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February 19, 2020

**VIA: ELECTRONIC FILING**

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

Re: Approval of Demand Side Management Plan for Tampa Electric Company

Dear Mr. Teitzman:

Attached for filing on behalf of Tampa Electric Company is a Petition for Approval of Demand Side Management Plan together with the company's proposed plan.

Thank you for your assistance in connection with this matter.

Sincerely,

James D. Beasley

JDB/bmp
Attachment

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

| | | |
|---|---|---|
| In re: Approval of Demand Side Management Plan for Tampa Electric Company. | ) | DOCKET NO. _____ |
| | ) | FILED: February 19, 2020 |

**TAMPA ELECTRIC COMPANY'S PETITION**
**FOR APPROVAL OF DEMAND SIDE MANAGEMENT PLAN**

Tampa Electric Company ("Tampa Electric" or "the company"), hereby petitions the Commission for approval of its 2020-2029 Demand Side Management ("DSM") Plan designed to meet the numeric conservation goals established by the Commission for Tampa Electric by Order No. PSC-2019-0509-FOF-EG issued November 26, 2019 in Docket No. 20190021-EG. In support of this petition the company states:

1. Notices and communication with respect to this petition in the above docket should be addressed to:

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2. On November 26, 2019 the Commission entered its Order No. PSC-2019-0509-FOF-EG which established numeric conservation goals for Tampa Electric for the 2020-2024 period.

3. Tampa Electric has prepared and submits herewith its proposed 2020-2029 DSM Plan that contains the necessary conservation programs designed to achieve the numeric

conservation goals established in Order No. PSC-2019-0509-FOF-EG and to comply with Florida Administrative Code Rule 25-17.0021.

4. Tampa Electric believes that its proposed programs are consistent with Order No. PSC-2019-0509-FOF-EG and the numeric conservation goals set forth therein.

5. Tampa Electric is not aware of any disputed issued of material fact relating to the matters addressed herein.

WHEREFORE, Tampa Electric Company requests that the Commission enter its order approving the company's proposed 2020-2029 DSM Plan for achieving the numeric conservation goals set by the Commission.

DATED this 19th day of February 2020.

Respectfully submitted,

JAMES D. BEASLEY
J. JEFFRY WAHLEN
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ATTORNEYS FOR TAMPA ELECTRIC COMPANY


# Tampa Electric Company

## Ten-Year DSM Plan

## 2020-2029

**February 19, 2020**

# Table of Contents

**Tampa Electric's 2020–2029 Demand Side Management Plan**

**Executive Summary**

Tampa Electric's 2020-2029 Demand Side Management Plan ("DSM Plan" or "Plan") provides a balanced, achievable, and comprehensive approach to meet the Demand Side Management ("DSM") goals recently prescribed by the Commission in Docket No. 20190021-EG, Order No. PSC-2019-0509-FOF-EG, issued November 26, 2019 that reflected the DSM Goals prescribed for the 2020-2024 period within Order No. PSC-14-0696-FOF-EU, issued December 16, 2014. The plan is based upon the Rate Impact Measure Test ("RIM") and the Participant Cost Test ("PCT") thus ensuring that the plan provides benefits to all rate classes regardless of participation and recognizes that all individual programs contribute some amount of energy and demand savings. By basing the DSM Plan on the RIM test, ensures that all of Tampa Electric's customers will receive the intended benefits of conservation programs. The Plan includes notes on data and assumptions, new programs, discontinued programs, modifications to existing programs, pilot programs and energy education/awareness and low-income customer initiatives.

In addition, this 2020-2029 Plan complements prior DSM Plans by continuing to provide customers with cost-effective programs for a total offering of 16 residential and 21 commercial/industrial DSM programs. Highlights of the Plan are detailed below:

**Executive Summary Table of Contents:**

**2020-2024 Approved Goals**

The tables below provide the Commission approved DSM Goals for Tampa Electric at the generator.

| 2020 - 2024<br>Commission Approved Residential DSM Goals<br>(At the Generator) | | | | | | |
|---|---|---|---|---|---|---|
| | Summer Demand (MW) | | Winter Demand (MW) | | Annual Energy (GWh) | |
| Year | Incremental | Cumulative | Incremental | Cumulative | Incremental | Cumulative |
| 2020 | 3.3 | 3.3 | 7.6 | 7.6 | 7.4 | 7.4 |
| 2021 | 3.3 | 6.6 | 8.0 | 15.6 | 7.7 | 15.1 |
| 2022 | 3.0 | 9.6 | 7.4 | 23.0 | 6.9 | 22.0 |
| 2023 | 2.9 | 12.5 | 6.8 | 29.8 | 6.3 | 28.3 |
| 2024 | 2.5 | 15.0 | 6.1 | 35.9 | 5.5 | 33.8 |

| 2020 - 2024<br>Commission Approved Commercial/Industrial DSM Goals<br>(At the Generator) | | | | | | |
|---|---|---|---|---|---|---|
| | Summer Demand (MW) | | Winter Demand (MW) | | Annual Energy (GWh) | |
| Year | Incremental | Cumulative | Incremental | Cumulative | Incremental | Cumulative |
| 2020 | 3.5 | 3.5 | 1.7 | 1.7 | 10.3 | 10.3 |
| 2021 | 3.6 | 7.1 | 1.9 | 3.6 | 10.4 | 20.7 |
| 2022 | 3.3 | 10.4 | 1.9 | 5.5 | 10.2 | 30.9 |
| 2023 | 3.5 | 13.9 | 1.8 | 7.3 | 9.9 | 40.8 |
| 2024 | 3.2 | 17.1 | 1.7 | 9.0 | 9.6 | 50.4 |

| 2020 - 2024<br>Commission Approved Combined DSM Goals<br>(At the Generator) | | | | | | |
|---|---|---|---|---|---|---|
| | Summer Demand (MW) | | Winter Demand (MW) | | Annual Energy (GWh) | |
| Year | Incremental | Cumulative | Incremental | Cumulative | Incremental | Cumulative |
| 2020 | 6.8 | 6.8 | 9.3 | 9.3 | 17.7 | 17.7 |
| 2021 | 6.9 | 13.7 | 9.9 | 19.2 | 18.1 | 35.8 |
| 2022 | 6.3 | 20.0 | 9.3 | 28.5 | 17.1 | 52.9 |
| 2023 | 6.4 | 26.4 | 8.6 | 37.1 | 16.2 | 69.1 |
| 2024 | 5.7 | 32.1 | 7.8 | 44.9 | 15.1 | 84.2 |

**Impacts of Approved Goals versus Proposed Goals**

On a ten-year cumulative basis, the Commission's decision to adopt the 2020-2024 DSM goals that were part of the 2015-2024 DSM Goals Setting prescribed by the Commission in Docket No. 20130201-EU, Order No. PSC-14-0696-FOF-EU, issued December 16, 2014, would have lowered Tampa Electric's DSM Goals proposed energy goal from a proposed amount of 165 GWh to 144.3 GWh. On a five-year basis, the Summer Demand Goal decreases by 15.7 percent, the Winter Demand Goal increases

by 106.0 percent, and the Energy Goal increases by 7.1 percent, comparing the 2020-2024 periods of the 2015-2024 DSM Goals Setting and the 2020-2029 DSM Goals Setting proceedings. The table below shows the comparisons supporting these numbers.

| | 2020 - 2024 Combined DSM Goals - Comparison (At the Generator) | | |
|---|---|---|---|
| | Summer Demand (MW) | Winter Demand (MW) | Annual Energy (GWh) |
| 2015-2024 DSM Goals Setting | 32.1 | 44.9 | 84.2 |
| 2020-2029 DSM Goals Setting | 38.1 | 21.8 | 78.6 |

In the 2020-2029 DSM Goals Setting proceeding, the company's next avoided unit was determined to need more summer capacity than winter capacity. Because of this, the company used the cost-effectiveness test assumptions and inputs that were derived in the 2020-2029 DSM Goals Setting process as the basis for this proposed DSM Plan.

**Data, Assumptions and Cost-Effectiveness**

Data used for the cost-effectiveness inputs for energy kWh savings and summer and winter demand kW saving came from four potential sources:

1. Nexant data: The new 2019 Nexant Technical Potential Study was completed to support the development of the company's proposed DSM goals for the recent numeric conservation goals docket. When this information contains the specific measures that are contained in the proposed DSM program, this data is considered an accurate source of information and may be used for cost-effectiveness tests.

2. Historical data: Tampa Electric has cost-effectively offered DSM programs for almost 40 years. The company captures data regarding the programs offered and when a substantial amount of history has been gained, this information is used in cost-effectiveness tests.

3. Load Research data: Tampa Electric utilized its internal Load Research Department to analyze specific measures or programs where similar customers can be clearly separated into two control groups. These control groups are those that have participated in the specific measure or program and those that have not participated in any DSM program during the monitoring period. The difference in the two control groups' usage data provided inputs for cost-effectiveness tests.

4. DOE2 software: Energy Gauge software produced by the Florida Solar Energy Center was used to evaluate residential building energy improvements. In these simulations, the resulting data was used for cost-effectiveness tests.

In the individual program descriptions throughout this plan, the source of the energy kWh savings and summer and winter demand kW savings will be stated. With the exception of those measures that use different energy and demand savings due to the design of

the individual DSM program, all data and assumptions used for the Plan's cost-effectiveness tests and those used to develop the proposed numeric conservation goals were the same.

**New Programs**

Tampa Electric is proposing to add the following DSM programs to the company's DSM portfolio:

Residential:
- ENERGY STAR Smart Thermostat
- ENERGY STAR Pool Pump
- Prime Time Plus

Commercial:
- Facility Energy Management System
- Smart Thermostat
- Variable Frequency Drive Control for Compressors

Pilot:
- Integrated Renewable Energy System (Photovoltaic, Battery, Car Charging, Industrial Truck Charging)

**Discontinued Programs**

Tampa Electric is proposing to discontinue the following programs from the company's DSM portfolio:

Residential:
- **Electronically Commutated Motors (ECM):** This program is not cost-effective to offer and failed from being included in the economic potential with an average RIM Score of 0.10 and an average PCT Score of negative 927. The main drivers causing this program to fail were a reduction of summer demand contribution by 94.5 percent and a reduction of winter demand contribution by 88.3 percent as compared to the prior goal setting period.

- **Residential Wall Insulation:** This program is not cost-effective to offer and failed from being included in the economic potential with an average RIM Score of 0.27 and an average PCT Score of negative 3,699. Additionally, the company examined the program through DOE2 software, and the program remained to be not cost-effective based upon the typical home that participated in rebates over the prior five years. The main driver causing this program to fail both analyses was a reduction of summer demand contribution by 54.8 percent as compared to the prior goal setting period.

Commercial:
- **Commercial Ceiling Insulation:** This program is not cost-effective to offer and failed from being included in the economic potential with an average RIM Score of 0.97 and TRC Score of 0.99. The main drivers

causing this program to fail were a reduction of summer demand contribution by 74.8 percent and a drop of annual energy contribution of 66.7 percent as compared to the prior goal setting period.

- **Cool Roof:** This program is not cost-effective to offer and failed from being included in the economic potential with an average RIM Score of 0.96, a TRC Score of 0.03 and a PCT Score of negative 4,149. The main drivers causing this program to fail were a reduction of summer demand contribution by 84.3 percent and a drop of annual energy contribution of 91.3 percent as compared to the prior goal setting period.

- **Electronically Commutated Motors (ECM):** This program is not cost-effective to offer and failed from being included in the economic potential with an average RIM Score of 0.91. The main driver causing this program to fail was a reduction of summer demand contribution by 87.8 percent as compared to the prior goal setting period.

- **Commercial Duct Repair:** This program is not cost-effective to offer and failed from being included in the economic potential with an average RIM Score of 0.80. The main driver causing this program to fail was a reduction of summer demand contribution by 23.2 percent as compared to the prior goal setting period.

- **Refrigeration Anti-Condensate Control:** This program is not cost-effective to offer and failed from being included in the economic potential with an average RIM Score of 0.95 and an average TRC Score of 0.99. The main drivers causing this program to fail were a reduction of summer demand contribution by 84.3 percent and winter demand contribution by 91.9 percent as compared to the prior goal setting period.

- **Thermal Energy Storage ("TES"):** This program is not cost-effective to offer and failed from being included in the economic potential with an average RIM Score of 0.87 and an average TRC Score of negative 0.79. The main driver causing this program to fail was a reduction of summer demand contribution by 79.4 percent as compared to the prior goal setting period. Customers can still apply for a potential rebate if the TES system qualifies under the Conservation Value Program.

- **Commercial Wall Insulation:** This program is not cost-effective to offer and failed from being included in the economic potential with an average RIM Score of 0.40. The main driver causing this program to fail was a reduction of summer demand contribution by 41.0 percent as compared to the prior goal setting period.

**Discontinued Programs Cost-Effectiveness Summary**

| Discontinued DSM Programs Summary | | | |
|---|---|---|---|
| **Program** | **RIM Value** | **PCT Value** | **TRC Value** |
| Residential - Electronically Commutated Motors (ECM) | 0.10 | -927 | 1.12 |
| Residential - Wall Insulation | 0.27 | -3,699 | 1.40 |
| Commercial - Ceiling Insulation | 0.97 | 31 | 0.99 |
| Commercial - Cool Roof | 0.96 | -4,149 | 0.03 |
| Commercial - Duct Repair | 0.80 | 229 | 7.58 |
| Commercial - Electronically Commutated Motors (ECM) | 0.91 | 220 | 1.78 |
| Commercial - Refrigeration Anti-Condensate Control | 0.95 | 5 | 0.99 |
| Commercial - Thermal Energy Storage | 0.87 | 6,572 | 0.79 |
| Commercial - Wall Insulation | 0.40 | 86 | 6.08 |

**Modifications to Existing Programs**

Tampa Electric made needed modifications to its existing residential, commercial and industrial DSM programs that will be offered with the company's 2020–2029 DSM Plan. Below is a summary of the modifications made in each of the remaining programs.

**Residential Program Modifications**

- **Residential Walk-Through Energy Audit (Free Energy Check):** No modifications needed.
- **Residential Customer Assisted Energy Audit (Online):** No modifications needed.
- **Residential Computer Assisted Energy Audit (RCS-Paid Audit):** No modifications needed.
- **Residential Ceiling Insulation:** The rebate was increased from $0.14 to $0.15 per square foot of installed insulation.

- **Residential Duct Repair:** The rebate was lowered from $165 to $125 per air distribution system ("ADS") repaired.

- **Energy Education, Awareness and Agency Outreach**: This program will add renewable energy education awareness to support educating customers on renewable energy systems and other technologies such as opportunities to conserve with the use of batteries, electric vehicle charging and other grid edge type energy systems or technologies. The new program will become the Energy and Renewable Education, Awareness and Agency Outreach.

- **ENERGY STAR for New Multi-Family Residences:** The rebate was lowered from $325 to $300 per new multi-family residence receiving the Energy Star Certificate.

- **ENERGY STAR for New Homes:** The rebate was increased from $850 to $1,000 per new residence receiving the Energy Star Certificate.

- **Residential Heating and Cooling:** No modifications were needed.

- **Neighborhood Weatherization:** The offering of a water heater wrap was removed as one of the measures within the energy efficiency kit. Water heaters that were manufactured after 1996 already are manufactured with sufficient insulation as to not require any additional insulation. In 2016 through 2018, the company did not find any water heaters that required the installation of a water heater wrap. The company is adding the performance of a walk-through energy audit to increase the amount of energy education. In addition, the team members performing the energy audit will install those items in the energy efficiency kit during the performance of the energy audit.

- **Residential Price Responsive Load Management (Energy Planner):** No modifications were needed.

- **Residential Window Replacement:** The rebate was lowered from $2.20 to $0.76 per square foot of installed window.

- **Renewable Energy Program (Sun to Go):** No modifications were needed.

**Commercial Program Modifications**

- **Commercial/Industrial Audit (Free):** No modifications were needed.

- **Comprehensive Commercial/Industrial Audit (Paid):** No modifications were needed.

- **Commercial Chiller:** The rebate was lowered from $146 to $50 per kW reduced above the baseline equipment.

- **Cogeneration:** No modifications were needed.

- **Conservation Value:** The typical rebate was lowered from $200 to $92 per kW reduced above the baseline equipment.

- **Commercial Cooling-Direct Expansion ("DX"):** The rebate was increased from $11 to $19 per ton installed.

- **Demand Response:** No modifications were needed.

- **Industrial Load Management (GSLM-2&3):** No modifications were needed.

- **Street and Outdoor Lighting Conversion Program:** No modifications were needed.

- **Lighting Conditioned Space:** The rebate was increased from $148 to $250 per kW reduced.

- **Lighting Non-Conditioned Space:** The rebate was increased from $75 to $200 per kW reduced.

- **Lighting Occupancy Sensors:** The rebate was increased from $20 to $40 per installed occupancy sensor.

- **Commercial Load Management (GSLM-1):** No modifications were needed.

- **Standby Generator:** No modifications were needed.

- **Commercial Water Heating:** The rebate was lowered from $0.0250 to $0.0100 per Btu of installed water heating system.

- **Renewable Energy Program (Sun to Go):** No modifications were needed.

**Pilot Programs**

Tampa Electric proposes the Integrated Renewable Energy System (Pilot) Program to study and understand the potential opportunities and interactions of a fully integrated renewable energy system that contains a photovoltaic system, batteries, car charging and industrial truck charging. The pilot program will study how these systems can be utilized to increase the value and amount of DSM savings that can be achieved. The system will be monitored to provide study data in addition to being used as an education platform for commercial customers that are seeking to install this type of system.

**Low-Income Program Initiatives**

Tampa Electric's Low-Income Programs have always been a leader in Florida. Tampa Electric recognizes there may be times where customers may not have the financial resources to install energy efficient technologies. To maximize the help provided to

these customers, the company believes in providing a multi-program approach. This approach involves offering neighborhood weatherization, energy education awareness, agency outreach and free energy audit programs where needed.

Tampa Electric's Neighborhood Weatherization program will continue to offer the comprehensive energy efficiency kit and increased energy education, with the addition of the walk-through energy audit, to assist low-income residential customers in becoming more energy efficient. The comprehensive energy efficiency kit includes 12 energy savings measures, in addition to ceiling insulation and/or duct sealing depending on the needs of the home:

- Six light emitting diode ("LED") lamps
- HVAC filter whistle
- Installation of up to three low flow faucet aerators
- Installation of up to two low flow shower heads
- Installation of a wall plate thermometer
- A water heating temperature check card for adjustment of the water heater
- Installation of hot water pipe insulation, if necessary
- Installation of weather stripping, if necessary
- Installation of caulking to seal windows, if necessary
- Installation of sealing foam to seal air infiltration issues, if necessary
- Refrigerator coil cleaning brush
- Installation of ceiling insulation, if needed
- Repair of duct seal, if needed
- Walk-Through Energy Audit
- Energy savings education handout

Tampa Electric's Energy and Renewable Education, Awareness and Agency Outreach program will continue to offer a subset of the comprehensive energy efficiency kit to assist low income customers in becoming more energy efficient. Tampa Electric commits to continue partnering with neighborhood service centers to ensure customers who need this assistance in reducing their energy usage and associated cost will receive the appropriate energy education and guidance. The smaller subset kit includes six energy savings measures:

- Four LED lamps
- HVAC filter whistle
- Two low flow faucet aerators
- Wall plate thermometer
- Water heating temperature check card for adjustment of the water heater
- Energy savings education handout

The company will continue to partner with local high schools to provide detailed electric vehicle energy education to young drivers on how to maximize the efficiency of driving and charging such vehicles and how to select the most efficient performing electric vehicles.

**Conservation Research and Development ("R&D")**

Rule 25-17.001(5)(f), Florida Administrative Code ("F.A.C.") requires aggressive R&D projects to be "…an ongoing part of the practice of every well managed utility's programs." Tampa Electric has conducted R&D projects on conservation and demand response technologies in the past which have led to the successful launch of DSM programs. Therefore, the company will continue its R&D efforts over the next five years at an estimated cost of $400,000 in any given year but will not exceed $2,000,000 over the five-year period.

Tampa Electric is exploring the following opportunities of performing R&D on the following potential projects:

- Continued exploration of small to mid-size commercial batteries.
- Grid connected residential and/or small commercial generation used for backup in addition to demand response.
- Residential and/or commercial shared battery for load shifting, peak shaving or demand response.
- Photovoltaic smart inverter capabilities.
- Electric vehicle charging for demand response or load shifting.
- Incorporation of distributed energy resources into an existing company demand response or load management programs.
- Potential current energy education and technology demonstration benefits for reestablishing an Energy Technology Resource Center.

**Advertising**

Tampa Electric utilizes a variety of methods that includes; print, television, radio, social media, online, bill on-serts, direct mail, collegiate and professional sports, and digital web messaging to conduct advertising to promote the company's Commission approved DSM programs. Advertising is focused heavily on promoting the Energy Audit, Energy Planner and Low-Income programs. Promoting these programs, also creates awareness of the many other residential and commercial/industrial energy-saving programs offered to customers. The company included the cost of advertising in these programs in the program description and in the program's individual cost-effectiveness evaluation where applicable.

**Program Standards**

Tampa Electric will file program standards within 30 days after the issuance of the Commission's final order approving its DSM Plan.

**2020–2029 Proposed Programs**

**Residential**

1. Residential Walk-Through Energy Audit (Free Energy Check)
2. Residential Customer Assisted Energy Audit (Online)
3. Residential Computer Assisted Energy Audits (RCS-Paid Audit)
4. Residential Ceiling Insulation
5. Residential Duct Repair

6. Energy and Renewable Education, Awareness and Agency Outreach
7. ENERGY STAR for New Multi-Family Residences
8. ENERGY STAR for New Homes
9. ENERGY STAR Pool Pumps
10. ENERGY STAR Thermostats
11. Residential Heating and Cooling
12. Neighborhood Weatherization
13. Residential Price Responsive Load Management (Energy Planner)
14. Residential Prime Time Plus
15. Residential Window Replacement
16. Renewable Energy Program (Sun to Go)

**Commercial**

1. Commercial/Industrial Audit (Free)
2. Comprehensive Commercial/Industrial Audit (Paid)
3. Commercial Chiller
4. Cogeneration
5. Conservation Value
6. Commercial Cooling
7. Demand Response
8. Facility Energy Management System
9. Industrial Load Management (GSLM 2&3)
10. Street and Outdoor Lighting Conversion
11. Lighting Conditioned Space
12. Lighting Non-Conditioned Space
13. Lighting Occupancy Sensors
14. Commercial Load Management (GSLM 1)
15. Commercial Smart Thermostats
16. Standby Generator
17. Variable Frequency Drive Control for Compressors
18. Commercial Water Heating
19. Integrated Renewable Energy System (Pilot)
20. Conservation Research and Development (R&D)
21. Renewable Energy Program (Sun to Go)

**Cost-Effectiveness Summary with Proposed Modifications**

| Residential Programs | | | |
|---|---|---|---|
| Program | RIM Value | PCT Value | TRC Value |
| Residential Ceiling Insulation | 1.02 | 1,285 | 1.01 |
| Residential Duct Repair | 1.02 | 1,120 | 1.95 |
| Energy and Renewable Education, Awareness and Agency Outreach | 0.73 | 660 | 4.03 |
| ENERGY STAR for New Multi-Family Residences | 1.01 | 1,152 | 1.12 |
| ENERGY STAR for New Homes | 1.09 | 5,677 | 1.10 |
| ENERGY STAR Pool Pumps | 1.04 | 3,145 | 1.51 |
| ENERGY STAR Thermostats | 1.11 | 241 | 1.31 |
| Residential Heating and cooling | 1.01 | -318 | 0.53 |
| Neighborhood Weatherization | 0.68 | 27,881 | 1.56 |
| Residential Price Responsive Load Management (Energy Planner) | 1.98 | 3,997 | 3.52 |
| Residential Prime Time Plus | 1.05 | 1,443 | 2.69 |
| Residential Windows | 1.02 | 188 | 0.93 |

| Commercial Programs | | | |
|---|---|---|---|
| Program | RIM Value | PCT Value | TRC Value |
| Chiller | 1.03 | 214 | 2.22 |
| Conservation Value | 1.00 | 330 | 1.94 |
| Cooling | 1.02 | 15 | 0.83 |
| Demand Response | 1.45 | 911 | 6.91 |
| Facility Energy Management System | 1.02 | 1,167 | 1.53 |
| LED Street and Outdoor Lighting Conversion Program | 1.40 | 46,169 | 2.61 |
| Lighting - Conditioned Space | 1.13 | 5,834 | 1.12 |
| Lighting - Non-Conditioned Space | 1.22 | 492 | 0.79 |
| Lighting Occupancy Sensors | 1.04 | 1,999 | 3.69 |
| Commercial Load Management (GSLM - 1, Cyclic) | 2.75 | 9 | 6.29 |
| Commercial Load Management (GSLM - 1, Extended) | 2.55 | 124 | 49.47 |
| Smart Thermostats | 1.06 | 106 | 0.65 |
| Standby Generator | 1.76 | 1,002 | 6.93 |
| Variable Frequency Drive Control for Compressors | 1.22 | 2,131 | 1.58 |
| Water Heating | 1.02 | 42 | 1.46 |

**Cost and Impact of Proposed DSM Programs**

Tampa Electric's 2020-2029 DSM Programs are designed to meet the new DSM Goals established by the Florida Public Service Commission for the 2020-2024 period and will decrease costs to customers. The costs incurred to offer these DSM Programs to achieve these goals will be collected through the Energy Conservation Cost Recovery ("ECCR") Clause. Tampa Electric's current 2020 residential ECCR cost at 1,200 kWh per month is $2.78 ($2.32 per 1,000 kWh). With the approval of this DSM Plan to support the new established goals and other spending requirements, the residential ECCR cost at 1,200 kWh per month is projected to increase to $3.32 for 2021, decrease to $2.81 by 2024, and then increase to $3.19 by 2029. The table that follows provides the detail of the projected costs over the ten-year period.

| DSM Cost Estimates | | | | | | |
|---|---|---|---|---|---|---|
| Tampa Electric Company | | | | | | |
| DSM Plan Reductions (GWh) (1) | | | DSM Plan Cost (2) | Residential ECCR Impacts @ 1,200 kWh (3) | Non-Fuel Revenue Impact (4) (1b x $/MWh) | DSM Plan Costs and Non-Fuel Revenue Impacts (2 + 4) |
| Year | Annual (1a) | Cumulative (1b) | | | | |
| 2020 | 69.3 | 69.3 | $48,279,419 | $3.31 | $4,830,184 | $53,109,603 |
| 2021 | 70.0 | 139.2 | $48,461,883 | $3.32 | $9,707,686 | $58,169,569 |
| 2022 | 70.6 | 209.9 | $45,587,347 | $3.13 | $14,644,834 | $60,232,181 |
| 2023 | 58.2 | 268.1 | $43,482,498 | $2.98 | $18,722,426 | $62,204,923 |
| 2024 | 47.1 | 315.2 | $41,027,430 | $2.81 | $22,018,656 | $63,046,085 |
| 2025 | 48.8 | 364.0 | $42,579,643 | $2.92 | $25,436,410 | $68,016,054 |
| 2026 | 51.7 | 415.7 | $43,645,357 | $2.99 | $29,060,335 | $72,705,692 |
| 2027 | 51.7 | 467.4 | $45,176,571 | $3.10 | $32,678,755 | $77,855,327 |
| 2028 | 51.7 | 519.2 | $45,843,785 | $3.14 | $36,283,072 | $82,126,857 |
| 2029 | 51.7 | 570.9 | $46,510,999 | $3.19 | $39,871,460 | $86,382,459 |
| **Total Measure Impacts** | 570.9 | | $450,594,932 | | $233,253,818 | $683,848,750 |

| Residential Energy and Demand Data | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (At the Generator) | | | | | | | | | | | | |
| | Projected Summer Demand Savings (MW) | | Commission Approved Summer MW Goal | | Projected Winter Demand Savings (MW) | | Commission Approved Winter MW Goal | | Projected Annual Energy Savings (GWh) | | Commission Approved Annual GWh Goal | |
| Year | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. |
| 2020 | 10.9 | 10.9 | 3.3 | 3.3 | 10.1 | 10.1 | 7.6 | 7.6 | 25.8 | 25.8 | 7.4 | 7.4 |
| 2021 | 10.9 | 21.7 | 3.3 | 6.6 | 10.1 | 20.1 | 8.0 | 15.6 | 25.8 | 51.6 | 7.7 | 15.1 |
| 2022 | 12.9 | 34.7 | 3.0 | 9.6 | 12.1 | 32.2 | 7.4 | 23.0 | 25.8 | 77.3 | 6.9 | 22.0 |
| 2023 | 15.6 | 50.3 | 2.9 | 12.5 | 14.3 | 46.5 | 6.8 | 29.8 | 27.0 | 104.4 | 6.3 | 28.3 |
| 2024 | 15.6 | 65.8 | 2.5 | 15.0 | 14.3 | 60.7 | 6.1 | 35.9 | 27.0 | 131.4 | 5.5 | 33.8 |
| 2025 | 18.6 | 84.4 | 0.0 | 15.0 | 16.3 | 77.0 | 0.0 | 35.9 | 28.7 | 160.1 | 0.0 | 33.8 |
| 2026 | 19.8 | 104.1 | 0.0 | 15.0 | 16.6 | 93.6 | 0.0 | 35.9 | 31.7 | 191.8 | 0.0 | 33.8 |
| 2027 | 21.8 | 126.0 | 0.0 | 15.0 | 18.6 | 112.2 | 0.0 | 35.9 | 31.7 | 223.5 | 0.0 | 33.8 |
| 2028 | 21.8 | 147.8 | 0.0 | 15.0 | 18.6 | 130.9 | 0.0 | 35.9 | 31.7 | 255.2 | 0.0 | 33.8 |
| 2029 | 21.8 | 169.6 | 0.0 | 15.0 | 18.6 | 149.5 | 0.0 | 35.9 | 31.7 | 286.9 | 0.0 | 33.8 |

| Commercial/Industrial Energy and Demand Data | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (At the Generator) | | | | | | | | | | | | |
| | Projected Summer Demand Savings (MW) | | Commission Approved Summer MW Goal | | Projected Winter Demand Savings (MW) | | Commission Approved Winter MW Goal | | Projected Annual Energy Savings (GWh) | | Commission Approved Annual GWh Goal | |
| Year | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. |
| 2020 | 5.2 | 5.2 | 3.5 | 3.5 | 10.1 | 10.1 | 1.7 | 1.7 | 43.5 | 43.5 | 10.3 | 10.3 |
| 2021 | 5.3 | 10.4 | 3.6 | 7.1 | 10.2 | 20.3 | 1.9 | 3.6 | 44.2 | 87.7 | 10.4 | 20.7 |
| 2022 | 5.4 | 15.8 | 3.3 | 10.4 | 10.2 | 30.5 | 1.9 | 5.5 | 44.9 | 132.5 | 10.2 | 30.9 |
| 2023 | 5.5 | 21.2 | 3.5 | 13.9 | 6.9 | 37.5 | 1.8 | 7.3 | 31.2 | 163.7 | 9.9 | 40.8 |
| 2024 | 5.5 | 26.7 | 3.2 | 17.1 | 4.3 | 41.8 | 1.7 | 9.0 | 20.0 | 183.8 | 9.6 | 50.4 |
| 2025 | 5.5 | 32.1 | 0.0 | 17.1 | 4.3 | 46.1 | 0.0 | 9.0 | 20.0 | 203.8 | 0.0 | 50.4 |
| 2026 | 5.5 | 37.6 | 0.0 | 17.1 | 4.3 | 50.4 | 0.0 | 9.0 | 20.0 | 223.9 | 0.0 | 50.4 |
| 2027 | 5.5 | 43.0 | 0.0 | 17.1 | 4.3 | 54.7 | 0.0 | 9.0 | 20.0 | 243.9 | 0.0 | 50.4 |
| 2028 | 5.5 | 48.5 | 0.0 | 17.1 | 4.3 | 59.0 | 0.0 | 9.0 | 20.0 | 263.9 | 0.0 | 50.4 |
| 2029 | 5.5 | 54.0 | 0.0 | 17.1 | 4.3 | 63.3 | 0.0 | 9.0 | 20.0 | 284.0 | 0.0 | 50.4 |

| Combined Residential & Commercial/Industrial Energy and Demand Data | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (At the Generator) | | | | | | | | | | | | |
| | Projected Summer Demand Savings (MW) | | Commission Approved Summer MW Goal | | Projected Winter Demand Savings (MW) | | Commission Approved Winter MW Goal | | Projected Annual Energy Savings (GWh) | | Commission Approved Annual GWh Goal | |
| Year | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. | Incr. | Cum. |
| 2020 | 16.0 | 16.0 | 6.8 | 6.8 | 20.2 | 20.2 | 9.3 | 9.3 | 69.3 | 69.3 | 17.7 | 17.7 |
| 2021 | 16.1 | 32.2 | 6.9 | 13.7 | 20.2 | 40.4 | 9.9 | 19.2 | 70.0 | 139.2 | 18.1 | 35.8 |
| 2022 | 18.3 | 50.5 | 6.3 | 20.0 | 22.3 | 62.8 | 9.3 | 28.5 | 70.6 | 209.9 | 17.1 | 52.9 |
| 2023 | 21.0 | 71.5 | 6.4 | 26.4 | 21.2 | 83.9 | 8.6 | 37.1 | 58.2 | 268.1 | 16.2 | 69.1 |
| 2024 | 21.0 | 92.5 | 5.7 | 32.1 | 18.6 | 102.5 | 7.8 | 44.9 | 47.1 | 315.2 | 15.1 | 84.2 |
| 2025 | 24.0 | 116.5 | 0.0 | 32.1 | 20.6 | 123.1 | 0.0 | 44.9 | 48.8 | 364.0 | 0.0 | 84.2 |
| 2026 | 25.2 | 141.7 | 0.0 | 32.1 | 20.9 | 144.0 | 0.0 | 44.9 | 51.7 | 415.7 | 0.0 | 84.2 |
| 2027 | 27.3 | 169.0 | 0.0 | 32.1 | 22.9 | 166.9 | 0.0 | 44.9 | 51.7 | 467.4 | 0.0 | 84.2 |
| 2028 | 27.3 | 196.3 | 0.0 | 32.1 | 22.9 | 189.9 | 0.0 | 44.9 | 51.7 | 519.2 | 0.0 | 84.2 |
| 2029 | 27.3 | 223.6 | 0.0 | 32.1 | 22.9 | 212.8 | 0.0 | 44.9 | 51.7 | 570.9 | 0.0 | 84.2 |

**Program: Residential Walk-Through Audit (Free Energy Check)**

**Program Start Date:** May 1981

**Program Description**

This is a conservation program adopted by Florida under Chapter 366.82(5), Florida Statutes, and Rule 25-17.003 F.A.C. This program is offered to all residential customers and is designed to save demand and energy by increasing customer awareness of energy use in personal residences. Savings are dependent on the customer implementing energy saving recommendations.

The audit is conducted by a trained and certified residential energy analyst who will perform the following at a minimum:

1. Identify, note and recommend those conservation measures and practices that apply to the specific residence.
2. Encourage customer participation in available conservation programs in which the specific residence and customer will benefit.
3. Identify and communicate to the customer identified no-cost, low-cost conservation measures and practices including those that have less than a two-year payback.

Audits are kept on file with the company for three years. There is no charge to the customer for the Residential Walk-Through Audit.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

The kWh billing histories of customers who received these audits were examined in comparison to those of matched customers without audits. Customers included in the analysis did not participate in any other DSM programs. Consumption before and after the audit was compared for both sets of customers to estimate the impact associated with the audit. Based on this load research data, the analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer demand: | 0.096 kW |
| Winter demand: | 0.127 kW |
| Annual energy: | 625 kWh |

Note: As approved on August 11, 2015 in Docket No. 20150081-EG, Order No. PSC-2015-0323-PAA-EG, the company will not count the energy or demand savings from this program toward contributions toward meeting Tampa Electric's Commission approved annual energy and demand saving's goals.

**Program Costs**

Based on historical costs, the administrative cost per audit is estimated to be $161. There are no rebates or incentives for this program.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: RESIDENTIAL WALK-THROUGH AUDIT (FREE ENERGY CHECK)

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 694,361 | 4,000 | 0.6% | 4,000 |
| 2021 | 707,775 | 707,775 | 4,000 | 1.1% | 8,000 |
| 2022 | 720,915 | 720,915 | 4,000 | 1.7% | 12,000 |
| 2023 | 733,874 | 733,874 | 4,000 | 2.2% | 16,000 |
| 2024 | 746,561 | 746,561 | 4,000 | 2.7% | 20,000 |
| 2025 | 758,905 | 758,905 | 4,000 | 3.2% | 24,000 |
| 2026 | 770,920 | 770,920 | 4,000 | 3.6% | 28,000 |
| 2027 | 782,598 | 782,598 | 4,000 | 4.1% | 32,000 |
| 2028 | 793,990 | 793,990 | 4,000 | 4.5% | 36,000 |
| 2029 | 803,878 | 803,878 | 4,000 | 5.0% | 40,000 |

PROGRAM NAME: RESIDENTIAL WALK-THROUGH AUDIT (FREE ENERGY CHECK)

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 625 | 0.127 | 0.096 | 4.375 | 0.889 | 0.672 |
| 2021 | 625 | 0.127 | 0.096 | 8.750 | 1.778 | 1.344 |
| 2022 | 625 | 0.127 | 0.096 | 13.125 | 2.667 | 2.016 |
| 2023 | 625 | 0.127 | 0.096 | 17.500 | 3.556 | 2.688 |
| 2024 | 625 | 0.127 | 0.096 | 21.875 | 4.445 | 3.360 |
| 2025 | 625 | 0.127 | 0.096 | 26.250 | 5.334 | 4.032 |
| 2026 | 625 | 0.127 | 0.096 | 30.625 | 6.223 | 4.704 |
| 2027 | 625 | 0.127 | 0.096 | 35.000 | 7.112 | 5.376 |
| 2028 | 625 | 0.127 | 0.096 | 39.375 | 8.001 | 6.048 |
| 2029 | 625 | 0.127 | 0.096 | 43.750 | 8.890 | 6.720 |

PROGRAM NAME: RESIDENTIAL WALK-THROUGH AUDIT (FREE ENERGY CHECK)

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 660 | 0.136 | 0.103 | 4.620 | 0.954 | 0.721 |
| 2021 | 660 | 0.136 | 0.103 | 9.240 | 1.908 | 1.442 |
| 2022 | 660 | 0.136 | 0.103 | 13.860 | 2.862 | 2.163 |
| 2023 | 660 | 0.136 | 0.103 | 18.480 | 3.816 | 2.884 |
| 2024 | 660 | 0.136 | 0.103 | 23.100 | 4.769 | 3.605 |
| 2025 | 660 | 0.136 | 0.103 | 27.720 | 5.723 | 4.326 |
| 2026 | 660 | 0.136 | 0.103 | 32.340 | 6.677 | 5.047 |
| 2027 | 660 | 0.136 | 0.103 | 36.960 | 7.631 | 5.768 |
| 2028 | 660 | 0.136 | 0.103 | 41.580 | 8.585 | 6.490 |
| 2029 | 660 | 0.136 | 0.103 | 46.200 | 9.539 | 7.211 |

**Program: Residential Customer Assisted Energy Audit (Online)**

**Program Start Date:** June 2002

**Program Description**

This is a conservation program designed to save demand and energy by increasing residential customer awareness of energy use in personal residences. This program allows for residential customers to engage in the energy audit either through a phone call or completing an online energy questionnaire. Savings are dependent on the customer implementing energy conservation measure and practice recommendations. Recommendations are standardized and include an estimated range of savings.

To access this free audit, customers can either call or go to Tampa Electric's internet site to link to the audit. Customers will answer questions about their home and energy usage. Personalized audit results are either emailed, provided by the phone team or immediately displayed on the customer's computer for review and implementation. The audit recommendations are based on the customers' answers to the questions and their actual energy consumption.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Energy and demand savings are estimated to be 25 percent less than the Residential Walk-Through Audit. Therefore, savings per participant are as follows:

| | |
|---|---|
| Summer Demand: | 0.072 kW |
| Winter Demand: | 0.095 kW |
| Annual Energy: | 469 kWh |

Note: As approved on August 11, 2015 in Docket No. 20150081-EG, Order No. PSC-2015-0323-PAA-EG, the company will not count the energy or demand savings from this program toward contributions toward meeting Tampa Electric's Commission approved annual energy and demand saving's goals.

**Program Costs**

Based on historical costs, the administrative cost per audit is estimated to be $36. There are no rebates or incentives for this program.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: RESIDENTIAL CUSTOMER ASSISTED ENERGY AUDIT

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 694,361 | 30,000 | 4.3% | 30,000 |
| 2021 | 707,775 | 677,775 | 30,000 | 8.9% | 60,000 |
| 2022 | 720,915 | 690,915 | 30,000 | 13.0% | 90,000 |
| 2023 | 733,874 | 703,874 | 30,000 | 17.0% | 120,000 |
| 2024 | 746,561 | 716,561 | 30,000 | 20.9% | 150,000 |
| 2025 | 758,905 | 728,905 | 30,000 | 24.7% | 180,000 |
| 2026 | 770,920 | 740,920 | 30,000 | 28.3% | 210,000 |
| 2027 | 782,598 | 752,598 | 30,000 | 31.9% | 240,000 |
| 2028 | 793,990 | 763,990 | 30,000 | 35.3% | 270,000 |
| 2029 | 803,878 | 773,878 | 30,000 | 38.8% | 300,000 |

PROGRAM NAME: RESIDENTIAL CUSTOMER ASSISTED ENERGY AUDIT

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 469 | 0.095 | 0.072 | 14.070 | 2.850 | 2.160 |
| 2021 | 469 | 0.095 | 0.072 | 28.140 | 5.700 | 4.320 |
| 2022 | 469 | 0.095 | 0.072 | 42.210 | 8.550 | 6.480 |
| 2023 | 469 | 0.095 | 0.072 | 56.280 | 11.400 | 8.640 |
| 2024 | 469 | 0.095 | 0.072 | 70.350 | 14.250 | 10.800 |
| 2025 | 469 | 0.095 | 0.072 | 84.420 | 17.100 | 12.960 |
| 2026 | 469 | 0.095 | 0.072 | 98.490 | 19.950 | 15.120 |
| 2027 | 469 | 0.095 | 0.072 | 112.560 | 22.800 | 17.280 |
| 2028 | 469 | 0.095 | 0.072 | 126.630 | 25.650 | 19.440 |
| 2029 | 469 | 0.095 | 0.072 | 140.700 | 28.500 | 21.600 |

PROGRAM NAME: RESIDENTIAL CUSTOMER ASSISTED ENERGY AUDIT

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 495 | 0.102 | 0.077 | 14.858 | 3.058 | 2.318 |
| 2021 | 495 | 0.102 | 0.077 | 29.716 | 6.116 | 4.635 |
| 2022 | 495 | 0.102 | 0.077 | 44.574 | 9.174 | 6.953 |
| 2023 | 495 | 0.102 | 0.077 | 59.432 | 12.232 | 9.271 |
| 2024 | 495 | 0.102 | 0.077 | 74.290 | 15.290 | 11.588 |
| 2025 | 495 | 0.102 | 0.077 | 89.148 | 18.348 | 13.906 |
| 2026 | 495 | 0.102 | 0.077 | 104.005 | 21.406 | 16.224 |
| 2027 | 495 | 0.102 | 0.077 | 118.863 | 24.464 | 18.541 |
| 2028 | 495 | 0.102 | 0.077 | 133.721 | 27.522 | 20.859 |
| 2029 | 495 | 0.102 | 0.077 | 148.579 | 30.581 | 23.177 |

**Program: Residential Computer Assisted Energy Audit (RCS-Paid Audit)**

**Program Start Date:** January 1981

**Program Description**

This is a conservation program originally developed in response to the Energy Policy Act (1978) and adopted by Florida under Chapter 366.82(5), Florida Statutes, and Rule 25-17.003, F.A.C. The program is designed to save demand and energy and is offered to all residential customers. Savings are achieved by increasing residential customer awareness of the energy use in personal residences. Savings are dependent on customers implementing conservation measures and practices. The audit is performed by a trained and certified residential analyst who collects specific data about the structure of the home and the customer's energy usage patterns. Using Energy Gauge software, the analyst will simulate different conservation measures and practices on the customer's residence to identify potential savings that can be achieved.

Analysts identify, note and recommend only those conservation measures and practices that apply to the specific residence. The following information is then provided on the applicable conservation measures and practices:

1. Estimated cost for contractor installation
2. Estimated cost for do-it-yourself installation
3. Payback period for customer investment
4. Estimated first-year energy savings

Audit findings are kept on file with the utility for three years. The audit charge to the customer is $15.00.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings for the Residential Computer Assisted Audit are assumed to be the same as the Residential Walk-Through Audit. The savings per participant are as follows:

| | |
|---|---|
| Summer Demand: | 0.096 kW |
| Winter Demand: | 0.127 kW |
| Annual Energy: | 625 kWh |

Note: As approved on August 11, 2015 in Docket No. 20150081-EG, Order No. PSC-2015-0323-PAA-EG, the company will not count the energy or demand savings from this program toward contributions toward meeting Tampa Electric's Commission approved annual energy and demand saving's goals.

**Program Costs**

There are no rebates or incentives for this program.

The estimated administrative cost per audit is $285.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: RESIDENTIAL COMPUTER ASSISTED ENERGY AUDIT (RCS)

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 694,361 | 4 | 0.0% | 4 |
| 2021 | 707,775 | 707,775 | 4 | 0.0% | 8 |
| 2022 | 720,915 | 720,915 | 4 | 0.0% | 12 |
| 2023 | 733,874 | 733,874 | 4 | 0.0% | 16 |
| 2024 | 746,561 | 746,561 | 4 | 0.0% | 20 |
| 2025 | 758,905 | 758,905 | 4 | 0.0% | 24 |
| 2026 | 770,920 | 770,920 | 4 | 0.0% | 28 |
| 2027 | 782,598 | 782,598 | 4 | 0.0% | 32 |
| 2028 | 793,990 | 793,990 | 4 | 0.0% | 36 |
| 2029 | 803,878 | 803,878 | 4 | 0.0% | 40 |

PROGRAM NAME: RESIDENTIAL COMPUTER ASSISTED ENERGY AUDIT (RCS)

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 625 | 0.127 | 0.096 | 0.003 | 0.001 | 0.000 |
| 2021 | 625 | 0.127 | 0.096 | 0.005 | 0.001 | 0.001 |
| 2022 | 625 | 0.127 | 0.096 | 0.008 | 0.002 | 0.001 |
| 2023 | 625 | 0.127 | 0.096 | 0.010 | 0.002 | 0.002 |
| 2024 | 625 | 0.127 | 0.096 | 0.013 | 0.003 | 0.002 |
| 2025 | 625 | 0.127 | 0.096 | 0.015 | 0.003 | 0.002 |
| 2026 | 625 | 0.127 | 0.096 | 0.018 | 0.004 | 0.003 |
| 2027 | 625 | 0.127 | 0.096 | 0.020 | 0.004 | 0.003 |
| 2028 | 625 | 0.127 | 0.096 | 0.023 | 0.005 | 0.003 |
| 2029 | 625 | 0.127 | 0.096 | 0.025 | 0.005 | 0.004 |

PROGRAM NAME: RESIDENTIAL COMPUTER ASSISTED ENERGY AUDIT (RCS)

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 660 | 0.136 | 0.103 | 0.003 | 0.001 | 0.000 |
| 2021 | 660 | 0.136 | 0.103 | 0.005 | 0.001 | 0.001 |
| 2022 | 660 | 0.136 | 0.103 | 0.008 | 0.002 | 0.001 |
| 2023 | 660 | 0.136 | 0.103 | 0.011 | 0.002 | 0.002 |
| 2024 | 660 | 0.136 | 0.103 | 0.013 | 0.003 | 0.002 |
| 2025 | 660 | 0.136 | 0.103 | 0.016 | 0.003 | 0.002 |
| 2026 | 660 | 0.136 | 0.103 | 0.018 | 0.004 | 0.003 |
| 2027 | 660 | 0.136 | 0.103 | 0.021 | 0.004 | 0.003 |
| 2028 | 660 | 0.136 | 0.103 | 0.024 | 0.005 | 0.004 |
| 2029 | 660 | 0.136 | 0.103 | 0.026 | 0.005 | 0.004 |

**Program: Residential Ceiling Insulation**

**Program Start Date:** November 1982

**Program Description**

The Residential Ceiling Insulation Program is designed to encourage customers to make cost-effective improvements to existing residences. The goal is to offer customer rebates for installing ceiling insulation to help reduce their energy consumption while reducing Tampa Electric's weather sensitive peak demand. Ceiling insulation is designed to reduce demand and energy by decreasing the load on residential air conditioning and heating equipment. Qualifying residential structures are eligible for a rebate based upon the total square footage of insulation installed over conditioned space. Customers will receive a certificate that is used as partial payment for the ceiling insulation installed.

**Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Savings**

Savings were determined using historical participation characteristics of residences and utilizing DOE2 building simulations for insulation changes. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 0.322 kW |
| Winter Demand: | 0.424 kW |
| Annual Energy: | 673 kWh |

**Program Costs**

Rebate: $0.15 per square foot of installed qualifying insulation.

The estimated administrative cost per participant is $50.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 1941173-EG.

