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January 25, 2019

**VIA: ELECTRONIC FILING**

Mr. Adam J. Teitzman  
Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399-0850

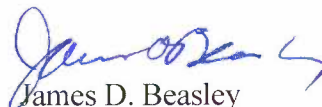
Re: Petition for Approval of Shared Solar Tariff by Tampa Electric Company  
FPSC Docket No. 20180204-EI

Dear Mr. Teitzman:

Attached for filing in the above docket are Tampa Electric Company's Responses to Staff's First Data Request (Nos. 1-30) dated January 4, 2019, with the exception of Tampa Electric's responses to Nos. 27b and 28a, which are being separately submitted on a confidential basis and accompanied by a Request for Confidential Classification and Motion for Temporary Protective Order.

Thank you for your assistance in connection with this matter.

Sincerely,

  
James D. Beasley

JDB/pp  
Attachment

cc: Charles Morgan II

**TAMPA ELECTRIC COMPANY  
DOCKET NO. 20180204-EI  
STAFF'S FIRST DATA REQUEST  
REQUEST NO. 1  
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**Please refer to TECO's Petition in Docket No. 20180204-EI (the Petition) and the Company's Microsoft PowerPoint Presentation (the Presentation), distributed to Staff and other parties during the December 10, 2018 informal meeting, for the following questions.**

- 1.** Please provide a breakdown of how the initial energy charge of \$0.063 per kilowatt-hour (kWh) was calculated, including all inputs, assumptions, and formulas, in an electronic Microsoft Excel file.
  - A.** The requested data is provided in Excel on the enclosed CD.

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- 2.** At the December 10, 2018 informal meeting, the Company stated that the \$0.063 per kWh is designed to cover the cost of the 17.7 MW portion of Lake Hancock unit. Please explain this assertion.
  - A.** The portion of Lake Hancock to be used for the SSR-1 program is now 17.5 MW based on expected output of the six (6) inverters assigned to SSR-1. As shown in the response to No. 1, this set, the \$0.063 per kWh is derived in part based on cost recovery of the 17.5 MW portion of the Lake Hancock unit on a levelized basis at the 95 percent recovery rate. Additional costs associated with the SSR-1 program are included in the \$0.063 per kWh rate.

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- 3.** Please describe how the Company plans to offset the cost and revenue requirement of the 17.7 MW portion of Lake Hancock in base rates using the \$0.063 per kWh charge.
  - A.** The portion of Lake Hancock to be used for the SSR-1 program is now 17.5 MW based on expected output of the six (6) inverters assigned to SSR-1. The rate base and expense components of the 17.5 MW portion of the Lake Hancock unit would be included in Tampa Electric's total cost of service upon being placed into service and these costs would be include in Surveillance reporting at that time. As customers are signed up to take service under the proposed SSR-1 tariff and begin generating revenues, the revenues collected would also be included in Surveillance reporting, thus offsetting the cost and revenue requirements. When base rates are being reset in a future base rate proceeding, the full revenue requirements of the 17.5 MW portion the Lake Hancock unit assigned to the SSR-1 tariff would be included in the revenue requirements developed in that proceeding, and the revenues being collected under the SSR-1 tariff would be revenue credited to the revenue requirement in that proceeding as an offset.

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4. Please provide an example of a residential bill using 2019 cost recovery clause factors for a customer that elects into the SSR-1 tariff. Please include 25, 50, and 100 percent blocks, as well as a non-participant's bill, based on 1,000 kWh and 2,000 kWh monthly usages.

A. The tables below provide examples of residential bills using 2019 cost recovery clause factors for a customer that elects into the SSR-1 tariff based on 1,000 kWh and 2,000 kWh monthly usages:

		1000	kWh Residential Customer	0.063	SSR-1 Rate	
<b>Residential Usage</b>			<b>Standard Bill</b>	<b>25%</b>	<b>50%</b>	<b>100%</b>
	Total kWh Used		1,000	1,000	1,000	1,000
<b>Basic Service Charge</b>			\$ 15.12	\$ 15.12	\$ 15.12	\$ 15.12
<b>Energy Charge</b>						
Tier 1 Energy Charge Non-Solar Portion	0.05787 per kWh	\$	57.87	\$ 43.40	\$ 28.94	\$ -
Tier 1 Energy Charge <b>Shared Solar</b> Portion (no ECRC)	0.05565 per kWh			\$ 13.91	\$ 27.83	\$ 55.65
Tier 2 Energy Charge Non-Solar Portion	0.06787 per kWh	\$	-	\$ -	\$ -	\$ -
Tier 2 Energy Charge <b>Shared Solar</b> Portion (no ECRC)	0.06565 per kWh	\$	-	\$ -	\$ -	\$ -
<b>Total Energy Charge</b>		\$	<b>57.87</b>	\$ <b>57.32</b>	\$ <b>56.76</b>	\$ <b>55.65</b>
<b>Fuel Charge</b>						
Tier 1 Fuel Charge Non-Solar Portion	0.02405 per kWh	\$	24.05	\$ 18.04	\$ 12.03	\$ -
Tier 1 <b>Shared Solar</b> Charge	0.06300 per kWh	\$	-	\$ 15.75	\$ 31.50	\$ 63.00
Tier 2 Fuel Charge Non-Solar Portion	0.03405 per kWh	\$	-	\$ -	\$ -	\$ -
Tier 2 <b>Shared Solar</b> Charge	0.06300 per kWh	\$	-	\$ -	\$ -	\$ -
<b>Total Fuel and/or Solar Charge</b>		\$	<b>24.05</b>	\$ <b>33.79</b>	\$ <b>43.53</b>	\$ <b>63.00</b>
<b>Electric Service Cost without Taxes and Fees</b>		\$	<b>97.04</b>	\$ <b>106.22</b>	\$ <b>115.41</b>	\$ <b>133.77</b>

		2000	kWh Residential Customer	0.063	SSR-1 Rate	
<b>Residential Usage</b>			<b>Standard Bill</b>	<b>25%</b>	<b>50%</b>	<b>100%</b>
	Total kWh Used		2,000	2,000	2,000	2,000
<b>Basic Service Charge</b>			\$ 15.12	\$ 15.12	\$ 15.12	\$ 15.12
<b>Energy Charge</b>						
Tier 1 Energy Charge Non-Solar Portion	0.05787 per kWh	\$	57.87	\$ 57.87	\$ 57.87	\$ -
Tier 1 Energy Charge <b>Shared Solar</b> Portion (no ECRC)	0.05565 per kWh			\$ -	\$ -	\$ 55.65
Tier 2 Energy Charge Non-Solar Portion	0.06787 per kWh	\$	67.87	\$ 33.94	\$ -	\$ -
Tier 2 Energy Charge <b>Shared Solar</b> Portion (no ECRC)	0.06565 per kWh	\$	-	\$ 32.83	\$ 65.65	\$ 65.65
<b>Total Energy Charge</b>		\$	<b>125.74</b>	\$ <b>124.63</b>	\$ <b>123.52</b>	\$ <b>121.30</b>
<b>Fuel Charge</b>						
Tier 1 Fuel Charge Non-Solar Portion	0.02405 per kWh	\$	24.05	\$ 24.05	\$ 24.05	\$ -
Tier 1 <b>Shared Solar</b> Charge	0.06300 per kWh	\$	-	\$ -	\$ -	\$ 63.00
Tier 2 Fuel Charge Non-Solar Portion	0.03405 per kWh	\$	34.05	\$ 17.03	\$ -	\$ -
Tier 2 <b>Shared Solar</b> Charge	0.06300 per kWh	\$	-	\$ 31.50	\$ 63.00	\$ 63.00
<b>Total Fuel and/or Solar Charge</b>		\$	<b>58.10</b>	\$ <b>72.58</b>	\$ <b>87.05</b>	\$ <b>126.00</b>
<b>Electric Service Cost without Taxes and Fees</b>		\$	<b>198.96</b>	\$ <b>212.33</b>	\$ <b>225.69</b>	\$ <b>262.42</b>

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5. Please provide the estimated annual residential bill (at 1,000 kWh) for non-participants in the SSR-1 for the period of 2019 through 2048, assuming the Company is able to consistently achieve the subscription rates below.
- a. 95 percent
  - b. 50 percent
  - c. 0 percent

Year	Base Rate Charges	FCRC	Energy Conservation Cost Recovery Clause	ECRC	Capacity Cost Recovery Clause	Gross Receipts Tax	Total

- A. The requested data is provided in Excel on the enclosed CD.

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6. Please describe the benefits and risks associated with the SSR-1 for each of the following groups.
- a. The general body of ratepayers
  - b. Non-participants
  - c. The Company
  - d. SSR-1 subscribers

- A. a. Benefits:
- 1. Provides customers an option to purchase more of their electric supply from renewable generators without having to install renewable generation at their home or business.
  - 2. For general body of ratepayers who do not have roofs or locations where they can install solar generation, this provides an option to purchase more of their electric supply from renewable generators.
  - 3. Results in more renewable generation as part of Tampa Electric generation fleet, with less emissions from fleet operations.
  - 4. There are system operations and reliability benefits associated utility-owned solar generation that go along with the utility's ability to control utility owned solar facilities.
  - 5. Utility owned solar secures land upon which more and better solar can be installed in coming decades as solar technology becomes more efficient and less costly.

Risks:

- 1. With declining solar costs, a risk of investing in solar now is that future solar costs may be lower, so that deferring the investment could result in lower costs to customers.

b. Benefits:

- 1. Results in more renewable generation as part of Tampa Electric's generation fleet, with less emissions from fleet operations.
- 2. There are system operations and reliability benefits associated utility-owned solar generation that go along with the utility's ability to control utility-owned solar facilities.
- 3. Beneficial bill impact in later part of life of SSR-1 solar facility

Risks:

- 1. None. The shared solar facility is cost-effective.

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c. Benefits:

1. Consistent with company goals and customer demand, shared solar provides increased opportunity to supply renewable generation to customers.
2. Meets the needs of customers and results in improved customer satisfaction.
3. Increases company experience in both solar development and customer acceptance of solar in the generation mix – including future energy storage investment.

Risks:

1. Newer technologies like solar have inherent risks as technology changes more swiftly and unknown issues arise.

d. Benefits:

1. The zero fuel cost component acts as insurance against future increases in fuel cost under traditional tariffs.
2. Ability to secure more solar supplying participating customers' energy needs without the customers having to make investments in plant at their home or business, whether or not they have the ability to install their own solar.

Risks:

1. Paying more for shared solar in early years in anticipation that the shared solar program may act as insurance against higher fuel costs may not pan out if fuel costs don't increase or if the customer moves before future year fuel cost increases benefit them.
2. Technology may change and more cost-effective options may arise, though customers have the ability to terminate their participation in the program without consequence, which may allow the customers to take advantage of more cost-effective options when they arise.
3. Energy efficiency may result in a lower consumption.



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7. Please explain whether non-participant customers will be held harmless if the program is approved as designed.
  - A. This program extends at least the 30-year life of the Lake Hancock solar facility, assuming customers continue to participate over that time period. Tampa Electric cannot predict what will happen to Tampa Electric, the Florida regulatory process or the electric utility industry over that 30 year time period to assure anyone that non-participating customers will be held harmless, benefit or incur some adverse rate impact or "harm". The program has been designed so that, over the life of the shared solar facilities, non-participating ratepayers will have minimal if any impact from the provision of the program to SSR-1 customers. This facility has been found to be a cost effective addition to Tampa Electric's system regardless of participation by SSR-1 customers.

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- 8.** At the December 10, 2018 informal meeting, TECO stated that it assumed a 95 percent annual available energy subscription rate for the entire 30-year life of the plant when developing the proposed SSR-1 rate. This would imply that the SSR-1 tariff would be fully subscribed to that threshold on the effective date of the tariff. What does TECO rely upon to support this assumption?
  
- A.** Tampa Electric did not mean to imply that 95 percent annual available energy subscription would be achieved for the entire 30-year life of the plant. The 95 percent figure is used as a cap on participation by customers for the purpose of signing up new customers under SSR-1. Tampa Electric believes it needs this cap to enable fulfillment of the supply of renewable energy to customers under SSR-1 allowing for growth for existing customers usage over time and management of the loss of customer participation and opening of new customer participation until demand grows to the point where a new unit is a reasonable and cost-effective option to meet such demand. Tampa Electric does not expect to have fully sold out participation on the effective date of the tariff.

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9. For the period 2019 through 2048, please provide, on an annual basis, TECO's projected total number of customers by type (residential, commercial, etc.) and the projected total number of SSR-1 customers by type.
- A. The table below provides Tampa Electric's projected total number of customers by type. The total number of SSR-1 customers by type has not been projected. The SSR-1 facility will generate enough energy for approximately 2,600 average residential customers subscribed at 100%.

Year	Residential	Commercial	Industrial	Governmental	Total
2019	681,322	75,304	1,597	9,218	767,441
2020	695,011	75,612	1,606	9,301	781,530
2021	707,997	75,861	1,614	9,387	794,859
2022	720,760	76,210	1,623	9,483	808,076
2023	733,249	76,600	1,632	9,585	821,066
2024	745,420	76,916	1,639	9,689	833,664
2025	757,236	77,155	1,647	9,791	845,829
2026	768,684	77,375	1,654	9,893	857,606
2027	779,733	77,612	1,661	9,996	869,002
2028	790,431	77,879	1,667	10,100	880,077
2029	800,837	78,155	1,674	10,206	890,872
2030	810,656	78,417	1,680	10,311	901,064
2031	819,363	78,652	1,686	10,416	910,117
2032	828,097	78,877	1,692	10,515	919,181
2033	836,930	79,103	1,698	10,610	928,341
2034	845,862	79,336	1,704	10,703	937,605
2035	854,617	79,577	1,709	10,797	946,700
2036	862,683	79,808	1,715	10,892	955,098
2037	870,782	80,023	1,721	10,988	963,514
2038	878,960	80,236	1,726	11,083	972,005
2039	887,216	80,452	1,731	11,178	980,577
2040	895,338	80,673	1,737	11,276	989,024
2041	903,534	80,895	1,743	11,376	997,548
2042	911,806	81,117	1,749	11,476	1,006,148
2043	920,153	81,340	1,755	11,577	1,014,825
2044	928,576	81,563	1,761	11,679	1,023,580
2045	937,077	81,787	1,767	11,782	1,032,414
2046	945,655	82,012	1,773	11,886	1,041,327
2047	954,312	82,237	1,780	11,991	1,050,320
2048	963,049	82,463	1,786	12,097	1,059,394

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**10.** Please indicate whether or not the SSR-1 conforms to TECO's 2017 Amended and Restated Stipulation and Settlement Agreement ("Agreement"). Please explain.

**A.** Tampa Electric believes that the proposed SSR-1 fully conforms to the Agreement. With regard to pertinent sections of that agreement:

Section 3(a & b) page 5: Under SSR-1 proposal, general base rates, charges, credits and rate design methodologies in effect on December 31, 2017 remain in effect, SSR-1 is new.

Section 6 in general pages 10-20: The portion of Lake Hancock to be used for the SSR-1 program is now 17.5 MW based on expected output of the six (6) inverters assigned to SSR-1. The 17.5 MW portion of Hancock to be utilized for SSR-1 is not part of the SoBRA units.

Section 6(q) page 20: This section directs that the lowest cost PV generating units constructed by Tampa Electric be utilized for SoBRA. Hancock, while a new unit, is expected to be the highest cost unit utilized for SoBRA. Hence, a subset of this unit being utilized for SSR-1 conforms to the Agreement.

Section 11(e) page 27: The portion of Lake Hancock to be used for the SSR-1 program is now 17.5 MW based on expected output of the six (6) inverters assigned to SSR-1. Since the 17.5 MW portion of Hancock is not part of the SoBRA, it is permissible for the renewable energy credits associated with it to be retained and retired by the company or assigned to the customers participating in SSR-1.

Section 12 page 27: SSR-1 is an optional tariff offering to Tampa Electric customers and therefore is from this section.

