Hopping Green & Sams
Attorneys and Counselors

Writer's Direct Dial No.
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April 12, 2019

BY E-FILING

Adam Teitzman
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399

Re: *In re: Commission review of numeric conservation goals (JEA)*,
Docket No. 20190020-EG

Dear Mr. Teitzman:

Enclosed for filing on behalf of JEA in the above docket are the following:

- JEA's Petition for Approval of Numeric Conservation Goals;
- Pre-filed Testimony of **Donald P. Wucker**, along with attached Exhibit Nos. ____ [DPW-1] through ___ [DPW-7]; and
- Pre-filed Testimony of **Bradley E. Kushner**, along with attached Exhibit Nos. ____ [BEK-1] through ___ [BEK-3].

By copy of this letter, the enclosed documents have been furnished to the parties on the attached certificate of service by electronic mail.

Please acknowledge receipt and filing of the above. If you have any questions concerning this filing, please contact me at 425-2359.

Thank you for your assistance in connection with this matter.

Very truly yours,

HOPPING GREEN & SAMS, P.A.

By: _____
Gary V. Perko
Brooke E. Lewis

Attorneys for JEA

GVP/mee
Enclosures

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by electronic delivery, this 12th day of April, 2019, to the following:

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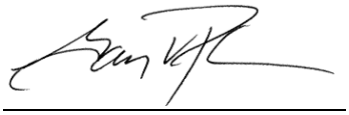

Attorney

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Commission review of numeric conservation goals (Florida Power & Light Company).	DOCKET NO. 20190015-EG
In re: Commission review of numeric conservation goals (Gulf Power Company).	DOCKET NO. 20190016-EG
In re: Commission review of numeric conservation goals (Florida Public Utilities Company).	DOCKET NO. 20190017-EG
In re: Commission review of numeric conservation goals (Duke Energy Florida, LLC).	DOCKET NO. 20190018-EG
In re: Commission review of numeric conservation goals (Orlando Utilities Commission).	DOCKET NO. 20190019-EG
In re: Commission review of numeric conservation goals (JEA).	DOCKET NO. 20190020-EG
In re: Commission review of numeric conservation goals (Tampa Electric Company).	DOCKET NO. 20190021-EG DATED: April 12, 2019

JEA'S PETITION FOR APPROVAL OF
NUMERIC CONSERVATION GOALS

JEA, by and through its undersigned attorneys, files this petition with proposed numeric conservation goals and requests that the Florida Public Service Commission (Commission) accept, approve and adopt JEA's proposed goals pursuant to section 366.82, Florida Statutes, and Rules 25-17.001 and 25-17.0021, Florida Administrative Code. In support, JEA states:

1. JEA is subject to section 366.82, Florida Statutes, part of the Florida Energy Efficiency and Conservation Act (FEECA), which requires the Commission to adopt and periodically review goals to increase the efficiency of energy consumption, increase the development of demand side renewable energy systems, reduce and control the growth rates of

electric consumption and weather sensitive peak demand, and encourage the development of demand side renewable energy resources.

2. All notices, pleadings and other communications required to be served on the petition should be directed to:

Gary V. Perko
Brooke E. Lewis
Hopping Green & Sams, P.A.
119 S. Monroe St., Suite 300
P.O. Box 6526 (32314)
Tallahassee, FL 32301
gperko@hgslaw.com
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3. The testimony of Donald P. Wucker and Bradley E. Kushner filed contemporaneously with this petition, as well as the testimony of Jim Herndon filed separately, explain the methodology by which JEA's proposed goals were derived and, along with the exhibits attached to the testimony, satisfy the minimum filing requirements established in the Order Consolidating Dockets and Establishing Procedure entered on February 18, 2019. *See* Order No. PSC-2019-0062-PCO-EG.

4. As discussed in the testimony of Mr. Wucker and Mr. Kushner, JEA generally utilized the same methodology used in the 2009 and 2014 goal-setting proceedings to identify and evaluate potential conservation measures. Based on the results of those evaluations, JEA proposes FEECA goals of 0 MW (summer and winter) and 0 MWh (annual energy) for both the residential and commercial/industrial classes.

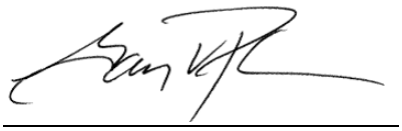
5. JEA knows of no material facts in dispute regarding the relief requested herein.

WHEREFORE, JEA requests that the Florida Public Service Commission enter an order approving and establishing the Company's proposed numeric conservation goals for the period 2020-2029 pursuant to section 366.82, Florida Statutes, and Rule 25-17.0021, Florida

Administrative Code, and grant such other relief as is just and reasonable under the facts and law as determined by the Commission.

Respectfully submitted this 12th day of April, 2019.

HOPPING GREEN & SAMS, P.A.



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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF DONALD P. WUCKER

ON BEHALF OF

JEA

DOCKET NO. 20190020-EG

APRIL 12, 2019

Q. Please state your name and business address.

A. My name is Donald P. Wucker. My business address is 21 West Church Street, Jacksonville, Florida 32302.

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

A. I am employed by JEA. My current responsibility is DSM Portfolio Management. Over the past 15 years my duties have progressed to include DSM Measure and Program Analysis and serving as a key strategic guiding resource on related industry and market initiatives. Additionally, I proactively anticipate expected changes in corporate planning and act to identify, incorporate and document changes as needed.

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 also held a PE license in the states of Louisiana and Alabama, which are currently inactive. With more than 35 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. For the past 15 years I have been given increasing responsibility for the development and implementation of JEA's DSM programs. I submitted pre-filed direct testimony on behalf of JEA when the Commission last established DSM goals for JEA in Docket No. 20130203-EM.

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

A. The purpose of my testimony is to discuss (1) how JEA is governed; (2) recent trends in JEA's system load growth; and (3) JEA's proposed DSM goals and the process used to develop them. My testimony includes discussion related to JEA's existing conservation and DSM programs, how the base load forecast was developed, how supply-side efficiencies are incorporated into JEA's planning process, and how JEA's proposed goals encourage demand-side renewable energy systems.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. Exhibit No. __ [DPW-1] is a copy of my resume. Exhibit No. __ [DPW-2] presents JEA's existing Florida Energy Efficiency and Conservation Act (FEECA) goals. Exhibit No. __ [DPW-3] presents a list of the DSM and conservation programs included in JEA's existing DSM Plan. Exhibit No. __ [DPW-4] summarizes the historical participation in JEA's existing FEECA DSM programs. Exhibit No. __ [DPW-5] presents the results of Nexant's economic and achievable potential analysis for JEA. Exhibit No. ___ [DPW-6] presents a summary of JEA's marketing and educational activities. Exhibit No. ___ [DPW-7] presents analysis of the estimated average bill impacts on residential customers.

