

State of Florida



Public Service Commission

CAPITAL CIRCLE OFFICE CENTER • 2540 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32399-0850

-M-E-M-O-R-A-N-D-U-M-

DATE: ~~October 15~~ December 3, 2009

TO: Office of Commission Clerk (Cole)

FROM: ~~Office of Strategic Analysis and Governmental Affairs~~ Division of Regulatory Analysis (Graves, Ellis, Gilbert, Matthews) *POE*
 Division of Economic Regulation (Matlock) *sum*
 Office of the General Counsel (Hartman Brubaker) *JSB*

RE: Docket No. 090109-EI – Petition for approval of solar energy power purchase agreement between Tampa Electric Company and Energy 5.0, LLC.

AGENDA: ~~10/27~~ 12/15/09 – PAA Proposed Agency Action - Regular Agenda – Interested Persons May Participate

COMMISSIONERS ASSIGNED: All Commissioners

PREHEARING OFFICER: None assigned at this time Klement

CRITICAL DATES: None

SPECIAL INSTRUCTIONS: None

FILE NAME AND LOCATION: S:\PSC\SGA RAD\WP\090109.RCM.DOC

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 COMMISSION
 CLERK

Case Background

On March 9, 2009, Tampa Electric Company (TECO or Company) filed a petition requesting approval of a purchased power agreement (Contract) with Energy 5.0, LLC (Energy 5.0). The Contract, executed on February 25, 2009, is based on TECO purchasing the entire net electrical output of Energy 5.0's Florida Solar I Facility (Facility) for a period of 25 years beginning on January 1, 2011. Energy 5.0 will sell as-available energy produced by the Facility to TECO at a price per megawatt-hour (MWh) that is fixed for the term of the Contract. The Facility is a 25 megawatt (MW) solar photovoltaic array that can provide approximately 50,000 MWh of energy annually.

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Date: ~~October 15~~ December 3, 2009

In addition to the purchase of energy, the Contract specifies that TECO will receive all environmental attributes and renewable energy credits (RECs) associated with the renewable energy that is sold to TECO.

On August 11, 2009, TECO filed updated information to its petition. Following an interconnection study performed by TECO, the Company identified a necessary upgrade to its 69kV network in order to accommodate the proposed facility. TECO's updated information included the costs associated with the described upgrades.

At the October 27, 2009, Commission Agenda Conference, the Commission requested additional information regarding the costs associated with the Facility and the Contract. On November 5, 2009, staff issued a data request to TECO and Energy 5.0. Responses from Energy 5.0 and TECO were received on November 12, 2009, and November 19, 2009, respectively.

On November 23, 2009, Mosaic Fertilizer, LLC (Mosaic) filed a petition for leave to intervene in this docket. In its petition Mosaic indicated that the Commission's decision will directly affect Mosaic by increasing the cost of electricity it purchases from TECO. On November 24, 2009, TECO filed its response to Mosaic's petition to intervene.

This recommendation addresses TECO's petition for approval of the Contract with Energy 5.0 and discusses TECO and Energy 5.0's responses to staff's November 5, 2009, data request on levelized cost and cost-effectiveness. Attachment 1 describes staff's calculations of levelized cost. The Commission has jurisdiction over this matter pursuant to Sections 366.051, 366.81, 366.91, and 366.92, Florida Statutes (F.S.).

Discussion of Issues

Issue 1: Should the Commission approve the requested recovery for costs incurred under the negotiated Contract between TECO and Energy 5.0?

Recommendation: Yes. Staff recommends that TECO be authorized to recover the energy payments made to Energy 5.0, up to TECO's as-available energy rate, through TECO's annual fuel cost recovery factor. Staff considers any costs in excess of TECO's as-available energy cost to be associated with the purchase of environmental attributes or renewable energy credits (RECs) which are discussed in Issue 2. (Graves, Ellis, Matthews)

Staff Analysis: Energy 5.0 will sell as-available energy produced by the Florida Solar I Facility to TECO for a term of 25 years beginning on January 1, 2011. The Facility is a 25 MW solar photovoltaic array that can provide approximately 50,000 MWh of energy annually. TECO has agreed to pay a fixed price per MWh for the life of the Contract. Because the Facility will not provide firm energy, there are no capacity payments associated with the Contract.

