BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF

RICHARD J. VENTO and DONALD P. WUCKER

ON BEHALF OF

JEA

DOCKET NO. 130203-EM

APRIL 2, 2014

Q. Mr. Vento, please state your name and business address.

A. My name is Richard J. Vento. My business address is 21 West Church Street, Jacksonville, Florida 32202.

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

A. I am employed by JEA. My current position is Director of Customer Solutions and Market Development.

Q. Please summarize your educational background and professional experience.

A. I hold a Bachelor of Science in Business Administration from the University of Florida. With more than 30 years in the utility industry, my experience includes electric production operations and maintenance, water and wastewater operations and maintenance, technology integration, load research and demand-side management (DSM).

Q. Mr. Wucker, please state your name and business address.

A. My name is Donald P. Wucker. My business address is 21 West Church Street, Jacksonville, Florida 32202.

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

A. I am employed by JEA. My current responsibility is DSM Portfolio Management.

Q. Please summarize your educational background and professional experience.

A. I hold a Bachelor of Science in Mechanical Engineering from the University of Florida. I am an actively licensed Professional Engineer (PE) in the State of Florida. I have also held a PE license in the states of Louisiana and Alabama, which are currently inactive. With more than 30 years in the energy industry, my experience includes the design of building mechanical systems such as heating, ventilation, air conditioning, refrigeration and plumbing systems for domestic, commercial and industrial applications. I have also been involved with a wide variety of energy retrofits including both as an engineer and as a contractor. My last 10 years of experience has been involved with the development and implementation of JEA's DSM programs.

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

A. The purpose of our testimony is to discuss: (1) how JEA is governed: (2) recent trends in JEA's system load growth: (3) JEA's proposed DSM goals and the process used to develop them; and (4) other issues identified in the Order

Consolidating Dockets and Establishing Procedure (OEP), Order No. PSC-13-0386-PCO-EU.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. Exhibit No. __ [RJV-1] is a copy of Richard Vento's resumé. Exhibit No. __ [DPW-1] is a copy of Donald Wucker's resumé. Exhibit No. __ [JEA-1] presents JEA's existing Florida Energy Efficiency and Conservation Act (FEECA) goals. Exhibit No.__[JEA-2] presents a list of the DSM and conservation programs included in JEA's existing DSM Plan as approved in Order No. PSC-10-0647-CO-EG. Exhibit No. ___[JEA-3] presents the fuel price projections considered in the cost-effectiveness evaluations. Exhibit No. ___[JEA-4] presents the economic and achievable potential for the base case evaluations as requested in the OEP. Exhibit No. __ [JEA-5] presents analysis of estimated bill impact to as required in the OEP. Exhibit No. ___[JEA-6] presents the economic potential for the sensitivity evaluations as requested in the OEP.

Q. How is JEA governed?

A. JEA is a municipal electric utility governed by a Board of Directors consisting of seven members appointed by the Mayor of the City of Jacksonville and approved by the City Council. The Board of Directors sets the rates and policies governing JEA's operations. The JEA operating budget requires City Council approval. JEA's board meetings are open to the general public and ratepayers are permitted to participate in board meetings. JEA's Board of Directors sets policies consistent with the best interests of JEA's customers and community.

Q. Please describe JEA's service territory.

A. JEA's service territory includes the City of Jacksonville and portions of St. Johns and Nassau Counties.

Q. Please describe the demographics of JEA's customer base.

A. JEA serves approximately 425,000 customers. JEA's customers are approximately 88 percent residential. Approximately 36 percent of Jacksonville's population lives in households whose income is less than twice the Federal Poverty Level ($31,460 for a family of two). For this reason, any impacts on rates resulting from implementation of DSM measures would have a disproportionate impact on low income customers. Furthermore, rental customers have less control over energy conservation efforts than homeowners.

Q. Please discuss how JEA's loads have changed since the last goal setting in 2009.

A. JEA's load growth has reduced significantly over the last 5 year period. JEA experienced a decline of approximately 6.6 percent in net energy for load (NEL) and approximately 16.5 percent in winter peak demand over the 2009 through 2013 period. JEA's average annual growth rates over the next 10 years are projected to be low at approximately 0.5 percent (NEL) and approximately 1.0 percent (winter peak demand).

Q. What are JEA's existing FEECA goals based on?

A. JEA's existing FFECA goals are based on continuation of the DSM and conservation programs that had been approved by JEA's Board at the time of the last goal-setting proceeding. JEA proposed goals of zero, but committed to continue current DSM program offerings. The Commission set goals for JEA based on its then-existing programs so as not to unduly increase rates. *See* Order No. PSC-10-0647-CO-EG. JEA's existing FEECA goals are presented in Exhibit No. __ [JEA-1]. The current program offerings in JEA's Commission-approved DSM Plan are summarized in Exhibit No. __ [JEA-2].

