenance; plant and equipment, such as power plants, transmission and distribution lines and related substations, transformers, and metering; capacity payments to third party power suppliers; customer service, including call

centers and billing systems; taxes; and interest expenses. Variable costs reflect the fluctuating "inputs" needed to produce and deliver electricity relative to fluctuating customer demand and include such things as the natural gas that a utility purchases to fuel its power plants; purchased power; and changing unit prices that the utility's suppliers charge the utility. In order to maintain its on-going operations, provide adequate and reliable service, and have an opportunity to earn a return on its invested capital, a utility must recover from customers both fixed and variable costs. Regulators, including the Council, typically allow utilities to recover variable costs related to fuel and purchased power via a volumetric (*i.e.*, cents per kWh) mechanism like a fuel adjustment clause. For various policy reasons, a utility also typically recovers from residential and small commercial customers its fixed costs on a volumetric basis by essentially designing rates that charge a fixed dollar amount for each volume-based unit of energy consumed (expressed as an Energy Charge in most filed tariffs).

It should also be noted that rates charged to customers are generally designed to recover these fixed and variable costs based upon average customer usage, not on the reduced net usage that results from applying NEM billing. For example, ENO's standard residential rate, Schedule RES-23, has the following pricing terms:

Customer Charge	$8.07 per month
Energy Charge	$0.06002 per kWh, except $0.04786 per kWh for all kWh used over 800 per month during the billing months of October through the following April
Fuel Adjustment	Varies monthly, but expressed on a volumetric basis as $ per kWh
Riders	Vary, but typically expressed as $ per kWh or a percentage applied to rate schedule charges
Minimum Bill	Customer Charge plus all applicable adjustments

ELL-Algiers' Schedule RS-1TA is similar to the above, but features a lower Customer Charge and lower Energy Charges. The following example illustrates a detailed breakdown of an ENO residential bill for February 2015 for a typical customer that used 1,000 kWh of electricity.

Figure 3: ENO Residential Billing for February 2015 based on 1,000 kWh Usage.

Customer Metered Usage (kWh) **1,000**

Feb 2015 Billing Determinants	**Charge**	**Amount**	
Customer Charge ($/mo)	$8.07	$8.07	**Base Rates**
Energy Charge ($/kWh)	$0.06002	$48.02	
Energy Charge ($/kWh)	$0.04766	$9.53	
	Sub-total	**$65.62**	
Storm Reserve Rider (%)	2.3246%	$1.53	**Riders (applied to Sub-total above)**
Formula Rate Plan (FRP) Rider (%)	-10.5278%	($6.91)	
Fuel Adjustment ($/kWh)	$0.01580	$15.80	**Fuel & Environmental (applied to usage)**
Environmental Adjustment ($/kWh)	$0.00001	$0.01	
Ninemile 6 PPA Rider ($/kWh)	$0.00107	$1.07	**Riders (applied to usage)**
	Sub-total	**$77.12**	
Retail Rate Adder Rider R-3 (%)	5.2632%	$4.06	**Riders (applied to Sub-total above)**
	Sub-total	**$81.18**	
City Sales Tax	3.0%	$2.44	**Tax (applied to Sub-total above)**
	Total	**$83.61**	

Despite having to recover significant fixed costs, ENO's Schedule RS-23 residential rate is expressed almost 90% on a variable basis as detailed above. As a residential customer uses less energy either via conservation and/or because of self-generation billed through NEM, the customer's bill is reduced. Assuming a customer has a self-generation installation that results in net electricity usage of 0 kWh in a given month under NEM, only ENO's minimum bill of $8.07 plus applicable riders is charged. For purposes of illustrating this point, assume that an ENO residential customer uses 1,000 kWh over the course of the month as recorded on Channel 1 of the net meter reflecting the flow of energy from Company to Customer. And further assume that

during that same month, the customer generates sufficient electricity from a net metered system that Channel 2 of the net meter reflecting the flow of energy from Customer to Company is 1,000 kWh. The net balance between Channel 1 and Channel 2 is zero (0) kWh. Based on that zero (0) kWh net balance, the customer's actual ENO bill for February 2015 would be $7.80 before sales tax, which is actually less than ENO's fixed monthly Customer Charge. The following figure provides the detailed breakdown of a zero (0) kWh bill described above.

Figure 4: ENO Residential Billing for February 2015 based on 0 kWh Net Usage.

Customer Metered Usage (kWh) **0**

Feb 2015 Billing Determinants	**Charge**	**Amount**	
Customer Charge ($/mo)	$8.07	$8.07	**Base Rates**
Energy Charge ($/kWh)	$0.06002	$0.00	
Energy Charge ($/kWh)	$0.04766	$0.00	
	Sub-total	**$8.07**	
Storm Reserve Rider (%)	2.3246%	$0.19	**Riders (applied to Sub-total above)**
Formula Rate Plan (FRP) Rider (%)	-10.5278%	($0.85)	
Fuel Adjustment ($/kWh)	$0.01580	$0.00	**Fuel & Environmental (applied to usage)**
Environmental Adjustment ($/kWh)	$0.00001	$0.00	
Ninemile 6 PPA Rider ($/kWh)	$0.00107	$0.00	**Riders (applied to usage)**
	Sub-total	**$7.41**	
Retail Rate Adder Rider R-3 (%)	5.2632%	$0.39	**Riders (applied to Sub-total above)**
	Sub-total	**$7.80**	
City Sales Tax	3.0%	$0.23	**Tax (applied to Sub-total above)**
	Total	**$8.03**	

As discussed above, the Council's NEM rules permit any excess energy (*i.e.*, monthly self-production in excess of customer usage) leading to an accumulated balance of kWh credits at the end of the month to be carried over to the next month to be used as a credit against the next month's usage. The Council's NEM rules also do not set any limits on the quantity of energy

that can be carried forward indefinitely.[9] Succinctly, the manner in which residential and small commercial customers are billed for a utility's fixed and variable costs serves as a strong incentive for a customer to self-produce power under NEM billing and, thus, lower their bill even if their total electricity consumption actually remains the same.

4.0 Growth of NEM in New Orleans

The following illustrates the rapid growth of solar PV systems in the Companies' respective service areas.[10]

Figure 5: Growth of Solar PV under NEM at ENO and ELL-Algiers

	ENO				ELL-Algiers			
Year	Systems Added	Capacity Added (KW_{DC})	Total Systems	Total Capacity (KW_{DC})	Systems Added	Capacity Added (KW_{DC})	Total Systems	Total Capacity (KW_{DC})
2007	9	26	9	26	0	0	0	0
2008	16	49	25	75	0	0	0	0
2009	50	236	75	311	5	13	5	13
2010	97	468	172	779	9	39	14	52
2011	115	610	287	1,389	3	28	17	80
2012	1,020	4,832	1,307	6,221	60	263	77	343
2013	2,237	11,181	3,544	17,402	149	696	226	1,039
2014	1,611	9,062	5,155	26,464	125	765	351	1,805

[9] Any accumulated balance can be forward indefinitely until the customer's account is closed at which time any remaining balance (kWh) is cashed out at the utility's avoided cost per the Council's NEM rules.

[10] U.S. Department of Energy, Energy Information Administration, EIA826 (adjusted thru December 2014); EIA data is not separately reported for ELL-Algiers so this information was prepared using internal company data.

Figure 6: Growth of Solar PV under NEM at ENO and ELL-Algiers (Systems).

