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April 2, 2024

ELECTRONIC FILING

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

Re: Docket 20240026-EI; Petition for Rate Increase by Tampa Electric Company

Dear Mr. Teitzman:

Attached for filing on behalf of Tampa Electric Company in the above-referenced docket is the Direct Testimony of Jose Aponte and Exhibit No. JA-1.

Thank you for your assistance in connection with this matter.

(Document 6 of 32)

Sincerely,

J. Jeffry Wahlen

cc: All parties

JJW/ne
Attachment

TECO
TAMPA ELECTRIC
AN EMERA COMPANY

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 20240026-EI

IN RE: PETITION FOR RATE INCREASE

BY TAMPA ELECTRIC COMPANY

PREPARED DIRECT TESTIMONY AND EXHIBIT

OF

JOSE APONTE

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PREPARED DIRECT TESTIMONY AND EXHIBIT

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

PREPARED DIRECT TESTIMONY

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JOSE APONTE

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

A. My name is Jose Aponte. My business address is 702 N. Franklin Street, Tampa, Florida 33602. I am employed by Tampa Electric Company ("Tampa Electric" or the "company") as the Manager Resource Planning.

Q. Please describe your duties and responsibilities in that position.

A. My responsibilities include conducting economic evaluations of future resource additions and analyzing the economic and operational impacts to Tampa Electric's system.

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

A. Yes. I submitted written direct testimony in Docket Nos. 20190136-EI and 20200064-EI regarding the company's Third and Fourth SoBRA projects, and Docket No. 20210034-EI regarding the company's petition for a rate adjustment. I also presented to the Commission during the Ten-Year Site Plan Workshop.

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

A. I graduated from the University of South Florida with a Bachelor's degree and a Master's degree in Mechanical Engineering. I am a registered Project Management Professional ("PMP").

I began working at Tampa Electric in 1999 as an engineer in the Inventory Management and Supply Chain Logistics department. In 2004, I became supervisor for the Materials and Quality Assurance department at the Big Bend Power Station. Since 2008, I have held several positions in the Resource Planning department at Tampa Electric and currently serve as the Manager of Resource Planning.

I have twenty-four years of electric utility experience working in the areas of planning, systems integration, data analytics, revenue requirements, project economic analysis, and engineering.

Q. What are the purposes of your direct testimony?

A. The purposes of my direct testimony are to (1) discuss the company's plans to add the Polk 1 Flexibility project ("Polk 1 Flexibility") and South Tampa Resilience project ("South Tampa Resilience") to our system; (2) demonstrate that the Polk 1 Flexibility and South Tampa Resilience projects are cost-effective; (3) discuss the company's plans for 12 projects to add energy storage capacity ("Future Energy Storage") and utility-scale solar generating capacity ("Future Solar") to our system; and (4) demonstrate that the Future Energy Storage and Future Solar projects are cost-effective.

This portfolio of resource additions will operate in concert to provide price stability and reliability benefits for customers, and will enhance operational flexibility, energy diversity, and resiliency in a cost-effective manner. The proposed resource plan yields a total Cumulative Present Value Revenue Requirements ("CPVRR") savings to customers of approximately $493.5 million compared to a plan without these projects.

Q. Have you prepared an exhibit to support your direct testimony?

A. Yes. Exhibit No. JA-1, entitled “Exhibit of Jose Aponte”, was prepared under my direction and supervision. The contents of my exhibit were derived from the business records of the company and are true and correct to the best of my information and belief. It consists of 22 documents, as follows:

Document No. 1	Demand and Energy Forecast
Document No. 2	Fuel Price Forecast
Document No. 3	Future Project Costs per kWac
Document No. 4	Polk 1 Flexibility Project Cost-Effectiveness Test
Document No. 5	South Tampa Resilience Project Cost-Effectiveness Test
Document No. 6	Total Energy Storage Capacity Cost-Effectiveness Test
Document No. 7	Dover Energy Storage Capacity Cost-Effectiveness Test
Document No. 8	Lake Mabel Energy Storage Capacity Cost-Effectiveness Test
Document No. 9	Wimauma Energy Storage Capacity Cost-Effectiveness Test
Document No. 10	South Tampa Energy Storage Capacity Cost-Effectiveness Test

Document No. 11	Total Future Solar Cost-Effectiveness Test
Document No. 12	Future Solar (2024 Projects) Cost-Effectiveness Test
Document No. 13	Future Solar (2025 Projects) Cost-Effectiveness Test
Document No. 14	Future Solar (2026 Projects) Cost-Effectiveness Test
Document No. 15	English Creek Solar Cost-Effectiveness Test
Document No. 16	Bullfrog Creek Solar Cost-Effectiveness Test
Document No. 17	Duette Solar Cost-Effectiveness Test
Document No. 18	Cottonmouth Solar Cost-Effectiveness Test
Document No. 19	Big Four Solar Cost-Effectiveness Test
Document No. 20	Farmland Solar Cost-Effectiveness Test
Document No. 21	Brewster Solar Cost-Effectiveness Test
Document No. 22	Wimauma 3 Solar Cost-Effectiveness Test

Q. Are you sponsoring any sections of Tampa Electric’s Minimum Filing Requirement (“MFR”) Schedules?

A. No.

Q. How does your testimony relate to the testimony of other Tampa Electric witnesses?

A. Tampa Electric witness Carlos Aldazabal will explain how the company's proposed Polk 1 Flexibility, South Tampa Resilience, Future Solar, and Future Energy Storage projects fit into the company's plans for its generating portfolio. Tampa Electric witness Kris Stryker will explain the details of the 12 Future Energy Storage and Future Solar projects. He will describe the location, size, timing, and projected costs of each of the 12 projects.