Q. What cost-effectiveness test or tests are appropriate for setting JEA's goals under FEECA?

A. Section 366.82, Florida Statutes, requires the Commission to consider, among other things, the costs and benefits to the participating ratepayers as well as the general body of ratepayers as a whole, including utility incentives and participant contributions. However, Section 366.82 does not dictate which cost-effectiveness test must be used to establish DSM goals. JEA believes the Commission should use both the Rate Impact Measure (RIM) and Participant test in setting DSM goals. When used in conjunction with each other, these tests fulfill the Commission's statutory obligations. Specifically, the Participant test includes all of the relevant benefits and costs that a customer who is considering participating in a DSM measure would consider; whereas the RIM test includes all of the relevant benefits and costs that all of the utility's customers as a whole would incur if the utility implements a particular measure.

Because the RIM test ensures no impact to customers' rates, it is particularly appropriate in establishing DSM goals for municipal utilities, such as JEA. Local governing is a fundamental aspect of public power. It provides the necessary latitude to make local decisions regarding the community's investment in energy efficiency that best suit our local needs and values. Local decisions are based on input from citizens who can speak out on electric power issues at governing board meetings. Accordingly, as the Commission has recognized in prior proceedings, it is appropriate to set goals based on RIM, but to defer to the municipal utilities' governing bodies to determine the level of investment in any non-RIM based measures. *See, In re: Adoption of Numeric Conservation Goals and Consideration of National Energy Policy Act Standards (Section 111)*, Order No. PSC-95-0461-FOF-EG (April 10, 1995).

Q. How did JEA evaluate DSM measures for this proceeding?

A. JEA evaluated DSM measures for this proceeding in accordance with the direction provided in the Commission Staff's June 17, 2013 workshop on the 2014 Conservation Goals and the minimum testimony requirements set forth in the OEP.

Q. Based on the results of the evaluation, what is JEA proposing as its FEECA goals?

A. As further discussed later in this testimony, the evaluations demonstrated that no residential DSM measures passed the RIM test. Although some commercial/ industrial measures passed the RIM test, the potential energy savings are so small (0.7 to 0.9 MW) and spread over so many measures (49) that it would be impractical from a design standpoint to develop a DSM plan to cost-effectively achieve such *de minimus* levels of potential. Accordingly, JEA is proposing goals of 0 MW (summer and winter) and 0 MWh (annual energy) for both the residential and commercial/industrial classes.

Q. Would it be appropriate to establish goals in this proceeding based on JEA's current conservation programs?

A. No. For the 2009 goals, the rate impact associated with JEA's then-existing conservation programs was acceptable to JEA's Board of Directors. Since that time, however, several market factors have changed, including much lower load growth as discussed above, as well as other factors that influence the cost-effectiveness of DSM measures (such as codes and standards). Taken together, these market factors have placed continued upward pressure on rates. Accordingly, JEA is in the process of revising its conservation programs based upon JEA Board policy. Because that effort is ongoing, it would not be appropriate to establish goals based on JEA's current conservation programs.

Q. Please explain the process used to update the 2009 Technical Potential Study.

A. The 2009 Technical Potential Study (TPS) was updated using the following three step process:

Step 1: Adjust existing measures by removing from the 2009 TPS those baseline measures rendered obsolete by changes to codes and standards, establishing new baseline measures to replace those that became obsolete, and reducing the demand and energy of all dependent measures related to the new baseline measure.

Step 2: Add new measures that are commercially-viable competing and complimentary measures that were not included in the 2009 TPS, and calculate the respective demand and energy impacts of those new measures relative to the appropriate baseline measure.

Step 3: Adjust for marketplace changes by incorporating the effect of overall service area growth for 2007 (the last year of actual data reflected in the 2009 TPS) through 2012, and reducing overall demand and energy potential to reflect the impact of JEA's DSM programs from 2007 through 2012.

Q. Ultimately, how many DSM measures were identified for analysis?

A. The study considered 275 unique energy efficiency (EE) measures (including 60 residential measures, 91 commercial measures, and 124 industrial measures), seven (7) unique DR measures (five (5) residential measures and two (2) commercial/industria1 measures), and three (3) unique PV measures (two (2) residential and one (1) commercial).

Q. How was the timing of avoidable capacity additions determined?

A. The timing of avoidable capacity additions was determined by analyzing the balance of JEA's existing generating resources (including owned generating units as well as power purchases) and JEA's firm peak demand projections to determine when additional capacity is required to maintain a 15 percent reserve margin. The balance of loads and resources was analyzed over the 2014 through 2043 period and indicated additional capacity will initially be required to maintain reserve margins in the year 2036. All avoided capacity additions were modeled as simple cycle combustion turbines. Avoided capacity additions were projected to occur in the years 2036, 2038, 2040, and 2043.

