BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 090451-EM,

PETITION FOR DETERMINATION OF NEED FOR THE

THE GAINESVILLE RENEWABLE ENERGY CENTER

SUPPLEMENTAL TESTIMONY OF RICHARD D. BACHMEIER

ON BEHALF OF

GAINESVILLE REGIONAL UTILITIES AND

GAINESVILLE RENEWABLE ENERGY CENTER, LLC

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MARCH 15, 2010

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Q. Please state your name and business address.

A. My name is Richard D. Bachmeier. My business address is 301 SE 4th Avenue, Gainesville, FL 32601.

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

A. I am employed by Gainesville Regional Utilities ("GRU") as the Electric System Planning Director.

Q. Please describe your responsibilities in that position.

A. My responsibilities include the planning and execution of GRU's long-term electric supply and transmission strategies, oversight of GRU's long-range production cost projections, structuring and pricing long-term wholesale power contracts, and coordinating GRU's NERC Reliability Compliance program. I have authored requests for proposals ("RFPs") and developed the methodology for evaluating biomass generation projects. I have also participated in contract

negotiations for the Gainesville Renewable Energy Center ("GREC") biomass facility.

Q. Please state your educational background and professional experience.

A. I received a Bachelor of Science degree in Mathematics and a Bachelor of Arts degree in Economics from the University of North Dakota. I have a Master of Applied Geography degree from Texas State University (formerly Southwest Texas State University) and was admitted to Ph.D. Candidacy in Economics at the University of Texas at Austin where I have completed all coursework and examination requirements for the Ph.D.

Prior to joining GRU in 2007, I held positions with the Orlando Utilities Commission (OUC), TXU Energy, Enron Corporation, the Public Utility Commission of Texas, and the University of Texas at Austin. I have nearly 25 years of professional experience in the electric power industry encompassing industry restructuring, competitive issues, utility risk management, electricity pricing, and system planning. My specific areas of expertise include utility regulation, policy, and ratemaking; utility resource planning; environmental economics and policy; risk management; financial modeling and analysis; and product development and pricing.

I have presented expert testimony in more than 20 regulatory proceedings at the Public Utility Commission of Texas, and have written or co-written several research papers and publications. While on staff at the Public Utility

Commission of Texas, I was involved in policy development that assisted the Texas Legislature in the restructuring and deregulation of the retail electric market in Texas, and I was a contributing author of the 1997 report "Electric Power Industry Scope of Competition and Potentially Strandable Investment."

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

A. The purpose of my testimony in this proceeding is to address the specific questions of whether the proposed GREC facility will result in the stranded investment of any of GRU's assets, and whether that is a risk that GRU should attempt to mitigate.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. I am sponsoring two exhibits. Exhibit No.__ [RDB-4] is a copy of resumé. Exhibit No. __ [RDB-5] is a study performed by The Energy Authority ("TEA") entitled Market Value of GRU's Generation Portfolio.

Q. Please summarize the main conclusions of your testimony.

A. GRU and its ratepayers are not and will not be exposed to potential stranded investment of GRU's assets as a result of GRU's addition of GREC to GRU's energy supply portfolio through the power purchase agreement with Gainesville Renewable Energy Center, LLC ("GREC LLC"). The addition of GREC will increase the value of GRU's entire energy portfolio in the market, and the addition of GREC will actually increase GRU's ability to recover costs associated with the net book value of its existing assets.

Q. Why have you prepared testimony addressing the issue of stranded investment?

A. During the Florida Public Service Commission's ("PSC") Agenda Conference held on February 9, 2010, in discussing this docket Commissioner Skop stated that "...you have so much excess generation to begin with, and basically all that does is strand ratepayer investment with the excess generation." [TR 68, L11-14] In the context of the Commissioners' broader concerns regarding risks and risk mitigation, my testimony addresses the issue of potential stranded investment as a result of adding GREC, and whether there is any stranded investment risk associated with adding GREC to GRU's generating portfolio.

