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June 1, 2009

VIA HAND DELIVERY

Ms. Ann Cole, Director
Office of Commission Clerk
Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Re: In Re: Commission Review of Numeric Conservation Goals
Docket No. 080412-EG

COMMISSION
CLERK

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Dear Ms. Cole:

Enclosed for filing in the above referenced docket on behalf of the Orlando Utilities Commission (OUC) are an original and 15 copies of the Direct Testimony of Randall E. Halley with Exhibit No. __ (RH - 1), Exhibit No. __ (RH - 2), Exhibit No. __ (RH - 3), and Bradley E. Kushner with Exhibit No. __ (BEK-1), Exhibit No. __ (BEK-2).

Thank you for your assistance in connection with this matter.

Sincerely yours,

W. Christopher Browder
Vice President & General Counsel

WCB:pan
Enclosures

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ORLANDO UTILITIES COMMISSION Office of General Counsel

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF RANDALL E. HALLEY

ON BEHALF OF

ORLANDO UTILITIES COMMISSION

DOCKET NO. 080412

JUNE 1, 2009

Q. Please state your name and business address.

A. My name is Randall E. Halley. My business address is Reliable Plaza at 100 West Anderson Street, P.O. Box 3193, Orlando, Florida 32802.

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

A. I am employed by Orlando Utilities Commission (OUC) as Manager of Strategic Planning.

Q. Please summarize your educational background and professional experience.

A. I have a Bachelor of Science degree in Finance from the University of Central Florida.

In my current role as Manager of Strategic Planning, I am responsible for leading the strategic planning group through initiatives within the organization focused on long-term planning. These initiatives pertain to electric and water integrated resource planning, developing, implementing and monitoring energy

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1 conservation measures, conducting various research and analysis studies
2 regarding cost of service and rate design options, capital prioritization process,
3 measurement and verification of OUC's renewable and conservation programs.
4 Strategic Planning is also responsible for forecasting customer billing
5 determinants and related revenues, forecasting of fuel costs, the financial
6 feasibility analyses for major capital projects, developing the cost of service
7 models for electric, water, and chilled water operations, developing rate designs
8 for electric, water, and chilled water services, as well as determining the
9 feasibility of new business opportunities for OUC.

10

11 Prior to joining OUC in July 2006, I was a Principal Consultant with the Utility
12 Advisors' Network. I have 18 years of financial and management experience
13 related to municipal utilities owning and operating electric, natural gas, water
14 and wastewater systems. As a consultant, I provided clients with services such
15 as; forecasting, cost of service analysis, retail and wholesale rate design
16 development, and financial feasibility analysis for capital additions and
17 acquisitions.

18

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

20 A. The purpose of my testimony is (1) to discuss OUC's unique customer base and
21 demographics, (2) to discuss OUC's historical and ongoing commitment to
22 conservation and demand-side management (DSM), (3) to describe the overall
23 process to develop DSM goals, (4) to explain OUC's approach to conservation
24 and DSM, (5) to explain OUC's proposed DSM goals, and (6) to address areas

1 the Public Service Commission Staff has expressed an interest in investigating
2 through this Docket.

3

4 **Q. Are you sponsoring any exhibits to your testimony?**

5 A. Yes. Exhibit No. __ [RH-1] is a copy of my résumé. Exhibit No. __[RH-2]
6 presents a list of the DSM, conservation, and renewable energy programs
7 currently offered by OUC and activities in which we are involved. Exhibit No.
8 __ [RH-3] presents the estimated bill impact to OUC's residential customers for
9 DSM measures passing both the Total Resources Cost (TRC) and Participants
10 tests.

11

12 **Q. How is OUC governed?**

13 A. OUC's governing board consists of five members, including the Mayor of the
14 City of Orlando, who is an ex-officio member. Members must be OUC
15 customers and at least one member must reside outside of the City limits in
16 unincorporated Orange County. Members serve without salary and may serve
17 two consecutive four-year terms. The governing board sets the rates and
18 policies governing OUC's operations. OUC's board meetings are open to the
19 general public and rate payers are permitted to participate in Commission
20 meetings. OUC's governing board sets policies and programs consistent with
21 the best interests of OUC's customers and community.