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- 11.** Please specify if the Company plans to place the entire Lake Hancock unit into base rates. If yes, please indicate whether the Company plans to request Commission approval in its next Solar Base Rate Adjustment (SoBRA), a general base rate proceeding, or a limited rates proceeding.
- A.** As is true for any general base rate proceeding, new power plants constructed and placed into service since the last base rate proceeding are subject to Commission review in a subsequent general base rate proceeding. Tampa Electric plans to include the entire Lake Hancock unit in rate base in its next general base rate proceeding for purposes of calculating base rates. The portion of Lake Hancock which is being utilized for and recovered from the general body of ratepayers was included in the Second SoBRA proceeding and received Commission approval for rate recovery under the SoBRA, subject to true-up in a subsequent proceeding. The portion of Lake Hancock which is being utilized for the proposed SSR-1 rate recovery is a portion of that same unit which costs were reviewed in the Second SoBRA proceeding and found to be appropriate for customer rate treatment and prudence. Tampa Electric does not expect to file a limited rates proceeding prior to its next general base rates proceeding, except as covered under the 2017 Amended and Restated Stipulation and Settlement Agreement or as ordered to do by the Commission.

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- 12.** Please explain if construction of any portion of the Lake Hancock project is contingent upon approval of the proposed SSR-1 tariff. If not, please provide the status of construction of the Lake Hancock unit.
- A.** The portion of Lake Hancock to be used for the SSR-1 program is now 17.5 MW based on expected output of the six (6) inverters assigned to SSR-1. Construction of any portion of Lake Hancock, in particular the 17.5 MW portion to be utilized under the SSR-1, is not contingent upon approval of the proposed SSR-1 tariff. The Lake Hancock 17.5 MW is currently under construction and the commercial in-service date has not yet been determined.

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- 13.** Please describe TECO's reasoning for developing the SSR-1 tariff instead of including this 17.7 MW portion of Lake Hancock in the Company's next tranche of SoBRA.
- A.** The portion of Lake Hancock to be used for the SSR-1 program is now 17.5 MW based on expected output of the six (6) inverters assigned to SSR-1. Tampa Electric did not develop the SSR-1 tariff as an alternative to including the 17.5 MW portion of Lake Hancock in the next tranche of SoBRA. Several parallel factors resulted in the 17.5 MW portion of Lake Hancock that was in excess of the second SoBRA as the unit to be used for the SSR-1 tariff. Following are those factors:
- A decision was reached in summer/fall 2018 to design a shared solar tariff and program
  - Lake Hancock was filed in the second SoBRA as part of 5 units to meet capacity limit allowed for second SoBRA, which was over by 17.5 MW
  - Lake Hancock was the most expensive of those 5 units and at the cap price allowed in the SoBRA agreement, which met the commitment to assure that SoBRA units would be the lowest cost units Tampa Electric would include in SoBRA
  - Lake Hancock would be completed in time to provide capacity for the SSR-1 tariff once approved and ready to accept customers

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14. Page 3, Paragraph 6 of the Petition states “the SSR-1 design mirrors some of the best facets of the City of Tallahassee’s utility tariff...”
- a. Please describe the Company’s efforts to evaluate the City of Tallahassee’s tariff and describe what the Company deemed as its “best facets.”
  - b. How did TECO incorporate those “best facets” into the SSR-1 program?

- A. a. The project team evaluated tariff filings for active and planned community/shared solar programs across the country. The team reviewed utility and third-party provided program structures and considered the solar capacity that was made available, participation rates, lessons learned, mandates, subsidies, and economics of each program.

Tampa Electric reviewed the City of Tallahassee’s solar program tariff as part of its investigation into similarly-sized community/shared solar offerings. Tampa Electric spoke with the City’s program team and discussed the success that the program experienced being fully subscribed soon after it was made available. The City’s program offers residential, small- and medium-sized commercial customers the ability to elect for 25, 50, or 100 percent of their monthly electric usage to be powered by solar. The City’s large commercial and industrial customers must specify a fixed number of monthly kilowatt hours that will be designated as solar energy. Customers that choose to participate in the City’s solar program pay \$0.05/kWh in lieu of their fuel and purchased power charge. This rate is locked in for 20 years.

- b. Some of the “best facets” that were incorporated into the design of Tampa Electric’s SSR-1 program include providing the option for residential and small commercial customers the ability to subscribe to 25, 50, or 100 percent of their energy usage rather than subscribing to capacity with variable output. As with the City’s program, Tampa Electric’s SSR-1 program requires large commercial customers to subscribe to a fixed number of kilowatt hours to manage supply and demand of SSR-1 energy. Other facets that led to the success of the City’s program, including the locked in rate in lieu of fuel, transferability (if a participant moves within the service area, they can take it with them), no application fee, and no penalty for discontinuing service were also incorporated into Tampa Electric’s program design.



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- 15.** Please refer to Page 6, Paragraph 14 in the Petition to answer the following questions.
- a. Please describe how Fuel Cost Recovery Clause (FCRC) and Environmental Cost Recovery Clause (ECRC) charges are calculated for customers subscribing to 25, 50, and 100 percent SSR-1 usage.
  - b. Please explain why the Company believes it is appropriate to exclude the FCRC and ECRC charges for SSR-1 customers, given the customers will be using energy generated from the Company's fleet.
  - c. Has the Company evaluated the impact of including all, or part of, the ECRC and/or the FCRC in the Shared Solar Energy Charge? Please explain.
  - d. Is it correct that the general body of ratepayers' ECRC factors must increase to allow for recovery of ECRC costs if SSR-1 customer sales are charged at a zero rate, given that much of ECRC costs are fixed? Please explain.
  - e. The Petition states that the cost recovery clause exclusions "will be recognized in the annual clause calculations." Please explain how these exclusions will be recognized. Identify in your response the specific Schedule or Schedules where these exclusions will be recognized.
- A.**
- a. It is important to recognize that SSR-1 customers will not be paying FCRC or ECRC charges only for the energy they purchase under SSR-1. For example, if a residential customer elects to purchase only 25% of their energy under SSR-1, the other 75% of the energy they purchase under standard residential rates will include FCRC and ECRC charges as part of the billing components. The tables provided in response to question No. 4 in this set display how the charges will be affected for participation rates of 25, 50, and 100 percent SSR-1.
  - b. The SSR-1 energy being purchased is generated at a PV array which does not include any equipment that uses fuel that will be recovered under FCRC, or environmental equipment subject to cost recovery under ECRC. There is no fuel cost or purchased power cost associated with the PV array, so the SSR-1 customer should not be subject to charges associated with fuel and purchase power costs. There is also no ECRC cost recovered environmental equipment associated with the energy being produced by the PV array, so there should be no ECRC charge associated with SSR-1 energy either. It should be noted that the SSR-1 energy purchase will be assessed both Capacity Clause and Conservation Clause charges. Purchased

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Capacity is being provided to SSR-1 customers to meet their needs through the grid. SSR-1 customers are still eligible to take advantage of conservation programs for their needs, and the benefits of conservation programs accrue to their benefit as well through the grid. It should be noted that FCRC and ECRC are energy related clause charges, whereas both Capacity and Conservation are demand related clause charges. SSR-1 is an energy purchase.

- c. In addition to the \$0.063/kWh SSR-1 charge, customers purchasing energy from an SSR-1 facility will continue to pay all standard residential rates with the exclusion of FCRC and ECRC. The SSR-1 energy being purchased is generated at a PV array which does not include any equipment that uses fuel that would be recovered under FCRC, or environmental equipment subject to cost recovery under ECRC.
- d. For 2019, the ECRC factors have already been set and will not increase in 2019 as a result of approval of SSR-1. For 2020 and beyond it is possible that ECRC costs could decrease or customer growth could offset any increase in costs such that the ECRC factors do not increase. Assuming ECRC costs remained exactly the same, customer growth would likely increase at a greater rate than SSR-1 customers, so the ECRC factor would decrease.
- e. Recognition will occur as energy billing determinants used as the denominator for fuel and ECRC clause factor calculations will exclude SSR-1 energy sales.

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BATES-STAMPED PAGE: 20  
FILED: JANUARY 25, 2019**

- 16.** If the proposed SSR-1 tariff is not approved by the Commission, what entity or entities will receive the output of the 17.7 MW SSR-1 portion of Lake Hancock? Please explain.
- A.** The portion of Lake Hancock to be used for the SSR-1 program is now 17.5 MW based on expected output of the six (6) inverters assigned to SSR-1. The 17.5 MW SSR-1 portion of Lake Hancock will be producing energy output for the general body of ratepayers.

**TAMPA ELECTRIC COMPANY  
DOCKET NO. 20180204-EI  
STAFF'S FIRST DATA REQUEST  
REQUEST NO. 17  
BATES-STAMPED PAGE: 21  
FILED: JANUARY 25, 2019**

- 17.** Page 5, Paragraph 11 of the Petition states that customers would be removed from being billed under the SSR-1 tariff in the event the SSR-1 tariff is closed. If the tariff is closed for any reason (or TECO does not achieve full participation), how would the remaining costs of the 17.7 MW SSR-1 portion of Lake Hancock be recovered by the Company?
- A.** The portion of Lake Hancock to be used for the SSR-1 program is now 17.5 MW based on expected output of the six (6) inverters assigned to SSR-1. If the SSR-1 tariff is closed for any reason, or if Tampa Electric does not achieve full participation under the SSR-1 tariff, the 17.5 MW SSR-1 portion of Lake Hancock not serving SSR-1 will be producing energy output for the general body of ratepayers. Until that portion of Lake Hancock is either included in a future SSR-1 tranche or is included as a portion of the revenue requirement in a general base rate case, the only "recovery" of the associated costs of that portion will be as included in surveillance reporting and as they affect the reported return of Tampa Electric.

**TAMPA ELECTRIC COMPANY  
DOCKET NO. 20180204-EI  
STAFF'S FIRST DATA REQUEST  
REQUEST NO. 18  
BATES-STAMPED PAGE: 22  
FILED: JANUARY 25, 2019**

- 18.** Refer to Page 5 and 6, Paragraph 13 of the Petition. Please explain whether or not the Company believes that expanding the SSR-1 tariff, beyond the 17.7 MW currently designated for SSR-1 service, would require Commission approval. If not, please explain.
- A.** The portion of Lake Hancock to be used for the SSR-1 program is now 17.5 MW based on expected output of the six (6) inverters assigned to SSR-1. Expansion beyond the 17.5 MW capacity designated for SSR-1 tariff service would require construction and assignment of a new PV generating unit to SSR-1 service. If the Commission approves the \$0.063 per kWh cap price for SSR-1 service, Tampa Electric would not undertake to build and apply a new PV generating unit to SSR-1 service unless its cost was at or below that cap price. If such a unit could be built, and there was market demand to utilize such a new unit (i.e., the market demand would affect how big a unit would be built), Tampa Electric believes it could do so without prior Commission approval and be subject to Commission review in a future general base rate proceeding. This same capacity expansion authority absent prior Commission approval applies to generation expansion not subject to need certification and transmission/distribution expansion.

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REQUEST NO. 19  
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- 19.** Please describe the proposed accounting treatment for the entire Lake Hancock project, addressing in your response all journal entries that will be necessary if the SSR-1 tariff is approved.
- A.** The assets will be booked in total for Lake Hancock based on the appropriate retirement unit breakout and cost allocation. The assets will not be segregated by SoBRA assets vs. community solar assets. Any required reporting will evaluate the total assets for Lake Hancock.

Dr. Plant in Service 101  
Cr. CWIP 107

**TAMPA ELECTRIC COMPANY  
DOCKET NO. 20180204-EI  
STAFF'S FIRST DATA REQUEST  
REQUEST NO. 20  
BATES-STAMPED PAGES: 24 - 25  
FILED: JANUARY 25, 2019**

- 20.** Please refer to Page 4, Paragraph 9 of the Petition, to answer the following questions.
- a. Please discuss how the cap value of 95 percent was chosen and calculated.
  - b. Please describe TECO's strategy to maintain the 95 percent usage rate of the SSR-1 output on a month-to-month and/or annual basis.
  - c. Please provide TECO's contingency plan for instances when the output of the solar project does not match customer usage.
  - d. Is it correct that the revenue requirement associated with the difference between the 95 percent annual available energy subscription cap and the actual percentage of energy output level subscribed would be collected from the general body of ratepayers both after SSR-1 tariff approval and after base rates are set? Please explain.
- A.**
- a. It is common for shared solar programs that offer solar energy rather than capacity to keep a reserve to manage supply and demand. The cap value of 95 percent was chosen with the intent to minimize financial impact of this reserve on both participants and non-participants. The proposed \$0.063 rate was calculated based on participants covering the cost of the entire SSR-1 facility but only benefitting from 95 percent of the energy generated. A larger reserve would result in a higher SSR-1 rate, making it less viable for customers to participate. A 5 percent reserve was determined to be the least amount that could be managed through subscriptions and natural attrition.
  - b. Available solar generation at SSR-1 facilities will be predicted and tracked on an annual basis due to the month-to-month variability of solar energy generation. 95 percent of this energy will be made available for SSR-1 participants. Associated energy subscribed from SSR-1 facilities will be predicted on an annual basis and calculated based on participant's previous 12-months energy consumed. This practice will ensure that the variability of solar energy generation and customer consumption on a month-to-month basis is accounted for in determining solar energy available for enrollment.
  - c. On a month-to-month basis, Tampa Electric does not anticipate the output of the solar project to match customer usage. At the time of enrollment, the kWh for subscribed or enrolled energy is determined by the customer's previous 12-months total usage. Subscription

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kWh/enrolled energy of residential and small commercial customers will be updated once every year based on the participant's 12-month actual consumption. This is necessary in keeping available SSR-1 solar energy up-to-date. This will occur after the December billing cycle each year. Large commercial and industrial customers will subscribe to a set amount of kWh each month. Subscription kWh of these customers will be reviewed on an annual basis as well. Available energy will be monitored regularly to avoid over-subscription and will be managed through expected natural attrition.

- d. The difference would not be collected after SSR-1 tariff approval but would be collected from the general body of ratepayers after base rates are reset as part of a general base rate case. While the SSR-1 tariff approval will provide for recovery of the cost of the SSR-1 unit under the \$0.063 proposed rate, that recovery will only be from SSR-1 customers. The general body of ratepayers will not see a base rate increase at that time. After a general rate case proceeding with base rates are reset, to the extent the revenue crediting of the SSR-1 revenues collected are less than the revenue requirement of the associated unit included in the company revenue requirements in that case, then the difference would result in an upward or downward pressure on base rates for the general body of ratepayers for that difference. Because the SSR-1 rates proposed are levelized rates, in the early years of service the pressure would be likely upward on base rates. After a period of years and the SSR-1 units are depreciated, the pressure would be likely downward on base rates. Over the lifetime of the units, the total impact on base rates would tend to be negligible, up in the early years and down in the later years.



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STAFF'S FIRST DATA REQUEST  
REQUEST NO. 21  
BATES-STAMPED PAGE: 26  
FILED: JANUARY 25, 2019**

- 21.** Please refer to Pages 3 and 4, Paragraph 8 of the Petition. Please provide the testimony in Docket No. 20180133-EI that shows that all of Lake Hancock Solar Facility is a cost-effective unit for TECO customers.
- A.** The referenced testimony is that of R. James Rocha in that docket, pages 19-20 (pages 97-98 of the complete pdf document) which can be accessed using the following FPSC website link:  
<http://www.psc.state.fl.us/library/filings/2018/04469-2018/04469-2018.pdf>

**TAMPA ELECTRIC COMPANY  
DOCKET NO. 20180204-EI  
STAFF'S FIRST DATA REQUEST  
REQUEST NO. 22  
BATES-STAMPED PAGES: 27 - 65  
FILED: JANUARY 25, 2019**

- 22.** Please refer to Page 2 of the Presentation to answer the following questions.
- a. Please provide high level reports or summaries of the customer survey performed in August 2016, which indicated that about 11 percent of customers would potentially participate in the SSR-1 tariff.
  - b. Please provide the third party market assessment discussed on this page.

- A.**
- a. A voluntary customer survey was performed in August 2016 to gain insight on Tampa Electric customers' desires for solar offerings. Tampa Electric sent the survey to over 220,000 electronic-billed customers, receiving almost 25,000 responses. When asked if respondents would be interested in shared solar, 45 percent expressed interest. After describing the proposed shared solar offering and explaining that there would be an up to \$0.04/kWh incremental charge to participate, 10.4 percent responded they would be very likely and 22 percent somewhat likely to participate.