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 interest of JEA's customers and community.

Q. Please describe JEA's service territory.

A. JEA is the municipal electric utility provider for the City of Jacksonville and portions of Clay, St. Johns, and Nassau Counties.

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

A. JEA serves approximately 466,000 customers. JEA's customers are approximately 88 percent residential. Approximately 35 percent of Jacksonville's population lives in households whose income is less than twice the Federal Poverty Level ($33,820 for a family of 2). 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 2014.

A. JEA's load growth has increased over the past 5 year period. JEA experienced an increase of approximately 1.22 percent in net energy for load (NEL) and approximately 9.1 percent in net firm peak demand since the last potential study was performed. JEA's

average annual growth rates over the next 10 years are projected to be low at approximately 0.57 percent (NEL), 0.61 percent (winter peak demand) and 0.40 percent (summer peak demand).

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

A. The Public Service Commission (Commission) set goals for JEA in 2014, based on a Settlement Agreement of the parties. *See* Order No. PSC-14-0696-FOF-EU. The Settlement Agreement recognized the role of the municipal utility's governing body to determine the appropriate level of investment in conservation programs and associated rate impacts. JEA's existing FEECA goals are presented in Exhibit No. ___ [DPW-2].

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

A. Section 366.82, Florida Statutes (F.S.), 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. In 2014 (Order No. PSC-14-0696-FOF-EU), the Commission determined that the Participant test is appropriate for calculating the costs and benefits to the customers participating in the energy savings and demand reduction measures. The Commission further determined that consideration of both the Rate Impact Measure (RIM) and Total Resource Cost (TRC) tests is necessary to reflect the benefits and costs incurred by the general body of ratepayers as a whole, including utility incentives and participant contributions.

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. Please describe JEA's current FEECA demand-side management programs.

A. Exhibit No. __ [DPW-3] includes a summary of the DSM and conservation programs included in JEA's existing Commission-approved DSM Plan.

Q. What is the historic participation rate of JEA's current FEECA demand-side management programs?

A. Exhibit No. __ [DPW-4] presents the historic participation rates in JEA's current FEECA demand-side management programs

Q. What are the cumulative kilowatt (kW) and kilowatt hour (kWh) savings associated with JEA's current FEECA demand-side management programs?

A. JEA has exceeded all its FEECA goals for both the Residential and Commercial/Industrial Sectors. The cumulative values from 2015 through 2018 are as follows:

- Residential Winter Peak megawatt (MW) Reduction is 9.0 MWs
- Residential Summer Peak MW Reduction is 13.0 MWs
- Residential gigawatt hour (GWh) Energy Reduction is 29.8 GWhs
- Commercial/Industrial Winter Peak MW Reduction is 0.1 MWs
- Commercial/Industrial Summer Peak MW Reduction is 2.3 MWs
- Commercial/Industrial GWh Energy Reduction is 6.4 GWhs

Q. Have JEA's current demand-side management programs been impacted by building code and appliance efficiency standards?

A. Yes. Building codes and appliance efficiency standards have and continue to become more stringent, increasing the minimum efficiency requirements for buildings and appliances. As building codes become more stringent and appliance efficiency standards increase, the incremental cost to achieve the next level of efficiency typically outweighs the savings/benefits over the life cycle of the measure.

Q. Has JEA taken any action to increase the level of customer awareness of, and participation in, conservation and DSM programs?

A. Yes. JEA uses numerous approaches to promote customer awareness and participation in conservation and efficient products. Exhibit No. __ [DPW-6] presents a summary of JEA's marketing and educational activities.

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

A. JEA joined a collaborative (the Collaborative) with the other Florida Energy Efficiency and Conservation Act (FEECA) jurisdictional utilities to engage a single contractor (Nexant) to evaluate DSM measures in each of the utilities' service areas. Nexant identified DSM measures and evaluated the technical, economic, and achievable potential for DSM in JEA's service area.

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

A. As discussed in the Market Potential Study report attached to the direct testimony of Jim Herndon, Nexant's economic analysis indicated that there are no cost effective RIM measures. Accordingly, JEA is proposing goals of 0 MW of summer and winter peak demand and 0 GWh of annual energy reductions for residential, commercial, and industrial customer classes.

Q. How were potential DSM measures identified and evaluated for JEA for purposes of this proceeding?

A. As described in the direct testimony of Jim Herndon and the Market Potential Study attached to his testimony, Nexant developed a list of DSM measures for consideration based on the 2014 Technical Potential Study, Nexant's DSM measure library, and discussion with the FEECA utilities.

Q. Please describe the process of how Nexant was selected to be the consulting firm utilized to provide the necessary assistance in the DSM goals setting process.

A. The Collaborative selected Nexant through a request for proposals (RFP) process administered by Florida Power & Light Company. The RFP was issued to several entities qualified to perform DSM potential studies for the FEECA utilities.

Q. What were Nexant's responsibilities with regard to JEA?

A. As more fully described in the direct testimony of Jim Herndon and the Market Potential Study attached to his testimony, the FEECA utilities retained Nexant to analyze the technical potential for energy efficiency, demand response, and demand side renewable energy across residential, commercial, and industrial customer classes. For JEA, Nexant also conducted the economic screening for the economic and achievable scenarios and analyzed economic potential and achievable potential based on the passing measures.

Q. How has JEA's Technical Potential Study been updated and modified, including any measures eliminated or added compared to the 2014 Technical Potential Study?

A. Rather than updating and modifying JEA's 2014 Technical Potential Study, Nexant performed a complete and extensive new analysis of technical, economic, and achievable potential for energy efficiency, demand response, and demand-side renewable energy measures for the 2020-2029 time period. The analysis included 278 energy efficiency, demand response, and demand-side renewable energy measures. The measures analyzed as well as a comparison to the 2014 measures list are included in the direct testimony of Jim Herndon.

Q. Did JEA's Technical Potential Study include any changes associated with changes to the building code or appliance efficiency standards?

A. Yes. As detailed in the Market Potential Study attached to the direct testimony of Jim Herndon, Nexant considered current and planned Florida building codes and federal equipment standards for baseline equipment in performing its analysis.

Q. How was JEA's Base Case forecast for customer winter and summer demand and annual energy for load developed?

A. In performing its analysis, Nexant utilized the 2020 load forecast from JEA's 2017 Ten-Year Site Plan, the most recent ten-year site plan available at the time the analysis began.

Annually, JEA develops forecasts of seasonal peak demand, net energy for load (NEL), interruptible customer demand, DSM, and the impact of plug-in electric vehicles (PEV). JEA removes from the total forecast all seasonal, coincidental non-firm sources and adds sources of additional demand to derive a firm load forecast.