Rule 25-17.0825(6), Florida Administrative Code (F.A.C.), states that the recovery of costs associated with the purchase of as-available energy made from qualifying facilities pursuant to a separately negotiated contract are conditional on two factors: (1) The payments to the qualifying facility are not reasonably projected to result in higher cost electric service and, (2) The adequacy and reliability of electric service will not be adversely affected. These two factors are evaluated below.

Economic Evaluation of Payments:

Because the Contract is for as-available energy, not firm capacity and energy, the payments to Energy 5.0 were evaluated against the utility's projected avoided energy costs. Per Rule 25-17.0825(6), F.A.C., avoided energy costs are the utility's incremental fuel cost, identifiable variable operating and maintenance expenses, and identifiable variable utility power purchases which can be avoided by the purchase of as-available energy. TECO considered several forecasts and potential costs in developing an avoided energy cost to evaluate the Contract.

TECO evaluated the Contract assuming the Company's September 15, 2008, fuel forecast (Base Case) which was used in TECO's 2009 fuel cost recovery projection filing. TECO additionally evaluated the contract assuming a higher fuel price forecast (High Fuel). In general, higher fuel costs would improve the economics of the proposed contract.

TECO also considered potential costs associated with future CO₂ emission penalties (CO₂ Cost Case) in its analysis of the contract. TECO's CO₂ emissions penalty costs were based on values produced in Navigant Consulting's recent Florida Renewable Energy Potential

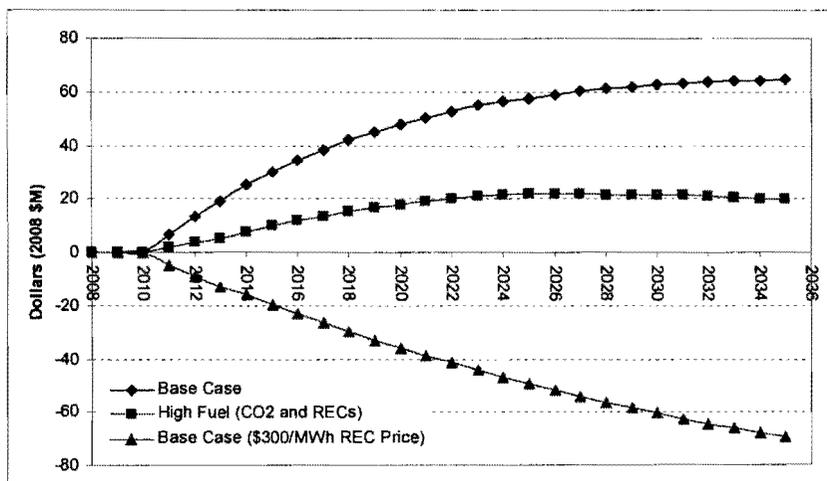
Assessment report (Navigant Study).¹ In general, the inclusion of costs associated with CO₂ would improve the economics of the proposed contract.

In addition to the purchase of as-available energy, the Contract states that all environmental attributes and RECs associated with the electric energy produced by the facility will belong to TECO. For evaluation of the Contract TECO assumed REC selling prices based on values produced in the Navigant Study. In general, higher REC values would improve the economics of the Contract. An additional economic analysis was performed utilizing a REC price based on a Renewable Portfolio Standard (RPS) that exists in some east coast markets. Giving consideration to these markets, TECO estimated a REC value of \$300/MWh per year.

TECO's evaluation of the Contract, without revenues from the sale of RECs, indicates that purchased power pursuant to the Contract would have a net cost above TECO's as-available energy costs of approximately \$44 million to \$65 million over the life of the contract. Figure 1 below, illustrates the difference in cost between the Contract and TECO's avoided energy cost. TECO's analyses show that the Contract is above avoided cost for every year of the 25-year contract. TECO's analyses also indicate that the sale of RECs could produce revenues to offset the costs of the Contract. However, it is only under the scenario in which TECO assumed a \$300/MWh selling price for RECs that the Contract resulted in a net savings (nearly \$70 million).