Q. Please define what is meant by "stranded investment" in the electric utility industry.

A. In a September, 2000 Florida PSC report "Key Aspects of Electric Restructuring and Their Relevance for Florida's Electricity Market," stranded investment is defined as "...assets reduced in value due to competition and is calculated as the difference between the net book value of the assets and their market value. Assets reduced in value for reasons not related to competition are not potential stranded investment." (Florida PSC Restructuring Report at page 27)

To further emphasize that stranded costs can only occur as a result of the transition from a regulated to a competitive market, the 1997 Public Utility Commission of Texas report "Electric Power Industry Scope of Competition and

Potentially Strandable Investment-Vol. III" defines stranded investment as *"...the historic financial obligations of utilities incurred in the regulated market that become unrecoverable in a competitive market."* (Texas PUC Strandable Investment Report at page 11, italics in original)

Q. Are GRU and its ratepayers exposed to potential stranded investment with the addition of GREC?

A. No. First, GREC itself cannot become a stranded investment because GRU will not own the facility. As for the potential stranding of GRU's existing assets, as defined above investment can only become stranded because customers of the utility chose an alternative supplier. If customers leave the utility and purchase electricity from another supplier, the original utility is left with debts for plants and equipment it may no longer need and without the revenue from the departing ratepayers that the plants were built to serve. Because the Florida retail electric utility market is not deregulated, GRU customers cannot switch electricity suppliers and leave the utility with stranded investment. The net book value of GRU's owned generating assets, i.e., the undepreciated capital investment associated with those assets, is currently being recovered in GRU's retail electric rates and wholesale power contracts, and GRU will continue to fully recover the costs associated with these assets. It is worth noting that most of GRU's generation assets are fully depreciated.

Q. You maintain that stranded investment can only occur when a regulated market is deregulated. Ignoring for the moment the absence of a

deregulated retail electric market in Florida, does excess generation necessarily result in "something like" stranded investment?

A. No. As mentioned above, GRU is recovering and will continue to recover the costs associated with existing generating assets from retail ratepayers and wholesale power contracts even if these assets become less utilized due to the addition of GREC.

Furthermore, the second condition for stranded investment in the above definitions requires that the market value of the assets in question be reduced below the net book value to the point where the remaining costs associated with the assets are unrecoverable. If GRU can recover the costs associated with the remaining net book value of less utilized assets in the market, the potential for "something like" stranded investment is minimal.

Finally, many of GRU's existing assets that could become less utilized due to the addition of GREC are some of the oldest units in GRU's generating fleet. As a result, these assets have largely been depreciated over their useful life, thus minimizing the remaining net book value that needs to be recovered.

Q. How would GRU recover the costs of less utilized assets?

A. In accordance with good utility practice, GRU is active in the wholesale power market and is continuously seeking ways to optimize its generating assets and minimize costs to its ratepayers. When the market price for power is greater than GRU's incremental cost of generation, GRU will increase generation and

sell into the market, thereby realizing margins that flow to the benefit of the entire system. If the market price is less than GRU's incremental cost of generation, GRU will reduce its own generation and make market purchases, thereby reducing costs to the utility and its ratepayers. To summarize, if any of GRU's existing assets become less utilized because of the addition of GREC, GRU can market the output of those assets and recover the associated costs as long as the assets have market value.

Q. Has GRU estimated whether its existing assets would have market value with the addition of GREC to GRU's generation portfolio?

A. Yes. At GRU's request, The Energy Authority (TEA) performed an analysis of the market value of all of GRU's resources both with and without the addition of GREC from 2014 through 2024. The question that the TEA analysis is posed to answer is what is the market value of GRU's energy supply portfolio with the addition of GREC?

The model that TEA employed is a proprietary economic dispatch model of the entire FRCC and Southern Company grid that includes outage schedules, transmission constraints, and operating constraints. TEA set up the model using load forecasts obtained through U.S. Energy Information Administration (EIA) reports and the EIA's Annual Energy Outlook (AEO) 2010 natural gas price forecast adjusted for regional differences in delivery costs.