JEA's load forecast utilized 10 years of historical data (2007 to 2016) which captured the pre-2008/09 economic downturn, the 2008/09 economic downturn, and the post-recession recovery. Using this shorter period allowed JEA to capture the more recent trends in customer behavior, energy efficiency and conservation, with these trends captured in the actual data and used to forecast projections.

JEA normalizes its historical seasonal peaks using historical maximum and minimum temperatures. JEA then develops the seasonal peak forecasts using multiple regression analysis of normalized historical seasonal peaks, normalized historical and forecasted residential, commercial and industrial energy for winter/summer peak months, heating degree hour for the 72 hours leading to winter peak and cooling degree hours for the 48 hours leading to summer peak.

JEA's residential energy forecast was developed using multiple regression analysis of weather normalized historical residential energy, total population, median household

income, total residential premise ID from JEA's data warehouse and JEA's residential electric rate.

The commercial energy forecast was developed using multiple regression analysis of weather normalized historical commercial energy, commercial inventory square footages, total population and gross product.

The industrial energy forecast was developed using multiple regression analysis of weather normalized historical industrial energy, total number of industrial employment and total retail sales product for existing industrial accounts. JEA then layered in the estimated energy for new industrial customers to the forecasted industrial energy. JEA's forecast also considered lighting energy demand and PEV peak demand.

Q. How are supply-side efficiencies incorporated in JEA's planning process?

A. JEA continually monitors the operation of its generating units and determines methods to utilize and/or modify the system in the most efficient manner. A recent example of improvements to the efficiency of supply-side resources is advanced gas path additions and compressor modifications that JEA is completing on the Brandy Branch combustion turbine units 2 and 3.

Q. How do supply-side efficiencies impact demand-side management programs?

A. 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. Has JEA provided an adequate assessment of the full technical potential of available demand-side and supply-side conservation and efficiency measures, including demand-side renewable energy systems?

A. Yes. As detailed in the direct testimony of Jim Herndon and the Market Potential Study attached to his testimony, Nexant performed an adequate assessment of the technical potential of demand-side and supply-side conservation and efficiency measures, including demand-side renewable energy systems. Drawing upon its recognized expertise, Nexant utilized its state-of-the art model to comprehensively analyze the full technical potential of energy efficiency, demand response, and demand-side renewable energy technologies.

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

A. 278 DSM measures were identified and included in the analysis.

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

A. Economic potential was determined for JEA by Nexant as discussed in the direct testimony of Jim Herndon and Market Potential Study attached to his testimony.

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 analysis. 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 Commission's

Order Consolidating Dockets and Establishing Procedure (Order No. PSC-2019-0062-PCO-EG, issued February 18, 2019).

Q. How was JEA's achievable potential for the 2020-2029 period determined?

A. Achievable potential was determined for JEA by Nexant as discussed in the direct testimony of Jim Herndon and Market Potential Study attached to his testimony.

Q. What are JEA's estimated achievable potentials for residential and commercial/industrial energy efficiency?

A. Nexant's analysis determined that there is no achievable potential for residential or non-residential energy efficiency for JEA based on the RIM test. Under the TRC test, savings potential for residential customers is 11 MW summer peak, 10 MW winter peak, and 86 GWh. For non-residential customers, the savings potential is 23 MW summer peak, 14 MW winter peak, and 176 GWh. Again, however, the RIM test in the appropriate test for evaluating achievable potential for municipal utilities such as JEA.

Q. What are JEA's estimated achievable potentials for residential and commercial/industrial demand response?

A. Nexant's analysis determined that there is no achievable potential for residential or non-residential energy efficiency for JEA based on the RIM and TRC tests.

Q. What are JEA's estimated achievable potentials for residential and commercial/industrial demand-side renewable energy technology?

A. Nexant's analysis determined that there is no achievable potential for demand-side renewable energy systems for JEA based on the RIM and TRC tests.

Q. Did JEA's analysis take into consideration the costs and benefits to customers participating in the measure, pursuant to Section 366.82(3)(a), F.S?

A. Yes. The analysis performed by Nexant for JEA is 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. Did JEA's analysis take into consideration the costs and benefits to the general body of ratepayers as a whole, including utility incentives and participant contributions, pursuant to Section 366.82, F.S.?

A. Yes. Nexant's analysis of achievable potential for JEA 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. Did JEA's analysis of potential DSM measures consider 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. Nexant's analysis comprehensively analyzed customer-owned energy efficiency measures and none were found to be cost-effective for JEA under the RIM test. 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 by Nexant for this Docket. As such, incentives

to promote customer-owned demand-side renewable energy system are adequately reflected in JEA's proposed goals. Utility-owned energy efficiency and renewable energy systems are supply-side issues.

Q. How do JEA's proposed goals encourage the development of demand-side renewable energy systems?

A. Nexant fully considered demand-side renewable energy systems and found no achievable potential for these measures. Therefore, JEA is not proposing goals associated with demand-side renewable energy systems.

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. Yes. There are currently no costs imposed by State and Federal regulation on the emissions of greenhouse gases. 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. Did JEA's analysis use an appropriate methodology in the consideration of free riders?

A. Yes. The screening criteria used by Nexant were based on simple payback to the customer (2 years or less) and 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 offering 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 winter and summer demand and annual energy savings for the base fuel forecast, including the effects of free ridership, but not any costs associated with carbon dioxide emissions, for both RIM-based and TRC-based evaluations.

A. Exhibit No. __ [DPW-5] summarizes the results of Nexants's economic and achievable potential analysis for JEA for both RIM-based and TRC-based evaluations.

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 residential customer bill impact for the RIM-based achievable portfolio, as there are no DSM measures that pass the RIM test for JEA. Exhibit No. __ [DPW-7] presents the analysis of the estimated bill impacts on residential customers for the TRC-based achievable portfolio. As shown in Exhibit No. __[DPW-7], the estimated

residential bill impact of the TRC-based achievable portfolio would be approximately 2.5 percent by 2029.

Q. Does this conclude your testimony?

A. Yes it does.

RESUME OF
Donald Wucker, Management of Demand Side Management Portfolio

JEA

Qualifications and Experience:

Summary: 35 years of progressive experience in building energy systems. Over 30 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 and technical 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

Experience (cont.)