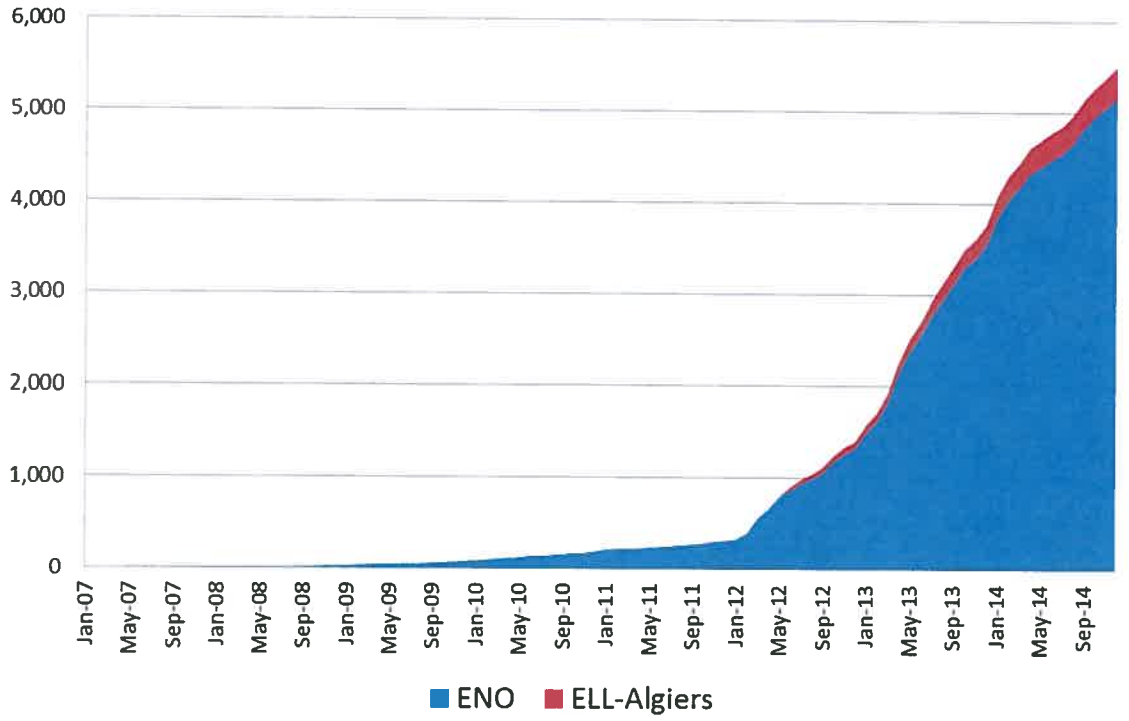
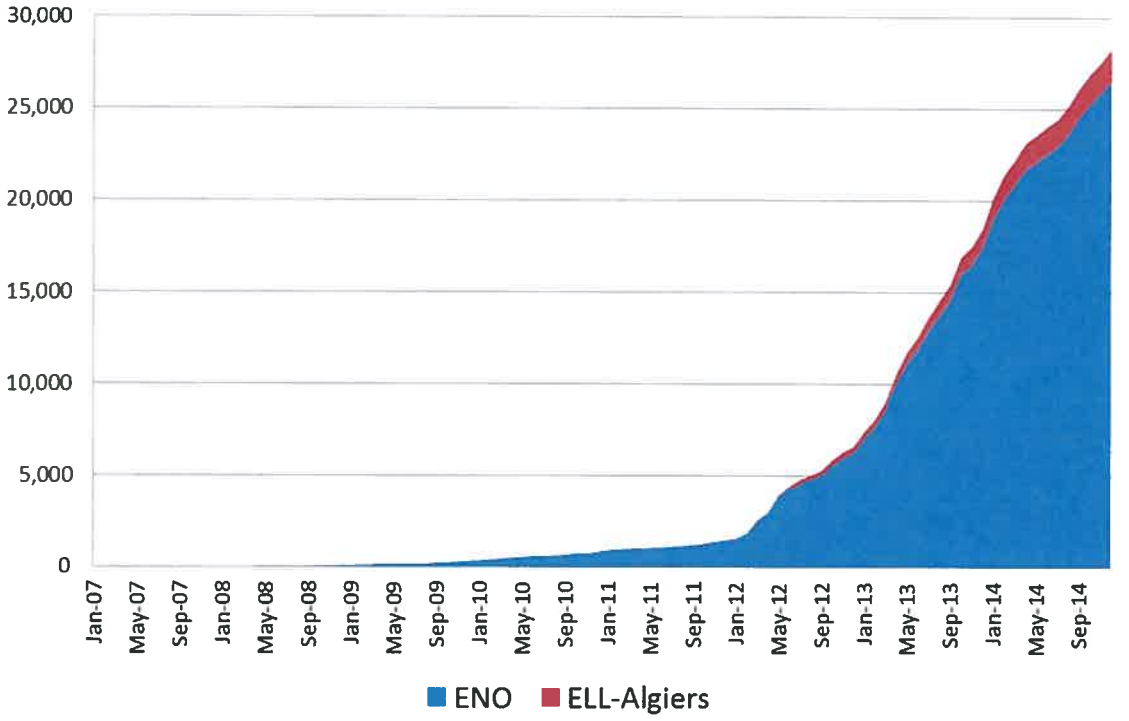


Figure 7: Growth of Solar PV under NEM at ENO and ELL-Algiers (Installed kW_{DC}).



With respect to a breakdown of residential vs. non-residential rooftop solar PV systems in the Companies' respective service areas, the vast majority (99.5+%) are located on residential properties (single-family homes, duplexes, or in a few cases multi-family complexes). In fact, ELL-Algiers does not currently have a single commercial customer that has added a net metered solar PV system. With that in mind, the following table summarizes the penetration of residential rooftop solar PV systems for utilities located in Louisiana.[11]

Figure 8: Residential Solar PV Penetration in Louisiana.[12]

Utility	Residential Capacity (MW)	Residential Customers w/NEM	Total Residential Customers	% with NEM	Avg. Residential Rate (¢/kWh)
ENO	25.0	5,064	151,835	3.34%	9.7
ELL-Algiers	1.7	332	20,552	1.62%	8.8
ELL (excl. Algiers)	23.5	4,228	568,429	0.74%	9.1
Cleco	10.3	1,779	240,707	0.74%	12.0
AEP-SWEPCO	5.3	917	201,870	0.45%	8.5
Cooperatives	5.4	1,008	356,279	0.28%	9.0
EGSL	5.1	831	338,003	0.25%	8.6
Municipals	1.3	237	139,700	0.17%	8.2
Louisiana	**77.6**	**14,396**	**2,017,375**	**0.71%**	**9.2**

On a macro-level, the following table summarizes the installations of residential rooftop solar PV in states throughout the region that offer some form of NEM billing.[13] Clearly, Louisiana is leading the region both in sheer installed capacity and number of systems, but penetration is much more pronounced when expressed as a percentage of residential customers

[11] *Id.* Estimates are made for electric cooperatives and municipal utilities neither of which report to EIA.

[12] U.S. DoE, EIA826 (as of Nov 2014); company data and estimates; average residential rate based on November 2014 billing month (except Municipals which is based on 2013 annual average data).

[13] *Id.*

with rooftop solar PV systems. Louisiana's penetration is more than 6x higher than that of Texas and 10x higher than that of Florida.

Figure 9: Regional Penetration of Residential Solar PV Systems.

State	Residential Solar (MW)	Residential Solar Systems	Total Residential Customers	% with Solar	Average Residential Rate (¢/kWh)
LA	77.6	14,396	2,017,375	0.71%	9.2
TX	55.6	10,446	9,802,110	0.11%	11.2
FL	28.1	5,164	8,645,207	0.06%	11.8
VA	7.4	1,585	3,248,518	0.05%	10.1
NC	7.1	1,642	4,230,588	0.04%	10.3
SC	1.7	416	2,113,144	0.02%	11.8
OK	1.2	324	1,679,296	0.02%	8.3
AR	1.2	249	1,332,154	0.02%	8.3
KY	0.9	229	1,924,644	0.01%	8.5
GA	2.2	331	4,071,478	0.01%	10.9
AL	0.3	62	2,150,977	0.00%	10.7
TN	0.1	7	2,721,099	0.00%	9.7
MS	---	---	1,256,392	---	10.5
Region	**176.7**	**33,606**	**45,171,268**	**0.07%**	**10.6**

Looking at installed residential solar PV on a national basis, ENO and ELL-Algiers rank among the highest penetration utility service areas in the U.S. The following table compares penetration of residential rooftop solar PV across all utility service areas that report to the U.S. Department of Energy, Energy Information Administration and have at least 1,000 NEM customers.[14] Two other LPSC-regulated electric utilities, ELL (excluding Algiers) and CLECO Power, LLC, are also included on the list.

[14] *Id.* The only exception is ELL-Algiers, which has been carved out of Entergy Louisiana, LLC to show its penetration rate as if it were a stand-alone electric utility.

Figure 10: Residential Solar PV Systems by U.S. Electric Utility.

Rank	Utility	State	Residential Capacity (MW)	Residential Customers w/NEM	Total Residential Customers	% with NEM	Avg. Residential Rate (¢/kWh)
1	Hawaiian Electric Co Inc	HI	152.5	33,661	267,614	12.58%	35.7
2	Maui Electric Co Ltd	HI	33.0	6,398	59,736	10.71%	38.5
3	Hawaii Electric Light Co Inc	HI	31.5	6,673	70,305	9.49%	42.4
4	Kauai Island Utility Cooperative	HI	8.1	2,117	28,608	7.40%	43.9
5	San Diego Gas & Electric Co	CA	230.1	45,039	1,258,998	3.58%	18.6
6	**Entergy New Orleans Inc**	**LA**	**25.0**	**5,064**	**151,988**	**3.33%**	**9.7**
7	Arizona Public Service Co	AZ	168.2	28,812	1,034,113	2.79%	12.8
8	Pacific Gas & Electric Co	CA	677.7	141,104	5,029,192	2.81%	16.6
9	Southern California Edison Co	CA	478.5	95,917	4,360,367	2.20%	16.4
10	El Paso Electric Co	NM	8.0	1,669	83,248	2.00%	12.0
11	Public Service Co of Colorado	CO	109.6	19,909	1,199,345	1.66%	12.0
12	**Entergy Louisiana LLC (Algiers)**	**LA**	**1.7**	**332**	**20,552**	**1.62%**	**8.8**
13	Tucson Electric Power Co	AZ	37.6	5,643	375,074	1.50%	11.0
14	Atlantic City Electric Co	NJ	48.7	6,071	409,331	1.48%	15.1
15	Jersey Central Power & Lt Co	NJ	91.5	11,170	777,713	1.44%	13.4
16	UNS Electric, Inc	AZ	9.3	1,158	82,258	1.41%	10.3
17	Modesto Irrigation District	CA	7.4	1,375	95,709	1.44%	17.9
18	Sacramento Municipal Util Dist	CA	27.2	7,501	544,044	1.38%	12.9
19	Salt River Project	AZ	78.4	11,566	895,298	1.29%	11.3
20	Green Mountain Power Corp	VT	8.9	1,590	220,845	0.72%	17.6
21	Orange & Rockland Utils Inc	NY	9.2	1,359	116,874	1.16%	22.6
22	Central Hudson Gas & Elec Corp	NY	15.0	2,273	211,735	1.07%	18.4
23	Los Angeles Department of Water & Power	CA	64.9	13,450	1,313,656	1.02%	14.8
24	Imperial Irrigation District	CA	6.1	1,227	129,995	0.94%	12.1
25	Public Service Co of NM	NM	18.8	3,997	455,039	0.88%	12.8
26	Massachusetts Electric Co	MA	47.4	8,501	956,230	0.89%	17.4
27	Western Massachusetts Electric Company	MA	8.5	1,428	168,209	0.85%	16.8
28	Connecticut Light & Power Co	CT	37.8	5,688	725,460	0.78%	17.9
29	**Entergy Louisiana LLC (excl. Algiers)**	**LA**	**23.5**	**4,228**	**569,528**	**0.74%**	**9.1**
30	**Cleco Power LLC**	**LA**	**10.3**	**1,779**	**240,649**	**0.74%**	**12.0**
Total U.S.			**3,079.4**	**576,066**	**129,400,199**	**0.45%**	**12.4**