22

1 **Q. Please describe OUC's service territory.**

2 A. OUC is the municipal electric utility provider for the City of Orlando, portions
3 of Orange County, portions of Osceola County and a full requirements provider
4 to the City of St. Cloud.

5
6 **Q. Please describe the demographics of OUC's customer base.**

7 A. OUC serves approximately 204,000 customers. OUC's customers are
8 approximately 86 percent residential, approximately 55 percent of which are
9 multi-family residences, many of which are rentals. Approximately 40 percent
10 of OUC's customers have household incomes of less than \$35,000. Many of
11 OUC's customers are employed in the service industry, which is especially
12 vulnerable to the impacts of economic downturns. The combination of low
13 income and rental customers presents special challenges to the effective
14 implementation of conservation and DSM programs. Any impacts on rates
15 resulting from implementation of DSM measures would have a disproportionate
16 impact on low income customers. Furthermore, rental customers have less
17 control over energy conservation efforts than homeowners.

18
19 **Q. Please explain OUC's existing Commission-approved DSM and
20 conservation goals.**

21 A. OUC's 2005 Demand-Side Management Plan was approved by the Florida
22 Public Service Commission on September 1, 2004 (Docket No. 040035). The
23 Commission determined there were no cost-effective DSM measures available

1 for use by OUC, and established zero DSM goals for OUC's residential,
2 commercial, and industrial sectors through 2014.

3
4 **Q. Has OUC offered DSM programs to its customers since the Commission**
5 **approved zero DSM goals in the 2004 goal setting process (Docket No.**
6 **040035)?**

7 A. Yes. OUC has continued to voluntarily offer DSM programs to customers
8 across all customer classes. OUC offers DSM programs that are directly
9 quantifiable, as well as programs that are not directly quantifiable. Since 2005,
10 the quantifiable DSM programs that OUC has voluntarily offered have saved a
11 total of approximately 5 MW of summer peak demand, approximately 4 MW of
12 winter peak demand, and nearly 15,000 MWh of energy.

13
14 **Q. How does OUC evaluate and select the DSM programs that are offered to**
15 **your customers?**

16 A. OUC works with several consultants to identify DSM programs that may be
17 available to OUC. OUC evaluates those programs initially based on the unique
18 characteristics of OUC's customer and community needs and potential for
19 successful implementation. If a program appears to provide benefits, OUC
20 considers implementation of the identified DSM programs to test customer
21 acceptance and quantify measurable results. Based on these results, OUC may
22 extend or discontinue the program as well as evaluate additional programs.
23 OUC's goal is to remain responsive to the needs of its customers rather than

1 impose mandated programs that may be ineffective when applied to OUC's
2 unique customer base.

3
4 **Q. How were potential DSM measures identified and evaluated for OUC for
5 purposes of this proceeding?**

6 A. In response to the mandate of Florida Energy Efficiency and Conservation Act
7 (FEECA) , OUC joined a collaborative (the Collaborative) with the other
8 FEECA jurisdictional utilities to engage a single contractor (Itron) to identify
9 DSM measures and evaluate the technical, economic, and achievable potential
10 for DSM for each of the utilities' service areas.

11
12 **Q. Please describe the Collaborative among the utilities and other entities.**

13 A. The Collaborative formed consisted of the FEECA utilities, the Natural
14 Resources Defense Council (NRDC), and the Southern Alliance for Clean
15 Energy (SACE). The goal of the Collaborative was to evaluate the technical,
16 economic, and achievable potential for DSM in Florida. The Collaborative
17 conducted workshops in conjunction with the Florida Public Service
18 Commission Staff.

