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April 2, 2014

VIA: ELECTRONIC FILING

Ms. Carlotta S. Stauffer
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: Commission review of numeric conservation goals (Tampa Electric Company); FPSC Docket No. 130201-EI

Dear Ms. Stauffer:

Attached for filing in the above docket, on behalf of Tampa Electric Company, is the Prepared Direct Testimony and Exhibit HTB-1 of Howard T. Bryant.

Thank you for your assistance in connection with this matter.

Sincerely,

James D. Beasley

JDB/pp
Enclosure

cc: All Parties of Record (w/enc.)

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing Prepared Direct Testimony and Exhibit, filed on behalf of Tampa Electric Company, has been furnished electronically this 2nd day of April 2014 to the following:

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TAMPA ELECTRIC

BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 130201-EI
IN RE: COMMISSION REVIEW OF
NUMERIC CONSERVATION GOALS
TAMPA ELECTRIC COMPANY

DIRECT TESTIMONY AND EXHIBIT
OF
HOWARD T. BRYANT

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OF

HOWARD T BRYANT

BEFORE THE PUBLIC SERVICE COMMISSION

PREPARED DIRECT TESTIMONY

OF

HOWARD T. BRYANT

Q. Please state your name, address, occupation and employer.

A. My name is Howard T. Bryant. My business address is 702 North Franklin Street, Tampa, Florida 33602. I am employed by Tampa Electric Company ("Tampa Electric" or "company") as Manager, Rates in the Regulatory Affairs Department.

Q. Please provide a brief outline of your educational background and business experience.

A. I graduated from the University of Florida in June 1973 with a Bachelor of Science degree in Business Administration. I have been employed at Tampa Electric since 1981. My work has included various positions in Customer Service, Energy Conservation Services, Demand Side Management ("DSM") Planning, Energy Management and Forecasting, and Regulatory Affairs. In my current position I am responsible for the company's Energy Conservation Cost Recovery ("ECCR") clause, the

Environmental Cost Recovery Clause ("ECRC"), and retail rate design.

Q. Have you previously testified before the Florida Public Service Commission ("Commission")?

A. Yes. I have testified before this Commission on conservation and load management activities, DSM goals setting and DSM plan approval dockets, and other ECCR dockets since 1993, and ECRC activities and dockets since 2001.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present, for Commission review and approval, Tampa Electric's proposed numerical DSM goals for 2015–2024. Tampa Electric's proposed goals are based upon the analytical work performed by the company and which was done in concert with the other Florida Energy Efficiency and Conservation Act ("FEECA") utilities. As such, the work updates and builds upon the most recent technical potential constructed by Itron, Inc. for the 2010-2019 DSM goals proceeding for FEECA utilities. The goals are separated into summer demand, winter demand and annual energy components for both residential and commercial/industrial sectors. In support of the proposed DSM goals, my testimony will demonstrate that the process Tampa Electric utilized to establish its reasonably achievable, cost-effective goals comports with the requirements of Rule 25-17.0021, Florida Administrative Code (“F.A.C.”).

In addition, my testimony addresses the renewable technology pilot programs that were required by the Commission in Docket No. 080409-EG. The results of the pilot programs are provided, and based on those results; my testimony supports the discontinuation of any future expenditures on these renewable technologies through the ECCR Clause until such time as they may become cost-effective.

Q. Have you prepared an exhibit in support of your testimony?

A. Yes. I have prepared an exhibit entitled, “Exhibit of Howard T. Bryant.” It consists of seven documents and has been identified as Exhibit No. _____ (HTB-1). Document No. 1 contains Tampa Electric’s proposed DSM goals for 2015-2024; Document No. 2 provides the comprehensive DSM measure list utilized in this proceeding; Document No. 3 provides the Technical Potential Study update process; Document No. 4 contains Tampa Electric's avoided cost data used for cost-effectiveness evaluations; Document No. 5 provides the 2015-2024 estimated annual DSM achievable potential for the RIM and TRC tests; Document No. 6 provides the DSM economic potential cost-effectiveness sensitivity analyses; and Document No. 7 provides the 2015-2024 residential bill impacts for the rate impact measure ("RIM") test and total resource cost ("TRC") test portfolios.

TAMPA ELECTRIC'S PROPOSED DSM GOALS

Q. What overall DSM goals are appropriate and reasonably achievable for Tampa Electric for the period 2015-2024?

A. The appropriate and reasonable cumulative DSM goals for Tampa Electric for the period 2015-2024 are segmented into the residential and commercial/industrial sectors and provided at the generator level. For the residential sector, the proposed goals are 25.7 MW of summer demand, 61.9 MW of winter demand and 56.9 GWH of annual energy. For the commercial/industrial sector, the proposed goals are 30.6 MW of summer demand, 16.4 MW of winter demand

and 87.4 GWH of annual energy. These goals were developed using the Commission-approved cost-effectiveness methodology and are based on the RIM test. Document No. 1 of my exhibit details the incremental and cumulative annual amounts that comprise these goals.

Q. How do Tampa Electric's proposed DSM goals for the upcoming period of 2015-2024 compare to the company's proposed DSM goals for the 2010–2019 period?

A. Tampa Electric's cumulative proposed goals across the residential and commercial/industrial sectors for the 2015-2024 period are 56.3 MW of summer demand, 78.3 MW of winter demand and 144.3 GWH of annual energy. The total cumulative goals at the generator level proposed for the 2010-2019 period was 81.8 MW of summer demand, 40.9 MW of winter demand and 201.7 GWH of annual energy.

Q. What are the major drivers that established Tampa Electric's proposed 2015-2024 DSM goals at a lower level than what the company proposed during the last DSM goals setting process?

A. There are several factors impacting the decrease in the company's current proposed goals from those proposed five years ago. These include: 1) overall annual customer growth is much lower as well as the average per customer usage of electricity has decreased thereby deferring the in-service date of the next generating unit in the company's expansion plan used for DSM evaluations, 2) appliance efficiencies have increased from previous levels and thus customer usage is further decreased, 3) cost for utility gas generation has decreased, and 4) several efficiency increases in appliance manufacturing standards have occurred for many baseline measures used for evaluation of potential DSM measures which reduced the available demand and energy savings that could be achieved through DSM.

Q. Do you believe that DSM goals should always be set higher than previously set goals?

A. No, I do not. More is not always better and setting goals too high just for the sake of having higher goals can lead to costly and unfair results for Tampa Electric customers. DSM goals should be set with a clear focus on the costs the utility would have to incur to serve the load that the conservation efforts are reasonably projected to avoid. In addition, the conservation measures selected should minimize rate impacts and avoid cross-subsidization between customers. The Commission has been able to accomplish these objectives in the past through the use of the RIM test (to minimize rate impacts and avoid cross-subsidization), the two-year payback screen to minimize free ridership and a process that focuses on the utility's most recently projected resource needs.

Q. How do Tampa Electric's DSM goals accomplishments compare to other utilities in the nation?

A. Tampa Electric's accomplishments are significantly greater than most other utilities in the U.S. Tampa Electric began its DSM efforts in the late 1970s prior to the 1980 legislative enactment of the Florida Energy Efficiency and Conservation Act ("FEECA"). Since then, the company has aggressively sought Commission approval for numerous DSM programs designed to promote energy efficient technologies and to change customer behavioral patterns such that energy savings occur with minimal effect on customer comfort. Additionally, the company has modified existing DSM programs over time to promote evolving technologies and to maintain program cost-effectiveness.

From the inception of Tampa Electric's programs through 2013, the company has achieved 723 MW of winter demand reduction, 331 MW of summer demand reduction and 815 GWH of annual energy savings. These peak load reductions have eliminated the need for the equivalent of four 180 MW power plants. Of greater significance is the fact that the great preponderance of this accomplishment was achieved without subsidizing or penalizing customers who were not participants. Except for the 2010-2013 period, Tampa Electric achieved this level of reduction by offering only those DSM programs that reduce rates for all customers, both DSM participants and non-participants alike.

The magnitude of these continuing efforts by Tampa Electric, as well as other utilities in Florida, is demonstrated by the continued high rankings Florida utilities achieve as identified in the data available from the Energy Information Administration of the Department of Energy.

OVERALL PROCESS TO DEVELOP DSM SAVINGS

Q. Please describe the overall process used by Tampa Electric to develop its proposed DSM savings.

A. Tampa Electric’s process to establish its proposed 2015-2024 DSM goals was strategically guided by two specific items that gave clear direction for DSM goals development and the ultimate filing requirements for this proceeding. First, a Commission Staff workshop occurred on June 17, 2013 where general direction was given by Staff as to how to initiate the current DSM goals setting process with regard to the Itron Technical Potential Study for each utility developed in the last goals proceeding. Second was the Commission’s Order Establishing Procedure (“OEP”) dated August 19, 2013.

The strong link between the June 17 workshop and the OEP is noted in the OEP. The OEP states that, “On June 17, 2013, staff conducted a meeting with utilities and interested parties to discuss the numeric goals proceeding. The parties agreed that the Technical Potential Study used in the previous numeric goals proceeding, Docket No. 080407-EG – 080412-EG, should be updated by each utility on or about September 30, 2013.” Therefore, with agreement among parties and a recent, robust Technical Potential Study in hand, the FEECA utilities embarked on a comprehensive exercise to perform the update function in a consistent manner. At the completion of the update and evaluation process, each utility was able to determine its proposed DSM goals for the 2015-2024 period.

