ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

REBUTTAL TESTIMONY OF RYAN J. PLETKA

ON BEHALF OF

FLORIDA MUNICIPAL POWER AGENCY

JEA

REEDY CREEK IMPROVEMENT DISTRICT

AND

CITY OF TALLAHASSEE

DOCKET NO. 060635-EU

NOVEMBER 21, 2006

Q. Please state your name and business address.

A. My name is Ryan J. Pletka. My business 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 Project Manager.

Q. Have you previously submitted testimony in this proceeding?

A. Yes.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. Exhibit No. __ (RJP-1R) is a chart showing historical biomass unit sizes.

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

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 Stephen A. Smith that was filed in this docket on November 2, 2006?

A. Yes, I have.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my testimony is to rebut the claims by Mr. Bryk that biomass options were not fully explored in the TEC Need for Power Application, Exhibit No. __ ([TEC-]1). In response to Dr. Smith's testimony, I also will discuss Tallahassee's recently signed contract with BG&E and will address his claims that biomass is a viable alternative to TEC. Finally, I will rebut Ms. Deevy's claims that new solar technologies are a reality and that biomass has not been adequately addressed.

Q. Please describe your experience with biomass.

A. I am one of Black & Veatch's lead engineers in assessment of biomass fuels and technologies. I have been involved in projects utilizing a variety of biomass fuels, including wood, energy crops, animal manure, municipal waste, agricultural residues, and industrial wastes. Areas of emphasis include combustion, gasification, pyrolysis, biogas, and production of alternative fuels (e.g., ethanol, biodiesel, and bio-oil). In Florida, I have worked on biomass related projects for the Florida Department of Environment Protection, Orlando Utilities Commission, Gainesville Regional Utilities, JEA, Lakeland Electric, and other clients. I have a mechanical engineering background with graduate-level specialization in gasification, biomass energy, fluidized beds, and energy storage. My master's thesis was based on a novel pyrolytic gasification process for biomass fuels and included design, construction, and testing of a pilot scale biomass gasifier.

Q. On Page 7 of his 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. The biomass alternatives considered were solid biomass (direct-fired, gasification and integrated gasification combined cycle [IGCC], and co-fired), biogas (anaerobic digestion and LFG), waste-to-energy (WTE, including mass burn and refuse derived fuel [RDF]). These are all the technologies that are either commercially proven today or have some potential in the near to mid-term.

For each of these non-conventional technologies, cost and performance parameters were developed based on Black & Veatch project experience, vendor inquiries, and literature reviews. These parameters were used to calculate the levelized cost of energy for each technology. In addition to economics, there are other important factors when evaluating non-conventional alternatives. These include the technology's developmental status, fuel availability or resource availability to generate electric energy, reliability, feasibility, and the technology's ability to meet each Participant's forecast capacity needs. Due to a combination of these factors and economics, most of the non-conventional alternatives are not viable alternatives to TEC.

Q. On Page 5 of her testimony, Dian Deevy suggests that woody biomass was not "adequately addressed" by each Participant. Do you agree?

A. No, for the same reasons I have discussed previously.

Q. Page 5 of Ms. Deevy's testimony also indicates her opinion that "consultants appear to have wrongly assumed that woody biomass supplies are too limited in the locations of interest to support more than about 50 MW of capacity in any suitable location". What was the basis for selecting the 30 MW size of the direct-fired biomass facility?

A. Selection of the appropriate size for a biomass plant must consider numerous factors including site constraints, emissions caps, risk, need for capacity, fuel supply and technology issues. Of these, the most important is fuel supply. Resource availability is critical to the success of biomass power plant applications. Due to the dispersed nature of the feedstock and high transportation costs, it is preferred to site the plant as close to the fuel source as possible.

Historically most direct-fired biomass plants have relied on local waste biomass from sources such as sawmills, pulp and paper production, and urban wood waste. These resources have typically been low cost and local. Their limited supply has often resulted in relatively small scale biomass facilities, usually less than 50 MW. Since 1950, the average unit size of direct fired biomass plants has been between 10 and 35 MW. This is shown in Exhibit No. __ (RJP-1R). Although the average unit size is increasing somewhat, it is still much smaller than coal fired plants. A plant size of 30 MW is considered typical and representative of direct-fired combustion biomass alternatives.

Q. Are larger direct-fired combustion biomass facilities possible?

A. Yes, larger facilities are possible, but practically, biomass facility size is constrained by two factors: (1) technology experience with large scale and (2) the maturity of the fuel supply chain.

There is no experience with biomass plants of the scale of TEC. As discussed previously, biomass plants are typically less than 50 MW in size. To my knowledge, the largest stand-alone biomass plant in the United States is the 80 MW Multitrade plant near Hurt, Virginia. There is one 240 MW circulating fluidized bed (CFB) plant in Finland that is capable of burning woody biomass. However, this plant normally burns a mixture of lignite coal, peat, and wood.

In addition to limited experience with large unit sizes, biomass power plants are also constrained by fuel supply economics and logistics. Biomass plants nearly always rely on very low cost (or free) waste fuels, such as sawmill residues. Fuel cost must be low to keep power prices low. With low cost fuels, transportation cost can be the largest component of overall fuel costs. It is important to keep transportation distance short to keep overall fuel prices down and ensure an economically viable project. This limits the resource collection area that can be cost-effectively accessed, which, in turn, limits the size of the project.

Another factor that uniquely affects biomass plants is that the more fuel a biomass plant needs, the more likely the fuel price is higher. This is because of the transportation cost issue discussed above, but also because very large biomass plants must secure huge quantities of fuel. Large plants affect the regional supply and demand balance by greatly increasing demand. These plants essentially become high "price makers" in a market rather than low "price takers."