19
20 **Q. Why was a collaborative approach taken?**

21 A. The collaborative approach offered opportunity for reduced costs to the FEECA
22 utilities in complying with the requirements of the Florida Energy Efficiency
23 and Conservation Act. In addition, the collaborative approach allowed for a

1 consistent methodology for the evaluation of DSM potential and formed a
2 vehicle for non-utility stakeholders' input.

3

4 **Q. Please describe the process of how the Collaborative selected Itron to be the**
5 **consulting firm utilized to provide the necessary assistance in the DSM**
6 **goals setting process.**

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

11

12 **Q. As the consultant selected by the Collaborative, what were Itron's**
13 **responsibilities?**

14 A. Itron's responsibilities included providing assessments of the technical and
15 achievable potential for energy and peak demand savings from energy
16 efficiency, demand response, and customer-scale renewable energy for each of
17 the FEECA utilities, as well as Florida as a whole. Itron also provided economic
18 potential estimates for OUC.

19

20 **Q. How were potential energy efficiency, demand response, and demand-side**
21 **renewable energy technologies identified?**

22 A. A comprehensive list of measures was developed by Itron from their vast
23 experience and supplemented with measures identified by the Collaborative, as
24 described in detail in the testimony of Mike Rufo.

1

2 **Q. How was OUC's achievable potential for the 2010 through 2019 period**
3 **determined?**

4 A. Achievable potential was determined for OUC by Itron as discussed in the
5 testimony of Mike Rufo.

6

7 **Q. What are OUC's estimated achievable potentials for residential and**
8 **commercial/industrial energy efficiency based on the Ratepayer Impact**
9 **Measure (RIM) test?**

10 A. Itron's analyses indicated that there is no achievable potential for residential and
11 commercial/industrial energy efficiency for OUC based on the RIM test.

12

13 **Q. What is the purpose of the RIM test?**

14 A. The purpose of the RIM test is to ensure that utility rates do not increase as a
15 result of implementation of DSM measures, thereby ensuring that customers
16 who cannot participate in the measure will not be penalized.

17

18 **Q. What are OUC's estimated achievable potentials for residential and**
19 **commercial/industrial demand response?**

20 A. Itron estimated achievable potential for residential and commercial/industrial
21 demand response under two different scenarios for enrollment under critical
22 peak price (CPP)/time of use (TOU) as discussed in the testimony of Mike Rufo.
23 The achievable potential under the high CPP/low TOU scenario is
24 approximately 11 MW (summer) and 10 MW (winter) by 2019. The achievable

1 potential under the low CPP/ high TOU scenario is approximately 9 MW
2 (summer) and 6 MW (winter) by 2019.

3

4 **Q. What are OUC's estimated achievable potentials for residential and**
5 **commercial/industrial demand-side renewable energy technologies based on**
6 **the RIM test?**

7 A. Itron's analyses indicated that there is no achievable potential for residential and
8 commercial/industrial customer-scale renewable energy technology for OUC
9 based on the RIM test.

10

11 **Q. What cost-effectiveness test or tests should the Commission use to set DSM**
12 **goals, pursuant to Section 366.82, F.S.?**

13 A. OUC believes the iterative process for evaluating DSM programs described
14 earlier in my testimony is adequate and the most appropriate means for
15 determining DSM programs for OUC. To the extent the Commission does set
16 DSM goals for municipal utilities it should use, as a threshold, the results of the
17 RIM test as the basis for setting DSM goals, particularly since the Commission
18 does not have rate setting jurisdiction over municipal utilities. If the results of
19 the RIM test indicate a DSM measure may be cost-effective, then it should also
20 be required to pass both the TRC test and the Participants test.

21

22 **Q. Has OUC provided an adequate assessment of the full technical potential of**
23 **available demand-side and supply-side conservation and efficiency**

1 **measures, including demand-side renewable energy systems, pursuant to**
2 **Section 366.82 (3), F.S.?**

3 A. Yes. The technical potential study performed by Itron, as described in the
4 testimony of Mike Rufo, provided an adequate assessment of the full technical
5 potential of available demand-side and supply-side conservation and efficiency
6 measures, including demand-side renewable energy systems. Drawing upon
7 their recognized expertise, Itron utilized its state-of-the-art models to
8 comprehensively analyze energy efficiency, demand response, and demand-side
9 renewable energy technologies.