PROGRAM NAME: RESIDENTIAL CEILING INSULATION

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 488,265 | 1,500 | 0.3% | 1,500 |
| 2021 | 707,775 | 486,765 | 1,500 | 0.6% | 3,000 |
| 2022 | 720,915 | 485,265 | 1,500 | 0.9% | 4,500 |
| 2023 | 733,874 | 483,765 | 1,500 | 1.2% | 6,000 |
| 2024 | 746,561 | 482,265 | 1,500 | 1.6% | 7,500 |
| 2025 | 758,905 | 480,765 | 1,500 | 1.9% | 9,000 |
| 2026 | 770,920 | 479,265 | 1,500 | 2.2% | 10,500 |
| 2027 | 782,598 | 477,765 | 1,500 | 2.5% | 12,000 |
| 2028 | 793,990 | 476,265 | 1,500 | 2.8% | 13,500 |
| 2029 | 803,878 | 474,765 | 1,500 | 3.2% | 15,000 |

PROGRAM NAME: RESIDENTIAL CEILING INSULATION

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 673 | 0.424 | 0.322 | 1.010 | 0.636 | 0.483 |
| 2021 | 673 | 0.424 | 0.322 | 2.019 | 1.272 | 0.966 |
| 2022 | 673 | 0.424 | 0.322 | 3.029 | 1.908 | 1.449 |
| 2023 | 673 | 0.424 | 0.322 | 4.038 | 2.544 | 1.932 |
| 2024 | 673 | 0.424 | 0.322 | 5.048 | 3.180 | 2.415 |
| 2025 | 673 | 0.424 | 0.322 | 6.057 | 3.816 | 2.898 |
| 2026 | 673 | 0.424 | 0.322 | 7.067 | 4.452 | 3.381 |
| 2027 | 673 | 0.424 | 0.322 | 8.076 | 5.088 | 3.864 |
| 2028 | 673 | 0.424 | 0.322 | 9.086 | 5.724 | 4.347 |
| 2029 | 673 | 0.424 | 0.322 | 10.095 | 6.360 | 4.830 |

PROGRAM NAME: RESIDENTIAL CEILING INSULATION

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 711 | 0.455 | 0.346 | 1.066 | 0.682 | 0.518 |
| 2021 | 711 | 0.455 | 0.346 | 2.132 | 1.365 | 1.037 |
| 2022 | 711 | 0.455 | 0.346 | 3.198 | 2.047 | 1.555 |
| 2023 | 711 | 0.455 | 0.346 | 4.264 | 2.730 | 2.073 |
| 2024 | 711 | 0.455 | 0.346 | 5.330 | 3.412 | 2.591 |
| 2025 | 711 | 0.455 | 0.346 | 6.396 | 4.095 | 3.110 |
| 2026 | 711 | 0.455 | 0.346 | 7.462 | 4.777 | 3.628 |
| 2027 | 711 | 0.455 | 0.346 | 8.528 | 5.459 | 4.146 |
| 2028 | 711 | 0.455 | 0.346 | 9.594 | 6.142 | 4.664 |
| 2029 | 711 | 0.455 | 0.346 | 10.660 | 6.824 | 5.183 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Residential Ceiling Insulation

PSC FORM CE 1.1
PAGE 1 OF 1
RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 0.424 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 0.383 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 713 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 673 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 50.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 818.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 312.18 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.01** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **1,285** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.02** |

TOTAL RESOURCE COST TESTS
PROGRAM: Residential Ceiling Insulation

PSC FORM CE 2.3
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 75 | 1,227 | 0 | 1,302 | 0 | 0 | 16 | 0 | 16 | (1,286) | (1,286) |
| 2021 | 0 | 77 | 1,255 | 0 | 1,332 | 0 | 27 | 46 | 0 | 73 | (1,259) | (2,462) |
| 2022 | 0 | 79 | 1,284 | 0 | 1,363 | 0 | 28 | 79 | 0 | 107 | (1,256) | (3,557) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 174 | 59 | 99 | 0 | 333 | 333 | (3,286) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 171 | 59 | 103 | 0 | 333 | 333 | (3,033) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 168 | 58 | 111 | 0 | 337 | 337 | (2,794) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 165 | 58 | 114 | 0 | 337 | 337 | (2,570) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 162 | 58 | 121 | 0 | 341 | 341 | (2,358) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 157 | 58 | 134 | 0 | 350 | 350 | (2,156) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 155 | 58 | 144 | 0 | 357 | 357 | (1,963) |
| 2030 | 0 | 0 | 0 | 0 | 0 | 150 | 58 | 161 | 0 | 369 | 369 | (1,777) |
| 2031 | 0 | 0 | 0 | 0 | 0 | 149 | 58 | 160 | 0 | 367 | 367 | (1,604) |
| 2032 | 0 | 0 | 0 | 0 | 0 | 145 | 58 | 175 | 0 | 378 | 378 | (1,438) |
| 2033 | 0 | 0 | 0 | 0 | 0 | 144 | 58 | 187 | 0 | 389 | 389 | (1,278) |
| 2034 | 0 | 0 | 0 | 0 | 0 | 141 | 58 | 196 | 0 | 394 | 394 | (1,127) |
| 2035 | 0 | 0 | 0 | 0 | 0 | 139 | 58 | 215 | 0 | 412 | 412 | (979) |
| 2036 | 0 | 0 | 0 | 0 | 0 | 138 | 58 | 213 | 0 | 409 | 409 | (842) |
| 2037 | 0 | 0 | 0 | 0 | 0 | 135 | 58 | 227 | 0 | 420 | 420 | (711) |
| 2038 | 0 | 0 | 0 | 0 | 0 | 135 | 58 | 228 | 0 | 421 | 421 | (588) |
| 2039 | 0 | 0 | 0 | 0 | 0 | 135 | 59 | 228 | 0 | 421 | 421 | (473) |
| 2040 | 0 | 0 | 0 | 0 | 0 | 138 | 59 | 245 | 0 | 443 | 443 | (360) |
| 2041 | 0 | 0 | 0 | 0 | 0 | 137 | 60 | 253 | 0 | 449 | 449 | (253) |
| 2042 | 0 | 0 | 0 | 0 | 0 | 136 | 60 | 270 | 0 | 466 | 466 | (150) |
| 2043 | 0 | 0 | 0 | 0 | 0 | 136 | 61 | 277 | 0 | 473 | 473 | (52) |
| 2044 | 0 | 0 | 0 | 0 | 0 | 141 | 61 | 266 | 0 | 469 | 469 | 39 |
| NOMINAL | 0 | 230 | 3,766 | 0 | 3,997 | 3,252 | 1,343 | 4,269 | 0 | 8,865 | 4,868 | |
| NPV: | 0 | 215 | 3,519 | 0 | 3,734 | 1,467 | 609 | 1,697 | 0 | 3,773 | 39 | |
| Discount Rate | | 0.0708 | Benefit/Cost Ratio - [col (11)/col (6)]: | | | | 1.01 | | | | | |

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Residential Ceiling Insulation

PSC FORM CE 2.4
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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 42 | 0 | 468 | 0 | 511 | 1,227 | 0 | 0 | 1,227 | (716) | (716) |
| 2021 | 129 | 0 | 468 | 0 | 598 | 1,255 | 0 | 0 | 1,255 | (658) | (1,331) |
| 2022 | 220 | 0 | 468 | 0 | 688 | 1,284 | 0 | 0 | 1,284 | (596) | (1,851) |
| 2023 | 265 | 0 | 0 | 0 | 265 | 0 | 0 | 0 | 0 | 265 | (1,635) |
| 2024 | 271 | 0 | 0 | 0 | 271 | 0 | 0 | 0 | 0 | 271 | (1,429) |
| 2025 | 278 | 0 | 0 | 0 | 278 | 0 | 0 | 0 | 0 | 278 | (1,232) |
| 2026 | 284 | 0 | 0 | 0 | 284 | 0 | 0 | 0 | 0 | 284 | (1,043) |
| 2027 | 291 | 0 | 0 | 0 | 291 | 0 | 0 | 0 | 0 | 291 | (863) |
| 2028 | 302 | 0 | 0 | 0 | 302 | 0 | 0 | 0 | 0 | 302 | (688) |
| 2029 | 310 | 0 | 0 | 0 | 310 | 0 | 0 | 0 | 0 | 310 | (521) |
| 2030 | 322 | 0 | 0 | 0 | 322 | 0 | 0 | 0 | 0 | 322 | (359) |
| 2031 | 328 | 0 | 0 | 0 | 328 | 0 | 0 | 0 | 0 | 328 | (204) |
| 2032 | 339 | 0 | 0 | 0 | 339 | 0 | 0 | 0 | 0 | 339 | (55) |
| 2033 | 344 | 0 | 0 | 0 | 344 | 0 | 0 | 0 | 0 | 344 | 86 |
| 2034 | 355 | 0 | 0 | 0 | 355 | 0 | 0 | 0 | 0 | 355 | 223 |
| 2035 | 364 | 0 | 0 | 0 | 364 | 0 | 0 | 0 | 0 | 364 | 353 |
| 2036 | 371 | 0 | 0 | 0 | 371 | 0 | 0 | 0 | 0 | 371 | 477 |
| 2037 | 382 | 0 | 0 | 0 | 382 | 0 | 0 | 0 | 0 | 382 | 596 |
| 2038 | 388 | 0 | 0 | 0 | 388 | 0 | 0 | 0 | 0 | 388 | 710 |
| 2039 | 397 | 0 | 0 | 0 | 397 | 0 | 0 | 0 | 0 | 397 | 818 |
| 2040 | 401 | 0 | 0 | 0 | 401 | 0 | 0 | 0 | 0 | 401 | 920 |
| 2041 | 412 | 0 | 0 | 0 | 412 | 0 | 0 | 0 | 0 | 412 | 1,018 |
| 2042 | 423 | 0 | 0 | 0 | 423 | 0 | 0 | 0 | 0 | 423 | 1,112 |
| 2043 | 431 | 0 | 0 | 0 | 431 | 0 | 0 | 0 | 0 | 431 | 1,201 |
| 2044 | 431 | 0 | 0 | 0 | 431 | 0 | 0 | 0 | 0 | 431 | 1,285 |
| NOMINAL | 8,079 | 0 | 1,405 | 0 | 9,484 | 3,766 | 0 | 0 | 3,766 | 5,717 | |
| NPV: | 3,490 | 0 | 1,314 | 0 | 4,804 | 3,519 | 0 | 0 | 3,519 | 1,285 | |
| In service year of gen unit: | | | 2023 | | 1.3651125 | | | | | | |

RATE IMPACT TEST
PROGRAM: Residential Ceiling Insulation

PSC FORM CE 2.5
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 75 | 468 | 30 | 0 | 573 | 16 | 0 | 0 | 0 | 16 | (558) | (558) |
| 2021 | 0 | 77 | 468 | 91 | 0 | 636 | 46 | 27 | 0 | 0 | 73 | (563) | (1083) |
| 2022 | 0 | 79 | 468 | 153 | 0 | 700 | 79 | 28 | 0 | 0 | 107 | (593) | (1600) |
| 2023 | 0 | 0 | 0 | 185 | 0 | 185 | 274 | 59 | 0 | 0 | 333 | 147 | (1480) |
| 2024 | 0 | 0 | 0 | 187 | 0 | 187 | 274 | 59 | 0 | 0 | 333 | 146 | (1369) |
| 2025 | 0 | 0 | 0 | 189 | 0 | 189 | 278 | 58 | 0 | 0 | 337 | 148 | (1264) |
| 2026 | 0 | 0 | 0 | 191 | 0 | 191 | 279 | 58 | 0 | 0 | 337 | 147 | (1167) |
| 2027 | 0 | 0 | 0 | 193 | 0 | 193 | 283 | 58 | 0 | 0 | 341 | 149 | (1075) |
| 2028 | 0 | 0 | 0 | 195 | 0 | 195 | 292 | 58 | 0 | 0 | 350 | 155 | (985) |
| 2029 | 0 | 0 | 0 | 197 | 0 | 197 | 299 | 58 | 0 | 0 | 357 | 160 | (898) |
| 2030 | 0 | 0 | 0 | 199 | 0 | 199 | 311 | 58 | 0 | 0 | 369 | 171 | (812) |
| 2031 | 0 | 0 | 0 | 201 | 0 | 201 | 309 | 58 | 0 | 0 | 367 | 166 | (734) |
| 2032 | 0 | 0 | 0 | 203 | 0 | 203 | 321 | 58 | 0 | 0 | 378 | 176 | (657) |
| 2033 | 0 | 0 | 0 | 205 | 0 | 205 | 331 | 58 | 0 | 0 | 389 | 184 | (581) |
| 2034 | 0 | 0 | 0 | 207 | 0 | 207 | 336 | 58 | 0 | 0 | 394 | 187 | (509) |
| 2035 | 0 | 0 | 0 | 209 | 0 | 209 | 354 | 58 | 0 | 0 | 412 | 203 | (436) |
| 2036 | 0 | 0 | 0 | 211 | 0 | 211 | 351 | 58 | 0 | 0 | 409 | 198 | (370) |
| 2037 | 0 | 0 | 0 | 213 | 0 | 213 | 362 | 58 | 0 | 0 | 420 | 207 | (305) |
| 2038 | 0 | 0 | 0 | 215 | 0 | 215 | 363 | 58 | 0 | 0 | 421 | 206 | (245) |
| 2039 | 0 | 0 | 0 | 217 | 0 | 217 | 363 | 59 | 0 | 0 | 421 | 204 | (189) |
| 2040 | 0 | 0 | 0 | 219 | 0 | 219 | 384 | 59 | 0 | 0 | 443 | 223 | (132) |
| 2041 | 0 | 0 | 0 | 222 | 0 | 222 | 389 | 60 | 0 | 0 | 449 | 227 | (78) |
| 2042 | 0 | 0 | 0 | 224 | 0 | 224 | 406 | 60 | 0 | 0 | 466 | 242 | (24) |
| 2043 | 0 | 0 | 0 | 226 | 0 | 226 | 413 | 61 | 0 | 0 | 473 | 247 | 27 |
| 2044 | 0 | 0 | 0 | 228 | 0 | 228 | 408 | 61 | 0 | 0 | 469 | 240 | 73 |
| NOMINAL | 0 | 230 | 1,405 | 4,806 | 0 | 6,442 | 7,521 | 1,343 | 0 | 0 | 8,865 | 2,423 | |
| NPV: | 0 | 215 | 1,314 | 2,171 | 0 | 3,700 | 3,164 | 609 | 0 | 0 | 3,773 | 73 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.02

**Program: Residential Duct Repair**

**Program Start Date:** September 1992

**Program Description**

The Residential Duct Repair Program is a conservation rebate program designed to reduce demand and energy by decreasing the load on residential HVAC equipment helping the customer reduce their energy consumption and to reduce Tampa Electric's peak demand. This program eliminates or reduces areas of HVAC air distribution losses by sealing and repairing the ADS. The ADS is defined as the air handler, air ducts, return plenums, supply plenums and any connecting structure.

Customers call Tampa Electric to request appointments for duct repair and an HVAC contractor appointed by Tampa Electric will seal and repair all accessible components of the ADS in the residence. Tampa Electric's rebate is included in the payment to the participating contractor performing ADS repairs.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible residential structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 0.199 kW |
| Winter Demand: | 0.333 kW |
| Annual Energy: | 696 kWh |

**Program Costs**

Rebate: $125 per HVAC system that has its ADS repaired.

The estimated administrative cost per participant is $30.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: RESIDENTIAL DUCT REPAIR

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 473,244 | 750 | 0.2% | 750 |
| 2021 | 707,775 | 472,494 | 750 | 0.3% | 1,500 |
| 2022 | 720,915 | 471,744 | 750 | 0.5% | 2,250 |
| 2023 | 733,874 | 470,994 | 750 | 0.6% | 3,000 |
| 2024 | 746,561 | 470,244 | 750 | 0.8% | 3,750 |
| 2025 | 758,905 | 469,494 | 750 | 1.0% | 4,500 |
| 2026 | 770,920 | 468,744 | 750 | 1.1% | 5,250 |
| 2027 | 782,598 | 467,994 | 750 | 1.3% | 6,000 |
| 2028 | 793,990 | 467,244 | 750 | 1.4% | 6,750 |
| 2029 | 803,878 | 466,494 | 750 | 1.6% | 7,500 |

PROGRAM NAME: RESIDENTIAL DUCT REPAIR

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 696 | 0.333 | 0.199 | 0.522 | 0.250 | 0.149 |
| 2021 | 696 | 0.333 | 0.199 | 1.044 | 0.500 | 0.299 |
| 2022 | 696 | 0.333 | 0.199 | 1.566 | 0.749 | 0.448 |
| 2023 | 696 | 0.333 | 0.199 | 2.088 | 0.999 | 0.597 |
| 2024 | 696 | 0.333 | 0.199 | 2.610 | 1.249 | 0.746 |
| 2025 | 696 | 0.333 | 0.199 | 3.132 | 1.499 | 0.896 |
| 2026 | 696 | 0.333 | 0.199 | 3.654 | 1.748 | 1.045 |
| 2027 | 696 | 0.333 | 0.199 | 4.176 | 1.998 | 1.194 |
| 2028 | 696 | 0.333 | 0.199 | 4.698 | 2.248 | 1.343 |
| 2029 | 696 | 0.333 | 0.199 | 5.220 | 2.498 | 1.493 |

PROGRAM NAME: RESIDENTIAL DUCT REPAIR

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 735 | 0.357 | 0.214 | 0.551 | 0.268 | 0.160 |
| 2021 | 735 | 0.357 | 0.214 | 1.102 | 0.536 | 0.320 |
| 2022 | 735 | 0.357 | 0.214 | 1.654 | 0.804 | 0.480 |
| 2023 | 735 | 0.357 | 0.214 | 2.205 | 1.072 | 0.641 |
| 2024 | 735 | 0.357 | 0.214 | 2.756 | 1.340 | 0.801 |
| 2025 | 735 | 0.357 | 0.214 | 3.307 | 1.608 | 0.961 |
| 2026 | 735 | 0.357 | 0.214 | 3.859 | 1.876 | 1.121 |
| 2027 | 735 | 0.357 | 0.214 | 4.410 | 2.144 | 1.281 |
| 2028 | 735 | 0.357 | 0.214 | 4.961 | 2.412 | 1.441 |
| 2029 | 735 | 0.357 | 0.214 | 5.512 | 2.680 | 1.601 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Residential Duct Repair

PSC FORM CE 1.1
PAGE 1 OF 1
RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 0.333 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 0.253 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 737 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 696 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 18 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 30.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 275.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 125.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.95** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **1,120** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.02** |

TOTAL RESOURCE COST TESTS
PROGRAM: Residential Duct Repair

PSC FORM CE 2.3
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 23 | 206 | 0 | 229 | 0 | 0 | 8 | 0 | 8 | (221) | (221) |
| 2021 | 0 | 23 | 211 | 0 | 234 | 0 | 19 | 24 | 0 | 42 | (192) | (400) |
| 2022 | 0 | 24 | 216 | 0 | 239 | 0 | 19 | 41 | 0 | 60 | (179) | (556) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 44 | 19 | 51 | 0 | 115 | 115 | (463) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 45 | 20 | 53 | 0 | 118 | 118 | (373) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 46 | 20 | 57 | 0 | 124 | 124 | (285) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 48 | 21 | 59 | 0 | 128 | 128 | (200) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 49 | 21 | 63 | 0 | 133 | 133 | (117) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 50 | 22 | 70 | 0 | 141 | 141 | (35) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 51 | 22 | 74 | 0 | 148 | 148 | 45 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 52 | 23 | 83 | 0 | 158 | 158 | 125 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 54 | 24 | 83 | 0 | 160 | 160 | 200 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 55 | 24 | 91 | 0 | 170 | 170 | 275 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 57 | 25 | 97 | 0 | 178 | 178 | 348 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 58 | 25 | 101 | 0 | 185 | 185 | 419 |
| 2035 | 0 | 0 | 0 | 0 | 0 | 60 | 26 | 111 | 0 | 197 | 197 | 490 |
| 2036 | 0 | 0 | 0 | 0 | 0 | 62 | 26 | 110 | 0 | 199 | 199 | 556 |
| 2037 | 0 | 0 | 0 | 0 | 0 | 64 | 27 | 117 | 0 | 208 | 208 | 621 |
| NOMINAL | 0 | 69 | 633 | 0 | 702 | 796 | 384 | 1,293 | 0 | 2,473 | 1,771 | |
| NPV: | 0 | 65 | 592 | 0 | 656 | 406 | 211 | 660 | 0 | 1,277 | 621 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 1.95

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Residential Duct Repair

PSC FORM CE 2.4
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 22 | 0 | 94 | 0 | 116 | 206 | 0 | 0 | 206 | (91) | (91) |
| 2021 | 67 | 0 | 94 | 0 | 161 | 211 | 0 | 0 | 211 | (50) | (138) |
| 2022 | 113 | 0 | 94 | 0 | 207 | 216 | 0 | 0 | 216 | (9) | (145) |
| 2023 | 137 | 0 | 0 | 0 | 137 | 0 | 0 | 0 | 0 | 137 | (34) |
| 2024 | 140 | 0 | 0 | 0 | 140 | 0 | 0 | 0 | 0 | 140 | 73 |
| 2025 | 144 | 0 | 0 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 175 |
| 2026 | 147 | 0 | 0 | 0 | 147 | 0 | 0 | 0 | 0 | 147 | 272 |
| 2027 | 150 | 0 | 0 | 0 | 150 | 0 | 0 | 0 | 0 | 150 | 365 |
| 2028 | 156 | 0 | 0 | 0 | 156 | 0 | 0 | 0 | 0 | 156 | 456 |
| 2029 | 160 | 0 | 0 | 0 | 160 | 0 | 0 | 0 | 0 | 160 | 542 |
| 2030 | 166 | 0 | 0 | 0 | 166 | 0 | 0 | 0 | 0 | 166 | 626 |
| 2031 | 170 | 0 | 0 | 0 | 170 | 0 | 0 | 0 | 0 | 170 | 706 |
| 2032 | 175 | 0 | 0 | 0 | 175 | 0 | 0 | 0 | 0 | 175 | 783 |
| 2033 | 178 | 0 | 0 | 0 | 178 | 0 | 0 | 0 | 0 | 178 | 856 |
| 2034 | 184 | 0 | 0 | 0 | 184 | 0 | 0 | 0 | 0 | 184 | 926 |
| 2035 | 188 | 0 | 0 | 0 | 188 | 0 | 0 | 0 | 0 | 188 | 994 |
| 2036 | 192 | 0 | 0 | 0 | 192 | 0 | 0 | 0 | 0 | 192 | 1,058 |
| 2037 | 197 | 0 | 0 | 0 | 197 | 0 | 0 | 0 | 0 | 197 | 1,120 |
| NOMINAL | 2,685 | 0 | 281 | 0 | 2,967 | 633 | 0 | 0 | 633 | 2,333 | |
| NPV: | 1,448 | 0 | 263 | 0 | 1,711 | 592 | 0 | 0 | 592 | 1,120 | |
| In service year of gen unit: | | | 2023 | | 2.8927406 | | | | | | |

RATE IMPACT TEST
PROGRAM: Residential Duct Repair

PSC FORM CE 2.5
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 23 | 94 | 15 | 0 | 132 | 8 | 0 | 0 | 0 | 8 | (124) | (124) |
| 2021 | 0 | 23 | 94 | 47 | 0 | 164 | 24 | 19 | 0 | 0 | 42 | (121) | (237) |
| 2022 | 0 | 24 | 94 | 79 | 0 | 196 | 41 | 19 | 0 | 0 | 60 | (136) | (356) |
| 2023 | 0 | 0 | 0 | 96 | 0 | 96 | 95 | 19 | 0 | 0 | 115 | 19 | (340) |
| 2024 | 0 | 0 | 0 | 97 | 0 | 97 | 98 | 20 | 0 | 0 | 118 | 22 | (324) |
| 2025 | 0 | 0 | 0 | 98 | 0 | 98 | 104 | 20 | 0 | 0 | 124 | 26 | (305) |
| 2026 | 0 | 0 | 0 | 99 | 0 | 99 | 107 | 21 | 0 | 0 | 128 | 29 | (286) |
| 2027 | 0 | 0 | 0 | 100 | 0 | 100 | 112 | 21 | 0 | 0 | 133 | 34 | (265) |
| 2028 | 0 | 0 | 0 | 101 | 0 | 101 | 119 | 22 | 0 | 0 | 141 | 41 | (241) |
| 2029 | 0 | 0 | 0 | 102 | 0 | 102 | 126 | 22 | 0 | 0 | 148 | 47 | (216) |
| 2030 | 0 | 0 | 0 | 103 | 0 | 103 | 135 | 23 | 0 | 0 | 158 | 56 | (188) |
| 2031 | 0 | 0 | 0 | 104 | 0 | 104 | 137 | 24 | 0 | 0 | 160 | 57 | (161) |
| 2032 | 0 | 0 | 0 | 105 | 0 | 105 | 146 | 24 | 0 | 0 | 170 | 65 | (133) |
| 2033 | 0 | 0 | 0 | 106 | 0 | 106 | 154 | 25 | 0 | 0 | 178 | 73 | (103) |
| 2034 | 0 | 0 | 0 | 107 | 0 | 107 | 159 | 25 | 0 | 0 | 185 | 78 | (73) |
| 2035 | 0 | 0 | 0 | 108 | 0 | 108 | 171 | 26 | 0 | 0 | 197 | 89 | (41) |
| 2036 | 0 | 0 | 0 | 109 | 0 | 109 | 172 | 26 | 0 | 0 | 199 | 90 | (11) |
| 2037 | 0 | 0 | 0 | 110 | 0 | 110 | 181 | 27 | 0 | 0 | 208 | 98 | 19 |
| NOMINAL | 0 | 69 | 281 | 1,683 | 0 | 2,033 | 2,089 | 384 | 0 | 0 | 2,473 | 440 | |
| NPV: | 0 | 65 | 263 | 930 | 0 | 1,258 | 1,066 | 211 | 0 | 0 | 1,277 | 19 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.02

**Program: Energy and Renewable Education, Awareness and Agency Outreach**

**Program Start Date:** March 2010

**Program Description**

The Energy and Renewable Education, Awareness and Agency Outreach Program is comprised of three distinct initiatives:

1) Public energy and renewable education
2) Energy awareness
3) Agency outreach

**Energy and Renewable Education and Awareness**

This portion of the program is designed to establish opportunities for engaging groups of customers and students in energy-efficiency and renewable energy related discussions in an organized setting. Tampa Electric recognizes the importance of educating students and motivating customers through participation in its energy audits and raising awareness of energy conservation, energy efficiency and renewable energy efficiency. This program will provide the opportunity to accomplish these initiatives for large groups in one setting.

In order to create an awareness of this offering, the company will establish participation avenues through its Speakers' Bureau and Community Relations teams.

By working with local civic groups, churches, government sponsored public forums, homeowners associations, trade shows, rental property management groups, etc., Tampa Electric will establish informative presentations that help educate customers on no-cost practices they can implement to reduce their energy consumption, low-cost improvements to increase the efficiency of their homes, investment type improvements with energy efficiency or renewable energy resources and rebates/incentives available which may help with these longer term investments. This type of forum will allow for dialogue with customers in such a setting that many customers will simultaneously benefit from the discussion.

Additionally, this program will focus on opportunities to promote energy efficiency education through local school systems. Students will be educated on ways to become active participants in saving energy at home and at school through the use of a variety of learning tools that support Sunshine State Standards and are approved by school authorities.

Participants will be provided with an energy efficiency kit containing the following energy saving devices and supporting information appropriate for the audience.

- **LEDs**
  This provides four LEDs to replace incandescent bulbs with similar lumen output.

- **Water Heater Temperature Check Card and Adjustment**

This provides a temperature check of the water heater temperature setting and informs the customer of the possibility for turn-down adjustment.

- **Low Flow Faucet Aerator**
  This provides two low flow faucet aerators to reduce the amount of hot water used.

- **Wall Plate Thermometer**
  This provides one wall plate thermometer to check the accuracy of the installed thermostat.

- **Air Filter Whistle**
  This provides one filter whistle to help remind to clean or change filter monthly.

- **Energy Savings Education Handout**
  This provides the content and directions for installation for all of the measures within the kit. The handout also includes several no-cost energy conservation tips that provide an immediate payback.

Also, as part of energy education and awareness, this portion of the program will continue the focus on providing opportunities to encourage the conservation of energy and for the promotion of energy efficiency through local school systems by partnering with high schools' driver's education classes. This portion of the program will provide energy efficiency and electric vehicle ("EV") training curriculum and educational materials and the incremental cost of one electric vehicle at selected high schools.

**Agency Outreach**

This portion of the program will allow for delivery of energy efficiency kits that will help educate agency clients on practices that help to reduce energy consumption. The suggested practices will mirror the recommendations provided to customers who participate in a free energy audit.

Customer eligibility is confirmed through the utilization of census data to identify eligible customer geographic regions of low-income customers or by referrals through direct customer contact, distributed literature and communication through key community contacts or local community assistance agencies which serve low income households.

As a means to encourage adoption of the recommendations, agency clients who are seeking energy-related assistance will be provided with the same energy efficiency kit above.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible residential structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 0.041 kW |
| Winter Demand: | 0.050 kW |
| Annual Energy: | 366 kWh |

For the EV portion of this program, there are no projected Summer Demand, Winter Demand or Annual Energy savings.

**Program Costs**

The estimated administrative cost per participant is $44.

The estimated administrative cost per participant for the EV portion of this program is $15.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: ENERGY AND RENEWABLE EDUCATION, AWARENESS AND AGENCY OUTREACH

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 694,361 | 750 | 0.1% | 750 |
| 2021 | 707,775 | 707,775 | 750 | 0.2% | 1,500 |
| 2022 | 720,915 | 720,915 | 750 | 0.3% | 2,250 |
| 2023 | 733,874 | 733,874 | 750 | 0.4% | 3,000 |
| 2024 | 746,561 | 746,561 | 750 | 0.5% | 3,750 |
| 2025 | 758,905 | 758,905 | 750 | 0.6% | 4,500 |
| 2026 | 770,920 | 770,920 | 750 | 0.7% | 5,250 |
| 2027 | 782,598 | 782,598 | 750 | 0.8% | 6,000 |
| 2028 | 793,990 | 793,990 | 750 | 0.9% | 6,750 |
| 2029 | 803,878 | 803,878 | 750 | 0.9% | 7,500 |

PROGRAM NAME: ENERGY AND RENEWABLE EDUCATION, AWARENESS AND AGENCY OUTREACH

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 366 | 0.050 | 0.041 | 0.274 | 0.038 | 0.031 |
| 2021 | 366 | 0.050 | 0.041 | 0.549 | 0.075 | 0.062 |
| 2022 | 366 | 0.050 | 0.041 | 0.823 | 0.113 | 0.092 |
| 2023 | 366 | 0.050 | 0.041 | 1.098 | 0.150 | 0.123 |
| 2024 | 366 | 0.050 | 0.041 | 1.372 | 0.188 | 0.154 |
| 2025 | 366 | 0.050 | 0.041 | 1.647 | 0.225 | 0.185 |
| 2026 | 366 | 0.050 | 0.041 | 1.921 | 0.263 | 0.215 |
| 2027 | 366 | 0.050 | 0.041 | 2.196 | 0.300 | 0.246 |
| 2028 | 366 | 0.050 | 0.041 | 2.470 | 0.338 | 0.277 |
| 2029 | 366 | 0.050 | 0.041 | 2.745 | 0.375 | 0.308 |

PROGRAM NAME: ENERGY AND RENEWABLE EDUCATION, AWARENESS AND AGENCY OUTREACH

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 386 | 0.054 | 0.044 | 0.290 | 0.040 | 0.033 |
| 2021 | 386 | 0.054 | 0.044 | 0.580 | 0.080 | 0.066 |
| 2022 | 386 | 0.054 | 0.044 | 0.870 | 0.121 | 0.099 |
| 2023 | 386 | 0.054 | 0.044 | 1.159 | 0.161 | 0.132 |
| 2024 | 386 | 0.054 | 0.044 | 1.449 | 0.201 | 0.165 |
| 2025 | 386 | 0.054 | 0.044 | 1.739 | 0.241 | 0.198 |
| 2026 | 386 | 0.054 | 0.044 | 2.029 | 0.282 | 0.231 |
| 2027 | 386 | 0.054 | 0.044 | 2.319 | 0.322 | 0.264 |
| 2028 | 386 | 0.054 | 0.044 | 2.609 | 0.362 | 0.297 |
| 2029 | 386 | 0.054 | 0.044 | 2.899 | 0.402 | 0.330 |

# INPUT DATA - PART 1

## PROGRAM TITLE: Energy and Renewable Education, Awareness and Agency Outreach

PSC FORM CE 1.1



RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 0.050 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 0.048 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 388 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 366 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 15 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 44.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 0.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 0.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **4.03** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **660** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **0.73** |

TOTAL RESOURCE COST TESTS
PROGRAM: Energy and Renewable Education, Awareness and Agency Outreach



| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 33 | 0 | 0 | 33 | 0 | 0 | 4 | 0 | 4 | (29) | (29) |
| 2021 | 0 | 34 | 0 | 0 | 34 | 0 | 3 | 13 | 0 | 15 | (18) | (46) |
| 2022 | 0 | 35 | 0 | 0 | 35 | 0 | 3 | 22 | 0 | 25 | (10) | (55) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 8 | 3 | 27 | 0 | 38 | 38 | (23) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 28 | 0 | 40 | 40 | 7 |
| 2025 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 30 | 0 | 42 | 42 | 37 |
| 2026 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 31 | 0 | 43 | 43 | 66 |
| 2027 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 33 | 0 | 46 | 46 | 94 |
| 2028 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 37 | 0 | 50 | 50 | 123 |
| 2029 | 0 | 0 | 0 | 0 | 0 | 10 | 4 | 39 | 0 | 52 | 52 | 151 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 10 | 4 | 44 | 0 | 57 | 57 | 180 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 10 | 4 | 44 | 0 | 58 | 58 | 207 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 10 | 4 | 48 | 0 | 62 | 62 | 234 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 11 | 4 | 51 | 0 | 66 | 66 | 261 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 11 | 4 | 53 | 0 | 68 | 68 | 287 |
| NOMINAL | 0 | 101 | 0 | 0 | 101 | 116 | 48 | 502 | 0 | 666 | 565 | |
| NPV: | 0 | 95 | 0 | 0 | 95 | 65 | 29 | 288 | 0 | 382 | 287 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 4.03

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Energy and Renewable Education, Awareness and Agency Outreach



| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 11 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 11 |
| 2021 | 35 | 0 | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 35 | 44 |
| 2022 | 60 | 0 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 60 | 96 |
| 2023 | 72 | 0 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 72 | 155 |
| 2024 | 74 | 0 | 0 | 0 | 74 | 0 | 0 | 0 | 0 | 74 | 211 |
| 2025 | 76 | 0 | 0 | 0 | 76 | 0 | 0 | 0 | 0 | 76 | 265 |
| 2026 | 77 | 0 | 0 | 0 | 77 | 0 | 0 | 0 | 0 | 77 | 316 |
| 2027 | 79 | 0 | 0 | 0 | 79 | 0 | 0 | 0 | 0 | 79 | 365 |
| 2028 | 82 | 0 | 0 | 0 | 82 | 0 | 0 | 0 | 0 | 82 | 412 |
| 2029 | 84 | 0 | 0 | 0 | 84 | 0 | 0 | 0 | 0 | 84 | 458 |
| 2030 | 87 | 0 | 0 | 0 | 87 | 0 | 0 | 0 | 0 | 87 | 502 |
| 2031 | 89 | 0 | 0 | 0 | 89 | 0 | 0 | 0 | 0 | 89 | 544 |
| 2032 | 92 | 0 | 0 | 0 | 92 | 0 | 0 | 0 | 0 | 92 | 585 |
| 2033 | 94 | 0 | 0 | 0 | 94 | 0 | 0 | 0 | 0 | 94 | 623 |
| 2034 | 97 | 0 | 0 | 0 | 97 | 0 | 0 | 0 | 0 | 97 | 660 |
| NOMINAL | 1,109 | 0 | 0 | 0 | 1,109 | 0 | 0 | 0 | 0 | 1,109 | |
| NPV: | 660 | 0 | 0 | 0 | 660 | 0 | 0 | 0 | 0 | 660 | |

In service year of gen unit: 2023 #DIV/0!

RATE IMPACT TEST
PROGRAM: Energy and Renewable Education, Awareness and Agency Outreach



| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 33 | 0 | 8 | 0 | 41 | 4 | 0 | 0 | 0 | 4 | (37) | (37) |
| 2021 | 0 | 34 | 0 | 25 | 0 | 58 | 13 | 3 | 0 | 0 | 15 | (43) | (77) |
| 2022 | 0 | 35 | 0 | 42 | 0 | 76 | 22 | 3 | 0 | 0 | 25 | (52) | (122) |
| 2023 | 0 | 0 | 0 | 50 | 0 | 50 | 35 | 3 | 0 | 0 | 38 | (12) | (132) |
| 2024 | 0 | 0 | 0 | 51 | 0 | 51 | 37 | 3 | 0 | 0 | 40 | (11) | (140) |
| 2025 | 0 | 0 | 0 | 51 | 0 | 51 | 39 | 3 | 0 | 0 | 42 | (9) | (147) |
| 2026 | 0 | 0 | 0 | 52 | 0 | 52 | 40 | 3 | 0 | 0 | 43 | (8) | (152) |
| 2027 | 0 | 0 | 0 | 52 | 0 | 52 | 42 | 3 | 0 | 0 | 46 | (7) | (157) |
| 2028 | 0 | 0 | 0 | 53 | 0 | 53 | 46 | 3 | 0 | 0 | 50 | (3) | (159) |
| 2029 | 0 | 0 | 0 | 53 | 0 | 53 | 49 | 4 | 0 | 0 | 52 | (1) | (159) |
| 2030 | 0 | 0 | 0 | 54 | 0 | 54 | 54 | 4 | 0 | 0 | 57 | 3 | (157) |
| 2031 | 0 | 0 | 0 | 55 | 0 | 55 | 54 | 4 | 0 | 0 | 58 | 3 | (156) |
| 2032 | 0 | 0 | 0 | 55 | 0 | 55 | 58 | 4 | 0 | 0 | 62 | 7 | (153) |
| 2033 | 0 | 0 | 0 | 56 | 0 | 56 | 62 | 4 | 0 | 0 | 66 | 10 | (149) |
| 2034 | 0 | 0 | 0 | 56 | 0 | 56 | 64 | 4 | 0 | 0 | 68 | 12 | (144) |
| NOMINAL | 0 | 101 | 0 | 713 | 0 | 815 | 618 | 48 | 0 | 0 | 666 | -148 | |
| NPV: | 0 | 95 | 0 | 432 | 0 | 526 | 353 | 29 | 0 | 0 | 382 | -144 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 0.73

**Program: ENERGY STAR for New Multi-Family Residences**

**Program Start Date:** June 2017

**Program Description**

The ENERGY STAR for New Multi-Family Residences Program is a residential new construction conservation program designed to reduce the growth of peak demand and energy in the residential new construction apartment and condominium residence market. The program utilizes a rebate to encourage the construction of new multi-family residences to meet the requirements to achieve the ENERGY STAR certified apartments and condominium label. By receiving this certificate, the new residence will use less energy and demand which will help reduce the growth of Tampa Electric's peak demand.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using historical participation characteristics of multi-family residences and utilizing DOE2 building simulations for a multi-family residence that would meet the current minimum Florida Building Code compared to a new multi-family residence that would meet the requirements to achieve the ENERGY STAR Certificate for the multi-family residence. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 0.440 kW |
| Winter Demand: | 0.295 kW |
| Annual Energy: | 1,460 kWh |

**Program Costs**

Rebate: $300 for a qualifying multi-family residence receiving the ENERGY STAR Certificate.

The estimated administrative cost per participant is $15.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: ENERGY STAR FOR NEW MULTI-FAMILY RESIDENCES

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 13,695 | 4,646 | 500 | 10.8% | 500 |
| 2021 | 13,415 | 4,551 | 500 | 22.0% | 1,000 |
| 2022 | 13,139 | 4,458 | 500 | 33.6% | 1,500 |
| 2023 | 12,959 | 4,397 | 500 | 45.5% | 2,000 |
| 2024 | 12,687 | 4,304 | 500 | 58.1% | 2,500 |
| 2025 | 12,345 | 4,188 | 500 | 71.6% | 3,000 |
| 2026 | 12,014 | 4,076 | 500 | 85.9% | 3,500 |
| 2027 | 11,679 | 3,962 | 500 | 101.0% | 4,000 |
| 2028 | 11,392 | 3,865 | 500 | 116.4% | 4,500 |
| 2029 | 11,167 | 3,789 | 500 | 132.0% | 5,000 |

PROGRAM NAME: ENERGY STAR FOR NEW MULTI-FAMILY RESIDENCES

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 1,460 | 0.295 | 0.440 | 0.730 | 0.148 | 0.220 |
| 2021 | 1,460 | 0.295 | 0.440 | 1.460 | 0.295 | 0.440 |
| 2022 | 1,460 | 0.295 | 0.440 | 2.190 | 0.443 | 0.660 |
| 2023 | 1,460 | 0.295 | 0.440 | 2.920 | 0.590 | 0.880 |
| 2024 | 1,460 | 0.295 | 0.440 | 3.650 | 0.738 | 1.100 |
| 2025 | 1,460 | 0.295 | 0.440 | 4.380 | 0.885 | 1.320 |
| 2026 | 1,460 | 0.295 | 0.440 | 5.110 | 1.033 | 1.540 |
| 2027 | 1,460 | 0.295 | 0.440 | 5.840 | 1.180 | 1.760 |
| 2028 | 1,460 | 0.295 | 0.440 | 6.570 | 1.328 | 1.980 |
| 2029 | 1,460 | 0.295 | 0.440 | 7.300 | 1.475 | 2.200 |

PROGRAM NAME: ENERGY STAR FOR NEW MULTI-FAMILY RESIDENCES

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 1,542 | 0.317 | 0.472 | 0.771 | 0.158 | 0.236 |
| 2021 | 1,542 | 0.317 | 0.472 | 1.542 | 0.317 | 0.472 |
| 2022 | 1,542 | 0.317 | 0.472 | 2.313 | 0.475 | 0.708 |
| 2023 | 1,542 | 0.317 | 0.472 | 3.084 | 0.633 | 0.944 |
| 2024 | 1,542 | 0.317 | 0.472 | 3.854 | 0.791 | 1.180 |
| 2025 | 1,542 | 0.317 | 0.472 | 4.625 | 0.950 | 1.416 |
| 2026 | 1,542 | 0.317 | 0.472 | 5.396 | 1.108 | 1.652 |
| 2027 | 1,542 | 0.317 | 0.472 | 6.167 | 1.266 | 1.888 |
| 2028 | 1,542 | 0.317 | 0.472 | 6.938 | 1.424 | 2.125 |
| 2029 | 1,542 | 0.317 | 0.472 | 7.709 | 1.583 | 2.361 |

# INPUT DATA - PART 1
## PROGRAM TITLE: ENERGY STAR for New Multi-family Residences

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PAGE 1 OF 1
RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 0.440 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 0.458 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 1,547 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 1,460 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 15.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 1,250.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 300.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.12** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **1,152** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.01** |

TOTAL RESOURCE COST TESTS
PROGRAM: ENERGY STAR for New Multi-family Residences

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 8 | 625 | 0 | 633 | 0 | 0 | 11 | 0 | 11 | (621) | (621) |
| 2021 | 0 | 8 | 639 | 0 | 647 | 0 | 10 | 33 | 0 | 43 | (604) | (1,185) |
| 2022 | 0 | 8 | 654 | 0 | 662 | 0 | 10 | 57 | 0 | 67 | (595) | (1,704) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 70 | 21 | 72 | 0 | 162 | 162 | (1,572) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 68 | 21 | 75 | 0 | 164 | 164 | (1,447) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 67 | 21 | 80 | 0 | 168 | 168 | (1,328) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 66 | 21 | 83 | 0 | 169 | 169 | (1,216) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 65 | 21 | 88 | 0 | 173 | 173 | (1,108) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 63 | 21 | 97 | 0 | 181 | 181 | (1,004) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 62 | 21 | 104 | 0 | 187 | 187 | (903) |
| 2030 | 0 | 0 | 0 | 0 | 0 | 60 | 21 | 116 | 0 | 197 | 197 | (804) |
| 2031 | 0 | 0 | 0 | 0 | 0 | 59 | 21 | 116 | 0 | 196 | 196 | (711) |
| 2032 | 0 | 0 | 0 | 0 | 0 | 58 | 21 | 127 | 0 | 205 | 205 | (621) |
| 2033 | 0 | 0 | 0 | 0 | 0 | 58 | 21 | 135 | 0 | 213 | 213 | (533) |
| 2034 | 0 | 0 | 0 | 0 | 0 | 56 | 21 | 141 | 0 | 218 | 218 | (450) |
| 2035 | 0 | 0 | 0 | 0 | 0 | 55 | 21 | 156 | 0 | 232 | 232 | (367) |
| 2036 | 0 | 0 | 0 | 0 | 0 | 55 | 21 | 154 | 0 | 230 | 230 | (290) |
| 2037 | 0 | 0 | 0 | 0 | 0 | 54 | 21 | 164 | 0 | 239 | 239 | (215) |
| 2038 | 0 | 0 | 0 | 0 | 0 | 54 | 21 | 165 | 0 | 240 | 240 | (145) |
| 2039 | 0 | 0 | 0 | 0 | 0 | 54 | 21 | 165 | 0 | 240 | 240 | (80) |
| 2040 | 0 | 0 | 0 | 0 | 0 | 55 | 21 | 178 | 0 | 254 | 254 | (15) |
| 2041 | 0 | 0 | 0 | 0 | 0 | 54 | 21 | 183 | 0 | 259 | 259 | 46 |
| 2042 | 0 | 0 | 0 | 0 | 0 | 54 | 21 | 195 | 0 | 271 | 271 | 106 |
| 2043 | 0 | 0 | 0 | 0 | 0 | 54 | 22 | 200 | 0 | 276 | 276 | 164 |
| 2044 | 0 | 0 | 0 | 0 | 0 | 56 | 22 | 192 | 0 | 271 | 271 | 216 |
| NOMINAL | 0 | 23 | 1,918 | 0 | 1,941 | 1,297 | 480 | 3,087 | 0 | 4,864 | 2,923 | |
| NPV: | 0 | 22 | 1,793 | 0 | 1,814 | 585 | 218 | 1,227 | 0 | 2,030 | 216 | |
| Discount Rate | | 0.0708 | Benefit/Cost Ratio - [col (11)/col (6)]: | | | | 1.12 | | | | | |

PARTICIPANT COSTS AND BENEFITS
PROGRAM: ENERGY STAR for New Multi-family Residences

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 31 | 0 | 150 | 0 | 181 | 625 | 0 | 0 | 625 | (444) | (444) |
| 2021 | 94 | 0 | 150 | 0 | 244 | 639 | 0 | 0 | 639 | (396) | (814) |
| 2022 | 159 | 0 | 150 | 0 | 309 | 654 | 0 | 0 | 654 | (345) | (1,115) |
| 2023 | 191 | 0 | 0 | 0 | 191 | 0 | 0 | 0 | 0 | 191 | (959) |
| 2024 | 196 | 0 | 0 | 0 | 196 | 0 | 0 | 0 | 0 | 196 | (810) |
| 2025 | 201 | 0 | 0 | 0 | 201 | 0 | 0 | 0 | 0 | 201 | (668) |
| 2026 | 205 | 0 | 0 | 0 | 205 | 0 | 0 | 0 | 0 | 205 | (532) |
| 2027 | 210 | 0 | 0 | 0 | 210 | 0 | 0 | 0 | 0 | 210 | (401) |
| 2028 | 219 | 0 | 0 | 0 | 219 | 0 | 0 | 0 | 0 | 219 | (275) |
| 2029 | 224 | 0 | 0 | 0 | 224 | 0 | 0 | 0 | 0 | 224 | (154) |
| 2030 | 233 | 0 | 0 | 0 | 233 | 0 | 0 | 0 | 0 | 233 | (36) |
| 2031 | 237 | 0 | 0 | 0 | 237 | 0 | 0 | 0 | 0 | 237 | 75 |
| 2032 | 245 | 0 | 0 | 0 | 245 | 0 | 0 | 0 | 0 | 245 | 183 |
| 2033 | 249 | 0 | 0 | 0 | 249 | 0 | 0 | 0 | 0 | 249 | 285 |
| 2034 | 257 | 0 | 0 | 0 | 257 | 0 | 0 | 0 | 0 | 257 | 384 |
| 2035 | 263 | 0 | 0 | 0 | 263 | 0 | 0 | 0 | 0 | 263 | 478 |
| 2036 | 268 | 0 | 0 | 0 | 268 | 0 | 0 | 0 | 0 | 268 | 568 |
| 2037 | 276 | 0 | 0 | 0 | 276 | 0 | 0 | 0 | 0 | 276 | 654 |
| 2038 | 281 | 0 | 0 | 0 | 281 | 0 | 0 | 0 | 0 | 281 | 736 |
| 2039 | 287 | 0 | 0 | 0 | 287 | 0 | 0 | 0 | 0 | 287 | 814 |
| 2040 | 290 | 0 | 0 | 0 | 290 | 0 | 0 | 0 | 0 | 290 | 888 |
| 2041 | 298 | 0 | 0 | 0 | 298 | 0 | 0 | 0 | 0 | 298 | 959 |
| 2042 | 306 | 0 | 0 | 0 | 306 | 0 | 0 | 0 | 0 | 306 | 1,027 |
| 2043 | 312 | 0 | 0 | 0 | 312 | 0 | 0 | 0 | 0 | 312 | 1,092 |
| 2044 | 311 | 0 | 0 | 0 | 311 | 0 | 0 | 0 | 0 | 311 | 1,152 |
| NOMINAL | 5,842 | 0 | 450 | 0 | 6,292 | 1,918 | 0 | 0 | 1,918 | 4,374 | |
| NPV: | 2,524 | 0 | 421 | 0 | 2,945 | 1,793 | 0 | 0 | 1,793 | 1,152 | |
| In service year of gen unit: | | | 2023 | | 1.6427209 | | | | | | |

RATE IMPACT TEST
PROGRAM: ENERGY STAR for New Multi-family Residences

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 8 | 150 | 22 | 0 | 179 | 11 | 0 | 0 | 0 | 11 | (168) | (168) |
| 2021 | 0 | 8 | 150 | 66 | 0 | 223 | 33 | 10 | 0 | 0 | 43 | (180) | (336) |
| 2022 | 0 | 8 | 150 | 111 | 0 | 268 | 57 | 10 | 0 | 0 | 67 | (201) | (512) |
| 2023 | 0 | 0 | 0 | 134 | 0 | 134 | 141 | 21 | 0 | 0 | 162 | 28 | (489) |
| 2024 | 0 | 0 | 0 | 135 | 0 | 135 | 143 | 21 | 0 | 0 | 164 | 29 | (467) |
| 2025 | 0 | 0 | 0 | 137 | 0 | 137 | 147 | 21 | 0 | 0 | 168 | 31 | (445) |
| 2026 | 0 | 0 | 0 | 138 | 0 | 138 | 148 | 21 | 0 | 0 | 169 | 31 | (424) |
| 2027 | 0 | 0 | 0 | 139 | 0 | 139 | 152 | 21 | 0 | 0 | 173 | 34 | (403) |
| 2028 | 0 | 0 | 0 | 141 | 0 | 141 | 160 | 21 | 0 | 0 | 181 | 40 | (380) |
| 2029 | 0 | 0 | 0 | 142 | 0 | 142 | 166 | 21 | 0 | 0 | 187 | 44 | (356) |
| 2030 | 0 | 0 | 0 | 144 | 0 | 144 | 176 | 21 | 0 | 0 | 197 | 53 | (329) |
| 2031 | 0 | 0 | 0 | 145 | 0 | 145 | 175 | 21 | 0 | 0 | 196 | 51 | (305) |
| 2032 | 0 | 0 | 0 | 146 | 0 | 146 | 185 | 21 | 0 | 0 | 205 | 59 | (279) |
| 2033 | 0 | 0 | 0 | 148 | 0 | 148 | 193 | 21 | 0 | 0 | 213 | 65 | (252) |
| 2034 | 0 | 0 | 0 | 149 | 0 | 149 | 197 | 21 | 0 | 0 | 218 | 69 | (226) |
| 2035 | 0 | 0 | 0 | 151 | 0 | 151 | 211 | 21 | 0 | 0 | 232 | 81 | (197) |
| 2036 | 0 | 0 | 0 | 152 | 0 | 152 | 209 | 21 | 0 | 0 | 230 | 77 | (171) |
| 2037 | 0 | 0 | 0 | 154 | 0 | 154 | 218 | 21 | 0 | 0 | 239 | 85 | (145) |
| 2038 | 0 | 0 | 0 | 156 | 0 | 156 | 219 | 21 | 0 | 0 | 240 | 84 | (120) |
| 2039 | 0 | 0 | 0 | 157 | 0 | 157 | 219 | 21 | 0 | 0 | 240 | 83 | (98) |
| 2040 | 0 | 0 | 0 | 159 | 0 | 159 | 233 | 21 | 0 | 0 | 254 | 95 | (73) |
| 2041 | 0 | 0 | 0 | 160 | 0 | 160 | 237 | 21 | 0 | 0 | 259 | 98 | (50) |
| 2042 | 0 | 0 | 0 | 162 | 0 | 162 | 250 | 21 | 0 | 0 | 271 | 109 | (26) |
| 2043 | 0 | 0 | 0 | 163 | 0 | 163 | 254 | 22 | 0 | 0 | 276 | 112 | (2) |
| 2044 | 0 | 0 | 0 | 165 | 0 | 165 | 249 | 22 | 0 | 0 | 271 | 106 | 18 |
| NOMINAL | 0 | 23 | 450 | 3,476 | 0 | 3,949 | 4,384 | 480 | 0 | 0 | 4,864 | 916 | |
| NPV: | 0 | 22 | 421 | 1,570 | 0 | 2,012 | 1,812 | 218 | 0 | 0 | 2,030 | 18 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.01

**Program: ENERGY STAR for New Homes**

**Program Start Date:** November 2015

**Program Description**

The ENERGY STAR for New Homes Program is a residential new construction conservation program designed to reduce the growth of peak demand and energy in the residential new construction market. The program utilizes a rebate to encourage the construction of new homes to meet the requirements to achieve the ENERGY STAR certified new home label. By receiving this certificate, the new home will use less energy and demand which will help reduce the growth of Tampa Electric's peak demand.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible residential structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 1.980 kW |
| Winter Demand: | 0.601 kW |
| Annual Energy: | 5,378 kWh |

**Program Costs**

Rebate: $1,000 for a qualifying home receiving the ENERGY STAR Certificate.