My direct testimony shows that Tampa Electric's proposed Polk 1 Flexibility, South Tampa Resilience, Future Energy Storage, and Future Solar projects are cost-effective. My testimony also explains that the company's economic analysis shows that a resource plan using the base fuel forecast with the proposed additions is expected to save customers over $1.18 billion in fuel costs compared to a resource plan without these additions. The per project fuel cost savings are as follows: (1) $178.0 million of savings from the Polk 1 Flexibility and South Tampa Resilience projects; (2) $206.1 million of savings from the Future Energy Storage projects; and (3) the remaining $797.5 million of savings from Future Solar projects.

My direct testimony will also show that from a CPVRR basis, the company's resource plan with the proposed additions is favorable to customers by approximately $493.4 million, with $176.9 million of the total savings anticipated to come from the Polk 1 Flexibility and South Tampa Resilience projects, $151.2 million in savings from the Future Energy Storage projects, and the remaining $165.3 million in savings from Future Solar projects.

The investments and operation and maintenance ("O&M") expenses associated with the Polk 1 Flexibility, the 75.2 megawatts ("MW") South Tampa Resilience project, 115 MW of Future Energy Storage, and 246.5 MW of Future Solar projects are reflected in the MFR Schedules for the company's proposed 2025 test year, which are jointly sponsored by Mr. Aldazabal and Mr. Stryker.

Mr. Stryker presents the company's proposal for recovering the investments and expenses associated with the remaining 242.2 MW of Future Solar in 2026 in his testimony.

Q. Please describe the process Tampa Electric employs for evaluating cost-effectiveness.

A. Tampa Electric evaluates cost-effectiveness based on whether a resource plan with the proposed project would lower the company's projected system CPVRR as compared to such CPVRR without the project. As part of the analysis, we modeled the annual revenue requirement associated with operating the company's generating portfolio with and without the proposed project and used those annual amounts to calculate the CPVRR with and without the proposed project. This technique is widely used by electric utilities during the development of integrated resource plans to evaluate whether to make additions to the generating portfolio.

POLK 1 FLEXIBILITY PROJECT

Q. Please generally describe the company's plans for Polk Unit 1.

A. The Polk 1 Flexibility project consists of converting our existing Polk Unit 1 from a combined cycle unit to a highly efficient simple cycle unit with the latest technology to better utilize that asset. The simple cycle configuration increases the unit's flexibility, allowing fast starts, increased ramp rates, and lower turndowns, which will allow the company to better optimize our lower cost system assets. The simple cycle unit will also have an improved heat rate, which, along with flexibility, are the main drivers for fuel savings.

Q. Do you have the Polk 1 Flexibility project's projected cost in dollars per kW_{ac}?

A. Yes. The projected costs, excluding Allowance for Funds Used for Construction ("AFUDC"), were provided to me by Mr. Aldazabal, who explains the cost and project schedule in his direct testimony. I added the AFUDC amounts to the project costs to arrive at the total project cost in dollars per kW_{ac} shown in Document No. 3 of my exhibit.

Q. How were the AFUDC amounts included in your project costs per kW_{ac} determined?

A. Capital spending was provided to the company's accounting team, who then calculated the AFUDC for the project. The AFUDC costs were provided to me and included in the cost-effectiveness calculations.

COST-EFFECTIVENESS OF THE POLK 1 FLEXIBILITY PROJECT

Q. Is the Polk 1 Flexibility project cost-effective?

A. Yes. The Polk 1 Flexibility project is cost-effective.

Q. Please describe the analysis Tampa Electric performed to evaluate the cost-effectiveness of the Polk 1 Flexibility project.

A. The company performed the analysis using our Integrated Resource Planning models to prepare a base case scenario with Polk Unit 1 operating as a combined cycle unit. We then prepared a change case scenario with Polk Unit 1 converted to simple cycle and compared the change case to the base case. The base and change cases used production cost modeling software to determine system CPVRR, including fuel costs and variable O&M, and then the costs associated with a change case were subtracted from the base case to determine the savings.

Q. Please explain the assumptions underlying the company's cost-effectiveness calculations.

A. The primary assumptions for the cost-effectiveness calculations are the company's Demand and Energy Forecast, the fuel price forecast, and the projected revenue requirements of the Polk 1 Flexibility project. We prepared our cost-effectiveness analyses with the Demand and Energy Forecast used to prepare Tampa Electric's 2024 cost recovery factors and its 2024 Ten Year Site Plan. A summary of the values in the Demand and Energy Forecast is shown in Document No. 1 of my exhibit.

The company prepared the fuel forecast using the same methodology the company has used to develop its fuel price forecast each year over the last decade, and it is shown in Document No. 2 of my exhibit.

Q. How did the company calculate the annual revenue requirements used in the analysis?

A. The company used project-specific projected costs to calculate the revenue requirement. Consistent with the guidelines in the 2021 Stipulation and Settlement Agreement ("2021 Agreement"), approved by the Commission on November 10, 2021 in Order No. PSC-2021-0423-S-EI in Docket 20210034-EI, we updated the long-term debt rate to 5.5 percent to reflect the prospective long-term debt issuances during the first 12 months of operations of the project. The revenue requirement calculation included reasonable estimates for O&M expenses, depreciation expense, and taxes.

Q. Did the company consider AFUDC when calculating the revenue requirements described above?

A. Yes. We calculated the revenue requirements with and without AFUDC.

Q. How much fuel expense will the Polk 1 Flexibility project allow the company's customers to avoid over the life of the project?

A. Based on our base fuel forecast, we expect that the Polk 1 Flexibility project will save our customers approximately $40 million in fuel costs.