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

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

Past & Current 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

Table 1 JEA's Existing Commission-Approved Residential Demand and Energy Goals			
Year	Winter Peak MW Reduction	Summer Peak MW Reduction	GWH Energy Reduction
2015	0.96	0.94	2.50
2016	0.96	0.94	2.50
2017	0.96	0.94	2.50
2018	0.96	0.94	2.50
2019	0.96	0.94	2.50
2020	0.96	0.94	2.50
2021	0.96	0.94	2.50
2022	0.96	0.94	2.50
2023	0.96	0.94	2.50
2024	0.96	0.94	2.50
Total	9.6	9.4	25.0

Table 2 JEA's Existing Commission-Approved Commercial/Industrial Demand and Energy Goals			
Year	Winter Peak MW Reduction	Summer Peak MW Reduction	GWH Energy Reduction
2015	0.007	0.14	0.08
2016	0.007	0.14	0.08
2017	0.007	0.14	0.08
2018	0.007	0.14	0.08
2019	0.007	0.14	0.08
2020	0.007	0.14	0.08
2021	0.007	0.14	0.08
2022	0.007	0.14	0.08
2023	0.007	0.14	0.08
2024	0.007	0.14	0.08
Total	0.07	1.40	0.80

DSM and Conservation Programs Included in JEA's Existing DSM Plan

A. Residential Programs

1. Residential Energy Audit Program uses auditors to examine homes, educate customers and make recommendations on low-cost or no-cost energy-saving practices and measures.
2. Residential Solar Water Heating pays a financial incentive to customers to encourage the installation and use of solar water heating technology.
3. Residential Net Metering promotes the use of solar photovoltaic systems by purchasing excessive power from residential customers implementing these systems and offers a rebate for qualified battery installations.
4. Neighborhood Efficiency Program offers education concerning the efficient use of energy & water as well as the direct installation of over a dozen electric & water efficient measures such as high-efficiency lighting, insulation, weather sealing, shower heads and aerators at no cost to income qualified customers.

B. Commercial Programs

1. Commercial Energy Audit Program uses auditors to examine business, educate customers and make recommendations on low-cost or no-cost energy-saving practices and measures.
2. Commercial Net Metering promotes the use of solar photovoltaic systems by purchasing excessive power from commercial customers implementing these systems and offers a rebate for qualified battery installations.

Historic Participation Rate of JEA's Current FEECA DSM Programs

JEA

Program Name: REA: Residential Energy Audits
Program Start Date: 1978
Reporting Period: 2018

a	b	c	d	e	f	g	h	i
Year	Total Number of Customers	Total Number of Eligible Customers	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level % (d/cx100)	Actual Annual Number of Program Participants	Actual Cumulative Number of Program Participants	Actual Cumulative Penetration Level % (g/cx100)	Actual Participation Over (Under) Projected Participants (g-d)
2015	390,376	390,376	4,500	1.2%	20,171	20,171	5.2%	15,671
2016	397,057	397,057	9,000	2.3%	16,730	36,901	9.3%	27,901
2017	403,655	403,655	13,500	3.3%	16,516	53,417	13.2%	39,917
2018	409,756	409,756	18,000	4.4%	14,681	68,098	16.6%	50,098
2019	415,662	415,662	22,500	5.4%				
2020	421,331	421,331	27,000	6.4%				
2021	426,984	426,984	31,500	7.4%				
2022	432,669	432,669	36,000	8.3%				
2023	438,312	438,312	40,500	9.2%				
2024	443,879	443,879	45,000	10.1%				

Estimated Annual Demand and Energy Savings	Per Installation		Program Total	
	@meter	@generator	@meter	@generator
Summer kW Reduction	0.100	0.106	1,468.1	1,556.2
Winter kW Reduction	0.100	0.105	1,468.1	1,541.5
kWH Reduction	200	208	2,936,200.0	3,053,648.0

Utility Cost per Installation	$ 102.80
Total Program Cost of the Utility (Administration and Incentives)	$ 1,509,207
Net Benefits of Measures Installed During Reporting Period	$ (6,075)

JEA

Program Name: RSWH: Residential Solar Water Heating
Program Start Date: 2002
Reporting Period: 2018

a	b	c	d	e	f	g	h	i
Year	Total Number of Customers	Total Number of Eligible Customers	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level % (d/cx100)	Actual Annual Number of Program Participants	Actual Cumulative Number of Program Participants	Actual Cumulative Penetration Level % (g/cx100)	Actual Participation Over (Under) Projected Participants (g-d)
2015	390,376	390,376	20	0.01%	20	20	0.0%	0
2016	397,057	397,057	40	0.01%	1	21	0.0%	(19)
2017	403,655	403,655	60	0.01%	0	21	0.0%	(39)
2018	409,756	409,756	80	0.02%	2	23	0.0%	(57)
2019	415,662	415,662	100	0.02%				
2020	421,331	421,331	120	0.03%				
2021	426,984	426,984	140	0.03%				
2022	432,669	432,669	160	0.04%				
2023	438,312	438,312	180	0.04%				
2024	443,879	443,879	200	0.05%				

Estimated Annual Demand and Energy Savings	Per Installation		Program Total	
	@meter	@generator	@meter	@generator
Summer kW Reduction	0.420	0.443	0.8	0.9
Winter kW Reduction	0.475	0.496	1.0	1.0
kWH Reduction	2,322	2,417	4,644.5	4,834.0

Utility Cost per Installation	$	1,130
Total Program Cost of the Utility (Administration and Incentives)	$	2,260
Net Benefits of Measures Installed During Reporting Period	$	(987)

JEA

Program Name: RSNM: Residential Solar Net Metering
Program Start Date: 2009
Reporting Period: 2018

a	b	c	d	e	f	g	h	I
Year	Total Number of Customers	Total Number of Eligible Customers	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level % (d/cx100)	Actual Annual Number of Program Participants	Actual Cumulative Number of Program Participants	Actual Cumulative Penetration Level % (g/cx100)	Actual Participation Over (Under) Projected Participants (g-d)
2015	390,376	390,376	41	0.01%	250	250	0.06%	209
2016	397,057	397,057	82	0.02%	406	656	0.17%	574
2017	403,655	403,655	123	0.03%	349	1,005	0.25%	882
2018	409,756	409,756	164	0.04%	330	1,335	0.33%	1,171
2019	415,662	415,662	205	0.05%				
2020	421,331	421,331	246	0.06%				
2021	426,984	426,984	287	0.07%				
2022	432,669	432,669	328	0.08%				
2023	438,312	438,312	369	0.08%				
2024	443,879	443,879	410	0.09%				

Estimated Annual Demand and Energy Savings	Per Installation		Program Total	
	@meter	@generator	@meter	@generator
Summer kW Reduction	2.80	2.95	924.0	973.5
Winter kW Reduction	0.00	0.00	0.0	0.0
kWH Reduction	7,982	8,309	2,634,060.0	2,741,970.0

Utility Cost per Installation	$ 770.88
Total Program Cost of the Utility (Administration and Incentives)	$ 254,390
Net Benefits of Measures Installed During Reporting Period	$ (863,532)