10
11 **Q. Has OUC provided an adequate assessment of the achievable potential of**
12 **available demand-side conservation and efficiency measures, including**
13 **demand-side renewable energy systems?**

14 A. Yes. The achievable potential study performed by Itron, as described in the
15 testimony of Mike Rufo, provided an adequate assessment of the achievable
16 potential of available demand-side conservation and efficiency measures,
17 including demand-side renewable energy systems. Drawing upon their
18 recognized expertise, Itron utilized its state-of-the-art models to
19 comprehensively analyze energy efficiency, demand response, and demand-side
20 renewable energy technologies.

21

1 **Q. Should the Commission establish additional goals for efficiency**
2 **improvements in generation, transmission, and distribution?**

3 A. No. OUC believes that efficiency improvements in generation, transmission,
4 and distribution are supply-side issues.

5

6 **Q. Should the Commission establish separate goals for demand-side renewable**
7 **energy systems for the period 2010 through 2019?**

8 A. No. The Commission should not establish separate goals for demand-side
9 renewable energy systems. Any goals should be established to promote cost-
10 effective DSM without bias toward any particular technology. Furthermore, if
11 demand-side renewable energy systems are cost-effective, utilities should have
12 the flexibility to include such systems as part of their renewable portfolio or as
13 part of their DSM goals.

14

15 **Q. Should the Commission establish separate goals for residential and**
16 **commercial/industrial customer participation in utility energy audit**
17 **programs for the period 2010 through 2019?**

18 A. No. The Commission should not establish separate goals for residential and
19 commercial/industrial customer participation in utility energy audit programs.
20 Utility energy audits are performed as a result of customer interest in such
21 audits, and the utility cannot dictate whether customers have interest in receiving
22 energy audits. Utilities should be allowed the flexibility to integrate energy
23 audits into conservation programs as appropriate.

24

1 **Q. Should the Commission establish incentives to promote both customer-**
2 **owned and utility-owned energy efficiency and demand-side renewable**
3 **energy systems?**

4 A. No. As part of this Docket, we have comprehensively analyzed customer-
5 owned energy efficiency and demand-side measures and none were found to be
6 cost-effective. Utility-owned energy efficiency and renewable energy systems
7 are supply-side issues.

8

9 **Q. Please identify the 2010 through 2019 projected technical potential for**
10 **OUC.**

11 A. Projected technical potential for OUC is presented in the Executive Summary
12 section of the *Technical Potential for Electric Energy and Peak Demand*
13 *Savings for Orlando Utilities Commission* (dated April 8, 2009) which was
14 developed by Itron and has been filed previously in this Docket.

15

16 **Q. What overall DSM goals (peak demand and energy reductions) are**
17 **appropriate and reasonably achievable for OUC for the 2010 through 2019**
18 **period?**

19 A. In Order No. PSC-04-0767-PAA-EG the Florida Public Service Commission
20 established OUC's DSM goals at zero for the period of 2005 - 2014. In that
21 Order the Commission agreed with OUC that where no DSM measures passed
22 both the Participant and RIM cost-effectiveness tests, no DSM measures were
23 appropriate. As noted earlier in my testimony, none of the DSM measures
24 evaluated by Itron passed the RIM test. Consistent with the Commission's prior

1 Order, OUC believes the DSM goals for OUC should remain at zero through the
2 current evaluation period ending in 2019.