Q. Please describe the results of the company's cost-effectiveness analysis for the Polk 1 Flexibility project.

A. Tampa Electric's analysis showed that the Polk 1 Flexibility project is cost effective. The CPVRR differential was favorable for customers by $166.9 million before including any value for reduced emissions. Including reduced emissions benefits increased the CPVRR savings from the Polk 1 Flexibility project to $170.3 million. Document No. 4 of my exhibit shows the results of our analysis.

Q. Did the company conduct sensitivity testing on the results of its cost-effectiveness analysis?

A. Yes. Tampa Electric tested the CPVRR savings calculated in its analysis using high and low fuel price forecasts. The high and low fuel forecasts were prepared contemporaneously with the base fuel forecast. The results show that customer savings occur under all fuel price forecast sensitivities.

SOUTH TAMPA RESILIENCE PROJECT

Q. Please generally describe the company's plans for the South Tampa Resilience project.

A. The South Tampa Resilience project is a Distributed Energy Resource ("DER") facility located on MacDill Air Force Base ("MAFB"). It consists of four Reciprocating Internal Combustion Engines ("RICE") units with a total capacity of 75.2 MW. Phase 1 (37.6 MW) has an expected commercial in-service date of April 2025, and Phase 2 (37.6 MW) has an expected commercial in-service date of June 2026.

These highly reliable, cost-effective resources are quick start units that enhance the system's operational flexibility compared to larger frame CT, and more frequently result in fuel savings and greenhouse gas emission reductions. The MAFB provided access to the site in exchange for the added level of resilience to the company's customers in the middle of a dense load center and the base.

Q. Do you have the South Tampa Resilience projected cost in dollars per kW_{ac}?

A. Yes. The projected costs, excluding AFUDC, were provided to me by Mr. Aldazabal, who explains the cost and project schedule in his direct testimony. I added the AFUDC amounts to the project costs to arrive at the total project cost in dollars per kW_{ac} shown in Document No. 3 of my exhibit.

Q. How were the AFUDC amounts included in your project costs per kW_{ac} determined?

A. Capital spending was provided to the company's accounting team, who then calculated the AFUDC for the project. The AFUDC costs were provided to me and included in the cost-effectiveness calculations.

COST-EFFECTIVENESS OF THE SOUTH TAMPA RESILIENCE PROJECT

Q. Is the South Tampa Resilience project cost-effective?

A. Yes. The South Tampa Resilience project is cost-effective.

Q. Please describe the analysis Tampa Electric performed to evaluate the cost-effectiveness of the South Tampa Resilience project.

A. Tampa Electric performed the analysis using our Integrated Resource Planning models to prepare a base case scenario without the four reciprocating engines. We then prepared a change case scenario with South Tampa Resilience reciprocating engines and compared the change case to the base case. The base and change cases used production cost modeling software to determine system CPVRR, including fuel and variable O&M costs, and then the costs associated with the change case were subtracted from the base case to determine the savings.

Q. Please explain the assumptions underlying the company's cost-effectiveness calculations.

A. The primary assumptions for the cost-effectiveness calculations are the company's Demand and Energy Forecast, the fuel price forecast, and the projected revenue requirements of the South Tampa Resilience project.

We prepared our cost-effectiveness analysis with the Demand and Energy Forecast used to prepare Tampa Electric's 2024 cost recovery factors and its 2024 Ten Year Site Plan. A summary of the values in the Demand and Energy Forecast is shown in Document No. 1 of my exhibit.

The company prepared the fuel forecast using the same methodology the company has used to develop its fuel price forecast each year over the last decade, and it is shown in Document No. 2 of my exhibit.

Q. How did the company calculate the annual revenue requirements used in the analysis?

A. The company used project-specific projected costs to calculate the revenue requirement. Consistent with the guidelines in the 2021 Agreement, we updated the long-term debt rate to 5.5 percent to reflect the prospective long-term debt issuances during the first 12 months of operations of the project. The revenue requirement calculation included reasonable estimates for O&M expenses, depreciation expense, and taxes.

Q. Did the company consider AFUDC when calculating the revenue requirements described above?

A. Yes. We calculated the revenue requirements with and without AFUDC.

Q. How much fuel expense will the South Tampa Resilience project allow the company's customers to avoid over the life of the project?

A. Based on our base fuel forecast, we expect the South Tampa Resilience project to save our customers approximately $137.9 million in fuel costs.

Q. Please describe the results of the company's cost-effectiveness analysis.

A. Our analysis showed that the South Tampa Resilience project is cost-effective. The CPVRR differential was favorable for customers by $10.0 million before including any value for reduced emissions. Including reduced emissions benefits increased the CPVRR savings from South Tampa Resilience project to $32.4 million. Document No. 5 of my exhibit shows the results of our analysis.

Q. Did the company conduct sensitivity testing on the results of its cost-effectiveness analysis?

A. Yes. Tampa Electric tested the CPVRR savings calculated in its analysis using high and low fuel price forecasts. The high and low fuel forecasts were prepared contemporaneously with the base fuel forecast. The results show that customer savings occur under the base and high fuel price forecast sensitivities.

TAMPA ELECTRIC'S PLAN FOR FUTURE ENERGY STORAGE PROJECTS

Q. Please generally describe the company's plans to build Future Energy Storage Capacity.

A. Tampa Electric plans to add a total of 115 MW of utility-scale energy storage capacity projects located across four sites inside its service territory by April 2025: (1) Dover; (2) Lake Mabel; (3) Wimauma; and (4) South Tampa. These projects will help the company maintain the required winter capacity reserve margin as peak load grows with increased customers. Additionally, the projects will provide fuel savings for customers through energy arbitrage, where energy is stored during off-peak hours when electricity prices are cheapest and used during on-peak hours when electricity prices are highest.

The Lake Mabel Future Energy Storage Capacity project has the added benefit of eliminating an otherwise necessary transmission upgrade by locating an energy source close to a high load area.