The estimated administrative cost per participant is $25.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: ENERGY STAR FOR NEW HOMES

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 13,695 | 7,749 | 800 | 10.3% | 800 |
| 2021 | 13,415 | 7,590 | 800 | 21.1% | 1,600 |
| 2022 | 13,139 | 7,435 | 800 | 32.3% | 2,400 |
| 2023 | 12,959 | 7,333 | 1,000 | 46.4% | 3,400 |
| 2024 | 12,687 | 7,179 | 1,000 | 61.3% | 4,400 |
| 2025 | 12,345 | 6,985 | 1,000 | 77.3% | 5,400 |
| 2026 | 12,014 | 6,798 | 1,500 | 101.5% | 6,900 |
| 2027 | 11,679 | 6,608 | 1,500 | 127.1% | 8,400 |
| 2028 | 11,392 | 6,446 | 1,500 | 153.6% | 9,900 |
| 2029 | 11,167 | 6,319 | 1,500 | 180.4% | 11,400 |

PROGRAM NAME: ENERGY STAR FOR NEW HOMES

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 5,378 | 0.601 | 1.980 | 4.302 | 0.481 | 1.584 |
| 2021 | 5,378 | 0.601 | 1.980 | 8.605 | 0.962 | 3.168 |
| 2022 | 5,378 | 0.601 | 1.980 | 12.907 | 1.442 | 4.752 |
| 2023 | 5,378 | 0.601 | 1.980 | 18.285 | 2.043 | 6.732 |
| 2024 | 5,378 | 0.601 | 1.980 | 23.663 | 2.644 | 8.712 |
| 2025 | 5,378 | 0.601 | 1.980 | 29.041 | 3.245 | 10.692 |
| 2026 | 5,378 | 0.601 | 1.980 | 37.108 | 4.147 | 13.662 |
| 2027 | 5,378 | 0.601 | 1.980 | 45.175 | 5.048 | 16.632 |
| 2028 | 5,378 | 0.601 | 1.980 | 53.242 | 5.950 | 19.602 |
| 2029 | 5,378 | 0.601 | 1.980 | 61.309 | 6.851 | 22.572 |

PROGRAM NAME: ENERGY STAR FOR NEW HOMES

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 5,679 | 0.645 | 2.125 | 4.543 | 0.516 | 1.700 |
| 2021 | 5,679 | 0.645 | 2.125 | 9.087 | 1.032 | 3.399 |
| 2022 | 5,679 | 0.645 | 2.125 | 13.630 | 1.548 | 5.099 |
| 2023 | 5,679 | 0.645 | 2.125 | 19.309 | 2.193 | 7.223 |
| 2024 | 5,679 | 0.645 | 2.125 | 24.988 | 2.837 | 9.348 |
| 2025 | 5,679 | 0.645 | 2.125 | 30.668 | 3.482 | 11.473 |
| 2026 | 5,679 | 0.645 | 2.125 | 39.186 | 4.450 | 14.659 |
| 2027 | 5,679 | 0.645 | 2.125 | 47.705 | 5.417 | 17.846 |
| 2028 | 5,679 | 0.645 | 2.125 | 56.224 | 6.384 | 21.033 |
| 2029 | 5,679 | 0.645 | 2.125 | 64.743 | 7.352 | 24.220 |

# INPUT DATA - PART 1
## PROGRAM TITLE: ENERGY STAR for New Homes

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RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 1.980 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 1.897 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 5,697 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 5,378 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 25.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 4,987.25 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 1000.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.10** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **5,677** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.09** |

TOTAL RESOURCE COST TESTS
PROGRAM: ENERGY STAR for New Homes

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 20 | 3,990 | 0 | 4,010 | 0 | 0 | 66 | 0 | 66 | (3,944) | (3,944) |
| 2021 | 0 | 20 | 4,082 | 0 | 4,102 | 0 | 68 | 197 | 0 | 265 | (3,837) | (7,527) |
| 2022 | 0 | 21 | 4,175 | 0 | 4,196 | 0 | 70 | 338 | 0 | 408 | (3,788) | (10,831) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 461 | 149 | 423 | 0 | 1,032 | 1,032 | (9,990) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 452 | 148 | 439 | 0 | 1,040 | 1,040 | (9,199) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 443 | 148 | 472 | 0 | 1,062 | 1,062 | (8,445) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 436 | 147 | 487 | 0 | 1,070 | 1,070 | (7,735) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 428 | 147 | 517 | 0 | 1,092 | 1,092 | (7,059) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 416 | 146 | 573 | 0 | 1,135 | 1,135 | (6,402) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 409 | 146 | 614 | 0 | 1,169 | 1,169 | (5,770) |
| 2030 | 0 | 0 | 0 | 0 | 0 | 397 | 146 | 686 | 0 | 1,229 | 1,229 | (5,150) |
| 2031 | 0 | 0 | 0 | 0 | 0 | 394 | 146 | 683 | 0 | 1,223 | 1,223 | (4,574) |
| 2032 | 0 | 0 | 0 | 0 | 0 | 384 | 146 | 747 | 0 | 1,277 | 1,277 | (4,012) |
| 2033 | 0 | 0 | 0 | 0 | 0 | 381 | 146 | 796 | 0 | 1,324 | 1,324 | (3,468) |
| 2034 | 0 | 0 | 0 | 0 | 0 | 371 | 146 | 833 | 0 | 1,351 | 1,351 | (2,950) |
| 2035 | 0 | 0 | 0 | 0 | 0 | 366 | 146 | 918 | 0 | 1,430 | 1,430 | (2,437) |
| 2036 | 0 | 0 | 0 | 0 | 0 | 365 | 146 | 907 | 0 | 1,418 | 1,418 | (1,963) |
| 2037 | 0 | 0 | 0 | 0 | 0 | 357 | 146 | 968 | 0 | 1,471 | 1,471 | (1,503) |
| 2038 | 0 | 0 | 0 | 0 | 0 | 358 | 147 | 971 | 0 | 1,476 | 1,476 | (1,072) |
| 2039 | 0 | 0 | 0 | 0 | 0 | 356 | 148 | 972 | 0 | 1,476 | 1,476 | (670) |
| 2040 | 0 | 0 | 0 | 0 | 0 | 365 | 149 | 1,046 | 0 | 1,561 | 1,561 | (272) |
| 2041 | 0 | 0 | 0 | 0 | 0 | 361 | 150 | 1,078 | 0 | 1,589 | 1,589 | 105 |
| 2042 | 0 | 0 | 0 | 0 | 0 | 358 | 152 | 1,152 | 0 | 1,662 | 1,662 | 474 |
| 2043 | 0 | 0 | 0 | 0 | 0 | 359 | 153 | 1,179 | 0 | 1,691 | 1,691 | 825 |
| 2044 | 0 | 0 | 0 | 0 | 0 | 374 | 154 | 1,134 | 0 | 1,662 | 1,662 | 1,147 |
| NOMINAL | 0 | 61 | 12,247 | 0 | 12,308 | 8,592 | 3,390 | 18,197 | 0 | 30,178 | 17,870 | |
| NPV: | 0 | 57 | 11,443 | 0 | 11,500 | 3,876 | 1,537 | 7,235 | 0 | 12,647 | 1,147 | |
| Discount Rate | | 0.0708 | Benefit/Cost Ratio - [col (11)/col (6)]: | | | | 1.10 | | | | | |

PARTICIPANT COSTS AND BENEFITS
PROGRAM: ENERGY STAR for New Homes

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 180 | 0 | 800 | 0 | 980 | 3,990 | 0 | 0 | 3,990 | (3,010) | (3,010) |
| 2021 | 552 | 0 | 800 | 0 | 1,352 | 4,082 | 0 | 0 | 4,082 | (2,730) | (5,559) |
| 2022 | 936 | 0 | 800 | 0 | 1,736 | 4,175 | 0 | 0 | 4,175 | (2,440) | (7,687) |
| 2023 | 1,128 | 0 | 0 | 0 | 1,128 | 0 | 0 | 0 | 0 | 1,128 | (6,768) |
| 2024 | 1,155 | 0 | 0 | 0 | 1,155 | 0 | 0 | 0 | 0 | 1,155 | (5,890) |
| 2025 | 1,184 | 0 | 0 | 0 | 1,184 | 0 | 0 | 0 | 0 | 1,184 | (5,049) |
| 2026 | 1,209 | 0 | 0 | 0 | 1,209 | 0 | 0 | 0 | 0 | 1,209 | (4,247) |
| 2027 | 1,240 | 0 | 0 | 0 | 1,240 | 0 | 0 | 0 | 0 | 1,240 | (3,479) |
| 2028 | 1,288 | 0 | 0 | 0 | 1,288 | 0 | 0 | 0 | 0 | 1,288 | (2,734) |
| 2029 | 1,320 | 0 | 0 | 0 | 1,320 | 0 | 0 | 0 | 0 | 1,320 | (2,020) |
| 2030 | 1,371 | 0 | 0 | 0 | 1,371 | 0 | 0 | 0 | 0 | 1,371 | (1,329) |
| 2031 | 1,398 | 0 | 0 | 0 | 1,398 | 0 | 0 | 0 | 0 | 1,398 | (670) |
| 2032 | 1,445 | 0 | 0 | 0 | 1,445 | 0 | 0 | 0 | 0 | 1,445 | (34) |
| 2033 | 1,466 | 0 | 0 | 0 | 1,466 | 0 | 0 | 0 | 0 | 1,466 | 568 |
| 2034 | 1,514 | 0 | 0 | 0 | 1,514 | 0 | 0 | 0 | 0 | 1,514 | 1,149 |
| 2035 | 1,550 | 0 | 0 | 0 | 1,550 | 0 | 0 | 0 | 0 | 1,550 | 1,705 |
| 2036 | 1,581 | 0 | 0 | 0 | 1,581 | 0 | 0 | 0 | 0 | 1,581 | 2,234 |
| 2037 | 1,628 | 0 | 0 | 0 | 1,628 | 0 | 0 | 0 | 0 | 1,628 | 2,742 |
| 2038 | 1,654 | 0 | 0 | 0 | 1,654 | 0 | 0 | 0 | 0 | 1,654 | 3,225 |
| 2039 | 1,691 | 0 | 0 | 0 | 1,691 | 0 | 0 | 0 | 0 | 1,691 | 3,686 |
| 2040 | 1,709 | 0 | 0 | 0 | 1,709 | 0 | 0 | 0 | 0 | 1,709 | 4,122 |
| 2041 | 1,757 | 0 | 0 | 0 | 1,757 | 0 | 0 | 0 | 0 | 1,757 | 4,539 |
| 2042 | 1,805 | 0 | 0 | 0 | 1,805 | 0 | 0 | 0 | 0 | 1,805 | 4,940 |
| 2043 | 1,839 | 0 | 0 | 0 | 1,839 | 0 | 0 | 0 | 0 | 1,839 | 5,321 |
| 2044 | 1,836 | 0 | 0 | 0 | 1,836 | 0 | 0 | 0 | 0 | 1,836 | 5,677 |
| NOMINAL | 34,433 | 0 | 2,400 | 0 | 36,833 | 12,247 | 0 | 0 | 12,247 | 24,587 | |
| NPV: | 14,875 | 0 | 2,245 | 0 | 17,120 | 11,443 | 0 | 0 | 11,443 | 5,677 | |
| In service year of gen unit: | | | 2023 | | 1.4960844 | | | | | | |

RATE IMPACT TEST
PROGRAM: ENERGY STAR for New Homes

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 20 | 800 | 128 | 0 | 948 | 66 | 0 | 0 | 0 | 66 | (882) | (882) |
| 2021 | 0 | 20 | 800 | 387 | 0 | 1,207 | 197 | 68 | 0 | 0 | 265 | (943) | (1762) |
| 2022 | 0 | 21 | 800 | 651 | 0 | 1,472 | 338 | 70 | 0 | 0 | 408 | (1,064) | (2690) |
| 2023 | 0 | 0 | 0 | 789 | 0 | 789 | 883 | 149 | 0 | 0 | 1,032 | 243 | (2492) |
| 2024 | 0 | 0 | 0 | 797 | 0 | 797 | 891 | 148 | 0 | 0 | 1,040 | 243 | (2308) |
| 2025 | 0 | 0 | 0 | 805 | 0 | 805 | 915 | 148 | 0 | 0 | 1,062 | 257 | (2125) |
| 2026 | 0 | 0 | 0 | 813 | 0 | 813 | 923 | 147 | 0 | 0 | 1,070 | 256 | (1955) |
| 2027 | 0 | 0 | 0 | 822 | 0 | 822 | 945 | 147 | 0 | 0 | 1,092 | 270 | (1788) |
| 2028 | 0 | 0 | 0 | 830 | 0 | 830 | 989 | 146 | 0 | 0 | 1,135 | 306 | (1611) |
| 2029 | 0 | 0 | 0 | 838 | 0 | 838 | 1,023 | 146 | 0 | 0 | 1,169 | 331 | (1432) |
| 2030 | 0 | 0 | 0 | 846 | 0 | 846 | 1,083 | 146 | 0 | 0 | 1,229 | 383 | (1239) |
| 2031 | 0 | 0 | 0 | 855 | 0 | 855 | 1,077 | 146 | 0 | 0 | 1,223 | 368 | (1066) |
| 2032 | 0 | 0 | 0 | 863 | 0 | 863 | 1,131 | 146 | 0 | 0 | 1,277 | 413 | (884) |
| 2033 | 0 | 0 | 0 | 872 | 0 | 872 | 1,178 | 146 | 0 | 0 | 1,324 | 451 | (698) |
| 2034 | 0 | 0 | 0 | 881 | 0 | 881 | 1,205 | 146 | 0 | 0 | 1,351 | 470 | (518) |
| 2035 | 0 | 0 | 0 | 890 | 0 | 890 | 1,284 | 146 | 0 | 0 | 1,430 | 541 | (324) |
| 2036 | 0 | 0 | 0 | 898 | 0 | 898 | 1,272 | 146 | 0 | 0 | 1,418 | 519 | (150) |
| 2037 | 0 | 0 | 0 | 907 | 0 | 907 | 1,325 | 146 | 0 | 0 | 1,471 | 564 | 26 |
| 2038 | 0 | 0 | 0 | 917 | 0 | 917 | 1,329 | 147 | 0 | 0 | 1,476 | 559 | 189 |
| 2039 | 0 | 0 | 0 | 926 | 0 | 926 | 1,328 | 148 | 0 | 0 | 1,476 | 550 | 339 |
| 2040 | 0 | 0 | 0 | 935 | 0 | 935 | 1,412 | 149 | 0 | 0 | 1,561 | 626 | 498 |
| 2041 | 0 | 0 | 0 | 944 | 0 | 944 | 1,438 | 150 | 0 | 0 | 1,589 | 644 | 652 |
| 2042 | 0 | 0 | 0 | 954 | 0 | 954 | 1,510 | 152 | 0 | 0 | 1,662 | 708 | 809 |
| 2043 | 0 | 0 | 0 | 963 | 0 | 963 | 1,538 | 153 | 0 | 0 | 1,691 | 728 | 960 |
| 2044 | 0 | 0 | 0 | 973 | 0 | 973 | 1,508 | 154 | 0 | 0 | 1,662 | 689 | 1093 |
| NOMINAL | 0 | 61 | 2,400 | 20,485 | 0 | 22,947 | 26,788 | 3,390 | 0 | 0 | 30,178 | 7,231 | |
| NPV: | 0 | 57 | 2,245 | 9,252 | 0 | 11,554 | 11,110 | 1,537 | 0 | 0 | 12,647 | 1,093 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.09

**Program: ENERGY STAR Pool Pumps**

**Program Start Date:** TBD

**Program Description**

The ENERGY STAR Pool Pumps Program is designed to encourage customers to make cost-effective improvements to existing residences. The goal is to offer customer rebates for installing high efficiency ENERGY STAR rated pool pumps to help reduce their energy consumption while reducing Tampa Electric's weather sensitive peak demand. High efficiency pool pumps require less demand and energy as compared to standard systems. This program will rebate residential customers that install a qualifying pool pump.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible residential structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 1.718 kW |
| Winter Demand: | 0.000 kW |
| Annual Energy: | 3,162 kWh |

**Program Costs**

Rebate: Up to $350 for a qualifying pool pump.

The estimated administrative cost per participant is $30.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 941173-EG.

PROGRAM NAME: ENERGY STAR POOL PUMPS

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 76,380 | 1,000 | 1.3% | 1,000 |
| 2021 | 707,775 | 77,855 | 1,000 | 2.6% | 2,000 |
| 2022 | 720,915 | 79,301 | 1,000 | 3.8% | 3,000 |
| 2023 | 733,874 | 80,726 | 1,000 | 5.0% | 4,000 |
| 2024 | 746,561 | 82,122 | 1,000 | 6.1% | 5,000 |
| 2025 | 758,905 | 83,480 | 1,500 | 7.8% | 6,500 |
| 2026 | 770,920 | 84,801 | 1,500 | 9.4% | 8,000 |
| 2027 | 782,598 | 86,086 | 1,500 | 11.0% | 9,500 |
| 2028 | 793,990 | 87,339 | 1,500 | 12.6% | 11,000 |
| 2029 | 803,878 | 88,427 | 1,500 | 14.1% | 12,500 |

PROGRAM NAME: ENERGY STAR POOL PUMPS

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 3,162 | 0.000 | 1.718 | 3.162 | 0.000 | 1.718 |
| 2021 | 3,162 | 0.000 | 1.718 | 6.324 | 0.000 | 3.436 |
| 2022 | 3,162 | 0.000 | 1.718 | 9.486 | 0.000 | 5.154 |
| 2023 | 3,162 | 0.000 | 1.718 | 12.648 | 0.000 | 6.872 |
| 2024 | 3,162 | 0.000 | 1.718 | 15.810 | 0.000 | 8.590 |
| 2025 | 3,162 | 0.000 | 1.718 | 20.553 | 0.000 | 11.167 |
| 2026 | 3,162 | 0.000 | 1.718 | 25.296 | 0.000 | 13.744 |
| 2027 | 3,162 | 0.000 | 1.718 | 30.039 | 0.000 | 16.321 |
| 2028 | 3,162 | 0.000 | 1.718 | 34.782 | 0.000 | 18.898 |
| 2029 | 3,162 | 0.000 | 1.718 | 39.525 | 0.000 | 21.475 |

PROGRAM NAME: ENERGY STAR POOL PUMPS

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 3,339 | 0.000 | 1.843 | 3.339 | 0.000 | 1.843 |
| 2021 | 3,339 | 0.000 | 1.843 | 6.678 | 0.000 | 3.687 |
| 2022 | 3,339 | 0.000 | 1.843 | 10.017 | 0.000 | 5.530 |
| 2023 | 3,339 | 0.000 | 1.843 | 13.356 | 0.000 | 7.374 |
| 2024 | 3,339 | 0.000 | 1.843 | 16.695 | 0.000 | 9.217 |
| 2025 | 3,339 | 0.000 | 1.843 | 21.704 | 0.000 | 11.982 |
| 2026 | 3,339 | 0.000 | 1.843 | 26.713 | 0.000 | 14.747 |
| 2027 | 3,339 | 0.000 | 1.843 | 31.721 | 0.000 | 17.512 |
| 2028 | 3,339 | 0.000 | 1.843 | 36.730 | 0.000 | 20.278 |
| 2029 | 3,339 | 0.000 | 1.843 | 41.738 | 0.000 | 23.043 |

# INPUT DATA - PART 1
## PROGRAM TITLE: ENERGY STAR Pool Pumps

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RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 1.718 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 1.527 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 3,349 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 3,162 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 10 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 30.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 1,085.01 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 350.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.51** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **3,145** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.04** |

TOTAL RESOURCE COST TESTS
PROGRAM: ENERGY STAR Pool Pumps

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 30 | 1,085 | 0 | 1,115 | 0 | 0 | 49 | 0 | 49 | (1,066) | (1,066) |
| 2021 | 0 | 31 | 1,110 | 0 | 1,141 | 0 | 132 | 145 | 0 | 277 | (864) | (1,873) |
| 2022 | 0 | 31 | 1,135 | 0 | 1,167 | 0 | 135 | 249 | 0 | 384 | (783) | (2,556) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 355 | 138 | 311 | 0 | 804 | 804 | (1,901) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 364 | 142 | 323 | 0 | 829 | 829 | (1,271) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 375 | 145 | 347 | 0 | 867 | 867 | (655) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 386 | 149 | 358 | 0 | 893 | 893 | (63) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 397 | 152 | 380 | 0 | 929 | 929 | 512 |
| 2028 | 0 | 0 | 0 | 0 | 0 | 403 | 156 | 421 | 0 | 980 | 980 | 1,080 |
| 2029 | 0 | 0 | 0 | 0 | 0 | 414 | 160 | 451 | 0 | 1,025 | 1,025 | 1,633 |
| NOMINAL | 0 | 92 | 3,330 | 0 | 3,423 | 2,694 | 1,309 | 3,032 | 0 | 7,036 | 3,613 | |
| NPV: | 0 | 86 | 3,112 | 0 | 3,198 | 1,792 | 934 | 2,105 | 0 | 4,831 | 1,633 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 1.51

PARTICIPANT COSTS AND BENEFITS
PROGRAM: ENERGY STAR Pool Pumps

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 132 | 0 | 350 | 0 | 482 | 1,085 | 0 | 0 | 1,085 | (603) | (603) |
| 2021 | 405 | 0 | 350 | 0 | 755 | 1,110 | 0 | 0 | 1,110 | (355) | (934) |
| 2022 | 688 | 0 | 350 | 0 | 1,038 | 1,135 | 0 | 0 | 1,135 | (98) | (1,019) |
| 2023 | 829 | 0 | 0 | 0 | 829 | 0 | 0 | 0 | 0 | 829 | (344) |
| 2024 | 849 | 0 | 0 | 0 | 849 | 0 | 0 | 0 | 0 | 849 | 302 |
| 2025 | 870 | 0 | 0 | 0 | 870 | 0 | 0 | 0 | 0 | 870 | 919 |
| 2026 | 888 | 0 | 0 | 0 | 888 | 0 | 0 | 0 | 0 | 888 | 1,509 |
| 2027 | 911 | 0 | 0 | 0 | 911 | 0 | 0 | 0 | 0 | 911 | 2,073 |
| 2028 | 947 | 0 | 0 | 0 | 947 | 0 | 0 | 0 | 0 | 947 | 2,621 |
| 2029 | 970 | 0 | 0 | 0 | 970 | 0 | 0 | 0 | 0 | 970 | 3,145 |
| NOMINAL | 7,489 | 0 | 1,050 | 0 | 8,539 | 3,330 | 0 | 0 | 3,330 | 5,208 | |
| NPV: | 5,275 | 0 | 982 | 0 | 6,257 | 3,112 | 0 | 0 | 3,112 | 3,145 | |
| In service year of gen unit: | | | 2023 | | 2.010606 | | | | | | |

RATE IMPACT TEST
PROGRAM: ENERGY STAR Pool Pumps

PSC FORM CE 2.5
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 30 | 350 | 94 | 0 | 474 | 49 | 0 | 0 | 0 | 49 | (425) | (425) |
| 2021 | 0 | 31 | 350 | 284 | 0 | 665 | 145 | 132 | 0 | 0 | 277 | (388) | (788) |
| 2022 | 0 | 31 | 350 | 479 | 0 | 860 | 249 | 135 | 0 | 0 | 384 | (476) | (1203) |
| 2023 | 0 | 0 | 0 | 580 | 0 | 580 | 666 | 138 | 0 | 0 | 804 | 224 | (1021) |
| 2024 | 0 | 0 | 0 | 586 | 0 | 586 | 687 | 142 | 0 | 0 | 829 | 243 | (836) |
| 2025 | 0 | 0 | 0 | 592 | 0 | 592 | 721 | 145 | 0 | 0 | 867 | 275 | (641) |
| 2026 | 0 | 0 | 0 | 598 | 0 | 598 | 744 | 149 | 0 | 0 | 893 | 295 | (445) |
| 2027 | 0 | 0 | 0 | 604 | 0 | 604 | 777 | 152 | 0 | 0 | 929 | 325 | (244) |
| 2028 | 0 | 0 | 0 | 610 | 0 | 610 | 824 | 156 | 0 | 0 | 980 | 371 | (29) |
| 2029 | 0 | 0 | 0 | 616 | 0 | 616 | 865 | 160 | 0 | 0 | 1,025 | 409 | 192 |
| NOMINAL | 0 | 92 | 1,050 | 5,042 | 0 | 6,184 | 5,726 | 1,309 | 0 | 0 | 7,036 | 852 | |
| NPV: | 0 | 86 | 982 | 3,571 | 0 | 4,640 | 3,897 | 934 | 0 | 0 | 4,831 | 192 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.04

**Program: ENERGY STAR Thermostats**

**Program Start Date:** TBD

**Program Description**

The ENERGY STAR Thermostats Program is designed to encourage customers to make cost-effective improvements to existing residences. The goal is to offer customer rebates for installing an ENERGY STAR certified smart thermostat to help reduce their energy consumption while reducing Tampa Electric's weather sensitive peak demand. Smart thermostats are designed to reduce demand and energy by decreasing the load on residential air conditioning and heating equipment and providing energy usage information regarding the heating and cooling system's settings and usage. This program will rebate residential customers that install a qualifying thermostat.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible residential structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 0.236 kW |
| Winter Demand: | 0.000 kW |
| Annual Energy: | 262 kWh |

**Program Costs**

Rebate: $50 for a qualifying thermostat.

The estimated administrative cost per participant is $30.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: ENERGY STAR THERMOSTATS

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 694,361 | 1,000 | 0.1% | 1,000 |
| 2021 | 707,775 | 707,775 | 1,000 | 0.3% | 2,000 |
| 2022 | 720,915 | 720,915 | 1,000 | 0.4% | 3,000 |
| 2023 | 733,874 | 733,874 | 1,500 | 0.6% | 4,500 |
| 2024 | 746,561 | 746,561 | 1,500 | 0.8% | 6,000 |
| 2025 | 758,905 | 758,905 | 1,500 | 1.0% | 7,500 |
| 2026 | 770,920 | 770,920 | 2,000 | 1.2% | 9,500 |
| 2027 | 782,598 | 782,598 | 2,000 | 1.5% | 11,500 |
| 2028 | 793,990 | 793,990 | 2,000 | 1.7% | 13,500 |
| 2029 | 803,878 | 803,878 | 2,000 | 1.9% | 15,500 |

PROGRAM NAME: ENERGY STAR THERMOSTATS

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 262 | 0.000 | 0.236 | 0.262 | 0.000 | 0.236 |
| 2021 | 262 | 0.000 | 0.236 | 0.524 | 0.000 | 0.472 |
| 2022 | 262 | 0.000 | 0.236 | 0.786 | 0.000 | 0.708 |
| 2023 | 262 | 0.000 | 0.236 | 1.179 | 0.000 | 1.062 |
| 2024 | 262 | 0.000 | 0.236 | 1.572 | 0.000 | 1.416 |
| 2025 | 262 | 0.000 | 0.236 | 1.965 | 0.000 | 1.770 |
| 2026 | 262 | 0.000 | 0.236 | 2.489 | 0.000 | 2.242 |
| 2027 | 262 | 0.000 | 0.236 | 3.013 | 0.000 | 2.714 |
| 2028 | 262 | 0.000 | 0.236 | 3.537 | 0.000 | 3.186 |
| 2029 | 262 | 0.000 | 0.236 | 4.061 | 0.000 | 3.658 |

PROGRAM NAME: ENERGY STAR THERMOSTATS

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 277 | 0.000 | 0.253 | 0.277 | 0.000 | 0.253 |
| 2021 | 277 | 0.000 | 0.253 | 0.553 | 0.000 | 0.506 |
| 2022 | 277 | 0.000 | 0.253 | 0.830 | 0.000 | 0.760 |
| 2023 | 277 | 0.000 | 0.253 | 1.245 | 0.000 | 1.140 |
| 2024 | 277 | 0.000 | 0.253 | 1.660 | 0.000 | 1.519 |
| 2025 | 277 | 0.000 | 0.253 | 2.075 | 0.000 | 1.899 |
| 2026 | 277 | 0.000 | 0.253 | 2.628 | 0.000 | 2.406 |
| 2027 | 277 | 0.000 | 0.253 | 3.182 | 0.000 | 2.912 |
| 2028 | 277 | 0.000 | 0.253 | 3.735 | 0.000 | 3.419 |
| 2029 | 277 | 0.000 | 0.253 | 4.288 | 1.073 | 3.925 |

## INPUT DATA - PART 1
## PROGRAM TITLE: Residential ENERGY STAR Thermostats

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PAGE 1 OF 1
RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 0.236 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 0.210 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 277 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 262 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 11 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 30.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 132.01 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 50.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.31** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **241** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.11** |

TOTAL RESOURCE COST TESTS
PROGRAM: Residential ENERGY STAR Thermostats



| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 30 | 132 | 0 | 162 | 0 | 0 | 4 | 0 | 4 | (158) | (158) |
| 2021 | 0 | 31 | 135 | 0 | 166 | 0 | 18 | 12 | 0 | 30 | (136) | (285) |
| 2022 | 0 | 31 | 138 | 0 | 170 | 0 | 19 | 21 | 0 | 39 | (130) | (398) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 49 | 19 | 26 | 0 | 93 | 93 | (322) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 50 | 19 | 27 | 0 | 96 | 96 | (249) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 51 | 20 | 29 | 0 | 100 | 100 | (178) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 53 | 20 | 30 | 0 | 103 | 103 | (110) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 54 | 21 | 31 | 0 | 107 | 107 | (43) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 55 | 21 | 35 | 0 | 112 | 112 | 21 |
| 2029 | 0 | 0 | 0 | 0 | 0 | 57 | 22 | 37 | 0 | 116 | 116 | 84 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 58 | 22 | 42 | 0 | 122 | 122 | 145 |
| NOMINAL | 0 | 92 | 405 | 0 | 497 | 428 | 202 | 293 | 0 | 923 | 425 | |
| NPV: | 0 | 86 | 379 | 0 | 465 | 275 | 140 | 195 | 0 | 610 | 145 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 1.31

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Residential ENERGY STAR Thermostats



| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 11 | 0 | 50 | 0 | 61 | 132 | 0 | 0 | 132 | (71) | (71) |
| 2021 | 34 | 0 | 50 | 0 | 84 | 135 | 0 | 0 | 135 | (51) | (119) |
| 2022 | 57 | 0 | 50 | 0 | 107 | 138 | 0 | 0 | 138 | (31) | (146) |
| 2023 | 69 | 0 | 0 | 0 | 69 | 0 | 0 | 0 | 0 | 69 | (90) |
| 2024 | 70 | 0 | 0 | 0 | 70 | 0 | 0 | 0 | 0 | 70 | (37) |
| 2025 | 72 | 0 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 72 | 14 |
| 2026 | 74 | 0 | 0 | 0 | 74 | 0 | 0 | 0 | 0 | 74 | 63 |
| 2027 | 75 | 0 | 0 | 0 | 75 | 0 | 0 | 0 | 0 | 75 | 110 |
| 2028 | 78 | 0 | 0 | 0 | 78 | 0 | 0 | 0 | 0 | 78 | 155 |
| 2029 | 80 | 0 | 0 | 0 | 80 | 0 | 0 | 0 | 0 | 80 | 198 |
| 2030 | 83 | 0 | 0 | 0 | 83 | 0 | 0 | 0 | 0 | 83 | 241 |
| NOMINAL | 704 | 0 | 150 | 0 | 854 | 405 | 0 | 0 | 405 | 448 | |
| NPV: | 479 | 0 | 140 | 0 | 619 | 379 | 0 | 0 | 379 | 241 | |
| In service year of gen unit: | | | 2023 | | 1.6352807 | | | | | | |

RATE IMPACT TEST
PROGRAM: Residential ENERGY STAR Thermostats



| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 30 | 50 | 8 | 0 | 88 | 4 | 0 | 0 | 0 | 4 | (84) | (84) |
| 2021 | 0 | 31 | 50 | 24 | 0 | 104 | 12 | 18 | 0 | 0 | 30 | (74) | (153) |
| 2022 | 0 | 31 | 50 | 40 | 0 | 121 | 21 | 19 | 0 | 0 | 39 | (82) | (224) |
| 2023 | 0 | 0 | 0 | 48 | 0 | 48 | 74 | 19 | 0 | 0 | 93 | 45 | (187) |
| 2024 | 0 | 0 | 0 | 49 | 0 | 49 | 77 | 19 | 0 | 0 | 96 | 48 | (151) |
| 2025 | 0 | 0 | 0 | 49 | 0 | 49 | 80 | 20 | 0 | 0 | 100 | 51 | (115) |
| 2026 | 0 | 0 | 0 | 49 | 0 | 49 | 83 | 20 | 0 | 0 | 103 | 54 | (79) |
| 2027 | 0 | 0 | 0 | 50 | 0 | 50 | 86 | 21 | 0 | 0 | 107 | 57 | (44) |
| 2028 | 0 | 0 | 0 | 50 | 0 | 50 | 90 | 21 | 0 | 0 | 112 | 61 | (9) |
| 2029 | 0 | 0 | 0 | 51 | 0 | 51 | 94 | 22 | 0 | 0 | 116 | 65 | 26 |
| 2030 | 0 | 0 | 0 | 52 | 0 | 52 | 99 | 22 | 0 | 0 | 122 | 70 | 62 |
| NOMINAL | 0 | 92 | 150 | 469 | 0 | 711 | 720 | 202 | 0 | 0 | 923 | 212 | |
| NPV: | 0 | 86 | 140 | 322 | 0 | 548 | 470 | 140 | 0 | 0 | 610 | 62 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.11

**Program: Residential Heating and Cooling**

**Program Start Date:** January 1981

**Program Description**

The Residential Heating and Cooling Program is designed to encourage customers to make cost-effective improvements to existing residences. The goal is to offer customer rebates for installing high efficiency heating and cooling systems to help reduce their energy consumption while reducing Tampa Electric's weather sensitive peak demand. High efficiency heating and cooling systems require less demand and energy as compared to standard systems. This program will rebate residential customers that install a qualifying air conditioning system.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible residential structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 0.195 kW |
| Winter Demand: | 0.207 kW |
| Annual Energy: | 394 kWh |

**Program Costs**

Rebate: $135 per qualifying air conditioning system.

The estimated administrative cost per participant is $22.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: RESIDENTIAL HEATING AND COOLING

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 694,361 | 500 | 0.1% | 500 |
| 2021 | 707,775 | 707,775 | 500 | 0.1% | 1,000 |
| 2022 | 720,915 | 720,915 | 500 | 0.2% | 1,500 |
| 2023 | 733,874 | 733,874 | 500 | 0.3% | 2,000 |
| 2024 | 746,561 | 746,561 | 500 | 0.3% | 2,500 |
| 2025 | 758,905 | 758,905 | 500 | 0.4% | 3,000 |
| 2026 | 770,920 | 770,920 | 500 | 0.5% | 3,500 |
| 2027 | 782,598 | 782,598 | 500 | 0.5% | 4,000 |
| 2028 | 793,990 | 793,990 | 500 | 0.6% | 4,500 |
| 2029 | 803,878 | 803,878 | 500 | 0.6% | 5,000 |

PROGRAM NAME: RESIDENTIAL HEATING AND COOLING

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 394 | 0.207 | 0.195 | 0.197 | 0.104 | 0.098 |
| 2021 | 394 | 0.207 | 0.195 | 0.394 | 0.207 | 0.195 |
| 2022 | 394 | 0.207 | 0.195 | 0.591 | 0.311 | 0.293 |
| 2023 | 394 | 0.207 | 0.195 | 0.788 | 0.414 | 0.390 |
| 2024 | 394 | 0.207 | 0.195 | 0.985 | 0.518 | 0.488 |
| 2025 | 394 | 0.207 | 0.195 | 1.182 | 0.621 | 0.585 |
| 2026 | 394 | 0.207 | 0.195 | 1.379 | 0.725 | 0.683 |
| 2027 | 394 | 0.207 | 0.195 | 1.576 | 0.828 | 0.780 |
| 2028 | 394 | 0.207 | 0.195 | 1.773 | 0.932 | 0.878 |
| 2029 | 394 | 0.207 | 0.195 | 1.970 | 1.035 | 0.975 |

PROGRAM NAME: RESIDENTIAL HEATING AND COOLING

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 416 | 0.222 | 0.209 | 0.208 | 0.111 | 0.105 |
| 2021 | 416 | 0.222 | 0.209 | 0.416 | 0.222 | 0.209 |
| 2022 | 416 | 0.222 | 0.209 | 0.624 | 0.333 | 0.314 |
| 2023 | 416 | 0.222 | 0.209 | 0.832 | 0.444 | 0.418 |
| 2024 | 416 | 0.222 | 0.209 | 1.040 | 0.555 | 0.523 |
| 2025 | 416 | 0.222 | 0.209 | 1.248 | 0.666 | 0.628 |
| 2026 | 416 | 0.222 | 0.209 | 1.456 | 0.777 | 0.732 |
| 2027 | 416 | 0.222 | 0.209 | 1.664 | 0.888 | 0.837 |
| 2028 | 416 | 0.222 | 0.209 | 1.872 | 0.999 | 0.942 |
| 2029 | 416 | 0.222 | 0.209 | 2.080 | 1.111 | 1.046 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Residential Heating and Cooling

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**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 0.207 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 0.220 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 417 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 394 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 18 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 22.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 735.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 135.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **0.53** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **(318)** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.01** |

TOTAL RESOURCE COST TESTS
PROGRAM: Residential Heating and Cooling

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 11 | 368 | 0 | 379 | 0 | 0 | 3 | 0 | 3 | (375) | (375) |
| 2021 | 0 | 11 | 376 | 0 | 387 | 0 | 8 | 9 | 0 | 17 | (370) | (721) |
| 2022 | 0 | 12 | 385 | 0 | 396 | 0 | 9 | 15 | 0 | 24 | (372) | (1,045) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 26 | 9 | 19 | 0 | 54 | 54 | (1,002) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 26 | 9 | 20 | 0 | 55 | 55 | (960) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 27 | 9 | 22 | 0 | 58 | 58 | (919) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 28 | 9 | 22 | 0 | 60 | 60 | (879) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 29 | 10 | 24 | 0 | 62 | 62 | (841) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 29 | 10 | 26 | 0 | 65 | 65 | (803) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 30 | 10 | 28 | 0 | 68 | 68 | (766) |
| 2030 | 0 | 0 | 0 | 0 | 0 | 30 | 10 | 31 | 0 | 72 | 72 | (730) |
| 2031 | 0 | 0 | 0 | 0 | 0 | 31 | 11 | 31 | 0 | 73 | 73 | (695) |
| 2032 | 0 | 0 | 0 | 0 | 0 | 32 | 11 | 34 | 0 | 77 | 77 | (661) |
| 2033 | 0 | 0 | 0 | 0 | 0 | 33 | 11 | 36 | 0 | 81 | 81 | (628) |
| 2034 | 0 | 0 | 0 | 0 | 0 | 34 | 11 | 38 | 0 | 83 | 83 | (596) |
| 2035 | 0 | 0 | 0 | 0 | 0 | 35 | 12 | 42 | 0 | 88 | 88 | (565) |
| 2036 | 0 | 0 | 0 | 0 | 0 | 36 | 12 | 42 | 0 | 90 | 90 | (535) |
| 2037 | 0 | 0 | 0 | 0 | 0 | 37 | 12 | 44 | 0 | 93 | 93 | (505) |
| NOMINAL | 0 | 34 | 1,128 | 0 | 1,162 | 464 | 172 | 488 | 0 | 1,124 | -38 | |
| NPV: | 0 | 32 | 1,054 | 0 | 1,086 | 237 | 94 | 249 | 0 | 580 | -505 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 0.53

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Residential Heating and Cooling

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 8 | 0 | 68 | 0 | 76 | 368 | 0 | 0 | 368 | (292) | (292) |
| 2021 | 25 | 0 | 68 | 0 | 93 | 376 | 0 | 0 | 376 | (283) | (556) |
| 2022 | 43 | 0 | 68 | 0 | 110 | 385 | 0 | 0 | 385 | (274) | (795) |
| 2023 | 52 | 0 | 0 | 0 | 52 | 0 | 0 | 0 | 0 | 52 | (753) |
| 2024 | 53 | 0 | 0 | 0 | 53 | 0 | 0 | 0 | 0 | 53 | (713) |
| 2025 | 54 | 0 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 54 | (675) |
| 2026 | 55 | 0 | 0 | 0 | 55 | 0 | 0 | 0 | 0 | 55 | (638) |
| 2027 | 57 | 0 | 0 | 0 | 57 | 0 | 0 | 0 | 0 | 57 | (603) |
| 2028 | 59 | 0 | 0 | 0 | 59 | 0 | 0 | 0 | 0 | 59 | (569) |
| 2029 | 60 | 0 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 60 | (536) |
| 2030 | 63 | 0 | 0 | 0 | 63 | 0 | 0 | 0 | 0 | 63 | (504) |
| 2031 | 64 | 0 | 0 | 0 | 64 | 0 | 0 | 0 | 0 | 64 | (474) |
| 2032 | 66 | 0 | 0 | 0 | 66 | 0 | 0 | 0 | 0 | 66 | (445) |
| 2033 | 67 | 0 | 0 | 0 | 67 | 0 | 0 | 0 | 0 | 67 | (417) |
| 2034 | 69 | 0 | 0 | 0 | 69 | 0 | 0 | 0 | 0 | 69 | (391) |
| 2035 | 71 | 0 | 0 | 0 | 71 | 0 | 0 | 0 | 0 | 71 | (365) |
| 2036 | 72 | 0 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 72 | (341) |
| 2037 | 75 | 0 | 0 | 0 | 75 | 0 | 0 | 0 | 0 | 75 | (318) |
| NOMINAL | 1,014 | 0 | 203 | 0 | 1,216 | 1,128 | 0 | 0 | 1,128 | 88 | |
| NPV: | 547 | 0 | 189 | 0 | 736 | 1,054 | 0 | 0 | 1,054 | -318 | |
| In service year of gen unit: | | | 2023 | | 0.6984009 | | | | | | |

RATE IMPACT TEST
PROGRAM: Residential Heating and Cooling

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 11 | 68 | 6 | 0 | 84 | 3 | 0 | 0 | 0 | 3 | (81) | (81) |
| 2021 | 0 | 11 | 68 | 18 | 0 | 96 | 9 | 8 | 0 | 0 | 17 | (79) | (155) |
| 2022 | 0 | 12 | 68 | 30 | 0 | 109 | 15 | 9 | 0 | 0 | 24 | (85) | (229) |
| 2023 | 0 | 0 | 0 | 36 | 0 | 36 | 45 | 9 | 0 | 0 | 54 | 18 | (215) |
| 2024 | 0 | 0 | 0 | 37 | 0 | 37 | 46 | 9 | 0 | 0 | 55 | 19 | (201) |
| 2025 | 0 | 0 | 0 | 37 | 0 | 37 | 49 | 9 | 0 | 0 | 58 | 21 | (186) |
| 2026 | 0 | 0 | 0 | 37 | 0 | 37 | 50 | 9 | 0 | 0 | 60 | 22 | (171) |
| 2027 | 0 | 0 | 0 | 38 | 0 | 38 | 52 | 10 | 0 | 0 | 62 | 24 | (156) |
| 2028 | 0 | 0 | 0 | 38 | 0 | 38 | 55 | 10 | 0 | 0 | 65 | 27 | (140) |
| 2029 | 0 | 0 | 0 | 38 | 0 | 38 | 58 | 10 | 0 | 0 | 68 | 30 | (124) |
| 2030 | 0 | 0 | 0 | 39 | 0 | 39 | 62 | 10 | 0 | 0 | 72 | 33 | (107) |
| 2031 | 0 | 0 | 0 | 39 | 0 | 39 | 63 | 11 | 0 | 0 | 73 | 34 | (91) |
| 2032 | 0 | 0 | 0 | 40 | 0 | 40 | 66 | 11 | 0 | 0 | 77 | 38 | (75) |
| 2033 | 0 | 0 | 0 | 40 | 0 | 40 | 70 | 11 | 0 | 0 | 81 | 41 | (58) |
| 2034 | 0 | 0 | 0 | 40 | 0 | 40 | 72 | 11 | 0 | 0 | 83 | 43 | (41) |
| 2035 | 0 | 0 | 0 | 41 | 0 | 41 | 77 | 12 | 0 | 0 | 88 | 48 | (24) |
| 2036 | 0 | 0 | 0 | 41 | 0 | 41 | 78 | 12 | 0 | 0 | 90 | 48 | (8) |
| 2037 | 0 | 0 | 0 | 42 | 0 | 42 | 81 | 12 | 0 | 0 | 93 | 52 | 8 |
| NOMINAL | 0 | 34 | 203 | 635 | 0 | 872 | 952 | 172 | 0 | 0 | 1,124 | 252 | |
| NPV: | 0 | 32 | 189 | 351 | 0 | 572 | 486 | 94 | 0 | 0 | 580 | 8 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.01

**Program: Neighborhood Weatherization**

**Program Start Date:** March 2008

**Program Description**

The Neighborhood Weatherization Program is designed to assist low-income families in reducing their energy usage. The goal of the program is to provide and install a package of conservation measures at no cost to the customer. Another key component will be educating families and promoting energy conservation techniques to help customers control and reduce their energy usage.

Customer eligibility is confirmed through the utilization of census data to identify eligible customer geographic regions of low-income customers or by referrals through direct customer contact, distributed literature and communication through key community contacts or local community assistance agencies which serve low income households. Local residents of these qualifying geographic regions will have the opportunity enroll for participation in the program at no cost.

Tampa Electric will deliver the following applicable measures.

- **Walk-Through Energy Audit**

- **Duct Sealing**
  For qualified dwellings with a ducted central HVAC system, this will provide sealing of the ADS.

- **Ceiling Insulation**
  For qualified dwellings where the existing ceiling insulation is below R-19, this will provide for an R-13 to be installed. Any home where roof pitch limits accessibility, a lower R-value may be installed.

- **LEDs**
  This provides the resident with six LEDs to replace incandescent bulbs with similar lumen output.

- **Hot Water Pipe Insulation**
  This allows for the installation of hot water insulation on un-insulated pipes.

- **Water Heater Temperature Check Card and Adjustment**
  This provides a temperature check of the water heater temperature setting and informs the customer of the possibility for turn-down adjustment.

- **Low Flow Faucet Aerator**
  This allows for the installation of up to three low flow faucet aerators to reduce the amount of hot water used.

- **Low Flow Showerhead**

This allows for the installation of up to two low flow showerheads to reduce the amount of hot water used.

- **Wall Plate Thermometer**
  This will provide for the installation of one wall plate thermometer per home to check the accuracy of the installed thermostat.

- **Refrigerator Coil Cleaning and Brush**
  This will provide for the cleaning of the refrigerator coil. The brush will be provided to the customer for future cleaning.

- **HVAC Weather Stripping Kit**
  This will provide for the installation of a weather-stripping kit for window/wall HVAC units. The customer will receive or have installed up to two kits.