A third-party marketing firm used an industry formula to calculate the realistic interest based on these results, taking half of the very interested and 25 percent of the somewhat interested to get approximately 11 percent of our surveyed respondents. Extrapolating over our electronic-billed customers, it was estimated that there is a market potential of approximately 24,000 residential customers for a shared solar program with an incremental cost of \$0.04/kWh over retail.

- b. The third-party market assessment discussed on Page 2 of the Presentation to Staff is attached.

# Assessment of TECO's Proposed Shared Solar Tariff

August 2, 2018  
(Revised 10/24/18)

# About Shelton Group

Shelton<sup>Grp</sup>

## Subject Matter Expertise

27 years in business

13 years exclusively focused on creating a market advantage for the organizations working to create a sustainable future

## Thought Leadership

12 years of Pulse® trending studies re: market beliefs and expectations

Featured speaker at 15-20 industry events annually

8,000+ subscribers to weekly insights newsletter

Regularly featured in mainstream and business press

## Storytelling

Sought after for sustainability-related marketing/comms work that:

- Evokes emotion
- Changes mindsets
- Builds brands
- Sells products

# Agenda

Discuss reactions, suggestions and recommendations to proposed SSR-1 tariff including:

- Pricing model and terms
- Language and explanation of benefits
- Customer bill impact
- Target profiles
- Timing of launch

Evaluation of TECO's solar portfolio including:

- Recommendations for Sun Select
- Audience drivers for each solar program

Preliminary marketing communications suggestions

- Language and strategies

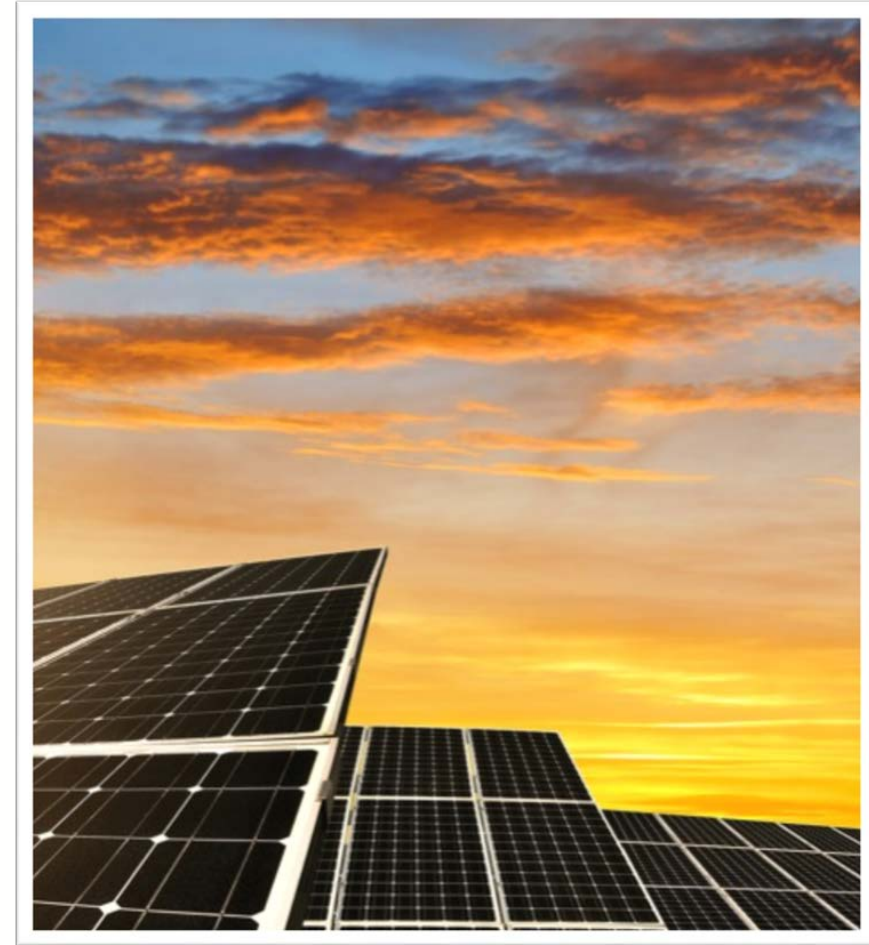
Recap recommendations and potential next steps

# Background

Tampa Electric has invested time and resources to uncovering the needed ingredients to build a new, fully subscribed community solar program.

For five years, you have investigated, studied and scrutinized both successful and non-successful community solar programs from peer IOUs to local city solar programs.

On the heels of filing a Shared Solar tariff in August to the FPSC, TECO has asked Shelton Group to objectively assess the program through the eyes of customers – from top to bottom – helping provide key commentary to shape this new program and get affirmation that this is, indeed, what customers want.





# Reactions, suggestions and recommendations to proposed SSR-1 tariff

# Snapshot of proposed Shared Solar program

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	Upfront payment required	Shared Solar Rate/term	% of power from solar	Capped rate on solar portion	Non-solar fuel charge	Transferrable?	Minimum commitment?
Residential	No	\$0.063/kWh for 25 years	25%, 50% or 100%	Yes	Blended rate from Tier 1 and Tier 2	Yes	No
Commercial	No	\$0.063/kWh for 25 years	Blocks of 1,000 kWh (not to exceed actual monthly consumption)	Yes	Stays the same/no impact	Yes	No



# Pricing Model and Terms

Will your terms entice subscribers?

- Typically community solar programs fall into two camps:
  - a. % of usage with variations from very low to max of 120%
  - b. Blocks typically starting at a minimum size, but with varying limits on how many blocks can be purchased.
- Which path is offered is usually dictated by the regulatory limitations and utility appetite for risk; to a lesser extent the program model and level of risk the developer assumes

	Upfront payment required	Shared Solar Rate/term	% of power from solar	Capped rate on solar portion	Non-solar fuel charge	Transferrable?	Minimum commitment ?
Residential	No	\$0.063/kWh for 25 years	25%, 50% or 100%	Yes	Blended rate from Tier 1 and Tier 2	Yes	No
Commercial	No	\$0.063/kWh for 25 years	Blocks of 1,000 kWh (not to exceed actual monthly consumption)	Yes	Stays the same/no impact	Yes	No

# Pricing Model and Terms

A close look at your research indicates:

- The potential for participation among your e-bill customers is ~11% at the \$0.14 / kWh price point

Rate tested	% Very likely (adjusted by ½)	% Likely (adjusted by ¼)	Viable participation from e-bill customers
Basic interest in CS	8.0%	7.3%	15.3%
\$0.12 / kWh	10.5%	9.0%	19.5%
\$0.13 / kWh	7.4%	7.9%	15.3%
\$0.14 / kWh	5.2%	5.5%	10.7%
\$0.15 / kWh	4.6%	4.4%	9.0%

35

## Unpacking the Numbers

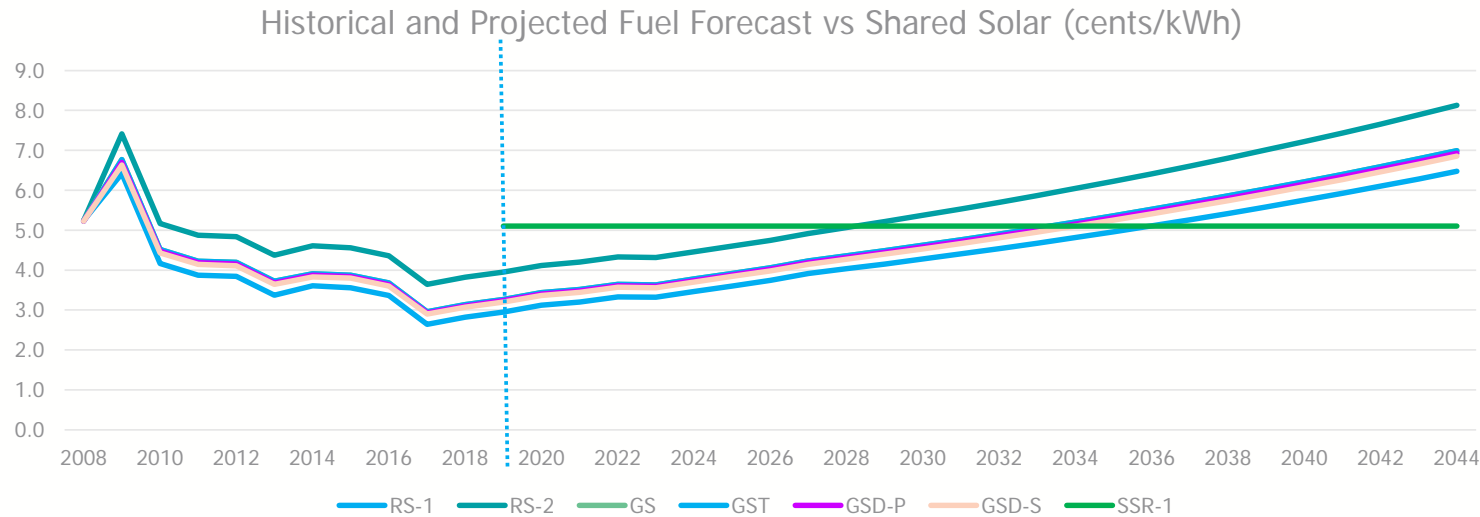
- You surveyed TECO's electric e-bill customers, of which there are currently 223,781 overall
- Therefore the math works out to a potential participant pool of ~24,000
- We recommend you run scenarios based on various participation constructs with the ~24,000
  - X% at 25% participation, Y% at 50%, etc.
  - Note: the ~24,000 is a mix of residential *and* commercial customers
- E-bill customers are a good audience to have surveyed and forecast from. In our experience they are:
  - Tech savvy
  - Millennials and young Gen-Xers
  - Middle to upper income
  - College educated

## Language and Explanation Observations

- Beware of framing the “solar charge in lieu of fuel charge” concept
  - Customers think the sun is free. Therefore, celebrate the fact that customers will have a fuel charge for the sun at \$0.00. Clearly articulate that there is an additional monthly cost (SSR rate) to the customer’s normal cost of electricity for the equipment and maintenance, as well as transmission and distribution of the solar array
- Back to the basics
  - Consider talking about the Shared Solar program from the basic structure of the utility model – power generation, transmission and distribution
  - In this case, the *power generation* portion of customers’ bills will be locked in and not be subject to future rate increases while they’re subscribed to the program. Transmission and distribution costs will be subject to change



# Language and Explanation Observations



- Residential customers would never think about fuel price or volatility – they think of overall bill consistency. If we look at the past 10 years, fuel prices have steadily come down, so why should they trust you when you say “it’s forecasted to go higher?”
  - If you share the potential hedge of future costs, do it in comparison to rooftop since the Shared Solar program should have a much shorter return
  - Instead, focus your message on other benefits like customers’ desire for choice and control over their energy experience no matter your roof orientation
  - In other words, sell to people considering solar and compare to rooftop costs and challenges
- Tout the fact that this program won’t impact the bills of those who aren’t ready to subscribe

# Customer Bill Impact



- Focus on the fuel
  - Consider augmenting your bill to reflect a \$0.00 fuel charge for the sun, add a new line item for the SSR rate and include their chosen energy consumption percentage
- Be cautious re talking about customers not being charged for the Environmental Cost Recovery Clause for the solar energy portion of their bill
  - They don't realize they're paying this charge to begin with. You must either NOT promote this or change your bill to reflect giving them a better sense of the breakdown of on-bill charges
  - On the other hand, this should be called out to your large commercial customers as it's clearly spelled out on their bill
- Customers want a consistent and predictable monthly bill – they already have a lack of trust with their utility because they don't understand how you charge them
- Make sure to update "How to read your bill" infographic on the TECO website to include this SSR rate breakdown



Account: [REDACTED]  
 Statement Date: 04/18/2018  
 Current month's charges due 05/09/2018

ACCO  
 tampaelectric.com

Resident

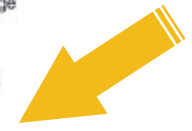
### Details of Charges – Service from 03/16/2018 to 04/12/2018

Service for [REDACTED], TAMPA, FL 33611-1540

Rate Schedule: Resic

Meter Number	Read Date	Current Reading	Previous Reading	=	Total Used
H75782	04/12/2018	15,056	13,426		1,630 kWh

Basic Service Charge			\$16.62
Energy Charge			
First 1,000 kWh	1,000 kWh @ \$0.05855/kWh	\$58.55	
Above 1,000 kWh	630 kWh @ \$0.06963/kWh	\$43.87	
Fuel Charge			
First 1,000 kWh	1,000 kWh @ \$0.02818/kWh	\$28.18	
Above 1,000 kWh	630 kWh @ \$0.03818/kWh	\$24.05	
Florida Gross Receipt Tax		\$4.39	
<b>Electric Service Cost</b>		<b>\$175.66</b>	
Franchise Fee		\$11.51	
Municipal Public Service Tax		\$14.48	
<b>Total Electric Cost, Local Fees and Taxes</b>		<b>\$201.65</b>	



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# Guidelines on cost per customer acquisition

- Cost per acquisition is a function of many variables including:
  - is there an upfront customer payment or just a monthly model?
  - minimum purchase requirements
  - minimum enrollment periods
  - customer program costs in general
  - size of the community solar resource (e.g., a small system is cheaper to sell-out than a large one)
  - is the program open to residential only, or can commercial also participate?
  - who's responsible for the marketing - the utility, the developer, or another third party?
- On the high end, costs can be comparable to behind the meter customer acquisition costs (~\$0.37/W-DC)\* to very nominal incremental cost when a utility leverages their existing communication and outreach channels



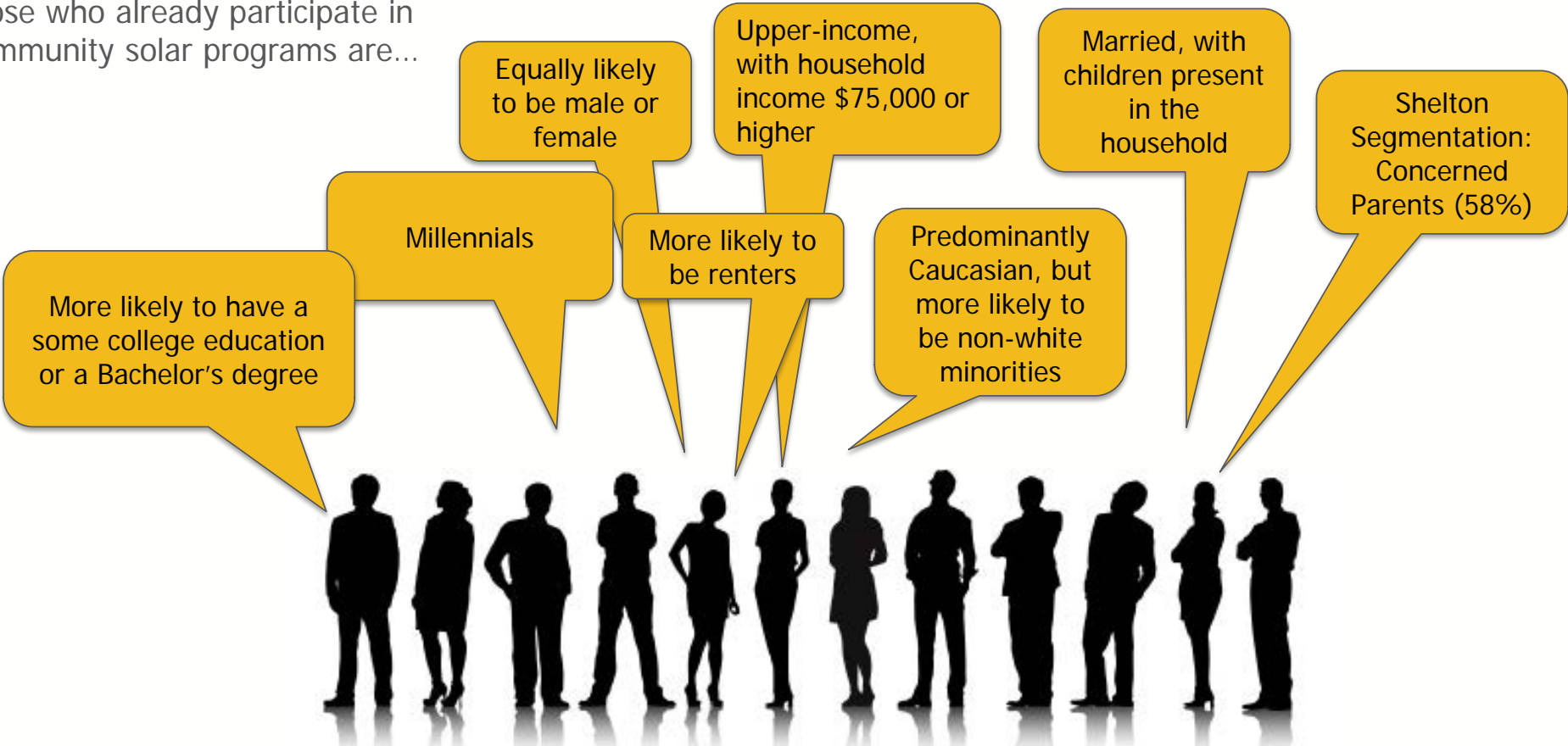
# Residential Customer Preferences and Profile



# Community Solar Customer Profile demographics

## Residential

From our research, we know those who already participate in community solar programs are...