Q. Do you have a list of the Future Energy Storage projects and their projected costs in dollars per kW_{ac}?

A. Yes. The projected costs, excluding AFUDC, were provided to me by Mr. Stryker, who explains the costs and project schedules in his direct testimony. I added the AFUDC amounts to the project costs to arrive at the total project costs in dollars per kW_{ac} shown in Document No. 3 of my exhibit.

Q. How were the AFUDC amounts included in your project costs per kW_{ac} determined?

A. Capital spending was provided to the company's accounting team, who then calculated the AFUDC per project. These AFUDC costs were provided to me and included in the cost-effectiveness calculations.

COST-EFFECTIVENESS OF THE FUTURE ENERGY STORAGE PROJECTS

Q. Are the planned Future Energy Storage projects cost-effective?

A. Yes. The planned Future Energy Storage projects are cost-effective in total, and on an individual project basis.

Q. Please describe the analyses Tampa Electric performed to evaluate the cost-effectiveness of the Future Energy Storage projects.

A. The company performed the analyses using our Integrated Resource Planning models to prepare a base case scenario without the planned energy storage capacity projects. We then prepared change case scenarios for the 115 MW in total, and for each individual project, and compared the change cases to the base case. The base case and change cases used production cost modeling software to determine system CPVRR, including fuel and variable O&M costs, and then the costs associated with the change cases were subtracted from the base case to determine the savings.

Q. Please explain the assumptions underlying the company's cost-effectiveness calculations.

A. The primary assumptions for the cost-effectiveness calculations are the company's Demand and Energy Forecast, the fuel price forecast, and the projected revenue requirements of the planned energy storage capacity projects.

We prepared our cost-effectiveness analyses with the Demand

and Energy Forecast used to prepare Tampa Electric's 2024 cost recovery factors and its 2024 Ten Year Site Plan. A summary of the values in the Demand and Energy Forecast is shown in Document No. 1 of my exhibit.

The company prepared the fuel forecast using the same methodology the company has used to develop its fuel price forecast each year over the last decade, and it is shown in Document No. 2 of my exhibit.

Q. How did the company calculate the annual revenue requirements used in the analysis?

A. The company used project-specific projected costs to calculate a revenue requirement by project, and in total. Consistent with the guidelines in the 2021 Agreement, we updated the long-term debt rate to 5.5 percent to reflect the prospective long-term debt issuances during the first 12 months of operations of the projects. The investment tax credits associated with the energy storage capacity projects were normalized over the life of the assets in accordance with applicable Internal Revenue Service regulations. Our revenue requirement calculation included reasonable estimates for O&M expenses, depreciation expense, and taxes.

Q. Did the company consider AFUDC when calculating the revenue requirements described above?

A. Yes. We calculated the revenue requirements with and without AFUDC costs.

Q. How much fuel expense will the energy storage capacity projects allow the company's customers to avoid over the life of the project?

A. Based on our base fuel forecast, Tampa Electric expects Future Energy Storage projects to save our customers approximately $206.1 million in fuel costs over the life of the projects.

Q. Please describe the results of the company's cost-effectiveness analysis.

A. The company's analysis showed that the planned energy storage capacity is cost-effective in total and by project. Document Nos. 6 through 10 of my exhibit shows the results of the analyses by individual project.

For the planned Future Energy Storage in total, the CPVRR differential was favorable for customers by $151.2 million before including any value for reduced emissions. Including reduced emissions benefits increased the CPVRR savings from Future Battery Storage to $169.9 million.

The CPVRR savings for Future Energy Storage by project were $18.7 million (Dover Energy Storage Capacity), $63.0 million (Lake Mabel Energy Storage Capacity), $52.5 million (Wimauma Energy Storage Capacity), and $17.1 million (South Tampa Energy Storage Capacity) before including any value for reduced emissions. Including reduced emissions benefits increased the CPVRR savings from Future Battery Storage to $22.3 million (Dover Energy Storage Capacity), $69.9 million (Lake Mabel Energy Storage Capacity), $58.2 million (Wimauma Energy Storage Capacity), and $19.6 million (South Tampa Energy Storage Capacity).

Q. Did the company conduct sensitivity testing on the results of its cost-effectiveness analysis?

A. Yes. Tampa Electric tested the CPVRR savings calculated in its analysis using high and low fuel price forecasts. The high and low fuel forecasts were prepared contemporaneously with the base fuel forecast. The results show that customer savings occur under all fuel price forecast sensitivities.

TAMPA ELECTRIC'S PLAN FOR FUTURE SOLAR

Q. Please describe the company's existing solar generating facilities.

A. Since 2015, Tampa Electric has deployed utility scale solar generation. As of January 2024, Tampa Electric owns and operates 22 solar generating sites geographically dispersed throughout its service territory with a combined capacity of 1,252 MW. The company's cost-effective solar portfolio includes 1,247 MW of primary single axis tracking photovoltaic ("PV") solar arrays throughout Hillsborough and Polk Counties. It also includes a 1.6 MW fixed tilt solar photovoltaic ("PV") rooftop canopy array located at the top of the south parking garage at Tampa International Airport, a 1.4 MW fixed tilt solar PV ground canopy array located at Legoland Florida, a 1.0 MW floating solar project, and a 1.0 MW agrivoltaics pilot project at Big Bend Power Station.

Tampa Electric installed 600 MW of this capacity pursuant to the company's 2017 Amended and Restated Stipulation and Settlement Agreement ("2017 Agreement") approved by the Commission on November 27, 2017, in Order No. PSC-2017-0456-EI. Another 595 MW of this capacity was installed pursuant to the company's 2021 Agreement.

In 2023, our solar facilities produced about eight percent of the total energy for load.