Clearly, penetration of residential rooftop solar PV within the Companies' respective service areas is well above other utilities in Louisiana. And, for that matter, the penetration rate within ENO is above all but one utility not located in Hawaii, which has the highest average electric rates in the U.S. by far. It is worth noting, in fact, that ENO has experienced such significant penetration of net metered rooftop solar PV while having the third lowest electric rates of the thirty utilities shown, behind only ELL and ELL-Algiers.

5.0 Solar PV Adoption Drivers

As discussed in the previous section, Louisiana, and New Orleans in particular, have seen explosive growth in installed solar PV systems over the past few years. There appear to be four key drivers for the level of growth experienced in Louisiana with each discussed in more detail below:

- Regulatory policies (*e.g.*, NEM billing)
- Tax policies and subsidies
- Increased cost competiveness of technology
- Third-party ownership ("TPO") business models (*e.g.*, solar leasing)

5.1 Regulatory Policies

As discussed above, NEM as a policy tool fosters increased penetration of intermittent self-generation technologies like solar PV because of the treatment of excess energy. Under PURPA, electricity generators that register with the Federal Energy Regulatory Commission ("FERC") as QFs are compensated for any excess energy they produce and deliver to the grid at the host utility's avoided cost. Because the host utility's avoided cost is typically below the average retail rate paid by the customer installing the QF, the customer is not incentivized to over-size their generator beyond their peak requirements (expressed in kW). Under the current NEM billing model, however, customers receive a full retail credit for each kWh of excess energy they send to the grid.

5.2 Tax Policies and Subsidies

A major determinant as to whether a market is attractive for residential and commercial-scale net metered solar PV projects is the presence of various financial incentives in the form of rebates, state and federal tax credits, and related policies. Louisiana currently has the highest

level of aggregate subsidies available in the U.S. to homeowners who install solar PV equipment either directly or through a TPO lease. Louisiana's refundable tax credit has been in place since 2008 and was recently revised during the 2013 legislative session. The following state tax credits are available to new residential solar PV systems in Louisiana:

- Refundable tax credit up to 50% of the first $25,000 incurred for the cost of the system, which includes installation costs, for systems directly purchased by homeowners.
- Refundable tax credit up to 38% (reduced from 50% effective 1/1/2014) of the first $25,000 incurred for the cost of the system, which includes installation costs, for systems leased by third-party owners to homeowners; separately, costs of the system in excess of $4.50/Watt are ineligible; the cost basis is reduced over time to $2/Watt effective July 1, 2015.
- System must be grid connected (subject to NEM) or standalone.
- Refundable tax credit may be combined with any federal tax incentive, but not with any other state incentives.
- State tax credits are currently set to expire on December 31, 2017.

Separately, a solar PV system is considered to be personal property in Louisiana and, consequently, is exempt from ad valorem taxes. Also, when a tax assessment of a property occurs, the value of the solar PV system is not to be included. In June 2010, the Louisiana Legislature enacted solar rights legislation that defines the right of use of "solar collectors," which is defined as "...any device or combination of elements that relies on sunlight as an energy source." Among other things, the legislation states that "No person or entity shall unreasonably restrict the right of a property owner to install or use a solar collector" although there are provisions related to not interfering with existing zoning restrictions and historical property designations.

With respect to federal tax incentives, the law was changed in 2008 as part of the Economic Stimulus Act whereby the previous cap of $2,000 was removed. Effective January 1,

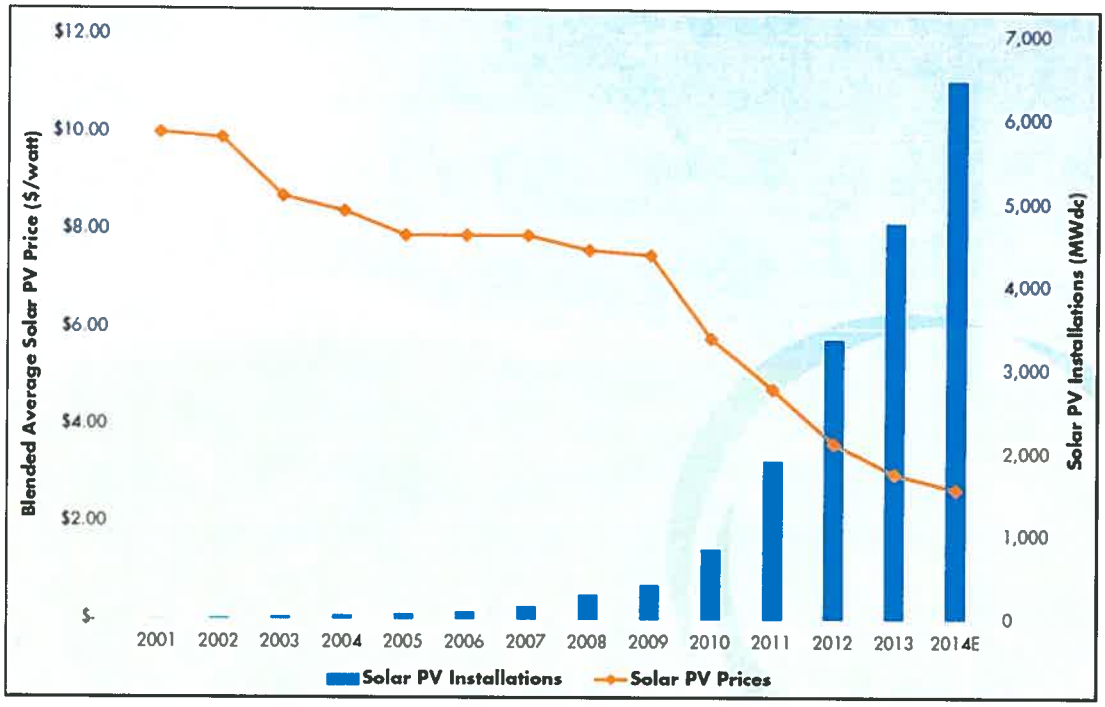
2009, a residential or commercial solar PV project became eligible for a 30% investment tax credit ("ITC") with no cap on the amount that can be received. Unlike the refundable Louisiana tax credits, the federal tax incentive recipient must have federal taxable income in order to benefit from the 30% ITC. Effective December 31, 2016, the federal ITC for commercial solar PV installations is to be reduced from 30% to 10% with no sunset provision. At the same time, the federal ITC for a residential solar PV installation owned directly by a homeowner (as opposed to via a TPO lease) disappears. Finally, for TPO lease providers, there are additional federal tax incentives that may be available in the form of bonus depreciation and use of the Modified Accelerated Cost Recovery System ("MACRS") in the current tax code for equipment depreciation.

5.3 Increased Cost Competiveness of Technology

Solar PV's increased cost competitiveness is driven by lower equipment costs (PV panels, racking, inverters, etc.) and lower overall installation costs coupled with generous state and federal incentives as discussed in the prior section. The following chart prepared by the Solar Energy Industries Association illustrates the dramatic fall in installed solar PV costs coupled with significant growth in installed capacity since 2009.[15]

[15] SEIA; *The U.S. Solar Energy Industry: Powering America*; January 20, 2015

Figure 11: Blended Average Solar PV Price and Installations (MW) – 2001-2014E.



The total installed cost of solar PV projects < 10 kW in capacity, which account for the vast majority of the Companies' customer installations thus far, has fallen dramatically in recent years and is now approaching $3.50 – 4.00/Watt on average in the U.S. Reduced equipment prices along with the combination of state and federal incentives means the total installed cost for a residential rooftop system in New Orleans is now generally less than $1.00/Watt.