42

15 Source: 2015 SEPA Community Solar Residential Survey

n=54

# Community Solar Customer Profile psychographics

## Residential

43

They want a CS program to be sponsored either by:

- A solar company working in partnership with their utility
- Their local utility company

When it comes to the environment

- Most say the government should pay more attention to the environment
- They are worried about the world their kids/grandkids will inherit
- Somewhat more likely to say they don't have time to worry about the environment

Anxious about climate change

Biggest energy concerns:

- Ability to pay for energy
- Environmental impact of their energy use

Benefits of CS over rooftop:

- Better monthly cost benefits
- Offers more flexibility
- Less risk involved

Reason to participate in energy efficiency activities:

- Save money
- To be responsible and not waste
- Reduce greenhouse gases/curb climate change
- Preserve quality of life for future generations
- Protect environment/save natural resources

Overall interest in participating in any type of solar driven by:

- Family/friends recommended it
- Wanting to be a good role model
- Doing my part to benefit the environment
- Wanting lower monthly energy costs





## SMB Preferences and Profile

# Businesses who are interested in a community solar subscription rate program are more likely to:

- Employ 1-9 employees
- Have a single location
- Report revenue less than \$5 million
- Operate in facilities less than 5,000 square feet
- Primarily own their facility, but more likely than average to rent/lease
- Be an owner/partner
- Be interested in solar to reduce energy costs and want more control/independence from electric utility
- Be driven by less risk and no maintenance costs
- Want sponsorship by local utility company



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## Businesses who are interested in rooftop solar are more likely to:

- Employ 50+ employees
- Have multiple locations
- Report revenue of \$5 million or more
- Operate in facilities of 2,500 square feet or larger
- Own their buildings
- Be mid-level managers
- Already purchase renewable energy certificates
- Their primary reasons for interest in solar:
  - reduce energy costs
  - concern about climate disruption/climate change
  - more control/independence from electric utility
  - pollution reduction





## One caveat:

- All of our testing – for both residential and SMB customers – offered a locked-in subscription rate, not just a locked-in fuel charge. That was clearly a driver in their interest.
- We recommend using the SMB profile we've included here for targeting and that you sell against rooftop – community solar is less expensive in the long-run with way fewer headaches. You won't get all who prefer community solar for the locked in rate since you can't promise that – but you'll still get some. And you won't get all the folks who want rooftop because they want it to be visible to employees and customers. But you'll get some.

# Large business and SMB contract “wish lists” are different



## Large Businesses contract “wish list”

- “Grid parity” pricing
- Additionality
- Ownership of RECs
- Protection against energy price volatility
- Term and consumption commitment flexibility



## SMBs contract “wish list”

- Pricing comparable to current “standard” rate
- While additionality isn’t a deal breaker now for SMBs, it could become more important as they get more experienced
- “Mid-range” contract term: 5-15 years
- If possible, offer a choice: % of total generation OR specific kWh purchase criteria

## For C&I customers:

- RECs are required
- Their interest in community will be about additionality – and being an “anchor tenant”
- Target the energy manager and if you can’t get traction target the sustainability managers looking to improve their company’s sustainability story
- Have them sign up with account rep



# Launch Timing & Target Priorities

- To hit your goal of a fully subscribed Shared Solar program, you need to open it up to both residential and commercial customers simultaneously
- You should immediately focus your marketing efforts on the follow target audiences:
  - All customers participating in Sun Select
  - Residential customers who are signed up for e-bill and who are high-consumption users
    - Note: A large portion of your residential high-consumption users will be Cautious Conservatives. An environmental message will not motivate them to subscribe, but rather the fact that this is a good deal which allows them more control over how they get their energy
  - SMB's that fit the profiles laid out here
  - C&I's that are publishing sustainability reports
    - Offer that you'll come in and market the program to their employees and help them market to their customers, thereby building their corporate brand



# Evaluation of Your Solar Portfolio

## Sun Select vs. SSR-1

- We all know customers want more access to solar options/packages, choice and control over how their energy is produced
- You may lose Sun Select customers who actively want to pursue solar energy when they uncover that subscribing to Shared Solar at 25% consumption is comparably priced to purchasing one block of Sun Select. And “25% of your monthly usage” sounds like more than “200 kWh”
  - If you don’t want to cannibalize any of those 1500 Sun Select customers, consider eliminating the 25% consumption offer on SSR-1
- While there will be some cannibalization of the Sun Select program because Shared Solar is new, we recommend that you keep the Sun Select program to help with:
  - Cross-promotion between the two programs
  - Reinforcing the idea of “choices” (and having offers that two different audiences can relate to)
  - **Key Recommendation:** To avoid confusion between solar programs, invest in an overarching brand for TECO Solar that houses Sun Select and Shared Solar, each with their own related program logo/look/feel that ladders up to the primary solar brand. Let customers know that you have solutions to help them hook up to the sun!

# Green Power Customer Profile

## Residential

From our research, we know those who already participate in green power programs are more likely than the overall population...

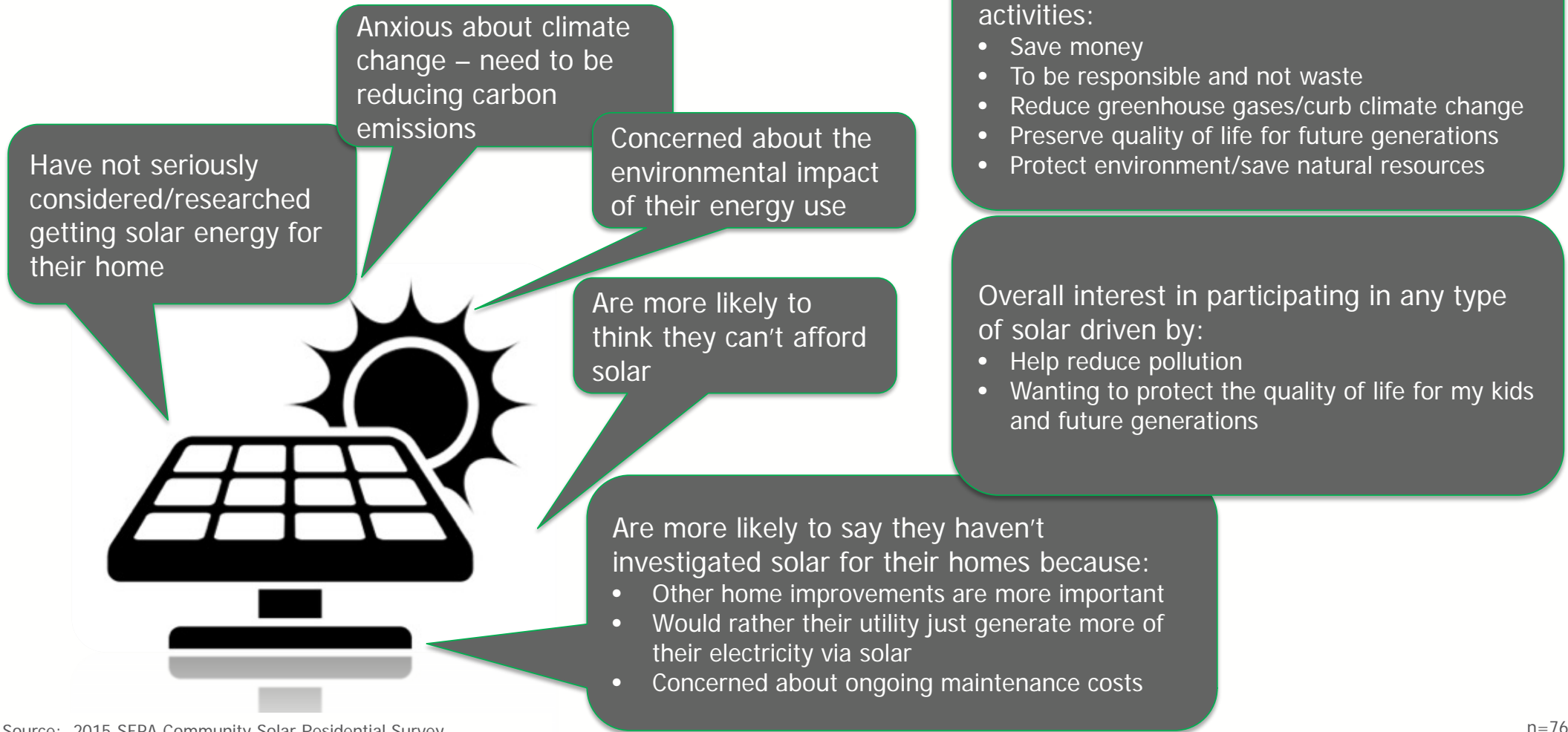


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# Green Power Customer Profile psychographics

*Residential*

54





# Preliminary Marketing Communications Suggestions



## By the People, For the People

- Marketing the Shared Solar program is an opportunity for TECO to genuinely tout that you listened to your customer's wants and needs – it's a matter of trust.
- Customers want a community feel
  - Clean energy for local subscribers
  - Built by local developers
  - Financed by local money
  - Community controlled
- Both residential and commercial customer segments think it's a smart decision to diversify/invest in the community

## Recommended Messaging Approach

1. Currently, **less than half of a percent of your energy mix comes from solar energy**. This gives you an opportunity to play offense:
  - Bold language can help position TECO as being an authentic and fair energy provider. For example, you could say, “Did you know that most of the electricity you use every day comes from fossil fuels? You now have an opportunity to change that. For as little as x/month (or for less than what you pay for Netflix) you can get some or all of your energy from the sun.”
  - Most people have no idea where their electricity comes from – other than the plug – and this lets you wake them up, while being authentic and building trust – and letting them make the choice.
2. Once you’ve awakened them to their choice, tell them it’s hassle free (essentially selling against rooftop)
  - Messaging should tout how easy/simple it is to be a part of the solar solution



# Specifics on Messaging

- Be overtly targeted on your messaging, don't be everything to everyone.
  - Develop a carefully thought through message and delivery strategy that taps into audience's key drivers / motivators as described here.
- All communications must start from square one
  - Be clear and consumer friendly, free of industry jargon
- Initially focus your marketing efforts on those who actively participate in Sun Select and have signed up for your renewables newsletter, as well as commercial customers that publish CSR reports and/or obviously have sustainability baked into their brands

➤ **Key Recommendation:** Consider segmenting your customer database so you can hone in on the right demographic *and* psychographic target. Shelton Group can help!

# Potential Promotions

- Garner greater customer satisfaction and loyalty while creating advocates for the program. Remember, a utility program is only as good as its community outreach
  - Promoting a community solar offering is your opportunity to connect with a vocal and environmentally conscious consumer group that supports brands that align with their personal values, so the program should be marketed in ways that focus on lifestyle and identity (40% of Americans want to be seen as someone who buys eco-friendly products)
  - Create fun swag! Businesses and residents will want to visibly show they're part of the solar solution in Tampa Bay. Help them tout their participation on their website and on-site (think Buy Local stickers in retailer windows)
    - Include a well designed social media component that allows them to demonstrate their commitment
    - All of this works to create a conversation point and referral opportunity for other like-minded friends and family
  - Be heavy on digital & direct marketing: outbound calling, doorhangers, direct mail pieces with recognizable logos
  - Consider having a contest to name the project
  - Host a kickoff/ribbon cutting event for customers to spend time at the solar array and sign their panels
  - Continue engagement by setting up an ongoing live stream of the solar array with kW generation ticker
  - Create a twitter handle and Instagram account specific to the Shared Solar program
  - Create a community rewards program (consider Green Power Points)



# Recap of Recommendations & Next Steps

## Recap of Assessment & Recommendations

- Overall, the SSR-1 is right in-line with some of today's most successful community solar programs
- You'll need to clearly define the program and costs in human language that hones in on emotional drivers and focus on the fuel – but be careful in communicating the idea of “hedging your future costs” unless you're comparing to rooftop
- Make available convenient tools and FAQs to help customers understand the bill impact and be clear of on-bill charges – simplify the message like other service providers and make sure it's clear the sun is free' it's the infrastructure they're paying for
- Be very targeted in your marketing communications efforts and remember this is a program by the people and for the people – and it's a choice.

## Let's talk about low income customers

- There's a bit of a national movement towards ensuring everyone has access to clean energy.
- How could you accommodate low income customers, knowing they can't pay more?
- Could you give participating customers at the 100% level the option of "donating" any extra energy production they've paid for to LI customers?

## Potential Blended Rate Structure

- We're concerned about doing that here, as it was tested, so we:
  - Don't know if it's appealing to customers
  - Have no way to judge potential participation (all our numbers would fall apart)
- Given that it's likely to cost lower users more than higher users, it will appear as though you're rewarding customers who spend more money with TECO and punishing those who spend less
  - Obviously, this looks bad, and will not help with satisfaction scores on JDP

## Next Steps

- Develop a solid marketing communications plan with a budget based on a comfortable cost per customer acquisition (outreach and retention budgets should be separate)
- Build out marketing assets and prep your customer service team with needed information
- Revising the bill to be clearer and more transparent will go a long way with customers

# Thank you!

Casey Ward, Group Account Director  
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**TAMPA ELECTRIC COMPANY  
DOCKET NO. 20180204-EI  
STAFF'S FIRST DATA REQUEST  
REQUEST NO. 23  
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FILED: JANUARY 25, 2019**

- 23.** Please provide TECO's projected annual net energy for load and projected annual retail energy sales for its system and for the 17.7 megawatt (MW) portion of the Lake Hancock unit, in gigawatt-hours (GWh), for the period 2019 through 2048.

Year	Net Energy for Load (GWh)	Total Sales to Ultimate Consumers (GWh)	17.7 MW Lake Hancock Portion (GWh)

- A.** The portion of Lake Hancock to be used for the SSR-1 program is now 17.5 MW based on expected output of the six (6) inverters assigned to SSR-1. TECO's projected 2019-2048 annual net energy for load and annual retail energy sales for its system and the Lake Hancock portion of the 17.5 MW is shown in the table below.

Year	Net Energy for Load (GWh)	Total Sales to Ultimate Consumers (GWh)	17.5 MW Lake Hancock Portion (GWh)
2019	20,445	19,482	37.5
2020	20,602	19,634	37.4
2021	20,830	19,851	37.3
2022	20,989	20,002	37.1
2023	21,246	20,247	37.0

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2024	21,504	20,493	36.8
2025	21,775	20,751	36.7
2026	22,041	21,004	36.5
2027	22,323	21,273	36.4
2028	22,622	21,557	36.2
2029	22,924	21,845	36.1
2030	23,193	22,101	36.0
2031	23,449	22,345	35.8
2032	23,706	22,590	35.7
2033	23,965	22,837	35.5
2034	24,231	23,090	35.4
2035	24,506	23,351	35.2
2036	24,787	23,619	35.1
2037	25,076	23,894	35.0

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2038	25,365	24,169	34.8
2039	25,649	24,439	34.7
2040	25,928	24,705	34.5
2041	26,210	24,974	34.4
2042	26,495	25,246	34.3
2043	26,783	25,521	34.1
2044	27,075	25,799	34.0
2045	27,369	26,080	33.9
2046	27,667	26,364	33.7
2047	27,968	26,651	33.6
2048	28,272	26,941	33.5

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- 24.** Please complete the following table providing the SSR-1 tariff's annual and cumulative breakdown of the cumulative present value revenue requirement analysis (CPVRR) for the period 2019 through 2048. Please include any financial assumptions for capital, property, operation and maintenance (O&M), taxes, owner expenses, program expenses, program salaries, discount rates, etc., in net present value. Provide all requested data in an electronic Microsoft Excel file with all formulae intact.