As noted in the direct testimony of Mr. Stryker, the company’s solar expansion is a cost-effective way to serve increased customer load while reducing the impact of fuel price fluctuations on customer bills due to the zero-fuel cost generation. The proposed Future Solar will help moderate fuel price volatility, increase fuel diversity, reduce reliance on natural gas, and have little to no water requirements for operations. In addition, with the passage of the Inflation Reduction Act, the federal government is providing additional tax incentives which will benefit our customers.

When Tampa Electric completes our Future Solar projects, nearly 18 percent of our energy will be from solar. This cost-effective long-term energy solution will promote fuel price stability for customers and increase our fuel diversity.

Q. Please generally describe the company’s plans to build Future Solar.

A. Tampa Electric plans to add an additional 488.7 MW of utility-scale solar PV projects across its service territory by the end of 2026.

The company plans to add the projects to its generating fleet over a three-year period. By the end of 2024, we will place in-service another 97.5 MW. During 2025, Tampa Electric will place 149 MW of Future Solar projects in-service, and the company will add 242.2 MW in-service by the end of 2026.

The Future Solar projects will be general system resources, not dedicated to a subset of solar energy subscribers and, therefore, their benefits will inure to all of our customers.

Q. Do you have a list of the Future Solar projects by year and their projected cost in dollars per kW_{ac}?

A. Yes. The projected cost for each Future Solar project, excluding AFUDC, was provided by Mr. Stryker who explains the costs and project schedules in his direct testimony. I added the AFUDC amounts to the project costs to arrive at the total project costs in dollars per kW_{ac} shown in Document No. 3 of my exhibit.

Q. How were the AFUDC amounts included in your project costs per kW_{ac} determined?

A. Capital spending was provided to the company's accounting team, who then calculated the AFUDC per project. These AFUDC costs were provided to me and included in the cost-effectiveness calculations.

COST-EFFECTIVENESS OF FUTURE SOLAR

Q. Are the planned solar PV projects cost-effective?

A. Yes. Excluding savings from avoided carbon emission costs, the Future Solar projects are cost-effective in total, by year, and individually except for one project.

Q. Please describe the analyses Tampa Electric performed to evaluate the cost-effectiveness of the Future Solar projects.

A. We performed the analyses using our Integrated Resource Planning models to prepare a base case scenario without the Future Solar. We then prepared change case scenarios for the 488.7 MW in total, for each year in total, and for each individual project, and compared the change cases to the base case. The base and change cases used production cost modeling software to determine system CPVRR, including fuel and variable O&M costs, and then the costs associated with the change case were subtracted from the base case to determine the savings.

Q. Please explain the assumptions underlying the company's cost-effectiveness calculations.

A. The primary assumptions for the cost-effectiveness calculations are the company's Demand and Energy Forecast, the fuel price forecast, and the projected revenue requirements of the Future Solar projects.

We prepared our cost-effectiveness analyses with the Demand and Energy Forecast used to prepare Tampa Electric's 2024 cost recovery factors and its 2024 Ten Year Site Plan. A summary of the values in the Demand and Energy Forecast is shown in Document No. 1 of my exhibit.

The company prepared the fuel forecast using the same methodology the company has used to develop its fuel price forecast each year over the last decade, and it is shown in Document No. 2 of my exhibit.

Q. How did the company calculate the annual revenue requirements used in the analysis?

A. The company used project-specific projected costs to calculate the revenue requirement by project and in total.

Consistent with the guidelines in the 2021 Agreement, we updated the long-term debt rate to 5.5 percent to reflect the prospective long-term debt issuances during the first 12 months of operations of the projects. The production tax credits associated with the utility-scale solar projects were applied over the first 10-year life of the assets in accordance with applicable Internal Revenue Service regulations. The revenue requirement calculation included reasonable estimates for O&M expenses, depreciation expense, and taxes, including the projected impact of the property tax exemption for solar projects.

Q. Did the company consider AFUDC and avoided carbon emission costs when calculating the revenue requirements described above?

A. Yes. Tampa Electric calculated the revenue requirements with and without AFUDC and with and without avoided carbon emission costs.

Q. By how much will the Future Solar projects lower the company's carbon emissions?

A. The 488.7 MW of Future Solar will decrease carbon dioxide ("CO_2") emissions by over 450 thousand tons per year and decrease nitrogen oxide ("NO_X") and sulfur dioxide ("SO_2") emissions by hundreds of tons.

Q. How did the company estimate the avoided cost of carbon emissions for the Future Solar projects?

A. Tampa Electric worked with a third-party contractor to estimate the avoided cost of carbon emissions for the Future Solar projects. Since 2015, upon the issuance of the draft Clean Power Plan, the company has monitored forecasted carbon prices. The company used a CO_2 forecast based on current assumptions and market conditions from global consulting services company ICF International, Inc. ("ICF"). ICF provides projections for various regions of the country as well as low, medium, and high cost-of-carbon forecasts.

Q. Is it reasonable to include the value of avoided carbon emission costs in the company's cost-effectiveness tests?

A. Yes. Although our federal government and the State of Florida do not currently impose a tax or fee on carbon emissions, public policy considerations and customer expectations in the United States and around the world are trending against carbon emissions and in favor of renewable energy like solar generation. It is difficult to predict when a carbon tax or fee will be imposed on the company, but it is even more difficult to completely rule out that possibility. Accordingly, it is reasonable to consider the value of avoided carbon costs when evaluating the cost-effectiveness of generating alternatives, including our Future Solar projects.

Q. How much fuel expense will Future Solar allow the company's customers to avoid over the life of the projects?

A. Based on our base fuel forecast, we expect Future Solar to save our customers approximately $797.5 million in fuel costs over the life of the projects.