Q. Why was an update to the previous Itron Technical Potential Study appropriate for this proceeding?

A. Updating a previous Technical Potential Study has been a practice utilized by this Commission in the past and has occurred when the foundational data in the previous study is still deemed appropriate. Furthermore, the utilities contacted Itron for advice on the appropriateness of conducting a comprehensive technical potential study so close in time to the last study. Itron experts advised that the value to be gained by conducting a full, comprehensive study versus updating a less-than-stale previous study would not be a wise use of funding. From their experience, they felt the previous study was still foundationally solid, and once updated by the capable utilities of Florida, would provide a useful and adequate tool for DSM goals setting. The end result would be consistency among the utilities, refreshed data with measure relationships maintained within sectors and any new measures added appropriately.

Q. How did the FEECA utilities initiate the update process for the previous Technical Potential Study?

A. To initiate the Technical Potential Study update process, the FEECA utilities sought input from interested parties on any new DSM measures that would be appropriate for inclusion in the current update process. The utilities also examined their own internal resources for new measures. For both the interested parties and the utilities, it was requested that any new measure meet two criteria: 1) the measure must be commercially available in the Florida marketplace, and 2) the assumptions for cost and savings potential must be Florida climate specific. In that manner, any new measure added to the evaluation process would be consistent in nature to the measures already contained in the previous Itron DSM measure data sets.

Q. Please identify the comprehensive DSM measure list developed for the 2015-2024 DSM goals setting process.

A. Tampa Electric's comprehensive DSM measure list developed by input from all collaborative members was comprised of 63 residential sector measures, 92 commercial sector measures, and 119 industrial sector measures for a combined total of 274 DSM measures. For residential, the measures were applied to building vintages in the single family, multi-family and mobile home building types. Commercially, the measures were applied to building vintages in the college, food store, hospital, office, lodging, restaurant, retail, school, warehouse, other health care and miscellaneous building types. For industrial, the measures were applied to building vintages in the food processing, textiles, lumber, paper-pulp, printing, chemicals, petroleum, rubber-plastics, stone-clay-glass, primary metals, fabrication metals, industrial machinery, electronics, transportation equipment, instruments and miscellaneous building types. When the comprehensive DSM measure list was applied to the various building types within each sector, over 3,300 specific DSM measure applications were developed for evaluation. Document No. 2 of my exhibit provides Tampa Electric’s comprehensive DSM measure list.

Q. What were the new measures added to the current evaluation process?

A. Several new measures were added by the FEECA utilities. These measures are specifically separated and identified in the residential, commercial and industrial measure lists provided in Document No. 2 of my exhibit. The FEECA utilities did not receive any new measures from interested parties in the format requested by the deadline established.

Q. In addition to new measures added for evaluation, what other adjustments were made to the evaluation process?

A. Other adjustments made to the evaluation process included adjusting for baseline measure changes due to building codes and manufacturing product standards. In these cases, some baseline measures were removed and new baselines were established. Those measures removed have been identified in the residential, commercial and industrial measure lists provided in Document No. 2 of my exhibit. Finally, adjustments were made for program participation and customer growth since the last study.

Q. What were the steps taken to update the Technical Potential Study previously completed by Itron?

A. The steps taken to update the previous study are provided in Document No. 3 of my exhibit. A flowchart with explanations of the process as well as a list of terms and their definitions is provided.

Q. Has the collaborative process among the FEECA utilities brought value to the overall DSM goals setting process?

A. Yes. The process has provided consistency, established accurate baselines to begin the new period of goals setting and included new measures not evaluated in the previous proceeding.

TAMPA ELECTRIC'S SPECIFIC PROCESS TO DEVELOP ITS DSM GOALS

Q. What was Tampa Electric's first step in developing its specific DSM goals?

A. Tampa Electric's first step in developing its specific DSM goals was to update its technical potential in the manner detailed in Document No. 3 of my exhibit. The technical potential is the total amount of DSM technically feasible in the company's service area based on the comprehensive DSM measure list. As stated in Itron's final report for Tampa Electric from the last DSM goals proceeding, the technical potential is a theoretical construct that represents the upper bound of energy efficiency, demand response and photovoltaic ("PV") potential from a technical feasibility sense, regardless of cost or acceptability to customers.

Specifically, the technical potential does not account for other real-world constraints such as product availability, contractor/vendor capacity, cost-effectiveness, or customer preferences. Furthermore, the technical potential estimates for energy efficiency, demand response, and PV are not additive. This is due to the interactive effect of certain measures on end uses. With this backdrop, the energy efficiency demand and energy values represented by the updated technical potential are 1,306 MW of summer demand, 823 MW of winter demand and 5,961 GWH of annual energy. The demand response demand reduction values represented by the technical potential are 502 MW of summer demand and 430 MW of winter demand. Finally, the PV demand and energy values represented by the technical potential are 2,929 MW of summer demand, 447 MW of winter demand and 7,892 GWH of annual energy.

Q. Once the technical potential was established, what was Tampa Electric’s next step?

A. The next step involved initiating Tampa Electric’s integrated resource planning (“IRP”) process. The company’s IRP process has been utilized and approved in all previous DSM goals setting proceedings and is clearly delineated in the company's annual Ten-Year Site Plan filing. The IRP process began by establishing Tampa Electric's supply-only resource plan for the base years of 2015 through 2024. The supply-only resource plan was developed by having no additional DSM impacting the company's forecast after 2014. In so doing, the avoided unit for the upcoming cost-effectiveness analyses was identified. Document No. 4 of my exhibit provides the detail of this avoided unit.

Q. Once the avoided unit information was determined, what was the next step in the process?

A. The next step for Tampa Electric was to establish its economic potential. This process began with the evaluation of the aforementioned 3,322 specific DSM measure applications contained in the technical potential that were spread across the various sectors and building types. The company developed its economic potential by utilizing the Commission's approved cost-effectiveness tests, namely, the RIM and TRC tests. When calculating the RIM test, only lost revenues were considered on the cost side of the equation. For the TRC test, only the customer's equipment cost was considered on the cost side of the equation. For both the RIM and TRC tests, the benefits were comprised of avoided supply side costs that included the generator, transmission and distribution, and fuel costs.

Tampa Electric’s economic potential established under the RIM test evaluation resulted in 556 individual evaluations remaining from the original list. The resulting demand and energy values of the economic potential were 1,090 MW of summer demand, 949 MW of winter demand and 3,516 GWH of annual energy.

Tampa Electric’s economic potential established under the TRC test evaluation resulted in 878 individual evaluations remaining from the original list. The resulting demand and energy values of the economic potential were 1,157 MW of summer demand, 876 MW of winter demand and 4,495 GWH of annual energy.

Q. After the RIM and TRC economic potentials were determined, what was the next step in Tampa Electric’s process?

A. The next step in Tampa Electric’s process was to perform a systematic analysis to determine the appropriate incentive for each measure under the RIM and TRC economic potential scenarios. Since this step required the identification of measures that could cost-effectively handle the application of incentives, it was necessary to employ a series of screenings such that when completed, the appropriate measures for DSM goals establishment would remain.

THE SCREENING PROCESS

Q. Please describe the steps involved in the screening process.

A. The first step in the screening process was to screen those measures out of the RIM and TRC economic potential scenarios by evaluating their cost-effectiveness for the inclusion of administrative costs but with no incentives. Tampa Electric developed the administrative costs though its experience with the same or similar measures contained in existing DSM programs. Under the RIM test evaluation, the screening resulted in 556 individual evaluations remaining with summer demand savings of 1,090 MW, winter demand savings of 949 MW, and annual energy savings of 3,516 GWH. Under the TRC test evaluation, this screening resulted in 878 individual evaluations remaining with summer demand savings of 1,157 MW, winter demand savings of 876 MW, and annual energy savings of 4,495 GWH. The demand and energy savings for this screening exercise is the same as the economic potential results previously identified due to the diminished impact of administrative costs.

The second step in the screening process was to screen those measures out of the RIM and TRC potential scenarios for free ridership. The term "free ridership" describes a situation where a customer willingly accepts a rebate or other type of incentive to purchase goods or services that the customer would have purchased anyway, without the rebate or other incentive, because of the cost-effectiveness of the goods or services purchased. Furthermore, Rule 25-17.0021, F.A.C., requires the minimization of free riders in the setting of DSM goals. This requirement was accomplished through the application of a longstanding Commission recognized practice, initially approved in the 1994 DSM goals proceeding. There, the Commission approved the use of a participant payback of two years or less without a utility incentive. The two-year or less period of time is sufficient motivation for a customer’s natural, self-serving adoption of the DSM measure. Simplistically, it was thought that Tampa Electric, and ultimately its customers, should not pay specific customers to do what they would do on their own without an incentive. Therefore, the two-year payback criterion is the appropriate means to apply to minimize free ridership as required by Rule.

The execution of this screening level for free ridership required not only the use of the RIM and TRC tests, but also the Participants' test in conjunction with each. By utilizing this free ridership screen, 417 individual evaluations remained qualified under the RIM and Participants' tests evaluation and had summer demand savings of 963 MW, winter demand savings of 903 MW, and annual energy savings of 2,933 GWH. Under the TRC and Participants' tests evaluation, 551 individual evaluations remained qualified with 786 MW of summer demand savings, 764 MW of winter demand savings, and 3,362 GWH of annual energy savings.

The third step in the screening process was the development of the incentive level to be applied to the remaining measures. For this step, Tampa Electric chose an incentive level that would maximize the achievable potential. This was accomplished by selecting the incentive level that established measure payback at the two-year payback level or as close to that level as possible while maintaining cost-effectiveness. This incentive selection process was completed for both RIM and TRC scenarios and provided the largest achievable potential for each scenario. Again, as this process was applied, cost-effectiveness was maintained under the RIM and TRC methodologies and in conjunction with the Participants' test.

FOLLOWING THE SCREENING PROCESS

Q. Once the third step in the screening process was completed, what did Tampa Electric do with the results?

A. At the completion of the screening process, the results of the incentive level determination under the RIM and TRC scenarios were evaluated with supply curve adoption modeling to establish the achievable DSM potential under both RIM and TRC scenarios.