3
4 OUC respectfully submits that the Commission's analysis in the Order still
5 holds true and that as the Commission notes in the Order, "...it is reasonable to
6 allow OUC to determine whether or not such programs should be continued
7 because OUC is in the best position to determine its customer's needs." As
8 discussed previously, OUC continues to offer the programs outlined in the Order
9 and continues to evaluate new measures. OUC's *2009 Annual Conservation*
10 *Report*, filed with the Public Service Commission in March 2009, describes the
11 DSM programs, conservation programs, and the renewable energy programs and
12 initiatives that OUC offered its customers in calendar year 2008. Subsequent to
13 that time, OUC has developed additional DSM and conservation programs that
14 are now offered to our customers. The DSM, conservation, and renewable
15 energy programs currently offered by OUC as well as other activities in which
16 OUC participates are presented in Exhibit No. ___ [RH-2].

17
18 **Q. What are OUC's proposed residential and commercial/industrial DSM**
19 **goals for the 2010 through 2019 period?**

20 **A.** OUC proposes that the DSM goals approved by the Public Service Commission
21 for OUC's residential and commercial/industrial customers remain zero.

22
23 The results of the Itron study identified one demand response program that may
24 have potential to provide cost-effective demand reductions. This program will

1 be evaluated by OUC, consistent with the process outlined earlier in my
2 testimony. If shown to be beneficial to our customers and the community, OUC
3 will consider implementing such a program.

4
5 **Q. Do OUC's proposed DSM goals adequately reflect the costs imposed by**
6 **state and federal regulations on the emission of greenhouse gases, pursuant**
7 **to Section 366.82(3)(d), F.S.?**

8 A. Greenhouse gases are not currently regulated at either the State or Federal level,
9 and there currently are no costs imposed on the emissions of greenhouse gases.
10 OUC does not believe it is appropriate to base the establishment of DSM goals
11 on speculation related to yet-to-be defined potential regulations of emissions of
12 greenhouse gases. However, for informational purposes, Itron is performing
13 additional analyses related to several different combinations of fuel and carbon
14 dioxide emissions allowance prices.

15
16 **Q. For OUC, what are the 2010 through 2019 annual bill impacts on**
17 **residential customers using 1,200 kWh/month for the projected TRC**
18 **achievable portfolio, the projected RIM achievable portfolio, and the**
19 **company's proposed DSM goals?**

20 A. Exhibit No. __ [RH-3] presents an approximation of the annual bill impacts on
21 residential customers for the TRC achievable portfolio projected by Itron due to
22 the DSM measures included in the TRC achievable portfolio based upon
23 information provided by Itron and OUC's projected annual revenue and energy

1 consumption by year. As shown in Exhibit No. ___ [RH-3], the estimated bill
2 impact is approximately 12.7 percent by 2019.

3

4 There is no incremental impact based on the RIM achievable portfolio, as there
5 are no DSM measures that pass the RIM test for OUC based on Itron's analyses.

6 As OUC has no proposed DSM goals, there is no incremental impact.

7

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

9 **A. Yes it does.**

10

11

12

13

14

15

16

Randall E. Halley
Manager, Strategic Planning
Orlando Utilities Commission

Professional Summary Eighteen years of financial and management experience within the utility industry. Skilled at cost-of-service and rate studies for electric, natural gas, water, wastewater and chilled water municipal utility systems. Mr. Halley is currently responsible for leading the strategic planning group through initiatives within the organization focused on long-term planning. These initiatives pertain to electric and water integrated resource planning, developing, implementing and monitoring energy conservation measures, conducting various research and analysis studies regarding cost of service and rate design options, capital prioritization process, measurement and verification of OUC's renewable and conservation programs.

*Professional and
Business History*

- | | |
|---|----------------|
| Orlando Utilities Commission | 2006 – Present |
| • Manager, Strategic Planning | |
| • Financial Coordinator | |
| Utility Advisors' Network, Inc. | 2004 – 2006 |
| • Principal | |
| Alliant Energy Integrated Services | 2002 – 2004 |
| • Southeast Regional Energy Manager | |
| Orlando Utilities Commission | 1999 – 2002 |
| • Senior Pricing Coordinator | |
| SVBK Consulting Group | 1991 - 1999 |
| • Senior Consultant | |

*Professional
Experience*

- Performed electric rate studies resulting in the development of rates that produce the desired revenues while sending the appropriate price signals to the customers.
- Assisted utilities in developing short-term and long-term plans for collecting appropriate customer load profiles for future rate design objectives.
- Managed several electric municipalization feasibility studies for cities considering their options at the end of their franchise agreements with investor owned utilities. Process included the valuation of the distribution system serving the city, performing projections of billing determinants, revenues, operating costs, purchased power costs and stranded costs.