Q. Please discuss how the total avoided costs per kW were calculated.

A. Total avoided costs per kW were calculated by adding the avoided capital costs per kW to the avoided fixed O&M costs per kW for each unit addition. The total annual avoided costs were calculated by multiplying the costs per kW by the kW output of the combustion turbines, and the resulting total costs for each unit addition were aggregated for all unit additions. The resulting total annual avoided costs were then divided by the total annual avoided capacity, and the annual total avoided costs per kW for all avoided units were used to develop economic potential and achievable potential estimates.

Q. Please discuss the base case fuel price forecast.

A. Exhibit No. __ [JEA-3] provides a summary of JEA's current fuel price projections for natural gas, coal (including a blend of petroleum coke for JEA's Northside solid fuel units), uranium, residual fuel oil and diesel fuel. These projections were developed utilizing information obtained from a variety of sources routinely utilized in the utility industry, including U.S. Energy Information Administration (natural gas, residual oil, and diesel fuel), PIRA Energy Group (coal and petroleum coke), and the IntercontinentalExchange (coal).

Q. Did JEA consider high and low fuel price sensitivities?

A. Yes. In addition to the base case fuel price forecasts, JEA considered the high and low fuel price sensitivities. The high and low fuel price projections provide a band of plus/minus 25 percent around the base case fuel price projections. Exhibit No. __ [JEA-3] includes the base, high, and low fuel price projections.

Q. How were marginal energy costs developed?

A. JEA performed detailed production cost modeling using the PROSYM production cost model, which is recognized as an industry standard production model and was used in JEA's 2009 FEECA goal setting docket. Marginal energy costs were extracted from the model for each year for the base, high, and low fuel price sensitivities. These costs were used in developing the economic and achievable DSM potential.

Q. How was economic potential defined and estimated for this study?

A. We utilized the same methodology used for the 2009 conservation goals to determine economic potential for this proceeding. Economic potential was defined as the technical potential of all measures determined to be cost-effective according to two different cost-effectiveness tests, the RIM test and the TRC test. In the RIM "portfolio" case, measures were defined as being cost-effective if the calculated RIM value was greater than or equal to 1.01. Measures with RIM values less than

1.01 were excluded from the RIM "portfolio" and screened from the achievable potential analysis. Likewise, in the TRC "portfolio" case, measures were defined as being cost-effective if the calculated TRC value was greater than or equal to 1.01. Measures with TRC values less than 1.01 were excluded from the TRC "portfolio" and screened from the achievable potential analysis.

It is important to note that for the purpose of evaluating cost-effectiveness to estimate economic potential, the measure-specific RIM values were calculated without administrative costs or incentive costs in the denominator. Similarly, the measure-specific TRC values were calculated without administrative costs in the denominator. Incentives are not considered in the TRC test.

Q. How did the analysis account for free-riders?

A. In addition to the economic screening based on the RIM and TRC tests, measures that demonstrated simple payback periods of less than 2 years with no incentive applications were excluded from the RIM and TRC "portfolios" and screened from the achievable potential analyses. Sensitivity evaluations were performed in order to evaluate the impact of shorter (1 year payback) and longer (3 year payback) free-ridership exclusion periods in accordance with the minimum testimony requirements set forth in the OEP.

Q. What incentive scenarios were defined for this study?

A. Three measure incentive scenarios were considered – low (up to 33 percent), mid (up to 50 percent), and high (up to 100 percent), but not to the extent that incentives resulted in less than a 2 year payback period – for the TRC and RIM portfolios, respectively.

For the RIM portfolio, the measure incentives in the high incentive cases were defined as the lesser of the incentive level that produces a simple payback period to the customer of two years or the maximum incentive allowable that produces a RIM ratio of 1.01 (max RIM). The measure incentives in the mid case were defined as the lesser of 50 percent of incremental measure cost, max RIM, or the incentive level that produces a simple payback period to the customer of two years. The measure incentives in the low case were defined as the lesser of 33 percent of incremental measure cost, max RIM, or the incentive level that produces a simple payback period to the customer of two years..

For the TRC portfolio, the measure incentives in the high case were defined as the lesser of the incentive level that produces a simple payback period to the customer of two years or 100 percent incremental measure cost (max TRC). The measure incentives in the mid case were defined as the lesser of 50 percent of incremental cost or the incentive level that produces a simple payback period to the customer of two years. The measure incentives in the low case were defined as the lesser of 33 percent of incremental cost or the incentive level that produces a simple payback period to the customer of two years.

Q. What was the next step in the development of achievable potential?

A. After cost-effectiveness screenings and incentive level estimation was complete, the next step in the study was to forecast customer adoption of all passing measures and estimate the energy and peak demand savings impacts of utility-funded incentive programs for the period 2015-2024.