JEA

Program Name: NEE: Neighborhood Energy Efficiency
Program Start Date: 2008
Reporting Period: 2018

a	b	c	d	e	f	g	h	i
Year	Total Number of Customers	Total Number of Eligible Customers	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level % (d/cx100)	Actual Annual Number of Program Participants	Actual Cumulative Number of Program Participants	Actual Cumulative Penetration Level % (g/cx100)	Actual Participation Over (Under) Projected Participants (g-d)
2015	368,783	117,113	1,500	1.3%	1,005	1,005	0.9%	(495)
2016	372,471	119,117	3,000	2.5%	1,518	2,523	2.1%	(477)
2017	376,196	121,097	4,500	3.7%	1,225	3,748	3.1%	(752)
2018	379,958	122,927	6,000	4.9%	1,294	5,042	4.1%	(958)
2019	383,758	124,699	7,500	6.0%				
2020	387,595	126,399	9,000	7.1%				
2021	391,471	128,095	10,500	8.2%				
2022	395,386	129,801	12,000	9.2%				
2023	399,340	131,494	13,500	10.3%				
2024	403,333	133,164	15,000	11.3%				

Estimated Annual Demand and Energy Savings	Per Installation		Program Total	
	@meter	@generator	@meter	@generator
Summer kW Reduction	0.353	0.373	456.8	482.7
Winter kW Reduction	0.353	0.369	456.8	477.5
kWH Reduction	858	893	1,110,252.0	1,155,542.0

Utility Cost per Installation	$	331
Total Program Cost of the Utility (Administration and Incentives)	$	428,314
Net Benefits of Measures Installed During Reporting Period	$	16,854

JEA

Program Name: CEA: Commercial Energy Audits
Program Start Date: 1978
Reporting Period: 2018

a	b	c	d	e	f	g	h	i
Year	Total Number of Customers	Total Number of Eligible Customers	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level % (d/cx100)	Actual Annual Number of Program Participants	Actual Cumulative Number of Program Participants	Actual Cumulative Penetration Level % (g/cx100)	Actual Participation Over (Under) Projected Participants (g-d)
2015	50,506	50,506	200	0.4%	245	245	0.5%	45
2016	51,136	51,136	400	0.8%	207	452	0.9%	52
2017	51,698	51,698	600	1.2%	146	598	1.2%	(2)
2018	52,187	52,187	800	1.5%	137	735	1.4%	(65)
2019	52,639	52,639	1,000	1.9%				
2020	53,069	53,069	1,200	2.3%				
2021	53,492	53,492	1,400	2.6%				
2022	53,908	53,908	1,600	3.0%				
2023	54,321	54,321	1,800	3.3%				
2024	54,735	54,735	2,000	3.7%				

Estimated Annual Demand and Energy Savings	Per Installation		Program Total	
	@meter	@generator	@meter	@generator
Summer kW Reduction	0.120	0.127	16.4	17.4
Winter kW Reduction	0.120	0.125	16.4	17.1
kWH Reduction	540	562	73,980.0	76,994.0

Utility Cost per Installation	$	221
Total Program Cost of the Utility (Administration and Incentives)	$	30,277
Net Benefits of Measures Installed During Reporting Period	$	885

JEA

Program Name: CSNM: Commercial Solar Net Metering
Program Start Date: 2009
Reporting Period: 2018

a	b	c	d	e	f	g	h	I
Year	Total Number of Customers	Total Number of Eligible Customers	Projected Cumulative Number of Program Participants	Projected Cumulative Penetration Level % (d/cx100)	Actual Annual Number of Program Participants	Actual Cumulative Number of Program Participants	Actual Cumulative Penetration Level % (g/cx100)	Actual Participation Over (Under) Projected Participants (g-d)
2015	50,506	50,506	8	0.02%	1	1	0.00%	(7)
2016	51,136	51,136	16	0.03%	7	8	0.02%	(8)
2017	51,698	51,698	24	0.05%	74**	82	0.16%	58
2018	52,187	52,187	32	0.06%	63**	145	0.28%	113
2019	52,639	52,639	40	0.08%				
2020	53,069	53,069	48	0.09%				
2021	53,492	53,492	56	0.10%				
2022	53,908	53,908	64	0.12%				
2023	54,321	54,321	72	0.13%				
2024	54,735	54,735	80	0.15%				

Estimated Annual Demand and Energy Savings	Per Installation		Program Total	
	@meter	@generator	@meter	@generator
Summer kW Reduction	14.10	14.900	888.3	938.7
Winter kW Reduction	0.00	0.000	0.0	0.0
kWH Reduction	39,553	41,175	2,491,839.0	2,594,025.0

Utility Cost per Installation	$	2,300
Total Program Cost of the Utility (Administration and Incentives)	$	144,900
Net Benefits of Measures Installed During Reporting Period	$	(925,775)

** Participant count determined by taking savings values and dividing by the filed, deemed kWh savings per participant

Economic and Achievable Potential Results

ENERGY EFFICIENCY Economic Potential	Summer Peak Demand (MW)	Winter Peak Demand (MW)	Energy (GWh)
RIM SCENARIO			
Residential	0	0	0
Non-Residential	0	0	1
Total	0	0	1
TRC SCENARIO			
Residential	113	66	419
Non-Residential	89	52	605
Total	202	118	1,024

ENERGY EFFICIENCY Achievable Potential	Summer Peak Demand (MW)	Winter Peak Demand (MW)	Energy (GWh)
RIM SCENARIO			
Residential	0	0	0
Non-Residential	0	0	0
Total	0	0	0
TRC SCENARIO			
Residential	11	10	86
Non-Residential	23	14	176
Total	34	24	262