- **Air Filter Whistle**
  This provides each homeowner with a filter whistle to help remind them to clean or change filter monthly.

- **Weatherization Measures**
  This portion of the program will provide weather stripping, caulk and foam sealant which will be used to reduce or stop air infiltration around doors, windows, attic entries and where pipes enter the home. Reducing air infiltration is vital to saving energy and improving comfort.

- **Energy Savings Education Handout**
  This provides each homeowner with the content and directions for installation for some of the measures within the kit. The handout also includes several no-cost energy conservation tips that provide an immediate payback.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible residential structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 0.534 kW |
| Winter Demand: | 0.643 kW |
| Annual Energy: | 1,932 kWh |

**Program Costs**

The estimated administrative cost per participant is $814. There are no rebates or incentives for this program.

**Program Monitoring and Evaluation**
Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: NEIGHBORHOOD WEATHERIZATION

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 121,219 | 6,500 | 5.4% | 6,500 |
| 2021 | 707,775 | 123,561 | 6,500 | 10.5% | 13,000 |
| 2022 | 720,915 | 125,855 | 6,500 | 15.5% | 19,500 |
| 2023 | 733,874 | 128,117 | 6,500 | 20.3% | 26,000 |
| 2024 | 746,561 | 130,332 | 6,500 | 24.9% | 32,500 |
| 2025 | 758,905 | 132,487 | 6,500 | 29.4% | 39,000 |
| 2026 | 770,920 | 134,585 | 6,500 | 33.8% | 45,500 |
| 2027 | 782,598 | 136,624 | 6,500 | 38.1% | 52,000 |
| 2028 | 793,990 | 138,612 | 6,500 | 42.2% | 58,500 |
| 2029 | 803,878 | 140,339 | 6,500 | 46.3% | 65,000 |

PROGRAM NAME: NEIGHBORHOOD WEATHERIZATION

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 1,932 | 0.643 | 0.534 | 12.558 | 4.180 | 3.471 |
| 2021 | 1,932 | 0.643 | 0.534 | 25.116 | 8.359 | 6.942 |
| 2022 | 1,932 | 0.643 | 0.534 | 37.674 | 12.539 | 10.413 |
| 2023 | 1,932 | 0.643 | 0.534 | 50.232 | 16.718 | 13.884 |
| 2024 | 1,932 | 0.643 | 0.534 | 62.790 | 20.898 | 17.355 |
| 2025 | 1,932 | 0.643 | 0.534 | 75.348 | 25.077 | 20.826 |
| 2026 | 1,932 | 0.643 | 0.534 | 87.906 | 29.257 | 24.297 |
| 2027 | 1,932 | 0.643 | 0.534 | 100.464 | 33.436 | 27.768 |
| 2028 | 1,932 | 0.643 | 0.534 | 113.022 | 37.616 | 31.239 |
| 2029 | 1,932 | 0.643 | 0.534 | 125.580 | 41.795 | 34.710 |

PROGRAM NAME: NEIGHBORHOOD WEATHERIZATION

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 2,040 | 0.690 | 0.573 | 13.261 | 4.485 | 3.724 |
| 2021 | 2,040 | 0.690 | 0.573 | 26.522 | 8.969 | 7.449 |
| 2022 | 2,040 | 0.690 | 0.573 | 39.784 | 13.454 | 11.173 |
| 2023 | 2,040 | 0.690 | 0.573 | 53.045 | 17.938 | 14.898 |
| 2024 | 2,040 | 0.690 | 0.573 | 66.306 | 22.423 | 18.622 |
| 2025 | 2,040 | 0.690 | 0.573 | 79.567 | 26.908 | 22.346 |
| 2026 | 2,040 | 0.690 | 0.573 | 92.829 | 31.392 | 26.071 |
| 2027 | 2,040 | 0.690 | 0.573 | 106.090 | 35.877 | 29.795 |
| 2028 | 2,040 | 0.690 | 0.573 | 119.351 | 40.361 | 33.519 |
| 2029 | 2,040 | 0.690 | 0.573 | 132.612 | 44.846 | 37.244 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Neighborhood Weatherization

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RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 0.643 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 0.621 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 2,047 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 1,932 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 15 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 814.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 0.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 0.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.56** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **27,881** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **0.68** |

TOTAL RESOURCE COST TESTS
PROGRAM: Neighborhood Weatherization



| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 4,884 | 0 | 0 | 4,884 | 0 | 0 | 178 | 0 | 178 | (4,706) | (4,706) |
| 2021 | 0 | 5,001 | 0 | 0 | 5,001 | 0 | 302 | 530 | 0 | 832 | (4,169) | (8,599) |
| 2022 | 0 | 5,121 | 0 | 0 | 5,121 | 0 | 309 | 912 | 0 | 1,221 | (3,900) | (12,001) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 866 | 317 | 1,139 | 0 | 2,322 | 2,322 | (10,110) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 889 | 324 | 1,184 | 0 | 2,397 | 2,397 | (8,286) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 914 | 332 | 1,271 | 0 | 2,518 | 2,518 | (6,498) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 943 | 340 | 1,312 | 0 | 2,595 | 2,595 | (4,777) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 968 | 348 | 1,394 | 0 | 2,710 | 2,710 | (3,098) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 984 | 357 | 1,544 | 0 | 2,885 | 2,885 | (1,429) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 1,011 | 365 | 1,655 | 0 | 3,030 | 3,030 | 209 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 1,027 | 374 | 1,848 | 0 | 3,249 | 3,249 | 1,848 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 1,062 | 383 | 1,841 | 0 | 3,286 | 3,286 | 3,396 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 1,085 | 392 | 2,012 | 0 | 3,489 | 3,489 | 4,932 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 1,123 | 402 | 2,146 | 0 | 3,671 | 3,671 | 6,440 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 1,145 | 411 | 2,246 | 0 | 3,802 | 3,802 | 7,900 |
| NOMINAL | 0 | 15,006 | 0 | 0 | 15,006 | 12,017 | 4,958 | 21,210 | 0 | 38,185 | 23,179 | |
| NPV: | 0 | 14,021 | 0 | 0 | 14,021 | 6,769 | 3,003 | 12,149 | 0 | 21,920 | 7,900 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 1.56

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Neighborhood Weatherization

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 485 | 0 | 0 | 0 | 485 | 0 | 0 | 0 | 0 | 485 | 485 |
| 2021 | 1,486 | 0 | 0 | 0 | 1,486 | 0 | 0 | 0 | 0 | 1,486 | 1,873 |
| 2022 | 2,522 | 0 | 0 | 0 | 2,522 | 0 | 0 | 0 | 0 | 2,522 | 4,072 |
| 2023 | 3,039 | 0 | 0 | 0 | 3,039 | 0 | 0 | 0 | 0 | 3,039 | 6,548 |
| 2024 | 3,112 | 0 | 0 | 0 | 3,112 | 0 | 0 | 0 | 0 | 3,112 | 8,915 |
| 2025 | 3,189 | 0 | 0 | 0 | 3,189 | 0 | 0 | 0 | 0 | 3,189 | 11,181 |
| 2026 | 3,257 | 0 | 0 | 0 | 3,257 | 0 | 0 | 0 | 0 | 3,257 | 13,341 |
| 2027 | 3,342 | 0 | 0 | 0 | 3,342 | 0 | 0 | 0 | 0 | 3,342 | 15,411 |
| 2028 | 3,471 | 0 | 0 | 0 | 3,471 | 0 | 0 | 0 | 0 | 3,471 | 17,419 |
| 2029 | 3,556 | 0 | 0 | 0 | 3,556 | 0 | 0 | 0 | 0 | 3,556 | 19,341 |
| 2030 | 3,695 | 0 | 0 | 0 | 3,695 | 0 | 0 | 0 | 0 | 3,695 | 21,205 |
| 2031 | 3,766 | 0 | 0 | 0 | 3,766 | 0 | 0 | 0 | 0 | 3,766 | 22,979 |
| 2032 | 3,894 | 0 | 0 | 0 | 3,894 | 0 | 0 | 0 | 0 | 3,894 | 24,693 |
| 2033 | 3,950 | 0 | 0 | 0 | 3,950 | 0 | 0 | 0 | 0 | 3,950 | 26,316 |
| 2034 | 4,079 | 0 | 0 | 0 | 4,079 | 0 | 0 | 0 | 0 | 4,079 | 27,881 |
| NOMINAL | 46,843 | 0 | 0 | 0 | 46,843 | 0 | 0 | 0 | 0 | 46,843 | |
| NPV: | 27,881 | 0 | 0 | 0 | 27,881 | 0 | 0 | 0 | 0 | 27,881 | |

In service year of gen unit: 2023 #DIV/0!

RATE IMPACT TEST
PROGRAM: Neighborhood Weatherization

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 4,884 | 0 | 344 | 0 | 5,228 | 178 | 0 | 0 | 0 | 178 | (5,050) | (5050) |
| 2021 | 0 | 5,001 | 0 | 1,043 | 0 | 6,044 | 530 | 302 | 0 | 0 | 832 | (5,212) | (9917) |
| 2022 | 0 | 5,121 | 0 | 1,755 | 0 | 6,876 | 912 | 309 | 0 | 0 | 1,221 | (5,655) | (14849) |
| 2023 | 0 | 0 | 0 | 2,127 | 0 | 2,127 | 2,005 | 317 | 0 | 0 | 2,322 | 195 | (14691) |
| 2024 | 0 | 0 | 0 | 2,149 | 0 | 2,149 | 2,073 | 324 | 0 | 0 | 2,397 | 249 | (14501) |
| 2025 | 0 | 0 | 0 | 2,170 | 0 | 2,170 | 2,185 | 332 | 0 | 0 | 2,518 | 348 | (14254) |
| 2026 | 0 | 0 | 0 | 2,192 | 0 | 2,192 | 2,254 | 340 | 0 | 0 | 2,595 | 403 | (13987) |
| 2027 | 0 | 0 | 0 | 2,214 | 0 | 2,214 | 2,362 | 348 | 0 | 0 | 2,710 | 497 | (13680) |
| 2028 | 0 | 0 | 0 | 2,236 | 0 | 2,236 | 2,528 | 357 | 0 | 0 | 2,885 | 649 | (13304) |
| 2029 | 0 | 0 | 0 | 2,258 | 0 | 2,258 | 2,665 | 365 | 0 | 0 | 3,030 | 772 | (12887) |
| 2030 | 0 | 0 | 0 | 2,281 | 0 | 2,281 | 2,875 | 374 | 0 | 0 | 3,249 | 968 | (12398) |
| 2031 | 0 | 0 | 0 | 2,303 | 0 | 2,303 | 2,903 | 383 | 0 | 0 | 3,286 | 983 | (11935) |
| 2032 | 0 | 0 | 0 | 2,327 | 0 | 2,327 | 3,097 | 392 | 0 | 0 | 3,489 | 1,163 | (11423) |
| 2033 | 0 | 0 | 0 | 2,350 | 0 | 2,350 | 3,269 | 402 | 0 | 0 | 3,671 | 1,321 | (10881) |
| 2034 | 0 | 0 | 0 | 2,373 | 0 | 2,373 | 3,391 | 411 | 0 | 0 | 3,802 | 1,429 | (10332) |
| NOMINAL | 0 | 15,006 | 0 | 30,120 | 0 | 45,127 | 33,227 | 4,958 | 0 | 0 | 38,185 | -6,941 | |
| NPV: | 0 | 14,021 | 0 | 18,232 | 0 | 32,253 | 18,917 | 3,003 | 0 | 0 | 21,920 | -10,332 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 0.68

**Program: Residential Price Responsive Load Management - Energy Planner**

**Program Start Date:** September 2007

**Program Description**

The company's program relies on a multi-tiered rate structure combined with price signals conveyed to participating customers during the day. This price information is designed to encourage customers to make behavioral or equipment usage changes to their energy consumption thereby achieving the desired high cost period load reduction to assist in meeting system peak.

Price information from the utility is used by the customer to program a "smart" thermostat into preset actions based on the level of pricing. Equipment may be turned on, turned off or changed to a different temperature setting automatically by the smart thermostat or manually by the customer through the smart thermostat in response to either the multi-tiered rates or critical price signals.

Tampa Electric will install a communication device along with a "smart" thermostat at the customer's home used to control the operation of selected appliances such as space heating, air conditioning, water heating and pool pumps. Customers will be able to program the operation of this equipment and alter their energy consumption based the price tiers occurring at specific times of the day and year.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

The billing and kWh usage histories of a control group of customers who participated in the Energy Planner program was examined and compared to those of a sample of similar sized customers who did not participate in the program. Customers included in the analysis did not participate in any other DSM programs. Fifteen-minute interval energy consumption data was used between both groups and then verified to have similar energy usage characteristics. Based on this load research data, the analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 2.007 kW |
| Winter Demand: | 3.134 kW |
| Annual Energy: | 1,156 kWh |

**Program Costs**

The estimated recurring rate benefit per participant: $115.

The estimated annual recurring administrative cost per participant is $15.

The estimated one time administrative, installation and setup cost is $896.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: RESIDENTIAL PRICE RESPONSIVE LOAD MANAGEMENT (ENERGY PLANNER)

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 479,385 | 1,000 | 0.2% | 1,000 |
| 2021 | 707,775 | 487,775 | 1,000 | 0.4% | 2,000 |
| 2022 | 720,915 | 495,972 | 1,000 | 0.6% | 3,000 |
| 2023 | 733,874 | 504,044 | 1,000 | 0.8% | 4,000 |
| 2024 | 746,561 | 511,925 | 1,000 | 1.0% | 5,000 |
| 2025 | 758,905 | 519,566 | 1,000 | 1.2% | 6,000 |
| 2026 | 770,920 | 526,976 | 1,000 | 1.3% | 7,000 |
| 2027 | 782,598 | 534,151 | 1,000 | 1.5% | 8,000 |
| 2028 | 793,990 | 541,125 | 1,000 | 1.7% | 9,000 |
| 2029 | 803,878 | 547,047 | 1,000 | 1.8% | 10,000 |

PROGRAM NAME: RESIDENTIAL PRICE RESPONSIVE LOAD MANAGEMENT (ENERGY PLANNER)

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 1,156 | 3.134 | 2.007 | 1.156 | 3.134 | 2.007 |
| 2021 | 1,156 | 3.134 | 2.007 | 2.312 | 6.268 | 4.014 |
| 2022 | 1,156 | 3.134 | 2.007 | 3.468 | 9.402 | 6.021 |
| 2023 | 1,156 | 3.134 | 2.007 | 4.624 | 12.536 | 8.028 |
| 2024 | 1,156 | 3.134 | 2.007 | 5.780 | 15.670 | 10.035 |
| 2025 | 1,156 | 3.134 | 2.007 | 6.936 | 18.804 | 12.042 |
| 2026 | 1,156 | 3.134 | 2.007 | 8.092 | 21.938 | 14.049 |
| 2027 | 1,156 | 3.134 | 2.007 | 9.248 | 25.072 | 16.056 |
| 2028 | 1,156 | 3.134 | 2.007 | 10.404 | 28.206 | 18.063 |
| 2029 | 1,156 | 3.134 | 2.007 | 11.560 | 31.340 | 20.070 |

PROGRAM NAME: RESIDENTIAL PRICE RESPONSIVE LOAD MANAGEMENT (ENERGY PLANNER)

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 1,221 | 3.363 | 2.154 | 1.221 | 3.363 | 2.154 |
| 2021 | 1,221 | 3.363 | 2.154 | 2.441 | 6.726 | 4.307 |
| 2022 | 1,221 | 3.363 | 2.154 | 3.662 | 10.088 | 6.461 |
| 2023 | 1,221 | 3.363 | 2.154 | 4.883 | 13.451 | 8.614 |
| 2024 | 1,221 | 3.363 | 2.154 | 6.104 | 16.814 | 10.768 |
| 2025 | 1,221 | 3.363 | 2.154 | 7.324 | 20.177 | 12.921 |
| 2026 | 1,221 | 3.363 | 2.154 | 8.545 | 23.539 | 15.075 |
| 2027 | 1,221 | 3.363 | 2.154 | 9.766 | 26.902 | 17.228 |
| 2028 | 1,221 | 3.363 | 2.154 | 10.987 | 30.265 | 19.382 |
| 2029 | 1,221 | 3.363 | 2.154 | 12.207 | 32.413 | 21.535 |

## INPUT DATA - PART 1
## PROGRAM TITLE: Residential Energy Planner

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PAGE 1 OF 1
RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 3.134 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 2.498 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 1,225 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 1,156 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 896.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 15.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 0.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 0.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 0.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **3.52** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **3,997** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.98** |

TOTAL RESOURCE COST TESTS
PROGRAM: Residential Energy Planner

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 904 | 0 | 0 | 904 | 0 | 0 | 18 | 0 | 18 | (886) | (886) |
| 2021 | 0 | 941 | 0 | 0 | 941 | 0 | 131 | 53 | 0 | 183 | (757) | (1,593) |
| 2022 | 0 | 979 | 0 | 0 | 979 | 0 | 134 | 91 | 0 | 225 | (754) | (2,251) |
| 2023 | 0 | 48 | 0 | 0 | 48 | 759 | 283 | 114 | 0 | 1,155 | 1,107 | (1,349) |
| 2024 | 0 | 49 | 0 | 0 | 49 | 744 | 282 | 118 | 0 | 1,144 | 1,095 | (517) |
| 2025 | 0 | 51 | 0 | 0 | 51 | 730 | 280 | 127 | 0 | 1,137 | 1,086 | 255 |
| 2026 | 0 | 52 | 0 | 0 | 52 | 718 | 279 | 131 | 0 | 1,128 | 1,076 | 968 |
| 2027 | 0 | 53 | 0 | 0 | 53 | 704 | 279 | 139 | 0 | 1,122 | 1,069 | 1,630 |
| 2028 | 0 | 54 | 0 | 0 | 54 | 685 | 278 | 154 | 0 | 1,117 | 1,062 | 2,245 |
| 2029 | 0 | 56 | 0 | 0 | 56 | 673 | 278 | 165 | 0 | 1,116 | 1,060 | 2,818 |
| 2030 | 0 | 57 | 0 | 0 | 57 | 654 | 277 | 184 | 0 | 1,116 | 1,059 | 3,352 |
| 2031 | 0 | 58 | 0 | 0 | 58 | 648 | 277 | 184 | 0 | 1,109 | 1,050 | 3,847 |
| 2032 | 0 | 60 | 0 | 0 | 60 | 633 | 277 | 201 | 0 | 1,111 | 1,051 | 4,309 |
| 2033 | 0 | 61 | 0 | 0 | 61 | 628 | 277 | 214 | 0 | 1,119 | 1,058 | 4,744 |
| 2034 | 0 | 63 | 0 | 0 | 63 | 611 | 278 | 224 | 0 | 1,113 | 1,050 | 5,147 |
| 2035 | 0 | 64 | 0 | 0 | 64 | 603 | 278 | 247 | 0 | 1,127 | 1,063 | 5,528 |
| 2036 | 0 | 66 | 0 | 0 | 66 | 601 | 278 | 244 | 0 | 1,123 | 1,057 | 5,882 |
| 2037 | 0 | 67 | 0 | 0 | 67 | 588 | 279 | 260 | 0 | 1,127 | 1,060 | 6,213 |
| 2038 | 0 | 69 | 0 | 0 | 69 | 589 | 280 | 261 | 0 | 1,130 | 1,061 | 6,523 |
| 2039 | 0 | 71 | 0 | 0 | 71 | 586 | 282 | 261 | 0 | 1,129 | 1,058 | 6,811 |
| 2040 | 0 | 72 | 0 | 0 | 72 | 602 | 284 | 281 | 0 | 1,167 | 1,094 | 7,090 |
| 2041 | 0 | 74 | 0 | 0 | 74 | 594 | 286 | 290 | 0 | 1,170 | 1,096 | 7,351 |
| 2042 | 0 | 76 | 0 | 0 | 76 | 590 | 289 | 310 | 0 | 1,189 | 1,113 | 7,598 |
| 2043 | 0 | 78 | 0 | 0 | 78 | 591 | 292 | 317 | 0 | 1,200 | 1,122 | 7,830 |
| 2044 | 0 | 80 | 0 | 0 | 80 | 615 | 294 | 305 | 0 | 1,214 | 1,135 | 8,050 |
| NOMINAL | 0 | 4,202 | 0 | 0 | 4,202 | 14,145 | 6,452 | 4,889 | 0 | 25,486 | 21,284 | |
| NPV: | 0 | 3,199 | 0 | 0 | 3,199 | 6,381 | 2,925 | 1,944 | 0 | 11,249 | 8,050 | |
| Discount Rate | | 0.0708 | Benefit/Cost Ratio - [col (11)/col (6)]: | | | | 3.52 | | | | | |

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Residential Energy Planner

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 48 | 0 | 0 | 0 | 48 | 0 | 0 | 0 | 0 | 48 | 48 |
| 2021 | 148 | 0 | 0 | 0 | 148 | 0 | 0 | 0 | 0 | 148 | 187 |
| 2022 | 251 | 0 | 0 | 0 | 251 | 0 | 0 | 0 | 0 | 251 | 406 |
| 2023 | 303 | 0 | 0 | 0 | 303 | 0 | 0 | 0 | 0 | 303 | 653 |
| 2024 | 310 | 0 | 0 | 0 | 310 | 0 | 0 | 0 | 0 | 310 | 889 |
| 2025 | 318 | 0 | 0 | 0 | 318 | 0 | 0 | 0 | 0 | 318 | 1,115 |
| 2026 | 325 | 0 | 0 | 0 | 325 | 0 | 0 | 0 | 0 | 325 | 1,330 |
| 2027 | 333 | 0 | 0 | 0 | 333 | 0 | 0 | 0 | 0 | 333 | 1,537 |
| 2028 | 346 | 0 | 0 | 0 | 346 | 0 | 0 | 0 | 0 | 346 | 1,737 |
| 2029 | 355 | 0 | 0 | 0 | 355 | 0 | 0 | 0 | 0 | 355 | 1,928 |
| 2030 | 368 | 0 | 0 | 0 | 368 | 0 | 0 | 0 | 0 | 368 | 2,114 |
| 2031 | 376 | 0 | 0 | 0 | 376 | 0 | 0 | 0 | 0 | 376 | 2,291 |
| 2032 | 388 | 0 | 0 | 0 | 388 | 0 | 0 | 0 | 0 | 388 | 2,462 |
| 2033 | 394 | 0 | 0 | 0 | 394 | 0 | 0 | 0 | 0 | 394 | 2,624 |
| 2034 | 407 | 0 | 0 | 0 | 407 | 0 | 0 | 0 | 0 | 407 | 2,780 |
| 2035 | 416 | 0 | 0 | 0 | 416 | 0 | 0 | 0 | 0 | 416 | 2,929 |
| 2036 | 425 | 0 | 0 | 0 | 425 | 0 | 0 | 0 | 0 | 425 | 3,071 |
| 2037 | 437 | 0 | 0 | 0 | 437 | 0 | 0 | 0 | 0 | 437 | 3,208 |
| 2038 | 444 | 0 | 0 | 0 | 444 | 0 | 0 | 0 | 0 | 444 | 3,338 |
| 2039 | 454 | 0 | 0 | 0 | 454 | 0 | 0 | 0 | 0 | 454 | 3,462 |
| 2040 | 459 | 0 | 0 | 0 | 459 | 0 | 0 | 0 | 0 | 459 | 3,579 |
| 2041 | 472 | 0 | 0 | 0 | 472 | 0 | 0 | 0 | 0 | 472 | 3,691 |
| 2042 | 485 | 0 | 0 | 0 | 485 | 0 | 0 | 0 | 0 | 485 | 3,799 |
| 2043 | 494 | 0 | 0 | 0 | 494 | 0 | 0 | 0 | 0 | 494 | 3,901 |
| 2044 | 493 | 0 | 0 | 0 | 493 | 0 | 0 | 0 | 0 | 493 | 3,997 |
| NOMINAL | 9,251 | 0 | 0 | 0 | 9,251 | 0 | 0 | 0 | 0 | 9,251 | |
| NPV: | 3,997 | 0 | 0 | 0 | 3,997 | 0 | 0 | 0 | 0 | 3,997 | |

In service year of gen unit: 2023 #DIV/0!

RATE IMPACT TEST
PROGRAM: Residential Energy Planner

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 904 | 0 | 34 | 0 | 938 | 18 | 0 | 0 | 0 | 18 | (920) | (920) |
| 2021 | 0 | 941 | 0 | 104 | 0 | 1,045 | 53 | 131 | 0 | 0 | 183 | (861) | (1724) |
| 2022 | 0 | 979 | 0 | 175 | 0 | 1,154 | 91 | 134 | 0 | 0 | 225 | (929) | (2535) |
| 2023 | 0 | 48 | 0 | 212 | 0 | 260 | 872 | 283 | 0 | 0 | 1,155 | 894 | (1806) |
| 2024 | 0 | 49 | 0 | 214 | 0 | 264 | 862 | 282 | 0 | 0 | 1,144 | 881 | (1136) |
| 2025 | 0 | 51 | 0 | 216 | 0 | 267 | 856 | 280 | 0 | 0 | 1,137 | 870 | (519) |
| 2026 | 0 | 52 | 0 | 219 | 0 | 270 | 848 | 279 | 0 | 0 | 1,128 | 857 | 50 |
| 2027 | 0 | 53 | 0 | 221 | 0 | 274 | 843 | 279 | 0 | 0 | 1,122 | 848 | 575 |
| 2028 | 0 | 54 | 0 | 223 | 0 | 277 | 839 | 278 | 0 | 0 | 1,117 | 839 | 1061 |
| 2029 | 0 | 56 | 0 | 225 | 0 | 281 | 838 | 278 | 0 | 0 | 1,116 | 835 | 1512 |
| 2030 | 0 | 57 | 0 | 227 | 0 | 284 | 838 | 277 | 0 | 0 | 1,116 | 831 | 1931 |
| 2031 | 0 | 58 | 0 | 230 | 0 | 288 | 831 | 277 | 0 | 0 | 1,109 | 821 | 2318 |
| 2032 | 0 | 60 | 0 | 232 | 0 | 292 | 833 | 277 | 0 | 0 | 1,111 | 819 | 2678 |
| 2033 | 0 | 61 | 0 | 234 | 0 | 296 | 842 | 277 | 0 | 0 | 1,119 | 824 | 3017 |
| 2034 | 0 | 63 | 0 | 237 | 0 | 299 | 835 | 278 | 0 | 0 | 1,113 | 814 | 3329 |
| 2035 | 0 | 64 | 0 | 239 | 0 | 303 | 850 | 278 | 0 | 0 | 1,127 | 824 | 3625 |
| 2036 | 0 | 66 | 0 | 241 | 0 | 307 | 844 | 278 | 0 | 0 | 1,123 | 816 | 3898 |
| 2037 | 0 | 67 | 0 | 244 | 0 | 311 | 848 | 279 | 0 | 0 | 1,127 | 816 | 4153 |
| 2038 | 0 | 69 | 0 | 246 | 0 | 315 | 850 | 280 | 0 | 0 | 1,130 | 814 | 4390 |
| 2039 | 0 | 71 | 0 | 249 | 0 | 319 | 847 | 282 | 0 | 0 | 1,129 | 810 | 4611 |
| 2040 | 0 | 72 | 0 | 251 | 0 | 324 | 883 | 284 | 0 | 0 | 1,167 | 843 | 4826 |
| 2041 | 0 | 74 | 0 | 254 | 0 | 328 | 883 | 286 | 0 | 0 | 1,170 | 842 | 5026 |
| 2042 | 0 | 76 | 0 | 256 | 0 | 332 | 900 | 289 | 0 | 0 | 1,189 | 857 | 5216 |
| 2043 | 0 | 78 | 0 | 259 | 0 | 336 | 908 | 292 | 0 | 0 | 1,200 | 863 | 5395 |
| 2044 | 0 | 80 | 0 | 261 | 0 | 341 | 920 | 294 | 0 | 0 | 1,214 | 874 | 5564 |
| NOMINAL | 0 | 4,202 | 0 | 5,504 | 0 | 9,706 | 19,034 | 6,452 | 0 | 0 | 25,486 | 15,780 | |
| NPV: | 0 | 3,199 | 0 | 2,486 | 0 | 5,685 | 8,324 | 2,925 | 0 | 0 | 11,249 | 5,564 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.98

**Program: Residential Prime Time Plus (Residential Load Management)**

**Program Start Date:** TBD

**Program Description**

Tampa Electric's "Prime Time Plus" is a residential load management program designed to alter the company's system load curve by reducing summer and winter demand peaks. Residential loads such as heating, air conditioning, water heaters and pool pumps will be controlled via the company's advanced metering infrastructure ("AMI") when that system fully becomes available. In addition, the customer will receive the same programmable "smart thermostat" and access to the web portal offered in the Energy Planner program. The web portal and "smart thermostat" allow the customer to change thermostat settings from any web connected device. The program will leverage the company's AMI to provide the communication with the installed thermostat and customer selected appliances for load control.

Customers participating in Prime Time Plus will receive monthly incentive credits on their electric bill. Air conditioning and pool pump appliances can be interrupted at any time but will not exceed 88 hours of control in a single year. Water heating appliances can be interrupted at any time and may exceed 88 hours a year if needed for frequency assistance for changes to the company's photovoltaic generation output.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible residential structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 1.933 kW |
| Winter Demand: | 1.890 kW |
| Annual Energy: | 0 kWh |

**Program Costs**

Incentives:

$6.00 per month for central heating and air conditioning control.
$3.00 per month for electric water heating control.
$3.00 per month for pool pump control.

The estimated annual recurring administrative cost per participant is $10.

The estimated one time administrative, installation and setup cost is $864.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: RESIDENTIAL PRIME TIME PLUS

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 0 | 0 | | 0 |
| 2021 | 707,775 | 0 | 0 | | 0 |
| 2022 | 720,915 | 712,247 | 1,000 | 0.1% | 1,000 |
| 2023 | 733,874 | 724,206 | 2,000 | 0.4% | 3,000 |
| 2024 | 746,561 | 735,893 | 2,000 | 0.7% | 5,000 |
| 2025 | 758,905 | 747,237 | 3,000 | 1.1% | 8,000 |
| 2026 | 770,920 | 758,252 | 3,000 | 1.5% | 11,000 |
| 2027 | 782,598 | 768,930 | 4,000 | 2.0% | 15,000 |
| 2028 | 793,990 | 779,322 | 4,000 | 2.4% | 19,000 |
| 2029 | 803,878 | 788,210 | 4,000 | 2.9% | 23,000 |

PROGRAM NAME: RESIDENTIAL PRIME TIME PLUS

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 0 | 1.890 | 1.933 | 0.000 | 0.000 | 0.000 |
| 2021 | 0 | 1.890 | 1.933 | 0.000 | 0.000 | 0.000 |
| 2022 | 0 | 1.890 | 1.933 | 0.000 | 1.890 | 1.933 |
| 2023 | 0 | 1.890 | 1.933 | 0.000 | 5.670 | 5.799 |
| 2024 | 0 | 1.890 | 1.933 | 0.000 | 9.450 | 9.665 |
| 2025 | 0 | 1.890 | 1.933 | 0.000 | 15.120 | 15.464 |
| 2026 | 0 | 1.890 | 1.933 | 0.000 | 20.790 | 21.263 |
| 2027 | 0 | 1.890 | 1.933 | 0.000 | 28.350 | 28.995 |
| 2028 | 0 | 1.890 | 1.933 | 0.000 | 35.910 | 36.727 |
| 2029 | 0 | 1.890 | 1.933 | 0.000 | 43.470 | 44.459 |

PROGRAM NAME: RESIDENTIAL PRIME TIME PLUS

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 0 | 2.028 | 2.074 | 0.000 | 0.000 | 0.000 |
| 2021 | 0 | 2.028 | 2.074 | 0.000 | 0.000 | 0.000 |
| 2022 | 0 | 2.028 | 2.074 | 0.000 | 2.028 | 2.074 |
| 2023 | 0 | 2.028 | 2.074 | 0.000 | 6.084 | 6.222 |
| 2024 | 0 | 2.028 | 2.074 | 0.000 | 10.140 | 10.371 |
| 2025 | 0 | 2.028 | 2.074 | 0.000 | 16.224 | 16.593 |
| 2026 | 0 | 2.028 | 2.074 | 0.000 | 22.308 | 22.815 |
| 2027 | 0 | 2.028 | 2.074 | 0.000 | 30.420 | 31.112 |
| 2028 | 0 | 2.028 | 2.074 | 0.000 | 38.531 | 39.408 |
| 2029 | 0 | 2.028 | 2.074 | 0.000 | 46.643 | 47.705 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Residential Prime Time Plus

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PAGE 1 OF 1
RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 1.933 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 2.148 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 0 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 0 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 864.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 10.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 0.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 0.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 144.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 0.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **2.69** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **1,443** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.05** |

TOTAL RESOURCE COST TESTS
PROGRAM: Residential Prime Time Plus

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2021 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 29 | 29 | 27 |
| 2022 | 0 | 911 | 0 | 0 | 911 | 0 | 29 | 0 | 0 | 29 | (882) | (743) |
| 2023 | 0 | 11 | 0 | 0 | 11 | 217 | 63 | 0 | 0 | 280 | 270 | (523) |
| 2024 | 0 | 11 | 0 | 0 | 11 | 213 | 63 | 0 | 0 | 276 | 265 | (321) |
| 2025 | 0 | 11 | 0 | 0 | 11 | 209 | 62 | 0 | 0 | 271 | 260 | (136) |
| 2026 | 0 | 12 | 0 | 0 | 12 | 206 | 62 | 0 | 0 | 268 | 256 | 33 |
| 2027 | 0 | 12 | 0 | 0 | 12 | 202 | 62 | 0 | 0 | 264 | 252 | 190 |
| 2028 | 0 | 12 | 0 | 0 | 12 | 196 | 62 | 0 | 0 | 258 | 246 | 332 |
| 2029 | 0 | 12 | 0 | 0 | 12 | 193 | 62 | 0 | 0 | 255 | 242 | 463 |
| 2030 | 0 | 13 | 0 | 0 | 13 | 188 | 62 | 0 | 0 | 249 | 236 | 582 |
| 2031 | 0 | 13 | 0 | 0 | 13 | 186 | 61 | 0 | 0 | 247 | 234 | 692 |
| 2032 | 0 | 13 | 0 | 0 | 13 | 181 | 61 | 0 | 0 | 243 | 229 | 793 |
| 2033 | 0 | 14 | 0 | 0 | 14 | 180 | 61 | 0 | 0 | 241 | 228 | 887 |
| 2034 | 0 | 14 | 0 | 0 | 14 | 175 | 61 | 0 | 0 | 237 | 223 | 972 |
| 2035 | 0 | 14 | 0 | 0 | 14 | 173 | 62 | 0 | 0 | 234 | 220 | 1,051 |
| 2036 | 0 | 15 | 0 | 0 | 15 | 172 | 62 | 0 | 0 | 234 | 219 | 1,125 |
| 2037 | 0 | 15 | 0 | 0 | 15 | 169 | 62 | 0 | 0 | 230 | 215 | 1,192 |
| 2038 | 0 | 15 | 0 | 0 | 15 | 169 | 62 | 0 | 0 | 231 | 215 | 1,255 |
| 2039 | 0 | 16 | 0 | 0 | 16 | 168 | 62 | 0 | 0 | 230 | 215 | 1,313 |
| 2040 | 0 | 16 | 0 | 0 | 16 | 172 | 63 | 0 | 0 | 235 | 219 | 1,369 |
| 2041 | 0 | 16 | 0 | 0 | 16 | 170 | 63 | 0 | 0 | 233 | 217 | 1,421 |
| 2042 | 0 | 17 | 0 | 0 | 17 | 169 | 64 | 0 | 0 | 233 | 216 | 1,469 |
| 2043 | 0 | 17 | 0 | 0 | 17 | 169 | 64 | 0 | 0 | 234 | 216 | 1,513 |
| 2044 | 0 | 18 | 0 | 0 | 18 | 176 | 65 | 0 | 0 | 241 | 224 | 1,557 |
| NOMINAL | 0 | 1,218 | 0 | 0 | 1,218 | 4,054 | 1,428 | 0 | 0 | 5,483 | 4,265 | |
| NPV: | 0 | 920 | 0 | 0 | 920 | 1,829 | 648 | 0 | 0 | 2,477 | 1,557 | |
| Discount Rate | | 0.0708 | Benefit/Cost Ratio - [col (11)/col (6)]: | | | | 2.69 | | | | | |

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Residential Prime Time Plus

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2022 | 0 | 0 | 72 | 0 | 72 | 0 | 0 | 0 | 0 | 72 | 63 |
| 2023 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 180 |
| 2024 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 290 |
| 2025 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 392 |
| 2026 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 487 |
| 2027 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 577 |
| 2028 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 660 |
| 2029 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 738 |
| 2030 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 810 |
| 2031 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 878 |
| 2032 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 942 |
| 2033 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,001 |
| 2034 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,056 |
| 2035 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,108 |
| 2036 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,156 |
| 2037 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,201 |
| 2038 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,243 |
| 2039 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,282 |
| 2040 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,319 |
| 2041 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,353 |
| 2042 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,385 |
| 2043 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,415 |
| 2044 | 0 | 0 | 144 | 0 | 144 | 0 | 0 | 0 | 0 | 144 | 1,443 |
| NOMINAL | 0 | 0 | 3,240 | 0 | 3,240 | 0 | 0 | 0 | 0 | 3,240 | |
| NPV: | 0 | 0 | 1,443 | 0 | 1,443 | 0 | 0 | 0 | 0 | 1,443 | |
| In service year of gen unit: | | | 2023 | | #DIV/0! | | | | | | |

RATE IMPACT TEST
PROGRAM: Residential Prime Time Plus

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 29 | 29 | 27 |
| 2022 | 0 | 911 | 72 | 0 | 0 | 983 | 0 | 29 | 0 | 0 | 29 | (954) | (805) |
| 2023 | 0 | 11 | 144 | 0 | 0 | 155 | 217 | 63 | 0 | 0 | 280 | 126 | (703) |
| 2024 | 0 | 11 | 144 | 0 | 0 | 155 | 213 | 63 | 0 | 0 | 276 | 121 | (611) |
| 2025 | 0 | 11 | 144 | 0 | 0 | 155 | 209 | 62 | 0 | 0 | 271 | 116 | (528) |
| 2026 | 0 | 12 | 144 | 0 | 0 | 156 | 206 | 62 | 0 | 0 | 268 | 112 | (454) |
| 2027 | 0 | 12 | 144 | 0 | 0 | 156 | 202 | 62 | 0 | 0 | 264 | 108 | (387) |
| 2028 | 0 | 12 | 144 | 0 | 0 | 156 | 196 | 62 | 0 | 0 | 258 | 102 | (328) |
| 2029 | 0 | 12 | 144 | 0 | 0 | 156 | 193 | 62 | 0 | 0 | 255 | 98 | (275) |
| 2030 | 0 | 13 | 144 | 0 | 0 | 157 | 188 | 62 | 0 | 0 | 249 | 92 | (228) |
| 2031 | 0 | 13 | 144 | 0 | 0 | 157 | 186 | 61 | 0 | 0 | 247 | 90 | (186) |
| 2032 | 0 | 13 | 144 | 0 | 0 | 157 | 181 | 61 | 0 | 0 | 243 | 85 | (148) |
| 2033 | 0 | 14 | 144 | 0 | 0 | 158 | 180 | 61 | 0 | 0 | 241 | 84 | (114) |
| 2034 | 0 | 14 | 144 | 0 | 0 | 158 | 175 | 61 | 0 | 0 | 237 | 79 | (84) |
| 2035 | 0 | 14 | 144 | 0 | 0 | 158 | 173 | 62 | 0 | 0 | 234 | 76 | (56) |
| 2036 | 0 | 15 | 144 | 0 | 0 | 159 | 172 | 62 | 0 | 0 | 234 | 75 | (31) |
| 2037 | 0 | 15 | 144 | 0 | 0 | 159 | 169 | 62 | 0 | 0 | 230 | 71 | (9) |
| 2038 | 0 | 15 | 144 | 0 | 0 | 159 | 169 | 62 | 0 | 0 | 231 | 71 | 12 |
| 2039 | 0 | 16 | 144 | 0 | 0 | 160 | 168 | 62 | 0 | 0 | 230 | 71 | 31 |
| 2040 | 0 | 16 | 144 | 0 | 0 | 160 | 172 | 63 | 0 | 0 | 235 | 75 | 50 |
| 2041 | 0 | 16 | 144 | 0 | 0 | 160 | 170 | 63 | 0 | 0 | 233 | 73 | 68 |
| 2042 | 0 | 17 | 144 | 0 | 0 | 161 | 169 | 64 | 0 | 0 | 233 | 72 | 84 |
| 2043 | 0 | 17 | 144 | 0 | 0 | 161 | 169 | 64 | 0 | 0 | 234 | 72 | 99 |
| 2044 | 0 | 18 | 144 | 0 | 0 | 162 | 176 | 65 | 0 | 0 | 241 | 80 | 114 |
| NOMINAL | 0 | 1,218 | 3,240 | 0 | 0 | 4,458 | 4,054 | 1,428 | 0 | 0 | 5,483 | 1,025 | |
| NPV: | 0 | 920 | 1,443 | 0 | 0 | 2,363 | 1,829 | 648 | 0 | 0 | 2,477 | 114 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.05

**Program: Residential Window Replacement**

**Program Start Date:** March 2008

**Program Description**

The Residential Window Replacement Program is designed to encourage customers to make cost-effective improvements to existing residences. The goal is to offer customer rebates for replacing existing external windows with high performance windows that help reduce their energy consumption while reducing Tampa Electric's weather sensitive peak demand. High performance windows are designed to reduce demand and energy by decreasing the solar heat gain into a residence and in turn, decrease the load on residential air conditioning equipment. Qualifying residential structures are eligible for a rebate based upon the total square footage of exterior windows replaced.

**Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using historical participation characteristics of residences and utilizing DOE2 building simulations for solar heat gain coefficient and U-factor changes. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 0.134 kW |
| Winter Demand: | 0.414 kW |
| Annual Energy: | 235 kWh |

**Program Costs**

Rebate: $0.76 per square foot of qualifying window replacement installed.

The estimated administrative cost per participant is $55.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 941173-EG.

PROGRAM NAME: RESIDENTIAL WINDOW REPLACEMENT

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 694,361 | 645,914 | 1,000 | 0.2% | 1,000 |
| 2021 | 707,775 | 644,914 | 1,000 | 0.3% | 2,000 |
| 2022 | 720,915 | 643,914 | 1,000 | 0.5% | 3,000 |
| 2023 | 733,874 | 642,914 | 1,000 | 0.6% | 4,000 |
| 2024 | 746,561 | 641,914 | 1,000 | 0.8% | 5,000 |
| 2025 | 758,905 | 640,914 | 1,000 | 0.9% | 6,000 |
| 2026 | 770,920 | 639,914 | 1,000 | 1.1% | 7,000 |
| 2027 | 782,598 | 638,914 | 1,000 | 1.3% | 8,000 |
| 2028 | 793,990 | 637,914 | 1,000 | 1.4% | 9,000 |
| 2029 | 803,878 | 636,914 | 1,000 | 1.6% | 10,000 |

PROGRAM NAME: RESIDENTIAL WINDOW REPLACEMENT

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 235 | 0.414 | 0.134 | 0.235 | 0.414 | 0.134 |
| 2021 | 235 | 0.414 | 0.134 | 0.470 | 0.828 | 0.268 |
| 2022 | 235 | 0.414 | 0.134 | 0.705 | 1.242 | 0.402 |
| 2023 | 235 | 0.414 | 0.134 | 0.940 | 1.656 | 0.536 |
| 2024 | 235 | 0.414 | 0.134 | 1.175 | 2.070 | 0.670 |
| 2025 | 235 | 0.414 | 0.134 | 1.410 | 2.484 | 0.804 |
| 2026 | 235 | 0.414 | 0.134 | 1.645 | 2.898 | 0.938 |
| 2027 | 235 | 0.414 | 0.134 | 1.880 | 3.312 | 1.072 |
| 2028 | 235 | 0.414 | 0.134 | 2.115 | 3.726 | 1.206 |
| 2029 | 235 | 0.414 | 0.134 | 2.350 | 4.140 | 1.340 |

PROGRAM NAME: RESIDENTIAL WINDOW REPLACEMENT

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 248 | 0.444 | 0.144 | 0.248 | 0.444 | 0.144 |
| 2021 | 248 | 0.444 | 0.144 | 0.496 | 0.888 | 0.288 |
| 2022 | 248 | 0.444 | 0.144 | 0.744 | 1.333 | 0.431 |
| 2023 | 248 | 0.444 | 0.144 | 0.993 | 1.777 | 0.575 |
| 2024 | 248 | 0.444 | 0.144 | 1.241 | 2.221 | 0.719 |
| 2025 | 248 | 0.444 | 0.144 | 1.489 | 2.665 | 0.863 |
| 2026 | 248 | 0.444 | 0.144 | 1.737 | 3.110 | 1.006 |
| 2027 | 248 | 0.444 | 0.144 | 1.985 | 3.554 | 1.150 |
| 2028 | 248 | 0.444 | 0.144 | 2.233 | 3.998 | 1.294 |
| 2029 | 248 | 0.444 | 0.144 | 2.482 | 4.442 | 1.438 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Residential Window Replacement

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RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 0.414 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 0.213 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.30 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 249 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.60 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 235 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 55.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 431.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 218.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 5.936 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **0.93** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **188** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.02** |

TOTAL RESOURCE COST TESTS
PROGRAM: Residential Window Replacement

PSC FORM CE 2.3
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 55 | 431 | 0 | 486 | 0 | 0 | 4 | 0 | 4 | (482) | (482) |
| 2021 | 0 | 56 | 441 | 0 | 497 | 0 | 16 | 11 | 0 | 27 | (470) | (922) |
| 2022 | 0 | 58 | 451 | 0 | 509 | 0 | 17 | 18 | 0 | 35 | (474) | (1,335) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 65 | 35 | 23 | 0 | 122 | 122 | (1,235) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 64 | 34 | 24 | 0 | 122 | 122 | (1,142) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 62 | 34 | 26 | 0 | 122 | 122 | (1,055) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 61 | 34 | 27 | 0 | 122 | 122 | (974) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 60 | 34 | 28 | 0 | 123 | 123 | (898) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 58 | 34 | 31 | 0 | 124 | 124 | (826) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 57 | 34 | 34 | 0 | 125 | 125 | (759) |
| 2030 | 0 | 0 | 0 | 0 | 0 | 56 | 34 | 37 | 0 | 127 | 127 | (695) |
| 2031 | 0 | 0 | 0 | 0 | 0 | 55 | 34 | 37 | 0 | 127 | 127 | (635) |
| 2032 | 0 | 0 | 0 | 0 | 0 | 54 | 34 | 41 | 0 | 129 | 129 | (578) |
| 2033 | 0 | 0 | 0 | 0 | 0 | 54 | 34 | 43 | 0 | 131 | 131 | (524) |
| 2034 | 0 | 0 | 0 | 0 | 0 | 52 | 34 | 46 | 0 | 132 | 132 | (474) |
| 2035 | 0 | 0 | 0 | 0 | 0 | 51 | 34 | 50 | 0 | 136 | 136 | (425) |
| 2036 | 0 | 0 | 0 | 0 | 0 | 51 | 34 | 50 | 0 | 135 | 135 | (380) |
| 2037 | 0 | 0 | 0 | 0 | 0 | 50 | 34 | 53 | 0 | 137 | 137 | (337) |
| 2038 | 0 | 0 | 0 | 0 | 0 | 50 | 34 | 53 | 0 | 138 | 138 | (297) |
| 2039 | 0 | 0 | 0 | 0 | 0 | 50 | 35 | 53 | 0 | 138 | 138 | (259) |
| 2040 | 0 | 0 | 0 | 0 | 0 | 51 | 35 | 57 | 0 | 144 | 144 | (222) |
| 2041 | 0 | 0 | 0 | 0 | 0 | 51 | 35 | 59 | 0 | 145 | 145 | (188) |
| 2042 | 0 | 0 | 0 | 0 | 0 | 50 | 36 | 63 | 0 | 149 | 149 | (155) |
| 2043 | 0 | 0 | 0 | 0 | 0 | 50 | 36 | 64 | 0 | 151 | 151 | (124) |
| 2044 | 0 | 0 | 0 | 0 | 0 | 53 | 36 | 62 | 0 | 151 | 151 | (94) |
| NOMINAL | 0 | 169 | 1,323 | 0 | 1,492 | 1,208 | 794 | 994 | 0 | 2,996 | 1,504 | |
| NPV: | 0 | 158 | 1,236 | 0 | 1,394 | 545 | 360 | 395 | 0 | 1,300 | -94 | |
| Discount Rate | | 0.0708 | Benefit/Cost Ratio - [col (11)/col (6)]: | | | | 0.93 | | | | | |

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Residential Window Replacement

PSC FORM CE 2.4
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 10 | 0 | 218 | 0 | 228 | 431 | 0 | 0 | 431 | (203) | (203) |
| 2021 | 30 | 0 | 218 | 0 | 248 | 441 | 0 | 0 | 441 | (193) | (383) |
| 2022 | 51 | 0 | 218 | 0 | 269 | 451 | 0 | 0 | 451 | (182) | (542) |
| 2023 | 62 | 0 | 0 | 0 | 62 | 0 | 0 | 0 | 0 | 62 | (492) |
| 2024 | 63 | 0 | 0 | 0 | 63 | 0 | 0 | 0 | 0 | 63 | (444) |
| 2025 | 65 | 0 | 0 | 0 | 65 | 0 | 0 | 0 | 0 | 65 | (398) |
| 2026 | 66 | 0 | 0 | 0 | 66 | 0 | 0 | 0 | 0 | 66 | (354) |
| 2027 | 68 | 0 | 0 | 0 | 68 | 0 | 0 | 0 | 0 | 68 | (312) |
| 2028 | 70 | 0 | 0 | 0 | 70 | 0 | 0 | 0 | 0 | 70 | (271) |
| 2029 | 72 | 0 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 72 | (232) |
| 2030 | 75 | 0 | 0 | 0 | 75 | 0 | 0 | 0 | 0 | 75 | (195) |
| 2031 | 76 | 0 | 0 | 0 | 76 | 0 | 0 | 0 | 0 | 76 | (159) |
| 2032 | 79 | 0 | 0 | 0 | 79 | 0 | 0 | 0 | 0 | 79 | (124) |
| 2033 | 80 | 0 | 0 | 0 | 80 | 0 | 0 | 0 | 0 | 80 | (91) |
| 2034 | 83 | 0 | 0 | 0 | 83 | 0 | 0 | 0 | 0 | 83 | (59) |
| 2035 | 85 | 0 | 0 | 0 | 85 | 0 | 0 | 0 | 0 | 85 | (29) |
| 2036 | 86 | 0 | 0 | 0 | 86 | 0 | 0 | 0 | 0 | 86 | (0) |
| 2037 | 89 | 0 | 0 | 0 | 89 | 0 | 0 | 0 | 0 | 89 | 28 |
| 2038 | 90 | 0 | 0 | 0 | 90 | 0 | 0 | 0 | 0 | 90 | 54 |
| 2039 | 92 | 0 | 0 | 0 | 92 | 0 | 0 | 0 | 0 | 92 | 79 |
| 2040 | 93 | 0 | 0 | 0 | 93 | 0 | 0 | 0 | 0 | 93 | 103 |
| 2041 | 96 | 0 | 0 | 0 | 96 | 0 | 0 | 0 | 0 | 96 | 126 |
| 2042 | 99 | 0 | 0 | 0 | 99 | 0 | 0 | 0 | 0 | 99 | 148 |
| 2043 | 100 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 169 |
| 2044 | 100 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 100 | 188 |
| NOMINAL | 1,881 | 0 | 654 | 0 | 2,535 | 1,323 | 0 | 0 | 1,323 | 1,212 | |
| NPV: | 812 | 0 | 612 | 0 | 1,424 | 1,236 | 0 | 0 | 1,236 | 188 | |
| In service year of gen unit: | | | 2023 | | 1.1520959 | | | | | | |

RATE IMPACT TEST
PROGRAM: Residential Window Replacement

PSC FORM CE 2.5
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 55 | 218 | 7 | 0 | 280 | 4 | 0 | 0 | 0 | 4 | (276) | (276) |
| 2021 | 0 | 56 | 218 | 21 | 0 | 295 | 11 | 16 | 0 | 0 | 27 | (268) | (527) |
| 2022 | 0 | 58 | 218 | 36 | 0 | 311 | 18 | 17 | 0 | 0 | 35 | (276) | (768) |
| 2023 | 0 | 0 | 0 | 43 | 0 | 43 | 88 | 35 | 0 | 0 | 122 | 79 | (703) |
| 2024 | 0 | 0 | 0 | 44 | 0 | 44 | 88 | 34 | 0 | 0 | 122 | 79 | (644) |
| 2025 | 0 | 0 | 0 | 44 | 0 | 44 | 88 | 34 | 0 | 0 | 122 | 78 | (588) |
| 2026 | 0 | 0 | 0 | 44 | 0 | 44 | 88 | 34 | 0 | 0 | 122 | 78 | (536) |
| 2027 | 0 | 0 | 0 | 45 | 0 | 45 | 88 | 34 | 0 | 0 | 123 | 78 | (488) |
| 2028 | 0 | 0 | 0 | 45 | 0 | 45 | 90 | 34 | 0 | 0 | 124 | 79 | (443) |
| 2029 | 0 | 0 | 0 | 46 | 0 | 46 | 91 | 34 | 0 | 0 | 125 | 79 | (400) |
| 2030 | 0 | 0 | 0 | 46 | 0 | 46 | 93 | 34 | 0 | 0 | 127 | 81 | (359) |
| 2031 | 0 | 0 | 0 | 47 | 0 | 47 | 93 | 34 | 0 | 0 | 127 | 80 | (321) |
| 2032 | 0 | 0 | 0 | 47 | 0 | 47 | 95 | 34 | 0 | 0 | 129 | 82 | (285) |
| 2033 | 0 | 0 | 0 | 48 | 0 | 48 | 97 | 34 | 0 | 0 | 131 | 84 | (251) |
| 2034 | 0 | 0 | 0 | 48 | 0 | 48 | 98 | 34 | 0 | 0 | 132 | 84 | (219) |
| 2035 | 0 | 0 | 0 | 49 | 0 | 49 | 102 | 34 | 0 | 0 | 136 | 87 | (188) |
| 2036 | 0 | 0 | 0 | 49 | 0 | 49 | 101 | 34 | 0 | 0 | 135 | 86 | (159) |
| 2037 | 0 | 0 | 0 | 50 | 0 | 50 | 103 | 34 | 0 | 0 | 137 | 88 | (131) |
| 2038 | 0 | 0 | 0 | 50 | 0 | 50 | 103 | 34 | 0 | 0 | 138 | 88 | (106) |
| 2039 | 0 | 0 | 0 | 51 | 0 | 51 | 103 | 35 | 0 | 0 | 138 | 87 | (82) |
| 2040 | 0 | 0 | 0 | 51 | 0 | 51 | 109 | 35 | 0 | 0 | 144 | 92 | (58) |
| 2041 | 0 | 0 | 0 | 52 | 0 | 52 | 110 | 35 | 0 | 0 | 145 | 93 | (36) |
| 2042 | 0 | 0 | 0 | 52 | 0 | 52 | 113 | 36 | 0 | 0 | 149 | 97 | (15) |
| 2043 | 0 | 0 | 0 | 53 | 0 | 53 | 115 | 36 | 0 | 0 | 151 | 98 | 6 |
| 2044 | 0 | 0 | 0 | 53 | 0 | 53 | 114 | 36 | 0 | 0 | 151 | 98 | 25 |
| NOMINAL | 0 | 169 | 654 | 1,119 | 0 | 1,942 | 2,202 | 794 | 0 | 0 | 2,996 | 1,054 | |
| NPV: | 0 | 158 | 612 | 505 | 0 | 1,275 | 940 | 360 | 0 | 0 | 1,300 | 25 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.02

**Program: Commercial/Industrial Audit (Free)**

**Program Start Date:** July 1983

**Program Description**

This is a conservation program designed to reduce demand and energy consumption of commercial/industrial facilities by increasing customer awareness of the energy use in their facilities. The savings are dependent upon the customer's implementation of conservation measures and practices recommended.