Q. How was achievable potential estimated for the cost-effective measures?

A. JEA contracted with Itron to estimate achievable potential using the same model (DSM ASSYST) and methodology as was utilized in JEA's 2009 goals docket (Docket No. 080413). The DSM ASSYST model was developed in the mid-1990s and has been used on a wide variety of EE potential and goals-setting related projects over the past decade. The model has a number of important features and characteristics that make it one of the leading, if not the leading, model of this type in the industry. These features include:

- Incorporation of both program information and incentive effects on measure adoption;
- Stock accounting of both physical stock and the fraction of the remaining market that is aware and knowledgeable of each measure;
- Measure adoption curves that reflect both direct and indirect economic factors;
- Internal methodological consistency between forecasts of program adoptions and naturally-occurring adoptions; and
- The ability to assign and calibrate adoption curves to individual measures.

Itron used a method of estimating adoption of EE measures that applies to both program and naturally-occurring analyses. The naturally occurring analysis includes "free riders" and is an estimate of the amount of efficiency adoptions predicted to occur without further program interventions. Whether as a result of natural market forces or aided by a program intervention, the rate at which measures are adopted is modeled in the method as a function of the following factors:

- The availability of the adoption opportunity as a function of capital equipment turnover rates and changes in building stock over time;
- Customer awareness and knowledge of the efficiency measure;
- The cost-effectiveness of the efficiency measure; and
- The relative importance of indirect costs and benefits associated with the efficiency measure.

Only measures that pass the measure screening criteria were put into the penetration model for estimation of customer adoption.

Q. Are the methodology and models used to develop achievable potential estimates analytically sound?

A. Yes. The methods and models used have a history of success because they appropriately blend theory and practice. The models use advanced stock and awareness accounting along with measure-specific adoption curves that reflect real-world differences in end user adoption of efficiency measures as a function of direct and indirect measure attributes.

Q. Have these methodologies and models been relied upon by other commissions or governmental agencies?

A. Yes, these methods and models have been used to develop potential estimates and goals in a variety of jurisdictions in addition to being used in Florida's FEECA goal setting process in 2009. For example, the methods and models were used to conduct the potential studies in California that were used by the California Public Utilities Commission (CPUC) to set energy efficiency goals for 2004-2011. The methods and models were also used to complete a report on energy efficiency goals for the Texas Legislature pursuant to a contract with the PUCT. The methods and models have been used for many other related projects including those for Xcel Energy (Colorado), PNM, Idaho Power, Los Angeles Department of Water & Power, and Northwestern Energy.

Q. Do JEA's proposed goals adequately reflect the costs and benefits to customers participating in the measure, pursuant to Section 366.82(3)(a), F.S?

A. Yes. JEA's proposed goals are based on forecasts of achievable potential that are driven primarily by measure-level assessments of cost-effectiveness to customers. Specifically, customer cost-effectiveness is assessed using the Participant Test, where benefits are calculated based on customer bill savings and costs are based on participant costs of acquiring and installing the energy efficiency measure (net of utility program incentives). Both the participant benefits and participant costs are assessed on present value basis over the life of the measure.

Q. Do the Company's proposed goals adequately reflect the costs and benefits to the general body of ratepayers as a whole, including utility incentives and participant contributions, pursuant to Section 366.82(3)(b), F.S.?

A. Yes. JEA's proposed goals are based on achievable potential that included consideration of the costs and benefits to the general body of ratepayers as a whole, including utility incentives and participant contributions, through use of the RIM and Participant tests.

Q. Do JEA's proposed goals adequately reflect the need for incentives to promote both customer-owned and utility-owned energy efficiency and demand-side renewable energy systems, pursuant to Section 366.82, F.S.?

A. Yes. We have comprehensively analyzed customer-owned energy efficiency measures and none were found to be cost-effective. JEA's load forecast reflects the impacts of net metering associated with customer-owned rooftop solar photovoltaic (PV) systems, and this load forecast was used as the basis for the cost-effectiveness analysis performed for this Docket. As such, incentives to promote customer-owned demand-side renewable energy systems are adequately reflected in JEA's proposed goals. Utility-owned energy efficiency and renewable energy systems are supply-side issues.

Q. **Do JEA's proposed goals adequately reflect the costs imposed by State and Federal regulations on the emission of greenhouse gases, pursuant to Section 366.82(3)(d), F.S.?**

A. There currently are no costs imposed by State and Federal regulations on the emissions of greenhouse gases (GHG). Although the US Environmental Protection Agency (EPA) is expected to propose GHG emissions guidelines for existing power plants later this year, there is no clear indication of what those guidelines may ultimately require or associated costs. EPA has proposed GHG new source performance standards for new units, but JEA does not forecast any new units until well beyond the 2015 through 2024 goal setting period. While there is much speculation on the potential for greenhouse gas emissions regulation, it would be inappropriate to establish DSM goals that would increase customer rates based on speculation related to yet-to-be defined potential regulations of emissions of greenhouse gases.