Q. What are Tampa Electric's DSM energy efficiency achievable potentials for the 2015-2024 period under the RIM and TRC scenarios?

A. For the 2015-2024 period, Tampa Electric's DSM energy efficiency achievable potentials under the RIM scenario are 35.8 MW of summer demand savings, 52.4 MW of winter demand savings, and 138 GWH of annual energy savings. Under the TRC scenario Tampa Electric's DSM energy efficiency achievable potentials are 65.7 MW of summer demand savings, 71.6 MW of winter demand savings, and 262.7 GWH of annual energy savings. These values are stated at the generator level.

Q. Do these DSM achievable potentials include demand response and renewable measures?

A. No. These DSM achievable potentials only account for energy efficiency measures. Tampa Electric evaluated the potentials of demand response and renewable measures separately.

Q. Please describe the method Tampa Electric employed to estimate the achievable potential demand and energy savings from demand response and renewable measures.

A. The achievable potential for demand response was developed in a manner similar to that used for the energy efficiency achievable potential, namely updating the demand response component of the 2009 Itron technical potential. However, no adjustments were necessary for codes and standards and no new measures were identified. Therefore, the updating only required adjustments for customer growth and historical accomplishments since the last technical potential. Based on these adjustments, the associated achievable potential for demand response is 20.5 MW of summer demand savings, 25.9 MW of winter demand savings, and 6.3 GWH of annual energy savings.

The achievable potential for renewables was developed utilizing data from Tampa Electric’s pilot renewable energy programs. Based on the results of the pilot programs, neither solar water heating nor PV measures provided any contribution to the company’s achievable potential. Details of the results of the company’s pilot renewable programs are addressed later in my testimony.

Q. Based on the estimated achievable potentials for energy efficiency and demand response, what is Tampa Electric’s total estimated maximum achievable potential for DSM measures?

A. When the estimated achievable potentials for energy efficiency and demand response are combined, Tampa Electric’s total estimated maximum DSM achievable potential for the 2015-2024 period under the RIM scenario is 56.3 MW of summer demand savings, 78.3 MW of winter demand savings, and 144.3 GWH of annual energy savings. Tampa Electric's total estimated maximum achievable potential for the 2015-2024 period under the TRC scenario is 86.2 MW of summer demand savings, 97.5 MW of winter demand savings, and 269.0 GWH of annual energy savings. These are generator level values. Document No. 5 of my exhibit provides the annual and cumulative totals for the RIM and TRC cost-effectiveness scenarios.

Q. What are Tampa Electric's proposed residential and commercial/industrial DSM goals for the 2015-2024 period?

A. For the 2015-2024 period, Tampa Electric's proposed DSM goals for the residential and commercial/industrial sectors are the generator level achievable potential demand and energy results under the RIM maximum incentive scenario. Specifically, the residential sector DSM goals are 25.7 MW of summer demand savings, 61.9 MW of winter demand savings, and 56.9 GWH of annual energy savings. The commercial/industrial sector DSM goals are 30.6 MW of summer demand savings, 16.4 MW of winter demand savings, and 87.4 GWH of annual energy savings. Document No. 1 of my exhibit provides the annual and cumulative amounts for both sectors for the 2015-2024 period.

Q. What is the cost-effectiveness basis for Tampa Electric's proposed DSM goals?

A. The cost-effectiveness basis for Tampa Electric's goals is the RIM test in conjunction with the Participants' test. The RIM test, when used in tandem with the Participants' test, provides a cost-effective, fair, reasonable and equitable determination of DSM expenditures for both the participants and the non-participants. The RIM test puts the least amount of upward pressure on rates while allowing for significant accomplishments of DSM measure deployment. Furthermore, the RIM test does not promote cross-subsidization among participants and non-participants. Finally, history indicates that this Commission's longstanding decisions in the past to approve a utility's DSM goals based on the RIM test have not hindered the DSM performance of the Florida utilities relative to other utilities in the industry. Based on these results and the fairness of the methodology, Tampa Electric believes its DSM goals for the 2015-2024 period should be established on the RIM test basis.

ADHERENCE TO F.A.C. RULE AND STATUTORY DSM GOALS SETTING REQUIREMENTS

Q. Does the evaluation process utilized by Tampa Electric to establish its proposed DSM goals for the 2015-2024 period address the requirements of Rule 25-17.0021, F.A.C.?

A. Yes. The Rule requires a utility to 1) project its proposed DSM goals in both the residential and commercial/industrial sectors, 2) give consideration to measures applicable for new and existing construction, 3) ensure that major end-use categories specified in the Rule be assessed, and 4) consider such things as overlapping measures, appliance efficiency standards, interactions with building codes, free riders, rebound effects and the utility's latest monitoring and evaluation data. Therefore, the comprehensive DSM measure list developed by the FEECA utilities, the company's previous utilization and now current update of Itron's Technical Potential for Electric Energy and Peak Demand savings for Tampa Electric, and the company's overall evaluation process from its updated technical potential to its proposed DSM goals for the 2015-2024 period comport with Rule 25-17.0021, F.A.C.

Q. Has Tampa Electric provided an adequate assessment of the full technical potential of all available demand-side conservation and efficiency measures, demand response and demand-side renewable energy systems?

A. Yes. Tampa Electric, in conjunction with the other FEECA utilities, developed a comprehensive DSM measure list. Subsequently, the company conducted an adequate assessment of the full technical potential of all available demand-side conservation and efficiency measures, demand response and renewable energy systems. A total of 274 measures, including energy efficiency, demand response and renewable energy measures were identified and evaluated by the company.

Q. How has Tampa Electric incorporated supply-side efficiencies into its planning process?

A. Supply-side efficiencies include improvements in generation, transmission and distribution. Therefore, Tampa Electric's motivation to deliver electric service to its customers in the most economically efficient manner possible makes executing supply-side efficiencies a naturally occurring result. A review of Tampa Electric's plans for supply-side endeavors is an inherent element of the company’s annual Ten-Year Site Plan which is routinely reviewed by this Commission. Furthermore, both supply-side efficiency and conservation resources are analyzed in every need determination for new sources of generation. When Tampa Electric selects its avoided supply-side costs for utilization in DSM cost-effectiveness evaluations, it is selecting resources that have previously been reviewed and determined to be efficient. Of further note is the fact that while efficiency improvements in supply-side resources are important, these improvements have a tendency to reduce potential savings available through DSM activity.

Q. Has Tampa Electric provided an adequate assessment of the achievable potential of all available demand-side conservation and efficiency measures, including demand-side renewable energy systems?

A. Yes. Tampa Electric has conducted an adequate assessment of the full technical, economic and achievable potentials of all available demand-side conservation and efficiency measures including renewable energy systems. The company employed a reasonable approach to identifying administrative costs and incentives for the measures and evaluated the measures against the appropriate supply-side avoided cost data.

Q. Should the Commission establish separate goals for demand-side renewable energy systems?

A. No. Tampa Electric evaluated renewable technologies as an integral part of its overall DSM measure evaluation process. Data for those evaluations was taken from actual field data collected from the company's residential and commercial pilot renewable energy programs that were initiated in late 2010 by Commission order from the last DSM goals proceeding. At the conclusion of that proceeding, the Commission acknowledged that none of the renewable technologies were cost-effective under any test; however, utilities were ordered to conduct pilot programs with expenditure caps up until the next DSM goals setting proceeding.

Tampa Electric is now at the next DSM goals setting proceeding having a wealth of information from its renewable pilot programs. A full narration concerning these pilot programs can be found later in my testimony, but program results clearly indicate cost-effectiveness has not been achieved under any test. Furthermore, any ongoing expenditures on these types of programs will only serve to continue to unduly raise rates on customers and further exacerbate subsidy payments among customers – something this Commission’s has strived not to do through applying appropriate cost allocations between customer rate classes.

Of further note is the acknowledgement by this Commission that setting DSM goals at zero is in fact appropriate if no DSM measures were found to be cost-effective.

At this juncture, the evidence is convincing that renewable technologies are not suitable for inclusion in goals setting. These measures demonstrated non-cost-effectiveness in the previous DSM goals setting proceeding, yet pilot programs were ordered and initiated and have now proven through field experience that they are still not cost-effective. With this Commission having previously concluded that setting goals at zero is appropriate when no measures are cost-effective, the Commission must conclude that zero goals for renewable technologies is now appropriate in this proceeding. To allow for any further expenditure on this renewable activity will only serve to increase rates beyond what is reasonable and continue the inappropriate practice of cross-subsidization among customers.

Q. Do Tampa Electric's proposed DSM goals adequately reflect the costs and benefits to customers who will participate in programs developed to promote DSM measures?

A. Yes. Through Tampa Electric's efforts to refresh the work Itron conducted for the previous DSM goals setting proceeding, and with local market input relative to baselines and incremental equipment costs supplied to Tampa Electric, the company's proposed RIM-based DSM goals adequately reflect the costs and benefits to customers who will participate in programs developed to promote DSM measures.

Q. Do Tampa Electric's proposed DSM goals adequately reflect the costs and benefits to the general body of ratepayers as a whole, including utility incentives and participant contributions?

A. Yes. The surest way to adequately reflect the costs and benefits to the general body of ratepayers as a whole without subsidization within or across rate classes is to employ the use of the RIM test for DSM goals setting and program approval. Since the inception of DSM in Florida, this Commission has a longstanding practice of utilizing the RIM test to provide fair, equitable and reasonable treatment for all ratepayers while minimizing overall rate impacts of DSM expenditures. Tampa Electric strongly encourages the Commission to continue this practice so as to establish meaningful DSM goals while minimizing overall rate impacts.