Q. Is it currently viable to fully displace the need for TEC with biomass?

A. No. TEC is very large relative to current biomass experience. As discussed previously, it is not practical or economically viable with current biomass technologies to develop a biomass power plant to the same scale.

Q. **On page 7 of her testimony, Ms. Deevy mentions the possibility of utilities purchasing forest land to secure biomass supply. Is purchasing large tracts of forestland a viable strategy for securing a biomass fuel supply?**

A. Purchasing timberland for fuel harvesting would be very expensive compared to other biomass sources. Meeting the annual fuel requirement of a utility-scale biomass power plant would require the purchase of thousands of acres of timberland, the cost of which would be similar to, if not higher than, the total capital cost of the biomass power plant. Due to the long growing rotation of commercial timber, even more land would need to be purchased to provide a long-term fuel supply to the plant. Costs for harvesting and processing the material and finally transporting it to the plant would add even further to the overall delivered fuel cost. Timber is much more valuable when harvested for other uses, such as dimensional lumber or pulp. Biomass fuels are most economically feasible as byproducts or residues of some other material processing operation (e.g., sawmill residues, pallet residues, urban wood waste, etc.).

Q. **Are you aware that the City of Tallahassee recently entered into a contract to purchase 38 MW of biomass?**

A. Yes.

Q. **On Page 4 of his testimony, Stephen Smith refers to this contract and suggests that biomass "clearly can be a viable alternative" to TEC. Do you agree?**

A. No. The technology contemplated in the BG&E contract is based on biomass gasification. There are no similar biomass gasification plants operating in the world at this scale. In addition, BG&E, the project developer, also has no operating biomass power facilities. At this time, there is simply not enough commercial experience with this technology to make it a viable alternative to coal generation, particularly at the level of generation and time-frame needed for the City and the other TEC Participants.

Q. Page 4 of Ms. Deevy's testimony discussed Nanosolar. Are you familiar with the technology developed by Nanosolar?

A. Yes, we have reviewed their technology. They use printing technology to produce thin-film photovoltaics that use no silicon and are hoping for an 80 percent cost reduction in production.

Q. What is the status of the Nanosolar technology?

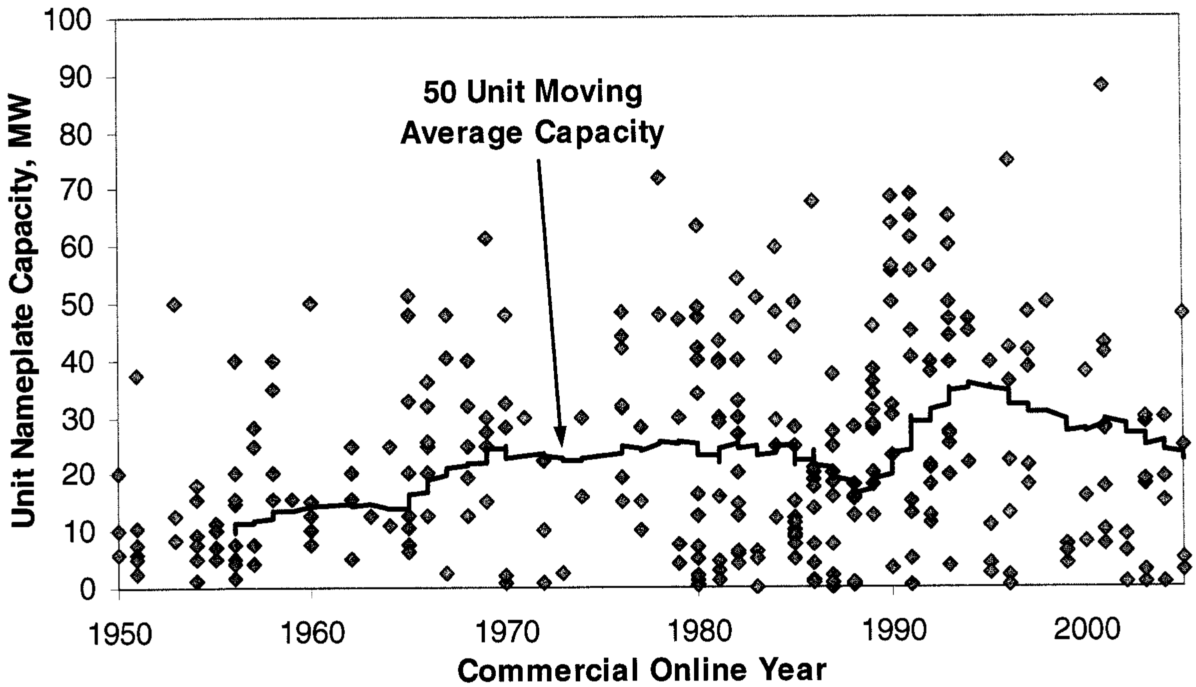
A. They are still an early stage company, with venture backing. They are planning a production facility in the San Francisco Bay area for 2007, but it is not certain when quantities of material will be available.

Q. Why was Nanosolar not considered in the review of technology alternatives?

A. This technology is not currently available today, nor is it likely to be available in large enough quantities in the timeframe required. Costs are speculative at this time. Conventional solar photovoltaic technologies were included in the evaluation of alternatives.

Q. Does this conclude your testimony?

A. Yes.



Biomass Unit Size by Year of Commercial Operation

Source: Black & Veatch Analysis of Global Energy Decisions "Energy Velocity" database, 2006