Year	SSR-1 CPVRR Analysis Assumptions (\$million) [NPV]									
	17.7 MW Lake Hancock Portion						SSR-1 Program			Total
	Generation Capital	Transmission & Distribution Capital	Property	O&M	Taxes	Owner Expenses	Program Expenses	Program Salaries	Other	

- A.** The requested data is provided in the table below and in Excel on the enclosed CD.

Year	SSR-1 CPVRR Analysis Assumptions (\$million) [NPV]									
	17.5 MW Lake Hancock Portion						SSR-1 Program			Total
	Generation Capital *	Transmission & Distribution Capital	Property	O&M	Taxes **	Owner Expenses	Program Expenses	Program Salaries	Other	
2019	24	-	5	2	1	-				31

- \* Includes Generation, Transmission and Distribution Capital
- \*\* Land property taxes included in Property
- \*\*\* Total may not add up due to rounding

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25. Please complete the following table providing the projected total jurisdictional fuel costs, including Generating Power Incentive Factor and taxes, sought for recovery through the FCRC, the amount of jurisdictional energy sales the costs would be spread over, and the resulting fuel factor in the SSR-1 for the period 2019 through 2048, assuming the Company is able to consistently achieve the subscription rates below.
- a. 95 percent
  - b. 50 percent
  - c. 0 percent

Year	Total Costs for Fuel Recovery (\$)	Total Energy (MWh)	Fuel Factor (Cents/kWh)

- A. Tampa Electric does not have projected total jurisdictional fuel costs, including Generating Power Incentive Factor and taxes, sought for recovery through the FCRC for the next 30 years; however, the impact of the SSR-1 program on the fuel factor can be seen in the following tables, which calculate the difference in factors with and without the SSR-1 program. The assumptions include expected energy sales for the next 30 years and 2019 projected fuel costs approved for cost recovery.
- a. The impact of the program is between two and five cents per MWh.
  - b. The impact of the program is between one and three cents per MWh.
  - c. The impact of the program is zero cents per MWh.

See attached.

**TAMPA ELECTRIC COMPANY  
DOCKET NO. 20180204-EI  
STAFF'S FIRST DATA REQUEST  
FILED: JANUARY 25, 2019**

**Data Request No. 25  
Fuel Factor  
95% Subscribed**

\$ 528,977,466 ('19 total costs) Schedule E1
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		Shared Solar	Subscribed	Total Retail	Factor w/o Shared Solar cents per kWh	Factor w/ Shared Solar cents per kWh	Difference in Factors cents per kWh	Impact of Program \$ per MWh
		MWh	MWh	MWh				
2019	95%	37,574	35,695	19,482,432	2.715	2.720	0.0050	0.05
2020	95%	37,424	35,552	19,634,000	2.694	2.699	0.0049	0.05
2021	95%	37,274	35,410	19,851,000	2.665	2.670	0.0048	0.05
2022	95%	37,125	35,269	20,002,000	2.645	2.649	0.0047	0.05
2023	95%	36,976	35,127	20,247,000	2.613	2.617	0.0045	0.05
2024	95%	36,828	34,987	20,493,000	2.581	2.586	0.0044	0.04
2025	95%	36,681	34,847	20,751,000	2.549	2.553	0.0043	0.04
2026	95%	36,534	34,708	21,004,000	2.518	2.523	0.0042	0.04
2027	95%	36,388	34,569	21,273,000	2.487	2.491	0.0040	0.04
2028	95%	36,243	34,430	21,557,000	2.454	2.458	0.0039	0.04
2029	95%	36,098	34,293	21,845,000	2.422	2.425	0.0038	0.04
2030	95%	35,953	34,156	22,101,000	2.393	2.397	0.0037	0.04
2031	95%	35,809	34,019	22,345,000	2.367	2.371	0.0036	0.04
2032	95%	35,666	33,883	22,590,000	2.342	2.345	0.0035	0.04
2033	95%	35,524	33,747	22,837,000	2.316	2.320	0.0034	0.03
2034	95%	35,381	33,612	23,090,000	2.291	2.294	0.0033	0.03
2035	95%	35,240	33,478	23,351,000	2.265	2.269	0.0033	0.03
2036	95%	35,099	33,344	23,619,000	2.240	2.243	0.0032	0.03
2037	95%	34,959	33,211	23,894,000	2.214	2.217	0.0031	0.03
2038	95%	34,819	33,078	24,169,000	2.189	2.192	0.0030	0.03
2039	95%	34,679	32,945	24,439,000	2.164	2.167	0.0029	0.03
2040	95%	34,541	32,814	24,705,000	2.141	2.144	0.0028	0.03
2041	95%	34,403	32,682	24,974,000	2.118	2.121	0.0028	0.03
2042	95%	34,265	32,552	25,246,000	2.095	2.098	0.0027	0.03
2043	95%	34,128	32,422	25,521,000	2.073	2.075	0.0026	0.03
2044	95%	33,991	32,292	25,799,000	2.050	2.053	0.0026	0.03
2045	95%	33,855	32,163	26,080,000	2.028	2.031	0.0025	0.03
2046	95%	33,720	32,034	26,364,000	2.006	2.009	0.0024	0.02
2047	95%	33,585	31,906	26,651,000	1.985	1.987	0.0024	0.02
2048	95%	33,451	31,778	26,941,000	1.963	1.966	0.0023	0.02

**TAMPA ELECTRIC COMPANY  
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**50% Subscribed**

		Shared Solar	Subscribed	Total Retail	Factor w/o Shared Solar cents per kWh	Factor w/ Shared Solar cents per kWh	Difference in Factors cents per kWh	Impact of Program \$ per MWh
		MWh	MWh	MWh				
2019	50%	37,574	18,787	19,482,432	2.715	2.718	0.0026	0.03
2020	50%	37,424	18,712	19,634,000	2.694	2.697	0.0026	0.03
2021	50%	37,274	18,637	19,851,000	2.665	2.667	0.0025	0.03
2022	50%	37,125	18,562	20,002,000	2.645	2.647	0.0025	0.02
2023	50%	36,976	18,488	20,247,000	2.613	2.615	0.0024	0.02
2024	50%	36,828	18,414	20,493,000	2.581	2.584	0.0023	0.02
2025	50%	36,681	18,341	20,751,000	2.549	2.551	0.0023	0.02
2026	50%	36,534	18,267	21,004,000	2.518	2.521	0.0022	0.02
2027	50%	36,388	18,194	21,273,000	2.487	2.489	0.0021	0.02
2028	50%	36,243	18,121	21,557,000	2.454	2.456	0.0021	0.02
2029	50%	36,098	18,049	21,845,000	2.422	2.424	0.0020	0.02
2030	50%	35,953	17,977	22,101,000	2.393	2.395	0.0019	0.02
2031	50%	35,809	17,905	22,345,000	2.367	2.369	0.0019	0.02
2032	50%	35,666	17,833	22,590,000	2.342	2.343	0.0019	0.02
2033	50%	35,524	17,762	22,837,000	2.316	2.318	0.0018	0.02
2034	50%	35,381	17,691	23,090,000	2.291	2.293	0.0018	0.02
2035	50%	35,240	17,620	23,351,000	2.265	2.267	0.0017	0.02
2036	50%	35,099	17,549	23,619,000	2.240	2.241	0.0017	0.02
2037	50%	34,959	17,479	23,894,000	2.214	2.215	0.0016	0.02
2038	50%	34,819	17,409	24,169,000	2.189	2.190	0.0016	0.02
2039	50%	34,679	17,340	24,439,000	2.164	2.166	0.0015	0.02
2040	50%	34,541	17,270	24,705,000	2.141	2.143	0.0015	0.01
2041	50%	34,403	17,201	24,974,000	2.118	2.120	0.0015	0.01
2042	50%	34,265	17,132	25,246,000	2.095	2.097	0.0014	0.01
2043	50%	34,128	17,064	25,521,000	2.073	2.074	0.0014	0.01
2044	50%	33,991	16,996	25,799,000	2.050	2.052	0.0014	0.01
2045	50%	33,855	16,928	26,080,000	2.028	2.030	0.0013	0.01
2046	50%	33,720	16,860	26,364,000	2.006	2.008	0.0013	0.01
2047	50%	33,585	16,793	26,651,000	1.985	1.986	0.0013	0.01
2048	50%	33,451	16,725	26,941,000	1.963	1.965	0.0012	0.01

**TAMPA ELECTRIC COMPANY  
DOCKET NO. 20180204-EI  
STAFF'S FIRST DATA REQUEST  
FILED: JANUARY 25, 2019**

**0% Subscribed**

		Shared Solar	Subscribed	Total Retail	Factor w/o Shared Solar cents per kWh	Factor w/ Shared Solar cents per kWh	Difference in Factors cents per kWh	Impact of Program \$ per MWh
		MWh	MWh	MWh				
2019	0%	37,574	0	19,482,432	2.715	2.715	-	-
2020	0%	37,424	0	19,634,000	2.694	2.694	-	-
2021	0%	37,274	0	19,851,000	2.665	2.665	-	-
2022	0%	37,125	0	20,002,000	2.645	2.645	-	-
2023	0%	36,976	0	20,247,000	2.613	2.613	-	-
2024	0%	36,828	0	20,493,000	2.581	2.581	-	-
2025	0%	36,681	0	20,751,000	2.549	2.549	-	-
2026	0%	36,534	0	21,004,000	2.518	2.518	-	-
2027	0%	36,388	0	21,273,000	2.487	2.487	-	-
2028	0%	36,243	0	21,557,000	2.454	2.454	-	-
2029	0%	36,098	0	21,845,000	2.422	2.422	-	-
2030	0%	35,953	0	22,101,000	2.393	2.393	-	-
2031	0%	35,809	0	22,345,000	2.367	2.367	-	-
2032	0%	35,666	0	22,590,000	2.342	2.342	-	-
2033	0%	35,524	0	22,837,000	2.316	2.316	-	-
2034	0%	35,381	0	23,090,000	2.291	2.291	-	-
2035	0%	35,240	0	23,351,000	2.265	2.265	-	-
2036	0%	35,099	0	23,619,000	2.240	2.240	-	-
2037	0%	34,959	0	23,894,000	2.214	2.214	-	-
2038	0%	34,819	0	24,169,000	2.189	2.189	-	-
2039	0%	34,679	0	24,439,000	2.164	2.164	-	-
2040	0%	34,541	0	24,705,000	2.141	2.141	-	-
2041	0%	34,403	0	24,974,000	2.118	2.118	-	-
2042	0%	34,265	0	25,246,000	2.095	2.095	-	-
2043	0%	34,128	0	25,521,000	2.073	2.073	-	-
2044	0%	33,991	0	25,799,000	2.050	2.050	-	-
2045	0%	33,855	0	26,080,000	2.028	2.028	-	-
2046	0%	33,720	0	26,364,000	2.006	2.006	-	-
2047	0%	33,585	0	26,651,000	1.985	1.985	-	-
2048	0%	33,451	0	26,941,000	1.963	1.963	-	-



**TAMPA ELECTRIC COMPANY  
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- 26.** Please complete the following table providing the projected total environmental costs sought for recovery through the ECRC, the amount of jurisdictional energy sales the costs would be spread over, and the resulting environmental factor in the SSR-1 for the period 2019 through 2048, assuming the Company is able to consistently achieve the subscription rates below.
- a. 95 percent
  - b. 50 percent
  - c. 0 percent

Year	Total Environmental Costs (\$)	Effective Sales at Secondary Level (MWh)	Environmental Factor (Cents/kWh)

- A.** Tampa Electric does not have projected environmental costs for the next 30 years; however, the impact of the SSR-1 program on the average ECRC factor can be seen in the following tables, which calculate the difference in factors with and without the SSR-1 program for expected energy sales for the next 30 years and 2019 projected costs approved for cost recovery.
- a. The impact of the program is between two-tenths and four-tenths of one cent per MWh.
  - b. The impact of the program is between one-tenth and two-tenths of one cent per MWh.
  - c. The impact of the program is zero cents per MWh.

See attached.

**Data Request No. 26**  
**ECRC Factor**  
**95% Subscribed**

99.85% (eff sales mult) Form 42-6P, col (3) / col (2)	\$ 42,980,454 ('19 total costs) Form 42-79, col (5)
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		Shared Solar MWh	Subscribed MWh	Effective Sales at Secondary Level MWh	Total Retail MWh (000)	Factor w/o Shared Solar cents per kWh	Factor w/ Shared Solar cents per kWh	Difference in Factors cents per kWh	\$ per MWh Impact of Program
2019	95%	37,574	35,695	19,453,086	19,482	0.221	0.221	0.0004	0.004
2020	95%	37,424	35,552	19,604,860	19,634	0.219	0.220	0.0004	0.004
2021	95%	37,274	35,410	19,821,538	19,851	0.217	0.217	0.0004	0.004
2022	95%	37,125	35,269	19,972,314	20,002	0.215	0.216	0.0004	0.004
2023	95%	36,976	35,127	20,216,950	20,247	0.213	0.213	0.0004	0.004
2024	95%	36,828	34,987	20,462,585	20,493	0.210	0.210	0.0004	0.004
2025	95%	36,681	34,847	20,720,202	20,751	0.207	0.208	0.0003	0.003
2026	95%	36,534	34,708	20,972,827	21,004	0.205	0.205	0.0003	0.003
2027	95%	36,388	34,569	21,241,428	21,273	0.202	0.203	0.0003	0.003
2028	95%	36,243	34,430	21,525,006	21,557	0.200	0.200	0.0003	0.003
2029	95%	36,098	34,293	21,812,579	21,845	0.197	0.197	0.0003	0.003
2030	95%	35,953	34,156	22,068,199	22,101	0.195	0.195	0.0003	0.003
2031	95%	35,809	34,019	22,311,836	22,345	0.193	0.193	0.0003	0.003
2032	95%	35,666	33,883	22,556,473	22,590	0.191	0.191	0.0003	0.003
2033	95%	35,524	33,747	22,803,106	22,837	0.188	0.189	0.0003	0.003
2034	95%	35,381	33,612	23,055,731	23,090	0.186	0.187	0.0003	0.003
2035	95%	35,240	33,478	23,316,343	23,351	0.184	0.185	0.0003	0.003
2036	95%	35,099	33,344	23,583,946	23,619	0.182	0.183	0.0003	0.003
2037	95%	34,959	33,211	23,858,538	23,894	0.180	0.180	0.0003	0.003
2038	95%	34,819	33,078	24,133,129	24,169	0.178	0.178	0.0002	0.002
2039	95%	34,679	32,945	24,402,729	24,439	0.176	0.176	0.0002	0.002
2040	95%	34,541	32,814	24,668,334	24,705	0.174	0.174	0.0002	0.002
2041	95%	34,403	32,682	24,936,935	24,974	0.172	0.173	0.0002	0.002
2042	95%	34,265	32,552	25,208,531	25,246	0.170	0.171	0.0002	0.002
2043	95%	34,128	32,422	25,483,123	25,521	0.169	0.169	0.0002	0.002
2044	95%	33,991	32,292	25,760,710	25,799	0.167	0.167	0.0002	0.002
2045	95%	33,855	32,163	26,041,293	26,080	0.165	0.165	0.0002	0.002
2046	95%	33,720	32,034	26,324,872	26,364	0.163	0.163	0.0002	0.002
2047	95%	33,585	31,906	26,611,446	26,651	0.162	0.162	0.0002	0.002
2048	95%	33,451	31,778	26,901,015	26,941	0.160	0.160	0.0002	0.002