The audit is conducted by a trained and certified commercial energy analyst who will perform at a minimum the following:

1. Identify, note and recommend only those conservation measures and practices that apply to the specific commercial or industrial facility.
2. Encourage customer and organization participation in available conservation programs in which the specific commercial or industrial facility will benefit.
3. Energy usage profiling and benchmarking showing the historical energy usage and forecasted usage with no changes.
4. Identify and communicate to the customer identified no-cost, low-cost and capital cost conservation measures and practices including those that have less than a two-year payback.

Recommendations are tailored to the specific commercial or industrial facility based upon the replacement of less efficient equipment and systems or modifications to operations to enhance the customer's overall efficiency. Recommendations are primarily standardized and encourage the customer to implement measures that, if cost-effective, move the customer beyond the efficiency level typically installed in the marketplace.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

The kWh billing histories of customers who received these audits were examined in comparison to those of matched customers without audits. Customers included in the analysis did not participate in any other DSM programs. Consumption before and after the audit was compared for both sets of customers to estimate the impact associated with the audit. Based on this load research data, the analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 0.093 kW |
| Winter Demand: | 0.094 kW |
| Annual Energy: | 817 kWh |

Note: As approved on August 11, 2015 in Docket 20150081-EG, Order No. PSC-2015-0323-PAA-EG, the company will not count the energy or demand savings from this

program toward contributions toward meeting Tampa Electric's Commission approved annual energy and demand saving's goals.

**Program Costs**

Based on historical costs, the administrative cost per audit is estimated to be $293. There are no rebates or incentives for this program.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: COMMERCIAL/INDUSTRIAL AUDIT (FREE)

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 87,232 | 800 | 0.9% | 800 |
| 2021 | 87,751 | 87,751 | 800 | 1.8% | 1,600 |
| 2022 | 88,348 | 88,348 | 800 | 2.7% | 2,400 |
| 2023 | 89,098 | 89,098 | 800 | 3.6% | 3,200 |
| 2024 | 89,793 | 89,793 | 800 | 4.5% | 4,000 |
| 2025 | 90,348 | 90,348 | 800 | 5.3% | 4,800 |
| 2026 | 90,824 | 90,824 | 800 | 6.2% | 5,600 |
| 2027 | 91,307 | 91,307 | 800 | 7.0% | 6,400 |
| 2028 | 91,824 | 91,824 | 800 | 7.8% | 7,200 |
| 2029 | 92,364 | 92,364 | 800 | 8.7% | 8,000 |

PROGRAM NAME: COMMERCIAL/INDUSTRIAL AUDIT (FREE)

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 817 | 0.094 | 0.093 | 0.572 | 0.066 | 0.065 |
| 2021 | 817 | 0.094 | 0.093 | 1.144 | 0.132 | 0.130 |
| 2022 | 817 | 0.094 | 0.093 | 1.757 | 0.202 | 0.200 |
| 2023 | 817 | 0.094 | 0.093 | 2.410 | 0.277 | 0.274 |
| 2024 | 817 | 0.094 | 0.093 | 3.064 | 0.353 | 0.349 |
| 2025 | 817 | 0.094 | 0.093 | 3.717 | 0.428 | 0.423 |
| 2026 | 817 | 0.094 | 0.093 | 4.371 | 0.503 | 0.498 |
| 2027 | 817 | 0.094 | 0.093 | 5.025 | 0.578 | 0.572 |
| 2028 | 817 | 0.094 | 0.093 | 5.678 | 0.653 | 0.646 |
| 2029 | 817 | 0.094 | 0.093 | 6.332 | 0.729 | 0.721 |

PROGRAM NAME: COMMERCIAL/INDUSTRIAL AUDIT (FREE)

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 859 | 0.101 | 0.100 | 0.602 | 0.070 | 0.070 |
| 2021 | 859 | 0.101 | 0.100 | 1.203 | 0.141 | 0.139 |
| 2022 | 859 | 0.101 | 0.100 | 1.848 | 0.216 | 0.214 |
| 2023 | 859 | 0.101 | 0.100 | 2.535 | 0.297 | 0.294 |
| 2024 | 859 | 0.101 | 0.100 | 3.223 | 0.377 | 0.373 |
| 2025 | 859 | 0.101 | 0.100 | 3.911 | 0.458 | 0.453 |
| 2026 | 859 | 0.101 | 0.100 | 4.598 | 0.538 | 0.532 |
| 2027 | 859 | 0.101 | 0.100 | 5.286 | 0.619 | 0.612 |
| 2028 | 859 | 0.101 | 0.100 | 5.973 | 0.699 | 0.692 |
| 2029 | 859 | 0.101 | 0.100 | 6.661 | 0.779 | 0.771 |

**Program: Comprehensive Commercial/Industrial Audit (Paid)**

**Program Start Date:** May 1981

**Program Description**

This is a conservation program designed to reduce demand and energy consumption of commercial/industrial facilities by increasing customer awareness of the energy use in their facilities. The paid audit will involve monitoring specific equipment within a customer's facility to determine its electric usage with respect to the volume of use and time of operation. Based on the results, Tampa Electric will recommend conservation measure or practice changes to save energy and/or demand within the facility. The savings are dependent upon the customer's implementation of conservation measures and practices recommended.

The audit is conducted by a trained and certified commercial energy analyst who will perform the following at a minimum:

1. Identify, note and recommend only those conservation measures and practices that apply to the specific commercial or industrial facility.
2. Encourage customer and organization participation in available conservation programs in which the specific commercial or industrial facility will benefit.
3. Energy usage profiling and benchmarking showing the historical energy usage and forecasted usage with no changes.
4. Set up energy and demand monitoring equipment on requested equipment.
5. Identify and communicate to the customer identified no-cost, low-cost and capital cost conservation measures and practices including those that have less than a two-year payback.
6. Provide a measurement and verification report showing the current usage and identifying the potential for energy and demand savings for the recommended conservation measures or practices recommended.

Recommendations are tailored to the specific commercial or industrial facility based upon the replacement of less efficient equipment and systems or modifications to operations to enhance the customer's overall efficiency. Recommendations are primarily standardized and encourage the customer to implement measures that, if cost-effective, move the customer beyond the efficiency level typically installed in the marketplace.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings for the Comprehensive Commercial/Industrial Audit are assumed to be the same as the Free Commercial/Industrial Audit due to the limited number of paid audits completed since the last evaluation.

Summer Demand: 0.093 kW

Winter Demand: 0.094 kW
Annual Energy: 817 kWh

Note: As approved on August 11, 2015 in Docket 20150081-EG, Order No. PSC-2015-0323-PAA-EG, the company will not count the energy or demand savings from this program toward contributions toward meeting Tampa Electric's Commission approved annual energy and demand saving's goals.

**Program Costs**

Based on experience, the administrative cost per audit is estimated to be $806. There are no rebates or incentives for this program.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: COMPREHENSIVE COMMERCIAL/INDUSTRIAL AUDIT (PAID)

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 87,232 | 4 | 0.00% | 4 |
| 2021 | 87,751 | 87,751 | 4 | 0.01% | 8 |
| 2022 | 88,348 | 88,348 | 4 | 0.01% | 12 |
| 2023 | 89,098 | 89,098 | 4 | 0.02% | 16 |
| 2024 | 89,793 | 89,793 | 4 | 0.02% | 20 |
| 2025 | 90,348 | 90,348 | 4 | 0.03% | 24 |
| 2026 | 90,824 | 90,824 | 4 | 0.03% | 28 |
| 2027 | 91,307 | 91,307 | 4 | 0.04% | 32 |
| 2028 | 91,824 | 91,824 | 4 | 0.04% | 36 |
| 2029 | 92,364 | 92,364 | 4 | 0.04% | 40 |

PROGRAM NAME: COMPREHENSIVE COMMERCIAL/INDUSTRIAL AUDIT (PAID)

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 817 | 0.094 | 0.093 | 0.003 | 0.000 | 0.000 |
| 2021 | 817 | 0.094 | 0.093 | 0.007 | 0.001 | 0.001 |
| 2022 | 817 | 0.094 | 0.093 | 0.010 | 0.001 | 0.001 |
| 2023 | 817 | 0.094 | 0.093 | 0.013 | 0.002 | 0.001 |
| 2024 | 817 | 0.094 | 0.093 | 0.016 | 0.002 | 0.002 |
| 2025 | 817 | 0.094 | 0.093 | 0.020 | 0.002 | 0.002 |
| 2026 | 817 | 0.094 | 0.093 | 0.023 | 0.003 | 0.003 |
| 2027 | 817 | 0.094 | 0.093 | 0.026 | 0.003 | 0.003 |
| 2028 | 817 | 0.094 | 0.093 | 0.029 | 0.003 | 0.003 |
| 2029 | 817 | 0.094 | 0.093 | 0.033 | 0.004 | 0.004 |

PROGRAM NAME: COMPREHENSIVE COMMERCIAL/INDUSTRIAL AUDIT (PAID)

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 859 | 0.101 | 0.100 | 0.003 | 0.000 | 0.000 |
| 2021 | 859 | 0.101 | 0.100 | 0.007 | 0.001 | 0.001 |
| 2022 | 859 | 0.101 | 0.100 | 0.010 | 0.001 | 0.001 |
| 2023 | 859 | 0.101 | 0.100 | 0.014 | 0.002 | 0.002 |
| 2024 | 859 | 0.101 | 0.100 | 0.017 | 0.002 | 0.002 |
| 2025 | 859 | 0.101 | 0.100 | 0.021 | 0.002 | 0.002 |
| 2026 | 859 | 0.101 | 0.100 | 0.024 | 0.003 | 0.003 |
| 2027 | 859 | 0.101 | 0.100 | 0.028 | 0.003 | 0.003 |
| 2028 | 859 | 0.101 | 0.100 | 0.031 | 0.004 | 0.004 |
| 2029 | 859 | 0.101 | 0.100 | 0.034 | 0.004 | 0.004 |

**Program: Commercial Chiller**

**Program Start Date:** March 2008

**Program Description**

The Commercial Chiller Program is designed to encourage commercial/industrial customers to make cost-effective improvements to existing facilities and processes. The goal is to offer customer rebates for installing high efficiency electric water-cooled chillers and electric air-cooled chillers that exceed Florida's Building Code and minimum product manufacturing standards in commercial/industrial buildings or processes to help reduce their energy consumption and demand while reducing Tampa Electric's weather sensitive peak demand. High efficiency chillers reduce demand and energy by decreasing the load on air conditioning and heating equipment or process cooling equipment during weather sensitive peak demand times.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible commercial structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 6.162 kW |
| Winter Demand: | 2.475 kW |
| Annual Energy: | 17,863 kWh |

**Program Costs**

Rebate: $50 per kW reduced over the baseline.

The estimated administrative cost per participant is $225.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: COMMERCIAL CHILLER

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 9,247 | 5 | 0.0% | 5 |
| 2021 | 87,751 | 9,302 | 5 | 0.0% | 10 |
| 2022 | 88,348 | 9,365 | 5 | 0.2% | 15 |
| 2023 | 89,098 | 9,444 | 5 | 0.2% | 20 |
| 2024 | 89,793 | 9,518 | 5 | 0.3% | 25 |
| 2025 | 90,348 | 9,577 | 5 | 0.3% | 30 |
| 2026 | 90,824 | 9,627 | 5 | 0.4% | 35 |
| 2027 | 91,307 | 9,679 | 5 | 0.4% | 40 |
| 2028 | 91,824 | 9,733 | 5 | 0.5% | 45 |
| 2029 | 92,364 | 9,791 | 5 | 0.5% | 50 |

PROGRAM NAME: COMMERCIAL CHILLER

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 17,863 | 2.475 | 6.162 | 0.089 | 0.012 | 0.031 |
| 2021 | 17,863 | 2.475 | 6.162 | 0.179 | 0.025 | 0.062 |
| 2022 | 17,863 | 2.475 | 6.162 | 0.268 | 0.037 | 0.092 |
| 2023 | 17,863 | 2.475 | 6.162 | 0.357 | 0.050 | 0.123 |
| 2024 | 17,863 | 2.475 | 6.162 | 0.447 | 0.062 | 0.154 |
| 2025 | 17,863 | 2.475 | 6.162 | 0.536 | 0.074 | 0.185 |
| 2026 | 17,863 | 2.475 | 6.162 | 0.625 | 0.087 | 0.216 |
| 2027 | 17,863 | 2.475 | 6.162 | 0.715 | 0.099 | 0.246 |
| 2028 | 17,863 | 2.475 | 6.162 | 0.804 | 0.111 | 0.277 |
| 2029 | 17,863 | 2.475 | 6.162 | 0.893 | 0.124 | 0.308 |

PROGRAM NAME: COMMERCIAL CHILLER

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 18,792 | 2.648 | 6.593 | 0.094 | 0.013 | 0.033 |
| 2021 | 18,792 | 2.648 | 6.593 | 0.188 | 0.026 | 0.066 |
| 2022 | 18,792 | 2.648 | 6.593 | 0.282 | 0.040 | 0.099 |
| 2023 | 18,792 | 2.648 | 6.593 | 0.376 | 0.053 | 0.132 |
| 2024 | 18,792 | 2.648 | 6.593 | 0.470 | 0.066 | 0.165 |
| 2025 | 18,792 | 2.648 | 6.593 | 0.564 | 0.079 | 0.198 |
| 2026 | 18,792 | 2.648 | 6.593 | 0.658 | 0.093 | 0.231 |
| 2027 | 18,792 | 2.648 | 6.593 | 0.752 | 0.106 | 0.264 |
| 2028 | 18,792 | 2.648 | 6.593 | 0.846 | 0.119 | 0.297 |
| 2029 | 18,792 | 2.648 | 6.593 | 0.940 | 0.132 | 0.330 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Commercial Chiller

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**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 6.162 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 6.021 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 18,843 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 17,863 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 20 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 225.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 6,800.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 3025.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.090 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **2.22** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **214** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.03** |

TOTAL RESOURCE COST TESTS
PROGRAM: Commercial Chiller

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 1 | 34 | 0 | 35 | 0 | 0 | 1 | 0 | 1 | (34) | (34) |
| 2021 | 0 | 1 | 35 | 0 | 36 | 0 | 2 | 4 | 0 | 6 | (29) | (61) |
| 2022 | 0 | 1 | 36 | 0 | 37 | 0 | 2 | 7 | 0 | 9 | (27) | (85) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 7 | 3 | 9 | 0 | 18 | 18 | (70) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 7 | 3 | 9 | 0 | 19 | 19 | (56) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 7 | 3 | 10 | 0 | 20 | 20 | (42) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 8 | 3 | 10 | 0 | 20 | 20 | (28) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 8 | 3 | 11 | 0 | 21 | 21 | (15) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 8 | 3 | 12 | 0 | 23 | 23 | (2) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 8 | 3 | 13 | 0 | 24 | 24 | 11 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 8 | 3 | 14 | 0 | 25 | 25 | 24 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 14 | 0 | 26 | 26 | 36 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 15 | 0 | 27 | 27 | 48 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 16 | 0 | 29 | 29 | 60 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 17 | 0 | 30 | 30 | 71 |
| 2035 | 0 | 0 | 0 | 0 | 0 | 10 | 3 | 19 | 0 | 32 | 32 | 82 |
| 2036 | 0 | 0 | 0 | 0 | 0 | 10 | 3 | 19 | 0 | 32 | 32 | 93 |
| 2037 | 0 | 0 | 0 | 0 | 0 | 10 | 4 | 20 | 0 | 34 | 34 | 104 |
| 2038 | 0 | 0 | 0 | 0 | 0 | 10 | 4 | 20 | 0 | 34 | 34 | 114 |
| 2039 | 0 | 0 | 0 | 0 | 0 | 11 | 4 | 20 | 0 | 35 | 35 | 123 |
| NOMINAL | 0 | 3 | 104 | 0 | 108 | 148 | 57 | 261 | 0 | 465 | 358 | |
| NPV: | 0 | 3 | 98 | 0 | 101 | 70 | 30 | 124 | 0 | 224 | 123 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 2.22

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Commercial Chiller

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 4 | 0 | 15 | 0 | 19 | 34 | 0 | 0 | 34 | (15) | (15) |
| 2021 | 12 | 0 | 15 | 0 | 27 | 35 | 0 | 0 | 35 | (8) | (23) |
| 2022 | 20 | 0 | 15 | 0 | 35 | 36 | 0 | 0 | 36 | (1) | (23) |
| 2023 | 24 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 24 | (4) |
| 2024 | 24 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 24 | 14 |
| 2025 | 25 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 25 | 32 |
| 2026 | 25 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 25 | 48 |
| 2027 | 26 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 26 | 64 |
| 2028 | 27 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 27 | 80 |
| 2029 | 28 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 28 | 95 |
| 2030 | 29 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 29 | 109 |
| 2031 | 29 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 29 | 123 |
| 2032 | 30 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 136 |
| 2033 | 31 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 31 | 149 |
| 2034 | 32 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 32 | 161 |
| 2035 | 32 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 32 | 173 |
| 2036 | 33 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 33 | 184 |
| 2037 | 34 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | 34 | 194 |
| 2038 | 35 | 0 | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 35 | 204 |
| 2039 | 35 | 0 | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 35 | 214 |
| NOMINAL | 532 | 0 | 45 | 0 | 578 | 104 | 0 | 0 | 104 | 473 | |
| NPV: | 269 | 0 | 42 | 0 | 312 | 98 | 0 | 0 | 98 | 214 | |

In service year of gen unit: 2023 3.1951304

RATE IMPACT TEST
PROGRAM: Commercial Chiller

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 1 | 15 | 3 | 0 | 19 | 1 | 0 | 0 | 0 | 1 | (18) | (18) |
| 2021 | 0 | 1 | 15 | 8 | 0 | 24 | 4 | 2 | 0 | 0 | 6 | (18) | (34) |
| 2022 | 0 | 1 | 15 | 14 | 0 | 30 | 7 | 2 | 0 | 0 | 9 | (20) | (52) |
| 2023 | 0 | 0 | 0 | 17 | 0 | 17 | 16 | 3 | 0 | 0 | 18 | 2 | (51) |
| 2024 | 0 | 0 | 0 | 17 | 0 | 17 | 16 | 3 | 0 | 0 | 19 | 2 | (49) |
| 2025 | 0 | 0 | 0 | 17 | 0 | 17 | 17 | 3 | 0 | 0 | 20 | 3 | (47) |
| 2026 | 0 | 0 | 0 | 17 | 0 | 17 | 18 | 3 | 0 | 0 | 20 | 3 | (45) |
| 2027 | 0 | 0 | 0 | 17 | 0 | 17 | 18 | 3 | 0 | 0 | 21 | 4 | (42) |
| 2028 | 0 | 0 | 0 | 17 | 0 | 17 | 20 | 3 | 0 | 0 | 23 | 5 | (39) |
| 2029 | 0 | 0 | 0 | 18 | 0 | 18 | 21 | 3 | 0 | 0 | 24 | 6 | (36) |
| 2030 | 0 | 0 | 0 | 18 | 0 | 18 | 22 | 3 | 0 | 0 | 25 | 8 | (32) |
| 2031 | 0 | 0 | 0 | 18 | 0 | 18 | 23 | 3 | 0 | 0 | 26 | 8 | (28) |
| 2032 | 0 | 0 | 0 | 18 | 0 | 18 | 24 | 3 | 0 | 0 | 27 | 9 | (24) |
| 2033 | 0 | 0 | 0 | 18 | 0 | 18 | 26 | 3 | 0 | 0 | 29 | 10 | (20) |
| 2034 | 0 | 0 | 0 | 18 | 0 | 18 | 26 | 3 | 0 | 0 | 30 | 11 | (16) |
| 2035 | 0 | 0 | 0 | 19 | 0 | 19 | 28 | 3 | 0 | 0 | 32 | 13 | (11) |
| 2036 | 0 | 0 | 0 | 19 | 0 | 19 | 29 | 3 | 0 | 0 | 32 | 13 | (7) |
| 2037 | 0 | 0 | 0 | 19 | 0 | 19 | 30 | 4 | 0 | 0 | 34 | 15 | (2) |
| 2038 | 0 | 0 | 0 | 19 | 0 | 19 | 31 | 4 | 0 | 0 | 34 | 15 | 2 |
| 2039 | 0 | 0 | 0 | 19 | 0 | 19 | 31 | 4 | 0 | 0 | 35 | 15 | 6 |
| NOMINAL | 0 | 3 | 45 | 329 | 0 | 378 | 408 | 57 | 0 | 0 | 465 | 87 | |
| NPV: | 0 | 3 | 42 | 172 | 0 | 217 | 194 | 30 | 0 | 0 | 224 | 6 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.03

**Program: Cogeneration**

**Program Start Date:** January 1981

**Program Description**

Tampa Electric's Cogeneration program is administered by a professional team experienced in working with cogenerators. The group manages functions related to coordination with Qualifying Facilities ("QFs") including negotiations, agreements and informational requests; functions related to governmental, regulatory and legislative bodies; research, development, data acquisition and analysis; economic evaluations of existing and proposed QFs as well as the preparation of Tampa Electric's Annual Twenty-Year Cogeneration Forecast.

The Cogeneration team leads Tampa Electric's involvement with prospective cogeneration projects that may be developed within the company's retail service area. This involvement includes developing and providing interconnection cost estimates, determining appropriate relaying schemes, establishing operation and maintenance procedures and negotiating purchase power and transmission service agreement when appropriate.

**Program Activities**

A detailed description of the activities conducted under the Cogeneration program is listed below.

- Plan, develop and assist in administering and implementing corporate and FPSC policies and regulations in areas related to cogeneration activities.

- Provide consultation, data and other specific information daily to cogeneration customers, consultants, industry executives, FPSC and other governmental agencies, developers, other utilities and various media publications regarding cogeneration policies, FPSC rules, avoided cost rates and other related criteria.

- Prepare testimony and represent Tampa Electric at hearings, rulemaking and workshop sessions, and specific tariff activities before the FPSC and other governmental agencies.

- Conduct research and development, data acquisition and economic analyses that provide reliable criteria upon which to evaluate the feasibility of cogeneration and small power production facilities.

- Prepare and issue monthly correspondence to cogeneration customers which includes a payment statement, hour-by-hour energy payment rates for preliminary and final energy payments, identification of hourly differences between preliminary and final energy payments and early capacity payment accrual accounts.

- Obtain appropriate initial and subsequent renewal Certificates of Insurance for each cogeneration customer interconnected with Tampa Electric and for each

cogeneration customer under contract with the company, sufficient to cover the customer's liability with the company.

- Prepare monthly and quarterly reports of cogeneration activities, avoided costs, etc., for submittal to the FPSC.

- Review monthly O&M bills for a customer's substation and transmission interconnections with the company.

- Determine if each customer's monthly contract standby demand level remains appropriate, and when ratcheted, the new level does not exceed the customer's generator capacity.

- Direct communications and develop the negotiations and final contractual language for interconnection, operating and transmission service agreements with cogeneration and small power production facilities.

- Assist the company's engineering and maintenance personnel with cogeneration maintenance procedures and cost estimates.

- Coordinate all cogeneration-related activities with other company departments.

- Develop the company's forecast of annual sales to cogeneration customers.

- Serve as a resource for budgeting non-fuel revenues from cogeneration customers for transmission service transactions, O&M on interconnected facilities and standby service from the company.

- Prepare and distribute the company's Twenty-Year Cogeneration Forecast.

**Program Costs**

Program costs are estimated on an annual basis and are integral to the company's annual ECCR Projection Filings. Actual expenses are reported in the annual ECCR True-Up Filings and subject to FPSC audits.

**Program: Conservation Value**

**Program Start Date:** April 1991

**Program Description**

The Conservation Value Program is designed to encourage commercial/industrial customers to make cost-effective improvements to existing facilities. This rebate program is designed to recognize those investments in demand shifting or demand reduction measures that reduce Tampa Electric's peak demand. Measures funded in this program will not be covered under any other Tampa Electric commercial/industrial conservation programs. Candidates are identified through energy audits or their engineering consultants can submit proposals for funding which offer demand and energy reduction during weather sensitive peak periods helping reduce Tampa Electric's peak demand.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Demand and energy savings were obtained using historical data collected from rebate submittals. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 185.140 kW |
| Winter Demand: | 0.000 kW |
| Annual Energy: | 19,244 kWh |

**Program Costs**

Rebate: up to a maximum of $92 per kW reduced over the baseline. The actual rebate will be based upon following the FPSC cost-effectiveness methodology for the specific project maintaining RIM and PCT values equal to or greater than 1.00.

The estimated administrative cost per participant is $2,200.

**Program Monitoring and Evaluation**

The measures evaluated in this program are specific to each participant. Because of this, every Conservation Value participant is evaluated on a case by case basis, including verification of savings.

Customers and/or their consultants are responsible for justifying their demand and energy savings estimates. Tampa Electric will advise the customer of any special metering requirements when conservation measure(s) are submitted for review. If the company does require special metering, the customer will include such provision in the design of the measure. The company may choose to furnish and install metering

equipment. The customer may also be requested to assist in data collection for complex measures.

PROGRAM NAME: CONSERVATION VALUE

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 87,232 | 1 | 0.0% | 1 |
| 2021 | 87,751 | 87,751 | 1 | 0.0% | 2 |
| 2022 | 88,348 | 88,348 | 1 | 0.0% | 3 |
| 2023 | 89,098 | 89,098 | 1 | 0.0% | 4 |
| 2024 | 89,793 | 89,793 | 1 | 0.0% | 5 |
| 2025 | 90,348 | 90,348 | 1 | 0.0% | 6 |
| 2026 | 90,824 | 90,824 | 1 | 0.0% | 7 |
| 2027 | 91,307 | 91,307 | 1 | 0.0% | 8 |
| 2028 | 91,824 | 91,824 | 1 | 0.0% | 9 |
| 2029 | 92,364 | 92,364 | 1 | 0.0% | 10 |

PROGRAM NAME: CONSERVATION VALUE

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 19,244 | 0.000 | 185.140 | 0.019 | 0.000 | 0.185 |
| 2021 | 19,244 | 0.000 | 185.140 | 0.038 | 0.000 | 0.370 |
| 2022 | 19,244 | 0.000 | 185.140 | 0.058 | 0.000 | 0.555 |
| 2023 | 19,244 | 0.000 | 185.140 | 0.077 | 0.000 | 0.741 |
| 2024 | 19,244 | 0.000 | 185.140 | 0.096 | 0.000 | 0.926 |
| 2025 | 19,244 | 0.000 | 185.140 | 0.115 | 0.000 | 1.111 |
| 2026 | 19,244 | 0.000 | 185.140 | 0.135 | 0.000 | 1.296 |
| 2027 | 19,244 | 0.000 | 185.140 | 0.154 | 0.000 | 1.481 |
| 2028 | 19,244 | 0.000 | 185.140 | 0.173 | 0.000 | 1.666 |
| 2029 | 19,244 | 0.000 | 185.140 | 0.192 | 0.000 | 1.851 |

PROGRAM NAME: CONSERVATION VALUE

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 20,245 | 0.000 | 198.100 | 0.020 | 0.000 | 0.198 |
| 2021 | 20,245 | 0.000 | 198.100 | 0.040 | 0.000 | 0.396 |
| 2022 | 20,245 | 0.000 | 198.100 | 0.061 | 0.000 | 0.594 |
| 2023 | 20,245 | 0.000 | 198.100 | 0.081 | 0.000 | 0.792 |
| 2024 | 20,245 | 0.000 | 198.100 | 0.101 | 0.000 | 0.990 |
| 2025 | 20,245 | 0.000 | 198.100 | 0.121 | 0.000 | 1.189 |
| 2026 | 20,245 | 0.000 | 198.100 | 0.142 | 0.000 | 1.387 |
| 2027 | 20,245 | 0.000 | 198.100 | 0.162 | 0.000 | 1.585 |
| 2028 | 20,245 | 0.000 | 198.100 | 0.182 | 0.000 | 1.783 |
| 2029 | 20,245 | 0.000 | 198.100 | 0.202 | 0.000 | 1.981 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Conservation Value

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**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 185.140 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 164.021 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 20,300 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 19,244 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 2,200.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 110,346.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 17099.40 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.090 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 0.69 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.94** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **330** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.00** |

TOTAL RESOURCE COST TESTS
PROGRAM: Conservation Value

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 2 | 110 | 0 | 113 | 0 | 0 | 0 | 0 | 0 | (112) | (112) |
| 2021 | 0 | 2 | 113 | 0 | 115 | 0 | 8 | 1 | 0 | 9 | (106) | (212) |
| 2022 | 0 | 2 | 115 | 0 | 118 | 0 | 8 | 2 | 0 | 10 | (108) | (306) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 50 | 17 | 2 | 0 | 69 | 69 | (250) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 49 | 17 | 2 | 0 | 68 | 68 | (198) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 48 | 17 | 2 | 0 | 67 | 67 | (151) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 47 | 17 | 2 | 0 | 66 | 66 | (107) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 46 | 17 | 2 | 0 | 65 | 65 | (66) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 45 | 17 | 3 | 0 | 64 | 64 | (29) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 44 | 17 | 3 | 0 | 64 | 64 | 5 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 43 | 17 | 3 | 0 | 63 | 63 | 37 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 43 | 17 | 3 | 0 | 62 | 62 | 66 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 42 | 17 | 3 | 0 | 62 | 62 | 93 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 41 | 17 | 4 | 0 | 62 | 62 | 119 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 40 | 17 | 4 | 0 | 61 | 61 | 142 |
| 2035 | 0 | 0 | 0 | 0 | 0 | 40 | 17 | 4 | 0 | 60 | 60 | 164 |
| 2036 | 0 | 0 | 0 | 0 | 0 | 39 | 17 | 4 | 0 | 60 | 60 | 184 |
| 2037 | 0 | 0 | 0 | 0 | 0 | 39 | 17 | 4 | 0 | 60 | 60 | 202 |
| 2038 | 0 | 0 | 0 | 0 | 0 | 39 | 17 | 4 | 0 | 60 | 60 | 220 |
| 2039 | 0 | 0 | 0 | 0 | 0 | 38 | 17 | 4 | 0 | 60 | 60 | 236 |
| 2040 | 0 | 0 | 0 | 0 | 0 | 40 | 17 | 5 | 0 | 61 | 61 | 252 |
| 2041 | 0 | 0 | 0 | 0 | 0 | 39 | 17 | 5 | 0 | 61 | 61 | 266 |
| 2042 | 0 | 0 | 0 | 0 | 0 | 39 | 17 | 5 | 0 | 61 | 61 | 280 |
| 2043 | 0 | 0 | 0 | 0 | 0 | 39 | 18 | 5 | 0 | 62 | 62 | 293 |
| 2044 | 0 | 0 | 0 | 0 | 0 | 40 | 18 | 5 | 0 | 63 | 63 | 305 |
| NOMINAL | 0 | 7 | 339 | 0 | 345 | 929 | 389 | 81 | 0 | 1,399 | 1,054 | |
| NPV: | 0 | 6 | 316 | 0 | 323 | 419 | 177 | 32 | 0 | 628 | 305 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 1.94

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Conservation Value



| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 8 | 0 | 17 | 0 | 25 | 110 | 0 | 0 | 110 | (85) | (85) |
| 2021 | 25 | 0 | 17 | 0 | 42 | 113 | 0 | 0 | 113 | (71) | (151) |
| 2022 | 42 | 0 | 17 | 0 | 59 | 115 | 0 | 0 | 115 | (57) | (201) |
| 2023 | 50 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 50 | (160) |
| 2024 | 51 | 0 | 0 | 0 | 51 | 0 | 0 | 0 | 0 | 51 | (121) |
| 2025 | 52 | 0 | 0 | 0 | 52 | 0 | 0 | 0 | 0 | 52 | (85) |
| 2026 | 52 | 0 | 0 | 0 | 52 | 0 | 0 | 0 | 0 | 52 | (50) |
| 2027 | 53 | 0 | 0 | 0 | 53 | 0 | 0 | 0 | 0 | 53 | (17) |
| 2028 | 53 | 0 | 0 | 0 | 53 | 0 | 0 | 0 | 0 | 53 | 14 |
| 2029 | 54 | 0 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 54 | 43 |
| 2030 | 55 | 0 | 0 | 0 | 55 | 0 | 0 | 0 | 0 | 55 | 70 |
| 2031 | 55 | 0 | 0 | 0 | 55 | 0 | 0 | 0 | 0 | 55 | 97 |
| 2032 | 56 | 0 | 0 | 0 | 56 | 0 | 0 | 0 | 0 | 56 | 121 |
| 2033 | 57 | 0 | 0 | 0 | 57 | 0 | 0 | 0 | 0 | 57 | 145 |
| 2034 | 57 | 0 | 0 | 0 | 57 | 0 | 0 | 0 | 0 | 57 | 167 |
| 2035 | 58 | 0 | 0 | 0 | 58 | 0 | 0 | 0 | 0 | 58 | 187 |
| 2036 | 59 | 0 | 0 | 0 | 59 | 0 | 0 | 0 | 0 | 59 | 207 |
| 2037 | 59 | 0 | 0 | 0 | 59 | 0 | 0 | 0 | 0 | 59 | 226 |
| 2038 | 60 | 0 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 60 | 243 |
| 2039 | 61 | 0 | 0 | 0 | 61 | 0 | 0 | 0 | 0 | 61 | 260 |
| 2040 | 61 | 0 | 0 | 0 | 61 | 0 | 0 | 0 | 0 | 61 | 275 |
| 2041 | 62 | 0 | 0 | 0 | 62 | 0 | 0 | 0 | 0 | 62 | 290 |
| 2042 | 63 | 0 | 0 | 0 | 63 | 0 | 0 | 0 | 0 | 63 | 304 |
| 2043 | 64 | 0 | 0 | 0 | 64 | 0 | 0 | 0 | 0 | 64 | 317 |
| 2044 | 64 | 0 | 0 | 0 | 64 | 0 | 0 | 0 | 0 | 64 | 330 |
| NOMINAL | 1,331 | 0 | 51 | 0 | 1,382 | 339 | 0 | 0 | 339 | 1,044 | |
| NPV: | 598 | 0 | 48 | 0 | 646 | 316 | 0 | 0 | 316 | 330 | |

In service year of gen unit: 2023 2.041451

RATE IMPACT TEST
PROGRAM: Conservation Value

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 2 | 17 | 8 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | (27) | (27) |
| 2021 | 0 | 2 | 17 | 24 | 0 | 43 | 1 | 8 | 0 | 0 | 9 | (35) | (59) |
| 2022 | 0 | 2 | 17 | 40 | 0 | 60 | 2 | 8 | 0 | 0 | 10 | (50) | (103) |
| 2023 | 0 | 0 | 0 | 49 | 0 | 49 | 52 | 17 | 0 | 0 | 69 | 20 | (87) |
| 2024 | 0 | 0 | 0 | 49 | 0 | 49 | 51 | 17 | 0 | 0 | 68 | 18 | (73) |
| 2025 | 0 | 0 | 0 | 50 | 0 | 50 | 50 | 17 | 0 | 0 | 67 | 17 | (61) |
| 2026 | 0 | 0 | 0 | 50 | 0 | 50 | 49 | 17 | 0 | 0 | 66 | 16 | (50) |
| 2027 | 0 | 0 | 0 | 51 | 0 | 51 | 49 | 17 | 0 | 0 | 65 | 14 | (41) |
| 2028 | 0 | 0 | 0 | 51 | 0 | 51 | 48 | 17 | 0 | 0 | 64 | 13 | (34) |
| 2029 | 0 | 0 | 0 | 52 | 0 | 52 | 47 | 17 | 0 | 0 | 64 | 12 | (27) |
| 2030 | 0 | 0 | 0 | 52 | 0 | 52 | 46 | 17 | 0 | 0 | 63 | 10 | (22) |
| 2031 | 0 | 0 | 0 | 53 | 0 | 53 | 46 | 17 | 0 | 0 | 62 | 9 | (18) |
| 2032 | 0 | 0 | 0 | 53 | 0 | 53 | 45 | 17 | 0 | 0 | 62 | 8 | (14) |
| 2033 | 0 | 0 | 0 | 54 | 0 | 54 | 45 | 17 | 0 | 0 | 62 | 8 | (11) |
| 2034 | 0 | 0 | 0 | 55 | 0 | 55 | 44 | 17 | 0 | 0 | 61 | 6 | (9) |
| 2035 | 0 | 0 | 0 | 55 | 0 | 55 | 44 | 17 | 0 | 0 | 60 | 5 | (7) |
| 2036 | 0 | 0 | 0 | 56 | 0 | 56 | 43 | 17 | 0 | 0 | 60 | 5 | (5) |
| 2037 | 0 | 0 | 0 | 56 | 0 | 56 | 43 | 17 | 0 | 0 | 60 | 4 | (4) |
| 2038 | 0 | 0 | 0 | 57 | 0 | 57 | 43 | 17 | 0 | 0 | 60 | 3 | (3) |
| 2039 | 0 | 0 | 0 | 57 | 0 | 57 | 43 | 17 | 0 | 0 | 60 | 2 | (2) |
| 2040 | 0 | 0 | 0 | 58 | 0 | 58 | 44 | 17 | 0 | 0 | 61 | 3 | (2) |
| 2041 | 0 | 0 | 0 | 58 | 0 | 58 | 44 | 17 | 0 | 0 | 61 | 3 | (1) |
| 2042 | 0 | 0 | 0 | 59 | 0 | 59 | 44 | 17 | 0 | 0 | 61 | 2 | (0) |
| 2043 | 0 | 0 | 0 | 60 | 0 | 60 | 44 | 18 | 0 | 0 | 62 | 2 | (0) |
| 2044 | 0 | 0 | 0 | 60 | 0 | 60 | 45 | 18 | 0 | 0 | 63 | 3 | 1 |
| NOMINAL | 0 | 7 | 51 | 1,269 | 0 | 1,327 | 1,010 | 389 | 0 | 0 | 1,399 | 73 | |
| NPV: | 0 | 6 | 48 | 573 | 0 | 627 | 451 | 177 | 0 | 0 | 628 | 1 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.00

**Program: Commercial Cooling**

**Program Start Date:** July 2000

**Program Description**

The Commercial Cooling Program is designed to encourage commercial/industrial customers to make cost-effective improvements to existing facilities. The goal is to offer customer rebates for installing high efficiency heating and cooling systems to help reduce their energy consumption and demand while reducing Tampa Electric's weather sensitive peak demand. High efficiency heating and cooling systems require less demand and energy as compared to standard systems. This program will rebate commercial/industrial customers that install a qualifying air conditioning system.

**Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible commercial structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 1.637 kW |
| Winter Demand: | 0.000 kW |
| Annual Energy: | 3,960 kWh |

**Program Costs**

Rebate: $19 per ton of installed qualifying air conditioning.

The estimated administrative cost per participant is $40.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: COMMERCIAL COOLING

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 87,232 | 10 | 0.0% | 10 |
| 2021 | 87,751 | 87,751 | 10 | 0.0% | 20 |
| 2022 | 88,348 | 88,348 | 10 | 0.0% | 30 |
| 2023 | 89,098 | 89,098 | 10 | 0.0% | 40 |
| 2024 | 89,793 | 89,793 | 10 | 0.1% | 50 |
| 2025 | 90,348 | 90,348 | 10 | 0.1% | 60 |
| 2026 | 90,824 | 90,824 | 10 | 0.1% | 70 |
| 2027 | 91,307 | 91,307 | 10 | 0.1% | 80 |
| 2028 | 91,824 | 91,824 | 10 | 0.1% | 90 |
| 2029 | 92,364 | 92,364 | 10 | 0.1% | 100 |

PROGRAM NAME: COMMERCIAL COOLING

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 3,960 | 0.000 | 1.637 | 0.040 | 0.000 | 0.016 |
| 2021 | 3,960 | 0.000 | 1.637 | 0.079 | 0.000 | 0.033 |
| 2022 | 3,960 | 0.000 | 1.637 | 0.119 | 0.000 | 0.049 |
| 2023 | 3,960 | 0.000 | 1.637 | 0.158 | 0.000 | 0.065 |
| 2024 | 3,960 | 0.000 | 1.637 | 0.198 | 0.000 | 0.082 |
| 2025 | 3,960 | 0.000 | 1.637 | 0.238 | 0.000 | 0.098 |
| 2026 | 3,960 | 0.000 | 1.637 | 0.277 | 0.000 | 0.115 |
| 2027 | 3,960 | 0.000 | 1.637 | 0.317 | 0.000 | 0.131 |
| 2028 | 3,960 | 0.000 | 1.637 | 0.356 | 0.000 | 0.147 |
| 2029 | 3,960 | 0.000 | 1.637 | 0.396 | 0.000 | 0.164 |

PROGRAM NAME: COMMERCIAL COOLING

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 4,166 | 0.000 | 1.752 | 0.042 | 0.000 | 0.018 |
| 2021 | 4,166 | 0.000 | 1.752 | 0.083 | 0.000 | 0.035 |
| 2022 | 4,166 | 0.000 | 1.752 | 0.125 | 0.000 | 0.053 |
| 2023 | 4,166 | 0.000 | 1.752 | 0.167 | 0.000 | 0.070 |
| 2024 | 4,166 | 0.000 | 1.752 | 0.208 | 0.000 | 0.088 |
| 2025 | 4,166 | 0.000 | 1.752 | 0.250 | 0.000 | 0.105 |
| 2026 | 4,166 | 0.000 | 1.752 | 0.292 | 0.000 | 0.123 |
| 2027 | 4,166 | 0.000 | 1.752 | 0.333 | 0.000 | 0.140 |
| 2028 | 4,166 | 0.000 | 1.752 | 0.375 | 0.000 | 0.158 |
| 2029 | 4,166 | 0.000 | 1.752 | 0.417 | 0.000 | 0.175 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Commercial Cooling

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**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 1.637 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 1.450 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 4,177 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 3,960 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 15 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 40.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 3,330.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 220.97 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.090 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **0.83** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **15** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.02** |

TOTAL RESOURCE COST TESTS
PROGRAM: Commercial Cooling

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 0 | 33 | 0 | 34 | 0 | 0 | 1 | 0 | 1 | (33) | (33) |
| 2021 | 0 | 0 | 34 | 0 | 34 | 0 | 1 | 2 | 0 | 3 | (31) | (62) |
| 2022 | 0 | 0 | 35 | 0 | 35 | 0 | 1 | 3 | 0 | 4 | (31) | (89) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 9 | 9 | (82) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 9 | 9 | (76) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 4 | 0 | 9 | 9 | (69) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 4 | 0 | 10 | 10 | (63) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 0 | 10 | 10 | (56) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 0 | 11 | 11 | (50) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 6 | 0 | 11 | 11 | (44) |
| 2030 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 6 | 0 | 12 | 12 | (38) |
| 2031 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 6 | 0 | 12 | 12 | (33) |
| 2032 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 7 | 0 | 13 | 13 | (27) |
| 2033 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 7 | 0 | 13 | 13 | (22) |
| 2034 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 8 | 0 | 14 | 14 | (16) |
| NOMINAL | 0 | 1 | 102 | 0 | 103 | 47 | 21 | 72 | 0 | 140 | 37 | |
| NPV: | 0 | 1 | 96 | 0 | 97 | 27 | 13 | 41 | 0 | 80 | -16 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 0.83

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Commercial Cooling

PSC FORM CE 2.4
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 2 | 0 | 2 | 0 | 4 | 33 | 0 | 0 | 33 | (29) | (29) |
| 2021 | 6 | 0 | 2 | 0 | 8 | 34 | 0 | 0 | 34 | (26) | (54) |
| 2022 | 10 | 0 | 2 | 0 | 12 | 35 | 0 | 0 | 35 | (23) | (74) |
| 2023 | 11 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | (65) |
| 2024 | 12 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 12 | (56) |
| 2025 | 12 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 12 | (47) |
| 2026 | 12 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 12 | (39) |
| 2027 | 13 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 13 | (31) |
| 2028 | 13 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 13 | (24) |
| 2029 | 13 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 13 | (17) |
| 2030 | 14 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 14 | (10) |
| 2031 | 14 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 14 | (3) |
| 2032 | 14 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 14 | 3 |
| 2033 | 15 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 15 | 9 |
| 2034 | 15 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 15 | 15 |
| NOMINAL | 175 | 0 | 7 | 0 | 182 | 102 | 0 | 0 | 102 | 80 | |
| NPV: | 105 | 0 | 6 | 0 | 111 | 96 | 0 | 0 | 96 | 15 | |

In service year of gen unit: 2023 1.1594748

RATE IMPACT TEST
PROGRAM: Commercial Cooling

PSC FORM CE 2.5
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 0 | 2 | 1 | 0 | 4 | 1 | 0 | 0 | 0 | 1 | (3) | (3) |
| 2021 | 0 | 0 | 2 | 4 | 0 | 7 | 2 | 1 | 0 | 0 | 3 | (4) | (7) |
| 2022 | 0 | 0 | 2 | 7 | 0 | 10 | 3 | 1 | 0 | 0 | 4 | (5) | (11) |
| 2023 | 0 | 0 | 0 | 8 | 0 | 8 | 7 | 1 | 0 | 0 | 9 | 0 | (11) |
| 2024 | 0 | 0 | 0 | 8 | 0 | 8 | 8 | 1 | 0 | 0 | 9 | 0 | (11) |
| 2025 | 0 | 0 | 0 | 9 | 0 | 9 | 8 | 1 | 0 | 0 | 9 | 1 | (10) |
| 2026 | 0 | 0 | 0 | 9 | 0 | 9 | 8 | 1 | 0 | 0 | 10 | 1 | (10) |
| 2027 | 0 | 0 | 0 | 9 | 0 | 9 | 9 | 1 | 0 | 0 | 10 | 1 | (9) |
| 2028 | 0 | 0 | 0 | 9 | 0 | 9 | 9 | 1 | 0 | 0 | 11 | 2 | (8) |
| 2029 | 0 | 0 | 0 | 9 | 0 | 9 | 10 | 2 | 0 | 0 | 11 | 2 | (6) |
| 2030 | 0 | 0 | 0 | 9 | 0 | 9 | 10 | 2 | 0 | 0 | 12 | 3 | (5) |
| 2031 | 0 | 0 | 0 | 9 | 0 | 9 | 10 | 2 | 0 | 0 | 12 | 3 | (4) |
| 2032 | 0 | 0 | 0 | 9 | 0 | 9 | 11 | 2 | 0 | 0 | 13 | 4 | (2) |
| 2033 | 0 | 0 | 0 | 9 | 0 | 9 | 12 | 2 | 0 | 0 | 13 | 4 | (0) |
| 2034 | 0 | 0 | 0 | 9 | 0 | 9 | 12 | 2 | 0 | 0 | 14 | 5 | 1 |
| NOMINAL | 0 | 1 | 7 | 118 | 0 | 126 | 119 | 21 | 0 | 0 | 140 | 14 | |
| NPV: | 0 | 1 | 6 | 72 | 0 | 79 | 68 | 13 | 0 | 0 | 80 | 1 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.02

**Program: Demand Response**

**Program Start Date:** March 2008

**Program Description**

Tampa Electric's Commercial Demand Response is a conservation and load management program intended to help alter the company's system load curve by reducing summer and winter demand peaks. The company will contract for a turn-key program that will incent commercial/industrial customers to reduce their demand for electricity in response to market signals. Energy and demand reductions will be achieved through a mix of emergency backup generation, energy management systems, raising cooling set-points and turning off or dimming lights, signage, etc.