The region modeled represents the actual energy market within which GRU operates. The model simulates GRU's energy market purchases and sales by optimizing the dispatch of the entire region. If GRU's incremental cost of generation is less than the incremental cost of the highest cost unit needed to meet the load of the entire region, GRU will sell energy into the market and generation from the highest cost unit will be decreased. Conversely, if GRU's incremental cost of generation is higher than the incremental cost of the region, GRU will back off its own generation and buy from the market until incremental costs are equalized.

The entire region was modeled first without GREC and then with the full 100 MW of GREC added to GRU's supply resources. The difference between the two scenarios represents GRU's net revenues from off-system sales, and therefore the change in the market value of GRU's supply portfolio as a result of adding GREC. The net increase in the market value of GRU's supply portfolio from the addition of GREC is summarized in Table 1 below.

The addition of GREC to GRU's supply portfolio actually increases the net market value for off-system sales from GRU's assets by almost $270 million over the period from 2014 through 2024. If discounted to 2010 at 4.2 percent, this yields a net present value (NPV) benefit to GRU of $182 million.

Table 1	
Increase of Net Market Value of GRU's Supply Portfolio for Off-System Sales from 100 MW of GREC	
Year	**Net Revenues ($000)**
2014	$22,275
2015	$16,886
2016	$18,090
2017	$19,606
2018	$20,862
2019	$21,546
2020	$24,391
2021	$26,469
2022	$29,155
2023	$33,132
2024	$37,119
Total	$269,531

Q. How does this modeling exercise relate to the issue of stranded investment?

A. The analysis shows that with the addition of GREC, GRU's entire energy portfolio will have increased value in the market, and that adding GREC will actually increase GRU's ability to recover costs associated with the net book value of its existing assets. The existence of a competitive retail electric market where customers may choose alternative suppliers is one condition for potential stranded investment. However, in the absence of a competitive market, something similar to stranded investment is theoretically possible if the market

value of a utility's generating assets would not allow the utility to recover the costs associated with the net book value of those assets.

Q. Does this conclude your testimony?

A. Yes.

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MARCH 15, 2010

Richard D. Bachmeier
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Office: (352) 393-1284 Email: bachmeierrd@gru.com

EXPERTISE

- Utility Resource Planning
- Environmental Economics and Policy
- Risk Management
- Utility Regulation, Policy, and Ratemaking
- Financial Modeling and Analysis
- Product Development and Pricing

EXPERIENCE

GAINESVILLE REGIONAL UTILITIES (GRU). GAINESVILLE, FLORIDA. 2007 – PRESENT

Electric System Planning Director, GRU Strategic Planning

- Responsibilities include:
  - Planning and execution of GRU's long-term electric supply strategy
  - Oversight of GRU's long-range production cost projections
  - Structuring and pricing long-term wholesale power contracts
  - Coordinating GRU's NERC Reliability Compliance program
  - Performing electric production cost projections and simulations with GenTrader, a utility planning and dispatch optimization model developed by Power Costs, Inc (PCI).
- Authored Request for Proposals (RFP) and developed evaluation methodology for biomass generation project.
- Participated in successful contract negotiations for the Gainesville Renewable Energy Center biomass facility that resulted from the RFP.

ORLANDO UTILITIES COMMISSION (OUC). ORLANDO, FLORIDA. 2003 – 2007

Planning Analyst, OUC Power Marketing – 2005 to 2007

- Developed electricity production cost projections for OUC's long-term supply planning, retail fuel rates, and wholesale power contracts.
- Implemented and maintained OUC's long-term planning version of PCI GenTrader.
- Developed OUC's Standard Offer Contract for capacity and energy purchases from Renewable Energy Facilities.
- Member of the Florida Municipal Power Pool (FMPP) Planning Committee.
- Developed a long-term PCI GenTrader model for all of FMPP to optimize outage coordination among member utilities.