Figure 1: The Contract vs. As-available Energy (Cumulative Present Value Revenue Requirements)²

Note: Positive values indicate a net cost and negative values indicate a net savings to ratepayers.



Staff additionally requested an analysis using updated fuel assumptions and carbon cost assumptions. The results of the updated analyses show that the Contract would be less economical than with previous assumptions. In summary, TECO's analyses indicate that the Contract would only be cost-effective to TECO's ratepayers if TECO were able to sell the RECS

¹ The Navigant Study was Submitted to the Commission on December 30, 2008 for use in Docket No. 080503, In re: Establishment of Rule on Renewable Portfolio Standard.

² Values calculated by Staff, using a Discount Rate of 7.89% and data provided by TECO in response to Staff Interrogatory No. 66, of Staff's Second Set of Interrogatories.

associated with the Contract for \$300/MWh for the 25-year life of the contract. The results of TECO's original economic analysis are summarized in Table 1 below. A positive value indicates a net cost and a negative value indicates a net savings to ratepayers.

Table 1: Summary of Economic Analyses (Cumulative Present Value Dollars 2008 \$M)

	Base Case	High Fuel
No CO ₂ or RECs	64.66	51.63
Only CO ₂	56.56	43.73
Only RECs	41.03	27.99
CO ₂ & RECs	32.92	20.09
\$300/kwh $\frac{\text{MWh}}{\text{REC}}$	(69.46)	N/A

Source: Page's 11, 12, and 15 of TECO's Petition.

~~Staff additionally requested an analysis using updated fuel assumptions and carbon cost assumptions. The results of the updated analyses show that the Contract would be less economical than with previous assumptions.~~

On August 11, 2009, TECO filed updated information to its March 9 petition. Following an interconnection study performed by TECO, the Company identified a necessary upgrade to its 69kV network in order to accommodate the proposed facility. TECO's updated information included the costs (\$750,000) associated with the described upgrades. In response to a staff data request, TECO stated that the network upgrades would be primarily capital improvements that would become the property of TECO and be included in the company's rate base by 2011. The resulting effect of the additional costs were relatively minimal (less than a 1 percent increase in costs) to the overall cost-effectiveness of the Contract. TECO also indicated that the transmission upgrades should not affect the in-service date of the proposed facility.

Electric Service Adequacy and Reliability:

The Contract provides that TECO may curtail or reduce deliveries of as-available energy, to the extent necessary to maintain the reliability and integrity of TECO's system. Staff believes that the provisions of the Contract are sufficient to ensure that the Florida Solar I Facility will not adversely affect the adequacy or reliability of electric service to TECO's customers.

Levelized Cost Comparison:

At the October 27, 2009, Commission Agenda Conference, the Commission requested additional information regarding the costs associated with the Facility and the Contract. On November 5, 2009, staff issued a data request to TECO and Energy 5.0. Responses from Energy 5.0 and TECO were received on November 12, 2009, and November 19, 2009, respectively.

As part of the November 5, 2009, data request, staff requested the levelized cost of Energy 5.0's proposed solar facility and a 25 MW solar PV facility that could be built by TECO at its Polk site. As part of its response to staff's data request, Energy 5.0 stated:

From Energy 5.0's perspective, it is not meaningful to discuss a levelized cost, because Energy 5.0 will incur whatever costs are required for the Project's capital investment, financing costs, income taxes, property taxes, and all other operating and maintenance costs, as those costs are incurred.

However, Energy 5.0 did provide a capital cost estimate (\$130 to \$140 million) and an estimate of annual operations and maintenance (O&M) costs (\$1.2 million). TECO also provided a capital cost estimate for a self-build option of \$173 million but no value for annual O&M. Staff utilized the values provided by Energy 5.0 and TECO to estimate a levelized cost for the proposed project and a comparable utility-owned facility. Staff additionally took into consideration the impact of the 30 percent investment tax credit (ITC) currently offered by the federal government for Energy 5.0's facility. Attachment 1 provides a description of staff's assumptions and calculations used for estimating the levelized costs.