5.4 TPO Business Models

In Louisiana, leasing accounts for the majority of newly installed net metered solar PV systems, perhaps as much as 75% for the Companies during some months. Entergy's utilities in Louisiana first became aware of leasing activity at the end of 2011 when they were separately contacted by two companies that were beginning to sign up customers for leases. At that time, both companies were ramping up sales activities and customer sign-ups in the New Orleans metropolitan area and reached out to the Companies to better understand the NEM processes

(contact names, paperwork flows, interconnection requirements, Council and local permitting rules, etc.). About the same time, the Companies also received several inquiries and complaints from customers related to leasing.

Under the TPO leasing business model, the TPO installs the system on the roof of the homeowner in return for a long-term, fixed-price lease (the leasing company may refer to the agreement as a "maintenance agreement" or other contractual arrangement). In return for the monthly fixed payment, the homeowner benefits via a reduced electricity bill through NEM; presumably, savings on the customer's utility bill more than covers the monthly lease payment. The leasing company owns and maintains all of the equipment and also claims any federal and state tax credits. In addition to leased solar PV equipment, several leasing companies have expanded their offerings to include energy audits, efficiency upgrades, and real-time internet monitoring of solar PV output.

From a national perspective, TPO solar leasing has become the predominant form of financing for residential and smaller-scale commercial solar PV in states like Arizona, California, and Colorado with higher NEM penetration. In a handful of states, large companies like SolarCity, SunRun, Sungevity, and Vivent have tapped external sources of capital to sign up and finance tens of thousands of new customers under long-term leases.

In some states and jurisdictions, TPO solar leasing is expressly not allowed under state law and/or utility regulation. Clearly that is not the case in New Orleans, or Louisiana for that matter, but as to the issue of whether TPO solar leasing is potentially problematic from a legal perspective, the Companies offer the following thoughts. A fixed payment, fixed term lease pursuant to which ownership of the solar PV equipment transfers to the lessee at the end of the lease's term is functionally equivalent to ownership. Under such an arrangement, the

homeowner (or business) benefits from whatever energy is produced by the solar PV system under NEM billing, but is also subject to risk if the system's operational performance is less than desired. Additionally, if the TPO solar leasing company offering the fixed-price, fixed-term lease is essentially providing only maintenance and repair of the equipment, then that too is analogous to an ownership situation where the equipment supplier provides a warranty to the homeowner that purchases the solar PV system outright. As to other aspects of TPO arrangements such as who benefits from various federal and state incentives, who is responsible for insuring the equipment, what occurs in the event of non-payment of the lease, and what promises are made to the lessee as to equipment performance and/or bill savings, the Companies do not have an opinion. These matters are more appropriately addressed by the State of Louisiana including the Attorney General whose office deals with consumer education, protection, and related safety issues involving the purchase of products and services.

Given the understanding described above, the Companies do not necessarily believe that the Council should restrict TPO solar leasing arrangements provided basic guidelines are met as to how leases must be structured in order to protect consumers and avoid the leasing company effectively making an unregulated, retail (end-use) sale of electricity. With these concerns in mind, it may be appropriate for the Council to consider some form of oversight however regarding TPO solar leasing, which could include: (1) clarifying the rights of each party under a solar leasing arrangement (the TPO of the net metered equipment, the homeowner or tenant who pays the electric bill, and the utility that provides net metered electric service to the home or business); (2) defining the minimum required information disclosures to the property owner or tenant who signs the lease; and (3) investigating consumer complaints, helping to resolve disputes as necessary, and taking enforcement action against solar leasing companies when

appropriate. It should be noted that some utility regulators have recently considered such oversight in an effort to better protect consumers.[16]

The Companies are concerned, however, that some companies offering leases or other forms of TPO arrangements may provide energy production and/or savings guarantees that could convert a fixed-price, fixed-term lease into a power purchase agreement ("PPA"), which may amount to an unregulated, retail (end-use) sale of electricity. If such a guarantee were to be made contractually, the Companies would strongly object to such an arrangement because the TPO solar leasing company may be operating as a *de facto* unregulated provider of utility service, in potential violation of Louisiana law and Council requirements. In a similar vein, the Companies are concerned about potential arrangements within multi-family residential properties (apartments and condominiums, whether master metered or separately metered) where the owner of the net metered equipment (either the property owner or a TPO) attempts to provide unregulated electric service to tenants via sub-metering. The Companies urge the Council as part of this proceeding to further investigate TPO arrangements and, after further consideration, amend its rules as necessary to address minimum requirements that must be met for TPO solar leasing arrangements to be legal. As noted above, basic requirements could include matters such as minimum disclosures that must be provided to consumers before a contract is executed (perhaps in conjunction with the State of Louisiana Attorney General's Office), a clear prohibition on third party PPAs and PPA-like lease provisions, unambiguous language that prevents circumvention of various Council rules and eliminates the possibility that entities such as multi-family property owners and/or third party generation equipment owners of functioning

[16] Washington Utilities and Transportation Commission ("UTC") finds state has authority to regulate solar leasing companies; requests Legislature clarify role in protecting consumers, ensuring competitive market; Docket Number: UE-112133; July 30, 2014.

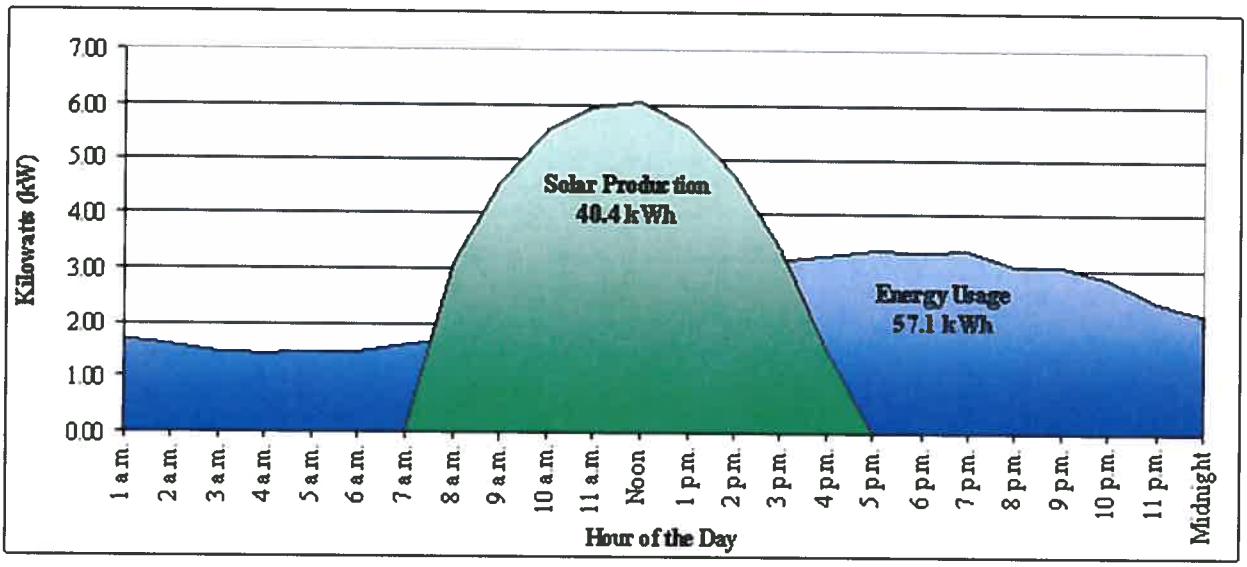
as unregulated utilities by making retail (end use) sales of electricity, and other matters as the Council may see fit to oversee.

6.0 Utility Rate Design and Potential for Cost Shifting

As discussed in the NEM Billing section, the Companies recover the vast majority of their fixed costs via volumetric (cents/kWh) charges. Cost shifting occurs under NEM billing because a net metered customer avoids paying their fair share for utility services that the customer continues to actually use when their solar PV system is not generating. In fact, if a customer consumes an amount of energy over the course of the month, but has a net metered installation that produces as much or more energy, then the customer will receive only a minimum bill as detailed above, despite the customer having used and relied upon the utility to ensure continuous electric service. The energy delivered by the utility and used by the customer throughout the month, as well as the customer's uninterrupted access through the utility grid to that energy, is made possible by the fixed costs that the utility incurs and recovers through rates to support the ability to continuously deliver energy to its customers. This shifting of cost is a direct result of NEM customers no longer having the type of service requirements and demand patterns for the customer class for which its normal retail rates were designed. The following graphic illustrates a typical summer weekday electricity usage pattern for an average residential customer in relation to the output of a 8.3 kW solar PV system on a normal clear, summer day.[17]

[17] 8.3 kW solar PV installation under NEM billing; typical solar production profile for New Orleans per http://mercator.nrel.gov/imby/; and typical residential usage on a normal summer day.

Figure 12: Solar PV Production Relative to Energy Usage on a Typical Summer Day.



