ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

**REVISED** REBUTTAL TESTIMONY OF BRADLEY E. KUSHNER

ON BEHALF OF

FLORIDA MUNICIPAL POWER AGENCY

JEA

REEDY CREEK IMPROVEMENT DISTRICT

AND

CITY OF TALLAHASSEE

DOCKET NO. 060635-EU

**DECEMBER 26, 2006**

**Q. Please state your name and business address.**

A. My name is Bradley E. Kushner. My business mailing address is 11401 Lamar Avenue, Overland Park, Kansas 66211.

**Q. By whom are you employed and in what capacity?**

A. I am employed by Black & Veatch Corporation. My current position is Senior Consultant/Project Manager.

**Q. Have you previously submitted testimony in this proceeding?**

A. Yes.

**Q. Have you reviewed the testimony of Dian Deevey that was filed in this docket on November 2, 2006?**

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A. Yes, I have.

**Q. Have you reviewed the testimony of Dale Bryk that was filed in this docket on November 2, 2006?**

A. Yes, I have.

**Q. Have you reviewed the testimony of Hale Powell that was filed in this docket on November 3, 2006?**

A. Yes, I have.

**Q. What is the purpose of your rebuttal testimony?**

A. The purpose of my testimony is to address several assertions in the testimony of Ms. Dale Bryk, Mr. Hale Powell and Ms. Dian Deevey. I will rebut the claims by Ms. Bryk that DSM, biomass, and IGCC were not evaluated in the TEC Need for Power Application, Exhibit No. __ (TEC-1). I will rebut Mr. Powell's claims that demand side management (DSM) was not adequately evaluated nor detailed in the TEC Need for Power Application, and will show that even in light of the updated capital cost estimate for TEC and the potential for higher fuel costs that DSM will still not be cost-effective.

**Q. Are you familiar with the updated capital cost estimate discussed in the supplemental testimony of Paul Hoornaert?**

A. Yes.

**Q. On page 7 of her testimony, Ms. Bryk suggests that DSM was not "fully explored" by all of the Participants. Do you agree with Ms. Bryk's suggestion?**

A. No. The cost-effectiveness of DSM was appropriately considered for each Participant.

**Q. Please explain how DSM was considered in the analysis for each Participant.**

A. The Commission-approved Florida Integrated Resource Evaluator (FIRE) model was used for the DSM evaluations for FMPA and JEA. The City of Tallahassee's DSM evaluation was based on a utility-specific approach that the City developed as part of its ongoing integrated resource planning effort. The City's approach, with which Ms. Bryk does not take exception, is based on projections of total achievable energy and capacity reductions and their associated annual costs developed specifically for the City of Tallahassee. A renewed evaluation of the potential cost-effectiveness of DSM for Reedy Creek Improvement District (RCID) was not performed as discussed in the direct testimony of Nicholas Guarriello because RCID's customers have already applied all reasonably available conservation measures and will continue to install conservation measures, as appropriate, in the future.

**Q. How many potential DSM measures were evaluated using the FIRE model for FMPA and JEA?**

A. Approximately 180 potential DSM measures were evaluated for both FMPA and JEA, encompassing DSM measures that target both residential and commercial customers.

**Q. How is the cost-effectiveness of DSM measures evaluated by the FIRE model?**

A. The FIRE model requires three main sources of input. The first is the characterization of the DSM and conservation measures which includes the detailed cost and kWh and kW savings of the measure. The second is the cost and characteristics of the unit to be avoided with the DSM and conservation, which in this case is participation in TEC. Finally, utility system specific information such as rates is required with separate rates used depending on the customer class each measure pertains to.

The FIRE model provides three tests designed to measure the cost-effectiveness of DSM and conservation from different perspectives, including the Total Resource Test, the Participant Test, and the Rate Impact Test.