Q. Do the Company's proposed goals use an appropriate methodology in the consideration of free riders?

A. Yes. The screening criteria based on simple payback to the customer (2 years or less) were designed to remove measures from the achievable potential forecasts that exhibit the key characteristic most associated with high levels of free-ridership in utility rebate programs, i.e. measures with naturally high levels of cost-effectiveness to the customer. The sensitivity of total achievable potential to this particular screening criterion was tested using alternative simple payback screening values (1 year and 3 years). In addition to this screening step, the naturally occurring analysis performed in estimating achievable potential represents an estimate of the amount of "free riders" that are reasonably expected to participate in the particular program offerings simulated. In this sense, the payback-based screening criteria were implemented to develop portfolios with necessarily low free-ridership levels, and within the achievable potential forecasts for those portfolios, the forecasting methodology produces explicit estimates of the expected level of free-ridership within those programs.

Q. Please discuss the economic and achievable potential for residential and commercial/industrial demand and energy reductions for the base fuel forecast, including the effects of free-ridership, for both RIM-based and TRC-based evaluations.

A. Exhibit No. __ [JEA-4] summarizes the mathematical results of the cost effective analysis. The analysis results indicate no achievable potential for the residential and commercial classes when utilizing the RIM test while indicating minimal achievable potential for the industrial class. A review of the measures that make up the industrial class's RIM test based achievable potential reveals the following:

- The 0.9 MW (summer), 0.7 MW (winter), and 6.3 GWh (annual energy) values represent the sum of potential across 49 measures, resulting in an average potential of 0.13 GWh and 0.18 MW savings per measure.
- The incentive levels available to these measures average less than 2% of the incremental cost of the measure.

Given these characteristics, the minimal achievable results for the industrial class represent the cost effectiveness model's mathematical result. While correct, they are impractical from both a goal-setting and a program design point of view. It is impractical to establish programs to acquire *di minimus* levels of potential. It is doubtful that customer would respond significantly to incentives equivalent to two

(2) percent of incremental cost and such minor rebate levels would be difficult to market effectively. Together, these characteristics would result in programs with high implementation costs relative to the size of efficiency resource being acquired. Furthermore, it is reasonable to expect high levels of participant free ridership in such industrial programs (compared to residential or commercial programs), as has been the history of such programs administered by utilities across North America.

Q. Please provide an estimate of the average residential customer bill impact for the RIM-based and TRC-based achievable portfolios.

A. There is no incremental impact based on the RIM achievable portfolio, as there are no DSM measures that pass the RIM test for JEA. However, Exhibit No. __ [JEA-5] presents analysis of the estimated bill impacts on residential customers for the TRC achievable portfolio. As shown in Exhibit No. __ [JEA-5], the estimated bill impact of the TRC achievable portfolio would be approximately 18.5 percent by 2024.

Q. Please provide the economic potential for residential and commercial/industrial winter and summer demand and annual energy savings for the following sensitivities, for both a RIM-based evaluation and a TRC-based evaluation: (1) higher fuel prices, (2) lower fuel prices, (3) shorter free-ridership exclusion period, and (4) longer free-ridership exclusion periods.

A. That information is presented in Exhibit No. __ [JEA-6].

Q. How are supply-side efficiencies incorporated into JEA's planning process and how do they impact DSM programs?

A. JEA continually monitors the operation of its generating units and determines methods to utilize the system in the most efficient manner. Improvements to the efficiency of supply-side resources (i.e. lower operating costs) should reduce the cost-effectiveness of DSM programs, all else being equal.

Q. What goals should be established for increasing the development of demand-side renewable energy systems, pursuant to Section 366.82(2), F.S.?

A. The cost-effectiveness analysis of demand-side renewable energy systems shows that they are not cost-effective. Therefore, no goals should be established.

Q. Should the Company's existing Solar Pilot Programs be extended and, if so, should any modifications be made to them?

A. JEA was not required under the 2009 FEECA goals to offer Solar Pilot Programs.

Q. Does this conclude your testimony?

A. Yes it does.

Richard Vento
March – 2014

Length of Service at JEA:
31 Years

Current Position and Responsibilities:
Director, Customer Solutions and Market Development
Responsible for:
- Development and operation of demand side management programs.
- Development and operation of programs to improve the customer experience.

Experience:
Director of New Technologies
- Evaluation and recommendation of emerging technologies that benefit the utility.

Director of Water and Wastewater Operations and Maintenance
- Managed water and wastewater treatment facilities.