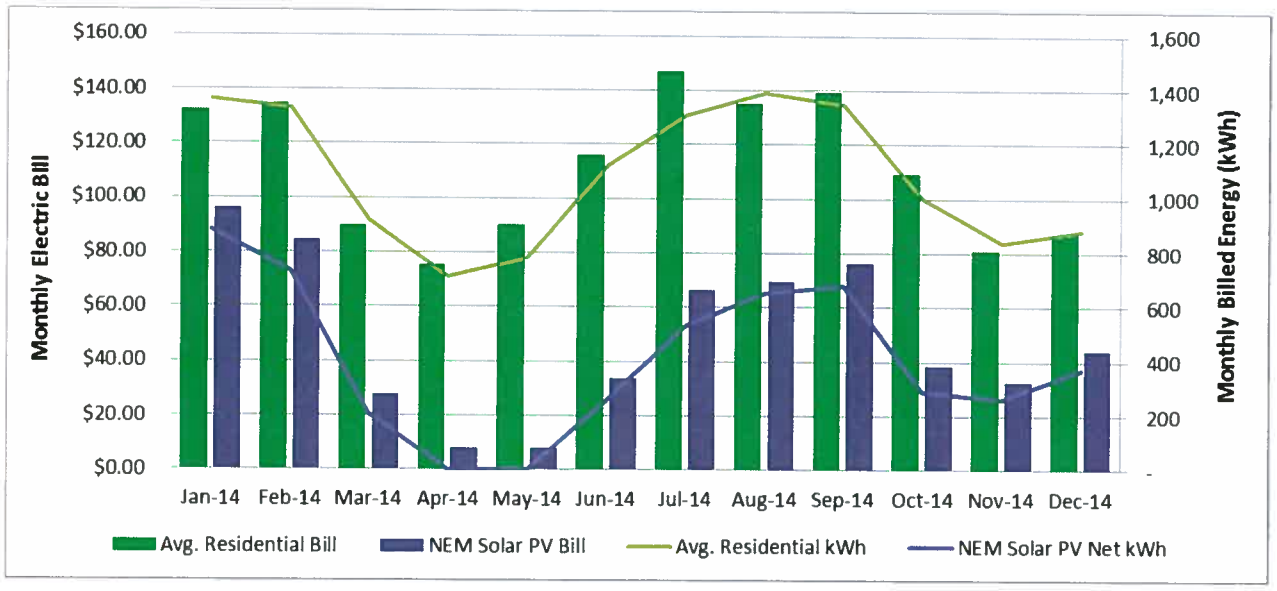
In the illustrative example above, the utility must still provide sufficient infrastructure to meet the customer's electricity requirements for the hours during which the customer's net metered solar PV equipment is not producing energy. In addition, the typical residential customer illustrated above reaches their peak load generally between 4 – 6 p.m., which is typically also when a utility system in Louisiana reaches its peak load. In order to provide reliable service, a utility has to construct sufficient infrastructure (generation, transmission, and distribution) to meet its peak load. However, as explained in detail above, because a utility's fixed costs are recovered from residential and small commercial customers on a volumetric (cents/kWh) basis, the customer in the illustrative example above will be billed only for their net usage for that particular day:

57.1 kWh – 40.4 kWh = 16.7 kWh

In effect, a customer using NEM billing that has self-generation with intermittent production is using the utility as a "free battery" and is shifting the costs of constructing and maintaining that so-called free battery to non-NEM customers.

While there are customers that are able to achieve net zero usage under NEM billing with their solar PV systems, the reality is that most NEM customers fall somewhere in between net zero usage and their pre-NEM level of usage. The following chart compares 2014 billing by month for ENO's average residential customer versus a residential customer with a typical 6 kW rooftop solar PV system that is net metered.[18]

Figure 13: ENO's Average Residential Customer Versus a Typical 6 kW NEM Customer.



The chart above illustrates the average bill savings for a typical 6 kW net metered rooftop solar PV system in ENO's service area in 2014. Viewed from another perspective, the same chart also illustrates to a degree the shift in (mostly fixed) cost per year from a typical NEM customer to ENO's other customers without self-generation. It is important to note that Figure 13 above is based on total customer bills, which include fuel adjustment charges.

[18] EIA826 monthly sales and revenue data for ENO and NREL PVWatts output for a typical 6 kW rooftop solar PV system located in New Orleans.

Cost shifting will only continue to grow as more net metered solar PV systems are installed in the Companies' respective service areas. In general, the Companies do not believe that this situation is just and reasonable to the extent that non-NEM customers are being unfairly asked to support a disproportionate share of infrastructure requirements of the Companies with that same infrastructure being needed by NEM customers for times when their solar PV systems are not producing energy (*e.g.*, at night).

It should be noted that there are two other forms of cost shifting associated with net metering with both being less significant than the shifting of cost that results from current rate design. Namely, the Companies currently charge $50 and $75 upfront for a residential and commercial net meter installation, respectively, whereas the actual costs associated with installing a new net meter are higher. Additionally, the Companies over time have had to add staff largely dedicated to managing net metering applications and ensuring timely installations of appropriate metering. However, these added administrative costs have been and continue to be borne by all of the Companies' customers as opposed to only those customers that request net metering. Given that the number of net metering installations continues to grow significantly and that there may be upcoming changes to state and federal tax policies that could affect future installation levels, the Companies have not yet performed a detailed analysis to estimate the level of cost shifting that will occur over the 25-yr plus lifetime that these net metered installations will be in place. Nonetheless, the following describes several possible approaches that the Council could consider to address the unfair shifting of cost that occurs under NEM billing.

7.0 Potential Options to Address Cost Shifting Under NEM

There are several possible options that the Council could consider to address the inherent cost shifting that occurs under NEM billing. The Companies have conducted some research on what other jurisdictions are considering or have implemented to address this issue. Appendix A contains a table summarizing those research efforts. It should also be noted that the following potential options are by no means an exhaustive list.

7.1 Implement a Cap on NEM

Many states and jurisdictions, including the LPSC, have implemented caps on NEM. A cap typically involves a maximum amount of installations (usually expressed as a fixed percentage of a utility's peak load) that a utility is obligated to accept for NEM. One downside of implementing a cap is that it typically does not provide a path forward after the cap is reached for what some might term NEM version 2.0 ("NEM2.0"). Or, put another way, a subsequent program that continues to offer some variation of NEM billing to customers in lieu of requiring customers to self-register as QFs and that allows streamlined interconnection of small, intermittent generators, but that also addresses the inherent cost shifting that the Companies discuss at length above.

The Council could consider a cap whereby once the cap is reached, a replacement program (hence the term NEM 2.0) would take effect for customers who install new intermittent self-generation equipment. As discussed above, rooftop solar PV penetration under NEM in New Orleans already far exceeds most other utility areas (not including Hawaii, which is clearly an outlier). As such, the Council might consider developing an appropriate cap using total installed solar capacity (expressed in kW_{DC}) divided by the utility's peak load (also expressed in

kW) for the prior calendar year. As discussed further below, the Companies suggest it might be appropriate for the Council to "grandfather" existing NEM customers that installed solar PV systems prior to a cap being reached. With respect to how long such customers might be grandfathered, the Companies suggest it would be appropriate to address this issue as part of the stakeholder engagement process. As to what might constitute NEM 2.0, below is one possible idea for the Council and other stakeholders to consider as part of this proceeding.

7.2 Avoided Cost Applied to Excess Energy

As has been discussed previously, it is not possible with current bi-directional NEM to determine a customer's gross consumption and gross generation at any point in time or even each month. Instead, what is captured by the bi-directional net meter each month for billing purposes is two aforementioned measurements: total "Company to Customer" energy (Channel 1 of the meter) and total "Customer to Company" energy (Channel 2 of the meter). As described above, NEM refers to taking the difference between the two energy values (*i.e.*, the net balance expressed in kWh) and applying the utility's Council-approved rates and riders to render a monthly bill.

Under this approach, rather than determining the net balance (kWh) amount for billing in a single step, the utility would calculate what the NEM customer owes in two separate steps. First, the utility would apply the Council-approved rates and riders to the customer's consumption (*i.e.*, the cumulative recorded Company to Customer energy in kWh). Second, the utility would apply some variation of avoided cost to any excess energy (*i.e.*, the cumulative recorded Customer to Company energy in kWh) to calculate a bill credit. Third, the customer's total bill would be the first calculated amount less the second calculated credit. A major advantage to the NEM customer of this approach is that it allows the customer to enjoy a full

retail rate credit for any self-generation used behind the meter to meet actual load, which is similar to the way QF billing normally works. It is only the excess energy produced by the customer (*i.e.*, energy produced beyond that needed by the customer) that would be compensated at some variation of the utility's avoided cost. Another benefit of this approach is that a customer could choose to over-size their self-generation equipment (provided the Council's NEM rules were amended) and deliberately produce excess energy to produce credits that they could apply on their own behalf to any other month's electric bill for that same account. This approach is straightforward, fair and balanced, and helps address the issue of cross-subsidization in a manner that is consistent with how existing QFs are treated from a billing perspective.

If such an approach were to be adopted, the Companies would propose to reflect the fact they would now be purchasing excess energy (kWh) as opposed to netting energy for billing purposes. As is the current practice, prudent costs incurred by a utility to purchase energy from a third party (QF or otherwise) are recovered via the utility's Council-approved fuel adjustment. If this approach were to be adopted, the Companies propose that any costs incurred to purchase excess energy from NEM customers should be deemed recoverable via the Companies' respective monthly fuel adjustment clauses.

With respect to specific details regarding calculating avoided cost, what adjustments to apply to avoided cost, as well as implementation timing, the Companies' comments above are relevant here as well. Each of these issues, among other specific details, would be appropriate to address further as part of this proceeding. Nonetheless, the Companies suggest that the issue of grandfathering should be addressed in the context of when such changes to NEM billing might take effect.