*Professional
Experience -
(continued)*

- Developed valuation studies for the acquisition of water and wastewater systems, natural gas systems and chilled water systems.
- Provided consulting services with regard to financing alternatives for the utilities' capital improvement plans. Developed analyses to determine the optimum method of financing, determine the most effective use of current and potential sources of funds, and plan the use of these funds to minimize rate impacts and meet the financial objectives of the utilities.
- Performed many financial feasibility analyses for various utility operations. These

analyses include the comparison of projected operating costs and market based rates and charges to the initial outlay in capital. Developed detailed cash flow models to account for comparison of these variables. Experience in the determination of the appropriate discount rate to use for each individual situation.

- Involved in the development financial feasibility reports for use in revenue bond official statements supporting the issuance of utility revenue bonds. These reports include historical and projected operating results, load projections, and determining projected rate paths to recover the projected revenue requirements. Involved in numerous revenue bond issuance projects and have appeared before rating agencies and bond insurers on behalf of municipal utilities.
- Developed chilled water service rates for district cooling systems. Performed life cycle cost analyses for the comparison of customers self cooling vs. chilled water service.

Education

B.S.B.A in Finance
University of Central Florida
Orlando, FL

1992

OUC DSM, Conservation, and Renewable Energy Programs and Activities

Quantifiable Conservation Programs

Residential Energy Survey Program. This program is designed to provide residential customers with recommended energy efficiency measures and practices Customers can implement. The Residential Energy Survey Program consists of three measures, including the Residential Energy Walk-Through Survey, the Residential Energy Survey Video and DVD, and an interactive On-Line Energy Survey.

The Residential Energy Walk-Through Survey includes a complete examination of the attic; heating, ventilation, and air conditioning (HVAC) system; air duct and air returns; window caulking; weather stripping around doors; faucets and toilets; and lawn sprinkler systems. OUC provides participating customers specific tips on conserving electricity and water as well as details on customer rebate programs. OUC Conservation Specialists are presently using this walk-through type audit as a means of motivating OUC customers to participate in other conservation programs and qualify for appropriate rebates.

The Residential Energy Survey Video was first offered in 2000 by OUC and is now available to OUC customers in an interactive DVD format. The video (or DVD) is free and is distributed either in the English or Spanish version to OUC customers by request. The measure was developed to further assist OUC customers in surveying their homes for potential energy saving opportunities. The video walks the customer through a complete visual assessment of energy and water efficiency in his or her home. A checklist brochure to guide the customer through the audit accompanies the video. The video has many benefits over the walk-through survey, including the convenience of viewing the video at any time without a scheduled appointment and the ability to watch the video numerous times. In addition to the Energy Walk-Through and the Video Surveys, OUC offers customers an interactive Online Home Energy Audit. The interactive Online Home Energy Audit is available on OUC's Web site, www.OUC.com.

One of the primary benefits of the Residential Energy Survey Program is the education it provides to customers on energy conservation measures and ways their lifestyle can directly affect their energy use. Customers participating in the Energy Survey Program are informed about conservation measures that they can implement. Customers will benefit from the increased efficiency in their homes, which will decrease their electric and water bills.

Participation in the Walk-Through Energy Survey has been consistently strong over the past several years and interest in both the Energy Survey Video and DVD, as well as the interactive

Online Home Energy Audit, has been high since the measures were first introduced. Feedback from customers that have taken advantage of the surveys has been very positive.