Q. Please describe the results of the company's cost-effectiveness analysis.

A. Document Nos. 11 through 22 of my exhibit shows the results of the analyses.

For Future Solar in total, the CPVRR differential in our analysis was favorable for customers by $165.3 million before including any value for reduced emissions. Including reduced emissions benefits increased the CPVRR savings from Future Solar to $322.3 million.

The CPVRR savings for Future Solar by year in our analysis were $34.0 million for the 2024 projects, $52.6 million for the 2025 projects, and $78.7 million for the 2026 projects before including any value for reduced emissions. Including reduced emissions benefits increased the CPVRR savings from Future Solar to $66.0 million for the 2024 projects, $100.5 million for the 2025 projects, and $155.8 million for the 2026 projects.

Q. Did the company conduct sensitivity testing on the results of its cost-effectiveness analysis?

A. Yes. Tampa Electric tested the CPVRR savings calculated in its analysis using high and low fuel price forecasts. The high and low fuel forecasts were prepared contemporaneously with the base fuel forecast. Results of the high fuel price sensitivity show that all individual projects are cost-effective, and under the low fuel price sensitivity all but two projects show benefits to customers.

OTHER BENEFITS TO THE RESILIENCE AND CAPACITY PROJECTS

Q. Are there any other benefits besides cost savings that the Polk 1 Flexibility and South Tampa Resilience projects will provide to Tampa Electric's customers and the communities where they live?

A. Yes. As explained in the testimony of Mr. Aldazabal, the Polk 1 Flexibility and South Tampa Resilience projects will improve the company's utilization of its generating assets due to the increased flexibility, reduced maintenance intervals, fast start capability, improved heat rates, faster ramp rates, and lower turndowns provided by these projects.

These projects also strengthen Tampa Electric's near-term reserve margins and further insulate our customers from disruptions during an extreme weather event.

Q. Are there any other benefits besides cost savings that the Future Energy Storage and Future Solar projects will provide to Tampa Electric's customers and the communities where they live?

A. Yes. As noted in the testimony of Mr. Stryker, our Future Solar and Future Energy Storage projects will require fewer financial resources to operate than fossil fuel-burning plants and will substitute, in part, for operation of solid fuel generating assets that cost more to operate and maintain, which will allow the company to incur less O&M expense.

Additionally, because solar resources do not burn fuel or have moving parts that operate under high temperatures and pressures, solar generators are safer to operate than fossil fuel-burning generators. Solar generation is not only emission-free, but also requires little to no water for operation, which is better for protecting Florida water resources.

Further, with the passage of the Inflation Reduction Act, the federal government is providing additional tax incentives which will also benefit our customers.

Construction of these projects will create new jobs in this area, which will help our local economy. The solar projects also generate new property tax revenues for the local governments where they are located.

PRUDENCE OF THE COMPANY'S PROPOSED RESOURCE PLAN

Q. Is the company's proposed resource plan prudent?

A. Yes. As noted in the testimony of Mr. Aldazabal and Mr. Stryker, the company has planned and will be constructing the 14 projects in the proposed resource plan at the lowest reasonable cost. My direct testimony shows these projects are cost-effective in total and by year.

The Polk 1 Flexibility, South Tampa Resilience, and Future Energy Storage projects will improve the company's utilization of the system generating assets due to the increased dispatch flexibility provided by these projects. The 14 projects included in our proposed resource plan will result in lower fuel costs for customers.

The Future Energy Storage projects also will enable energy arbitrage that will provide fuel cost savings for customers by storing lower cost off-peak energy and delivering it during peak times. Additionally, these assets will provide increased resilience and improve system reliability by helping the company maintain the required winter capacity reserve margin as peak load grows.

The proposed Future Solar projects reduce electricity costs, reduce price volatility for customers, improve fuel diversity, reduce reliance on natural gas, have little to no water requirements for operations, and provide alternative sources of energy that enhance system reliability and resilience.

The company's Future Solar projects will require fewer financial resources to operate than fossil fuel-burning plants, and will substitute, in part, for operation of fossil fuel generating assets that cost more to operate and maintain, which will allow the company to incur less O&M expense.

SUMMARY

Q. Please summarize your direct testimony.

A. My direct testimony describes the company's plans to upgrade Polk Unit 1 to a highly efficient simple cycle unit (Polk 1 Flexibility project), add 75.2 MW of distributed energy resources for improved system resilience (South Tampa Resilience project), add 115 MW of Energy Storage Capacity, and add an additional 488.7 MW of utility-scale Future Solar generating capacity to our system. My direct testimony also demonstrates that the Polk 1 Flexibility, South Tampa Resilience, Future Solar, and Future Energy Storage capacity projects are cost-effective, will benefit customers, and are prudent.

The company’s proposed resource plan is expected to save customers just over $1.18 billion in fuel costs alone over the life of these assets compared to a resource plan without these additions, with $178.0 million of the total savings anticipated to come from the Polk 1 Flexibility and South Tampa Resilience projects, $206.1 million in savings from the Future Energy Storage projects, and the remaining $797.5 million from the Future Solar projects.

On a CPVRR basis and excluding any benefits from reduced emissions, the proposed resource plan is estimated to be favorable to customers by $493.4 million over the life of these assets compared to a resource plan without the proposed additions, with $176.9 million of the total CPVRR savings anticipated to come from the Polk 1 Flexibility and South Tampa Resilience projects, $151.2 million savings from the Future Energy Storage projects, and the remaining $165.3 million of savings from the Future Solar projects.

The collection of projects in the proposed resource plan lowers overall costs to customers while simultaneously increasing system reliability and flexibility, reducing price and supply risk from natural gas, and lowering greenhouse gas emissions.