Manager, Generation Station Systems
- Managed the maintenance of multiple generation units and components

Instrument and Controls Supervisor
- Supervised the Instrument and Controls Maintenance Area

Education:
Bachelor of Science in Business Administration

Donald Wucker

JEA

Qualifications and Experience:

Summary: 30 years of progressive experience in building energy systems. Over 25 years as a licensed professional engineer and certified mechanical contractor in the State of Florida.

Areas of Experience

- Engineering and Economic Analysis of Building Energy Systems including Design, Operations and Maintenance
- Design of Building Mechanical, Plumbing and Fuel Systems including Residential, Commercial and Industrial
- Use of Engineering and Economic Software Modeling Tools
- Implementation of Demand Side Management Programs

Experience

JEA 2005-Present

Management of Demand Side Management Portfolio

Responsible for:

- Economic analysis of demand side management measures, programs and portfolio
- Engineering and economic support for the design, implementation and operation of utility sponsored demand side management programs

JEA 2004-2005

Research Project Consultant

Responsible for the identification, evaluation and business case development of emerging technologies that would benefit the utility

Winn-Dixie Stores, Inc. 1997-2004

Senior Mechanical Engineer

Responsible for the design and implementation of commercial and industrial mechanical systems to support manufacturing and logistics facilities which included the signing and sealing of specifications and plans for industrial ammonia systems

Reynolds Smith & Hills 1994-1997

Senior Mechanical Engineer

Managed a team of project engineers and designers to develop plans for various building mechanical systems and energy studies which included the signing and sealing of specifications and plans

Sverdrup Corporation 1993-1994/1990–1991

Senior Mechanical Engineer

Managed a team of project engineers and designers to develop plans for various building mechanical systems which included the signing and sealing of specifications and plans

Experience (cont.)

Honeywell Corporation 1991-1993
Facilities Planner
Worked with schools, industrial plants, and hospitals to analyze the operation of facilities, to perform energy audits, develop guaranteed energy retrofits, evaluate maintenance programs, analyze building comfort/health problems and engineer corrective designs

St. Luke's Hospital 1990-1990
Mechanical Engineer
Provided engineering, supervision, and design expertise to maintain and optimize mechanical and utility systems

Mayport Naval Station 1988-1990
General Engineer
Provided a multi-disciplined knowledge of engineering principles and practices concerning facility design, construction, maintenance, and support services

The Haskell Company 1983-1988
Mechanical Engineer
Engineered specifications plans for various building mechanical systems

C. J. Wucker & Sons Refrigeration 1975-1983
Service Technician
Repaired and maintained commercial heating, ventilation, air conditioning and refrigeration systems

Education

Bachelor of Science in Mechanical Engineering from University of Florida
Associate of Art in Pre-Engineering Florida Junior College

Memberships

American Society of Heating Refrigeration and Air Conditioning Engineers
Association of Energy Engineers
Association of Energy Service Professionals
International Institute of Ammonia Refrigeration
Toastmasters International
PI TAU SIGMA Honorary Mechanical Engineering Society

Commission-Approved Conservation Goals for JEA

	Residential				Commercial/Industrial		
Year	Summer (MW)	Winter (MW)	Annual (GWh)		Summer (MW)	Winter (MW)	Annual (GWh)
2010	1.2	1.0	5.4		0.6	0.4	10.1
2011	1.2	1.0	5.4		0.6	0.4	10.1
2012	1.2	1.0	5.4		0.6	0.4	10.1
2013	1.2	1.0	5.4		0.6	0.4	10.1
2014	1.2	1.0	5.4		0.6	0.4	10.1
2015	1.2	1.0	5.4		0.6	0.4	10.1
2016	1.2	1.0	5.4		0.6	0.4	10.1
2017	1.2	1.0	5.4		0.6	0.4	10.1
2018	1.2	1.0	5.4		0.6	0.4	10.1
2019	1.2	1.0	5.4		0.6	0.4	10.1
Total	12.0	10.0	54.0		6.0	4.0	101.0

Current JEA FEECA Programs

A. Residential FEECA Programs

- Residential Energy Audit Program
- Residential Energy Efficient Products
- Green Built Homes of Florida
- Residential Solar Water Heating
- Residential Solar Net Metering
- Neighborhood Efficiency Program

B. Commercial FEECA Programs

- Commercial Energy Audit Program
- Commercial Energy Efficient Products
- District Chilled Water Program
- Commercial Solar Net Metering