OTHER INFORMATION REQUESTED BY THE COMMISSION'S ORDER ESTABLISHING PROCEDURE

Q. Please describe how Tampa Electric conducted the sensitivity analyses requested by the Commission's OEP.

A. Tampa Electric's sensitivity analyses were conducted on the RIM and TRC economic potentials with regard to the following factors: 1) higher fuel costs, 2) lower fuel costs, 3) shorter free-ridership exclusion period, and 4) longer free-ridership exclusion period. Specifically, the fuel cost was varied in a similar manner as to Tampa Electric's sensitivity conducted in the fuel docket. The free-ridership exclusion period varied from one year to three years.

Q. For Tampa Electric, please describe the results of the sensitivity analyses when applied to the 2015-2024 RIM and TRC DSM economic potentials.

A. Tampa Electric’s sensitivity analyses on the 2015-2024 RIM and TRC DSM economic potentials were conducted by determining the change in four components for both potentials. These components were the total number of individual measures across housing and building types that passed RIM or TRC tests, annual energy, summer demand and winter demand. Document No. 6 provides the detailed results of the analyses.

Results from the sensitivity analyses are modest at best. From a RIM perspective, the greater variation occurred with summer demand relative to fuel costs. From a TRC perspective, the greater variation occurred with annual energy relative to payback duration.

Q. Should the results of these sensitivity analyses be used in any manner to influence or establish Tampa Electric’s DSM goals for the 2015-2024 period?

A. No. Tampa Electric believes the sensitivity analyses simply provide a relative indication as to how cost-effectiveness evaluations may be affected by changes in assumptions. There is no basis to conclude the assumption changes modeled by the company for this sensitivity exercise will in some manner become more plausible than the actual assumptions utilized.

Q. For Tampa Electric, what are the 2015-2024 annual bill impacts on residential customers using 1,200 kWh/month for the projected RIM achievable portfolio and the projected TRC achievable portfolio?

A. To make the determination of the 1,200 kWh/month annual residential bill impact for the 2015-2024 period relative to the RIM and TRC achievable portfolios, Tampa Electric’s approach was to provide a total bill estimate that included all of the normal components that comprise a typical residential bill, namely, base rate, recovery clauses and customer charge. Also, the company included the costs for maintaining existing DSM on the company’s system. This principally included load management costs associated with maintaining the existing level of load management on the system as well as energy audit costs necessary to continue compliance with Rule 25-17.003, F.A.C. The results of these analyses for the 2015-2024 period are contained in Document No. 7 of my exhibit and demonstrate the estimated ten-year total cost for a 1,200 kWh/month bill would be $16,817 for the RIM portfolio and $16,862 for the TRC portfolio.

It is important to realize the dollar amounts for the RIM and TRC achievable portfolios are estimates for only one customer's electric bill. A more realistic view is gained by looking at the impact across the company's entire system and thus its entire customer base. The estimated ECCR clause cost to deliver the RIM portfolio for the 2015-2024 period is $470 million. The estimated ECCR clause cost to deliver the TRC portfolio for the 2015-2024 period is $523 million. Therefore, the TRC portfolio is a $53 million greater burden for customers. Furthermore, the RIM portfolio, by definition of the RIM test, is cost-effective for both participating and non-participating customers; therefore, there are no losers. However, the TRC portfolio is cost-effective for program participants but not for non-participants. Under the TRC portfolio, non-participants will actually be subsidizing the program participants for their DSM efforts. Therefore, the RIM portfolio is the more cost-effective, less expensive, more reasonable and equitable approach to take in order to provide another resource to assist the company in meeting future system needs.

RESULTS OF TAMPA ELECTRIC'S SOLAR PILOT PROGRAMS

Q. Please describe Tampa Electric's current solar pilot programs.

A. Tampa Electric's solar pilot programs are comprised of four initiatives. These pilot initiatives include PV systems for residential and commercial customers, PV systems for schools, residential solar water heating ("SWH") and low income SWH.

The PV pilot program for residential and commercial customers provides an incentive of $2 per watt ($2,000 per kW) to the customer for PV systems installed on homes and businesses. The maximum incentive per premise is $20,000.

The pilot PV for schools program is managed in conjunction with the Florida Solar Energy Center ("FSEC") SunSmart/E-Shelter program. Tampa Electric installs one 10 kW PV system a year on a school in its service area identified as an emergency shelter. The school must meet FSEC E-Shelter program criteria for participation. The PV system includes battery backup and the overall effort includes educational opportunities for teachers and students.

The pilot residential SWH program provides a $1,000 incentive for the installation of a SWH system on a new or existing home.

Finally, the pilot low income SWH program provides a solar water heating system for new construction low income housing. This effort is managed in conjunction with non-profit building organizations (e.g., Habitat for Humanity) that engage in these types of construction activities. Tampa Electric provides up to five SWH systems per year.

Q. Why were these pilot programs initiated?

A. These pilot programs were initiated as a result of Commission Order No. PSC-09-0855-FOF-EG ("Order"). In that Order, the Commission stated that "…amendments to Section 366.82(2), F.S., require us to establish goals for demand-side renewable energy systems. ***None of these resources were found to be cost-effective in the utilities' analyses***. However, we can meet the intent of the Legislature to place added emphasis on these resources, while protecting ratepayers from undue rate increases by requiring the IOUs to offer renewable programs subject to an expenditure cap. We direct the IOUs to file pilot programs focusing on encouraging solar water heating and solar PV technologies in the DSM program approval proceeding. Expenditures allowed for recovery shall be limited to 10 percent of the average annual recovery through the Energy Conservation Cost Recovery clause in the previous five years…." (Emphasis added)

Based on that Order, Tampa Electric, along with Florida Power and Light, Duke Energy (at the time Progress Energy), Gulf Power and Florida Public Utilities developed specific pilot renewable programs to meet Order requirements. The Commission approved annual expenditure for these utilities was $24.5 million annually with Tampa Electric's portion being $1.5 million annually.

As stated in the Order, all witnesses who provided testimony on demand-side renewable resources in the proceeding clearly articulated the fact that PV and solar thermal technologies were not cost-effective. That fact was also stated in the Commission's conclusion to the section on Demand-Side Renewable Energy Systems. However, at the time, the Commission construed from the recently adopted legislation that emphasis on these resources was needed and directed the affected utilities to initiate programs for renewable technologies with the annual spending requirements discussed above. Witnesses advocating for this initiative put forth speculation that infusing the market with incentives could lower the overall cost of renewable systems and thereby improve cost-effectiveness. Interestingly, the cost of renewable systems has been declining on a national basis due in no part to the influence from Florida-specific incentives. Further, proponents of this quasi research and development type effort suggested that it would facilitate improvements in each technology's efficient energy production. Based on the results of the pilot programs, efficiency improvements of the technologies were limited at best.

Q. Generally, how have these pilot programs performed since inception?

A. The PV pilot program for residential and commercial sectors has been popular with customers. Customers quickly reserve the incentives offered each year through the company's website. In accordance with program standards, should any funds be reserved but not utilized in the prescribed time period, these funds are again made available to customers during that same year. Based on installed system sizes the company has experienced in this initiative, 60 to 70 incentives have been available each year.

The pilot PV for schools program was designed to use a portion of the overall renewable initiative annual funding to secure the installation of one PV system per year on qualified schools. The company had 11 schools in its service area that were finalists through FSEC's SunSmart Schools E-Shelter program. Tampa Electric has chosen one school each year based on that school's FSEC E-Shelter qualifications ranking and installed a PV system with battery backup at that location.

The pilot residential SWH program has experienced modest success. Each year, the incentives made available for SWH systems have been more than the amounts customers applied for and received. Therefore, the company has shifted those unused funds over to the pilot PV program for potential distribution. Annually, Tampa Electric has experienced a maximum of 49 participants in the pilot SWH program.

The pilot low income SWH program has had marginal success. The number of annual solar water heating installations is solely dependent upon the number of new houses constructed by non-profit organizations. Funding was made available for five installations per year; however, 2012 was the only year where all five systems were installed. Any remaining funds were made available to other pilot renewable initiatives.

Q. Please summarize the participation rates for these pilot programs.

A. The participation rates for these pilot programs are provided in the table below.

Year	PV System	PV for Schools	Res SWH	Low Income SWH
2011	57 (49 Res (8 Com)	1	46	2
2012	70 (63 Res (7 Com)	1	25	5
2013	65 (56 Res (9 Com)	1	49	3

Q. What costs has Tampa Electric incurred delivering these pilot programs to its service area?

A. The costs Tampa Electric has incurred delivering these pilot programs to its service area are as follows:

2011 - $671,429

2012 - $1,625,597

2013 – $1,496,697

Q. What are the customer equipment costs for the solar technologies and how has that trended since inception?

A. The annual average customer equipment costs for PV and SWH technologies are provided below:

PV:

2011 - $5,500 per kW

2012 - $4,346 per kW

2013 - $3,419 per kW

The cost per kW has decreased over time primarily due to the decrease in PV panel pricing. However, Tampa Electric does not believe the incentive program caused this price decrease. As previously stated, PV system costs have been declining on a national basis absent the influence of incentives from Florida utilities.

SWH:

2011 - $5,194 per system

2012 - $5,254 per system

2013 - $5,656 per system

The cost for SWH systems has experienced a modest increase over time. The company believes this is primary due to two factors: 1) normal inflationary impacts on materials and labor, and 2) slight variations in system sizes being installed.