Q. Does this conclude your direct testimony?

A. Yes, it does.

EXHIBIT

OF

JOSE APONTE

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Demand and Energy Forecast

Year	Winter (MW)	Summer (MW)	Energy (GWh)
2024	4,513	4,384	21,355
2025	4,566	4,421	21,513
2026	4,625	4,461	21,706
2027	4,683	4,501	21,900
2028	4,739	4,542	22,100
2029	4,795	4,584	22,313
2030	4,850	4,626	22,532
2031	4,903	4,668	22,757
2032	4,954	4,710	22,990
2033	5,005	4,752	23,224
2034	5,055	4,795	23,472
2035	5,104	4,843	23,754
2036	5,151	4,889	24,036
2037	5,199	4,936	24,319
2038	5,246	4,982	24,613
2039	5,293	5,026	24,897
2040	5,337	5,068	25,175
2041	5,380	5,111	25,450
2042	5,424	5,154	25,742
2043	5,468	5,197	26,028
2044	5,514	5,240	26,320
2045	5,560	5,283	26,596
2046	5,605	5,325	26,896
2047	5,651	5,368	27,189
2048	5,696	5,410	27,482
2049	5,743	5,452	27,760
2050	5,790	5,501	28,071
2051	5,837	5,557	28,385
2052	5,884	5,620	28,703
2053	5,931	5,690	29,024

Fuel Price Forecast ($/MMBtu)

Year	Natural Gas	Coal
2024	3.85	4.05
2025	4.31	4.03
2026	4.55	4.24
2027	5.23	4.58
2028	5.82	4.86
2029	5.61	5.03
2030	5.40	5.33
2031	5.40	5.68
2032	5.45	5.66
2033	5.66	5.83
2034	5.89	6.00
2035	6.19	6.17
2036	6.38	6.42
2037	6.64	6.70
2038	6.70	7.08
2039	7.01	7.35
2040	7.29	7.69
2041	7.52	7.93
2042	7.51	8.19
2043	7.63	8.57
2044	7.55	8.95
2045	7.73	9.35
2046	7.67	9.75
2047	7.79	10.12
2048	7.94	10.47
2049	8.00	10.88
2050	8.17	11.31
2051	8.30	11.74
2052	8.43	12.20
2053	8.55	12.50

Future Project Costs per kW_{ac} Including AFUDC

Project Name	Cost $/kW	Capacity (MW)
Polk 1 Flexibility Project	397	203.0
South Tampa Resilience	2,224	75.2
Dover Energy Storage Capacity	1,285	15.0
Lake Mabel Energy Storage Capacity	1,281	40.0
Wimauma Energy Storage Capacity	1,108	40.0
South Tampa Energy Storage Capacity	1,410	20.0
Bullfrog Creek Solar[1]	1,471	74.5
English Creek Solar	1,878	23.0
Cottonmouth Solar[1]	1,492	74.5
Duette Solar	1,536	74.5
Big Four Solar[1]	1,399	74.5
Farmland Solar	1,755	54.4
Brewster Solar	1,475	38.8
Wimauma 3 Solar[1]	1,695	74.5

[1] Land Lease costs (if applicable) are not included these figures but included in the cost effectiveness analyses

Polk 1 Flexibility Project

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - Polk 1 Project Upgrade	($40.8)
Capital RR - Polk 1 Sustaining Capital	($50.1)
Capital RR - Balance of System*	$8.7
System FOM	($20.3)
System VOM	($24.0)
System Fuel	($40.0)
Start Costs	($0.3)
Sub Total w/o CO_2 Emissions	($166.9)
CO_2 Emissions Cost /(Savings)	($3.4)
Total w/ CO_2 Emissions	($170.3)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

South Tampa Resilience Project

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - Reciprocating Engines	$203.3
Capital RR - Balance of System*	($73.9)
System FOM	$10.3
System VOM	($9.4)
System Fuel	($137.9)
Start Costs	($2.4)
Sub Total w/o CO_2 Emissions	($10.0)
CO_2 Emissions Cost /(Savings)	($22.4)
Total w/ CO_2 Emissions	($32.4)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Future Energy Storage Capacity (115 MW)

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Batteries	$124.8
Capital RR - Balance of System*	($54.2)
System FOM	($2.1)
System VOM	($6.9)
System Fuel	($206.1)
Start Costs	($6.7)
Sub Total w/o CO_2 Emissions	($151.2)
CO_2 Emissions Cost /(Savings)	($18.7)
Total w/ CO_2 Emissions	($169.9)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Dover Energy Storage Capacity

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Batteries	$16.8
Capital RR - Balance of System*	$0.0
System FOM	$0.7
System VOM	($3.6)
System Fuel	($31.6)
Start Costs	($1.0)
Sub Total w/o CO_2 Emissions	($18.7)
CO_2 Emissions Cost /(Savings)	($3.6)
Total w/ CO_2 Emissions	($22.3)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Lake Mabel Energy Storage Capacity

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Batteries	$45.0
Capital RR - Balance of System*	($25.3)
System FOM	$1.0
System VOM	($1.5)
System Fuel	($80.3)
Start Costs	($1.9)
Sub Total w/o CO_2 Emissions	($63.0)
CO_2 Emissions Cost /(Savings)	($6.9)
Total w/ CO_2 Emissions	($69.9)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Wimauma Energy Storage Capacity

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Batteries	$38.7
Capital RR - Balance of System*	($19.2)
System FOM	($2.5)
System VOM	($1.4)
System Fuel	($66.1)
Start Costs	($2.0)
Sub Total w/o CO_2 Emissions	($52.5)
CO_2 Emissions Cost /(Savings)	($5.7)
Total w/ CO_2 Emissions	($58.2)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

South Tampa Energy Storage Capacity

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Batteries	$24.3
Capital RR - Balance of System*	($9.6)
System FOM	($1.4)
System VOM	($0.5)
System Fuel	($28.1)
Start Costs	($1.8)
Sub Total w/o CO_2 Emissions	($17.1)
CO_2 Emissions Cost /(Savings)	($2.5)
Total w/ CO_2 Emissions	($19.6)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Total Future Solar