Tampa Electric will contract with a demand response vendor on an as needed basis for additional MW of load reduction. The vendor will market the program to potential customers and secure participants. In addition, the vendor will audit the customer's facility to identify equipment to be utilized in demand reduction, install automated controls and provide participant with load tracking software for the customer's use. The vendor will pay customers on a dollar per kW – month basis.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Demand and energy savings were obtained using historical data. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 404.040 kW |
| Winter Demand: | 404.040 kW |
| Annual Energy: | 30,298 kWh |

**Program Costs**

The estimated annual recurring administrative cost per participant is $5,390.

The estimated one time administrative, installation and setup cost is $2,500.

The estimated annual recurring incentive per participant is $25,939.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: DEMAND RESPONSE

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 15,702 | 1 | 0.0% | 1 |
| 2021 | 87,751 | 15,795 | 1 | 0.0% | 2 |
| 2022 | 88,348 | 15,903 | 1 | 0.0% | 3 |
| 2023 | 89,098 | 16,038 | 1 | 0.0% | 4 |
| 2024 | 89,793 | 16,163 | 1 | 0.0% | 5 |
| 2025 | 90,348 | 16,263 | 1 | 0.0% | 6 |
| 2026 | 90,824 | 16,348 | 1 | 0.0% | 7 |
| 2027 | 91,307 | 16,435 | 1 | 0.0% | 8 |
| 2028 | 91,824 | 16,528 | 1 | 0.1% | 9 |
| 2029 | 92,364 | 16,626 | 1 | 0.1% | 10 |

PROGRAM NAME: DEMAND RESPONSE

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 30,298 | 404.040 | 404.040 | 0.030 | 0.404 | 0.404 |
| 2021 | 30,298 | 404.040 | 404.040 | 0.061 | 0.808 | 0.808 |
| 2022 | 30,298 | 404.040 | 404.040 | 0.091 | 1.212 | 1.212 |
| 2023 | 30,298 | 404.040 | 404.040 | 0.121 | 1.616 | 1.616 |
| 2024 | 30,298 | 404.040 | 404.040 | 0.151 | 2.020 | 2.020 |
| 2025 | 30,298 | 404.040 | 404.040 | 0.182 | 2.424 | 2.424 |
| 2026 | 30,298 | 404.040 | 404.040 | 0.212 | 2.828 | 2.828 |
| 2027 | 30,298 | 404.040 | 404.040 | 0.242 | 3.232 | 3.232 |
| 2028 | 30,298 | 404.040 | 404.040 | 0.273 | 3.636 | 3.636 |
| 2029 | 30,298 | 404.040 | 404.040 | 0.303 | 4.040 | 4.040 |

PROGRAM NAME: DEMAND RESPONSE

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 31,873 | 432.323 | 432.323 | 0.032 | 0.432 | 0.432 |
| 2021 | 31,873 | 432.323 | 432.323 | 0.064 | 0.865 | 0.865 |
| 2022 | 31,873 | 432.323 | 432.323 | 0.096 | 1.297 | 1.297 |
| 2023 | 31,873 | 432.323 | 432.323 | 0.127 | 1.729 | 1.729 |
| 2024 | 31,873 | 432.323 | 432.323 | 0.159 | 2.162 | 2.162 |
| 2025 | 31,873 | 432.323 | 432.323 | 0.191 | 2.594 | 2.594 |
| 2026 | 31,873 | 432.323 | 432.323 | 0.223 | 3.026 | 3.026 |
| 2027 | 31,873 | 432.323 | 432.323 | 0.255 | 3.459 | 3.459 |
| 2028 | 31,873 | 432.323 | 432.323 | 0.287 | 3.891 | 3.891 |
| 2029 | 31,873 | 432.323 | 432.323 | 0.319 | 4.323 | 4.323 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Demand Response

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RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 404.040 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 449.743 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 31,960 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 30,298 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 2,500.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 5,390.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 0.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 0.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 25,939.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 11.870 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 0.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **6.91** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **911** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.45** |

TOTAL RESOURCE COST TESTS
PROGRAM: Demand Response

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | (5) | (5) |
| 2021 | 0 | 11 | 0 | 0 | 11 | 0 | 18 | 1 | 0 | 19 | 8 | 3 |
| 2022 | 0 | 17 | 0 | 0 | 17 | 0 | 18 | 2 | 0 | 21 | 4 | 7 |
| 2023 | 0 | 17 | 0 | 0 | 17 | 137 | 39 | 3 | 0 | 179 | 162 | 138 |
| 2024 | 0 | 18 | 0 | 0 | 18 | 134 | 39 | 3 | 0 | 176 | 159 | 259 |
| 2025 | 0 | 18 | 0 | 0 | 18 | 131 | 39 | 3 | 0 | 174 | 156 | 369 |
| 2026 | 0 | 19 | 0 | 0 | 19 | 129 | 39 | 3 | 0 | 172 | 153 | 471 |
| 2027 | 0 | 19 | 0 | 0 | 19 | 127 | 39 | 4 | 0 | 169 | 150 | 564 |
| 2028 | 0 | 20 | 0 | 0 | 20 | 123 | 39 | 4 | 0 | 166 | 146 | 649 |
| 2029 | 0 | 20 | 0 | 0 | 20 | 121 | 39 | 4 | 0 | 164 | 144 | 727 |
| 2030 | 0 | 20 | 0 | 0 | 20 | 118 | 39 | 5 | 0 | 161 | 141 | 798 |
| 2031 | 0 | 21 | 0 | 0 | 21 | 117 | 39 | 5 | 0 | 160 | 139 | 863 |
| 2032 | 0 | 21 | 0 | 0 | 21 | 114 | 39 | 5 | 0 | 158 | 136 | 923 |
| 2033 | 0 | 22 | 0 | 0 | 22 | 113 | 39 | 6 | 0 | 157 | 135 | 979 |
| 2034 | 0 | 23 | 0 | 0 | 23 | 110 | 39 | 6 | 0 | 155 | 132 | 1,029 |
| 2035 | 0 | 23 | 0 | 0 | 23 | 109 | 39 | 6 | 0 | 154 | 131 | 1,076 |
| 2036 | 0 | 24 | 0 | 0 | 24 | 108 | 39 | 6 | 0 | 153 | 130 | 1,119 |
| 2037 | 0 | 24 | 0 | 0 | 24 | 106 | 39 | 7 | 0 | 151 | 127 | 1,159 |
| 2038 | 0 | 25 | 0 | 0 | 25 | 106 | 39 | 7 | 0 | 152 | 127 | 1,196 |
| 2039 | 0 | 25 | 0 | 0 | 25 | 106 | 39 | 7 | 0 | 151 | 126 | 1,231 |
| 2040 | 0 | 26 | 0 | 0 | 26 | 108 | 39 | 7 | 0 | 155 | 129 | 1,263 |
| 2041 | 0 | 27 | 0 | 0 | 27 | 107 | 40 | 8 | 0 | 154 | 128 | 1,294 |
| 2042 | 0 | 27 | 0 | 0 | 27 | 106 | 40 | 8 | 0 | 154 | 127 | 1,322 |
| 2043 | 0 | 28 | 0 | 0 | 28 | 106 | 40 | 8 | 0 | 155 | 127 | 1,348 |
| 2044 | 0 | 29 | 0 | 0 | 29 | 111 | 41 | 8 | 0 | 160 | 131 | 1,374 |
| NOMINAL | 0 | 528 | 0 | 0 | 528 | 2,547 | 896 | 128 | 0 | 3,571 | 3,042 | |
| NPV: | 0 | 232 | 0 | 0 | 232 | 1,149 | 406 | 51 | 0 | 1,606 | 1,374 | |
| Discount Rate | | 0.0708 | Benefit/Cost Ratio - [col (11)/col (6)]: | | | | 6.91 | | | | | |

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Demand Response

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 1 | 0 | 13 | 0 | 14 | 0 | 0 | 0 | 0 | 14 | 14 |
| 2021 | 2 | 0 | 39 | 0 | 41 | 0 | 0 | 0 | 0 | 41 | 52 |
| 2022 | 3 | 0 | 65 | 0 | 68 | 0 | 0 | 0 | 0 | 68 | 111 |
| 2023 | 4 | 0 | 78 | 0 | 82 | 0 | 0 | 0 | 0 | 82 | 178 |
| 2024 | 4 | 0 | 78 | 0 | 82 | 0 | 0 | 0 | 0 | 82 | 240 |
| 2025 | 4 | 0 | 78 | 0 | 82 | 0 | 0 | 0 | 0 | 82 | 299 |
| 2026 | 5 | 0 | 78 | 0 | 82 | 0 | 0 | 0 | 0 | 82 | 353 |
| 2027 | 5 | 0 | 78 | 0 | 83 | 0 | 0 | 0 | 0 | 83 | 405 |
| 2028 | 5 | 0 | 78 | 0 | 83 | 0 | 0 | 0 | 0 | 83 | 453 |
| 2029 | 5 | 0 | 78 | 0 | 83 | 0 | 0 | 0 | 0 | 83 | 497 |
| 2030 | 6 | 0 | 78 | 0 | 83 | 0 | 0 | 0 | 0 | 83 | 539 |
| 2031 | 6 | 0 | 78 | 0 | 83 | 0 | 0 | 0 | 0 | 83 | 579 |
| 2032 | 6 | 0 | 78 | 0 | 84 | 0 | 0 | 0 | 0 | 84 | 616 |
| 2033 | 6 | 0 | 78 | 0 | 84 | 0 | 0 | 0 | 0 | 84 | 650 |
| 2034 | 6 | 0 | 78 | 0 | 84 | 0 | 0 | 0 | 0 | 84 | 682 |
| 2035 | 7 | 0 | 78 | 0 | 84 | 0 | 0 | 0 | 0 | 84 | 713 |
| 2036 | 7 | 0 | 78 | 0 | 85 | 0 | 0 | 0 | 0 | 85 | 741 |
| 2037 | 7 | 0 | 78 | 0 | 85 | 0 | 0 | 0 | 0 | 85 | 767 |
| 2038 | 7 | 0 | 78 | 0 | 85 | 0 | 0 | 0 | 0 | 85 | 792 |
| 2039 | 7 | 0 | 78 | 0 | 85 | 0 | 0 | 0 | 0 | 85 | 816 |
| 2040 | 7 | 0 | 78 | 0 | 85 | 0 | 0 | 0 | 0 | 85 | 837 |
| 2041 | 8 | 0 | 78 | 0 | 86 | 0 | 0 | 0 | 0 | 86 | 858 |
| 2042 | 8 | 0 | 78 | 0 | 86 | 0 | 0 | 0 | 0 | 86 | 877 |
| 2043 | 8 | 0 | 78 | 0 | 86 | 0 | 0 | 0 | 0 | 86 | 894 |
| 2044 | 8 | 0 | 78 | 0 | 86 | 0 | 0 | 0 | 0 | 86 | 911 |
| NOMINAL | 142 | 0 | 1,829 | 0 | 1,971 | 0 | 0 | 0 | 0 | 1,971 | |
| NPV: | 60 | 0 | 852 | 0 | 911 | 0 | 0 | 0 | 0 | 911 | |

In service year of gen unit: 2023 #DIV/0!

RATE IMPACT TEST
PROGRAM: Demand Response

PSC FORM CE 2.5
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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 5 | 13 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | (18) | (18) |
| 2021 | 0 | 11 | 39 | 1 | 0 | 51 | 1 | 18 | 0 | 0 | 19 | (31) | (47) |
| 2022 | 0 | 17 | 65 | 1 | 0 | 83 | 2 | 18 | 0 | 0 | 21 | (62) | (102) |
| 2023 | 0 | 17 | 78 | 2 | 0 | 97 | 140 | 39 | 0 | 0 | 179 | 82 | (35) |
| 2024 | 0 | 18 | 78 | 2 | 0 | 97 | 137 | 39 | 0 | 0 | 176 | 79 | 26 |
| 2025 | 0 | 18 | 78 | 2 | 0 | 98 | 135 | 39 | 0 | 0 | 174 | 76 | 80 |
| 2026 | 0 | 19 | 78 | 2 | 0 | 98 | 133 | 39 | 0 | 0 | 172 | 73 | 128 |
| 2027 | 0 | 19 | 78 | 2 | 0 | 99 | 130 | 39 | 0 | 0 | 169 | 71 | 172 |
| 2028 | 0 | 20 | 78 | 2 | 0 | 99 | 127 | 39 | 0 | 0 | 166 | 67 | 211 |
| 2029 | 0 | 20 | 78 | 2 | 0 | 100 | 126 | 39 | 0 | 0 | 164 | 65 | 246 |
| 2030 | 0 | 20 | 78 | 2 | 0 | 100 | 123 | 39 | 0 | 0 | 161 | 61 | 276 |
| 2031 | 0 | 21 | 78 | 2 | 0 | 101 | 121 | 39 | 0 | 0 | 160 | 59 | 304 |
| 2032 | 0 | 21 | 78 | 2 | 0 | 101 | 119 | 39 | 0 | 0 | 158 | 57 | 329 |
| 2033 | 0 | 22 | 78 | 2 | 0 | 102 | 119 | 39 | 0 | 0 | 157 | 56 | 352 |
| 2034 | 0 | 23 | 78 | 2 | 0 | 102 | 116 | 39 | 0 | 0 | 155 | 52 | 372 |
| 2035 | 0 | 23 | 78 | 2 | 0 | 103 | 115 | 39 | 0 | 0 | 154 | 51 | 390 |
| 2036 | 0 | 24 | 78 | 2 | 0 | 103 | 115 | 39 | 0 | 0 | 153 | 50 | 407 |
| 2037 | 0 | 24 | 78 | 2 | 0 | 104 | 113 | 39 | 0 | 0 | 151 | 47 | 422 |
| 2038 | 0 | 25 | 78 | 2 | 0 | 105 | 113 | 39 | 0 | 0 | 152 | 47 | 435 |
| 2039 | 0 | 25 | 78 | 2 | 0 | 105 | 112 | 39 | 0 | 0 | 151 | 46 | 448 |
| 2040 | 0 | 26 | 78 | 2 | 0 | 106 | 116 | 39 | 0 | 0 | 155 | 49 | 461 |
| 2041 | 0 | 27 | 78 | 2 | 0 | 106 | 115 | 40 | 0 | 0 | 154 | 48 | 472 |
| 2042 | 0 | 27 | 78 | 2 | 0 | 107 | 114 | 40 | 0 | 0 | 154 | 47 | 482 |
| 2043 | 0 | 28 | 78 | 2 | 0 | 108 | 115 | 40 | 0 | 0 | 155 | 47 | 492 |
| 2044 | 0 | 29 | 78 | 2 | 0 | 108 | 119 | 41 | 0 | 0 | 160 | 51 | 502 |
| NOMINAL | 0 | 528 | 1,829 | 44 | 0 | 2,401 | 2,675 | 896 | 0 | 0 | 3,571 | 1,170 | |
| NPV: | 0 | 232 | 852 | 20 | 0 | 1,104 | 1,200 | 406 | 0 | 0 | 1,606 | 502 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.45

**Program: Facility Energy Management System**

**Program Start Date:** TBD

**Program Description**

The Facility Energy Management System Program is designed to encourage commercial/industrial customers to make cost-effective improvements to existing facilities. The goal is to offer customer rebates for installing a facility energy management system that provides real time operational, production and energy consumption information which enables the customer to reduce their energy consumption and demand and reducing Tampa Electric's peak demand. Tampa Electric will provide a rebate to customers who install a qualifying facility energy management system.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible commercial structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 33.200 kW |
| Winter Demand: | 12.350 kW |
| Annual Energy: | 175,633 kWh |

**Program Costs**

Rebate: Up to $25,000 per facility.

The estimated administrative cost per participant is $225.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: FACILITY ENERGY MANAGEMENT SYSTEM

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 87,232 | 5 | 0.0% | 5 |
| 2021 | 87,751 | 87,751 | 5 | 0.0% | 10 |
| 2022 | 88,348 | 88,348 | 5 | 0.0% | 15 |
| 2023 | 89,098 | 89,098 | 5 | 0.0% | 20 |
| 2024 | 89,793 | 89,793 | 5 | 0.0% | 25 |
| 2025 | 90,348 | 90,348 | 5 | 0.0% | 30 |
| 2026 | 90,824 | 90,824 | 5 | 0.0% | 35 |
| 2027 | 91,307 | 91,307 | 5 | 0.0% | 40 |
| 2028 | 91,824 | 91,824 | 5 | 0.0% | 45 |
| 2029 | 92,364 | 92,364 | 5 | 0.1% | 50 |

PROGRAM NAME: FACILITY ENERGY MANAGEMENT SYSTEM

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 175,633 | 12.350 | 33.200 | 0.878 | 0.062 | 0.166 |
| 2021 | 175,633 | 12.350 | 33.200 | 1.756 | 0.124 | 0.332 |
| 2022 | 175,633 | 12.350 | 33.200 | 2.634 | 0.185 | 0.498 |
| 2023 | 175,633 | 12.350 | 33.200 | 3.513 | 0.247 | 0.664 |
| 2024 | 175,633 | 12.350 | 33.200 | 4.391 | 0.309 | 0.830 |
| 2025 | 175,633 | 12.350 | 33.200 | 5.269 | 0.371 | 0.996 |
| 2026 | 175,633 | 12.350 | 33.200 | 6.147 | 0.432 | 1.162 |
| 2027 | 175,633 | 12.350 | 33.200 | 7.025 | 0.494 | 1.328 |
| 2028 | 175,633 | 12.350 | 33.200 | 7.903 | 0.556 | 1.494 |
| 2029 | 175,633 | 12.350 | 33.200 | 8.782 | 0.618 | 1.660 |

PROGRAM NAME: FACILITY ENERGY MANAGEMENT SYSTEM

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 184,766 | 13.215 | 35.524 | 0.924 | 0.066 | 0.178 |
| 2021 | 184,766 | 13.215 | 35.524 | 1.848 | 0.132 | 0.355 |
| 2022 | 184,766 | 13.215 | 35.524 | 2.771 | 0.198 | 0.533 |
| 2023 | 184,766 | 13.215 | 35.524 | 3.695 | 0.264 | 0.710 |
| 2024 | 184,766 | 13.215 | 35.524 | 4.619 | 0.330 | 0.888 |
| 2025 | 184,766 | 13.215 | 35.524 | 5.543 | 0.396 | 1.066 |
| 2026 | 184,766 | 13.215 | 35.524 | 6.467 | 0.463 | 1.243 |
| 2027 | 184,766 | 13.215 | 35.524 | 7.391 | 0.529 | 1.421 |
| 2028 | 184,766 | 13.215 | 35.524 | 8.314 | 0.595 | 1.599 |
| 2029 | 184,766 | 13.215 | 35.524 | 9.238 | 0.661 | 1.776 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Commercial Facility EMS

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**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 33.200 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 32.219 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 185,267 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 175,633 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 15 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 225.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 60,700.69 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 25000.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.090 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.53** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **1,167** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.02** |

TOTAL RESOURCE COST TESTS
PROGRAM: Commercial Facility EMS

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 1 | 304 | 0 | 305 | 0 | 0 | 13 | 0 | 13 | (291) | (291) |
| 2021 | 0 | 1 | 310 | 0 | 312 | 0 | 13 | 40 | 0 | 53 | (259) | (533) |
| 2022 | 0 | 1 | 318 | 0 | 319 | 0 | 13 | 69 | 0 | 82 | (237) | (739) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 37 | 14 | 86 | 0 | 137 | 137 | (628) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 38 | 14 | 89 | 0 | 142 | 142 | (520) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 40 | 14 | 96 | 0 | 150 | 150 | (414) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 41 | 15 | 99 | 0 | 154 | 154 | (311) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 42 | 15 | 105 | 0 | 162 | 162 | (211) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 43 | 15 | 116 | 0 | 174 | 174 | (110) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 44 | 16 | 125 | 0 | 184 | 184 | (10) |
| 2030 | 0 | 0 | 0 | 0 | 0 | 44 | 16 | 139 | 0 | 200 | 200 | 90 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 46 | 16 | 139 | 0 | 201 | 201 | 185 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 47 | 17 | 152 | 0 | 216 | 216 | 280 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 49 | 17 | 162 | 0 | 228 | 228 | 374 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 49 | 18 | 169 | 0 | 237 | 237 | 464 |
| NOMINAL | 0 | 3 | 932 | 0 | 935 | 519 | 214 | 1,600 | 0 | 2,333 | 1,398 | |
| NPV: | 0 | 3 | 870 | 0 | 874 | 293 | 129 | 916 | 0 | 1,338 | 464 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 1.53

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Commercial Facility EMS

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 29 | 0 | 125 | 0 | 154 | 304 | 0 | 0 | 304 | (150) | (150) |
| 2021 | 88 | 0 | 125 | 0 | 213 | 310 | 0 | 0 | 310 | (97) | (241) |
| 2022 | 150 | 0 | 125 | 0 | 275 | 318 | 0 | 0 | 318 | (43) | (278) |
| 2023 | 181 | 0 | 0 | 0 | 181 | 0 | 0 | 0 | 0 | 181 | (131) |
| 2024 | 186 | 0 | 0 | 0 | 186 | 0 | 0 | 0 | 0 | 186 | 10 |
| 2025 | 191 | 0 | 0 | 0 | 191 | 0 | 0 | 0 | 0 | 191 | 146 |
| 2026 | 196 | 0 | 0 | 0 | 196 | 0 | 0 | 0 | 0 | 196 | 276 |
| 2027 | 201 | 0 | 0 | 0 | 201 | 0 | 0 | 0 | 0 | 201 | 401 |
| 2028 | 211 | 0 | 0 | 0 | 211 | 0 | 0 | 0 | 0 | 211 | 522 |
| 2029 | 217 | 0 | 0 | 0 | 217 | 0 | 0 | 0 | 0 | 217 | 640 |
| 2030 | 227 | 0 | 0 | 0 | 227 | 0 | 0 | 0 | 0 | 227 | 754 |
| 2031 | 232 | 0 | 0 | 0 | 232 | 0 | 0 | 0 | 0 | 232 | 863 |
| 2032 | 241 | 0 | 0 | 0 | 241 | 0 | 0 | 0 | 0 | 241 | 969 |
| 2033 | 244 | 0 | 0 | 0 | 244 | 0 | 0 | 0 | 0 | 244 | 1,069 |
| 2034 | 254 | 0 | 0 | 0 | 254 | 0 | 0 | 0 | 0 | 254 | 1,167 |
| NOMINAL | 2,845 | 0 | 375 | 0 | 3,220 | 932 | 0 | 0 | 932 | 2,288 | |
| NPV: | 1,686 | 0 | 351 | 0 | 2,037 | 870 | 0 | 0 | 870 | 1,167 | |
| In service year of gen unit: | | | 2023 | | 2.3401637 | | | | | | |

RATE IMPACT TEST
PROGRAM: Commercial Facility EMS

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 1 | 125 | 18 | 0 | 144 | 13 | 0 | 0 | 0 | 13 | (131) | (131) |
| 2021 | 0 | 1 | 125 | 55 | 0 | 181 | 40 | 13 | 0 | 0 | 53 | (128) | (250) |
| 2022 | 0 | 1 | 125 | 92 | 0 | 218 | 69 | 13 | 0 | 0 | 82 | (136) | (369) |
| 2023 | 0 | 0 | 0 | 111 | 0 | 111 | 123 | 14 | 0 | 0 | 137 | 26 | (348) |
| 2024 | 0 | 0 | 0 | 113 | 0 | 113 | 128 | 14 | 0 | 0 | 142 | 29 | (326) |
| 2025 | 0 | 0 | 0 | 114 | 0 | 114 | 135 | 14 | 0 | 0 | 150 | 36 | (300) |
| 2026 | 0 | 0 | 0 | 115 | 0 | 115 | 140 | 15 | 0 | 0 | 154 | 39 | (274) |
| 2027 | 0 | 0 | 0 | 116 | 0 | 116 | 147 | 15 | 0 | 0 | 162 | 46 | (246) |
| 2028 | 0 | 0 | 0 | 117 | 0 | 117 | 159 | 15 | 0 | 0 | 174 | 57 | (212) |
| 2029 | 0 | 0 | 0 | 118 | 0 | 118 | 168 | 16 | 0 | 0 | 184 | 66 | (177) |
| 2030 | 0 | 0 | 0 | 120 | 0 | 120 | 184 | 16 | 0 | 0 | 200 | 80 | (136) |
| 2031 | 0 | 0 | 0 | 121 | 0 | 121 | 185 | 16 | 0 | 0 | 201 | 81 | (98) |
| 2032 | 0 | 0 | 0 | 122 | 0 | 122 | 199 | 17 | 0 | 0 | 216 | 94 | (57) |
| 2033 | 0 | 0 | 0 | 123 | 0 | 123 | 210 | 17 | 0 | 0 | 228 | 105 | (14) |
| 2034 | 0 | 0 | 0 | 124 | 0 | 124 | 219 | 18 | 0 | 0 | 237 | 112 | 29 |
| NOMINAL | 0 | 3 | 375 | 1,578 | 0 | 1,957 | 2,119 | 214 | 0 | 0 | 2,333 | 376 | |
| NPV: | 0 | 3 | 351 | 955 | 0 | 1,309 | 1,209 | 129 | 0 | 0 | 1,338 | 29 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.02

**Program: Industrial Load Management (GSLM 2&3)**

**Program Start Date:** September 1999

**Program Description**

This is a load management program for large industrial customers with interruptible loads of 500 kW or greater. The program was approved by the FPSC in Docket No. 19990037-EI, Order No. PSC-99-1778-FOF-EI, issued September 10, 1999. Assessments for customer participation are conducted every six months.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Demand and energy savings were obtained using historical data. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 5,060 kW |
| Winter Demand: | 4,757 kW |
| Annual Energy: | 1,184,085 kWh |

**Program Costs**

Program costs include estimates for marketing, administration and field verification for participation and incentives. The incentive amount was approved on an ongoing basis by the Commission in Order No. PSC-2017-0456-S-EI, on November 27, 2017, from Tampa Electric's Petition for limited proceeding to approve the company's 2017 amended and restated stipulation and settlement agreement within Docket No. 20170210-EI.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

**Program: Street and Outdoor Lighting Conversion**

**Program Start Date:** February 2018

**Program Description**

The Street and Outdoor Lighting Conversion Program is designed to encourage the conversion from Non-Light Emitting Diode ("LED") street and outdoor lighting luminaires to eligible LED luminaires in a five-year program. The goal of this program is to install energy efficient LED street and outdoor lighting technology to reduce the energy consumption and demand and reducing Tampa Electric's peak demand. Tampa Electric will recover the remaining unamortized costs in rate base with the eligible Non-LED luminaires.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Demand and energy savings were obtained using wattage data from each existing eligible Non-LED lamps and the proposed LED lamps that will be installed in its place. Operating hours were estimated using the United States Naval Observatory tables for Tampa, Florida. The analysis yielded the following expected savings per lamp conversion performed:

| | |
|---|---|
| Summer Demand: | 0.000 kW |
| Winter Demand: | 0.133 kW |
| Annual Energy: | 576 kWh |

Note: As approved on February 27, 2018 in Docket 20170199-EI, Order No. PSC-2018-0110-PAA-EI, the company will not count the energy or demand savings from this program toward contributions toward meeting Tampa Electric's Commission approved annual energy and demand saving's goals.

**Program Costs**

Estimated unamortized depreciation capture: $153 per fixture.

The estimated administrative cost per participant is $0.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: STREET AND OUTDOOR LIGHTING CONVERSION

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants* |
|---|---|---|---|---|---|
| 2020 | 209,821 | 144,739 | 42,115 | 29.1% | 42,115 |
| 2021 | 209,821 | 102,624 | 42,115 | 82.1% | 84,230 |
| 2022 | 209,821 | 60,509 | 42,115 | 208.8% | 126,345 |
| 2023 | 209,821 | 18,394 | 18,394 | 786.9% | 144,739 |
| 2024 | 0 | 0 | 0 | 0.0% | 144,739 |
| 2025 | 0 | 0 | 0 | 0.0% | 144,739 |
| 2026 | 0 | 0 | 0 | 0.0% | 144,739 |
| 2027 | 0 | 0 | 0 | 0.0% | 144,739 |
| 2028 | 0 | 0 | 0 | 0.0% | 144,739 |
| 2029 | 0 | 0 | 0 | 0.0% | 144,739 |

*Program will conclude upon completion of converting 209,821 luminaires.

PROGRAM NAME: STREET AND OUTDOOR LIGHTING CONVERSION

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 576 | 0.133 | 0.000 | 24.258 | 5.601 | 0.000 |
| 2021 | 576 | 0.133 | 0.000 | 48.516 | 11.203 | 0.000 |
| 2022 | 576 | 0.133 | 0.000 | 72.775 | 16.804 | 0.000 |
| 2023 | 576 | 0.133 | 0.000 | 83.370 | 19.250 | 0.000 |
| 2024 | 576 | 0.133 | 0.000 | 83.370 | 19.250 | 0.000 |
| 2025 | 576 | 0.133 | 0.000 | 83.370 | 19.250 | 0.000 |
| 2026 | 576 | 0.133 | 0.000 | 83.370 | 19.250 | 0.000 |
| 2027 | 576 | 0.133 | 0.000 | 83.370 | 19.250 | 0.000 |
| 2028 | 576 | 0.133 | 0.000 | 83.370 | 19.250 | 0.000 |
| 2029 | 576 | 0.133 | 0.000 | 83.370 | 19.250 | 0.000 |

PROGRAM NAME: STREET AND OUTDOOR LIGHTING CONVERSION

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 606 | 0.142 | 0.000 | 25.520 | 5.993 | 0.000 |
| 2021 | 606 | 0.142 | 0.000 | 51.039 | 11.987 | 0.000 |
| 2022 | 606 | 0.142 | 0.000 | 76.559 | 17.980 | 0.000 |
| 2023 | 606 | 0.142 | 0.000 | 87.705 | 20.598 | 0.000 |
| 2024 | 606 | 0.142 | 0.000 | 87.705 | 20.598 | 0.000 |
| 2025 | 606 | 0.142 | 0.000 | 87.705 | 20.598 | 0.000 |
| 2026 | 606 | 0.142 | 0.000 | 87.705 | 20.598 | 0.000 |
| 2027 | 606 | 0.142 | 0.000 | 87.705 | 20.598 | 0.000 |
| 2028 | 606 | 0.142 | 0.000 | 87.705 | 20.598 | 0.000 |
| 2029 | 606 | 0.142 | 0.000 | 87.705 | 20.598 | 0.000 |

# INPUT DATA - PART 1
## PROGRAM TITLE: LED Street and Outdoor Lighting Conversion

PSC FORM CE 1.1
PAGE 1 OF 1
RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 0.133 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 0.030 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 608 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 576 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 153.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 0.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 0.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 0.000 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **2.61** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **46,169** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.40** |

TOTAL RESOURCE COST TESTS
PROGRAM: LED Street and Outdoor Lighting Conversion

PSC FORM CE 2.3
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 6,444 | 0 | 0 | 6,444 | 0 | 0 | 371 | 0 | 371 | (6,072) | (6,072) |
| 2021 | 0 | 6,598 | 0 | 0 | 6,598 | 0 | 199 | 1,104 | 0 | 1,303 | (5,295) | (11,017) |
| 2022 | 0 | 6,073 | 0 | 0 | 6,073 | 0 | 204 | 1,861 | 0 | 2,065 | (4,008) | (14,512) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 373 | 415 | 2,293 | 0 | 3,082 | 3,082 | (12,002) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 367 | 414 | 2,383 | 0 | 3,164 | 3,164 | (9,596) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 359 | 413 | 2,559 | 0 | 3,330 | 3,330 | (7,230) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 353 | 411 | 2,641 | 0 | 3,405 | 3,405 | (4,971) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 347 | 411 | 2,806 | 0 | 3,563 | 3,563 | (2,764) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 337 | 410 | 3,109 | 0 | 3,857 | 3,857 | (533) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 331 | 410 | 3,331 | 0 | 4,073 | 4,073 | 1,668 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 322 | 410 | 3,721 | 0 | 4,453 | 4,453 | 3,915 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 319 | 411 | 3,707 | 0 | 4,436 | 4,436 | 6,005 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 311 | 411 | 4,051 | 0 | 4,774 | 4,774 | 8,106 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 309 | 412 | 4,320 | 0 | 5,041 | 5,041 | 10,177 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 301 | 412 | 4,521 | 0 | 5,235 | 5,235 | 12,186 |
| 2035 | 0 | 0 | 0 | 0 | 0 | 297 | 413 | 4,979 | 0 | 5,690 | 5,690 | 14,225 |
| 2036 | 0 | 0 | 0 | 0 | 0 | 296 | 414 | 4,918 | 0 | 5,628 | 5,628 | 16,109 |
| 2037 | 0 | 0 | 0 | 0 | 0 | 290 | 416 | 5,249 | 0 | 5,954 | 5,954 | 17,971 |
| 2038 | 0 | 0 | 0 | 0 | 0 | 290 | 418 | 5,269 | 0 | 5,977 | 5,977 | 19,715 |
| 2039 | 0 | 0 | 0 | 0 | 0 | 289 | 421 | 5,275 | 0 | 5,984 | 5,984 | 21,346 |
| 2040 | 0 | 0 | 0 | 0 | 0 | 296 | 424 | 5,676 | 0 | 6,396 | 6,396 | 22,975 |
| 2041 | 0 | 0 | 0 | 0 | 0 | 292 | 428 | 5,846 | 0 | 6,566 | 6,566 | 24,536 |
| 2042 | 0 | 0 | 0 | 0 | 0 | 291 | 433 | 6,250 | 0 | 6,973 | 6,973 | 26,084 |
| 2043 | 0 | 0 | 0 | 0 | 0 | 291 | 437 | 6,398 | 0 | 7,126 | 7,126 | 27,562 |
| 2044 | 0 | 0 | 0 | 0 | 0 | 303 | 441 | 6,152 | 0 | 6,896 | 6,896 | 28,897 |
| NOMINAL | 0 | 19,114 | 0 | 0 | 19,114 | 6,965 | 9,590 | 98,788 | 0 | 115,343 | 96,228 | |
| NPV: | 0 | 17,902 | 0 | 0 | 17,902 | 3,142 | 4,341 | 39,316 | 0 | 46,799 | 28,897 | |
| Discount Rate | | 0.0708 | Benefit/Cost Ratio - [col (11)/col (6)]: | | | | 2.61 | | | | | |

PARTICIPANT COSTS AND BENEFITS
PROGRAM: LED Street and Outdoor Lighting Conversion

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 516 | 0 | 0 | 0 | 516 | 0 | 0 | 0 | 0 | 516 | 516 |
| 2021 | 1,596 | 0 | 0 | 0 | 1,596 | 0 | 0 | 0 | 0 | 1,596 | 2,006 |
| 2022 | 2,673 | 0 | 0 | 0 | 2,673 | 0 | 0 | 0 | 0 | 2,673 | 4,338 |
| 2023 | 3,161 | 0 | 0 | 0 | 3,161 | 0 | 0 | 0 | 0 | 3,161 | 6,913 |
| 2024 | 3,279 | 0 | 0 | 0 | 3,279 | 0 | 0 | 0 | 0 | 3,279 | 9,407 |
| 2025 | 3,404 | 0 | 0 | 0 | 3,404 | 0 | 0 | 0 | 0 | 3,404 | 11,825 |
| 2026 | 3,511 | 0 | 0 | 0 | 3,511 | 0 | 0 | 0 | 0 | 3,511 | 14,154 |
| 2027 | 3,651 | 0 | 0 | 0 | 3,651 | 0 | 0 | 0 | 0 | 3,651 | 16,416 |
| 2028 | 3,881 | 0 | 0 | 0 | 3,881 | 0 | 0 | 0 | 0 | 3,881 | 18,662 |
| 2029 | 4,022 | 0 | 0 | 0 | 4,022 | 0 | 0 | 0 | 0 | 4,022 | 20,835 |
| 2030 | 4,271 | 0 | 0 | 0 | 4,271 | 0 | 0 | 0 | 0 | 4,271 | 22,990 |
| 2031 | 4,384 | 0 | 0 | 0 | 4,384 | 0 | 0 | 0 | 0 | 4,384 | 25,055 |
| 2032 | 4,609 | 0 | 0 | 0 | 4,609 | 0 | 0 | 0 | 0 | 4,609 | 27,083 |
| 2033 | 4,690 | 0 | 0 | 0 | 4,690 | 0 | 0 | 0 | 0 | 4,690 | 29,011 |
| 2034 | 4,918 | 0 | 0 | 0 | 4,918 | 0 | 0 | 0 | 0 | 4,918 | 30,898 |
| 2035 | 5,080 | 0 | 0 | 0 | 5,080 | 0 | 0 | 0 | 0 | 5,080 | 32,719 |
| 2036 | 5,215 | 0 | 0 | 0 | 5,215 | 0 | 0 | 0 | 0 | 5,215 | 34,464 |
| 2037 | 5,438 | 0 | 0 | 0 | 5,438 | 0 | 0 | 0 | 0 | 5,438 | 36,164 |
| 2038 | 5,546 | 0 | 0 | 0 | 5,546 | 0 | 0 | 0 | 0 | 5,546 | 37,783 |
| 2039 | 5,715 | 0 | 0 | 0 | 5,715 | 0 | 0 | 0 | 0 | 5,715 | 39,341 |
| 2040 | 5,779 | 0 | 0 | 0 | 5,779 | 0 | 0 | 0 | 0 | 5,779 | 40,812 |
| 2041 | 6,004 | 0 | 0 | 0 | 6,004 | 0 | 0 | 0 | 0 | 6,004 | 42,240 |
| 2042 | 6,227 | 0 | 0 | 0 | 6,227 | 0 | 0 | 0 | 0 | 6,227 | 43,622 |
| 2043 | 6,377 | 0 | 0 | 0 | 6,377 | 0 | 0 | 0 | 0 | 6,377 | 44,944 |
| 2044 | 6,323 | 0 | 0 | 0 | 6,323 | 0 | 0 | 0 | 0 | 6,323 | 46,169 |
| NOMINAL | 110,270 | 0 | 0 | 0 | 110,270 | 0 | 0 | 0 | 0 | 110,270 | |
| NPV: | 46,169 | 0 | 0 | 0 | 46,169 | 0 | 0 | 0 | 0 | 46,169 | |

In service year of gen unit: 2023 #DIV/0!

RATE IMPACT TEST
PROGRAM: LED Street and Outdoor Lighting Conversion



| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 6,444 | 0 | 221 | 0 | 6,664 | 371 | 0 | 0 | 0 | 371 | (6,293) | (6293) |
| 2021 | 0 | 6,598 | 0 | 668 | 0 | 7,266 | 1,104 | 199 | 0 | 0 | 1,303 | (5,963) | (11862) |
| 2022 | 0 | 6,073 | 0 | 1,102 | 0 | 7,174 | 1,861 | 204 | 0 | 0 | 2,065 | (5,110) | (16318) |
| 2023 | 0 | 0 | 0 | 1,317 | 0 | 1,317 | 2,666 | 415 | 0 | 0 | 3,082 | 1,765 | (14881) |
| 2024 | 0 | 0 | 0 | 1,330 | 0 | 1,330 | 2,750 | 414 | 0 | 0 | 3,164 | 1,833 | (13486) |
| 2025 | 0 | 0 | 0 | 1,344 | 0 | 1,344 | 2,918 | 413 | 0 | 0 | 3,330 | 1,987 | (12075) |
| 2026 | 0 | 0 | 0 | 1,357 | 0 | 1,357 | 2,994 | 411 | 0 | 0 | 3,405 | 2,048 | (10716) |
| 2027 | 0 | 0 | 0 | 1,371 | 0 | 1,371 | 3,152 | 411 | 0 | 0 | 3,563 | 2,193 | (9358) |
| 2028 | 0 | 0 | 0 | 1,384 | 0 | 1,384 | 3,446 | 410 | 0 | 0 | 3,857 | 2,472 | (7927) |
| 2029 | 0 | 0 | 0 | 1,398 | 0 | 1,398 | 3,662 | 410 | 0 | 0 | 4,073 | 2,675 | (6482) |
| 2030 | 0 | 0 | 0 | 1,412 | 0 | 1,412 | 4,043 | 410 | 0 | 0 | 4,453 | 3,041 | (4948) |
| 2031 | 0 | 0 | 0 | 1,426 | 0 | 1,426 | 4,026 | 411 | 0 | 0 | 4,436 | 3,010 | (3530) |
| 2032 | 0 | 0 | 0 | 1,441 | 0 | 1,441 | 4,363 | 411 | 0 | 0 | 4,774 | 3,333 | (2063) |
| 2033 | 0 | 0 | 0 | 1,455 | 0 | 1,455 | 4,629 | 412 | 0 | 0 | 5,041 | 3,586 | (589) |
| 2034 | 0 | 0 | 0 | 1,469 | 0 | 1,469 | 4,822 | 412 | 0 | 0 | 5,235 | 3,765 | 856 |
| 2035 | 0 | 0 | 0 | 1,484 | 0 | 1,484 | 5,276 | 413 | 0 | 0 | 5,690 | 4,206 | 2363 |
| 2036 | 0 | 0 | 0 | 1,499 | 0 | 1,499 | 5,214 | 414 | 0 | 0 | 5,628 | 4,129 | 3745 |
| 2037 | 0 | 0 | 0 | 1,514 | 0 | 1,514 | 5,539 | 416 | 0 | 0 | 5,954 | 4,440 | 5133 |
| 2038 | 0 | 0 | 0 | 1,529 | 0 | 1,529 | 5,559 | 418 | 0 | 0 | 5,977 | 4,447 | 6431 |
| 2039 | 0 | 0 | 0 | 1,544 | 0 | 1,544 | 5,563 | 421 | 0 | 0 | 5,984 | 4,439 | 7642 |
| 2040 | 0 | 0 | 0 | 1,560 | 0 | 1,560 | 5,972 | 424 | 0 | 0 | 6,396 | 4,837 | 8873 |
| 2041 | 0 | 0 | 0 | 1,575 | 0 | 1,575 | 6,138 | 428 | 0 | 0 | 6,566 | 4,991 | 10060 |
| 2042 | 0 | 0 | 0 | 1,591 | 0 | 1,591 | 6,540 | 433 | 0 | 0 | 6,973 | 5,381 | 11254 |
| 2043 | 0 | 0 | 0 | 1,607 | 0 | 1,607 | 6,689 | 437 | 0 | 0 | 7,126 | 5,519 | 12399 |
| 2044 | 0 | 0 | 0 | 1,623 | 0 | 1,623 | 6,455 | 441 | 0 | 0 | 6,896 | 5,273 | 13420 |
| NOMINAL | 0 | 19,114 | 0 | 34,223 | 0 | 53,337 | 105,753 | 9,590 | 0 | 0 | 115,343 | 62,006 | |
| NPV: | 0 | 17,902 | 0 | 15,477 | 0 | 33,379 | 42,458 | 4,341 | 0 | 0 | 46,799 | 13,420 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.40

**Program: Lighting Conditioned Space**

**Program Start Date:** January 1991

**Program Description**

The Lighting Conditioned Space Program is designed to encourage commercial/industrial customers to make cost-effective improvements to existing facilities. The goal is to offer customer rebates for installing energy efficient lighting technology and systems within conditioned space to help reduce their energy consumption and demand and reducing Tampa Electric's peak demand. Tampa Electric will provide a rebate to customers who install qualifying conditioned spaces lighting systems.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Demand and energy savings were obtained using historical data collected from rebate submittals including the associated effect from the lighting system on the HVAC equipment. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 17.433 kW |
| Winter Demand: | 13.573 kW |
| Annual Energy: | 77,206 kWh |

**Program Costs**

Rebate: $0.250 per Watt reduction.

The estimated administrative cost per participant is $175.

**Program Monitoring and Evaluation**

Data necessary to substantiate the kW and kWh savings as well as the demand coincidence will be contained on the customer's rebate analysis worksheet that accompanies the rebate application.