Low Income SWH:

2011 - $3,500 per system

2012 - $4,480 per system

2013 - $4,230 per system

The per unit cost for SWH systems installed on new low income housing has risen since the first year, but of interest is the comparison between low income system costs and residential SWH program system costs. Annually, the low income SWH systems, totally funded by renewable initiative dollars, have ranged between $800 to almost $1,700 less than the SWH systems receiving incentives through the residential SWH pilot program. However, the SWH system incentive paid to the residential homeowner ($1,000) tends to bring that system's net cost down to levels somewhat comparable to the low income systems.

Q. For the purpose of cost-effectiveness calculations, what are the demand and energy savings from Tampa Electric's pilot solar programs?

A. The demand and energy savings necessary for the cost-effectiveness determination of each of the pilot programs is provided in the table below.

Pilot Program	**Summer kW**	**Winter kW**	**Annual Energy**
Residential PV	2.33	1.05	11,236
Commercial PV	3.56	1.61	17,188
SWH	0.31	0.40	1,730

Q. Based on the demand and energy savings from these solar pilot programs, what are their cost-effectiveness values?

A. The cost-effectiveness values for Tampa Electric's solar pilot programs are determined by calculating the benefit-to-cost ratios of the program offerings as defined by three tests, namely the RIM test, the TRC test and the Participant Test. These tests are specifically identified by Commission Rule 25-17.008, F.A.C. – the same rule and calculation methodology used in setting DSM goals and establishing cost-effective DSM plans. By utilizing these same tests, the "playing field" for all technologies, solar or otherwise, is fair and level. In order to pass these tests, the calculated test values must be greater than 1.0, indicating benefits are greater than costs. The cost-effectiveness values for the solar pilot programs are provided in the table below.

Pilot Program	**RIM Value**	**TRC Value**	**Participant Value**
Residential PV	0.38	0.41	1.20
Commercial PV	0.40	0.39	1.10
SWH	0.56	0.28	0.71

Q. What do the cost-effectiveness test values for the pilot PV programs mean?

A. The meaning of these cost-effectiveness values is clear and stark. The pilot residential and commercial PV programs do not pass the RIM Test or the TRC Test. Their RIM values are 0.38 and 0.40, respectively, and their TRC values are 0.41 and 0.39, respectively.

From a RIM Test perspective, this means the total benefits (avoided generation, avoided T&D and fuel) are far too small compared to the costs (incentives, program administration, and lost revenue) associated with delivering these programs.

From a TRC Test perspective, this means the total benefits (avoided generation, avoided T&D and fuel) are also far too small compared to the program costs (cost of equipment, equipment O&M costs, and program administration) associated with delivering these programs.

However, the Participant Test values for both the residential and commercial offerings (1.20 and 1.10, respectively) indicate adequate cost-effectiveness, i.e., the benefits to the participants is greater than the costs; however, this is due to cross-subsidies. Specifically, the non-passing values for both the RIM and TRC Tests demonstrate that participants are being non-cost-effectively subsidized by all other customers.

Q. Please explain why the RIM and TRC Tests have failing values and yet the Participant Test has passing values.

A. The RIM Test has failing values for the residential and commercial programs (0.38 and 0.40, respectively) due to the magnitude of the incentives. At $2 per watt, the average incentive for residential is $14,028 and the average incentive for commercial is $20,000.

The TRC Test has failing values for the residential and commercial programs (0.41 and 0.39, respectively) due to the high cost of the technology, even though costs have been decreasing over the life of the pilot programs.

The Participant Test has passing values for the residential and commercial programs due to the high incentives offered as well as currently available tax credits. Over time, the incentive levels offered help the participant recover the investment before the useful life of the equipment has been exhausted. But as previously stated, cross-subsidies are flowing from non-participants to the participants without sufficient, cost-effective benefits being received by the non-participants.

Q. Did Tampa Electric perform sensitivities on the various tests to determine what combination of incentives and technology costs, if any, could result in passing values for the RIM and TRC Tests? If so, what were the results of those sensitivities?

A. Yes. Tampa Electric performed a series of sensitivities that included the following: 1) decrease the incentive to the point where the Participant Test still passes and then determine the RIM Test values; 2) decrease the incentive to the point where the RIM Test finally achieves a passing value and then examine the resulting Participant Test values; and 3) decrease the technology cost to the point where the TRC Test finally passes and then examine the resulting Participant Test values.

The results of the first sensitivity (Participant Test/ RIM Test) indicate the incentive levels for pilot residential and commercial programs can be decreased to $6,779 and $14,358, respectively, and still maintain Participant Test viability. However, the resulting RIM Test values only reach a level of 0.50 and 0.46, respectively. These reduced incentive levels are as low as the Participant Test can withstand and still maintain cost-effectiveness for the customer; however, the respective RIM values do not pass and therefore cannot support an ongoing program that will be equitable to the general body of ratepayers.

The results of the second sensitivity (RIM Test/Participant Test) indicate there is no level of incentive that the RIM Test can support and sustain cost-effectiveness. In other words, even at a zero incentive level for both pilot residential and commercial programs, both programs continue to fail the RIM Test with RIM values of 0.73 and 0.77, respectively.

The results of the third sensitivity (TRC Test/Participant Test) indicate that technology costs must drop to $1,205 per kW for residential systems and $1,201 per kW for commercial systems so that the TRC Test gives a passing value of greater than 1.0. Given the difference in magnitude between these costs per KW and the 2013 average cost of $3,419 per kW Tampa Electric experienced, it seems unlikely a passing TRC Test value will materialize.

In summary, for now and the foreseeable future these sensitivity analyses do not support the potential of PV to be promoted as a cost-effective DSM program for Tampa Electric. Based on the pilot program results to date, the technology does not pass the RIM Test under any circumstance and the only way to pass the TRC Test is for the technology cost to significantly decrease from its most recent actual level of $3,419 per kW to $1,201 per kW – a precipitous fall indeed.

Q. What do the cost-effectiveness test values for the pilot residential SWH program mean?

A. The pilot residential SWH program cost-effectiveness values are as depressed as the pilot PV programs. Specifically, the RIM value is 0.56; the TRC value is 0.28; and the Participant Test value is 0.71. These values have been calculated with the $1,000 incentive included.

From a RIM Test perspective, this means the total benefits associated with this program are far too small compared to the company costs necessary to deliver the program. From a TRC Test perspective, the total benefits are also far too small compared to the overall program costs associated with delivering this program. Finally, from a Participant Test perspective, even with the $1,000 incentive, the participant is not made whole since the savings on the electric bill will not recoup the net equipment cost. Therefore, the customer should not install the SWH technology because it is not cost-effective to do so.

Q. As with the PV programs, did Tampa Electric perform sensitivities on the various tests to determine what combination of incentives and technology costs, if any, could result in passing values? If so, what were the results of those sensitivities?

A. Yes, Tampa Electric performed sensitivity analyses on the pilot residential SWH program. The first analysis was to determine if the RIM Test could reach a passing value. Even with an incentive of zero dollars, the RIM Test only achieved a value of 0.80.

The second analysis was to determine how large an incentive was necessary for the Participant Test to reach a passing value. A passing value was achieved at an incentive of $3,740; however, the RIM Test plummeted to a value of 0.31 due to the increased magnitude of the incentive.

The third analysis was to determine what decrease in equipment cost would be necessary in order to reach a passing value for the TRC Test. The analysis demonstrated that an equipment cost of $1,051 would allow the TRC Test to achieve a passing value. However, when that cost is compared to the pilot program's 2013 average installed equipment cost of $5,656 per SWH system, it seems highly unlikely that level of reduction in the equipment cost will ever occur.

In summary, there appears to be no opportunity for SWH to be developed into a cost-effective DSM program in the foreseeable future.

Q. Based on these cost-effectiveness evaluations and subsequent sensitivities conducted by Tampa Electric, does the company anticipate continuing to offer incentives for the solar technologies contained in the pilot programs at the end of the required pilot program period?

A. No. The pilot solar technologies initiative ordered by the Commission was established to determine DSM program viability. Tampa Electric believes viability has been determined, and in fact, does not exist. Therefore, any continuation of expenditures on this renewable initiative exacerbates two existing conditions: 1) the continued upward pressure on the ECCR Clause for programs that do not pass RIM or TRC cost-effectiveness tests, and 2) the continued payment of subsidies from non-participants to those customers installing the technologies. These subsidizing payments made through the collection of pilot program costs in the ECCR Clause are being levied against the non-participating general body of ratepayers who are not receiving their commensurate level of benefits. It is simply not a responsible use of ratepayer dollars to promote these programs under any cost-effectiveness test.

CONCLUSIONS

Q. What overall DSM goals are reasonably achievable for Tampa Electric for the 2015-2024 period?

A. Based on the analysis performed by Tampa Electric for this current DSM goals setting process, the company's reasonably achievable generator level RIM-based DSM goals for the 2015-2024 period are 56.3 MW of summer demand savings, 78.3 MW of winter demand savings, and 144.3 GWH of annual energy savings. These amounts are detailed on an annual basis for both the residential and commercial/industrial sectors in Document No. 1 of my exhibit.

By accomplishing these DSM goals, Tampa Electric will increase overall energy efficiency in its service area and lower electric rates for all customers. The company is quite aware that keeping electric rates as low as possible while advancing broad scale efforts of overall conservation is important to its customers and therefore the company.

Q. Does the methodology used by Tampa Electric to set DSM goals for the 2015-2024 period comport with statutory and F.A.C. requirements?

A. Yes. Tampa Electric began its evaluation process with a comprehensive list of potential DSM measures for residential and commercial and industrial sectors, applied those measures over multiple construction and building types, and considered several aspects of measure interaction as well as free ridership. Tampa Electric adhered to statutory requirements by developing estimated technical and achievable potentials while properly reflecting cost and benefits to all customers. Additionally, Tampa Electric utilized a sound, proven approach that has been used and approved in principle by this Commission in past DSM goals setting proceedings.