Residential Energy Efficiency Rebate Program. This program offers financial incentives to residential customers who implement efficiency measures including energy-efficient heat pumps, weather stripping, insulation, duct repairs, and other energy-saving measures for their single-family homes. Under this program, OUC will give specific tips to customers on conserving electricity and water, and offer details on the following customer rebate programs:

1. OUC will rebate up to \$300 on customer's purchase of an energy-efficient heat pump
2. OUC will rebate customers 50% of the cost up to \$50 for the purchase of caulking, weather stripping.
3. OUC will rebate up to \$100 for the purchase of window film or solar screening. (Increased in 2009 from \$75 to \$100.)
4. OUC will rebate up to \$100 to upgrade the customer's attic insulation to R-19 or higher
5. OUC will rebate up to \$150 on repairs made to leaking ducts. (Increased in 2009 from \$75 to \$150.)

Residential Home Energy Fix-Up Program. This program is available to residential customers with a total annual family income of \$35,000 or less. Each customer must request and complete a free Residential Energy Survey. Ordinarily, Energy Survey recommendations require a customer to spend money replacing or adding energy conservation measures, which low-income customers may not have the discretionary income to implement. Under this program, OUC will arrange for a licensed, approved contractor to perform the necessary repairs and will pay 85 percent of the total cost, not to exceed \$2,000. The remaining 15 percent can be paid directly or over an interest-free 12-month period on the participant's monthly electric bill. To be eligible for this program, the customer's account must be in good credit standing. Measures covered under this program include:

1. Attic insulation.
2. Exterior and interior caulking.
3. Weather-stripping of doors and windows.
4. Minor air conditioning/heating supply and return air duct repairs.
5. Water heater and hot water pipe insulation.
6. Minor water leakage repair.
7. Installation of water flow restrictors.

The purpose of the program is to reduce the energy cost for low-income households, particularly those households with elderly persons, disabled persons, and children, by improving the energy efficiency of their homes and reduce their living expenses. Through this program, OUC helps to lower the bills of low-income customers who may have difficulty paying their bills. Reducing the bill of the low-income customer may improve the customer's ability to pay the bill, thereby decreasing costly service disconnect fees and late charges. OUC believes that this program will help customers afford other important living expenses.

Residential Financed Insulation Program. This measure is available to OUC residential customers who utilize some type of electric heat and/or air conditioning. To qualify, customers must request and complete a free Residential Energy Survey. To qualify for financing, customers must have a satisfactory credit rating with OUC. The program allows customers who insulate their attics to a minimum R-19 level to pay for the insulation on their monthly utility bills for up to 2 years interest-free with no money down. In addition, the customer will receive a \$100 rebate to be deducted from the financed amount. OUC directly pays the total cost for installation when the customer makes payments to OUC as part of their monthly utility bill. The maximum amount that can be financed is \$1,000. Feedback from customers that have taken advantage of the program has been very positive.

Residential Efficient Electric Heat Pump Program. This program provides rebates to qualifying customers who install heat pumps having a seasonal energy efficiency ratio (SEER) of 14.0 or higher. Customers will be able to obtain a rebate in the form of a credit on their bill of \$100, \$200 or \$300, if they install heat pumps with a SEER rating of 14, 15, or 16 and above respectively. A qualified, licensed, and insured air conditioner contractor must perform the work. In addition, OUC will require proof of purchase or invoice documenting the eligibility of heat pump installation. Customers will benefit from the increased energy conservation in their homes, which will decrease their electric bills. An additional benefit of this program is the ductwork and insulation level improvements made by contractors when installing energy efficient heat pumps.

Residential Gold Ring Home Program. The Residential Gold Ring Home Program is closely aligned with Energy Star Ratings. In developing the program, OUC partnered with local home builders to construct new homes according to Energy Star standards. Features may include high efficiency heat pumps, heat recovery water heaters, R-30 attic insulation, interior air ducts, double pane windows, window shading, etc.

The contractor is required to qualify its homes to Energy Star standards by having the homes rated by a certified rater. In return for each Energy Star home certification, the builder receives a rebate of \$200 for single-family homes and \$100 for townhomes. After obtaining the Energy Star certification, OUC will help support the builder's efforts through additional advertising and other promotional strategies.