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$735.5
Capital RR - Balance of System*	$0.0
PTC Benefit	($252.4)
RR Land for Solar	$30.1
Land Lease	$34.8
System FOM	$133.9
System VOM	($52.6)
System Fuel	($797.5)
Start Costs	$2.9
Sub Total w/o CO_2 Emissions	($165.3)
CO_2 Emissions Cost /(Savings)	($157.0)
Total w/ CO_2 Emissions	($322.3)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

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Future Solar (2024 Projects)

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$164.7
Capital RR - Balance of System*	$0.0
PTC Benefit	($54.1)
RR Land for Solar	$0.0
Land Lease	$9.1
System FOM	$28.4
System VOM	($11.0)
System Fuel	($171.5)
Start Costs	$0.3
Sub Total w/o CO_2 Emissions	($34.0)
CO_2 Emissions Cost /(Savings)	($32.0)
Total w/ CO_2 Emissions	($66.0)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Future Solar (2025 Projects)

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$214.4
Capital RR - Balance of System*	$0.0
PTC Benefit	($77.3)
RR Land for Solar	$16.7
Land Lease	$8.3
System FOM	$41.2
System VOM	($16.1)
System Fuel	($240.4)
Start Costs	$0.5
Sub Total w/o CO_2 Emissions	($52.6)
CO_2 Emissions Cost /(Savings)	($47.9)
Total w/ CO_2 Emissions	($100.5)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Future Solar (2026 Projects)

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$356.4
Capital RR - Balance of System*	$0.0
PTC Benefit	($121.1)
RR Land for Solar	$13.5
Land Lease	$17.3
System FOM	$64.3
System VOM	($25.5)
System Fuel	($385.6)
Start Costs	$2.0
Sub Total w/o CO_2 Emissions	($78.7)
CO_2 Emissions Cost /(Savings)	($77.1)
Total w/ CO_2 Emissions	($155.8)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

English Creek Solar

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$46.6
Capital RR - Balance of System*	$0.0
PTC Benefit	($12.6)
System FOM	$6.7
System VOM	($1.9)
System Fuel	($36.5)
Start Costs	$0.1
Sub Total w/o CO_2 Emissions	$2.3
CO_2 Emissions Cost /(Savings)	($6.8)
Total w/ CO_2 Emissions	($4.5)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

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Bullfrog Creek Solar

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$118.1
Capital RR - Balance of System*	$0.0
PTC Benefit	($41.5)
Land Lease	$9.1
System FOM	$21.7
System VOM	($9.1)
System Fuel	($135.0)
Start Costs	$0.2
Sub Total w/o CO_2 Emissions	($36.4)
CO_2 Emissions Cost /(Savings)	($25.2)
Total w/ CO_2 Emissions	($61.5)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Duette Solar

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$101.7
Capital RR - Balance of System*	$0.0
PTC Benefit	($38.6)
RR Land for Solar	$16.7
System FOM	$20.6
System VOM	($7.8)
System Fuel	($118.2)
Start Costs	$1.7
Sub Total w/o CO_2 Emissions	($23.9)
CO_2 Emissions Cost /(Savings)	($23.2)
Total w/ CO_2 Emissions	($47.1)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

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Cottonmouth Solar

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$112.7
Capital RR - Balance of System*	$0.0
PTC Benefit	($38.6)
Land Lease	$8.3
System FOM	$20.6
System VOM	($8.3)
System Fuel	($122.2)
Start Costs	($1.2)
Sub Total w/o CO_2 Emissions	($28.7)
CO_2 Emissions Cost /(Savings)	($24.7)
Total w/ CO_2 Emissions	($53.4)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Big Four Solar

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$103.8
Capital RR - Balance of System*	$0.0
PTC Benefit	($37.7)
Land Lease	$8.9
System FOM	$20.2
System VOM	($7.8)
System Fuel	($124.0)
Start Costs	$1.3
Sub Total w/o CO_2 Emissions	($35.3)
CO_2 Emissions Cost /(Savings)	($23.6)
Total w/ CO_2 Emissions	($59.0)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Farmland Solar

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$81.1
Capital RR - Balance of System*	$0.0
PTC Benefit	($26.3)
RR Land for Solar	$10.8
System FOM	$14.3
System VOM	($6.2)
System Fuel	($82.7)
Start Costs	$0.8
Sub Total w/o CO_2 Emissions	($8.2)
CO_2 Emissions Cost /(Savings)	($16.6)
Total w/ CO_2 Emissions	($24.8)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Brewster Solar

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$51.9
Capital RR - Balance of System*	$0.0
PTC Benefit	($18.7)
RR Land for Solar	$2.6
System FOM	$10.2
System VOM	($3.5)
System Fuel	($54.6)
Start Costs	($0.4)
Sub Total w/o CO_2 Emissions	($12.4)
CO_2 Emissions Cost /(Savings)	($11.4)
Total w/ CO_2 Emissions	($23.8)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.

Wimauma 3 Solar

Cost-Effectiveness Test

Base Fuel Forecast	Cost/(Savings) (2024 US $ millions)
Capital RR - New Solar Units	$119.5
Capital RR - Balance of System*	$0.0
PTC Benefit	($38.4)
Land Lease	$8.4
System FOM	$19.6
System VOM	($7.9)
System Fuel	($124.4)
Start Costs	$0.3
Sub Total w/o CO_2 Emissions	($22.8)
CO_2 Emissions Cost /(Savings)	($25.5)
Total w/ CO_2 Emissions	($48.2)

* Capital RR - Balance of System includes new and/or avoided generation, transmission, and interconnect capital.