Q. Do Tampa Electric’s proposed DSM goals provide a cost-effective means for all ratepayers to help meet the need for additional generation through 2024?

A. Yes. Through the use of the RIM test, Tampa Electric has assured its ratepayers that the most cost-effective resources will be used to meet future capacity needs.

Q. Should Tampa Electric’s proposed 2015-2024 DSM goals be approved?

A. Yes. Tampa Electric’s proposed 2015-2024 DSM goals meet rule and statutory requirements, are cost-effective for participants and non-participants, help to minimize the rate impact for future capacity needs, address the desires and needs of its customers, and are reasonably achievable.

Q. Does this conclude your testimony?

A. Yes.

EXHIBIT

OF

HOWARD T. BRYANT

Table of Contents

Tampa Electric Company

2015 - 2024
Proposed Residential DSM Goals
(At the Generator)

Year	Summer Demand (MW)		Winter Demand (MW)		Annual Energy (GWH)	
	Incremental	Cuumulative	Incremental	Cuumulative	Incremental	Cuumulative
2015	1.1	1.1	2.6	2.6	1.8	1.8
2016	1.6	2.7	4.1	6.7	3.5	5.3
2017	2.2	4.9	5.2	11.9	4.8	10.1
2018	2.7	7.6	6.5	18.4	6.1	16.2
2019	3.1	10.7	7.6	26.0	6.9	23.1
2020	3.3	14.0	7.6	33.6	7.4	30.5
2021	3.3	17.3	8.0	41.6	7.7	38.2
2022	3.0	20.3	7.4	49.0	6.9	45.1
2023	2.9	23.2	6.8	55.8	6.3	51.4
2024	2.5	25.7	6.1	61.9	5.5	56.9

2015 - 2024
Proposed Commercial/Industrial DSM Goals
(At the Generator)

Year	Summer Demand (MW)		Winter Demand (MW)		Annual Energy (GWH)	
	Incremental	Cuumulative	Incremental	Cuumulative	Incremental	Cuumulative
2015	1.7	1.7	1.2	1.2	3.9	3.9
2016	2.5	4.2	1.3	2.5	6.0	9.9
2017	2.7	6.9	1.6	4.1	8.0	17.9
2018	3.3	10.2	1.7	5.8	9.2	27.1
2019	3.3	13.5	1.6	7.4	9.9	37.0
2020	3.5	17.0	1.7	9.1	10.3	47.3
2021	3.6	20.6	1.9	11.0	10.4	57.7
2022	3.3	23.9	1.9	12.9	10.2	67.9
2023	3.5	27.4	1.8	14.7	9.9	77.8
2024	3.2	30.6	1.7	16.4	9.6	87.4

Comprehensive Technical Potential Measure List

Residential

1 14 SEER Split-System Heat Pump
2 15 SEER Split-System Air Conditioner
3 15 SEER Split-System Heat Pump
4 17 SEER Split-System Air Conditioner
5 17 SEER Split-System Heat Pump
6 19 SEER Split-System Air Conditioner
7 AC Heat Recovery Units
8 AC Maintenance (Indoor Coil Cleaning)
9 AC Maintenance (Outdoor Coil Cleaning)
10 Ceiling R-0 to R-19 Insulation
11 Ceiling R-19 to R-38 Insulation
12 CFL (18-Watt integral ballast), 0.5 hr/day
13 CFL (18-Watt integral ballast), 2.5 hr/day
14 CFL (18-Watt integral ballast), 6.0 hr/day
15 Default Window With Sunscreen
16 Duct Repair
17 Electronically Commutated Motors (ECM) on an Air Handler Unit
18 Energy Star CW CEE Tier 2 (MEF=2.0)
19 Energy Star CW CEE Tier 3 (MEF=2.2)
20 Energy Star Desktop PC
21 Energy Star DVD Player
22 Energy Star DW (EF=0.68)
23 Energy Star Laptop PC
24 Energy Star Set-Top Box
25 Energy Star TV
26 Energy Star VCR
27 Faucet Aerators
28 HE Freezer
29 HE Refrigerator - Energy Star version of above
30 HE Room Air Conditioner - EER 11
31 HE Room Air Conditioner - EER 12
32 Heat Pump Water Heater (EF=2.9)
33 Heat Trap
34 High Efficiency One Speed Pool Pump (1.5 hp)
35 Low Flow Showerhead
36 Pipe Wrap
37 Proper Refrigerant Charging and Air Flow
38 PV-Powered Pool Pumps
39 Radient Barrier
40 Reflective Roof
41 RET 2L4'T8, 1EB
42 ROB 2L4'T8, 1EB
43 Sealed Attic w/Sprayed Foam Insulated Roof Deck

44 Sealed Attics
45 Single Pane Clear Windows to Double Pane Low-E Windows
46 Solar Water Heating
47 Two Speed Pool Pump (1.5 hp)
48 Variable-Speed Pool Pump (<1 hp)
49 Wall 2x4 R-0 to Blow-In R-13 Insulation
50 Water Heater Blanket
51 Water Heater Temperature Check and Adjustment
52 Water Heater Timeclock
53 Weather Strip/Caulk w/Blower Door
54 Window Film
55 Window Tinting
56 Photovoltaic System

New Measures

1 LED (12-Watt integral ballast), 0.5 hr/day
2 LED (12-Watt integral ballast), 2.5 hr/day
3 LED (12-Watt integral ballast), 6.0 hr/day
4 LED 13W Flood Outdoor
5 Refrigerator recycling
6 Freezer recycling
7 Smart Plug

Eliminated Measures

1 14 SEER Split-System Air Conditioner
2 HVAC Proper Sizing
3 14 SEER Split-System Heat Pump
4 High Efficiency CD (EF=3.01 w/moisture sensor)
5 High Efficiency Water Heating (EF=0.93)

58 Total Measures Evaluated

Commercial

1 Aerosole Duct Sealing
2 Air Handler Optimization
3 Anti-sweat (humidistat) controls
4 Ceiling Insulation
5 Centrifugal Chiller, 0.51 kW/ton, 500 tons
6 CFL Hardwired, Modular 18W
7 CFL Screw-in 18W
8 Chiller Tune Up/Diagnostics
9 Compressor VSD retrofit
10 Continuous Dimming
11 Convection Oven
12 Cool Roof

13 Copier Power Management Enabling
14 Demand Control Ventilation (DCV)
15 Demand controlled circulating systems
16 Demand Defrost Electric
17 Demand Hot Gas Defrost
18 Duct/Pipe Insulation
19 DX Coil Cleaning
20 DX Packaged System, EER=11.9, 10 tons
21 DX Tune Up/ Advanced Diagnostics
22 Efficient compressor motor
23 Efficient Fryer
24 Electronically Commutated Motors (ECM) on an Air Handler Unit
25 EMS - Chiller
26 EMS Optimization
27 Energy Recovery Ventilation (ERV)
28 Energy Star or Better Copier
29 Energy Star or Better Monitor
30 Evaporator fan controller for MT walk-ins
31 Floating head pressure controls
32 Freezer-Cooler Replacement Gaskets
33 Geothermal Heat Pump, EER=13, 10 tons
34 HE PTAC, EER=9.6, 1 ton
35 Heat Pump Water Heater (air source)
36 Heat Recovery Unit
37 Heat Trap
38 High Bay T5
39 High Efficiency Chiller Motors
40 High Efficiency Fan Motor, 15hp, 1800rpm, 92.4%
41 High Pressure Sodium 250W Lamp
42 High R-Value Glass Doors
43 High-efficiency fan motors
44 Hot Water Pipe Insulation
45 Hybrid Dessicant-DX System (Trane CDQ)
46 LED Display Lighting
47 LED Exit Sign
48 Lighting Control Tuneup
49 Monitor Power Management Enabling
50 Multiplex Compressor System
51 Night covers for display cases
52 Occupancy Sensor
53 Occupancy Sensor (hotels)
54 Optimize Controls
55 Outdoor Lighting Controls (Photocell/Timeclock)
56 Oversized Air Cooled Condenser
57 Packaged HP System, EER=11.7, 10 tons
58 PC Manual Power Management Enabling
59 PC Network Power Management Enabling

60 Premium T8, EB, Reflector
61 Premium T8, Elecctronic Ballast
62 Printer Power Management Enabling
63 PSMH, 250W, magnetic ballast
64 Refrigeration Commissioning
65 ROB Premium T8, 1EB
66 ROB Premium T8, EB, Reflector
67 Roof Insulation
68 Separate Makeup Air / Exhaust Hoods AC
69 Solar Water Heater
70 Strip curtains for walk-ins
71 Thermal Energy Storage (TES)
72 Variable Speed Drive Control
73 Vending Misers (cooled machines only)
74 VSD for Chiller Pumps and Towers
75 Window Film (Standard)
76 Photovoltaic System

New Measures

1 LED Linear Tube 22W
2 Flood LED 14W
3 LED (12-Watt)
4 Outdoor LED 104W
5 LED High Bay 83W (400W equivalent)
6 Run Time Optimizer
7 dehumidification hybrid desiccant heat pump
8 Ice Machine
9 0.5 Faucet Aerator (DI) - Commercial
10 1.0 gpm Faucet Aerator (DI) -Commercial
11 1.5 gpm Showerhead (DI) - Commercial
12 Server Virtualization
13 Griddle
14 Steamer
15 Holding Cabinet