If the benefit-to-cost ratio of these tests is greater than 1.0, then the DSM and conservation measures are cost-effective under the test. Consistent with the Commission's past actions, both FMPA and JEA relied on the Rate Impact Test for their determination of cost-effectiveness of DSM and conservation measures. The FPSC has also consistently found the Rate Impact Test to be appropriate for determining cost-effectiveness.

**Q. Were any DSM measures determined to be cost-effective for either FMPA or JEA?**

A. No. None of the additional measures considered by FMPA or JEA had a Rate Impact Test score greater than 1.0. Thus, none of the additional DSM or conservation measures were found to be cost-effective. Consideration of the TEC capital cost estimate discussed in the supplemental testimony of Paul Hoornaert does not change these conclusions.

**Q. Is the scope and methodology of the DSM evaluation presented in this docket on behalf of FMPA and JEA consistent with previous DSM evaluations presented to and approved by the Florida Public Service Commission?**

A. Yes. Evaluations using the same or similar methodology were presented to and approved by the Commission in the need determination proceeding regarding FMPA's Treasure Coast Energy Center Unit 1 Need for Power Application (Docket 050256-EM) and in the need determination proceeding for Orlando Utilities Commission's Stanton Energy Center Unit B Need for Power Application (Docket No. 060155-EM). The Commission approved those need applications in Order No. PSC-05-0781-FOF-EM (July 2005) and Order No. PSC-06-0457-FOF-EM (May 2006), respectively. I personally oversaw the DSM evaluations in those proceedings and presented the results in testimony filed with the Commission.

**Q. Mr. Powell's testimony suggests that the Need for Power Application does not provide sufficient detail to assess the Participant's DSM cost-effectiveness evaluations. Do you agree?**

A. No. Section 7.0 of Volumes B and C discuss each of the 180 DSM measures considered in the analysis, as well as the methodology utilized and results of the cost-effectiveness evaluations. The level of detail provided in the TEC Need for Power Application is consistent with, if not greater than, that presented in the afore-mentioned Docket No. 050256-EM and Docket No. 060155-EM, which the Commission found to be appropriate. Due to the volume of material comprising the input and output of the FIRE model (i.e. thousands of pages), it was not practical to file all the supporting background materials with the Need for Power Application.

**Q. How were the various DSM measures selected for evaluation?**

A. The DSM measures evaluated in the FIRE model were chosen to represent a wide range of various end-use measures across residential and commercial customer classes, and also differentiate between existing and new construction. The DSM measures also are consistent with those evaluated in previous dockets as discussed above.

**Q. Are the end-uses, customer classes, and differentiation between existing and new construction delineated in the TEC Need for Power Application?**

A. Yes. The descriptions of the DSM measures in Section 7.0 of Volumes B and C identify the end-use and customer class of each measure, as well as whether

each measure targets existing or new construction. Further, the tables presented at the end of Section 7.0 of Volumes B and C reiterate these parameters.

**Q. The testimony of Hale Powell (Page 19) states that achievable cost-effective potential DSM ranges from 9 percent to 24 percent. Do you believe this is an appropriate range?**

A. Dr. Powell does not identify the "nine studies" he relied upon in calculating that range. It is impossible to assess this range of cost-effective DSM potential without reviewing the studies that Powell references. For comparison purposes, Florida Power & Light Company (FPL), which has the largest demand savings from conservation of any utility in the United States, has realized demand and energy savings of 12 percent and 4 percent, respectively as presented in their 2006 Ten-Year Site Plan.

**Q. The testimony of Hale Powell (Page 17) states that even if only 50 percent of a DSM program is completed it will provide energy savings over the useful life of the DSM measure. Do you agree with that statement?**

A. Not necessarily. Some DSM programs lose their energy savings over time. Good examples of this are compact fluorescents which sometimes get replaced before the end of their life with incandescents due to customer dissatisfaction with delay when they are turned on or the difference in the color of the light. Another example is low flow shower restrictors that are sometimes removed because the customer does not like the reduced water flow. Besides the above examples, another important point associated with Mr. Powell's comment is the

cost-effectiveness of the DSM program. If the planned DSM expenditures are made and the program only achieves half of the penetration, then the program is twice as costly as planned. Likewise, if the DSM savings are half of what was planned, the program is twice as costly as planned.