Senior Retail Pricing Coordinator, OUC Customer Connection, Commercial Markets – 2003 to 2005

- Developed electric cost-of-service studies and rate design for OUC's regulated retail customers.
- Developed pricing and business plans for new competitive retail products and business ventures.
- Performed financial analyses and contributed to business plan for OUC's Retail Renewable Energy product.

TXU ENERGY. DALLAS, TEXAS. 2002 – 2003

Manager of Product Structuring, Retail Commodity Management

- Facilitated transactions among TXU Energy's marketing, sales, and trading groups.
- Produced financial and market analyses for out-of-territory customer acquisitions.
- Developed competitive retail energy products consistent with TXU Energy's risk profile.

ENRON CORPORATION. HOUSTON, TEXAS. 1997 – 2001

Director, Utility Risk Management

- Supervised teams responsible for managing risk in energy markets throughout the United States.
- Developed and implemented hedging strategies for fuel, commodity, and regulated elements of the Enron retail energy portfolio.
- Created and implemented a system for producing Enron's daily retail electric position reports.
- Developed models to generate and manage forward price curves for utility tariffs.
- Represented Enron in electric deregulation proceedings in Texas, New York, Nevada, and Arizona.

PUBLIC UTILITY COMMISSION OF TEXAS. AUSTIN, TEXAS. 1985 – 1997

Assistant Director, Competitive Issues Division

- Supervised Commission staff in the areas of utility load forecasting and resource planning, environmental issues, and energy and telecommunications pricing and policy.
- Testified as an expert witness in proceedings before the Commission and the Texas State Legislature.
- Headed task force that developed the Commission's Integrated Resource Planning policy on the valuation of environmental externalities for power plant certification and operation; authored report on findings and recommendations.
- Reviewed and provided recommendations on energy industry legislation proposed by the Texas State Legislature.
- Authored research reports and working papers on energy forecasting, conservation, and environmental policy.

UNIVERSITY OF TEXAS AT AUSTIN. AUSTIN, TEXAS. 1982 – 1985

Instructor, Department of Economics

- Instructor of university level microeconomics and macroeconomics courses.
- Developed and administered lectures and examinations; assigned final grades.

EDUCATION

PH.D. CANDIDATE (ABD) - ECONOMICS

University of Texas at Austin. Austin, Texas.

- Completed all coursework and examination requirements for the Ph.D.
- Coursework included graduate level microeconomics, macroeconomics, and econometrics.

MASTER OF APPLIED GEOGRAPHY

Texas State University - San Marcos (formerly Southwest Texas State University). San Marcos, Texas.

- Major: Resource and Environmental Studies
- Directed Research: "Spatial Variation in Electric Utility Customer Valuation of Environmental Externalities in Texas."
- Coursework included environmental planning and regulation, quantitative methods and research design, air quality management, land use planning, computer cartography, and Geographic Information Systems (GIS).

BACHELOR OF ARTS - ECONOMICS

University of North Dakota. Grand Forks, North Dakota.

BACHELOR OF SCIENCE - MATHEMATICS

University of North Dakota. Grand Forks, North Dakota.

EXPERT WITNESS TESTIMONY

Filed In Regulatory Proceedings at the Public Utility Commission of Texas:

- Docket No. 14965, SOAH Docket No. 473-95-1563, Application of Central Power and Light Company for Authority to Change Rates, May and August 1996.
- Docket No. 14435, SOAH Docket No. 473-95-1206, Application of Southwestern Electric Power Company for Approval of Agreement for Electric Service to Eastman Chemical Company, November 1995.
- Docket No. 13575, Application of Texas Utilities Electric Company for Approval of Notices of Intent, February 1995.
- Docket No. 12820, Petition of the General Counsel for an Inquiry into the Reasonableness of the Rates and Services of Central Power and Light Company, October 1994.
- Docket No. 12700, Application of El Paso Electric Company for Authority to Change Rates and of Central and South West Corporation and El Paso Electric for Approval of Acquisition, June 1994.
- Docket No. 12138, Notice of Intent of Houston Lighting & Power Company for a Certificate of Convenience and Necessity for Advanced Gas Turbine Projects, September 1993.
- Docket No. 11735, Application of Texas Utilities Electric Company for Authority to Change Rates, July 1993.
- Docket No. 11520, Petition of the General Counsel for an Inquiry into the Reasonableness of the Rates and Services of Southwestern Public Service Company, July 1993.
- Docket No. 11292, Application of Entergy Corporation and Gulf States Utilities Company for Sale, Transfer, or Merger, January 1993.
- Docket No. 11000, Application of Houston Lighting & Power Company for a Certificate of Convenience and Necessity for the DuPont Project, October 1992.
- Docket No. 10894, Application of Gulf States Utilities Company to Reconcile Fuel Costs, Establish New Fixed Fuel Factor and Recover Its Under-Recovered Fuel Expense, August 1992.
- Docket No. 10883, Application of Brazos Electric Power Cooperative, Inc. for a Certificate of Convenience and Necessity for Proposed Generating Facilities, July 1992.
- Docket No. 10400, Application of Texas Utilities Electric Company for Approval of Its Notice of Intent, August 1991.
- Docket No. 10059, Notice of Intent by Brazos Electric Power Cooperative, Inc. to Apply for Certificate of Convenience and Necessity for Proposed Generating Facilities, May 1991.
- Docket No. 9850, Application of Houston Lighting and Power Company for Authority to Change Rates, February 1991.
- Docket No. 9491, Application of Texas-New Mexico Power Company for Authority to Change Rates, July 1990.
- Docket No. 9165, Application of El Paso Electric Company for Authority to Change Rates, February 1990.
- Docket No. 9119, Appeal of the Office of Public Utility Counsel of the City of Kerrville Municipal Utility Rate Action, August 1990.
- Docket No. 8868, Application of Brazos Electric Power Cooperative, Inc. to Change (Reduce) Rates, September 1989.
- Docket No. 8702, Application of Gulf States Utilities for Authority to Change Rates, July 1989.
- Docket No. 8425, Application of Houston Lighting and Power Company for Authority to Change Rates, May 1989.

Testimony Before the Texas Legislature:

- Testified as a resource witness before the Texas State House of Representatives Energy Resources Interim Committee on Environmental Externalities, February 21, 1996.

RESEARCH PAPERS AND PUBLICATIONS

- "Electric Power Industry Scope of Competition and Potentially Strandable Investment," Public Utility Commission of Texas Report to the 75th Texas Legislature. January 1997. Project team member and contributing author.
- "Spatial Variation in Electric Utility Customer Valuation of Environmental Externalities in Texas." Directed Research for completion of Master's degree, Texas State University-San Marcos, December 1996.
- "Public Participation as an Alternative to Monetization of Environmental Externalities in Electric Utility Resource Selection." Public Utility Commission of Texas Working Paper, September 1995.
- "Report of the Integrated Resource Planning Team on Externalities." Team leader and principal author of Public Utility Commission of Texas Report, January 1994.
- "A Conditional Demand Analysis of Residential Appliance Use in the Southwest U.S.," with Michael D. Robinson. Public Utility Commission of Texas Working Paper, February 1988. Presented for the program of the Southwestern Society of Economists, March 2-5, 1988 in San Antonio, TX.
- "Impacts of Texas-New Mexico Power's Conservation Information Programs," with Michael D. Robinson and Jeffrey I. Rosenblum. Published in EPRI EM-5452, *Proceedings Third National Conference on Utility Demand-Side Management Programs: Strategies in Transition*, June 16-18, 1987 in Houston, TX.
- "A Texas Study of the Effects of the National Appliance Energy Conservation Act of 1987." Public Utility Commission of Texas Working Paper, November 1986. Also published in the proceedings of *The Fourth Annual Symposium on Improving Energy Efficiency in Hot and Humid Climates*, September 15-16, 1987 in Houston, TX.
- "An Eight-Zone REEPS Model of the State of Texas with Conservation Analysis." Public Utility Commission of Texas Working Paper, April 1986.