Eliminated Measures

1 High Efficiency Water Heater (electric)

90 Total Measures Evaulated

Industrial

1 Aerosole Duct Sealing
2 Air conveying systems
3 Bakery - Process
4 Bakery - Process (Mixing) - O&M

5 Centrifugal Chiller, 0.51 kW/ton, 500 tons
6 CFL Hardwired, Modular 18W
7 CFL Screw-in 18W
8 Chiller Tune Up/Diagnostics
9 Clean Room - Controls
10 Clean Room - New Designs
11 Comp Air - ASD (100+ hp)
12 Comp Air - ASD (1-5 hp)
13 Comp Air - ASD (6-100 hp)
14 Comp Air - Motor practices-1 (100+ HP)
15 Comp Air - Motor practices-1 (1-5 HP)
16 Comp Air - Motor practices-1 (6-100 HP)
17 Comp Air - Replace 100+ HP motor
18 Comp Air - Replace 1-5 HP motor
19 Comp Air - Replace 6-100 HP motor
20 Compressed Air - Controls
21 Compressed Air - System Optimization
22 Compressed Air- Sizing
23 Compressed Air-O&M
24 Cool Roof
25 Direct drive Extruders
26 Drives - EE motor
27 Drives - Optimization process (M&T)
28 Drives - Process Control
29 Drives - Process Controls (batch + site)
30 Drives - Scheduling
31 Drying (UV/IR)
32 Duct/Pipe Insulation
33 DX Coil Cleaning
34 DX Packaged System, EER=11.9, 10 tons
35 DX Tune Up/ Advanced Diagnostics
36 Efficient Curing ovens
37 Efficient desalter
38 Efficient drives
39 Efficient drives - rolling
40 Efficient electric melting
41 Efficient grinding
42 Efficient Machinery
43 Efficient practices printing press
44 Efficient Printing press (fewer cylinders)
45 Efficient processes (welding, etc.)
46 Efficient Refrigeration - Operations
47 EMS - Chiller
48 EMS Optimization - Chiller
49 Extruders/injection Moulding-multipump
50 Fans - ASD (100+ hp)
51 Fans - ASD (1-5 hp)

52 Fans - ASD (6-100 hp)
53 Fans - Controls
54 Fans - Motor practices-1 (100+ HP)
55 Fans - Motor practices-1 (1-5 HP)
56 Fans - Motor practices-1 (6-100 HP)
57 Fans - O&M
58 Fans - Replace 100+ HP motor
59 Fans - Replace 1-5 HP motor
60 Fans - Replace 6-100 HP motor
61 Fans - System Optimization
62 Fans- Improve components
63 Gap Forming papermachine
64 Geothermal Heat Pump, EER=13, 10 tons
65 Heat Pumps - Drying
66 Heating - Optimization process (M&T)
67 Heating - Process Control
68 Heating - Scheduling
69 High Bay T5
70 High Consistency forming
71 High Efficiency Chiller Motors
72 Hybrid Dessicant-DX System (Trane CDQ)
73 Injection Moulding - Direct drive
74 Injection Moulding - Impulse Cooling
75 Intelligent extruder (DOE)
76 Light cylinders
77 Machinery
78 Membranes for wastewater
79 Near Net Shape Casting
80 New transformers welding
81 O&M - Extruders/Injection Moulding
82 O&M/drives spinning machines
83 Occupancy Sensor
84 Optimization control PM
85 Optimization Refrigeration
86 Optimize Controls
87 Optimize drying process
88 Other Process Controls (batch + site)
89 Power recovery
90 Premium T8, Electronic Ballast
91 Process control
92 Process Drives - ASD
93 Process optimization
94 Pumps - ASD (100+ hp)
95 Pumps - ASD (1-5 hp)
96 Pumps - ASD (6-100 hp)
97 Pumps - Controls
98 Pumps - Motor practices-1 (100+ HP)

99 Pumps - Motor practices-1 (1-5 HP)
100 Pumps - Motor practices-1 (6-100 HP)
101 Pumps - O&M
102 Pumps - Replace 100+ HP motor
103 Pumps - Replace 1-5 HP motor
104 Pumps - Replace 6-100 HP motor
105 Pumps - Sizing
106 Pumps - System Optimization
107 Refinery Controls
108 Replace V-Belts
109 Roof Insulation
110 Top-heating (glass)
111 VSD for Chiller Pumps and Towers
112 Window Film (Standard) - Chiller

New Measure

1 Run Time Optimizer
2 Dehumidification Hybrid Desiccant Heat Pump (5 TON)
3 LED Linear Tube 22W
4 Flood LED 14W
5 LED High Bay 83W

Eliminated Measures

None

117 Total Measures Evaulated

Demand Response

Residential

1 In home display with peak threshold warning system and pre set control strategies
2 On-off switching via low-power wireless communication technology
3 Smart thrermostats
4 Switch - cycling program
5 Switch - shedding program

Commercial

1 Automated control strategies
2 Direct load control

Industrial

1 Automated control strategies
2 Direct load control

	Total Measures
265	Energy Efficiency
9	Demand Response
274	Total

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Tampa Electric 2014 Technical Potential Update Methodology

Updating the energy efficiency measures included all steps. Step 3 was performed for demand response and photovoltaic measures as there were no applicable Codes and Standards changes or new measures.

2009 Technical Potential

↓

1. Adjusted Existing Measures

- Removed baseline measures rendered obsolete by Codes and Standards changes
- Established new baseline measures, where appropriate, to replace those that became obsolete
- Reduced the demand and energy of all dependent measures related to the new baseline measure

↓

2. Added New Measures

- Added commercially-viable competing and complimentary measures not included in the 2009 TP
- Calculated the respective demand and energy impacts of those new measures relative to the appropriate baseline measure

↓

3. Adjusted for Marketplace Changes

- Incorporated impact of overall service area growth from 2008 (2009 TP last actuals) through 2012
- Reduced overall demand and energy potential to reflect the impact the utility's DSM programs from 2008-2012

↓

2014 Technical Potential

Tampa Electric 2014 Technical Potential Update Methodology

Definitions

- **Technical potential ("TP") –** An analysis performed in the DSM Goals development process to identify the theoretical limit of electric peak demand (MW) and energy (GWh) reductions. The TP assumes every measure is installed everywhere it could be physically installed, regardless of cost, customer acceptance or any other real-world constraints. The 2014 TP is the 2009 TP updated to reflect subsequent technology and marketplace changes.

- **Codes and Standards –** Florida Building Codes and Federal equipment manufacturing standards.

- **Baseline measure –** A measure which represents the minimum demand and energy impacts for a technology (e.g., 14 SEER for air-conditioning as prescribed by 2015 Codes and Standards). The baseline measure serves as the basis for calculating the incremental impacts for related dependent measures.

- **Dependent measure –** A measure related to a baseline measure with demand and energy impact values that are incremental to its baseline measure (e.g., a 15 SEER air-conditioner vs. the 14 SEER baseline measure).

- **Competing measure –** A dependent measure which "competes" or displaces another similar measure from being implemented (e.g., high efficiency air-conditioners with SEER values of 15 or 17 could not both be installed to serve the same cooling load).

- **Complimentary measure –** A dependent measure that can add incremental demand and energy impacts independent of other measures (e.g., ceiling insulation). The size of these measures' incremental impacts can be affected by other measures (e.g., impact of ceiling insulation can be affected by the level of air-conditioning efficiency).

Tampa Electric 2014 Technical Potential Update Methodology

I. Energy Efficiency Existing Measures' Adjustments

A. Removed obsolete baseline measures

1. Identified 2009 baseline measures impacted by new codes and standards
2. Identified new baseline measures replacing the obsolete ones
3. Determined each new baseline measure's savings impact values
4. Zeroed out each new baseline measure's savings impact values (since those measures do not contribute to incremental savings)

B. Reduced associated dependent measures' impacts

1. Calculated the incremental difference in the savings impacts between the associated dependent measures and the new baseline measures
2. Calculated the incremental difference between associated dependent measures and their 2009 technical potential baseline measure
3. Calculated the adjustment factor for each by dividing the values from step 1 by the values from step 2
4. Multiplied the affected dependent measures' 2009 technical potential total savings impacts by their adjustment factors

II. Energy Efficiency Adjustments for New Measures

A. Competing Measures

1. Identified the appropriate baseline measures
2. Identified existing dependent measures associated with these baseline measures
3. Calculated the available incremental savings impacts remaining for the new measure (baseline measure impact less the sum of the impacts from the existing dependent measures)
4. Calculated the incremental percentage of savings impacts for each new competing measure from the associated baseline measure
5. Multiplied the values from step 3 by the values from step 4

B. Complimentary Measures

1. Steps 1, 2 and 3 for competing measures duplicated for complimentary measures
2. Calculated the maximum percentage of savings impacts for each new complimentary measure from the associated baseline measure
3. Step 5 for competing measures duplicated for complimentary measures

III. Energy Efficiency Market Size Adjustments

A. Overall Market Growth

1. Calculated five-year overall customer growth percentage from year end 2007 (actuals through 2007 used as basis for 2009 technical potential) through 2012 based on values reported in the company's 2013 Ten-Year Site Plan
2. Multiplied the total overall savings impacts by the value from step 1
3. Added the values from step 2 to the total overall savings impacts

B. DSM Program Achievements

1. Calculated the 2008-2012 DSM program savings achievements as reported in the company's annual FEECA achievement reports
2. Subtracted the values from step 1 from the total savings impacts

IV. Demand Response

- **A.** Calculated the 2008-2012 DSM program savings achievements as reported in the company's annual FEECA achievement reports
- **B.** Subtracted the values from step 1 from the 2009 technical potential total overall savings impacts for demand response

V. Photovoltaics

- **A.** Calculated five-year savings values for 2008-2012 as reported in the company's net metering reports which was inclusive of solar pilot programs
- **B.** Subtracted the values from step 1 from the 2009 technical potential total overall savings impacts for photovoltaics