7.3 Other Alternatives

As noted in the Appendix, there are several other alternatives that utilities, regulators, and stakeholders have explored in recent years to address the inherent cost-shifting and cross-subsidization that occurs under current NEM policies. These concepts include a transmission & distribution ("T&D") network use charge, using demand and volumetric charges for billing instead of primarily volumetric charges, value of solar tariffs ("VOST") which are essentially feed-in tariffs ("FITs"), as well as broader approaches that would affect all customers including implementing minimum bills, redesigning current rates using straight-fixed variable ("SFV") rate design principles, and implementing full revenue decoupling. Each of these alternatives is discussed further below.

7.3(a) Transmission & Distribution ("T&D") Network Use Charge

This approach would maintain the Council's current NEM rules that provide a full retail rate credit for self-generation (both behind-the-meter and excess energy delivered to the grid) along with the ability to carry over an unlimited amount of energy (kWh) indefinitely, but would add a monthly charge based on the installed generator capacity. Computing such a T&D Network Use Charge would require the utility to develop an estimate of lost transmission and distribution revenue and use those unit cost of service figures along with installed self-generation capacity (kW) to derive a fixed $/kW charge to be applied each month. The application of a T&D Network Use Charge is analogous to a monthly demand charge ($/kW-month) that is typically used in rate design for commercial accounts as well as "standby" charges that apply to customers with QF self-generation equipment.

In the context of this proceeding, the Companies have not developed a proposed charge to be applied to the customer's total installed self-generation capacity (expressed in kW_{DC}). To

address cost-shifting, several jurisdictions have either approved or are considering such charges.[19] To address concerns regarding impact on the local solar market, a possible implementation approach that was proposed by a consumer advocate in an Arizona Public Service Company proceeding would be to phase-in the charge in fixed increments and increase the charge to the ultimate level in concert with a fixed amount of solar capacity that is eligible for NEM being added to the utility's system. While more complex from a billing perspective, a phase-in plan could offer the benefit of gradually increasing the T&D Network Use Charge to allow the market to adjust accordingly.

Overall, the primary benefit of applying a T&D Network Use Charge is that all customers (whether they self-generate or not, excluding any NEM customers that would be grandfathered) would contribute to the use of the utility infrastructure through the volumetric portion of the rate. This helps ensure that those customers who add a self-generator under NEM billing contribute their fair share to the utility's fixed costs, while enjoying the opportunity to reduce their electric bill. The use of such a fixed charge is predictable, easy to calculate and bill, and would not vary from year to year. This approach better reflects the infrastructure costs that are being avoided by customers under NEM billing and does so in a manner that is perhaps more equitable and more directly focused on addressing the issue than other approaches discussed further below.

7.3(b) Demand and Volumetric Charges

This approach would create a new residential (and likely small commercial) rate schedule that would apply to customers that install self-generation equipment. As discussed at length

[19] *In the Matter of the Application of Arizona Public Service Company for Approval of Net Metering Cost Shift Solution* – Docket No. E-01345A-13-0248 (Arizona Corporation Commission decision November 2013); *In the Matter of the Application of Public Service Company of New Mexico for Revision of its Retail Electric Rates Pursuant to Advice Notice No. 507* – Case No. 14-00332-UT (filed December 2014).

above, the Companies' respective existing residential and small commercial rate schedules predominantly use volumetric (cents/kWh) charges for billing. Under this approach, a residential (and small commercial) customer that installs new self-generation equipment that is proposed to be net metered would be moved to this new, to-be-designed rate schedule. The new rate schedule would use a combination of a fixed customer charge, a demand charge (expressed in $/kW-month), and a volumetric (cents/kWh) charge for billing. The customer would also receive a bi-directional net meter that is capable of measuring demand (in kW) each month similar to the net meters that are used for larger customers that utilize NEM billing. As it relates to NEM billing, the net energy balance at the end of the month would be used to calculate any volumetric (cents/kWh) charges. If the customer's self-generation equipment is able to offset their demand, then the customer may be able to minimize or possibly even avoid a demand charge. Two benefits of this approach are that: (1) it would mirror what is done today for the Companies' larger customers that are billed using demand charges and choose to install self-generation equipment; and (2) it would facilitate rate designs that more closely reflect cost causation. Two potential detriments of this approach are that: (1) a bi-directional net meter that records demand will be somewhat more costly; and (2) there may be some customer confusion resulting from moving to a new, more complex billing arrangement.

7.3(c) Value of Solar Tariff ("VOST")

Feed-in tariffs ("FIT") have been around for some time although they were popularized for renewable energy development in recent years by several European countries, notably Germany and Spain. In general, a FIT is a policy mechanism that is designed to incentivize investment in certain technologies, normally renewables and clean energy sources such as wind, solar, biomass, etc. The basis of a FIT is a standardized, longer-term contract (or PPA) that is

non-negotiable and that specifies a specific guaranteed price (typically cents/kWh) to be paid to the provider for all of the energy output (kWh) from the generator. The overarching goals of a FIT program are to provide a policy mechanism that is attractive enough to drive desired investment in specific technologies via price certainty and contractual protections afforded the project developer/owner while maintaining some safeguards to ensure the program does not involve significant unforeseen and unintended consequences. In the U.S., there have been a few FITs implemented in recent years and, more often than not, they are meant to incentivize solar PV development. Recent examples include solar PV FIT programs offered by Tennessee Valley Authority, Virginia Power, the City of Gainesville, Florida, and the City of Los Angeles. It should be pointed out that experience with FITs in the U.S. is fairly limited and there has been an abundance of caution in recent years because of the experience of some countries, notably Germany, Spain, and Italy, where poorly designed and implemented FITs have been blamed for rapidly escalating utility costs and concerns from politicians and other stakeholders about government budgets.[20]

The VOST concept is a variation of a FIT and was developed very recently when, in early 2012, Austin Energy initiated an effort to replace traditional NEM with a new policy it referred to as a "Value of Solar Tariff" or VOST for short. Austin Energy used an outside consulting firm to help it design and implement its VOST policy. Essentially, the VOST is used in place of NEM and involves the customer having two different meters: one that records all consumption and one that records all solar PV energy production. The customer's entire consumption is billed at the utility's normally applicable rates and riders. The customer's solar

[20] *Spain and Italy Reduce Feed-in Tariffs*, Sun & Wind Energy, .June 26, 2014; *Spain Adopts Energy Reform and Removes Renewable Feed-in Tariffs*, Enerdata, July 16, 2013; *Are the Legacy Costs of Germany's Solar Feed-In Tariff Fixable? Germany Tries to Get a Handle on the Mounting Costs of its Past Solar Policies*, Greentech Media, June 4, 2014.

PV energy production is credited using the VOST rate. In a simple hypothetical example, assume the customer's entire consumption is 1,000 kWh and the utility's average residential retail rate is 10 cents/kWh. The customer's bill would start at $100 before crediting their entire solar PV output under the VOST. Now assume the customer's entire solar PV energy production is 500 kWh and the current VOST is 11 cents/kWh. The customer would receive a credit of $55 and the total bill would be $100 - $55 = $45 for that month.

In developing its VOST rate to be credited on customer's bills, Austin Energy considered the following attributes:

- Loss savings
- Energy savings
- Generation capacity savings
- Fuel price hedge value
- T&D capacity savings
- Environmental benefits

Initially, Austin Energy's VOST was set at 12.8 cents/kWh, but is subject to change annually, and was reduced in 2014, which Austin Energy largely attributed to lower natural gas prices in the market and, thus, reduced energy savings. To recover the costs of the VOST program, it is the Companies' understanding that Austin Energy reflects VOST credits as "purchased power" under its fuel adjustment. This is essentially the same treatment that the Companies suggest above would be appropriate if the Council were to approve revisions to the NEM rules as discussed above under Section 7.2.

With respect to advantages and disadvantages of the VOST approach, the Companies offer the following thoughts. Advocates of VOST argue that it more fairly compensates participants for their solar PV energy production while maintaining the utility's base revenues and, thus, mitigating cost shifting and cross subsidization that is inherently part of NEM. Advocates also argue that a VOST is easier to administer than other approaches to modifying

NEM, can have built-in safeguards protecting both participants and other customers, and doesn't unduly affect local solar installers. Opponents of VOST argue that developing the VOST rate involves making numerous simplifying assumptions some of which can be questionable (*e.g.*, explicitly valuing reduced carbon emissions in the absence of clear federal policy such as a tax or cap and trade program), applying a credit to the bill could theoretically trigger taxable income depending on local, state, and/or federal agency rules, and that an annually changing VOST rate involves greater uncertainty for the participant than traditional NEM billing.

7.3(d) Minimum Bill

A minimum bill is a seldom used alternative approach to a fixed monthly customer charge. Most utilities, including the Companies, use a fixed monthly customer charge to recover at least a portion of the utility's fixed costs. The fixed monthly customer charges for ENO and ELL-Algiers are $8.07 and $2.56, respectively, and apply regardless of whether the customer has any billed usage (kWh). In contrast, under a minimum bill approach, the tariff would specify various pricing elements that would apply primarily to usage (kWh), but would also state that, regardless, the bill shall not be less than some value. With respect to mechanics, the customer's bill would first be calculated using the tariff's specified pricing and the customer's monthly usage (or net usage in the case of a net metered customer). Second, the amount resulting from the first step would be compared to the specified minimum bill and the customer would pay the higher of the two amounts.