The Energy Authority®

March 12, 2010

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Introduction and Summary

This letter report was prepared by The Energy Authority (TEA) at the request of Gainesville Regional Utilities (GRU) to explain the analysis that was performed by TEA. The analysis performed by TEA compares estimates of the market value of GRU's generation portfolio with and without the proposed Gainesville Renewable Energy Center (GREC).

Summary of Analysis

A regional multi-year production cost analysis of the combined Florida Regional Coordination Council (FRCC) and the Southern (SOCO) regions was preformed. The analysis consisted of simulating production cost with and without the GREC biomass plant, then comparing results of the two simulations. The individual units of the GRU system were dispatched into the market for each case and each received a revenue stream for their energy sold based on the hourly market clearing price (MCP) produced by the simulations. This revenue less the variable costs of production represents the net revenue to the GRU system for an individual unit. The net revenues were summed up across the GRU generation portfolio to produce the Total Net MCP Revenue for the GRU system.

The difference of the Total Net Revenue values between the two scenarios represents the energy production related benefit to the GRU system by having the "new" generation since that was the only change in the model assumptions.

Summary of Results

	Net Energy Benefit ($000)
2014	$22,275
2015	$16,886
2016	$18,090
2017	$19,606
2018	$20,862
2019	$21,546
2020	$24,391
2021	$26,469

2022	$29,155
2023	$33,132
2024	$37,119
Total	$269,531

Methodology

Overview of Market Analytics

The Market Analytics[i] model is a powerful electric utility production cost model that allows users to forecast electric market clearing prices by simulating the operation of individual generation units, utilities, loads and transmission area transfer limits within a particular geographic region while taking into account various system and operational constraints.

It incorporates sophisticated production cost optimization algorithms to formulate hourly market clearing prices within each transmission zone. For the regional analysis, all generating units are dispatched into the market as stand-alone entities and operated according to load and price signals within regional transmission and other operating constraints. The plants are dispatched if they are the "next least expensive" unit in the stack.

The MCP revenue is the revenue received by individual units for generating energy over the market study period. It is a gross payment and not "net of incremental costs" revenue.

Variable costs include all of the costs associated with the incremental dispatch of a generating resource. Variable costs include fuel, variable O&M, start-up costs and certain emission allowance costs. Fixed or sunk costs are not included in the analysis.

A portion of the net variable benefits would be realized directly by GRU ratepayers as a decrease in fuel costs. Rate treatment of the variable benefits is outside this studies scope.

The analysis does not include any economic impact of potential revenue from GRU selling Renewable Energy Certificates (RECs). Additionally, variable production costs do not include any consideration for potential greenhouse gas emissions allowances. Fixed costs or potential revenues from capacity sales are not addressed in this analysis.

Summary of Key Assumptions

Market footprint – Southern Company and the Florida markets.

Study period- the years 2014-2024.

Source of generation and load data – Model inputs supplied by Ventyx for all loads and generating resources in the footprint; utilized the latest model update.

Key fuel prices (e.g. NG) – Henry Hub natural gas prices for the study term were updated to reflect the 2010 EIO assumptions, with appropriate basis adjustments to points of delivery.

Handling of emissions cost (SO2, NOx) – Costs for both SO2 and NOx allowances were included in the model; CO2 allowance costs were not included in the analysis.

Description of TEA

The Energy Authority (TEA[®]) is the nation's leader in public power energy trading and risk management. We are wholly-owned and directed by our Public Power members who participate in our organization's decision-making.

Today, 39 public power utilities across the nation are TEA members and partners, representing more than 25,000 MW of combined generation assets with all fuel types.

[i] Market Analytics is a proprietary electric power production cost model owned by Ventyx.