50% Subscribed

		Shared Solar MWh	Subscribed MWh	Effective Sales at Secondary Level MWh	Total Retail MWh (000)	Factor w/o Shared Solar cents per kWh	Factor w/ Shared Solar cents per kWh	Difference in Factors cents per kWh	\$ per MWh Impact of Program
2019	50%	37,574	18,787	19,453,086	19,482	0.221	0.221	0.0002	0.002
2020	50%	37,424	18,712	19,604,860	19,634	0.219	0.219	0.0002	0.002
2021	50%	37,274	18,637	19,821,538	19,851	0.217	0.217	0.0002	0.002
2022	50%	37,125	18,562	19,972,314	20,002	0.215	0.215	0.0002	0.002
2023	50%	36,976	18,488	20,216,950	20,247	0.213	0.213	0.0002	0.002
2024	50%	36,828	18,414	20,462,585	20,493	0.210	0.210	0.0002	0.002
2025	50%	36,681	18,341	20,720,202	20,751	0.207	0.208	0.0002	0.002
2026	50%	36,534	18,267	20,972,827	21,004	0.205	0.205	0.0002	0.002
2027	50%	36,388	18,194	21,241,428	21,273	0.202	0.203	0.0002	0.002
2028	50%	36,243	18,121	21,525,006	21,557	0.200	0.200	0.0002	0.002
2029	50%	36,098	18,049	21,812,579	21,845	0.197	0.197	0.0002	0.002
2030	50%	35,953	17,977	22,068,199	22,101	0.195	0.195	0.0002	0.002
2031	50%	35,809	17,905	22,311,836	22,345	0.193	0.193	0.0002	0.002
2032	50%	35,666	17,833	22,556,473	22,590	0.191	0.191	0.0002	0.002
2033	50%	35,524	17,762	22,803,106	22,837	0.188	0.189	0.0001	0.001
2034	50%	35,381	17,691	23,055,731	23,090	0.186	0.187	0.0001	0.001
2035	50%	35,240	17,620	23,316,343	23,351	0.184	0.184	0.0001	0.001
2036	50%	35,099	17,549	23,583,946	23,619	0.182	0.182	0.0001	0.001
2037	50%	34,959	17,479	23,858,538	23,894	0.180	0.180	0.0001	0.001
2038	50%	34,819	17,409	24,133,129	24,169	0.178	0.178	0.0001	0.001
2039	50%	34,679	17,340	24,402,729	24,439	0.176	0.176	0.0001	0.001
2040	50%	34,541	17,270	24,668,334	24,705	0.174	0.174	0.0001	0.001
2041	50%	34,403	17,201	24,936,935	24,974	0.172	0.172	0.0001	0.001
2042	50%	34,265	17,132	25,208,531	25,246	0.170	0.171	0.0001	0.001
2043	50%	34,128	17,064	25,483,123	25,521	0.169	0.169	0.0001	0.001
2044	50%	33,991	16,996	25,760,710	25,799	0.167	0.167	0.0001	0.001
2045	50%	33,855	16,928	26,041,293	26,080	0.165	0.165	0.0001	0.001
2046	50%	33,720	16,860	26,324,872	26,364	0.163	0.163	0.0001	0.001
2047	50%	33,585	16,793	26,611,446	26,651	0.162	0.162	0.0001	0.001
2048	50%	33,451	16,725	26,901,015	26,941	0.160	0.160	0.0001	0.001

## 0% Subscribed

		Shared Solar MWh	Subscribed MWh	Effective Sales at Secondary Level MWh	Total Retail MWh (000)	Factor w/o Shared Solar cents per kWh	Factor w/ Shared Solar cents per kWh	Difference in Factors cents per kWh	\$ per MWh Impact of Program
2019	0%	37,574	0	19,453,086	19,482	0.221	0.221	-	-
2020	0%	37,424	0	19,604,860	19,634	0.219	0.219	-	-
2021	0%	37,274	0	19,821,538	19,851	0.217	0.217	-	-
2022	0%	37,125	0	19,972,314	20,002	0.215	0.215	-	-
2023	0%	36,976	0	20,216,950	20,247	0.213	0.213	-	-
2024	0%	36,828	0	20,462,585	20,493	0.210	0.210	-	-
2025	0%	36,681	0	20,720,202	20,751	0.207	0.207	-	-
2026	0%	36,534	0	20,972,827	21,004	0.205	0.205	-	-
2027	0%	36,388	0	21,241,428	21,273	0.202	0.202	-	-
2028	0%	36,243	0	21,525,006	21,557	0.200	0.200	-	-
2029	0%	36,098	0	21,812,579	21,845	0.197	0.197	-	-
2030	0%	35,953	0	22,068,199	22,101	0.195	0.195	-	-
2031	0%	35,809	0	22,311,836	22,345	0.193	0.193	-	-
2032	0%	35,666	0	22,556,473	22,590	0.191	0.191	-	-
2033	0%	35,524	0	22,803,106	22,837	0.188	0.188	-	-
2034	0%	35,381	0	23,055,731	23,090	0.186	0.186	-	-
2035	0%	35,240	0	23,316,343	23,351	0.184	0.184	-	-
2036	0%	35,099	0	23,583,946	23,619	0.182	0.182	-	-
2037	0%	34,959	0	23,858,538	23,894	0.180	0.180	-	-
2038	0%	34,819	0	24,133,129	24,169	0.178	0.178	-	-
2039	0%	34,679	0	24,402,729	24,439	0.176	0.176	-	-
2040	0%	34,541	0	24,668,334	24,705	0.174	0.174	-	-
2041	0%	34,403	0	24,936,935	24,974	0.172	0.172	-	-
2042	0%	34,265	0	25,208,531	25,246	0.170	0.170	-	-
2043	0%	34,128	0	25,483,123	25,521	0.169	0.169	-	-
2044	0%	33,991	0	25,760,710	25,799	0.167	0.167	-	-
2045	0%	33,855	0	26,041,293	26,080	0.165	0.165	-	-
2046	0%	33,720	0	26,324,872	26,364	0.163	0.163	-	-
2047	0%	33,585	0	26,611,446	26,651	0.162	0.162	-	-
2048	0%	33,451	0	26,901,015	26,941	0.160	0.160	-	-

**TAMPA ELECTRIC COMPANY  
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27. The following set of questions pertains to emissions costs related to the Petition.
- a. Page 3, Paragraph 8 of the Petition, states that the entire Lake Hancock solar unit is cost-effective for TECO's customers, and the 17.7 MW portion of Lake Hancock dedicated to SSR-1 is also cost-effective for TECO's customers. Does TECO's cost-effectiveness analysis include the evaluation of emissions savings?
    - If your response is negative, please explain why not.
    - If your response is affirmative, please explain whether TECO's emissions savings include CO<sub>2</sub> or CO<sub>2</sub> equivalent emissions. If so, please provide a sensitivity of the analysis without these costs and provide the revised annual and cumulative values (in nominal and net present value) for each category in an electronic Microsoft Excel file.
  - b. Please provide the annual and cumulative values over a 30-year period (in nominal and net present value) for the following, in total and separated by type (CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, etc.). Please provide in an electronic Microsoft Excel file:
    - Avoided air emissions resulting from the 17.7 MW portion of Lake Hancock that is designated for SSR-1 service, and showing how each was calculated using the year 2020 as an example;
    - Air Emission Savings resulting from the 17.7 MW portion of Lake Hancock that is designated for SSR-1 service, and explaining fully how the saving amounts were derived.
- A.
- a. No, the favorable CPVRR of \$12.6 million shown in Docket No. 20180133-EI of R. James Rocha's Testimony, Document No. 4, is before any value for reduced emission rates. Tampa Electric has been tracking CO<sub>2</sub> impacts since the initial Clean Power Plan talks began around June 2014. Since that time, the company has assessed air emission rate reductions as a below-the-line consideration for each project.
  - b. The portion of Lake Hancock to be used for the SSR-1 program is now 17.5 MW based on expected output of the six (6) inverters assigned to SSR-1. The tons of emissions avoided multiplied by the dollar per ton of those emissions equals the total dollars of the emissions provided in table below (values shown may be affected due to rounding):

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**CO<sub>2</sub> (\$million)**

Years	Reference	Reference w/ 17.7 MW Solar	CO <sub>2</sub>
2018	-	-	-
2019	-	-	-
2020	-	-	-
2021	-	-	-
2022	-	-	-
2023	-	-	-
2024	-	-	-
2025	-	-	-
2026	-	-	-
2027	-	-	-
2028	20	20	(0.0)
2029	23	23	0.0
2030	44	44	0.0
2031	66	66	(0.1)
2032	95	95	(0.1)
2033	123	122	(0.7)
2034	157	157	(0.1)
2035	191	191	(0.0)
2036	218	218	(0.3)
2037	235	234	(0.4)
2038	267	267	(0.2)
2039	299	299	(0.4)
2040	329	329	(0.4)
2041	335	334	(0.7)
2042	346	346	(0.5)
2043	363	362	(0.6)
2044	385	384	(0.6)
2045	405	404	(0.8)
2046	450	449	(0.7)
2047	491	491	(0.8)
2048	534	533	(0.8)
NPV 2018 \$million	1,149	1,148	(1.7)

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**NO<sub>x</sub> (\$million)**

<b>Years</b>	<b>Reference</b>	<b>Reference w/ 17.7 MW Solar</b>	<b>NO<sub>x</sub></b>
2018	2.77	2.77	-
2019	2.29	2.28	(0.00)
2020	3.24	3.23	(0.01)
2021	3.11	3.10	(0.01)
2022	3.13	3.13	(0.00)
2023	2.22	2.21	(0.01)
2024	2.62	2.64	0.02
2025	2.94	2.94	0.00
2026	3.00	2.98	(0.02)
2027	3.45	3.45	0.01
2028	4.41	4.40	(0.02)
2029	4.68	4.72	0.04
2030	4.60	4.62	0.02
2031	4.91	4.90	(0.01)
2032	5.56	5.55	(0.01)
2033	5.53	5.47	(0.06)
2034	5.76	5.77	0.01
2035	5.54	5.56	0.01
2036	5.76	5.75	(0.01)
2037	5.13	5.13	(0.00)
2038	5.52	5.52	(0.00)
2039	5.59	5.58	(0.00)
2040	5.36	5.36	(0.00)
2041	4.57	4.56	(0.01)
2042	3.96	3.96	(0.00)
2043	3.91	3.91	(0.00)
2044	3.93	3.93	(0.00)
2045	3.59	3.59	(0.00)
2046	3.93	3.93	(0.00)
2047	4.03	4.03	(0.00)
2048	3.95	3.94	(0.00)
NPV 2018 \$million	50.29	50.25	(0.04)

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The CO<sub>2</sub> price forecast used in the cost-effectiveness analysis was purchased from a global consulting services company, ICF International, Inc., and developed in the third quarter of 2017. The NO<sub>x</sub> price forecast is estimated using an actual sale of Tampa Electric's NO<sub>x</sub> Ozone Season allowances in 2016, at \$170 per ton, and escalated by one percent a year after 2017. These are the same forecasts which were used for TEC's Second SoBRA, Docket No. 20180133-EI. The avoided air emissions and associated savings are shown in the following tables. The Excel file titled "(BS 83) Request No. 27b CONFIDENTIAL.xlsx" provides the avoided air emissions, associated savings and example calculations for year 2020 at tabs "Q27b - Avoided Air Emissions", "Q27b - Avoided CO<sub>2</sub>", "Q27b - Avoided NO<sub>x</sub>, Q27b - Avoided SO<sub>2</sub>", "Q27b - Avoided Emission Dollars, ICF 2017 Q3 Probability Weight". Tampa Electric does not currently have a price forecast for SO<sub>2</sub> and therefore no monetary savings are shown although there will be a slight reduction in SO<sub>2</sub>.



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- 28.** The following set of questions refers to the Company's fuel price forecast with regard to the Petition.
- a. Provide a copy of the Company's annual fuel price forecast covering the 30-year period mentioned on Page 5, Paragraph 13 of the Petition.
  - b. Please provide a copy of the Company's fuel price forecast used in developing the fuel charge values shown on pages 6 and 7 of the Presentation, if different from the forecast in Part A.
  - c. Please identify the source and date of TECO's fuel price forecast used in support of the Petition.
  - d. Please identify the date, if known, of TECO's next/updated fuel price forecast that will be used for company/business planning purposes.
  - e. Has TECO compared the fuel price forecast (used in support of its Petition) to any other publicly available source of forecasted fuel prices, such as the Energy Information Administration? If so, please discuss the results of any analysis performed.
  - f. Did the Company perform any price sensitivity analysis (high and low) of its fuel price forecast used in support of its Petition? If so, please provide the results for the full 30-year forecast period.
- A.**
- a. See attached.
  - b. The fuel prices used in the presentation were not forecast but were the actual residential fuel rates from 2018 and 2019. The model did not use a forecast. Those slides show the bill impact for a residential customer at different levels of participation.
  - c. The fuel forecast used in support of the Petition in this docket is the same fuel forecasts used in preparing the 2019 projected costs and cost recovery factors submitted in Docket No. 20180001-EI.
  - d. The company's request for mid-course correction submitted in Docket No. 20190001-EI on January 15, 2019 included updated 2019 fuel prices. The 30-year fuel price forecast will next be updated in Summer 2019.
  - e. Tampa Electric has used the same methodology to forecast fuel commodity prices for approximately ten years. The methodology is consistent across commodities. For the base case, it uses market indicators (e.g., NYMEX futures contracts) to estimate near-term prices (one to three years). The methodology then uses a

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commercially available, published fuel commodity price forecast from an independent energy consulting firm (e.g., PIRA, Wood MacKenzie) for the mid-term (two to 20 years). The final long-term portion of the fuel price forecast then transitions to using an independent, longer term source for the annual price changes (e.g., EIA Long Term Energy Outlook). The source data is blended to transition between time periods. The forecast is produced early each summer to support the late-summer fuel clause actual-estimate and projection filing and is used for one year until the next official forecast is produced.

The high and low fuel forecasts are determined by transitioning from the current year base case fuel prices to the high and low fuel price sensitivities provided by PIRA for the near and mid-term pricing. For the long-term time period, the company transitions to EIA's "High Resource" (low fuel price) and "Low Resource" (high fuel price) sensitivities to extend the low and high fuel price forecasts to the end of the forecast period.

- f. High and low fuel forecast sensitivity were performed during TEC's Second SoBRA in Docket No. 20180133-EI. The results of these sensitivities confirmed that customer savings would occur under the high fuel forecast with or without the 17.5 MW of Lake Hancock Solar. See Excel file titled "(BS 106) Request No. 28f.xlsx" at tabs "Cost-effectiveness 422.7" and "Cost-effectiveness 405" for the results of each cost-effectiveness analysis.

**BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION**

Petition for limited proceeding to approve  
second solar base rate adjustment  
(SoBRA), effective January 1, 2019 by  
Tampa Electric Company

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DOCKET NO. 20180133-EI  
FILED: August 23, 2018

**REDACTED**

**TAMPA ELECTRIC COMPANY'S  
ANSWERS TO FIRST SET OF INTERROGATORIES (NOS. 1-5)  
OF  
FLORIDA PUBLIC SERVICE COMMISSION STAFF**

Tampa Electric files this its Answers to Interrogatories (Nos. 1-5)  
propounded and served on August 9, 2018, by the Florida Public Service  
Commission Staff.