Some advantages of the minimum bill approach is that it is easy to bill, somewhat easy to administer with respect to addressing customer concerns, and does address to a limited extent concerns regarding cost shifting and cross-subsidization that occur under NEM billing. A

significant disadvantage of the approach is that there is an unintended consequence that results. In its design, the minimum bill amount needs to be set at a meaningful level such that it actually begins to address cost shifting and cross-subsidization that occurs under NEM billing. However, the very act of setting the minimum bill amount high enough will result in smaller, non-NEM customers potentially seeing a significant increase through no fault of their own and to address an issue that they are not contributing towards.

7.3(e) SFV Rate Design

In the Council's separate decoupling proceeding,[21] the Companies and other parties have provided comments on using SFV rate design to address certain concerns such as the inherent disincentive utilities face in promoting energy efficiency programs in the absence of a mechanism to address lost revenues. The Companies are not repeating those comments here, but suffice to say that significant concerns were expressed by various stakeholders regarding unintended negative consequences on smaller customers. As such, while SFV rate design is a viable path a utility could use to address cost shifting and cross-subsidization inherent in NEM billing and one that several utilities have begun to implement (see Appendix), the Companies do not feel that SFV rate design is necessarily an attractive option that should be considered further in this proceeding.

7.4(f) Full Revenue Decoupling

As noted above, the Council has a separate proceeding underway regarding the consideration of full revenue decoupling. The Companies reserve their rights in that proceeding, but would offer here that full revenue decoupling has the potential to address the so-called

[21] Council Docket No. UD-08-02.

throughput incentive that is a natural by-product of traditional rate design that emphasizes volumetric (cents/kWh) rates for smaller customers. However, as the Companies expect will be more fully explored in the decoupling proceeding, full revenue decoupling in and of itself does not address cost shifting and cross-subsidization inherent in NEM billing. Put another way, decoupling, if appropriately designed, has the ability to address lost revenues resulting from things like increased energy efficiency and customer-owned self-generation, but it does not fundamentally address the unfair shifting of costs from NEM customers to non-net metered customers.

8.0 Recommendations

The Companies reiterate in no uncertain terms that they fundamentally support an individual customer's choice, as well as legal right, to install self-generation equipment (whether it be a solar PV system or some other technology) and to be treated fairly and in a non-discriminatory manner with respect to grid access. As discussed above, the concern with the current form of NEM billing is that utility infrastructure and other related fixed operating costs are being unfairly shifted to non-net metered customers. The Council's current NEM rules are economically inefficient in that they incentivize customers to make decisions that do not reflect cost of service principles. As a general principle, the Companies support cost-based rates and continue to be concerned that the Companies' non-net metered customers are being financially harmed by the continued proliferation of rooftop solar PV systems that benefit from the current NEM billing regime.

The Companies believe that it would be appropriate at this time for the Council to consider adopting one or more of the solutions proposed above, namely, considering the

implementation of a pre-specified cap and determining what NEM 2.0 should entail once such a cap is reached. The Companies believe that the alternative billing model presented above involving compensating NEM customers for their excess energy using avoided cost as the basis for determining a rate is fair, just, and reasonable both to NEM customers who are being subsidized and to the broader group of current customers without self-generation equipment who are incurring higher costs as a result. The other alternatives discussed above may also offer certain potential benefits and it may be appropriate to consider them further in conjunction with this proceeding. As for the timing of any changes to the Council's NEM rules and the applicability of any such changes to existing NEM customers, the Companies are open to a dialogue with the Council, its Advisors, and other stakeholders.

Respectfully Submitted:

By: _____

Kathryn J. Lichtenberg, Bar No. 1836
Timothy S. Cragin, Bar No. 22313
Brian L. Guillot, Bar No. 31759
Courtney R. Nicholson, Bar No. 32618
639 Loyola Avenue, Mail Unit L-ENT-26E
New Orleans, Louisiana 70113
Telephone: (504) 576-6571
Facsimile: (504) 576-5579

ATTORNEYS FOR ENTERGY NEW ORLEANS, INC. AND ENTERGY LOUISIANA, LLC

CERTIFICATE OF SERVICE

I hereby certify that I have this 3rd day of March 2015, served the required number of copies of the foregoing report upon all other known parties of this proceeding, by: ☒ electronic mail, ☐ facsimile, ☐ overnight mail, ☐ hand delivery, and/or ☐ United States Postal Service, postage prepaid.

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

W. Thomas Stratton, Jr.
Director, City Council Utilities
Regulatory Office
City of New Orleans
City Hall, Room 6E07
1300 Perdido Street
New Orleans, LA 70112

Evelyn F. Pugh, Esq.
Council Chief of Staff
New Orleans City Council
City Hall, Room 1E06
1300 Perdido Street
New Orleans, LA 70112

Sharonda Williams
City Attorney Office
City Hall, Room 5E03
1300 Perdido Street
New Orleans, LA 70112

Norman S. Foster
Department of Finance
City Hall, Room 3W06
1300 Perdido Street
New Orleans, LA 70112

Hon. Jeffery S. Gulin
3203 Bridle Ridge Lane
Lutherville, GA 21093

Clinton A. Vince, Esq.
Presley R. Reed, Jr., Esq.
Emma F. Hand, Esq.
Dentons US LLP
1301 K Street, NW
Suite 600, East Tower
Washington, DC 20005-3364

Basile J. Uddo, Esq.
J.A. "Jay" Beatmann, Jr.
c/o Dentons US LLP
The Poydras Center, Suite 2850
650 Poydras Street
New Orleans, LA 70130-6132

Walter J. Wilkerson, Esq.
Bobbie Mason, Esq.
Kelley Bazile
Wilkerson and Associates, PLC
The Poydras Center, Suite 1913
650 Poydras Street
New Orleans, LA 70130

Joseph A. Vumbaco, P.E.
Legend Consulting Group Limited
8055 East Tufts Avenue
Suite 1250
Denver, CO 80237-2835

Errol Smith, CPA
Bruno and Tervalon
4298 Elysian Fields Avenue
New Orleans, LA 70122

Kenneth C. Pailet, CPA
Pailet, Meunier and LeBlanc, L.L.P.
3421 N. Causeway Boulevard
Suite 701
Metairie, LA 70002

Gary Huntley
Entergy New Orleans, Inc.
Mail Unit L-MAG-505B
1600 Perdido Street
New Orleans, LA 70112

Charles Rice, Jr.
Entergy New Orleans, Inc.
Mail Unit L-MAG-505A
1600 Perdido Street
New Orleans, LA 70112

Seth Cureington
Polly S. Rosemond
Al D. Eiffert
Entergy New Orleans, Inc.
Mail Unit L-MAG-505B
1600 Perdido Street
New Orleans, LA 70112

Kathryn J. Lichtenberg, Esq.
Timothy S. Cragin, Esq.
Courtney R. Nicholson, Esq.
Brian L. Guillot, Esq.
Lawrence J. Hand, Jr., Esq.
Edward Wicker, Jr., Esq.
Entergy Services, Inc.
Mail Unit L-ENT-26E
639 Loyola Avenue
New Orleans, LA 70113

Joseph J. Romano, III
Suzanne Fontan
Entergy Services, Inc.
Mail Unit L-ENT-4C
639 Loyola Avenue
New Orleans, LA 70113

Kimberly A. Fontan
Entergy Services, Inc.
4809 Jefferson Highway
Mail Unit L-JEF-357
Jefferson, LA 70121

Michael L. Winberry
Jacobs Technology Inc.
13800 Old Gentilly Rd., Bldg. 320
New Orleans, LA 70129

Randy Day
Director
The Folger Coffee Company
14601 Old Gentilly Road
New Orleans, LA 70129

Ernest L. Edwards, Jr.
Beirne, Maynard & Parsons, L.L.P.
601 Poydras Street
Suite 2200
New Orleans, LA 70130-6097

Fred M. Mazurski, CEM, CDSM
Energy USG Corporation
550 West Adams Street
Chicago, IL 60661-3676

Joshua Smith
Staff Attorney
Sierra Club Environnemental Law Program
85 Second Street, 2nd Floor
San Francisco, CA 94105

Casey DeMoss
CEO
Alliance for Affordable Energy
2372 St. Claude Avenue, 300A
New Orleans, LA 40117

Thomas W. Milliner
Brian Burke
Anzelmo, Milliner & Burke LLC
3636 S. I-10 Service Road W.
Suite 206
Metairie, LA 70001

Jeff Cantin
C. Tucker Crawford
Heather Pohnan
Gulf States Renewable Energy Industries Association
643 Magazine Street, Suite 102
New Orleans, LA 70130

Jacquelyn Dadakis, Managing Director
Gina LaMacchia, GCE Services
2725 So. Broad Street
New Orleans, LA 70125

Abby Schwimmer
Policy Manager
Southeast Energy Efficiency Alliance
50 Hurt Plaza SE, Suite 1250
Atlanta, GA 30303

Karla Loeb
Margot Want
Posigen Solar Solutions
2424 Edenborn Ave., Suite 550
Metairie, LA 70001

C. Tucker Crawford
Co-Founder/Partner
South Coast Solar, LLC
2605 Ridgelake Drive
Metairie, LA 70002

New Orleans, Louisiana, this 3rd day of March, 2015.