Fuel Price Projections for JEA FEECA - Base Fuel Prices

	Base Case - Nominal $/MMBtu						
Year	Scherer	SJRPP	Northside	Natural Gas	Residual Fuel Oil	Distillate Fuel Oil	Nuclear
2014	2.49	3.31	3.59	4.85	15.18	22.54	0.60
2015	2.51	3.40	3.69	4.98	15.78	21.70	0.63
2016	2.60	3.53	3.83	5.58	15.47	21.50	0.65
2017	2.68	3.69	3.96	6.04	15.59	21.73	0.68
2018	2.78	3.76	4.03	6.69	16.05	22.53	0.71
2019	2.94	3.81	4.09	6.67	16.76	23.66	0.74
2020	3.03	3.93	4.21	6.47	17.62	24.82	0.77
2021	3.12	4.04	4.34	7.02	18.56	26.05	0.81
2022	3.21	4.17	4.47	7.41	19.54	27.33	0.84
2023	3.31	4.29	4.60	7.79	20.57	28.62	0.88
2024	3.42	4.42	4.73	8.22	21.57	29.92	0.92
2025	3.52	4.55	4.87	8.60	22.63	31.25	0.96
2026	3.63	4.68	5.01	9.01	23.70	32.49	1.00
2027	3.74	4.82	5.16	9.43	24.79	33.91	1.04
2028	3.86	4.97	5.31	9.84	25.90	35.17	1.09
2029	3.96	5.11	5.47	10.38	27.01	36.60	1.14
2030	4.07	5.27	5.63	11.08	27.95	37.93	1.19
2031	4.18	5.42	5.79	11.59	29.14	39.42	1.24
2032	4.29	5.58	5.96	12.22	30.43	41.02	1.29
2033	4.41	5.75	6.14	12.93	31.80	42.80	1.35
2034	4.53	5.92	6.32	13.54	33.28	44.56	1.41
2035	4.65	6.10	6.50	14.24	34.72	46.31	1.47
2036	4.78	6.28	6.69	15.10	36.06	48.03	1.54
2037	4.91	6.47	6.89	15.56	37.60	49.88	1.61
2038	5.04	6.66	7.09	16.03	39.14	51.74	1.68
2039	5.18	6.86	7.30	16.77	40.93	54.06	1.75
2040	5.32	7.06	7.51	17.68	42.93	56.42	1.83
2041	5.32	7.06	7.51	17.68	42.93	56.42	1.83
2042	5.32	7.06	7.51	17.68	42.93	56.42	1.83
2043	5.32	7.06	7.51	17.68	42.93	56.42	1.83

Fuel Price Projections for JEA FEECA High Fuel Price Sensitivity

	High Fuel - Nominal $/MMBtu						
Year	Scherer	SJRPP	Northside	Natural Gas	Residual Fuel Oil	Distillate Fuel Oil	Nuclear
2014	3.11	4.14	4.48	6.06	18.97	28.17	0.75
2015	3.14	4.26	4.62	6.22	19.72	27.13	0.78
2016	3.25	4.41	4.79	6.97	19.34	26.87	0.82
2017	3.35	4.62	4.95	7.55	19.48	27.16	0.85
2018	3.47	4.70	5.04	8.36	20.06	28.16	0.89
2019	3.67	4.77	5.12	8.34	20.96	29.57	0.93
2020	3.79	4.91	5.27	8.08	22.02	31.02	0.97
2021	3.90	5.06	5.42	8.78	23.20	32.56	1.01
2022	4.02	5.21	5.58	9.26	24.42	34.16	1.05
2023	4.14	5.36	5.74	9.74	25.71	35.78	1.10
2024	4.27	5.52	5.91	10.28	26.96	37.41	1.15
2025	4.40	5.69	6.09	10.75	28.29	39.06	1.20
2026	4.54	5.85	6.26	11.26	29.63	40.61	1.25
2027	4.68	6.03	6.45	11.79	30.98	42.38	1.30
2028	4.82	6.21	6.64	12.30	32.37	43.97	1.36
2029	4.95	6.39	6.83	12.98	33.76	45.75	1.42
2030	5.08	6.58	7.03	13.85	34.94	47.42	1.48
2031	5.22	6.78	7.24	14.49	36.42	49.27	1.55
2032	5.36	6.98	7.45	15.27	38.03	51.28	1.62
2033	5.51	7.19	7.67	16.16	39.75	53.50	1.69
2034	5.66	7.40	7.89	16.92	41.60	55.70	1.76
2035	5.81	7.62	8.13	17.79	43.40	57.89	1.84
2036	5.97	7.85	8.36	18.87	45.07	60.03	1.92
2037	6.14	8.08	8.61	19.45	47.00	62.35	2.01
2038	6.30	8.33	8.86	20.03	48.93	64.67	2.10
2039	6.47	8.57	9.12	20.96	51.16	67.57	2.19
2040	6.65	8.83	9.39	22.10	53.66	70.53	2.29
2041	6.65	8.83	9.39	22.10	53.66	70.53	2.29
2042	6.65	8.83	9.39	22.10	53.66	70.53	2.29
2043	6.65	8.83	9.39	22.10	53.66	70.53	2.29