Table 2, below, summarizes staff's cost estimates for the proposed Energy 5.0 project and a TECO self-build option. Staff has additionally included cost estimates from the following sources which are recent and specific to Florida:

1. 49.5¢/kWh - FPL's De Soto Solar Project, which is a 25 MW solar PV facility located in Florida.
2. 28.8¢/kWh - Navigant Consulting's levelized cost estimate for ground-mounted solar PV in Florida assuming no renewable energy credits (RECs).

Table 2: Summary of Levelized Cost Estimates

	<u>¢/kWh</u>
<u>Energy 5.0 Project (Estimated by Staff)</u>	<u>22.4³</u>
<u>TECO Self Build (Estimated by Staff)</u>	<u>38.0³</u>
<u>Navigant Estimate</u>	<u>28.8⁴</u>
<u>FPL De Soto Project</u>	<u>49.5⁵</u>

Based on the data compiled by staff, the levelized cost estimate of the Energy 5.0 facility appears to be reasonable when compared to other similar projects. However, as discussed below, the Contract remains substantially above TECO's avoided-cost.

³ Value is exclusive of significant undetermined major maintenance expenses.

⁴ Value taken from Navigant Consulting's "Florida Renewable Energy Potential Assessment" report which was submitted to the Commission on December 30, 2008, for use in Docket No. 080503-EI, In re: Establishment of Rule on Renewable Portfolio Standard.

⁵ Value provided by FPL in response to Staff Interrogatory No. 56, of Staff's Eighth Set of Interrogatories, in Docket No. 080007-EI, In re: Environmental cost recovery clause, assumes a 20 percent capacity factor.

Updated Cost-Effectiveness:

As part of the November 5, 2009, data request, staff requested updated economic analyses of the Contract assuming the Company's most recent fuel forecasts. The results of the updated cost-effectiveness analyses indicate that the Contract is less cost-effective than previously projected. The results of the updated base case economic analyses (assuming no CO2 costs or revenue from RECs) are summarized in the tables below. Positive values indicate a net cost to ratepayers.

Table 3: Summary of Base Case Economic Analyses

<u>-</u>	<u>Original</u>	<u>Updated</u>
<u>Net Present Value Costs (\$)</u>	<u>65 Million</u>	<u>78 Million⁶</u>
<u>Residential Bill Impact (\$/Mo)</u>		
<u>2011</u>	<u>0.48</u>	<u>0.52</u>
<u>2023</u>	<u>0.26</u>	<u>0.34</u>
<u>2035</u>	<u>0.10</u>	<u>0.19</u>
<u>AVG</u>	<u>0.28</u>	<u>0.36</u>

Sources: Page 11 of TECO's Petition, TECO's Response to Staff's Second Data Request, No.4., TECO's response to Staff Interrogatory No. 66.

As shown in Table 3, above, approval of TECO's petition would result in TECO's customers paying a premium for solar power.

Conclusion:

The negotiated Contract between TECO and Energy 5.0 will provide a viable source of renewable energy that will displace energy generated by fossil fuels, thus reducing the state's dependence on these resources and promoting fuel diversity. However, the Contract is estimated to be significantly above TECO's avoided cost under a variety of scenarios. As stated in Rule 25-17.0825(6), F.A.C., payments for as-available energy made to qualifying facilities pursuant to a separately negotiated contract shall be recoverable by the utility through the Commission's periodic review of fuel and purchased power costs if the payments are not reasonably projected to result in higher cost electric service to the utility's general body of ratepayers. Therefore, staff recommends that TECO only be allowed recovery of costs from ratepayers up to the utility's as-available energy cost. Staff considers any costs in excess of TECO's as-available energy cost to be associated with the purchase of environmental attributes or RECs which are discussed in Issue 2.

⁶ Present Value calculated by staff, using a Discount Rate of 7.89 percent.

Issue 2: Should the Commission approve cost recovery for payments, above avoided cost, incurred under the negotiated contract between TECO and Energy 5.0 for the purchase of environmental attributes and renewable energy credits?