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: LIGHTING CONDITIONED SPACE

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 87,232 | 100 | 0.1% | 100 |
| 2021 | 87,751 | 87,751 | 100 | 0.2% | 200 |
| 2022 | 88,348 | 88,348 | 100 | 0.3% | 300 |
| 2023 | 89,098 | 89,098 | 100 | 0.4% | 400 |
| 2024 | 89,793 | 89,793 | 100 | 0.6% | 500 |
| 2025 | 90,348 | 90,348 | 100 | 0.7% | 600 |
| 2026 | 90,824 | 90,824 | 100 | 0.8% | 700 |
| 2027 | 91,307 | 91,307 | 100 | 0.9% | 800 |
| 2028 | 91,824 | 91,824 | 100 | 1.0% | 900 |
| 2029 | 92,364 | 92,364 | 100 | 1.1% | 1,000 |

PROGRAM NAME: LIGHTING CONDITIONED SPACE

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 77,206 | 13.573 | 17.433 | 7.721 | 1.357 | 1.743 |
| 2021 | 77,206 | 13.573 | 17.433 | 15.441 | 2.715 | 3.487 |
| 2022 | 77,206 | 13.573 | 17.433 | 23.162 | 4.072 | 5.230 |
| 2023 | 77,206 | 13.573 | 17.433 | 30.882 | 5.429 | 6.973 |
| 2024 | 77,206 | 13.573 | 17.433 | 38.603 | 6.787 | 8.717 |
| 2025 | 77,206 | 13.573 | 17.433 | 46.324 | 8.144 | 10.460 |
| 2026 | 77,206 | 13.573 | 17.433 | 54.044 | 9.501 | 12.203 |
| 2027 | 77,206 | 13.573 | 17.433 | 61.765 | 10.858 | 13.946 |
| 2028 | 77,206 | 13.573 | 17.433 | 69.485 | 12.216 | 15.690 |
| 2029 | 77,206 | 13.573 | 17.433 | 77.206 | 13.573 | 17.433 |

PROGRAM NAME: LIGHTING CONDITIONED SPACE

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 81,221 | 14.523 | 18.653 | 8.122 | 1.452 | 1.865 |
| 2021 | 81,221 | 14.523 | 18.653 | 16.244 | 2.905 | 3.731 |
| 2022 | 81,221 | 14.523 | 18.653 | 24.366 | 4.357 | 5.596 |
| 2023 | 81,221 | 14.523 | 18.653 | 32.488 | 5.809 | 7.461 |
| 2024 | 81,221 | 14.523 | 18.653 | 40.610 | 7.262 | 9.327 |
| 2025 | 81,221 | 14.523 | 18.653 | 48.732 | 8.714 | 11.192 |
| 2026 | 81,221 | 14.523 | 18.653 | 56.854 | 10.166 | 13.057 |
| 2027 | 81,221 | 14.523 | 18.653 | 64.977 | 11.618 | 14.923 |
| 2028 | 81,221 | 14.523 | 18.653 | 73.099 | 13.071 | 16.788 |
| 2029 | 81,221 | 14.523 | 18.653 | 81.221 | 14.523 | 18.653 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Lighting - Conditioned Space





**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 17.433 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 18.528 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 81,441 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 77,206 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 14 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 175.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 37,126.33 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 4350.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.900 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.12** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **5,834** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.13** |

TOTAL RESOURCE COST TESTS
PROGRAM: Lighting - Conditioned Space

PSC FORM CE 2.3
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 18 | 3,713 | 0 | 3,730 | 0 | 0 | 118 | 0 | 118 | (3,612) | (3,612) |
| 2021 | 0 | 18 | 3,798 | 0 | 3,816 | 0 | 140 | 351 | 0 | 491 | (3,325) | (6,717) |
| 2022 | 0 | 18 | 3,885 | 0 | 3,904 | 0 | 143 | 605 | 0 | 748 | (3,156) | (9,469) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 431 | 147 | 755 | 0 | 1,332 | 1,332 | (8,384) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 442 | 150 | 785 | 0 | 1,377 | 1,377 | (7,337) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 455 | 154 | 843 | 0 | 1,451 | 1,451 | (6,306) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 469 | 157 | 870 | 0 | 1,496 | 1,496 | (5,313) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 481 | 161 | 924 | 0 | 1,567 | 1,567 | (4,343) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 489 | 165 | 1,024 | 0 | 1,678 | 1,678 | (3,372) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 502 | 169 | 1,097 | 0 | 1,769 | 1,769 | (2,416) |
| 2030 | 0 | 0 | 0 | 0 | 0 | 511 | 173 | 1,225 | 0 | 1,909 | 1,909 | (1,453) |
| 2031 | 0 | 0 | 0 | 0 | 0 | 528 | 177 | 1,221 | 0 | 1,926 | 1,926 | (545) |
| 2032 | 0 | 0 | 0 | 0 | 0 | 539 | 181 | 1,334 | 0 | 2,055 | 2,055 | 359 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 559 | 186 | 1,423 | 0 | 2,167 | 2,167 | 1,249 |
| NOMINAL | 0 | 54 | 11,396 | 0 | 11,450 | 5,406 | 2,103 | 12,576 | 0 | 20,085 | 8,635 | |
| NPV: | 0 | 50 | 10,648 | 0 | 10,698 | 3,147 | 1,316 | 7,485 | 0 | 11,948 | 1,249 | |
| Discount Rate | | 0.0708 | Benefit/Cost Ratio - [col (11)/col (6)]: | | | | 1.12 | | | | | |

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Lighting - Conditioned Space

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 278 | 0 | 435 | 0 | 713 | 3,713 | 0 | 0 | 3,713 | (2,999) | (2,999) |
| 2021 | 853 | 0 | 435 | 0 | 1,288 | 3,798 | 0 | 0 | 3,798 | (2,510) | (5,343) |
| 2022 | 1,450 | 0 | 435 | 0 | 1,885 | 3,885 | 0 | 0 | 3,885 | (2,000) | (7,088) |
| 2023 | 1,746 | 0 | 0 | 0 | 1,746 | 0 | 0 | 0 | 0 | 1,746 | (5,666) |
| 2024 | 1,792 | 0 | 0 | 0 | 1,792 | 0 | 0 | 0 | 0 | 1,792 | (4,303) |
| 2025 | 1,840 | 0 | 0 | 0 | 1,840 | 0 | 0 | 0 | 0 | 1,840 | (2,995) |
| 2026 | 1,883 | 0 | 0 | 0 | 1,883 | 0 | 0 | 0 | 0 | 1,883 | (1,747) |
| 2027 | 1,936 | 0 | 0 | 0 | 1,936 | 0 | 0 | 0 | 0 | 1,936 | (547) |
| 2028 | 2,019 | 0 | 0 | 0 | 2,019 | 0 | 0 | 0 | 0 | 2,019 | 621 |
| 2029 | 2,073 | 0 | 0 | 0 | 2,073 | 0 | 0 | 0 | 0 | 2,073 | 1,741 |
| 2030 | 2,162 | 0 | 0 | 0 | 2,162 | 0 | 0 | 0 | 0 | 2,162 | 2,832 |
| 2031 | 2,207 | 0 | 0 | 0 | 2,207 | 0 | 0 | 0 | 0 | 2,207 | 3,872 |
| 2032 | 2,289 | 0 | 0 | 0 | 2,289 | 0 | 0 | 0 | 0 | 2,289 | 4,879 |
| 2033 | 2,323 | 0 | 0 | 0 | 2,323 | 0 | 0 | 0 | 0 | 2,323 | 5,834 |
| NOMINAL | 24,853 | 0 | 1,305 | 0 | 26,158 | 11,396 | 0 | 0 | 11,396 | 14,762 | |
| NPV: | 15,262 | 0 | 1,221 | 0 | 16,482 | 10,648 | 0 | 0 | 10,648 | 5,834 | |

In service year of gen unit: 2023 1.5479024

RATE IMPACT TEST
PROGRAM: Lighting - Conditioned Space

PSC FORM CE 2.5
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 18 | 435 | 184 | 0 | 637 | 118 | 0 | 0 | 0 | 118 | (519) | (519) |
| 2021 | 0 | 18 | 435 | 558 | 0 | 1,011 | 351 | 140 | 0 | 0 | 491 | (520) | (1004) |
| 2022 | 0 | 18 | 435 | 939 | 0 | 1,393 | 605 | 143 | 0 | 0 | 748 | (645) | (1567) |
| 2023 | 0 | 0 | 0 | 1,139 | 0 | 1,139 | 1,186 | 147 | 0 | 0 | 1,332 | 194 | (1409) |
| 2024 | 0 | 0 | 0 | 1,150 | 0 | 1,150 | 1,227 | 150 | 0 | 0 | 1,377 | 227 | (1236) |
| 2025 | 0 | 0 | 0 | 1,162 | 0 | 1,162 | 1,297 | 154 | 0 | 0 | 1,451 | 290 | (1030) |
| 2026 | 0 | 0 | 0 | 1,173 | 0 | 1,173 | 1,339 | 157 | 0 | 0 | 1,496 | 323 | (816) |
| 2027 | 0 | 0 | 0 | 1,185 | 0 | 1,185 | 1,406 | 161 | 0 | 0 | 1,567 | 382 | (580) |
| 2028 | 0 | 0 | 0 | 1,197 | 0 | 1,197 | 1,513 | 165 | 0 | 0 | 1,678 | 482 | (301) |
| 2029 | 0 | 0 | 0 | 1,209 | 0 | 1,209 | 1,600 | 169 | 0 | 0 | 1,769 | 560 | 2 |
| 2030 | 0 | 0 | 0 | 1,221 | 0 | 1,221 | 1,736 | 173 | 0 | 0 | 1,909 | 688 | 349 |
| 2031 | 0 | 0 | 0 | 1,233 | 0 | 1,233 | 1,749 | 177 | 0 | 0 | 1,926 | 693 | 676 |
| 2032 | 0 | 0 | 0 | 1,245 | 0 | 1,245 | 1,874 | 181 | 0 | 0 | 2,055 | 810 | 1032 |
| 2033 | 0 | 0 | 0 | 1,258 | 0 | 1,258 | 1,982 | 186 | 0 | 0 | 2,167 | 910 | 1406 |
| NOMINAL | 0 | 54 | 1,305 | 14,852 | 0 | 16,211 | 17,982 | 2,103 | 0 | 0 | 20,085 | 3,874 | |
| NPV: | 0 | 50 | 1,221 | 9,271 | 0 | 10,542 | 10,632 | 1,316 | 0 | 0 | 11,948 | 1,406 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.13

**Program: Lighting Non-Conditioned Space**

**Program Start Date:** January 1991

**Program Description**

The Lighting Non-Conditioned Space Program is designed to encourage commercial/industrial customers to make cost-effective improvements to existing facilities. The goal is to offer customer rebates for installing energy efficient outdoor lighting technology and systems or in non-conditioned spaces to help reduce their energy consumption and demand and reducing Tampa Electric's peak demand. Tampa Electric will provide a rebate to customers who install qualifying non-conditioned spaces lighting systems.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Demand and energy savings were obtained using historical data collected from rebate submittals. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 8.670 kW |
| Winter Demand: | 8.670 kW |
| Annual Energy: | 44,095 kWh |

**Program Costs**

Rebate: $0.200 per Watt reduction.

The estimated administrative cost per participant is $175.

**Program Monitoring and Evaluation**

Data necessary to substantiate the kW and kWh savings as well as the demand coincidence will be contained on the customer's rebate analysis worksheet that accompanies the rebate application.

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: LIGHTING NON-CONDITIONED SPACE

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 87,232 | 100 | 0.0% | 100 |
| 2021 | 87,751 | 87,751 | 100 | 0.0% | 200 |
| 2022 | 88,348 | 88,348 | 100 | 0.3% | 300 |
| 2023 | 89,098 | 89,098 | 100 | 0.4% | 400 |
| 2024 | 89,793 | 89,793 | 100 | 0.6% | 500 |
| 2025 | 90,348 | 90,348 | 100 | 0.7% | 600 |
| 2026 | 90,824 | 90,824 | 100 | 0.8% | 700 |
| 2027 | 91,307 | 91,307 | 100 | 0.9% | 800 |
| 2028 | 91,824 | 91,824 | 100 | 1.0% | 900 |
| 2029 | 92,364 | 92,364 | 100 | 1.1% | 1,000 |

PROGRAM NAME: LIGHTING NON-CONDITIONED SPACE

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 44,095 | 8.670 | 8.670 | 4.410 | 0.867 | 0.867 |
| 2021 | 44,095 | 8.670 | 8.670 | 8.819 | 1.734 | 1.734 |
| 2022 | 44,095 | 8.670 | 8.670 | 13.229 | 2.601 | 2.601 |
| 2023 | 44,095 | 8.670 | 8.670 | 17.638 | 3.468 | 3.468 |
| 2024 | 44,095 | 8.670 | 8.670 | 22.048 | 4.335 | 4.335 |
| 2025 | 44,095 | 8.670 | 8.670 | 26.457 | 5.202 | 5.202 |
| 2026 | 44,095 | 8.670 | 8.670 | 30.867 | 6.069 | 6.069 |
| 2027 | 44,095 | 8.670 | 8.670 | 35.276 | 6.936 | 6.936 |
| 2028 | 44,095 | 8.670 | 8.670 | 39.686 | 7.803 | 7.803 |
| 2029 | 44,095 | 8.670 | 8.670 | 44.095 | 8.670 | 8.670 |

PROGRAM NAME: LIGHTING NON-CONDITIONED SPACE

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 46,388 | 9.277 | 9.277 | 4.639 | 0.928 | 0.928 |
| 2021 | 46,388 | 9.277 | 9.277 | 9.278 | 1.855 | 1.855 |
| 2022 | 46,388 | 9.277 | 9.277 | 13.916 | 2.783 | 2.783 |
| 2023 | 46,388 | 9.277 | 9.277 | 18.555 | 3.711 | 3.711 |
| 2024 | 46,388 | 9.277 | 9.277 | 23.194 | 4.638 | 4.638 |
| 2025 | 46,388 | 9.277 | 9.277 | 27.833 | 5.566 | 5.566 |
| 2026 | 46,388 | 9.277 | 9.277 | 32.472 | 6.494 | 6.494 |
| 2027 | 46,388 | 9.277 | 9.277 | 37.110 | 7.422 | 7.422 |
| 2028 | 46,388 | 9.277 | 9.277 | 41.749 | 8.349 | 8.349 |
| 2029 | 46,388 | 9.277 | 9.277 | 46.388 | 9.277 | 9.277 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Lighting - Non Conditioned





**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 8.670 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 9.651 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 46,514 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 44,095 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 14 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 175.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 28,896.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 1734.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.900 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **0.79** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **492** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.22** |

TOTAL RESOURCE COST TESTS
PROGRAM: Lighting - Non Conditioned

PSC FORM CE 2.3
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 18 | 2,890 | 0 | 2,907 | 0 | 0 | 67 | 0 | 67 | (2,840) | (2,840) |
| 2021 | 0 | 18 | 2,956 | 0 | 2,974 | 0 | 70 | 201 | 0 | 271 | (2,703) | (5,364) |
| 2022 | 0 | 18 | 3,024 | 0 | 3,042 | 0 | 72 | 345 | 0 | 417 | (2,625) | (7,653) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 224 | 74 | 431 | 0 | 729 | 729 | (7,059) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 230 | 76 | 448 | 0 | 754 | 754 | (6,486) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 237 | 77 | 481 | 0 | 796 | 796 | (5,920) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 244 | 79 | 497 | 0 | 820 | 820 | (5,376) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 251 | 81 | 528 | 0 | 860 | 860 | (4,844) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 255 | 83 | 585 | 0 | 923 | 923 | (4,310) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 262 | 85 | 627 | 0 | 973 | 973 | (3,784) |
| 2030 | 0 | 0 | 0 | 0 | 0 | 266 | 87 | 700 | 0 | 1,053 | 1,053 | (3,253) |
| 2031 | 0 | 0 | 0 | 0 | 0 | 275 | 89 | 697 | 0 | 1,062 | 1,062 | (2,753) |
| 2032 | 0 | 0 | 0 | 0 | 0 | 281 | 91 | 762 | 0 | 1,134 | 1,134 | (2,253) |
| 2033 | 0 | 0 | 0 | 0 | 0 | 291 | 94 | 813 | 0 | 1,197 | 1,197 | (1,761) |
| NOMINAL | 0 | 54 | 8,870 | 0 | 8,923 | 2,816 | 1,059 | 7,183 | 0 | 11,057 | 2,133 | |
| NPV: | 0 | 50 | 8,288 | 0 | 8,338 | 1,639 | 662 | 4,275 | 0 | 6,576 | -1,761 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 0.79

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Lighting - Non Conditioned

PSC FORM CE 2.4
Page 1 of 1
January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 150 | 0 | 173 | 0 | 324 | 2,890 | 0 | 0 | 2,890 | (2,566) | (2,566) |
| 2021 | 462 | 0 | 173 | 0 | 635 | 2,956 | 0 | 0 | 2,956 | (2,321) | (4,733) |
| 2022 | 785 | 0 | 173 | 0 | 959 | 3,024 | 0 | 0 | 3,024 | (2,065) | (6,534) |
| 2023 | 945 | 0 | 0 | 0 | 945 | 0 | 0 | 0 | 0 | 945 | (5,765) |
| 2024 | 971 | 0 | 0 | 0 | 971 | 0 | 0 | 0 | 0 | 971 | (5,026) |
| 2025 | 998 | 0 | 0 | 0 | 998 | 0 | 0 | 0 | 0 | 998 | (4,317) |
| 2026 | 1,022 | 0 | 0 | 0 | 1,022 | 0 | 0 | 0 | 0 | 1,022 | (3,639) |
| 2027 | 1,052 | 0 | 0 | 0 | 1,052 | 0 | 0 | 0 | 0 | 1,052 | (2,988) |
| 2028 | 1,099 | 0 | 0 | 0 | 1,099 | 0 | 0 | 0 | 0 | 1,099 | (2,352) |
| 2029 | 1,129 | 0 | 0 | 0 | 1,129 | 0 | 0 | 0 | 0 | 1,129 | (1,743) |
| 2030 | 1,179 | 0 | 0 | 0 | 1,179 | 0 | 0 | 0 | 0 | 1,179 | (1,147) |
| 2031 | 1,204 | 0 | 0 | 0 | 1,204 | 0 | 0 | 0 | 0 | 1,204 | (580) |
| 2032 | 1,250 | 0 | 0 | 0 | 1,250 | 0 | 0 | 0 | 0 | 1,250 | (30) |
| 2033 | 1,269 | 0 | 0 | 0 | 1,269 | 0 | 0 | 0 | 0 | 1,269 | 492 |
| NOMINAL | 13,516 | 0 | 520 | 0 | 14,036 | 8,870 | 0 | 0 | 8,870 | 5,166 | |
| NPV: | 8,293 | 0 | 487 | 0 | 8,779 | 8,288 | 0 | 0 | 8,288 | 492 | |

In service year of gen unit: 2023 1.0593505

RATE IMPACT TEST
PROGRAM: Lighting - Non Conditioned

PSC FORM CE 2.5
Page 1 of 1
January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 18 | 173 | 97 | 0 | 288 | 67 | 0 | 0 | 0 | 67 | (220) | (220) |
| 2021 | 0 | 18 | 173 | 293 | 0 | 485 | 201 | 70 | 0 | 0 | 271 | (213) | (420) |
| 2022 | 0 | 18 | 173 | 494 | 0 | 685 | 345 | 72 | 0 | 0 | 417 | (268) | (653) |
| 2023 | 0 | 0 | 0 | 598 | 0 | 598 | 656 | 74 | 0 | 0 | 729 | 131 | (547) |
| 2024 | 0 | 0 | 0 | 604 | 0 | 604 | 679 | 76 | 0 | 0 | 754 | 150 | (433) |
| 2025 | 0 | 0 | 0 | 610 | 0 | 610 | 718 | 77 | 0 | 0 | 796 | 185 | (301) |
| 2026 | 0 | 0 | 0 | 616 | 0 | 616 | 741 | 79 | 0 | 0 | 820 | 204 | (166) |
| 2027 | 0 | 0 | 0 | 623 | 0 | 623 | 779 | 81 | 0 | 0 | 860 | 237 | (19) |
| 2028 | 0 | 0 | 0 | 629 | 0 | 629 | 840 | 83 | 0 | 0 | 923 | 294 | 151 |
| 2029 | 0 | 0 | 0 | 635 | 0 | 635 | 888 | 85 | 0 | 0 | 973 | 338 | 334 |
| 2030 | 0 | 0 | 0 | 641 | 0 | 641 | 966 | 87 | 0 | 0 | 1,053 | 411 | 541 |
| 2031 | 0 | 0 | 0 | 648 | 0 | 648 | 972 | 89 | 0 | 0 | 1,062 | 414 | 736 |
| 2032 | 0 | 0 | 0 | 654 | 0 | 654 | 1,043 | 91 | 0 | 0 | 1,134 | 480 | 948 |
| 2033 | 0 | 0 | 0 | 661 | 0 | 661 | 1,104 | 94 | 0 | 0 | 1,197 | 536 | 1168 |
| NOMINAL | 0 | 54 | 520 | 7,804 | 0 | 8,378 | 9,998 | 1,059 | 0 | 0 | 11,057 | 2,679 | |
| NPV: | 0 | 50 | 487 | 4,872 | 0 | 5,408 | 5,914 | 662 | 0 | 0 | 6,576 | 1,168 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.22

**Program: Lighting Occupancy Sensors**

**Program Start Date:** March 2008

**Program Description**

The Lighting Occupancy Sensors Program is designed to encourage commercial/industrial customers to make cost-effective improvements to existing facilities. The goal is to offer customer rebates for installing lighting occupancy sensors to efficiently control lighting systems to help reduce their energy consumption and demand and reducing Tampa Electric's peak demand. Tampa Electric will provide a rebate to customers who install qualifying occupancy sensors for lighting systems.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Demand and energy savings were obtained using historical data collected from rebate submittals. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 33.610 kW |
| Winter Demand: | 26.880 kW |
| Annual Energy: | 91,255 kWh |

**Program Costs**

Rebate: $40 per qualifying occupancy sensor.

The estimated administrative cost per participant is $125.

**Program Monitoring and Evaluation**

Data necessary to substantiate the kW and kWh savings as well as the demand coincidence will be contained on the customer's rebate analysis worksheet that accompanies the rebate application. Time of use sampling with data loggers to confirm operating hours and kWh estimates may be used.

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: LIGHTING OCCUPANCY SENSORS

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 87,232 | 15 | 0.0% | 15 |
| 2021 | 87,751 | 87,751 | 15 | 0.0% | 30 |
| 2022 | 88,348 | 88,348 | 15 | 0.1% | 45 |
| 2023 | 89,098 | 89,098 | 15 | 0.1% | 60 |
| 2024 | 89,793 | 89,793 | 15 | 0.1% | 75 |
| 2025 | 90,348 | 90,348 | 15 | 0.1% | 90 |
| 2026 | 90,824 | 90,824 | 15 | 0.1% | 105 |
| 2027 | 91,307 | 91,307 | 15 | 0.1% | 120 |
| 2028 | 91,824 | 91,824 | 15 | 0.1% | 135 |
| 2029 | 92,364 | 92,364 | 15 | 0.2% | 150 |

PROGRAM NAME: LIGHTING OCCUPANCY SENSORS

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 91,255 | 26.880 | 33.610 | 1.369 | 0.403 | 0.504 |
| 2021 | 91,255 | 26.880 | 33.610 | 2.738 | 0.806 | 1.008 |
| 2022 | 91,255 | 26.880 | 33.610 | 4.106 | 1.210 | 1.512 |
| 2023 | 91,255 | 26.880 | 33.610 | 5.475 | 1.613 | 2.017 |
| 2024 | 91,255 | 26.880 | 33.610 | 6.844 | 2.016 | 2.521 |
| 2025 | 91,255 | 26.880 | 33.610 | 8.213 | 2.419 | 3.025 |
| 2026 | 91,255 | 26.880 | 33.610 | 9.582 | 2.822 | 3.529 |
| 2027 | 91,255 | 26.880 | 33.610 | 10.951 | 3.226 | 4.033 |
| 2028 | 91,255 | 26.880 | 33.610 | 12.319 | 3.629 | 4.537 |
| 2029 | 91,255 | 26.880 | 33.610 | 13.688 | 4.032 | 5.042 |

PROGRAM NAME: LIGHTING OCCUPANCY SENSORS

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 96,000 | 28.762 | 35.963 | 1.440 | 0.431 | 0.539 |
| 2021 | 96,000 | 28.762 | 35.963 | 2.880 | 0.863 | 1.079 |
| 2022 | 96,000 | 28.762 | 35.963 | 4.320 | 1.294 | 1.618 |
| 2023 | 96,000 | 28.762 | 35.963 | 5.760 | 1.726 | 2.158 |
| 2024 | 96,000 | 28.762 | 35.963 | 7.200 | 2.157 | 2.697 |
| 2025 | 96,000 | 28.762 | 35.963 | 8.640 | 2.589 | 3.237 |
| 2026 | 96,000 | 28.762 | 35.963 | 10.080 | 3.020 | 3.776 |
| 2027 | 96,000 | 28.762 | 35.963 | 11.520 | 3.451 | 4.316 |
| 2028 | 96,000 | 28.762 | 35.963 | 12.960 | 3.883 | 4.855 |
| 2029 | 96,000 | 28.762 | 35.963 | 14.400 | 4.314 | 5.394 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Commercial Occupancy Sensors

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RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 33.610 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 35.883 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 96,261 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 91,255 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 10 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 125.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 11,362.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 529.20 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.900 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **3.69** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **1,999** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.04** |

TOTAL RESOURCE COST TESTS
PROGRAM: Lighting - Occupancy Sensors

PSC FORM CE 2.3
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 2 | 170 | 0 | 172 | 0 | 0 | 21 | 0 | 21 | (151) | (151) |
| 2021 | 0 | 2 | 174 | 0 | 176 | 0 | 40 | 62 | 0 | 103 | (73) | (220) |
| 2022 | 0 | 2 | 178 | 0 | 180 | 0 | 41 | 107 | 0 | 149 | (32) | (248) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 125 | 42 | 134 | 0 | 301 | 301 | (2) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 128 | 43 | 139 | 0 | 311 | 311 | 235 |
| 2025 | 0 | 0 | 0 | 0 | 0 | 132 | 44 | 149 | 0 | 326 | 326 | 466 |
| 2026 | 0 | 0 | 0 | 0 | 0 | 136 | 46 | 154 | 0 | 336 | 336 | 689 |
| 2027 | 0 | 0 | 0 | 0 | 0 | 140 | 47 | 164 | 0 | 350 | 350 | 906 |
| 2028 | 0 | 0 | 0 | 0 | 0 | 142 | 48 | 182 | 0 | 371 | 371 | 1,121 |
| 2029 | 0 | 0 | 0 | 0 | 0 | 146 | 49 | 195 | 0 | 389 | 389 | 1,331 |
| NOMINAL | 0 | 6 | 523 | 0 | 529 | 950 | 401 | 1,307 | 0 | 2,658 | 2,129 | |
| NPV: | 0 | 5 | 489 | 0 | 494 | 632 | 286 | 908 | 0 | 1,826 | 1,331 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 3.69

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Lighting - Occupancy Sensors

PSC FORM CE 2.4
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 62 | 0 | 8 | 0 | 70 | 170 | 0 | 0 | 170 | (100) | (100) |
| 2021 | 190 | 0 | 8 | 0 | 198 | 174 | 0 | 0 | 174 | 24 | (78) |
| 2022 | 322 | 0 | 8 | 0 | 330 | 178 | 0 | 0 | 178 | 152 | 54 |
| 2023 | 388 | 0 | 0 | 0 | 388 | 0 | 0 | 0 | 0 | 388 | 370 |
| 2024 | 397 | 0 | 0 | 0 | 397 | 0 | 0 | 0 | 0 | 397 | 673 |
| 2025 | 407 | 0 | 0 | 0 | 407 | 0 | 0 | 0 | 0 | 407 | 961 |
| 2026 | 415 | 0 | 0 | 0 | 415 | 0 | 0 | 0 | 0 | 415 | 1,237 |
| 2027 | 425 | 0 | 0 | 0 | 425 | 0 | 0 | 0 | 0 | 425 | 1,500 |
| 2028 | 441 | 0 | 0 | 0 | 441 | 0 | 0 | 0 | 0 | 441 | 1,755 |
| 2029 | 451 | 0 | 0 | 0 | 451 | 0 | 0 | 0 | 0 | 451 | 1,999 |
| NOMINAL | 3,499 | 0 | 24 | 0 | 3,523 | 523 | 0 | 0 | 523 | 3,000 | |
| NPV: | 2,466 | 0 | 22 | 0 | 2,488 | 489 | 0 | 0 | 489 | 1,999 | |

In service year of gen unit: 2023 5.0897416

RATE IMPACT TEST
PROGRAM: Lighting - Occupancy Sensors

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 2 | 8 | 45 | 0 | 55 | 21 | 0 | 0 | 0 | 21 | (34) | (34) |
| 2021 | 0 | 2 | 8 | 138 | 0 | 147 | 62 | 40 | 0 | 0 | 103 | (45) | (76) |
| 2022 | 0 | 2 | 8 | 232 | 0 | 242 | 107 | 41 | 0 | 0 | 149 | (93) | (157) |
| 2023 | 0 | 0 | 0 | 281 | 0 | 281 | 259 | 42 | 0 | 0 | 301 | 21 | (140) |
| 2024 | 0 | 0 | 0 | 284 | 0 | 284 | 268 | 43 | 0 | 0 | 311 | 28 | (119) |
| 2025 | 0 | 0 | 0 | 286 | 0 | 286 | 282 | 44 | 0 | 0 | 326 | 40 | (91) |
| 2026 | 0 | 0 | 0 | 289 | 0 | 289 | 290 | 46 | 0 | 0 | 336 | 47 | (60) |
| 2027 | 0 | 0 | 0 | 292 | 0 | 292 | 304 | 47 | 0 | 0 | 350 | 58 | (24) |
| 2028 | 0 | 0 | 0 | 295 | 0 | 295 | 324 | 48 | 0 | 0 | 371 | 76 | 20 |
| 2029 | 0 | 0 | 0 | 298 | 0 | 298 | 341 | 49 | 0 | 0 | 389 | 91 | 70 |
| NOMINAL | 0 | 6 | 24 | 2,440 | 0 | 2,469 | 2,257 | 401 | 0 | 0 | 2,658 | 189 | |
| NPV: | 0 | 5 | 22 | 1,728 | 0 | 1,756 | 1,539 | 286 | 0 | 0 | 1,826 | 70 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.04

**Program: Commercial Load Management**

**Program Start Date:** January 1988

**Program Description**

The Commercial Load Management Program is intended to help alter Tampa Electric's system load curve by reducing summer and winter demand peaks. The goal is to offer customer incentives for allowing the installation and control of load management control equipment on specific technologies to reduce Tampa Electric's weather sensitive peak demand. Customers that participate in this program choose whether to have the technology controlled either interrupted for the entire control period or cycled during the control period. Tampa Electric will provide a monthly incentive credit to customers participating in this program.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Demand and energy savings were obtained using historical data collected. Demand reduction for the extended control commercial customers is continuously metered. Demand reduction for cyclic control customers is determined at the time of installation either through equipment performance evaluation or calculations performed by the company using the nameplate electrical capacity of the equipment. The analysis yielded the following expected savings per customer participant:

The average demand reduction per customer is as follows:
Summer @ 5:00 P.M. and 91°F in June
Winter @ 8:00 A.M. and 31°F in January

| | Cyclic Control | Extended Control |
|---|---|---|
| Summer Demand: | 13.200 kW | 92.000 kW |
| Winter Demand: | 0.000 kW | 60.000 kW |
| Annual Energy: | 0.000 kWh | 0.000 kWh |

**Program Costs**

Incentive: Cyclic control receives $3.00 per kW demand reduction per month during the summer; extended control receives $3.50 per kW demand reduction per month annually. Both incentives are applied to the customer's monthly bill.

Incentive: $265 recurring annual average per cyclic participant.

Incentive: $3,776 recurring annual average per extended participant.

The estimated annual recurring administrative cost per participant is $103.

The estimated one time administrative, installation and setup cost is $850.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: COMMERCIAL LOAD MANAGEMENT - CYCLIC

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 87,232 | 1 | 0.0% | 1 |
| 2021 | 87,751 | 87,751 | 1 | 0.0% | 2 |
| 2022 | 88,348 | 88,348 | 1 | 0.0% | 3 |
| 2023 | 89,098 | 89,098 | 1 | 0.0% | 4 |
| 2024 | 89,793 | 89,793 | 1 | 0.0% | 5 |
| 2025 | 90,348 | 90,348 | 1 | 0.0% | 6 |
| 2026 | 90,824 | 90,824 | 1 | 0.0% | 7 |
| 2027 | 91,307 | 91,307 | 1 | 0.0% | 8 |
| 2028 | 91,824 | 91,824 | 1 | 0.0% | 9 |
| 2029 | 92,364 | 92,364 | 1 | 0.0% | 10 |

PROGRAM NAME: COMMERCIAL LOAD MANAGEMENT - CYCLIC

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 0 | 0.000 | 13.200 | 0.000 | 0.000 | 0.013 |
| 2021 | 0 | 0.000 | 13.200 | 0.000 | 0.000 | 0.026 |
| 2022 | 0 | 0.000 | 13.200 | 0.000 | 0.000 | 0.040 |
| 2023 | 0 | 0.000 | 13.200 | 0.000 | 0.000 | 0.053 |
| 2024 | 0 | 0.000 | 13.200 | 0.000 | 0.000 | 0.066 |
| 2025 | 0 | 0.000 | 13.200 | 0.000 | 0.000 | 0.079 |
| 2026 | 0 | 0.000 | 13.200 | 0.000 | 0.000 | 0.092 |
| 2027 | 0 | 0.000 | 13.200 | 0.000 | 0.000 | 0.106 |
| 2028 | 0 | 0.000 | 13.200 | 0.000 | 0.000 | 0.119 |
| 2029 | 0 | 0.000 | 13.200 | 0.000 | 0.000 | 0.132 |

PROGRAM NAME: COMMERCIAL LOAD MANAGEMENT - CYCLIC

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 0 | 0.000 | 14.124 | 0.000 | 0.000 | 0.014 |
| 2021 | 0 | 0.000 | 14.124 | 0.000 | 0.000 | 0.028 |
| 2022 | 0 | 0.000 | 14.124 | 0.000 | 0.000 | 0.042 |
| 2023 | 0 | 0.000 | 14.124 | 0.000 | 0.000 | 0.056 |
| 2024 | 0 | 0.000 | 14.124 | 0.000 | 0.000 | 0.071 |
| 2025 | 0 | 0.000 | 14.124 | 0.000 | 0.000 | 0.085 |
| 2026 | 0 | 0.000 | 14.124 | 0.000 | 0.000 | 0.099 |
| 2027 | 0 | 0.000 | 14.124 | 0.000 | 0.000 | 0.113 |
| 2028 | 0 | 0.000 | 14.124 | 0.000 | 0.000 | 0.127 |
| 2029 | 0 | 0.000 | 14.124 | 0.000 | 0.000 | 0.141 |

PROGRAM NAME: COMMERCIAL LOAD MANAGEMENT - EXTENDED

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 8,723 | 1 | 0.0% | 1 |
| 2021 | 87,751 | 8,775 | 1 | 0.0% | 2 |
| 2022 | 88,348 | 8,835 | 1 | 0.0% | 3 |
| 2023 | 89,098 | 8,910 | 1 | 0.0% | 4 |
| 2024 | 89,793 | 8,979 | 1 | 0.1% | 5 |
| 2025 | 90,348 | 9,035 | 1 | 0.1% | 6 |
| 2026 | 90,824 | 9,082 | 1 | 0.1% | 7 |
| 2027 | 91,307 | 9,131 | 1 | 0.1% | 8 |
| 2028 | 91,824 | 9,182 | 1 | 0.1% | 9 |
| 2029 | 92,364 | 9,236 | 1 | 0.1% | 10 |

PROGRAM NAME: COMMERCIAL LOAD MANAGEMENT - EXTENDED

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 0 | 60.000 | 92.000 | 0.000 | 0.060 | 0.092 |
| 2021 | 0 | 60.000 | 92.000 | 0.000 | 0.120 | 0.184 |
| 2022 | 0 | 60.000 | 92.000 | 0.000 | 0.180 | 0.276 |
| 2023 | 0 | 60.000 | 92.000 | 0.000 | 0.240 | 0.368 |
| 2024 | 0 | 60.000 | 92.000 | 0.000 | 0.300 | 0.460 |
| 2025 | 0 | 60.000 | 92.000 | 0.000 | 0.360 | 0.552 |
| 2026 | 0 | 60.000 | 92.000 | 0.000 | 0.420 | 0.644 |
| 2027 | 0 | 60.000 | 92.000 | 0.000 | 0.480 | 0.736 |
| 2028 | 0 | 60.000 | 92.000 | 0.000 | 0.540 | 0.828 |
| 2029 | 0 | 60.000 | 92.000 | 0.000 | 0.600 | 0.920 |

PROGRAM NAME: COMMERCIAL LOAD MANAGEMENT - EXTENDED

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 0 | 64.200 | 98.440 | 0.000 | 0.064 | 0.098 |
| 2021 | 0 | 64.200 | 98.440 | 0.000 | 0.128 | 0.197 |
| 2022 | 0 | 64.200 | 98.440 | 0.000 | 0.193 | 0.295 |
| 2023 | 0 | 64.200 | 98.440 | 0.000 | 0.257 | 0.394 |
| 2024 | 0 | 64.200 | 98.440 | 0.000 | 0.321 | 0.492 |
| 2025 | 0 | 64.200 | 98.440 | 0.000 | 0.385 | 0.591 |
| 2026 | 0 | 64.200 | 98.440 | 0.000 | 0.449 | 0.689 |
| 2027 | 0 | 64.200 | 98.440 | 0.000 | 0.514 | 0.788 |
| 2028 | 0 | 64.200 | 98.440 | 0.000 | 0.578 | 0.886 |
| 2029 | 0 | 64.200 | 98.440 | 0.000 | 0.642 | 0.984 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Commercial Load Management - Cyclic

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**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 13.200 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 11.694 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 0 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 0 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 850.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 103.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 0.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 0.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 265.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.090 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 0.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **6.29** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **9** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **2.75** |

TOTAL RESOURCE COST TESTS
PROGRAM: Commercial Load Management - Cyclic

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | (1) | (1) |
| 2021 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | (0) | (1) |
| 2022 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | (1) | (2) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 5 | 4 | 2 |
| 2024 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 5 | 4 | 5 |
| 2025 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 5 | 4 | 8 |
| 2026 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 5 | 4 | 11 |
| 2027 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 13 |
| 2028 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 16 |
| 2029 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 18 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 20 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 22 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 23 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 25 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 26 |
| 2035 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 27 |
| 2036 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 29 |
| 2037 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 3 | 30 |
| 2038 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 3 | 31 |
| 2039 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 3 | 32 |
| 2040 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 4 | 33 |
| 2041 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 4 | 33 |
| 2042 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 34 |
| 2043 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 35 |
| 2044 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 4 | 36 |
| NOMINAL | 0 | 13 | 0 | 0 | 13 | 66 | 28 | 0 | 0 | 94 | 81 | |
| NPV: | 0 | 7 | 0 | 0 | 7 | 30 | 13 | 0 | 0 | 42 | 36 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 6.29

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Commercial Load Management - Cyclic

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2022 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 2023 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 |
| 2024 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 |
| 2025 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3 |
| 2026 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3 |
| 2027 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4 |
| 2028 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4 |
| 2029 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 5 |
| 2030 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 5 |
| 2031 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6 |
| 2032 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6 |
| 2033 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6 |
| 2034 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7 |
| 2035 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7 |
| 2036 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7 |
| 2037 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7 |
| 2038 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8 |
| 2039 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8 |
| 2040 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8 |
| 2041 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8 |
| 2042 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8 |
| 2043 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9 |
| 2044 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9 |
| NOMINAL | 0 | 0 | 19 | 0 | 19 | 0 | 0 | 0 | 0 | 19 | |
| NPV: | 0 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 9 | |

In service year of gen unit: 2023 #DIV/0!

RATE IMPACT TEST
PROGRAM: Commercial Load Management - Cyclic

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | (1) | (1) |
| 2021 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | (1) | (2) |
| 2022 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | (1) | (3) |
| 2023 | 0 | 0 | 1 | 0 | 0 | 1 | 4 | 1 | 0 | 0 | 5 | 4 | 0 |
| 2024 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 5 | 4 | 3 |
| 2025 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 5 | 3 | 5 |
| 2026 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 5 | 3 | 7 |
| 2027 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 10 |
| 2028 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 11 |
| 2029 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 13 |
| 2030 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 15 |
| 2031 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 16 |
| 2032 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 17 |
| 2033 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 19 |
| 2034 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 20 |
| 2035 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 21 |
| 2036 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 22 |
| 2037 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 22 |
| 2038 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 23 |
| 2039 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 24 |
| 2040 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 25 |
| 2041 | 0 | 1 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 25 |
| 2042 | 0 | 1 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 26 |
| 2043 | 0 | 1 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 26 |
| 2044 | 0 | 1 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | 3 | 27 |
| NOMINAL | 0 | 13 | 19 | 0 | 0 | 31 | 66 | 28 | 0 | 0 | 94 | 63 | |
| NPV: | 0 | 7 | 9 | 0 | 0 | 15 | 30 | 13 | 0 | 0 | 42 | 27 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 2.75

# INPUT DATA - PART 1
## PROGRAM TITLE: Commercial Load Management - Extended

PSC FORM CE 1.1
PAGE 1 OF 1
RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 92.000 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 95.137 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 0 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 0 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 850.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 103.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 0.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 0.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 3,776.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.090 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 0.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **49.47** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **124** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **2.55** |

TOTAL RESOURCE COST TESTS
PROGRAM: Commercial Load Management - Extended

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | (1) | (1) |
| 2021 | 0 | 1 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 4 | 3 | 2 |
| 2022 | 0 | 1 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 4 | 3 | 4 |
| 2023 | 0 | 0 | 0 | 0 | 0 | 29 | 9 | 0 | 0 | 38 | 37 | 35 |
| 2024 | 0 | 0 | 0 | 0 | 0 | 28 | 9 | 0 | 0 | 37 | 37 | 63 |
| 2025 | 0 | 0 | 0 | 0 | 0 | 28 | 9 | 0 | 0 | 36 | 36 | 89 |
| 2026 | 0 | 0 | 0 | 0 | 0 | 27 | 9 | 0 | 0 | 36 | 36 | 112 |
| 2027 | 0 | 0 | 0 | 0 | 0 | 27 | 9 | 0 | 0 | 35 | 35 | 134 |
| 2028 | 0 | 0 | 0 | 0 | 0 | 26 | 9 | 0 | 0 | 35 | 34 | 154 |
| 2029 | 0 | 0 | 0 | 0 | 0 | 26 | 9 | 0 | 0 | 34 | 34 | 172 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 25 | 9 | 0 | 0 | 34 | 33 | 189 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 25 | 9 | 0 | 0 | 33 | 33 | 204 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 24 | 9 | 0 | 0 | 33 | 32 | 218 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 24 | 9 | 0 | 0 | 33 | 32 | 232 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 23 | 9 | 0 | 0 | 32 | 31 | 244 |
| 2035 | 0 | 0 | 0 | 0 | 0 | 23 | 9 | 0 | 0 | 32 | 31 | 255 |
| 2036 | 0 | 0 | 0 | 0 | 0 | 23 | 9 | 0 | 0 | 32 | 31 | 265 |
| 2037 | 0 | 0 | 0 | 0 | 0 | 22 | 9 | 0 | 0 | 31 | 31 | 275 |
| 2038 | 0 | 0 | 0 | 0 | 0 | 22 | 9 | 0 | 0 | 31 | 31 | 284 |
| 2039 | 0 | 0 | 0 | 0 | 0 | 22 | 9 | 0 | 0 | 31 | 31 | 292 |
| 2040 | 0 | 0 | 0 | 0 | 0 | 23 | 9 | 0 | 0 | 32 | 31 | 300 |
| 2041 | 0 | 1 | 0 | 0 | 1 | 23 | 9 | 0 | 0 | 31 | 31 | 307 |
| 2042 | 0 | 1 | 0 | 0 | 1 | 22 | 9 | 0 | 0 | 31 | 31 | 314 |
| 2043 | 0 | 1 | 0 | 0 | 1 | 22 | 9 | 0 | 0 | 32 | 31 | 321 |
| 2044 | 0 | 1 | 0 | 0 | 1 | 23 | 9 | 0 | 0 | 33 | 32 | 327 |
| NOMINAL | 0 | 13 | 0 | 0 | 13 | 538 | 200 | 0 | 0 | 739 | 726 | |
| NPV: | 0 | 7 | 0 | 0 | 7 | 243 | 91 | 0 | 0 | 334 | 327 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 49.47

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Commercial Load Management - Extended

PSC FORM CE 2.4
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 |
| 2021 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 6 | 7 |
| 2022 | 0 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 9 | 15 |
| 2023 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 25 |
| 2024 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 33 |
| 2025 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 41 |
| 2026 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 49 |
| 2027 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 56 |
| 2028 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 62 |
| 2029 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 69 |
| 2030 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 74 |
| 2031 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 80 |
| 2032 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 85 |
| 2033 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 89 |
| 2034 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 94 |
| 2035 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 98 |
| 2036 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 101 |
| 2037 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 105 |
| 2038 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 108 |
| 2039 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 111 |
| 2040 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 114 |
| 2041 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 117 |
| 2042 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 119 |
| 2043 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 122 |
| 2044 | 0 | 0 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 124 |
| NOMINAL | 0 | 0 | 266 | 0 | 266 | 0 | 0 | 0 | 0 | 266 | |
| NPV: | 0 | 0 | 124 | 0 | 124 | 0 | 0 | 0 | 0 | 124 | |

In service year of gen unit: 2023 #DIV/0!

RATE IMPACT TEST
PROGRAM: Commercial Load Management - Extended

PSC FORM CE 2.5
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | (3) | (3) |
| 2021 | 0 | 1 | 6 | 0 | 0 | 7 | 0 | 4 | 0 | 0 | 4 | (3) | (5) |
| 2022 | 0 | 1 | 9 | 0 | 0 | 11 | 0 | 4 | 0 | 0 | 4 | (6) | (11) |
| 2023 | 0 | 0 | 11 | 0 | 0 | 12 | 29 | 9 | 0 | 0 | 38 | 26 | 10 |
| 2024 | 0 | 0 | 11 | 0 | 0 | 12 | 28 | 9 | 0 | 0 | 37 | 25 | 30 |
| 2025 | 0 | 0 | 11 | 0 | 0 | 12 | 28 | 9 | 0 | 0 | 36 | 25 | 47 |
| 2026 | 0 | 0 | 11 | 0 | 0 | 12 | 27 | 9 | 0 | 0 | 36 | 24 | 63 |
| 2027 | 0 | 0 | 11 | 0 | 0 | 12 | 27 | 9 | 0 | 0 | 35 | 24 | 78 |
| 2028 | 0 | 0 | 11 | 0 | 0 | 12 | 26 | 9 | 0 | 0 | 35 | 23 | 91 |
| 2029 | 0 | 0 | 11 | 0 | 0 | 12 | 26 | 9 | 0 | 0 | 34 | 23 | 104 |
| 2030 | 0 | 0 | 11 | 0 | 0 | 12 | 25 | 9 | 0 | 0 | 34 | 22 | 115 |
| 2031 | 0 | 0 | 11 | 0 | 0 | 12 | 25 | 9 | 0 | 0 | 33 | 22 | 125 |
| 2032 | 0 | 0 | 11 | 0 | 0 | 12 | 24 | 9 | 0 | 0 | 33 | 21 | 134 |
| 2033 | 0 | 0 | 11 | 0 | 0 | 12 | 24 | 9 | 0 | 0 | 33 | 21 | 142 |
| 2034 | 0 | 0 | 11 | 0 | 0 | 12 | 23 | 9 | 0 | 0 | 32 | 20 | 150 |
| 2035 | 0 | 0 | 11 | 0 | 0 | 12 | 23 | 9 | 0 | 0 | 32 | 20 | 157 |
| 2036 | 0 | 0 | 11 | 0 | 0 | 12 | 23 | 9 | 0 | 0 | 32 | 20 | 164 |
| 2037 | 0 | 0 | 11 | 0 | 0 | 12 | 22 | 9 | 0 | 0 | 31 | 19 | 170 |
| 2038 | 0 | 0 | 11 | 0 | 0 | 12 | 22 | 9 | 0 | 0 | 31 | 19 | 176 |
| 2039 | 0 | 0 | 11 | 0 | 0 | 12 | 22 | 9 | 0 | 0 | 31 | 19 | 181 |
| 2040 | 0 | 0 | 11 | 0 | 0 | 12 | 23 | 9 | 0 | 0 | 32 | 20 | 186 |
| 2041 | 0 | 1 | 11 | 0 | 0 | 12 | 23 | 9 | 0 | 0 | 31 | 20 | 191 |
| 2042 | 0 | 1 | 11 | 0 | 0 | 12 | 22 | 9 | 0 | 0 | 31 | 20 | 195 |
| 2043 | 0 | 1 | 11 | 0 | 0 | 12 | 22 | 9 | 0 | 0 | 32 | 20 | 199 |
| 2044 | 0 | 1 | 11 | 0 | 0 | 12 | 23 | 9 | 0 | 0 | 33 | 21 | 203 |
| NOMINAL | 0 | 13 | 266 | 0 | 0 | 279 | 538 | 200 | 0 | 0 | 739 | 460 | |
| NPV: | 0 | 7 | 124 | 0 | 0 | 131 | 243 | 91 | 0 | 0 | 334 | 203 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 2.55

**Program: Commercial Smart Thermostats**

**Program Start Date:** TBD

The Commercial Smart Thermostat Program is designed to encourage commercial/industrial customers to make cost-effective improvements to existing facilities. The goal is to offer customer rebates for installing smart thermostats to help reduce their demand while reducing Tampa Electric's weather sensitive peak demand. Smart thermostats are designed to reduce demand and energy by decreasing the load on commercial/industrial air conditioning and heating equipment and providing energy usage information regarding the heating and cooling system's settings and usage. This program will rebate commercial/industrial customers that install qualifying thermostat(s).

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible residential structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 2.600 kW |
| Winter Demand: | 0.950 kW |
| Annual Energy: | 45,895 kWh |

**Program Costs**

Rebate: Up to $4,500 per facility.