Fuel Price Projections for JEA FEECA Low Fuel Price Sensitivity

	Low Fuel - Nominal $/MMBtu						
Year	Scherer	SJRPP	Northside	Natural Gas	Residual Fuel Oil	Distillate Fuel Oil	Nuclear
2014	1.87	2.49	2.69	3.64	11.38	16.90	0.45
2015	3.14	4.26	4.62	6.22	19.72	27.13	0.78
2016	3.25	4.41	4.79	6.97	19.34	26.87	0.82
2017	3.35	4.62	4.95	7.55	19.48	27.16	0.85
2018	3.47	4.70	5.04	8.36	20.06	28.16	0.89
2019	3.67	4.77	5.12	8.34	20.96	29.57	0.93
2020	3.79	4.91	5.27	8.08	22.02	31.02	0.97
2021	3.90	5.06	5.42	8.78	23.20	32.56	1.01
2022	4.02	5.21	5.58	9.26	24.42	34.16	1.05
2023	4.14	5.36	5.74	9.74	25.71	35.78	1.10
2024	4.27	5.52	5.91	10.28	26.96	37.41	1.15
2025	4.40	5.69	6.09	10.75	28.29	39.06	1.20
2026	4.54	5.85	6.26	11.26	29.63	40.61	1.25
2027	4.68	6.03	6.45	11.79	30.98	42.38	1.30
2028	4.82	6.21	6.64	12.30	32.37	43.97	1.36
2029	4.95	6.39	6.83	12.98	33.76	45.75	1.42
2030	5.08	6.58	7.03	13.85	34.94	47.42	1.48
2031	5.22	6.78	7.24	14.49	36.42	49.27	1.55
2032	5.36	6.98	7.45	15.27	38.03	51.28	1.62
2033	5.51	7.19	7.67	16.16	39.75	53.50	1.69
2034	5.66	7.40	7.89	16.92	41.60	55.70	1.76
2035	5.81	7.62	8.13	17.79	43.40	57.89	1.84
2036	5.97	7.85	8.36	18.87	45.07	60.03	1.92
2037	6.14	8.08	8.61	19.45	47.00	62.35	2.01
2038	6.30	8.33	8.86	20.03	48.93	64.67	2.10
2039	6.47	8.57	9.12	20.96	51.16	67.57	2.19
2040	6.65	8.83	9.39	22.10	53.66	70.53	2.29
2041	6.65	8.83	9.39	22.10	53.66	70.53	2.29
2042	6.65	8.83	9.39	22.10	53.66	70.53	2.29
2043	6.65	8.83	9.39	22.10	53.66	70.53	2.29

	RIM Evaluation			TRC Evaluation		
Economic Potential - Base Fuel	**Summer MW**	**Winter MW**	**Annual GWh**	**Summer MW**	**Winter MW**	**Annual GWh**
Residential	0	0	0	47.3	12.7	209.1
Commercial/Industrial	11.8	7.4	85.1	58.2	16.0	278.3
Achievable Potential - Base Fuel	**Summer MW**	**Winter MW**	**Annual GWh**	**Summer MW**	**Winter MW**	**Annual GWh**
Residential	0	0	0	14.0	2.8	49.8
Commercial/Industrial	0.9	0.7	6.3	10.1	2.5	50.9

Estimated Cumulative Annual Bill for 2015 through 2024 Residential Customers - DSM Measures Passing both TRC and Participant Tests										
Calendar Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Percent Increase	1.2%	2.9%	5.0%	7.2%	9.4%	11.5%	13.4%	15.3%	17.0%	18.5%

	RIM Evaluation			TRC Evaluation		
Economic Potential - High Fuel	**Summer MW**	**Winter MW**	**Annual GWh**	**Summer MW**	**Winter MW**	**Annual GWh**
Residential	0	0	0	56.26	21.36	328.98
Commercial/Industrial	11.67	7.30	84.29	64.18	19.04	313.52
Economic Potential - Low Fuel	**Summer MW**	**Winter MW**	**Annual GWh**	**Summer MW**	**Winter MW**	**Annual GWh**
Residential	0	0	0	30.28	6.81	136.74
Commercial/Industrial	0	0	0	52.02	17.12	261.27
Economic Potential - 1-Year Free-Ridership Exclusion	**Summer MW**	**Winter MW**	**Annual GWh**	**Summer MW**	**Winter MW**	**Annual GWh**
Residential	0	0	0	79.94	52.74	398.61
Commercial/Industrial	24.68	18.23	185.95	95.65	42.00	523.47
Economic Potential - 3-Year Free-Ridership Exclusion	**Summer MW**	**Winter MW**	**Annual GWh**	**Summer MW**	**Winter MW**	**Annual GWh**
Residential	0	0	0	12.73	7.26	65.25
Commercial/Industrial	11.31	7.08	81.18	43.91	12.62	195.86