Tampa Electric Technical Potential Update Results

Energy Efficiency

	System Total			Residential			Commercial/Industrial		
	GWH	Sum. MW	Win. MW	GWH	Sum. MW	Win. MW	GWH	Sum. MW	Win. MW
ITRON Original Technical Potential	5,853	1,412	903	3,102	857	598	2,751	555	305
Adjusted for Standard/Code Changes	4,890	1,188	771	2,524	711	505	2,367	477	267
New Measures Added	5,987	1,325	852	3,038	757	554	2,949	568	298
Adjusted for Customer Growth	6,148	1,360	875	3,120	777	569	3,028	583	306
Adjusted for DSM Accomplishments	5,961	1,306	823	3,038	744	529	2,923	562	294
2014 Technical Potential	**5,961**	**1,306**	**823**	**3,038**	**744**	**529**	**2,923**	**562**	**294**

Demand Response

	System Total		Residential		Commercial/Industrial	
	Sum. MW	Win. MW	Sum. MW	Win. MW	Sum. MW	Win. MW
ITRON Original Technical Potential	550	485	342	399	208	86
Adjusted for Customer Growth	564	498	351	410	213	88
Adjusted for DSM Accomplishments	502	430	346	404	156	26
2014 Technical Potential	**502**	**430**	**346**	**404**	**156**	**26**

Renewable

	System Total			Residential			Commercial		
	GWH	Sum. MW	Win. MW	GWH	Sum. MW	Win. MW	GWH	Sum. MW	Win. MW
ITRON Original Technical Potential	7,693	2,855	436	3,673	1,333	243	4,020	1,522	193
Adjusted for Customer Growth	7,899	2,932	448	3,771	1,369	250	4,128	1,563	198
Adjusted for DSM Accomplishments	7,892	2,929	447	3,769	1,368	249	4,123	1,561	198
2014 Technical Potential	**7,892**	**2,929**	**447**	**3,769**	**1,368**	**249**	**4,123**	**1,561**	**198**

TAMPA ELECTRIC COMPANY
AVOIDED UNIT COST DATA
2015 DSM Goals Setting

1. In-service Date:	May 1, 2019
2. Type of Unit:	7 FA.05 CT
3. Type of Fuel:	Natural Gas
4. Average Annual heat rate:	
Average (Btu/kWh)	10,046
5. Cost of Fuel:	
Natural Gas (2019 $/MMBtu)	5.59
6. Construction Cost (W/O AFUDC)	
a: 2013 $000	125,724
b: $/kW (based on average rating)	613.29
7. Construction Escalation Rate	
2013 & beyond	3.0%
8. In-service Cost (W/AFUDC)	
a: 2019 $000	158,677
b: $/kW (based on average rating)	774.04
9. Incremental Capital Structure	
a: Debt	46.00%
c: Common Stock	54.00%
10. Cost of Capital	
a: Debt	6.40%
c: Common Stock	10.25%
11. Book Life	25
12. Tax Life	15
13. AFUDC Rate	6.45%
14. Effective Tax Rate	38.575%
15. Other Taxes (2019)	1.27%
16. Other Taxes Escalation Rate	0.00%
17. Discount Rate for Present Worth	7.34%
18. Fixed O&M Costs (2013 $/kW/yr)	11.40
19. Variable O&M Costs (2013 $/MWh)	1.80
20. O&M Escalation Rate	
2013 & beyond	2.4%
21. Value of K-factor	1.4625
22. Capacity (kW) Winter	220,000
23 Capacity (kW) Summer	190,000

Tampa Electric Company

2015 - 2024
Residential Achievable Potential
RIM Evaluation
(At the Generator)

Year	Summer Demand (MW)		Winter Demand (MW)		Annual Energy (GWH)	
	Incremental	Cuumulative	Incremental	Cuumulative	Incremental	Cuumulative
2015	1.1	1.1	2.6	2.6	1.8	1.8
2016	1.6	2.7	4.1	6.7	3.5	5.3
2017	2.2	4.9	5.2	11.9	4.8	10.1
2018	2.7	7.6	6.5	18.4	6.1	16.2
2019	3.1	10.7	7.6	26.0	6.9	23.1
2020	3.3	14.0	7.6	33.6	7.4	30.5
2021	3.3	17.3	8.0	41.6	7.7	38.2
2022	3.0	20.3	7.4	49.0	6.9	45.1
2023	2.9	23.2	6.8	55.8	6.3	51.4
2024	2.5	25.7	6.1	61.9	5.5	56.9

2015 - 2024
Commercial/Industrial Achievable Potential
RIM Evaluation
(At the Generator)

Year	Summer Demand (MW)		Winter Demand (MW)		Annual Energy (GWH)	
	Incremental	Cuumulative	Incremental	Cuumulative	Incremental	Cuumulative
2015	1.7	1.7	1.2	1.2	3.9	3.9
2016	2.5	4.2	1.3	2.5	6.0	9.9
2017	2.7	6.9	1.6	4.1	8.0	17.9
2018	3.3	10.2	1.7	5.8	9.2	27.1
2019	3.3	13.5	1.6	7.4	9.9	37.0
2020	3.5	17.0	1.7	9.1	10.3	47.3
2021	3.6	20.6	1.9	11.0	10.4	57.7
2022	3.3	23.9	1.9	12.9	10.2	67.9
2023	3.5	27.4	1.8	14.7	9.9	77.8
2024	3.2	30.6	1.7	16.4	9.6	87.4

Tampa Electric Company

2015 - 2024
Residential Achievable Potential
TRC Evaluation
(At the Generator)

Year	Summer Demand (MW)		Winter Demand (MW)		Annual Energy (GWH)	
	Incremental	Cuumulative	Incremental	Cuumulative	Incremental	Cuumulative
2015	1.5	1.5	3.4	3.4	3.3	3.3
2016	2.5	4.0	5.9	9.3	6.3	9.6
2017	3.5	7.5	8.0	17.3	8.8	18.4
2018	4.3	11.8	9.6	26.9	10.9	29.3
2019	4.8	16.6	10.3	37.2	12.3	41.6
2020	4.8	21.4	9.7	46.9	12.5	54.1
2021	4.3	25.7	7.9	54.8	11.4	65.5
2022	3.8	29.5	6.3	61.1	10.0	75.5
2023	3.5	33.0	5.3	66.4	9.3	84.8
2024	3.2	36.2	4.6	71.0	8.6	93.4

2015 - 2024
Commercial/Industrial Achievable Potential
TRC Evaluation
(At the Generator)

Year	Summer Demand (MW)		Winter Demand (MW)		Annual Energy (GWH)	
	Incremental	Cuumulative	Incremental	Cuumulative	Incremental	Cuumulative
2015	2.4	2.4	1.6	1.6	6.5	6.5
2016	3.5	5.9	2.0	3.6	10.6	17.1
2017	4.1	10.0	2.6	6.2	15.3	32.4
2018	4.9	14.9	2.4	8.6	16.1	48.5
2019	5.2	20.1	2.7	11.3	19.4	67.9
2020	5.8	25.9	3.2	14.5	20.8	88.7
2021	6.0	31.9	2.9	17.4	21.5	110.2
2022	6.0	37.9	2.9	20.3	21.8	132.0
2023	6.1	44.0	3.1	23.4	22.0	154.0
2024	6.0	50.0	3.1	26.5	21.6	175.6

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FUEL SENSITIVITIES

RIM

Sensitivity Scenarios	Total Individual Measures	Percent to Base	Annual Energy		Summer Demand		Winter Demand	
			GWH	Percent to Base	MW	Percent to Base	MW	Percent to Base
Base	556	100.0%	1,758.1	100.0%	545.2	100.0%	474.5	100.0%
Low Fuel	495	89.0%	1,544.8	87.9%	454.1	83.3%	413.8	87.2%
High Fuel	590	106.1%	1,943.4	110.5%	597.9	109.7%	495.9	104.5%

TRC

Sensitivity Scenarios	Total Individual Measures	Percent to Base	Annual Energy		Summer Demand		Winter Demand	
			GWH	Percent to Base	MW	Percent to Base	MW	Percent to Base
Base	878	100.0%	2,247.6	100.0%	578.7	100.0%	438.1	100.0%
Low Fuel	817	93.1%	1,918.7	85.4%	424.9	73.4%	350.2	79.9%
High Fuel	949	108.1%	2,390.2	106.3%	633.2	109.4%	475.7	108.6%

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2015-2024
Bill Impacts of RIM and TRC Portfolios

Year	DSM Portfolio Costs			Annual Bill Impact (1,200 KWH)		
	RIM	**TRC**	**Delta**	**RIM**	**TRC**	**Delta**
2015	$47,489,234	$52,354,256	$4,865,022	$1,655.30	$1,659.62	$4.32
2016	$47,288,857	$52,252,677	$4,963,820	$1,644.81	$1,649.18	$4.36
2017	$47,125,211	$52,190,792	$5,065,581	$1,630.40	$1,634.80	$4.40
2018	$46,995,979	$52,166,373	$5,170,395	$1,643.10	$1,647.53	$4.43
2019	$46,899,046	$52,177,399	$5,278,353	$1,648.88	$1,653.35	$4.47
2020	$46,832,488	$52,222,038	$5,389,550	$1,671.88	$1,676.39	$4.52
2021	$46,794,553	$52,298,636	$5,504,083	$1,689.60	$1,694.16	$4.56
2022	$46,783,650	$52,405,703	$5,622,052	$1,707.91	$1,712.52	$4.61
2023	$46,798,338	$52,541,898	$5,743,560	$1,753.28	$1,757.93	$4.66
2024	$46,837,309	$52,706,023	$5,868,714	$1,771.86	$1,776.56	$4.70
Total	$469,844,664	$523,315,794	$53,471,130	$16,817.02	$16,862.04	$45.02

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