Recommendation: No. Pursuant to Rule 25-17.0825(6), F.A.C., payments to a qualifying facility for as-available energy cannot result in higher cost electric service to the utility's general body of ratepayers. Staff recommends that the environmental attributes and RECs purchased should be the property of TECO, and any risk of profit or loss resulting from the sale of such attributes should be borne by TECO's stockholders. (Graves, Ellis, Matthews)

Staff Analysis: As noted in Issue 1, the Contract states that all environmental attributes and RECs associated with the electric energy produced by the facility will belong to TECO. No information was provided in the Contract identifying a monetary amount associated with environmental attributes and RECs. However, in response to a staff interrogatory, TECO indicated that if the Contract was absent environmental attributes and RECs, the Company would expect the fixed energy cost to decrease. As discussed in Issue 1, any costs in excess of the utility's projected hourly as-available energy cost must be associated with the purchase of environmental attributes or RECs.

Consistent with a recent Commission decision,⁷ staff believes it is not appropriate at this time to allow the recovery of costs associated with speculative costs associated with environmental attributes or RECs. Order No. PSC-08-0116-PAA-EQ states:

Payment for renewable energy credits are speculative at this time and there is no regulatory requirement for their purchase. There are many varied scenarios which could possibly develop within the provisions of the FPL agreement for the purchase of "Green Attributes" from the Manatee project. It would not be appropriate for the general body of ratepayers to be obligated at this time to pay the cost to purchase speculative "Green Attributes" that may be associated with the Manatee project.

Order No. PSC-08-0116-PAA-EQ also directed that:

FPL may seek recovery for capacity and energy payments incurred under the negotiated contract, but may not seek recovery through the fuel clause for costs associated with payments for "Green Attributes" under the terms of the negotiated contract.

Conclusion:

Staff believes that the purchase of RECs remains speculative at this time and there is still no requirement for their purchase. Staff recommends that TECO may not seek recovery through the fuel clause for costs associated with payments for environmental attributes and RECs. In the view of staff, TECO has an opportunity to purchase and own the environmental attributes and

⁷ Order No. PSC-08-0116-PAA-EQ, issued: February 22, 2008, in Docket No. 070677, In re: Petition for approval of negotiated renewable energy contract with Manatee Green Power, LLC, by Florida Power & Light Company.

RECs provided in the Contract as a non-regulated operation. The environmental attributes and RECs purchased should be the property of TECO, and any risk of profit or loss resulting from the sale of such attributes should be borne by TECO's stockholders. If TECO chooses to go forward with this Contract, the utility's stockholders could benefit from participating in the voluntary market utilizing utility-based expertise, while protecting the ratepayer from any additional costs which may arise from such a purchase.

Docket No. 090109-EI

REVISED 12/03/09

Date: ~~October 15~~ December 3, 2009

Issue 3: Should this docket be closed?

Recommendation: Yes, this docket should be closed upon issuance of a Consummating Order unless a person whose substantial interests are affected by the Commission's decision files a protest within 21 days of the issuance of the proposed agency action. (~~Hartman~~ Brubaker)

Staff Analysis: This docket should be closed upon issuance of a Consummating Order unless a person whose substantial interests are affected by the Commission's decision files a protest within 21 days of the issuance of the proposed agency action.

REVISED 12/03/09

Economic Inputs		
Capital		
Capital Cost	(\$)	135,000,000
Federal ITC Value	(\$)	40,500,000
Remaining Capital Cost	(\$)	94,500,000
Interest Rate	(%)	8.29%
Duration of Payments	(yr)	25
Levelized Capital Cost	(\$/yr)	9,072,961
O&M		
2009 O&M Costs	(\$/yr)	1,200,000
Escalation Rate	(%)	2.50%