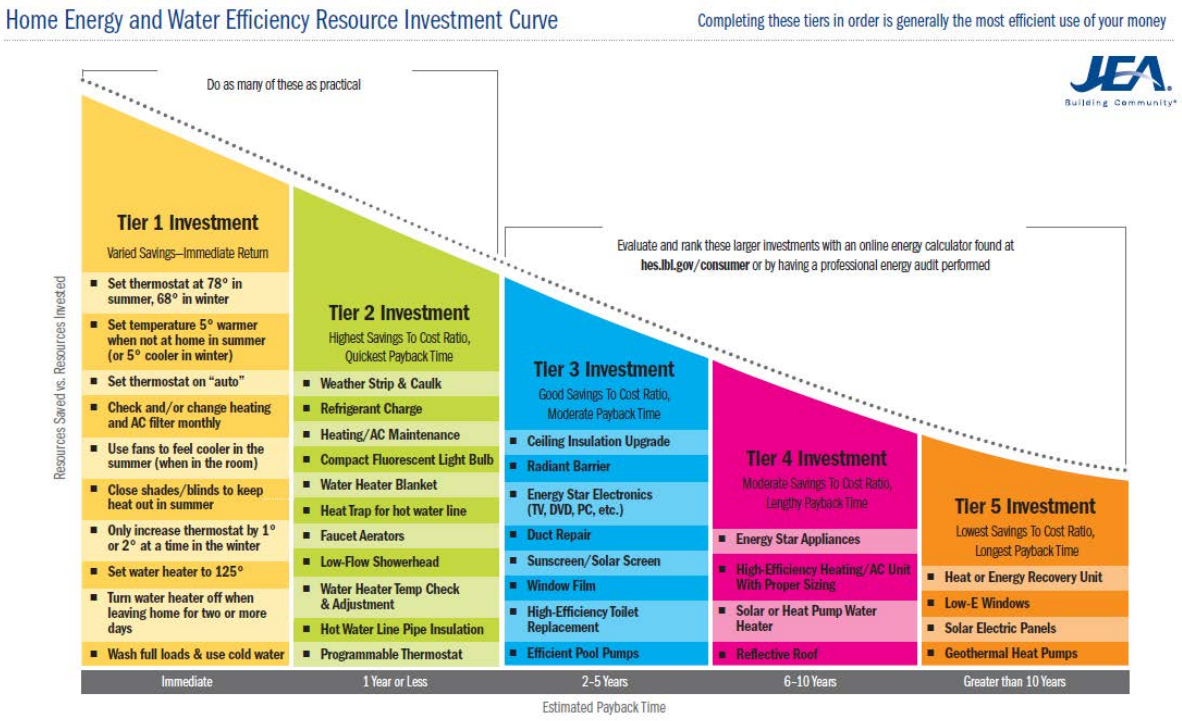
DEMAND RESPONSE Economic Potential	Summer Savings (MW)	Winter Savings (MW)
RIM and TRC SCENARIO		
Residential	489	1,150
Non-Residential	538	503
Total	1,027	1,653

DEMAND RESPONSE Achievable Potential
Nexant found there to be no cost-effective potential for JEA.
Note: The achievable program potential includes estimated program costs and incentives, whereas the economic potential scenario does not.

DEMAND-SIDE RENEWABLE ENERGY (DSRE) systems
Nexant found there to be no cost-effective Economic or Achievable potential for JEA.

Summary of Marketing and Educational Activities

JEA places a high priority on providing customers tips and tools to help them manage their energy use as efficiently as possible. Since most of JEA's customers are budget constrained our messages place an emphasis on "low to no cost" measures as shown on our "Home Energy and Water Efficiency Resource Investment Curve".



Using a multi-channel approach, efficiency messaging is included through all channels: paid media—radio, television, print, billboard, online, social media; earned media—news releases and interviews; owned media—our website, social media, email campaigns, bill insert, bill messages, bill envelope back, brochures, public speaking, workshops, trade shows, videos, and community events. Our most recent annual accomplishments are as follow:

Paid Media:

- Your JEA Minute — 52 segments
- TV Spots (energy, and water conservation, irrigation) — 5
- Radio Spots (energy, and water conservation, irrigation) — 6
- Digital Billboards (energy, and water conservation, irrigation) — 10
- Online Banners (energy, and water conservation, irrigation) — 5
- Paid Social — 10
- Print Ad (energy, and water conservation, Irrigation) — 3

E Communications:

- Unique Visitors to jea.com 7,515,829
- Customer Emails Sent 4,387,864
- My JEA Utility Tracker—number of customers with access ~466,000
  - Number of customers who accessed 61,861
- Social Media
  - JEA Facebook Contacts 28,641,929
    - Facebook Followers 40,738
  - YouTube Views 147,974
    - YouTube Subscribers 2,043
  - JEA Twitter Contacts 5,712,446
    - Twitter Followers 7,164

Bill Related Communications:

- Bill insert 12
- Bill envelope back (efficiency messages) 6
- Bill messages—residential and commercial messages on efficiency tips 40

Community Programs:

- Museum of Science and History Exhibit on Energy and Efficiency 140,977 annually
- Retail Store Events
  - In Store events educating customers on LEDs 60

In School Programs:

- Conservation and Efficiency Materials 65,799
- Tree Hill School Program Attendance 13,271
- Energy and Water Detective 3,751

In Home Programs:

- Residential Energy Audit/Assessments 14,681
  (Educational focus on causes of cause of high bills and emphasis on low to no cost measures)
- Neighborhood Energy Efficiency Program
  1,104
  (Low Income home visits with no cost, short term payback measures furnished and installed)

JEA is committed to maintaining its high priority emphasis in assisting and educating our customers with current knowledge in managing their energy use as efficiently as possible.

Estimated Cumulative Annual Bill Impacts for 2020 through 2029 Residential Customers - DSM Measures Passing TRC Test										
Calendar Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Percent Increase	0.4%	0.6%	0.9%	1.2%	1.4%	1.7%	2.0%	2.2%	2.4%	2.5%

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF BRADLEY E. KUSHNER

ON BEHALF OF

JEA

DOCKET NO. 20190020-EG

APRIL 12, 2019

Q. Please state your name and business address.

A. My name is Bradley E. Kushner. My business address is 2465 Southern Hills Ct., Oviedo, Florida 32765.

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

A. I am employed by nFront Consulting LLC as an Executive Consultant.

Q. What are your responsibilities in that position?

A. My responsibilities include project management and project support for various projects for electric utility clients. These projects include integrated resource plans, power supply studies, power supply requests for proposals, demand-side management/conservation reports, and other regulatory filings.

Q. Please describe nFront Consulting LLC.

A. nFront Consulting is organized into two service practices – Energy and Transmission & Delivery. nFront Consulting's Energy Practice provides advisory services to support and optimize the assets, programs, systems, and business operations of our electric industry clients nFront Consulting assists in the areas of planning, implementing, and managing

resources, portfolios, and individual business unit operations. nFront Consulting interacts on behalf of our clients with regulatory, political, and environmental agencies; the financial community; and other professional service providers on national, state, and local levels to complete large-scale transactions, projects, or programs.

nFront Consulting's Transmission and Delivery Services Practice provides independent transmission consulting, analyses and advisory services to support project financing, acquisitions, development, transmission risk, curtailment and congestion assessments, transmission planning, resource integration, and open access, expert witness and regulatory services.

Q. Please state your educational background and professional experience.

A. I received my Bachelors of Science in Mechanical Engineering from the University of Missouri-Columbia in 2000 and my Masters of Business Administration from Emporia State University in 2013. I have nearly 20 years of experience in the engineering and consulting industry. I have experience in the development of integrated resource plans, ten-year-site plans, DSM plans, and other capacity planning studies for clients throughout the United States. Utilities in Florida for which I have worked include JEA, Florida Municipal Power Agency, Kissimmee Utility Authority, OUC, Lakeland Electric, Gainesville Regional Utilities (GRU), Reedy Creek Improvement District, Tampa Electric Company, and the City of Tallahassee. I have performed production cost modeling and economic analysis, and otherwise participated in six Need for Power Applications that have been filed on behalf of Florida utilities and approved by the Florida Public Service Commission (FPSC). I have also testified before the FPSC in Need for Power and Conservation Goal proceedings.