**Q. On Page 7 of her testimony, Dale Bryk suggests that a biomass supply-side resource alternative was not "fully explored" by each Participant. Has each Participant appropriately considered biomass resources?**

A. Yes. A sensitivity analysis was performed for each Participant that included 30 MW of conventional direct fired biomass capacity in their portfolio of supply-side additions. The results of these analyses are summarized in Section 6.0 of Volumes B through E of the TEC Need for Power Application, and are also presented in Exhibit No.__(BEK-3) of my direct testimony. The results of these sensitivity analyses indicate that biomass in lieu of TEC is not a cost-effective for any of the Participants.

**Q. On page 9 of her testimony, Ms. Bryk suggests that the Participants must "realistically evaluate (in light of $CO_2$-related cost implications and other factors) the relative benefits of natural gas-fired generation and the benefits of IGCC technology." Did your analysis consider natural gas-fired generation alternatives?**

A. Yes. We included an alternative of a 3x1 natural gas-fired combined cycle unit instead of TEC in our analysis.

**Q. Was natural gas-fired generation found to be a cost-effective alternative to TEC when the cost of $CO_2$ allowances are considered?**

A. No. TEC remains the most cost-effective alternative under the hypothetical regulated-$CO_2$ scenario.

**Q. Did your analysis consider integrated gasification combined cycle (IGCC) alternatives?**

A. Yes. A 1x1 IGCC alternative was considered for FMPA, JEA, and the City of Tallahassee. Each of the Participants also evaluated a joint-development IGCC alternative to participation in TEC.

**Q. Was IGCC found to be a cost-effective alternative to TEC?**

A. No.

**Q. Page 8 of Powell's testimony contemplates the impact of higher than expected emission allowance prices. How would higher than expected emission allowance prices affect the cost-effectiveness of TEC for each Participant?**

A. Section 6.0 of Volumes B through E of the TEC Need for Power Application presents a sensitivity scenario in which emissions annual allowance prices are increased by 25 percent above the annual base case emission allowance price forecasts. TEC was found to be cost-effective for each of the Participants under this high emission allowance price sensitivity.

**Q. Page 8 of the testimony of Powell also theorizes that DSM would be more cost-effective under scenarios in which fuel prices are higher than expected. Has any analysis been performed to determine if DSM is cost-effective in a scenario in which fuel prices are higher than expected?**

A. Yes. The DSM cost-effectiveness analysis has been performed for FMPA and JEA using the high fuel price sensitivity scenario. The results of this analysis indicate that no DSM measures pass the Rate Impact Test for either FMPA or JEA.

Similarly, the DSM cost-effectiveness analysis has been performed for FMPA and JEA using the regulated-$CO_2$ sensitivity scenario. The results of this analysis indicate that no DSM measures pass the Rate Impact Test for either FMPA or JEA.

**Q. On Page 8 of her testimony, Dian Deevey states that Synapse Energy Economics was responsible for an evaluation of potential $CO_2$ compliance costs for the City of Tallahassee. Ms. Deevey further states that Synapse's estimates should have been used by all of the Participants. Why were Synapse's $CO_2$ allowance price projections not considered in the TEC Need for Power Application?**

A. The $CO_2$ allowance price projections presented in the TEC Need for Power Application were developed by Hill & Associates, and were therefore consistent with the parameters and assumptions used in developing their fuel forecasts.

Thus, it is appropriate to use Hill & Associates' $CO_2$ allowance price projections in the base case rather than introduce a forecast of $CO_2$ allowance prices that is decoupled from the overall fuel price forecasts, which is the case when using Synapse's projections.

**Q. Does this conclude your testimony?**

A. Yes.