TAMPA ELECTRIC COMPANY  
DOCKET NO. 20180133-EI  
INDEX TO STAFF'S FIRST SET OF INTERROGATORIES (NOS. 1-5)

<u>Number</u>	<u>Witness</u>	<u>Subject</u>	<u>Bates Stamped Page</u>
1	Rocha	<p>Please refer to TECO's supplemental response to Staff's First Data Request (filed August 6, 2018), No. 23.</p> <p>a. Are TECO's fuel price sensitivities (values) for the "near and mid-term" time periods obtained solely from PIRA? As in, did PIRA completely formulate the near and mid-term fuel price sensitivity levels discussed in the aforementioned response?</p> <p>b. If the response to (a.) is negative, how and by what methodology does TECO adjust the values/information purchased from PIRA related to forecasted fuel price sensitivity levels? Please fully explain how such adjustments to the data obtained from PIRA are formulated.</p> <p>c. Are TECO's fuel price sensitivities values for the "long-term time period" sourced solely from the Energy Information Administration (EIA)? As in, did the EIA wholly formulate in the long-term fuel price sensitivity levels discussed to in the aforementioned response?</p> <p>d. If the response to (c.) is negative, how and by what methodology does TECO adjust the values/information sourced from the EIA related to forecasted fuel price sensitivity levels? Please fully explain how such adjustments to the data sourced from the EIA are formulated.</p>	1
2	Rocha	<p>In its response to Staff's First Data Request, No. 27(a), TECO indicates "Actual natural gas prices often vary from forecasted prices by more than 20 percent. This occurs despite the forecasted prices being based on independent, industry-recognized sources". What probabilities, if any, did TECO assign to its base, high, and low natural gas price forecasts in this proceeding, and what method did the Company use to derive such probabilities?</p>	11

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3	Rocha	Please refer to witness Rocha's direct testimony exhibit, Document No. 2 and TECO's response to Staff's First Production of Documents, No. 5. What probabilities, if any, did TECO assign to its base, high, and low coal price forecasts in this proceeding, and what method did the Company use to derive such probabilities?	12
4	Rocha	If TECO did not assign probabilities to its base, high, and low natural gas and coal price forecasts provided in this proceeding, please explain why it chose not to do so.	13
5	Rocha	Please refer to the Direct Testimony of TECO witness Rocha, Exhibit RJR-1, Document No. 2, Page 1 of 1. Do the forecasted prices shown on this exhibit include transportation/delivery costs? If not, please provide an updated fuel price forecast listing separate commodity and transportation/delivery charges.	14

Jim Rocha  
Director, Planning Strategy and Compliance

Tampa Electric Company  
702 N. Franklin Street  
Tampa, Florida 33602

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1. Please refer to TECO's supplemental response to Staff's First Data Request (filed August 6, 2018), No. 23.
  - a. Are TECO's fuel price sensitivities (values) for the "near and mid-term" time periods obtained solely from PIRA? As in, did PIRA completely formulate the near and mid-term fuel price sensitivity levels discussed in the aforesaid response?
  - b. If the response to (a.) is negative, how and by what methodology does TECO adjust the values/information purchased from PIRA related to forecasted fuel price sensitivity levels? Please fully explain how such adjustments to the data obtained from PIRA are formulated.
  - c. Are TECO's fuel price sensitivities values for the "long-term time period" sourced solely from the Energy Information Administration (EIA)? As in, did the EIA wholly formulate in the long-term fuel price sensitivity levels discussed to in the aforesaid response?
  - d. If the response to (c.) is negative, how and by what methodology does TECO adjust the values/information sourced from the EIA related to forecasted fuel price sensitivity levels? Please fully explain how such adjustments to the data sourced from the EIA are formulated.
  
- A.
  - a. No, the near-term and mid-term forecasts are not obtained solely from PIRA. The near-term prices are from NYMEX for natural gas and from the *Coal Daily* published index forward prices for coal. Prices transition from the near-term source to the mid-term source by progressive blending of the two sources over several years. This process allows a smooth transition from one source to the other. The tables provided in the response to subpart (d) show the weighting percentages as the forecasts are aligned.
  - b. The mid-term data source for both natural gas and coal is PIRA's Scenario Planning Service issued in February 2018.

The natural gas forecast adjustments are listed below.

    1. Calculate the nominal price of natural gas by applying the projected Consumer Price Index Less Energy inflation adjustment factors to PIRA's "real" (also known as "constant dollar") forecasted price of natural gas;

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2. A basis adjustment is applied to account for the location of Tampa Electric's pipeline receipt points, which are mostly near Mobile, Alabama (called FGT Zone 3), instead of at Henry Hub, which is the receipt point for the PIRA, NYMEX and EIA price forecasts.

The coal adjustments are listed below.

1. Recent price ratios are used to derive a forecast price for Illinois Basin coal from the Central Appalachian and/or foreign low sulfur coal price forecasts provided by PIRA.
  2. The nominal price of coal is calculated by adjusting PIRA's real price forecast by the projected Consumer Price Index Less Energy inflation adjustment factor.
  3. The price forecast is adjusted the price to reflect the specific quality characteristics of Illinois Basin coal needed for Tampa Electric's units.
- c. No. For natural gas the long-term time period price forecasts contain a transition period where the weighting of the PIRA price forecast percent change diminishes and the weighting of the EIA price forecast percent change increases each year until the EIA forecast changes represent 100% of the forecast used for the years after PIRA's forecast ends.

For coal, the mid-term period forecast is based on the PIRA forecast changes, and then the annual escalation from the natural gas forecast during the transition period and the 100% EIA period is applied to the coal price forecast to extend it past the mid-term period after the PIRA forecast ends.

These processes allow a smooth transition from one forecast source to another. Also see the tables provided in the response to subpart (d).

- d. See the response to subpart (c) and the following tables and charts.

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Tampa Electric Derivation of Natural Gas Commodity Price Forecast - High \$/MMBtu									
				Weighting Factors			TEC Forecast		
	NYMEX	PIRA	EIA	NYMEX	PIRA	EIA	TEC NG @ HH	HH to FGT Z3 Basis	@FGT Z3 Receipt
2018	2.84		3.29	100%	0%	0%			
2019	2.79		4.41	100%	0%	0%			
2020	2.77		5.52	75%	25%	0%			
2021	2.81		5.93	50%	50%	0%			
2022	2.86		6.36	25%	75%	0%			
2023	2.92		6.90	0%	100%	0%			
2024	2.97		7.45	0%	100%	0%			
2025	3.03		7.96	0%	100%	0%			
2026	3.08		8.33	0%	100%	0%			
2027	3.14		8.68	0%	100%	0%			
2028			9.01	0%	100%	0%			
2029			9.39	0%	100%	0%			
2030			9.55	0%	100%	0%			
2031			9.77	0%	90%	10%			
2032			10.05	0%	80%	20%			
2033			10.30	0%	70%	30%			
2034			10.70	0%	60%	40%			
2035			11.07	0%	50%	50%			
2036			11.59	0%	40%	60%			
2037			11.96	0%	30%	70%			
2038			12.40	0%	20%	80%			
2039			12.77	0%	10%	90%			
2040			13.17	0%	0%	100%			
2041			13.62	0%	0%	100%			
2042			13.94	0%	0%	100%			
2043			14.38	0%	0%	100%			
2044			15.24	0%	0%	100%			
2045			16.03	0%	0%	100%			
2046			16.66	0%	0%	100%			
2047			17.45	0%	0%	100%			
2048			18.63	0%	0%	100%			

Note: 2018 values for NYMEX, PIRA and EIA reflect actual NYMEX closed prices for the first six months of the year and forecasted prices for the last six months of the year.

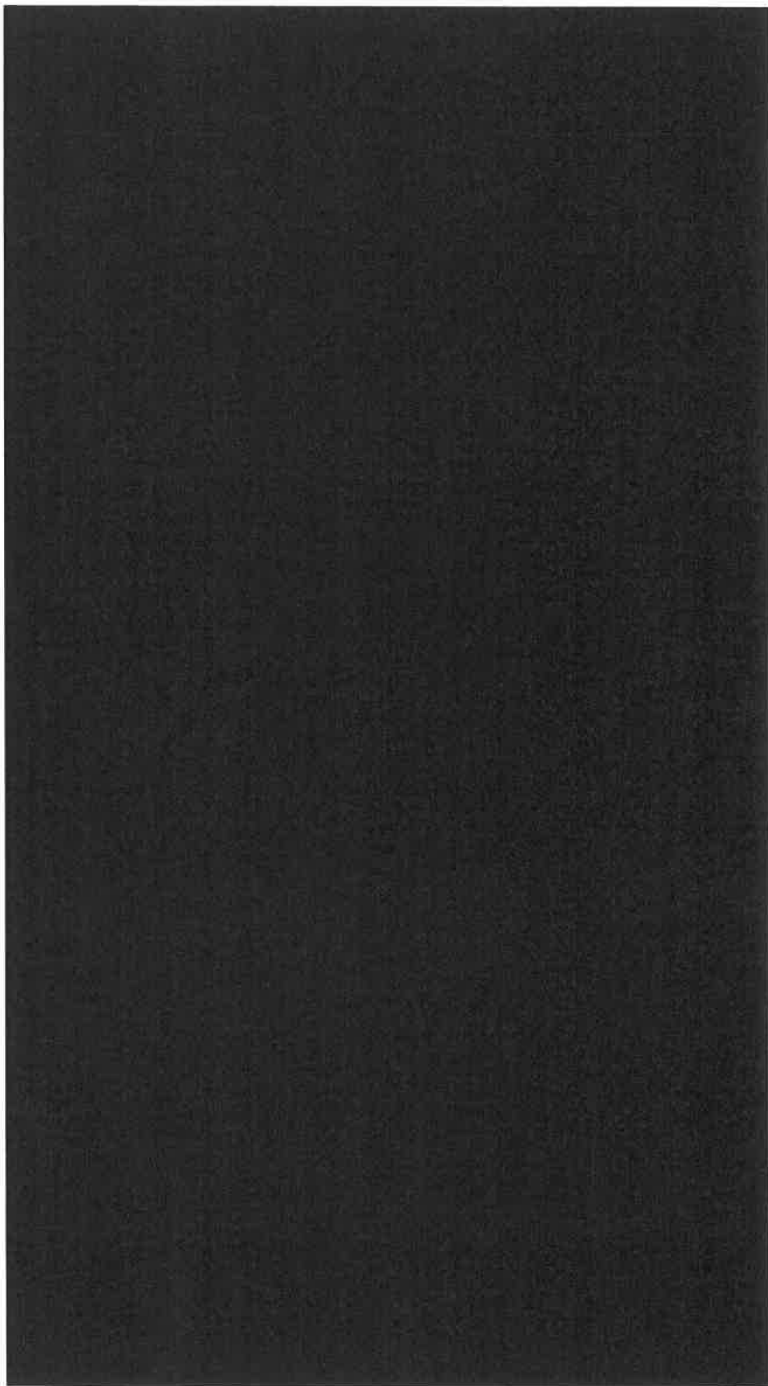


**REDACTED**

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Tampa Electric Derivation of Natural Gas Commodity Price Forecast - Low									
\$/MMBtu									
				Weighting Factors			TEC Forecast		
	NYMEX	PIRA	EIA	NYMEX	PIRA	EIA	TEC NG @ HH	HH to FGT Z3 Basis	@FGT Z3 Receipt
2018	2.84		2.91	100%	0%	0%			
2019	2.79		3.24	100%	0%	0%			
2020	2.77		3.60	75%	25%	0%			
2021	2.81		3.42	50%	50%	0%			
2022	2.86		3.32	25%	75%	0%			
2023	2.92		3.38	0%	100%	0%			
2024	2.97		3.50	0%	100%	0%			
2025	3.03		3.65	0%	100%	0%			
2026	3.08		3.84	0%	100%	0%			
2027	3.14		4.02	0%	100%	0%			
2028			4.16	0%	100%	0%			
2029			4.26	0%	100%	0%			
2030			4.32	0%	100%	0%			
2031			4.40	0%	90%	10%			
2032			4.47	0%	80%	20%			
2033			4.50	0%	70%	30%			
2034			4.54	0%	60%	40%			
2035			4.61	0%	50%	50%			
2036			4.72	0%	40%	60%			
2037			4.78	0%	30%	70%			
2038			4.91	0%	20%	80%			
2039			5.07	0%	10%	90%			
2040			5.19	0%	0%	100%			
2041			5.27	0%	0%	100%			
2042			5.37	0%	0%	100%			
2043			5.48	0%	0%	100%			
2044			5.62	0%	0%	100%			
2045			5.72	0%	0%	100%			
2046			5.84	0%	0%	100%			
2047			5.99	0%	0%	100%			
2048			6.17	0%	0%	100%			

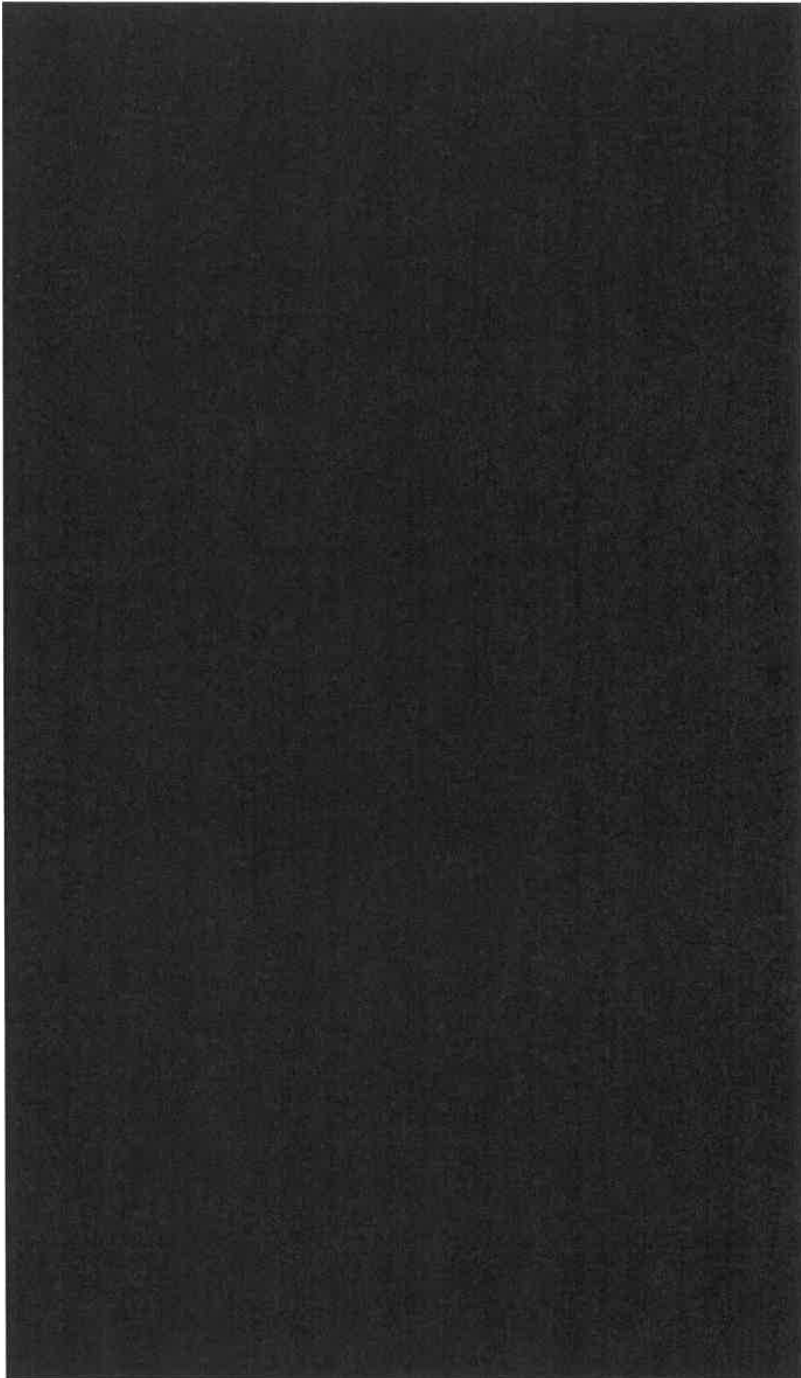
Note: 2018 values for NYMEX, PIRA and EIA reflect actual NYMEX closed prices for the first six months of the year and forecasted prices for the last six months of the year.