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

A. The purpose of my testimony in this proceeding is to discuss the methodology used to develop the avoided capacity costs that were provided to Nexant for use in their analyses of DSM measures for JEA. I will also discuss JEA's fuel forecasts used in the production cost modeling that formed the basis for the avoided energy costs provided to Nexant.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. Exhibit No. __ [BEK-1] is a copy of my resume. Exhibit No. ___ [BEK-2] summarizes the avoided unit costs. Exhibit No. __ [BEK-3] summarizes JEA's fuel price forecast.

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

A. Based on JEA's current load forecast over the next 20 years and its existing and planned future generating resources, JEA is anticipated to require additional capacity to maintain a 15 percent reserve margin over the 2020 through 2022 period, and again beginning in 2029. Given the timing and magnitude of the anticipated capacity requirements for the 2020 through 2022 period, it has been assumed that JEA would purchase capacity to maintain its reserve margin requirements. For the anticipated capacity requirements beginning in 2029, it has been assumed that JEA would install a new simple cycle F-class combustion turbine at the existing Greenland Energy Center (GEC). Following installation of the new simple cycle unit in 2029, additional capacity is projected to be required in 2039 to maintain reserve margin requirements, at which time a second new simple cycle F-class combustion turbine is assumed to be installed at GEC. JEA has made no commitments to any of these short-term purchases or simple cycle unit additions, and for purposes of this docket, each of these is considered avoidable capacity.

Q. How were capital costs for these additions calculated?

A. Capital costs for the 2020 through 2022 purchases were treated as demand costs associated with a power purchase agreement (PPA), and were based on short-term market alternatives available to JEA.

Capital costs for the new simple cycle F-class combustion turbines were based on estimates used by JEA for resource planning activities. Capital costs were escalated to the year the new units are assumed to be in-service (*i.e.*, 2029 and 2039) using a 2.0 percent annual escalation rate, and include costs for interest during construction to determine an estimated in-service year installed cost. Resulting installed costs were multiplied by a fixed charge rate to determine a levelized installed capital cost, which was divided by the output of the combustion turbine to develop a levelized installed capital cost per kW.

Q. How were fixed operating and maintenance (O&M) costs for these additions calculated?

A. Fixed O&M costs for the 2020 through 2022 purchases were included in the demand costs for the PPA discussed previously.

Fixed O&M costs for the new simple cycle F-class combustion turbines were based on estimates used by JEA for resource planning activities. The fixed O&M cost estimates, in $/kW-yr., were escalated to nominal dollars at a 2.0 percent escalation rate.
In addition to the fixed O&M costs, a natural gas pipeline usage charge of $0.28/MMBtu was included for the new simple cycle F-class combustion turbines to reflect costs for

utilizing the existing natural gas lateral at GEC. This cost was converted to a fixed cost per kW-yr based on an assumed 5 percent capacity factor.

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 (or demand charges in the case of the PPA discussed previously) to the avoided fixed O&M costs and the natural gas pipeline usage charge. The resulting annual avoided costs per kW were determined by dividing by the total kW installed in each year. This approach was used in order to capture the difference in installed costs for the simple cycle combustion turbine added in 2039 as compared to the simple cycle added in 2029 due to escalation of the capital costs to in-service year dollars. The avoided costs per kW are presented in Exhibit No. ___ [BEK-2].

Q. Please discuss the base case fuel forecast.

A. Exhibit No. __ [BEK-3] provides a summary of JEA's fuel price projections for natural gas, coal (including a blend of coal/natural gas/petroleum coke for JEA's Northside solid fuel units), and diesel fuel. These projections were developed utilizing information obtained from sources routinely utilized in the utility industry, including the New York Mercantile Exchange (NYMEX) and the U.S. Energy Information Administration.

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

A. Yes. In addition to the base case fuel price forecasts, JEA considered 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. This high and low band is

consistent with what JEA used in the previous FEECA goal-setting process. *See* Docket No. 130203-EM, Direct Testimony of Vento and Wucker, p. 10, l. 5-8 (Apr. 2, 2014).

Q. How were energy costs for each of the cases previously identified in your testimony developed?

A. Under my direction and supervision, JEA utilized ProSym, an industry accepted production cost model, to perform production cost modeling of its electric generating system, taking into account existing and planned future generating resources, the avoided units, its load forecast, and the base fuel price projections discussed previously in my testimony.

The resulting energy costs were taken from the ProSym output and include fuel as well as non-fuel variable O&M costs associated with dispatch of JEA's resources to meet forecast system demand requirements. The ProSym output was provided to Nexant for use in the economic analysis.

Q. Were energy costs developed for each of the fuel price cases discussed previously in your testimony?

A. Yes. The energy costs developed using the base case fuel price projections were increased by 25 percent for the high fuel price sensitivity and decreased by 25 percent for the low fuel price sensitivity.

Q. Does this conclude your testimony?

A. Yes it does.

RESUME OF BRADLEY E. KUSHNER

OVERVIEW

Mr. Kushner has close to 20 years in the energy industry with a specialty in electric utility system resource planning. His expertise includes the following areas:

- Conservation / Demand-Side Management / Energy Efficiency
- Expert Testimony
- Regulatory Compliance and Support
- Integrated Resource Plans
- Power Supply Studies
- Conventional Energy Technologies
- Renewable Energy Technologies
- Economic Analysis
- Production Cost Modeling
- Independent Engineering
- Project Management
- Power Supply Requests for Proposals (RFPs)

Mr. Kushner has provided testimony in many conservation and energy efficiency dockets, power plant need determination proceedings, and integrated resource plans. Mr. Kushner has managed numerous integrated resource plans, need for power applications, power supply studies, demand-side management/energy efficiency/conservation evaluations and power supply request for proposals (RFPs), among other studies. Mr. Kushner has a demonstrated ability to manage internal and external project teams with diverse experience levels and areas of expertise, both in co-located and virtual environments. Mr. Kushner's experience in project management and expertise in the areas outlined above allow him to collaborate with clients to deliver outstanding services to his clients. His ability to effectively communicate in writing and verbally helps to keep stakeholders informed throughout project lifecycles, and has contributed to his successful experiences as a witness and in formal presentations to clients' Board of Directors.

PROJECT EXPERIENCE

Demand-Side Management / Energy Efficiency/ Conservation (DSM/EE/Conservation)

Mr. Kushner's experience with the evaluation of DSM/EE/Conservation is highlighted by his involvement in the development of conservation goals and demand-side management plans for Florida utilities as part of the 2009 and 2014 Florida Energy Efficiency and Conservation Act (FEECA) filings. Mr. Kushner led development of the filings and testified as to the appropriateness of the numeric goals and process utilized to evaluate the cost-effectiveness of DSM/EE/Conservation programs.