Timothy S. Cragin

Appendix – Recent Net Energy Metering ("NEM") Regulatory Activities

State	Utility	Brief Description of Policy / Mechanism
AZ	Arizona Public Service	In November 2014, the Arizona Corporation Commission ("ACC") approved a monthly fee ($0.70/kW-month) to be applied to new net metered customers that come on-line after January 1, 2014.
AZ	Utilities subject to ACC regulation	Open docket to investigate value & costs of distributed generation ("DG") to the grid (Case E-00000J-14-0023)
AZ	Salt River Project ("SRP")	In February 2015, SRP's Board of Directors approved a new rate schedule to apply to new net metered customers that come on-line after December 8, 2014; the rate schedule involves a fixed customer charge, seasonal/tiered demand charges, and seasonal/on-peak/off-peak energy charges.
CA	Utilities subject to CPUC regulation	House Bill AB 327 requires utilities to propose successor NEM tariffs to California Public Utilities Commission ("CPUC") (Case R14-07-002); proposed successor NEM tariffs have not yet been filed
CO	Utilities subject to PUC regulation	Colorado Public Utilities Commission opened a generic proceeding to investigate DG/NEM issues (Case 14M-0235E); matter is unresolved
GA	Utilities subject to PSC regulation	Georgia Solar Energy Industry Association, Vote Solar, and Interstate Renewable Energy Council ("IREC") petitioned the Georgia Public Service Commission to establish a value of solar tariff ("VOST") (Case 38619); matter is unresolved
ID	Idaho Power	Idaho Power proposed to increase the fixed charge for residential NEM customers from $5 to $20.92 per month ($22.49 for small business); also proposed a charge of $1.48/kW-month for residential NEM ($1.37 for small business); also proposed to reduce energy charges for NEM customers (Case No. IPC-E-12-27); the matter was decided July 2013 when the Idaho Public Utilities Commission ("PUC") denied most of Idaho Power's application; the PUC stated that the company raised valid issues that are more appropriately addressed in a general rate case
IN	Indianapolis Power & Light ("IPL")	Rate case filed proposing residential customer charge increase from $11 to $17 per month (Case 44576); matter unresolved
IN	Legislation	HB 1320 filed to authorize DG rates and charges, provide for third-party ownership solar leasing, interconnection fees; legislation appears to prohibit rates that subsidize DG customers; matter unresolved
KS	Kansas City Power & Light	Rate case filed proposing residential customer charge increase from$10.71 to $19 per month (Case 15-KCPE-116-RTS); matter unresolved
KY	Kentucky Utilities	Rate case filed proposing residential customer charge increase from $10.75 to $18 per month; filing also includes various clarifying changes to NEM (Case 2014-00371); matter unresolved
KY	Louisville Gas & Electric	Rate case filed proposing residential customer charge increase from $10.75 to $18 per month; filing also includes various clarifying changes to NEM (Case 2014-00371); matter unresolved
KY	Kentucky Power	Rate case filed proposing residential customer charge increase from $8 to $16 per month; filing also includes various clarifying changes to NEM (Case 2014-00396); matter unresolved

State	Utility	Brief Description of Policy / Mechanism
LA	LPSC-Regulated Utilities	In June 2013, the LPSC voted not to accept Staff's Report and Recommendation regarding proposed changes to the Commission's NEM rules (Docket No. R-31417); in a subsequent vote, the Commission approved a 0.5% cap on NEM installations for each jurisdictional utility
LA	LPSC-Regulated Utilities	Consolidated proceeding regarding the LPSC Staff's calculation of the 0.5% cap relative to three co-ops that had each notified the LPSC they had exceeded the cap (Docket No. U-32913 et al.); matter unresolved, but a final Administrative Law Judge recommendation is pending
LA	LPSC-Regulated Utilities	In April 2014, the LPSC hired a consultant to perform a cost-benefit study on NEM (Docket No. X-33192); draft report was issued to the LSPC on February 27, 2015; matter unresolved
ME	Utilities subject to PUC regulation	The Maine Public Utilities Commission ("PUC") issued a Notice of Inquiry ("NOI") into the determination of the value of distributed solar energy generation in the State of Maine; the NOI is apparently being conducted in conjunction with LD 1652, An Act to Support Solar Energy Development in Maine (Docket No. 2014-00171)
MN	Utilities subject to PUC regulation	In April 2014, the Minnesota PUC adopted new rules regarding calculating an optional VOST; under the rules, affected utilities have the voluntary option of applying to use the VOST formula instead of the retail rate when crediting customers for unused electricity they generate from solar; as of yet, no utility has applied to use the VOST formula in lieu of NEM
MN	Utilities subject to PUC regulation	In January 2015, the Minnesota Public Utilities Commission ("PUC") issued proposed rules to revise the state's NEM policy; under the proposed rules, customers with generators up to 40 kW could choose to be compensated at the average retail energy rate or at the avoided cost rate (Docket No. 13-729); matter unresolved
MO	Empire District Electric Co. ("EDE"	Rate case filed proposing residential customer charge increase from $12.52 to $18.75 per month (Case ER-2014-0351); matter unresolved
MO	Kansas City Power & Light	Rate case filed proposing residential customer charge increase from $9 to $25 per month (Case ER-2014-0370); matter unresolved
MS	Utilities subject to PSC regulation	In September 2014, a consultant hired by the Mississippi Public Service Commission ("PSC") issued a report on potential costs and benefits associated with adopting NEM; report also addressed a possible VOST mechanism to be used in lieu of NEM (Docket No. 2011-AD-2); matter unresolved
NM	Public Service of New Mexico ("PNM")	Rate case filed proposing residential customer charge increase from $5 to $12.80 per month; also proposed a charge ($6/kW-month) for new NEM customers (Case 14-00332-UT); matter unresolved
NY	Central Hudson Gas & Electric ("CHG&E")	In conjunction with New York's Reforming the Energy Vision ("REV") initiative, CHG&E filed a rate case proposing residential customer charge increase from $24 to $30 per month (Case 14-E-0318); matter unresolved, but settlement filed phasing in higher customer charge over a 3-year period to $29 per month
OK	Utilities subject to OCC regulation	Per Oklahoma SB 1456 passed in April 2014, regulated utilities are allowed to propose a new customer class and associated charges for DG; as of yet, no applications have been filed, but Oklahoma Gas and Electric ("OG&E") publicly indicated in November 2014 that may file a rate case in 2015 with such proposed changes

State	Utility	Brief Description of Policy / Mechanism
OR	Utilities subject to PUC regulation	In January 2015, the Public Utility Commission ("PUC") of Oregon issued a report to the state legislature regarding the resource value of solar as well as potential cost shift concerns (Case UM 1716)
SC	Legislation	Implementation of SB 1189 establishing various DG programs including addressing potential cost shift concerns; settlement filed in late 2014 that stipulates no NEM-specific charges will be requested for five years
TX	Austin Energy ("AE")	In 2011, AE implemented a VOST in lieu of NEM; AE utilizes two meters: one for billing consumption and one crediting solar output at the current VOST rate; VOST rate subject to change annually
TX	City of San Antonio ("CPS")	In April 2013, CPS proposed a VOST program similar to AE's VOST, but with a lower rate (5.6 cents/kWh average for 2013); the proposal was apparently dropped in mid-2013 and in early 2014 CPS proposed charging a $450 upfront fee and a new fee to be based on a per installed kW basis; it is unclear whether the subsequent proposal was adopted or not
UT	PacifiCorp; utilities subject to Utah PSC regulation	In January 2014, rate case was filed requesting a $4.25 per month facilities charge apply to NEM customers; staff recommended the PSC adopt the $4.25 surcharge, while Office of Consumer Services recommended a charge of $1.54/kW-month based on the rated kW output of a residential net metered customer; in August 2014, the PSC denied the request, but decided to open a proceeding to investigate NEM costs and benefits (Case 14-035-114); matter unresolved
WA	Utilities subject to UTC regulation	Washington Utilities and Telecom Commission ("UTC") opened an investigation into DG including costs and benefits (Case UE-131883); matter unresolved
WI	Madison Gas & Electric ("MG&E")	Rate case was filed proposing residential customer charge increase from $10.44 to $19 per month (Case 3270-UR-120); approved by Public Service Commission of Wisconsin December 2014
WI	We Energies ("WEPCO")	Rate case was filed proposing residential customer charge increase from $9.13 to $16 per month as well as new demand charge for small customers that install DG equipment (Case 05-UR-107); approved by Public Service Commission of Wisconsin December 2014; appeal filed January 2015
WI	Wisconsin Public Service ("WPS")	Rate case was filed proposing residential customer charge increase from $10.40 to $19 per month (Case 6690-UR-123); approved by Public Service Commission of Wisconsin December 2014
WV	Legislation	House Bill 2201 passed that prohibits cross-subsidy associated with NEM; vetoed by WV Governor in February 2015