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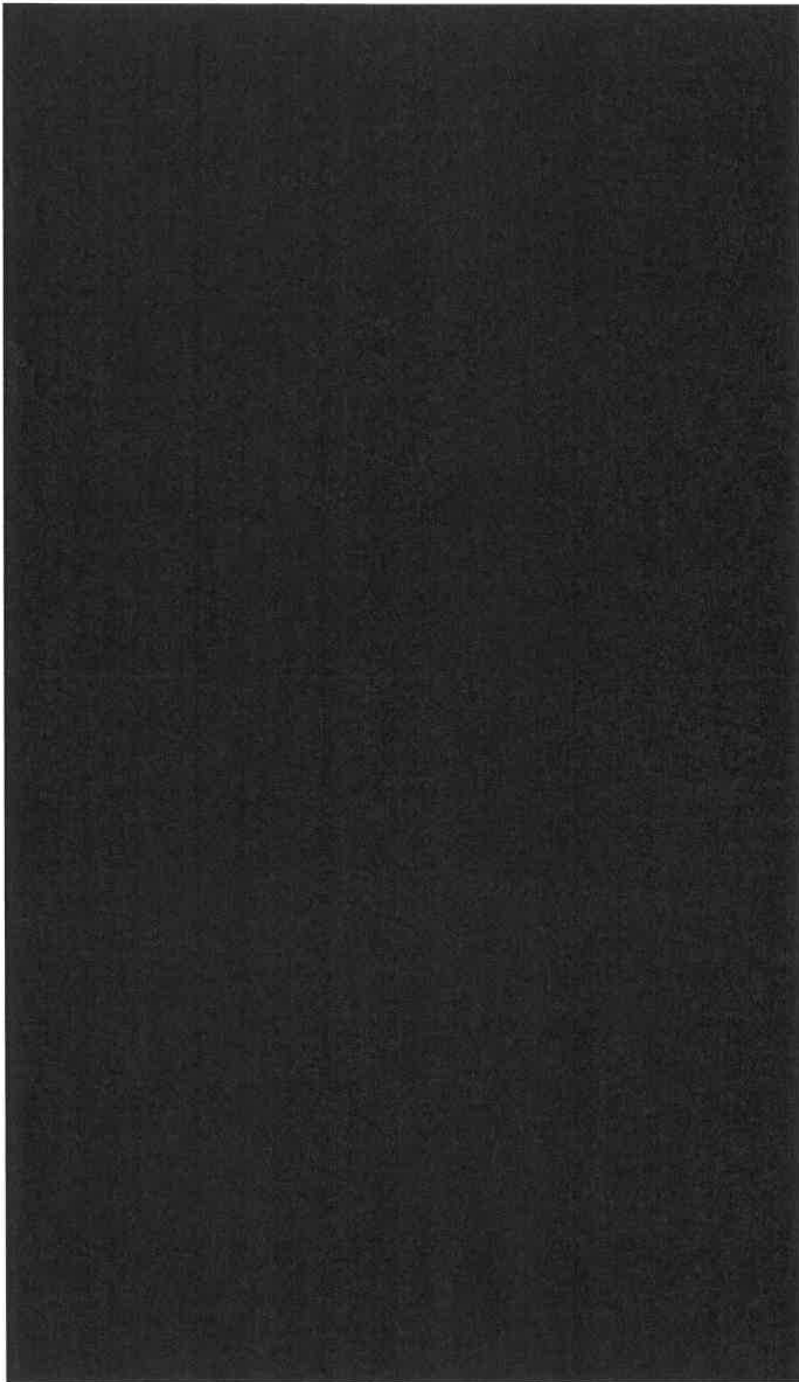
Tampa Electric Derivation of STD Coal Commodity Price Forecast - High \$/MMBtu							
	Published	PIRA	EIA NG	Weighting Factors			TEC
	Index		Esc %	Index	PIRA	Esc %	Forecast STD Coal
2018	1.67			100%	0%	0%	
2019	1.61			75%	25%	0%	
2020	1.63			50%	50%	0%	
2021	1.73			25%	75%	0%	
2022				0%	100%	0%	
2023				0%	100%	0%	
2024				0%	100%	0%	
2025				0%	100%	0%	
2026				0%	100%	0%	
2027				0%	100%	0%	
2028				0%	100%	0%	
2029				0%	100%	0%	
2030				0%	100%	0%	
2031				0%	0%	100%	
2032				0%	0%	100%	
2033				0%	0%	100%	
2034				0%	0%	100%	
2035				0%	0%	100%	
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2041				0%	0%	100%	
2042				0%	0%	100%	
2043				0%	0%	100%	
2044				0%	0%	100%	
2045				0%	0%	100%	
2046				0%	0%	100%	
2047				0%	0%	100%	
2048				0%	0%	100%	

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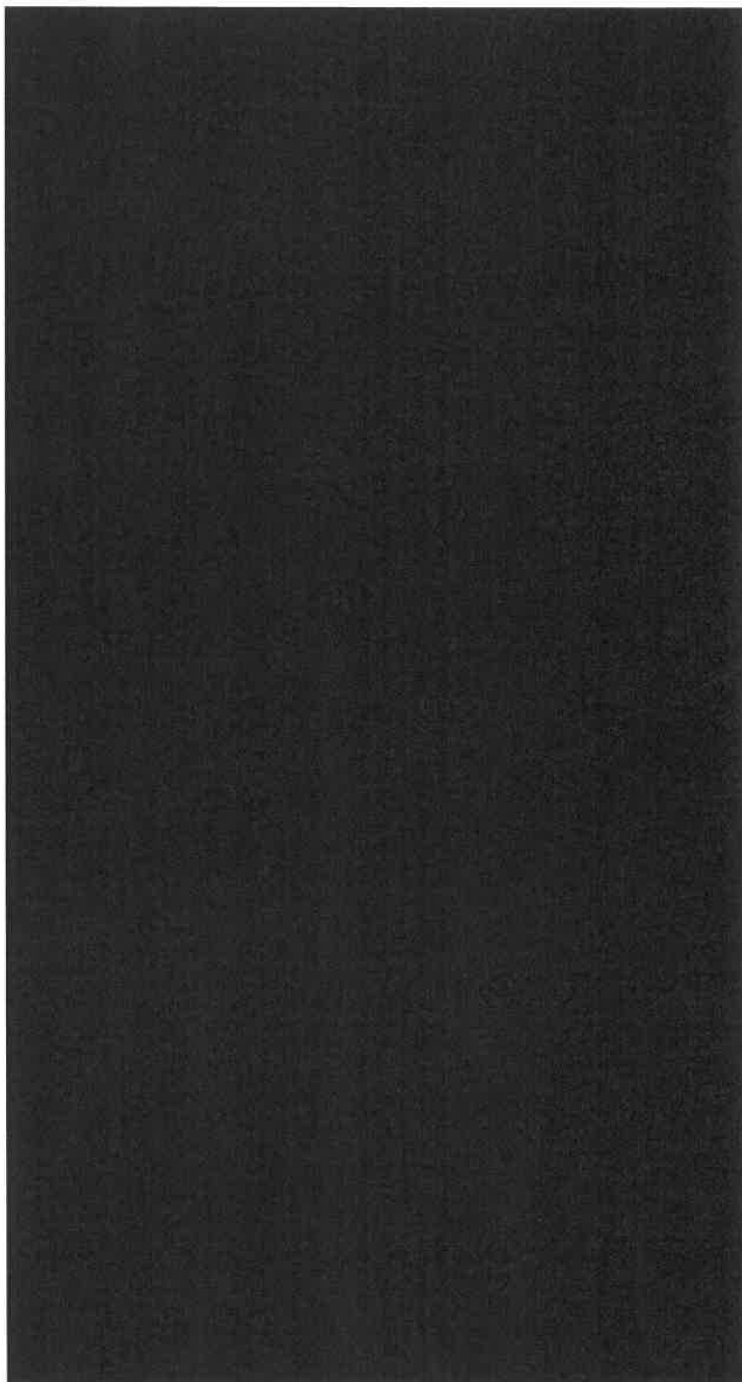
Tampa Electric Derivation of STD Coal Commodity Price Forecast - Low \$/MMBtu							
	Published			Weighting Factors			TEC Forecast STD Coal
	Index	PIRA	EIA NG Esc %	Index	PIRA	EIA NG Esc %	
2018	1.67			100%	0%	0%	
2019	1.61			75%	25%	0%	
2020	1.63			50%	50%	0%	
2021	1.73			25%	75%	0%	
2022				0%	100%	0%	
2023				0%	100%	0%	
2024				0%	100%	0%	
2025				0%	100%	0%	
2026				0%	100%	0%	
2027				0%	100%	0%	
2028				0%	100%	0%	
2029				0%	100%	0%	
2030				0%	100%	0%	
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2038				0%	0%	100%	
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2043				0%	0%	100%	
2044				0%	0%	100%	
2045				0%	0%	100%	
2046				0%	0%	100%	
2047				0%	0%	100%	
2048				0%	0%	100%	

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2. In its response to Staff's First Data Request, No. 27(a), TECO indicates "Actual natural gas prices often vary from forecasted prices by more than 20 percent. This occurs despite the forecasted prices being based on independent, industry-recognized sources". What probabilities, if any, did TECO assign to its base, high, and low natural gas price forecasts in this proceeding, and what method did the Company use to derive such probabilities?
  - A. For its natural gas price at Henry Hub forecasts, PIRA assigns 20% probability to its low price forecast, 50% to its base (reference) price forecast, and 30% to its high price forecast. However in this proceeding, Tampa Electric did not assign probabilities to the results of the sensitivities, but rather evaluated the results of the sensitivities individually. The company presented results separately for base, high and low price forecasts.



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3. Please refer to witness Rocha's direct testimony exhibit, Document No. 2 and TECO's response to Staff's First Production of Documents, No. 5. What probabilities, if any, did TECO assign to its base, high, and low coal price forecasts in this proceeding, and what method did the Company use to derive such probabilities?
  - A. For its coal price forecasts, PIRA assigns 30% probability to its low price forecast, 50% to its base (reference) price forecast, and 20% to its high price forecast. However in this proceeding, Tampa Electric did not assign probabilities to the results of the sensitivities, but rather evaluated the results of the sensitivities individually. The company presented results separately for base, high and low price forecasts.

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- 4.** If TECO did not assign probabilities to its base, high, and low natural gas and coal price forecasts provided in this proceeding, please explain why it chose not to do so.
  - A.** Tampa Electric analyzed the full projected impact of each of these sensitivities. For example, natural gas prices are at historical lows so while low price forecasts can only go to zero, high price forecasts do not have such a limit.

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5. Please refer to the Direct Testimony of TECO witness Rocha, Exhibit RJR-1, Document No. 2, Page 1 of 1. Do the forecasted prices shown on this exhibit include transportation/delivery costs? If not, please provide an updated fuel price forecast listing separate commodity and transportation/delivery charges.
  - A. The forecasted prices shown on witness Rocha's Exhibit No. RJR-1, Document 2, Page 1 of 1, include variable delivery costs. They do not include the fixed component of gas transportation. See the following tables for base natural gas fuel price forecasts showing the components of commodity and transportation. For example on the natural gas table, the column labeled variable delivered cost matches the information shown in Exhibit RJR-1, Document No. 2, Page 1 of 1, and the following column presents the additional fixed cost of one of the company's firm gas pipeline contracts.

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Tampa Electric Components of Natural Gas Delivered Price Forecast - Base \$/MMBtu							
	Commodity			FGT Fuel and Usage	Variable Delivered Cost	FGT FTS-2 Res. @ 100% Util.	All-in Delivered Cost
	TEC NG Fcst @ HH	HH to FGT Z3 Basis	@FGT Z3 Receipt Point				
2018							3.68
2019							3.64
2020							3.70
2021							3.93
2022							4.10
2023							4.18
2024							4.36
2025							4.62
2026							4.92
2027							5.19
2028							5.47
2029							5.72
2030							5.99
2031							6.30
2032							6.59
2033							6.86
2034							7.10
2035							7.33
2036							7.65
2037							7.93
2038							8.29
2039							8.65
2040							9.00
2041							9.24
2042							9.54
2043							9.81
2044							10.12
2045							10.42
2046							10.72
2047							11.05
2048							11.55

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Tampa Electric Components of STD Coal Delivered Price Forecast - Base					
\$/MMBtu					
	Commodity TEC STD Coal	Variable Rail Rate	Variable Delivered Cost	Fixed Rail Rate	All-in Delivered Cost
2018					2.87
2019					2.88
2020					2.85
2021					2.90
2022					2.95
2023					3.03
2024					3.08
2025					3.20
2026					3.35
2027					3.44
2028					3.54
2029					3.63
2030					3.72
2031					3.84
2032					3.93
2033					4.01
2034					4.09
2035					4.15
2036					4.24
2037					4.31
2038					4.40
2039					4.49
2040					4.58
2041					4.62
2042					4.74
2043					4.85
2044					4.97
2045					5.08
2046					5.15
2047					5.27
2048					5.45

A F F I D A V I T

STATE OF FLORIDA            )  
  )  
COUNTY OF HILLSBOROUGH )

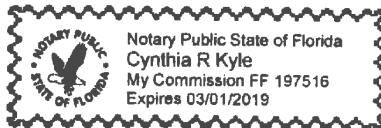
Before me the undersigned authority personally appeared Penelope Rusk who deposed and said that she is a Manager, Rates, Tampa Electric Company, and that the individuals listed in Tampa Electric Company's response to Staff's First Set of Interrogatories, (Nos. 1-5) prepared or assisted with the responses to these interrogatories to the best of her information and belief.

Dated at Tampa, Florida this 23<sup>rd</sup> day of August, 2018.

Penelope A Rusk

Sworn to and subscribed before me this 23<sup>rd</sup> day of August, 2018.

Cynthia R. Kyle



My Commission expires \_\_\_\_\_

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- 29.** The following set of questions pertains to TECO's load forecast with regard to the Petition.
- a. Please provide TECO's most recent base case annual energy forecasts in an electronic Microsoft Excel file for the period 2019 through 2048, including the Company's Total Sales energy forecast as well as the customer class energy forecasts.
  - b. Please identify the date on which the forecasts discussed in Part A were designated as TECO's official energy forecasts and the date when TECO expects to identify its next official energy forecasts.
  - c. Please identify any prior commission proceedings where TECO has relied upon the energy forecasts requested in Part A.
  - d. Please identify the entity(ies) responsible for the development of the energy forecasts requested in Part A.
  - e. Please detail the main economic and statistical assumptions the energy consumption models used to produce the energy forecasts requested in Part A.
- A.**
- a. TECO's most recent base case annual energy forecasts for the period 2019-2048 are in the attached file titled "(BS 109) Request No. 29a.xlsx".
  - b. The forecasts discussed in Part A were designated as the official energy forecasts in May 2018. TECO expects the next official energy forecasts to be completed by June 2019.
  - c. The energy forecasts in Part A have been used in the following commission proceedings:
    - 1) Docket No. 20180204-EI: Petition for Approval of shared Solar Tariff
    - 2) Docket No. 20180001-EI: Fuel and Purchase Power Cost Recovery Clause with Generation Performance Incentive Factor
    - 3) Docket No. 20180002-EG: Conservation cost Recovery Clause
    - 4) Docket No. 20180007-EI: Environmental Cost Recovery Clause
    - 5) Docket No. 20180045-EI: Tax Impacts associated with Tax Cuts
    - 6) Docket No. 20180133-EI: Petition for limited proceeding to approve Second SoBRA effective January 1, 2019

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- 7) Docket No. 20190001-EI: Mid-Course Correction of Fuel and Purchase Power Cost Recovery Clause with Generation Performance Incentive Factor
  
- d. The entities responsible for the development of the energy forecasts in Part A include the staff of the Load Research and Forecasting section of the Regulatory Affairs Department.
  
- e. The main economic and statistical assumptions the energy consumption models used include the following:
  - 1) Population - UF's Bureau of Economic and Business Research
  - 2) Employment – Moody's Analytics
  - 3) Household Income – Moody's Analytics
  - 4) Household Size – Moody's Analytics
  - 5) Gross Domestic Product (GDP) – Moody's Analytics
  - 6) Appliance Efficiency trends – ITRON and Energy Information Administration
  - 7) Price of Electricity – Internally Estimated
  - 8) Number of billing days – historical average
  - 9) Heating and Cooling Degree Days – historical 20 year of average
  - 10) Binary variables are also used to capture monthly seasonality, data anomalies (hurricane outages, billing corrections, etc.), and structural changes in the data (migration between customer classes, loss of large customers, etc.).



**Please refer to the Company's Renewable Energy Program for the following question.**

- 30.** Please provide a breakdown of current participants in the Renewable Energy Program by customer class.
  
- A.** In the billing month for December 2018, there were 17 Commercial, 3 Industrial and 1,480 Residential customers subscribed to the Renewable Energy Program.