The estimated administrative cost per participant is $125.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: COMMERCIAL SMART THERMOSTAT

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 87,232 | 25 | 0.0% | 25 |
| 2021 | 87,751 | 87,751 | 25 | 0.1% | 50 |
| 2022 | 88,348 | 88,348 | 25 | 0.1% | 75 |
| 2023 | 89,098 | 89,098 | 25 | 0.1% | 100 |
| 2024 | 89,793 | 89,793 | 25 | 0.1% | 125 |
| 2025 | 90,348 | 90,348 | 25 | 0.2% | 150 |
| 2026 | 90,824 | 90,824 | 25 | 0.2% | 175 |
| 2027 | 91,307 | 91,307 | 25 | 0.2% | 200 |
| 2028 | 91,824 | 91,824 | 25 | 0.2% | 225 |
| 2029 | 92,364 | 92,364 | 25 | 0.3% | 250 |

PROGRAM NAME: COMMERCIAL SMART THERMOSTAT

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 45,895 | 0.950 | 2.600 | 1.147 | 0.024 | 0.065 |
| 2021 | 45,895 | 0.950 | 2.600 | 2.295 | 0.048 | 0.130 |
| 2022 | 45,895 | 0.950 | 2.600 | 3.442 | 0.071 | 0.195 |
| 2023 | 45,895 | 0.950 | 2.600 | 4.590 | 0.095 | 0.260 |
| 2024 | 45,895 | 0.950 | 2.600 | 5.737 | 0.119 | 0.325 |
| 2025 | 45,895 | 0.950 | 2.600 | 6.884 | 0.143 | 0.390 |
| 2026 | 45,895 | 0.950 | 2.600 | 8.032 | 0.166 | 0.455 |
| 2027 | 45,895 | 0.950 | 2.600 | 9.179 | 0.190 | 0.520 |
| 2028 | 45,895 | 0.950 | 2.600 | 10.326 | 0.214 | 0.585 |
| 2029 | 45,895 | 0.950 | 2.600 | 11.474 | 0.238 | 0.650 |

PROGRAM NAME: COMMERCIAL SMART THERMOSTAT

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 48,282 | 1.017 | 2.782 | 1.207 | 0.025 | 0.070 |
| 2021 | 48,282 | 1.017 | 2.782 | 2.414 | 0.051 | 0.139 |
| 2022 | 48,282 | 1.017 | 2.782 | 3.621 | 0.076 | 0.209 |
| 2023 | 48,282 | 1.017 | 2.782 | 4.828 | 0.102 | 0.278 |
| 2024 | 48,282 | 1.017 | 2.782 | 6.035 | 0.127 | 0.348 |
| 2025 | 48,282 | 1.017 | 2.782 | 7.242 | 0.152 | 0.417 |
| 2026 | 48,282 | 1.017 | 2.782 | 8.449 | 0.178 | 0.487 |
| 2027 | 48,282 | 1.017 | 2.782 | 9.656 | 0.203 | 0.556 |
| 2028 | 48,282 | 1.017 | 2.782 | 10.863 | 0.229 | 0.626 |
| 2029 | 48,282 | 1.017 | 2.782 | 12.070 | 0.254 | 0.696 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Commercial Smart Thermostat

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RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 2.600 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 2.519 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 48,412 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 45,895 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 11 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 125.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 20,824.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 4500.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.090 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **0.65** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **106** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.06** |

TOTAL RESOURCE COST TESTS
PROGRAM: Commercial Smart Thermostat

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 3 | 521 | 0 | 524 | 0 | 0 | 18 | 0 | 18 | (506) | (506) |
| 2021 | 0 | 3 | 533 | 0 | 536 | 0 | 5 | 52 | 0 | 57 | (478) | (953) |
| 2022 | 0 | 3 | 545 | 0 | 548 | 0 | 5 | 90 | 0 | 95 | (453) | (1,348) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 15 | 5 | 112 | 0 | 132 | 132 | (1,240) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 15 | 5 | 117 | 0 | 137 | 137 | (1,136) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 15 | 6 | 125 | 0 | 146 | 146 | (1,032) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 16 | 6 | 129 | 0 | 151 | 151 | (932) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 16 | 6 | 137 | 0 | 160 | 160 | (833) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 17 | 6 | 152 | 0 | 175 | 175 | (732) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 17 | 6 | 163 | 0 | 186 | 186 | (631) |
| 2030 | 0 | 0 | 0 | 0 | 0 | 17 | 6 | 182 | 0 | 206 | 206 | (528) |
| NOMINAL | 0 | 10 | 1,598 | 0 | 1,608 | 129 | 57 | 1,278 | 0 | 1,463 | -145 | |
| NPV: | 0 | 9 | 1,493 | 0 | 1,502 | 83 | 39 | 853 | 0 | 975 | -528 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 0.65

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Commercial Smart Thermostat

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 28 | 0 | 113 | 0 | 141 | 521 | 0 | 0 | 521 | (380) | (380) |
| 2021 | 87 | 0 | 113 | 0 | 200 | 533 | 0 | 0 | 533 | (333) | (690) |
| 2022 | 149 | 0 | 113 | 0 | 262 | 545 | 0 | 0 | 545 | (283) | (937) |
| 2023 | 179 | 0 | 0 | 0 | 179 | 0 | 0 | 0 | 0 | 179 | (792) |
| 2024 | 185 | 0 | 0 | 0 | 185 | 0 | 0 | 0 | 0 | 185 | (651) |
| 2025 | 191 | 0 | 0 | 0 | 191 | 0 | 0 | 0 | 0 | 191 | (515) |
| 2026 | 197 | 0 | 0 | 0 | 197 | 0 | 0 | 0 | 0 | 197 | (384) |
| 2027 | 204 | 0 | 0 | 0 | 204 | 0 | 0 | 0 | 0 | 204 | (258) |
| 2028 | 216 | 0 | 0 | 0 | 216 | 0 | 0 | 0 | 0 | 216 | (133) |
| 2029 | 223 | 0 | 0 | 0 | 223 | 0 | 0 | 0 | 0 | 223 | (13) |
| 2030 | 235 | 0 | 0 | 0 | 235 | 0 | 0 | 0 | 0 | 235 | 106 |
| NOMINAL | 1,895 | 0 | 338 | 0 | 2,232 | 1,598 | 0 | 0 | 1,598 | 634 | |
| NPV: | 1,283 | 0 | 316 | 0 | 1,599 | 1,493 | 0 | 0 | 1,493 | 106 | |
| In service year of gen unit: | | | 2023 | | 1.0709431 | | | | | | |

RATE IMPACT TEST
PROGRAM: Commercial Smart Thermostat

PSC FORM CE 2.5
Page 1 of 1
January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 3 | 113 | 14 | 0 | 130 | 18 | 0 | 0 | 0 | 18 | (112) | (112) |
| 2021 | 0 | 3 | 113 | 44 | 0 | 159 | 52 | 5 | 0 | 0 | 57 | (102) | (208) |
| 2022 | 0 | 3 | 113 | 73 | 0 | 189 | 90 | 5 | 0 | 0 | 95 | (94) | (290) |
| 2023 | 0 | 0 | 0 | 89 | 0 | 89 | 127 | 5 | 0 | 0 | 132 | 43 | (254) |
| 2024 | 0 | 0 | 0 | 90 | 0 | 90 | 132 | 5 | 0 | 0 | 137 | 47 | (218) |
| 2025 | 0 | 0 | 0 | 91 | 0 | 91 | 141 | 6 | 0 | 0 | 146 | 56 | (178) |
| 2026 | 0 | 0 | 0 | 91 | 0 | 91 | 145 | 6 | 0 | 0 | 151 | 59 | (139) |
| 2027 | 0 | 0 | 0 | 92 | 0 | 92 | 154 | 6 | 0 | 0 | 160 | 67 | (97) |
| 2028 | 0 | 0 | 0 | 93 | 0 | 93 | 169 | 6 | 0 | 0 | 175 | 82 | (50) |
| 2029 | 0 | 0 | 0 | 94 | 0 | 94 | 180 | 6 | 0 | 0 | 186 | 92 | (1) |
| 2030 | 0 | 0 | 0 | 95 | 0 | 95 | 199 | 6 | 0 | 0 | 206 | 111 | 55 |
| NOMINAL | 0 | 10 | 338 | 867 | 0 | 1,214 | 1,406 | 57 | 0 | 0 | 1,463 | 249 | |
| NPV: | 0 | 9 | 316 | 595 | 0 | 919 | 935 | 39 | 0 | 0 | 975 | 55 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.06

**Program: Standby Generator**

**Program Start Date:** January 1991

**Program Description**

The Standby Generator Program is designed to utilize the emergency generation capacity of commercial/industrial facilities in order to reduce weather sensitive peak demand. Tampa Electric provides the participating customers a 30-minute notice that their generation will be required. This allows customers time to start generators and arrange for orderly transfer of load. Tampa Electric meters and issues monthly credits for that portion of the generator's output that could serve normal building load after the notification time. Normal building load is defined as load (type, amount and time duration) that would have been served by Tampa Electric if the emergency generator did not operate. Under no circumstances will the generator deliver power to Tampa Electric's grid. Under the Environmental Protection Agency's rules, Tampa Electric classifies the Standby Generator Program as a non-emergency program.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Demand and energy savings were obtained using historical data collected. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 545.450 kW |
| Winter Demand: | 545.450 kW |
| Annual Energy: | 54,545 kWh |

**Program Costs**

The estimated annual recurring administrative cost per participant is $1,196.

The estimated one time administrative, installation and setup cost is $4,000.

The estimated annual recurring incentive per participant is $35,018.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: STANDBY GENERATOR

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 2,617 | 1 | 0.0% | 1 |
| 2021 | 87,751 | 2,633 | 1 | 0.1% | 2 |
| 2022 | 88,348 | 2,650 | 1 | 0.1% | 3 |
| 2023 | 89,098 | 2,673 | 1 | 0.1% | 4 |
| 2024 | 89,793 | 2,694 | 1 | 0.2% | 5 |
| 2025 | 90,348 | 2,710 | 1 | 0.2% | 6 |
| 2026 | 90,824 | 2,725 | 1 | 0.3% | 7 |
| 2027 | 91,307 | 2,739 | 1 | 0.3% | 8 |
| 2028 | 91,824 | 2,755 | 1 | 0.3% | 9 |
| 2029 | 92,364 | 2,771 | 1 | 0.4% | 10 |

PROGRAM NAME: STANDBY GENERATOR

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 54,545 | 545.450 | 545.450 | 0.055 | 0.545 | 0.545 |
| 2021 | 54,545 | 545.450 | 545.450 | 0.109 | 1.091 | 1.091 |
| 2022 | 54,545 | 545.450 | 545.450 | 0.164 | 1.636 | 1.636 |
| 2023 | 54,545 | 545.450 | 545.450 | 0.218 | 2.182 | 2.182 |
| 2024 | 54,545 | 545.450 | 545.450 | 0.273 | 2.727 | 2.727 |
| 2025 | 54,545 | 545.450 | 545.450 | 0.327 | 3.273 | 3.273 |
| 2026 | 54,545 | 545.450 | 545.450 | 0.382 | 3.818 | 3.818 |
| 2027 | 54,545 | 545.450 | 545.450 | 0.436 | 4.364 | 4.364 |
| 2028 | 54,545 | 545.450 | 545.450 | 0.491 | 4.909 | 4.909 |
| 2029 | 54,545 | 545.450 | 545.450 | 0.545 | 5.455 | 5.455 |

PROGRAM NAME: STANDBY GENERATOR

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 57,381 | 583.632 | 583.632 | 0.057 | 0.584 | 0.584 |
| 2021 | 57,381 | 583.632 | 583.632 | 0.115 | 1.167 | 1.167 |
| 2022 | 57,381 | 583.632 | 583.632 | 0.172 | 1.751 | 1.751 |
| 2023 | 57,381 | 583.632 | 583.632 | 0.230 | 2.335 | 2.335 |
| 2024 | 57,381 | 583.632 | 583.632 | 0.287 | 2.918 | 2.918 |
| 2025 | 57,381 | 583.632 | 583.632 | 0.344 | 3.502 | 3.502 |
| 2026 | 57,381 | 583.632 | 583.632 | 0.402 | 4.085 | 4.085 |
| 2027 | 57,381 | 583.632 | 583.632 | 0.459 | 4.669 | 4.669 |
| 2028 | 57,381 | 583.632 | 583.632 | 0.516 | 5.253 | 5.253 |
| 2029 | 57,381 | 583.632 | 583.632 | 0.574 | 5.836 | 5.836 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Standby Generator

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PAGE 1 OF 1
RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 545.450 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 607.148 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 57,537 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 54,545 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 25 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 0 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 4,000.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 1,196.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 0.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 6162.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 0.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 35,018.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 11.870 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 0.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **6.93** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **1,002** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.76** |

TOTAL RESOURCE COST TESTS
PROGRAM: Standby Generator

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 5 | 3 | 0 | 8 | 0 | 0 | 1 | 0 | 1 | (7) | (7) |
| 2021 | 0 | 6 | 9 | 0 | 15 | 0 | 24 | 2 | 0 | 27 | 11 | 4 |
| 2022 | 0 | 7 | 16 | 0 | 23 | 0 | 25 | 4 | 0 | 29 | 6 | 9 |
| 2023 | 0 | 4 | 20 | 0 | 24 | 184 | 53 | 5 | 0 | 243 | 219 | 187 |
| 2024 | 0 | 4 | 20 | 0 | 24 | 181 | 53 | 6 | 0 | 240 | 215 | 351 |
| 2025 | 0 | 4 | 21 | 0 | 25 | 177 | 53 | 6 | 0 | 236 | 211 | 501 |
| 2026 | 0 | 4 | 21 | 0 | 25 | 174 | 53 | 6 | 0 | 233 | 208 | 639 |
| 2027 | 0 | 4 | 22 | 0 | 26 | 171 | 52 | 7 | 0 | 230 | 204 | 766 |
| 2028 | 0 | 4 | 22 | 0 | 27 | 166 | 52 | 7 | 0 | 226 | 199 | 881 |
| 2029 | 0 | 4 | 23 | 0 | 27 | 164 | 52 | 8 | 0 | 224 | 196 | 987 |
| 2030 | 0 | 5 | 23 | 0 | 28 | 159 | 52 | 9 | 0 | 220 | 192 | 1,084 |
| 2031 | 0 | 5 | 24 | 0 | 28 | 157 | 52 | 9 | 0 | 218 | 190 | 1,173 |
| 2032 | 0 | 5 | 24 | 0 | 29 | 154 | 52 | 9 | 0 | 215 | 186 | 1,255 |
| 2033 | 0 | 5 | 25 | 0 | 30 | 153 | 52 | 10 | 0 | 215 | 185 | 1,331 |
| 2034 | 0 | 5 | 25 | 0 | 30 | 149 | 52 | 11 | 0 | 211 | 181 | 1,401 |
| 2035 | 0 | 5 | 26 | 0 | 31 | 147 | 52 | 12 | 0 | 210 | 179 | 1,465 |
| 2036 | 0 | 5 | 27 | 0 | 32 | 146 | 52 | 11 | 0 | 210 | 178 | 1,524 |
| 2037 | 0 | 5 | 27 | 0 | 33 | 143 | 52 | 12 | 0 | 207 | 175 | 1,579 |
| 2038 | 0 | 5 | 28 | 0 | 33 | 143 | 52 | 12 | 0 | 208 | 174 | 1,630 |
| 2039 | 0 | 6 | 28 | 0 | 34 | 142 | 53 | 12 | 0 | 207 | 173 | 1,677 |
| 2040 | 0 | 6 | 29 | 0 | 35 | 146 | 53 | 13 | 0 | 213 | 178 | 1,722 |
| 2041 | 0 | 6 | 30 | 0 | 36 | 144 | 54 | 14 | 0 | 212 | 176 | 1,764 |
| 2042 | 0 | 6 | 30 | 0 | 37 | 143 | 54 | 15 | 0 | 212 | 175 | 1,803 |
| 2043 | 0 | 6 | 31 | 0 | 37 | 144 | 54 | 15 | 0 | 213 | 176 | 1,840 |
| 2044 | 0 | 6 | 32 | 0 | 38 | 150 | 55 | 14 | 0 | 219 | 181 | 1,875 |
| NOMINAL | 0 | 128 | 587 | 0 | 715 | 3,438 | 1,210 | 230 | 0 | 4,878 | 4,163 | |
| NPV: | 0 | 61 | 255 | 0 | 316 | 1,551 | 549 | 91 | 0 | 2,191 | 1,875 | |
| Discount Rate | | 0.0708 | Benefit/Cost Ratio - [col (11)/col (6)]: | | | | 6.93 | | | | | |

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Standby Generator

PSC FORM CE 2.4
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 1 | 0 | 18 | 0 | 19 | 0 | 3 | 0 | 3 | 16 | 16 |
| 2021 | 4 | 0 | 53 | 0 | 56 | 0 | 9 | 0 | 9 | 47 | 59 |
| 2022 | 6 | 0 | 88 | 0 | 94 | 0 | 16 | 0 | 16 | 78 | 127 |
| 2023 | 7 | 0 | 105 | 0 | 112 | 0 | 20 | 0 | 20 | 93 | 202 |
| 2024 | 8 | 0 | 105 | 0 | 113 | 0 | 20 | 0 | 20 | 92 | 273 |
| 2025 | 8 | 0 | 105 | 0 | 113 | 0 | 21 | 0 | 21 | 92 | 338 |
| 2026 | 8 | 0 | 105 | 0 | 113 | 0 | 21 | 0 | 21 | 92 | 399 |
| 2027 | 8 | 0 | 105 | 0 | 114 | 0 | 22 | 0 | 22 | 92 | 456 |
| 2028 | 9 | 0 | 105 | 0 | 114 | 0 | 22 | 0 | 22 | 92 | 509 |
| 2029 | 9 | 0 | 105 | 0 | 114 | 0 | 23 | 0 | 23 | 92 | 559 |
| 2030 | 10 | 0 | 105 | 0 | 115 | 0 | 23 | 0 | 23 | 92 | 605 |
| 2031 | 10 | 0 | 105 | 0 | 115 | 0 | 24 | 0 | 24 | 92 | 648 |
| 2032 | 11 | 0 | 105 | 0 | 116 | 0 | 24 | 0 | 24 | 91 | 688 |
| 2033 | 11 | 0 | 105 | 0 | 116 | 0 | 25 | 0 | 25 | 91 | 726 |
| 2034 | 11 | 0 | 105 | 0 | 116 | 0 | 25 | 0 | 25 | 91 | 761 |
| 2035 | 12 | 0 | 105 | 0 | 117 | 0 | 26 | 0 | 26 | 91 | 793 |
| 2036 | 12 | 0 | 105 | 0 | 117 | 0 | 27 | 0 | 27 | 91 | 824 |
| 2037 | 13 | 0 | 105 | 0 | 118 | 0 | 27 | 0 | 27 | 90 | 852 |
| 2038 | 13 | 0 | 105 | 0 | 118 | 0 | 28 | 0 | 28 | 90 | 878 |
| 2039 | 13 | 0 | 105 | 0 | 118 | 0 | 28 | 0 | 28 | 90 | 903 |
| 2040 | 13 | 0 | 105 | 0 | 119 | 0 | 29 | 0 | 29 | 89 | 926 |
| 2041 | 14 | 0 | 105 | 0 | 119 | 0 | 30 | 0 | 30 | 89 | 947 |
| 2042 | 14 | 0 | 105 | 0 | 120 | 0 | 30 | 0 | 30 | 89 | 967 |
| 2043 | 15 | 0 | 105 | 0 | 120 | 0 | 31 | 0 | 31 | 89 | 985 |
| 2044 | 15 | 0 | 105 | 0 | 120 | 0 | 32 | 0 | 32 | 88 | 1,002 |
| NOMINAL | 256 | 0 | 2,469 | 0 | 2,725 | 0 | 587 | 0 | 587 | 2,138 | |
| NPV: | 107 | 0 | 1,150 | 0 | 1,257 | 0 | 255 | 0 | 255 | 1,002 | |
| In service year of gen unit: | | | 2023 | | 4.9318714 | | | | | | |

RATE IMPACT TEST
PROGRAM: Standby Generator

PSC FORM CE 2.5
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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 5 | 18 | 0 | 0 | 23 | 1 | 0 | 0 | 0 | 1 | (22) | (22) |
| 2021 | 0 | 6 | 53 | 2 | 0 | 60 | 2 | 24 | 0 | 0 | 27 | (33) | (53) |
| 2022 | 0 | 7 | 88 | 3 | 0 | 97 | 4 | 25 | 0 | 0 | 29 | (68) | (112) |
| 2023 | 0 | 4 | 105 | 3 | 0 | 112 | 190 | 53 | 0 | 0 | 243 | 131 | (6) |
| 2024 | 0 | 4 | 105 | 3 | 0 | 112 | 186 | 53 | 0 | 0 | 240 | 127 | 91 |
| 2025 | 0 | 4 | 105 | 3 | 0 | 112 | 183 | 53 | 0 | 0 | 236 | 124 | 179 |
| 2026 | 0 | 4 | 105 | 3 | 0 | 112 | 181 | 53 | 0 | 0 | 233 | 121 | 259 |
| 2027 | 0 | 4 | 105 | 3 | 0 | 112 | 178 | 52 | 0 | 0 | 230 | 118 | 332 |
| 2028 | 0 | 4 | 105 | 3 | 0 | 113 | 174 | 52 | 0 | 0 | 226 | 113 | 398 |
| 2029 | 0 | 4 | 105 | 3 | 0 | 113 | 171 | 52 | 0 | 0 | 224 | 111 | 458 |
| 2030 | 0 | 5 | 105 | 3 | 0 | 113 | 168 | 52 | 0 | 0 | 220 | 107 | 512 |
| 2031 | 0 | 5 | 105 | 3 | 0 | 113 | 166 | 52 | 0 | 0 | 218 | 105 | 561 |
| 2032 | 0 | 5 | 105 | 3 | 0 | 113 | 163 | 52 | 0 | 0 | 215 | 102 | 606 |
| 2033 | 0 | 5 | 105 | 3 | 0 | 113 | 163 | 52 | 0 | 0 | 215 | 101 | 648 |
| 2034 | 0 | 5 | 105 | 3 | 0 | 113 | 159 | 52 | 0 | 0 | 211 | 98 | 685 |
| 2035 | 0 | 5 | 105 | 3 | 0 | 114 | 158 | 52 | 0 | 0 | 210 | 97 | 720 |
| 2036 | 0 | 5 | 105 | 3 | 0 | 114 | 157 | 52 | 0 | 0 | 210 | 96 | 752 |
| 2037 | 0 | 5 | 105 | 4 | 0 | 114 | 155 | 52 | 0 | 0 | 207 | 93 | 781 |
| 2038 | 0 | 5 | 105 | 4 | 0 | 114 | 155 | 52 | 0 | 0 | 208 | 94 | 808 |
| 2039 | 0 | 6 | 105 | 4 | 0 | 114 | 155 | 53 | 0 | 0 | 207 | 93 | 834 |
| 2040 | 0 | 6 | 105 | 4 | 0 | 114 | 159 | 53 | 0 | 0 | 213 | 98 | 859 |
| 2041 | 0 | 6 | 105 | 4 | 0 | 115 | 158 | 54 | 0 | 0 | 212 | 97 | 882 |
| 2042 | 0 | 6 | 105 | 4 | 0 | 115 | 158 | 54 | 0 | 0 | 212 | 97 | 904 |
| 2043 | 0 | 6 | 105 | 4 | 0 | 115 | 159 | 54 | 0 | 0 | 213 | 98 | 924 |
| 2044 | 0 | 6 | 105 | 4 | 0 | 115 | 164 | 55 | 0 | 0 | 219 | 104 | 944 |
| NOMINAL | 0 | 128 | 2,469 | 80 | 0 | 2,676 | 3,668 | 1,210 | 0 | 0 | 4,878 | 2,202 | |
| NPV: | 0 | 61 | 1,150 | 36 | 0 | 1,247 | 1,642 | 549 | 0 | 0 | 2,191 | 944 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.76

**Program: Variable Frequency Drive Control for Compressors**

**Program Start Date:** TBD

**Program Description**

The Variable Frequency Drive Control for Compressors Program is designed to encourage commercial/industrial customers to make cost-effective improvements to existing facilities. The goal is to offer customer rebates for installing variable frequency drives to their new or existing refrigerant or air compressor motors to help reduce their demand while reducing Tampa Electric's weather sensitive peak demand. Tampa Electric will provide a rebate to customers who install a qualifying variable frequency drive.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible commercial structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 1.860 kW |
| Winter Demand: | 1.160 kW |
| Annual Energy: | 13,160 kWh |

**Program Costs**

Rebate: $50 per compressor-controlled Horse Power ("HP").

The estimated administrative cost per participant is $125.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: VARIABLE FREQUENCY DRIVE CONTROL FOR COMPRESSORS

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 69,785 | 100 | 0.0% | 100 |
| 2021 | 87,751 | 70,201 | 150 | 0.0% | 250 |
| 2022 | 88,348 | 70,678 | 200 | 0.6% | 450 |
| 2023 | 89,098 | 71,278 | 250 | 1.0% | 700 |
| 2024 | 89,793 | 71,835 | 250 | 1.3% | 950 |
| 2025 | 90,348 | 72,279 | 250 | 1.7% | 1,200 |
| 2026 | 90,824 | 72,659 | 250 | 2.0% | 1,450 |
| 2027 | 91,307 | 73,046 | 250 | 2.3% | 1,700 |
| 2028 | 91,824 | 73,459 | 250 | 2.7% | 1,950 |
| 2029 | 92,364 | 73,891 | 250 | 3.0% | 2,200 |

PROGRAM NAME: VARIABLE FREQUENCY DRIVE CONTROL FOR COMPRESSORS

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 13,160 | 1.160 | 1.860 | 1.316 | 0.116 | 0.186 |
| 2021 | 13,160 | 1.160 | 1.860 | 3.290 | 0.290 | 0.465 |
| 2022 | 13,160 | 1.160 | 1.860 | 5.922 | 0.522 | 0.837 |
| 2023 | 13,160 | 1.160 | 1.860 | 9.212 | 0.812 | 1.302 |
| 2024 | 13,160 | 1.160 | 1.860 | 12.502 | 1.102 | 1.767 |
| 2025 | 13,160 | 1.160 | 1.860 | 15.792 | 1.392 | 2.232 |
| 2026 | 13,160 | 1.160 | 1.860 | 19.082 | 1.682 | 2.697 |
| 2027 | 13,160 | 1.160 | 1.860 | 22.372 | 1.972 | 3.162 |
| 2028 | 13,160 | 1.160 | 1.860 | 25.662 | 2.262 | 3.627 |
| 2029 | 13,160 | 1.160 | 1.860 | 28.952 | 2.552 | 4.092 |

PROGRAM NAME: VARIABLE FREQUENCY DRIVE CONTROL FOR COMPRESSORS

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 13,844 | 1.241 | 1.990 | 1.384 | 0.124 | 0.199 |
| 2021 | 13,844 | 1.241 | 1.990 | 3.461 | 0.310 | 0.498 |
| 2022 | 13,844 | 1.241 | 1.990 | 6.230 | 0.559 | 0.896 |
| 2023 | 13,844 | 1.241 | 1.990 | 9.691 | 0.869 | 1.393 |
| 2024 | 13,844 | 1.241 | 1.990 | 13.152 | 1.179 | 1.891 |
| 2025 | 13,844 | 1.241 | 1.990 | 16.613 | 1.489 | 2.388 |
| 2026 | 13,844 | 1.241 | 1.990 | 20.074 | 1.800 | 2.886 |
| 2027 | 13,844 | 1.241 | 1.990 | 23.535 | 2.110 | 3.383 |
| 2028 | 13,844 | 1.241 | 1.990 | 26.996 | 2.420 | 3.881 |
| 2029 | 13,844 | 1.241 | 1.990 | 30.458 | 2.731 | 4.378 |

# INPUT DATA - PART 1
## PROGRAM TITLE: VFD Control for Compressors

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**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 1.860 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 1.911 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 13,882 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 13,160 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 15 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 125.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 3,986.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 1000.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.090 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.58** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **2,131** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.22** |

TOTAL RESOURCE COST TESTS
PROGRAM: VFD Control for Compressors

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 13 | 399 | 0 | 411 | 0 | 0 | 20 | 0 | 20 | (391) | (391) |
| 2021 | 0 | 19 | 612 | 0 | 631 | 0 | 22 | 70 | 0 | 92 | (539) | (894) |
| 2022 | 0 | 26 | 834 | 0 | 861 | 0 | 23 | 144 | 0 | 167 | (694) | (1,499) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 67 | 23 | 193 | 0 | 283 | 283 | (1,268) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 68 | 24 | 201 | 0 | 293 | 293 | (1,046) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 70 | 24 | 215 | 0 | 310 | 310 | (825) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 73 | 25 | 222 | 0 | 320 | 320 | (613) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 74 | 26 | 236 | 0 | 336 | 336 | (405) |
| 2028 | 0 | 0 | 0 | 0 | 0 | 76 | 26 | 262 | 0 | 364 | 364 | (194) |
| 2029 | 0 | 0 | 0 | 0 | 0 | 78 | 27 | 281 | 0 | 385 | 385 | 14 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 79 | 27 | 313 | 0 | 420 | 420 | 226 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 82 | 28 | 312 | 0 | 422 | 422 | 424 |
| 2032 | 0 | 0 | 0 | 0 | 0 | 83 | 29 | 341 | 0 | 453 | 453 | 624 |
| 2033 | 0 | 0 | 0 | 0 | 0 | 86 | 29 | 364 | 0 | 480 | 480 | 821 |
| 2034 | 0 | 0 | 0 | 0 | 0 | 88 | 30 | 381 | 0 | 499 | 499 | 1,013 |
| NOMINAL | 0 | 58 | 1,845 | 0 | 1,902 | 925 | 364 | 3,556 | 0 | 4,844 | 2,942 | |
| NPV: | 0 | 53 | 1,697 | 0 | 1,751 | 521 | 220 | 2,022 | 0 | 2,763 | 1,013 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 1.58

PARTICIPANT COSTS AND BENEFITS
PROGRAM: VFD Control for Compressors

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January 15, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 39 | 0 | 100 | 0 | 139 | 399 | 0 | 0 | 399 | (259) | (259) |
| 2021 | 141 | 0 | 150 | 0 | 291 | 612 | 0 | 0 | 612 | (321) | (559) |
| 2022 | 288 | 0 | 200 | 0 | 488 | 834 | 0 | 0 | 834 | (347) | (861) |
| 2023 | 371 | 0 | 0 | 0 | 371 | 0 | 0 | 0 | 0 | 371 | (559) |
| 2024 | 382 | 0 | 0 | 0 | 382 | 0 | 0 | 0 | 0 | 382 | (269) |
| 2025 | 393 | 0 | 0 | 0 | 393 | 0 | 0 | 0 | 0 | 393 | 10 |
| 2026 | 403 | 0 | 0 | 0 | 403 | 0 | 0 | 0 | 0 | 403 | 278 |
| 2027 | 416 | 0 | 0 | 0 | 416 | 0 | 0 | 0 | 0 | 416 | 535 |
| 2028 | 437 | 0 | 0 | 0 | 437 | 0 | 0 | 0 | 0 | 437 | 788 |
| 2029 | 450 | 0 | 0 | 0 | 450 | 0 | 0 | 0 | 0 | 450 | 1,031 |
| 2030 | 472 | 0 | 0 | 0 | 472 | 0 | 0 | 0 | 0 | 472 | 1,269 |
| 2031 | 482 | 0 | 0 | 0 | 482 | 0 | 0 | 0 | 0 | 482 | 1,496 |
| 2032 | 502 | 0 | 0 | 0 | 502 | 0 | 0 | 0 | 0 | 502 | 1,717 |
| 2033 | 510 | 0 | 0 | 0 | 510 | 0 | 0 | 0 | 0 | 510 | 1,927 |
| 2034 | 531 | 0 | 0 | 0 | 531 | 0 | 0 | 0 | 0 | 531 | 2,131 |
| NOMINAL | 5,816 | 0 | 450 | 0 | 6,266 | 1,845 | 0 | 0 | 1,845 | 4,421 | |
| NPV: | 3,414 | 0 | 415 | 0 | 3,828 | 1,697 | 0 | 0 | 1,697 | 2,131 | |

In service year of gen unit: 2023 2.255194

RATE IMPACT TEST
PROGRAM: VFD Control for Compressors

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 13 | 100 | 23 | 0 | 136 | 20 | 0 | 0 | 0 | 20 | (116) | (116) |
| 2021 | 0 | 19 | 150 | 82 | 0 | 251 | 70 | 22 | 0 | 0 | 92 | (159) | (264) |
| 2022 | 0 | 26 | 200 | 166 | 0 | 392 | 144 | 23 | 0 | 0 | 167 | (225) | (461) |
| 2023 | 0 | 0 | 0 | 215 | 0 | 215 | 260 | 23 | 0 | 0 | 283 | 68 | (405) |
| 2024 | 0 | 0 | 0 | 217 | 0 | 217 | 269 | 24 | 0 | 0 | 293 | 75 | (348) |
| 2025 | 0 | 0 | 0 | 220 | 0 | 220 | 286 | 24 | 0 | 0 | 310 | 91 | (284) |
| 2026 | 0 | 0 | 0 | 222 | 0 | 222 | 295 | 25 | 0 | 0 | 320 | 98 | (219) |
| 2027 | 0 | 0 | 0 | 224 | 0 | 224 | 311 | 26 | 0 | 0 | 336 | 112 | (149) |
| 2028 | 0 | 0 | 0 | 226 | 0 | 226 | 338 | 26 | 0 | 0 | 364 | 137 | (70) |
| 2029 | 0 | 0 | 0 | 229 | 0 | 229 | 358 | 27 | 0 | 0 | 385 | 157 | 15 |
| 2030 | 0 | 0 | 0 | 231 | 0 | 231 | 392 | 27 | 0 | 0 | 420 | 189 | 110 |
| 2031 | 0 | 0 | 0 | 233 | 0 | 233 | 394 | 28 | 0 | 0 | 422 | 189 | 199 |
| 2032 | 0 | 0 | 0 | 236 | 0 | 236 | 425 | 29 | 0 | 0 | 453 | 218 | 295 |
| 2033 | 0 | 0 | 0 | 238 | 0 | 238 | 450 | 29 | 0 | 0 | 480 | 242 | 395 |
| 2034 | 0 | 0 | 0 | 240 | 0 | 240 | 469 | 30 | 0 | 0 | 499 | 259 | 494 |
| NOMINAL | 0 | 58 | 450 | 3,002 | 0 | 3,510 | 4,480 | 364 | 0 | 0 | 4,844 | 1,334 | |
| NPV: | 0 | 53 | 415 | 1,802 | 0 | 2,270 | 2,543 | 220 | 0 | 0 | 2,763 | 494 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.22

**Program: Commercial Water Heating**

**Program Start Date:** March 2008

**Program Description**

The Commercial Water Heating Program is designed to encourage commercial/industrial customers to make cost-effective improvements to existing facilities. The goal is to offer customer rebates for installing energy efficient water heating systems to help reduce their energy consumption and demand and to reduce Tampa Electric's peak demand. Tampa Electric will provide a rebate to customers who install qualifying water heating systems.

**Program Participation Standards**

Program Standards to be submitted 30 days after Commission order approving DSM Plan.

**Program Savings**

Savings were determined using Nexant's updated Technical Potential data for systems across all eligible commercial structures and participants. The analysis yielded the following expected savings per customer participant:

| | |
|---|---|
| Summer Demand: | 0.870 kW |
| Winter Demand: | 0.580 kW |
| Annual Energy: | 5,128 kWh |

**Program Costs**

Rebate: $.0100 per Btu of qualifying water heating equipment.

The estimated administrative cost per participant is $175.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

PROGRAM NAME: COMMERCIAL WATER HEATING

| Year | (a) Total Number of Customers | (b) Total Number of Eligible Customers | (c) Annual Number of Program Participants | (d) Cumulative Penetration Level % | (e) Cumulative Number of Program Participants |
|---|---|---|---|---|---|
| 2020 | 87,232 | 87,232 | 1 | 0.0% | 1 |
| 2021 | 87,751 | 87,751 | 1 | 0.0% | 2 |
| 2022 | 88,348 | 88,348 | 1 | 0.0% | 3 |
| 2023 | 89,098 | 89,098 | 1 | 0.0% | 4 |
| 2024 | 89,793 | 89,793 | 1 | 0.0% | 5 |
| 2025 | 90,348 | 90,348 | 1 | 0.0% | 6 |
| 2026 | 90,824 | 90,824 | 1 | 0.0% | 7 |
| 2027 | 91,307 | 91,307 | 1 | 0.0% | 8 |
| 2028 | 91,824 | 91,824 | 1 | 0.0% | 9 |
| 2029 | 92,364 | 92,364 | 1 | 0.0% | 10 |

PROGRAM NAME: COMMERCIAL WATER HEATING

| AT THE METER | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 5,128 | 0.580 | 0.870 | 0.005 | 0.001 | 0.001 |
| 2021 | 5,128 | 0.580 | 0.870 | 0.010 | 0.001 | 0.002 |
| 2022 | 5,128 | 0.580 | 0.870 | 0.015 | 0.002 | 0.003 |
| 2023 | 5,128 | 0.580 | 0.870 | 0.021 | 0.002 | 0.003 |
| 2024 | 5,128 | 0.580 | 0.870 | 0.026 | 0.003 | 0.004 |
| 2025 | 5,128 | 0.580 | 0.870 | 0.031 | 0.003 | 0.005 |
| 2026 | 5,128 | 0.580 | 0.870 | 0.036 | 0.004 | 0.006 |
| 2027 | 5,128 | 0.580 | 0.870 | 0.041 | 0.005 | 0.007 |
| 2028 | 5,128 | 0.580 | 0.870 | 0.046 | 0.005 | 0.008 |
| 2029 | 5,128 | 0.580 | 0.870 | 0.051 | 0.006 | 0.009 |

PROGRAM NAME: COMMERCIAL WATER HEATING

| AT THE GENERATOR | | | | | | |
|---|---|---|---|---|---|---|
| Year | Per Customer kWh Reduction | Per Customer Winter kW Reduction | Per Customer Summer kW Reduction | Total Annual GWh Reduction | Total Annual Winter MW Reduction | Total Annual Summer MW Reduction |
| 2020 | 5,395 | 0.621 | 0.931 | 0.005 | 0.001 | 0.001 |
| 2021 | 5,395 | 0.621 | 0.931 | 0.011 | 0.001 | 0.002 |
| 2022 | 5,395 | 0.621 | 0.931 | 0.016 | 0.002 | 0.003 |
| 2023 | 5,395 | 0.621 | 0.931 | 0.022 | 0.002 | 0.004 |
| 2024 | 5,395 | 0.621 | 0.931 | 0.027 | 0.003 | 0.005 |
| 2025 | 5,395 | 0.621 | 0.931 | 0.032 | 0.004 | 0.006 |
| 2026 | 5,395 | 0.621 | 0.931 | 0.038 | 0.004 | 0.007 |
| 2027 | 5,395 | 0.621 | 0.931 | 0.043 | 0.005 | 0.007 |
| 2028 | 5,395 | 0.621 | 0.931 | 0.049 | 0.006 | 0.008 |
| 2029 | 5,395 | 0.621 | 0.931 | 0.054 | 0.006 | 0.009 |

# INPUT DATA - PART 1
## PROGRAM TITLE: Commercial Water Heating

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RUN DATE: January 15, 2020

**PROGRAM DEMAND SAVINGS & LINE LOSSES**

| | | | |
|---|---|---|---|
| I. | (1) CUSTOMER KW REDUCTION AT THE METER | 0.870 | KW /CUST |
| I. | (2) GENERATOR KW REDUCTION PER CUSTOMER | 0.903 | KW GEN/CUST |
| I. | (3) KW LINE LOSS PERCENTAGE | 7.00 | % |
| I. | (4) GENERATION KWH REDUCTION PER CUSTOMER | 5,409 | KWH/CUST/YR |
| I. | (5) KWH LINE LOSS PERCENTAGE | 5.20 | % |
| I. | (6) GROUP LINE LOSS MULTIPLIER | 1 | |
| I. | (7) CUSTOMER KWH PROGRAM INCREASE AT METER | 0 | KWH/CUST/YR |
| I. | (8)* CUSTOMER KWH REDUCTION AT METER | 5,128 | KWH/CUST/YR |

**ECONOMIC LIFE & K FACTORS**

| | | | |
|---|---|---|---|
| II. | (1) STUDY PERIOD FOR CONSERVATION PROGRAM | 10 | YEARS |
| II. | (2) GENERATOR ECONOMIC LIFE | 25 | YEARS |
| II. | (3) T & D ECONOMIC LIFE | 25 | YEARS |
| II. | (4) K FACTOR FOR GENERATION | 1.5213 | |
| II. | (5) K FACTOR FOR T & D | 1.5213 | |
| | (6)* SWITCH REV REQ(0) OR VAL-OF-DEF (1) | 1 | |

**UTILITY & CUSTOMER COSTS**

| | | | |
|---|---|---|---|
| III. | (1) UTILITY NONRECURRING COST PER CUSTOMER | 175.00 | $/CUST |
| III. | (2) UTILITY RECURRING COST PER CUSTOMER | 0.00 | $/CUST/YR |
| III. | (3) UTILITY COST ESCALATION RATE | 2.40 | % |
| III. | (4) CUSTOMER EQUIPMENT COST | 1,006.00 | $/CUST |
| III. | (5) CUSTOMER EQUIPMENT ESCALATION RATE | 2.30 | % |
| III. | (6) CUSTOMER O & M COST | 0.00 | $/CUST/YR |
| III. | (7) CUSTOMER O & M ESCALATION RATE | 2.30 | % |
| III. | (8)* CUSTOMER TAX CREDIT PER INSTALLATION | 0.00 | $/CUST |
| III. | (9)* CUSTOMER TAX CREDIT ESCALATION RATE | 0.00 | % |
| III. | (10)* INCREASED SUPPLY COSTS | 0.00 | $/CUST/YR |
| III. | (11)* SUPPLY COSTS ESCALATION RATE | 0.00 | % |
| III. | (12)* UTILITY DISCOUNT RATE | 0.0708 | |
| III. | (13)* UTILITY AFUDC RATE | 0.0646 | |
| III. | (14)* UTILITY NON RECURRING REBATE/INCENTIVE | 210.00 | $/CUST |
| III. | (15)* UTILITY RECURRING REBATE/INCENTIVE | 0.00 | $/CUST/YR |
| III. | (16)* UTILITY REBATE/INCENTIVE ESCAL RATE | 0.00 | % |

**AVOIDED GENERATOR, TRANS. & DIST COSTS**

| | | | |
|---|---|---|---|
| IV. | (1) BASE YEAR | 2020 | |
| IV. | (2) IN-SERVICE YEAR FOR AVOIDED GENERATING UNIT | 2023 | |
| IV. | (3) IN-SERVICE YEAR FOR AVOIDED T & D | 2021 | |
| IV. | (4) BASE YEAR AVOIDED GENERATING UNIT COST | 526.30 | $/KW |
| IV. | (5) BASE YEAR AVOIDED TRANSMISSION COST | 34.90 | $/KW |
| IV. | (6) BASE YEAR DISTRIBUTION COST | 82.37 | $/KW |
| IV. | (7) GEN, TRAN, & DIST COST ESCALATION RATE | 2.40 | % |
| IV. | (8) GENERATOR FIXED O & M COST | 5.83 | $/KW/YR |
| IV. | (9) GENERATOR FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (10) TRANSMISSION FIXED O & M COST | 2.78 | $/KW/YR |
| IV. | (11) DISTRIBUTION FIXED O & M COST | 11.34 | $/KW/YR |
| IV. | (12) T&D FIXED O&M ESCALATION RATE | 2.40 | % |
| IV. | (13) AVOIDED GEN UNIT VARIABLE O & M COSTS | 0.210 | CENTS/KWH |
| IV. | (14) GENERATOR VARIABLE O&M COST ESCALATION RATE | 2.40 | % |
| IV. | (15) GENERATOR CAPACITY FACTOR | 9.10 | % |
| IV. | (16) AVOIDED GENERATING UNIT FUEL COST | 3.75 | CENTS/KWH |
| IV. | (17) AVOIDED GEN UNIT FUEL ESCALATION RATE | 4.54 | % |
| IV. | (18)* AVOIDED PURCHASE CAPACITY COST PER KW | 0.00 | $/KW/YR |
| IV. | (19)* CAPACITY COST ESCALATION RATE | 0.00 | % |

**NON-FUEL ENERGY AND DEMAND CHARGES**

| | | | |
|---|---|---|---|
| V. | (1) NON-FUEL COST IN CUSTOMER BILL | 1.818 | CENTS/KWH |
| V. | (2) NON-FUEL ESCALATION RATE | 1.00 | % |
| V. | (3) CUSTOMER DEMAND CHARGE PER KW | 10.090 | $/KW/MO |
| V. | (4) DEMAND CHARGE ESCALATION RATE | 1.00 | % |
| V. | (5)* DIVERSITY and ANNUAL DEMAND ADJUSTMENT FACTOR FOR CUSTOMER BILL | 1.00 | |

| CALCULATED BENEFITS AND COSTS | |
|---|---|
| (1)* TRC TEST - BENEFIT/COST RATIO | **1.46** |
| (2)* PARTICIPANT NET BENEFITS (NPV) | **42** |
| (3)* RIM TEST - BENEFIT/COST RATIO | **1.02** |

TOTAL RESOURCE COST TESTS
PROGRAM: Commercial Water Heating

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | PARTICIPANT PROGRAM COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | PROGRAM FUEL SAVINGS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 0 | 2 | 10 | 0 | 12 | 0 | 0 | 1 | 0 | 1 | (11) | (11) |
| 2021 | 0 | 2 | 10 | 0 | 12 | 0 | 1 | 2 | 0 | 3 | (9) | (19) |
| 2022 | 0 | 2 | 11 | 0 | 12 | 0 | 1 | 4 | 0 | 5 | (8) | (26) |
| 2023 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 5 | 0 | 8 | 8 | (20) |
| 2024 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 5 | 0 | 8 | 8 | (14) |
| 2025 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 6 | 0 | 9 | 9 | (8) |
| 2026 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 6 | 0 | 9 | 9 | (2) |
| 2027 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 6 | 0 | 9 | 9 | 4 |
| 2028 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 7 | 0 | 10 | 10 | 10 |
| 2029 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 7 | 0 | 11 | 11 | 16 |
| NOMINAL | 0 | 5 | 31 | 0 | 36 | 16 | 7 | 49 | 0 | 72 | 35 | |
| NPV: | 0 | 5 | 29 | 0 | 34 | 11 | 5 | 34 | 0 | 49 | 16 | |

Discount Rate 0.0708 Benefit/Cost Ratio - [col (11)/col (6)]: 1.46

PARTICIPANT COSTS AND BENEFITS
PROGRAM: Commercial Water Heating

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | SAVINGS IN PARTICIPANTS BILL $(000) | TAX CREDITS $(000) | UTILITY REBATES $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | CUSTOMER EQUIPMENT COSTS $(000) | CUSTOMER O & M COSTS $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | NET BENEFITS $(000) | CUMULATIVE DISCOUNTED NET BENEFITS $(000) |
| 2020 | 2 | 0 | 2 | 0 | 4 | 10 | 0 | 0 | 10 | (6) | (6) |
| 2021 | 5 | 0 | 2 | 0 | 7 | 10 | 0 | 0 | 10 | (3) | (9) |
| 2022 | 8 | 0 | 2 | 0 | 11 | 11 | 0 | 0 | 11 | 0 | (9) |
| 2023 | 10 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | (1) |
| 2024 | 10 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 7 |
| 2025 | 11 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 15 |
| 2026 | 11 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 22 |
| 2027 | 11 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 29 |
| 2028 | 12 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 12 | 36 |
| 2029 | 12 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 12 | 42 |
| NOMINAL | 93 | 0 | 6 | 0 | 99 | 31 | 0 | 0 | 31 | 68 | |
| NPV: | 65 | 0 | 6 | 0 | 71 | 29 | 0 | 0 | 29 | 42 | |

In service year of gen unit: 2023 2.4710019

RATE IMPACT TEST
PROGRAM: Commercial Water Heating

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| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | INCREASED SUPPLY COSTS $(000) | UTILITY PROGRAM COSTS $(000) | INCENTIVES $(000) | REVENUE LOSSES $(000) | OTHER COSTS $(000) | TOTAL COSTS $(000) | AVOIDED GEN UNIT UNIT & FUEL BENEFITS $(000) | AVOIDED T & D BENEFITS $(000) | REVENUE GAINS $(000) | OTHER BENEFITS $(000) | TOTAL BENEFITS $(000) | NET BENEFITS TO ALL CUSTOMERS $(000) | CUMULATIVE DISCOUNTED NET BENEFIT $(000) |
| 2020 | 0 | 2 | 2 | 1 | 0 | 5 | 1 | 0 | 0 | 0 | 1 | (4) | (4) |
| 2021 | 0 | 2 | 2 | 3 | 0 | 7 | 2 | 1 | 0 | 0 | 3 | (4) | (8) |
| 2022 | 0 | 2 | 2 | 5 | 0 | 9 | 4 | 1 | 0 | 0 | 5 | (4) | (11) |
| 2023 | 0 | 0 | 0 | 6 | 0 | 6 | 7 | 1 | 0 | 0 | 8 | 2 | (10) |
| 2024 | 0 | 0 | 0 | 6 | 0 | 6 | 7 | 1 | 0 | 0 | 8 | 2 | (9) |
| 2025 | 0 | 0 | 0 | 6 | 0 | 6 | 8 | 1 | 0 | 0 | 9 | 2 | (7) |
| 2026 | 0 | 0 | 0 | 6 | 0 | 6 | 8 | 1 | 0 | 0 | 9 | 3 | (5) |
| 2027 | 0 | 0 | 0 | 6 | 0 | 6 | 8 | 1 | 0 | 0 | 9 | 3 | (3) |
| 2028 | 0 | 0 | 0 | 6 | 0 | 6 | 9 | 1 | 0 | 0 | 10 | 4 | (1) |
| 2029 | 0 | 0 | 0 | 7 | 0 | 7 | 10 | 1 | 0 | 0 | 11 | 4 | 1 |
| NOMINAL | 0 | 5 | 6 | 53 | 0 | 65 | 65 | 7 | 0 | 0 | 72 | 7 | |
| NPV: | 0 | 5 | 6 | 38 | 0 | 49 | 45 | 5 | 0 | 0 | 49 | 1 | |

Discount rate: 0.0708

Benefit/Cost Ratio - [col (12)/col (7)]: 1.02

**Program**: **Integrated Renewable Energy System (Pilot)**

**Program Start Date: TBD**

**Program Description**

The commercial/industrial Integrated Renewable Energy System Program is a five-year pilot program to study the capabilities and DSM opportunities of a fully integrated renewable energy system. The integrated renewable energy system will include an approximate 800 kW photovoltaic array, two-250 kW batteries, and several electric vehicle charging systems to charge electric vehicles, industrial vehicles and auxiliary industrial vehicle batteries. The pilot program will have two main purposes. The first main purpose is to evaluate the capability to perform demand response from the main batteries and each vehicle battery and to determine the preferred operating characteristics of a fully integrated renewable and energy storage system to leverage DSM opportunities. The second main purpose is to use the installation and its associated operational information as an education platform for commercial and industrial customers seeking information on this type of system and its benefits, concerns and capabilities.

**Program Costs**

This pilot program will have an approximate cost of four million dollars for the five-year study. This program will be monitored and reported on until the end of 2025, at which time the study period for the pilot program will retire. The system will continue to be used after the five-year period as an education platform for commercial and industrial customers.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program through cost-effectiveness techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 19941173-EG.

**Program: Conservation Research and Development ("R&D")**

**Program Start Date:** July 1995

**Program Description**

This program is in response to Rule 25-17.001 (5) (f), F.A.C., that requires aggressive R&D projects be "…an ongoing part of the practice of every well managed utility's programs." It is also in support of FPSC Order No. 22176 dated November 14, 1989, requiring utilities to "…pursue research, development, and demonstration projects designed to promote energy efficiency and conservation." R&D activity will be conducted on proposed measures to determine the impact to the company and its ratepayers and may occur at customer premises, Tampa Electric facilities or at independent test sites. Tampa Electric will report program progress through the annual ECCR True-Up filing.

**Program Participation Standards**

Program Standards to be submitted within 30 days after Commission order approving DSM Plan.

**Program Eligible Measures**

Most technology measures are eligible for consideration including renewable and green energy sources, energy efficient construction, heat recovery, space conditioning equipment, refrigeration, cooking, fuel cells, ventilation, pumps and fan efficiency, water heating, etc.

**Program Costs**

Program costs are estimated at $400,000 per year for a five-year period. Expenses for a given year may exceed $400,000; however, total program cost shall not exceed $2,000,000 for the five-year period.

**Program Monitoring and Evaluation**

Data collected shall be in support of the FPSC cost-effectiveness methodology, specifically, input data for conducting RIM, TRC, and PCT tests. Positive measure evaluation results may support future ECCR program filings by the company.

**Program: Renewable Energy Program (Sun to Go)**

**Program Start Date:** December 2006

**Program Description**

This program provides customers with the option to purchase 200 kWh blocks of renewable energy for five dollars per block to assist in the delivery of renewable energy to the company's grid system. This specific effort provides funding for renewable energy procurement, program administration, evaluation and market research.

Renewable energy participants will be served from the existing electrical system. Renewable energy may not be delivered to the customer, but will displace energy that would have otherwise been produced from traditional fossil fuels. Tampa Electric will report program progress through the annual ECCR True-up and Projection Filings.

**Program Participation Standards**

Program Standards to be submitted 30 days after Commission order approving DSM Plan.

**Program Monitoring and Evaluation**

Tampa Electric will monitor and evaluate this program and provide reports on the program's progress as required by the Commission in Docket No. 20060678-EG, Order No. PSC-06-1063-TRF-EG, issued December 26, 2006.