Staff Estimate - Energy 5.0 Project with Federal ITC					
Year	O&M	Capital	Annual Total	Generation	Annual Cost
	(\$)	(\$)	(\$)	(kWh)	(¢/kWh)
2011	1,260,750	9,072,961	10,333,711	48,280,680	21.40
2012	1,292,269	9,072,961	10,365,230	48,280,680	21.47
2013	1,324,575	9,072,961	10,397,537	48,280,680	21.54
2014	1,357,690	9,072,961	10,430,651	48,280,680	21.60
2015	1,391,632	9,072,961	10,464,593	48,280,680	21.67
2016	1,426,423	9,072,961	10,499,384	48,280,680	21.75
2017	1,462,083	9,072,961	10,535,045	48,280,680	21.82
2018	1,498,636	9,072,961	10,571,597	48,280,680	21.90
2019	1,536,101	9,072,961	10,609,063	48,280,680	21.97
2020	1,574,504	9,072,961	10,647,465	48,280,680	22.05
2021	1,613,867	9,072,961	10,686,828	48,280,680	22.13
2022	1,654,213	9,072,961	10,727,175	48,280,680	22.22
2023	1,695,569	9,072,961	10,768,530	48,280,680	22.30
2024	1,737,958	9,072,961	10,810,919	48,280,680	22.39
2025	1,781,407	9,072,961	10,854,368	48,280,680	22.48
2026	1,825,942	9,072,961	10,898,903	48,280,680	22.57
2027	1,871,590	9,072,961	10,944,552	48,280,680	22.67
2028	1,918,380	9,072,961	10,991,342	48,280,680	22.77
2029	1,966,340	9,072,961	11,039,301	48,280,680	22.86
2030	2,015,498	9,072,961	11,088,460	48,280,680	22.97
2031	2,065,886	9,072,961	11,138,847	48,280,680	23.07
2032	2,117,533	9,072,961	11,190,494	48,280,680	23.18
2033	2,170,471	9,072,961	11,243,432	48,280,680	23.29
2034	2,224,733	9,072,961	11,297,694	48,280,680	23.40
2035	2,280,351	9,072,961	11,353,313	48,280,680	23.52
SUM	43,064,401	226,824,033	269,888,433	1,207,017,000	22.36

REVISED 12/03/09

Formula Components		
Capital		
Capital Cost	(\$)	173,000,000
Interest Rate	(%)	8.29%
Duration of Payments	(yr)	25
Levelized Capital Cost	(\$/yr)	16,609,760
O&M		
2009 O&M Costs	(\$/yr)	1,200,000
Escalation Rate	(%)	2.50%

Staff Estimate - TECO Self Build					
Year	O&M	Capital	Annual Total	Generation	Annual Cost
	(\$)	(\$)	(\$)	(kWh)	(¢/kWh)
2011	1,260,750	16,609,760	17,870,510	48,280,680	37.01
2012	1,292,269	16,609,760	17,902,029	48,280,680	37.08
2013	1,324,575	16,609,760	17,934,335	48,280,680	37.15
2014	1,357,690	16,609,760	17,967,450	48,280,680	37.21
2015	1,391,632	16,609,760	18,001,392	48,280,680	37.28
2016	1,426,423	16,609,760	18,036,183	48,280,680	37.36
2017	1,462,083	16,609,760	18,071,843	48,280,680	37.43
2018	1,498,636	16,609,760	18,108,395	48,280,680	37.51
2019	1,536,101	16,609,760	18,145,861	48,280,680	37.58
2020	1,574,504	16,609,760	18,184,264	48,280,680	37.66
2021	1,613,867	16,609,760	18,223,626	48,280,680	37.75
2022	1,654,213	16,609,760	18,263,973	48,280,680	37.83
2023	1,695,569	16,609,760	18,305,328	48,280,680	37.91
2024	1,737,958	16,609,760	18,347,718	48,280,680	38.00
2025	1,781,407	16,609,760	18,391,167	48,280,680	38.09
2026	1,825,942	16,609,760	18,435,702	48,280,680	38.18
2027	1,871,590	16,609,760	18,481,350	48,280,680	38.28
2028	1,918,380	16,609,760	18,528,140	48,280,680	38.38
2029	1,966,340	16,609,760	18,576,100	48,280,680	38.48
2030	2,015,498	16,609,760	18,625,258	48,280,680	38.58
2031	2,065,886	16,609,760	18,675,646	48,280,680	38.68
2032	2,117,533	16,609,760	18,727,293	48,280,680	38.79
2033	2,170,471	16,609,760	18,780,231	48,280,680	38.90
2034	2,224,733	16,609,760	18,834,493	48,280,680	39.01
2035	2,280,351	16,609,760	18,890,111	48,280,680	39.13
SUM	43,064,401	415,243,996	458,308,397	1,207,017,000	37.97