Witness Support

Mr. Kushner has testified as an witness in numerous proceedings related to Determination of Need petitions

and Florida Energy Efficiency and Conservation Act (FEECA) filings in the State of Florida, and has been involved as an witness in integrated resource planning (IRP) proceedings elsewhere in the United States. Related experience includes coordinating/leading responses to hundreds of interrogatories and production of document requests.

Electric Utility System Resource Planning / Production Cost Modeling

With his extensive experience in Electric Utility System Resource Planning and production cost modeling, Mr. Kushner recognizes that while industry best practices provide effective guidelines, the unique nature of each client's situation require strategic thinking and the ability to develop plans that are specific to the client's needs. Mr. Kushner's expertise in generation (including conventional and renewable technologies), demand-side management, and fundamentals of production cost modeling allow Mr. Kushner to deliver comprehensive resource plans that clients can utilize for future decision making.

Integrated Resource Plans /Power Supply Studies

Mr. Kushner has been involved as the project manager, study manager, and lead analyst on several integrated resource plans (IRP) or power supply studies during his professional career. Mr. Kushner has been involved in such studies for clients in Alaska, Colorado, Florida, Massachusetts, Michigan, New York, Oklahoma, Texas, and Wisconsin, as well as other states and territories.

Power Supply Requests for Proposals (RFPs)

Power purchases are often an important component of electric utility system planning, and conducting a competitive power supply RFP process may be critical to the ensuring the most cost-effective, reliable, and environmentally responsible alternatives are being considered. Mr. Kushner has experience in the complete RFP lifecycle, including collaborating with clients to develop the RFP, supporting clients during issuance and subsequent management of the RFP process, screening and evaluating RFP responses, presenting the results of the RFP to clients and stakeholders, and supporting negotiations related to power purchase agreements. Mr. Kushner has been managed or otherwise been involved in numerous RFP processes focused on both conventional and renewable generating technologies.

Independent Engineering / Project Financing Support

Mr. Kushner has managed projects in the area of independent engineering, related to merger and acquisition support as well as development of new power projects. Most recently, Mr. Kushner managed the independent engineering assessment of a new biomass facility in North America for which the developer was trying to obtain project financing. The independent engineering assessment included development of a due diligence report on behalf of the developer, supporting negotiations with potential investors, supporting development of the credit agreement with the eventual loan syndicate, and monthly construction monitoring activities.

PROFESSIONAL HISTORY

Mr. Kushner began his career with Black & Veatch Corporation in 2000 and has been involved in electric utility system resource planning and independent engineering engagements since that time in various roles at Black & Veatch. Most recently, Mr. Kushner was Department Head for Black & Veatch's Management Consulting group and was a Director for Black & Veatch Management Consulting LLC's electric system resource planning service offering before joining nFront Consulting LLC in 2016.

EDUCATIONAL

Mr. Kushner's educational background includes a B.S. in Mechanical Engineering from the University of Missouri - Columbia and a Masters of Business Administration from Emporia State University.

	All Avoided Costs in Nominal Dollars			
Year	Avoided Capital Cost per kW	Avoided Fixed O&M per kW	Avoided GEC Natural Gas Charge per kW	**Total Avoided Cost per kW**
2029	$49.49	$9.95	$1.24	**$60.68**
2030	$49.49	$10.15	$1.24	**$60.87**
2031	$49.49	$10.35	$1.24	**$61.08**
2032	$49.49	$10.56	$1.24	**$61.28**
2033	$49.49	$10.77	$1.24	**$61.50**
2034	$49.49	$10.98	$1.24	**$61.71**
2035	$49.49	$11.20	$1.24	**$61.93**
2036	$49.49	$11.43	$1.24	**$62.15**
2037	$49.49	$11.65	$1.24	**$62.38**
2038	$54.91	$11.89	$1.24	**$68.04**
2039	$54.91	$12.13	$1.24	**$68.27**
2040	$54.91	$12.37	$1.24	**$68.52**
2041	$54.91	$12.62	$1.24	**$68.76**
2042	$54.91	$12.87	$1.24	**$69.02**
2043	$54.91	$13.12	$1.24	**$69.27**
2044	$54.91	$13.39	$1.24	**$69.54**
2045	$54.91	$13.66	$1.24	**$69.80**
2046	$54.91	$13.93	$1.24	**$70.08**
2047	$54.91	$14.21	$1.24	**$70.35**
2048	$54.91	$14.49	$1.24	**$70.64**
2049	$54.91	$14.78	$1.24	**$70.93**
2050	$54.91	$15.08	$1.24	**$71.22**

	JEA Fuel Price Projections - Base Case (Nominal $/MMBtu)				
Year	Natural Gas - Greenland Energy Center	Natural Gas - All Sites Besides Greenland Energy Center	Fuel Oil	Scherer 4 Coal	Northside 1 and 2 Coal/Petcoke Blend
2020	3.11	3.18	16.43	2.51	3.30
2021	3.10	3.17	16.30	2.56	3.25
2022	3.19	3.26	16.88	2.62	3.31
2023	3.36	3.43	17.43	2.69	3.38
2024	3.52	3.59	18.05	2.75	3.48
2025	3.70	3.76	18.62	2.82	3.57
2026	3.81	3.87	19.08	2.89	3.65
2027	3.93	3.99	19.70	2.95	3.69
2028	4.02	4.09	20.37	3.02	3.77
2029	4.16	4.23	21.11	3.09	3.83
2030	4.25	4.31	21.74	3.16	3.90
2031	4.34	4.40	22.52	3.22	3.97
2032	4.43	4.49	23.13	3.29	4.04
2033	4.52	4.58	23.86	3.37	4.10
2034	4.61	4.66	24.64	3.45	4.18
2035	4.69	4.74	25.30	3.54	4.26
2036	4.88	4.93	25.94	3.62	4.36
2037	4.99	5.04	26.99	3.71	4.46
2038	5.16	5.21	27.68	3.79	4.59
2039	5.31	5.36	28.47	3.88	4.73
2040	5.44	5.49	29.25	3.96	4.87
2041	5.58	5.63	30.07	4.05	4.99
2042	5.76	5.80	30.69	4.14	5.13
2043	5.92	5.96	31.35	4.23	5.27
2044	6.09	6.14	31.97	4.32	5.42
2045	6.27	6.31	32.69	4.42	5.59
2046	6.44	6.48	33.24	4.51	5.73
2047	6.63	6.67	34.04	4.60	5.91
2048	6.87	6.90	34.85	4.70	6.10
2049	7.08	7.12	35.38	4.79	6.30
2050	7.33	7.36	36.17	4.90	6.51