Gold Ring Homes use less energy than other homes, allowing Gold Ring homeowners benefit from lower energy bills and qualification for all FHA, VA, and Energy Efficient Mortgage Programs. This allows the homeowner to increase his or her income-to-debt ratio by 2 percent and makes it easier to qualify for a mortgage. However, due to the past years' housing crisis, local builder and customer demand for this program has significantly diminished.

Commercial Energy Survey Program. This program is focused on increasing the energy efficiency and energy conservation of commercial buildings and includes a free survey comprised of a physical walk-through inspection of the commercial facility performed by highly trained and experienced energy experts. The survey will examine heating and air conditioning systems including duct work, refrigeration equipment, lighting, water heating, motors, process equipments, and the thermal characteristics of the building including insulation. Following the inspection the customer receives a written report detailing cost-effective recommendations to make the facility more energy and water efficient.

The commercial customer who has a Commercial Energy Survey also receives the book *Business Energy Efficiency Guide* which shows more ways for businesses to profit from energy management. Customers are encouraged to participate in other OUC commercial programs and directly benefit from energy conservation, which decreases their electric and water bills.

Commercial Indoor Lighting Retrofit Program. This program reduces energy consumption for the commercial customer through the replacement of older fluorescent and incandescent lighting with newer, more efficient lighting technologies. A special alliance between OUC and the lighting contractor enables OUC to offer the customer a discounted project cost. An additional feature of the program allows the customer to pay for the retrofit through the monthly savings that the project generates. Upfront capital funding is not required to participate in this program. The project payment appears on the participating customer's utility bill as a line-item. After the project has been completely paid, the participating customer's annual energy bill will decrease by the approximate amount of projected energy cost savings.

Additional Conservation Programs

The following programs are offered by OUC to its customers, resulting in energy savings and increased reliability. Although the programs are neither directly nor easily quantifiable, each program provides a valuable service to OUC's customers.

Residential Energy Conservation Rate. Beginning in October 2002, OUC modified its residential rate structure to a two-tiered block structure to encourage energy conservation. Residential customers using more than 1,000 kWh per month pay a higher rate for the additional energy usage. The purpose of this rate structure is to make OUC customers more energy-conscious and to encourage conservation of energy resources.

Commercial OUC Consumption Online Program. This program enables businesses to check their energy usage and demand from a desktop computer, thereby allowing businesses to manage their energy load. Customers are able to analyze the metered interval load data for multiple locations, compare energy usage among facilities, and measure the effectiveness of various energy efficiency efforts. The data can also be downloaded for further analysis. Participants must cover a one-time program set-up fee of \$45, a \$45 monthly fee per meter for this service, and the cost of additional infrastructure (which can range between \$0 and \$500) at the meters which may be required.

Commercial OUC Convenient Lighting Program. OUC Convenient Lighting provides complete outdoor lighting services for commercial applications, including industrial parks, sports complexes, and residential developments. Each lighting package is customized for each participant, allowing the participant to choose among light fixtures and poles. OUC handles all of the upfront financial costs and maintenance. The participant then pays a low monthly fee for each fixture. OUC also retrofits existing fixtures to new light sources or higher output units, increasing efficiency as well as providing preventive and corrective maintenance. New interlocal agreements have allowed this program to expand into neighboring communities like Clermont, Oviedo, and Brevard County.

Commercial Power Quality Analysis Program. This program enables OUC to ensure the highest possible power quality to commercial customers. There are five general categories of power irregularities, including overvoltage, undervoltage, outages, electric noise, and harmonic distortion. Under the Power Quality Analysis program, trained and experienced service personnel help the customer isolate any problems and find appropriate solutions. The goals of

this program include making the maximum effort to solve power quality problems through monitoring and interpretive analysis, identifying solutions that will lead to corrective action, and providing ongoing follow-up services to monitor results.

Commercial Infrared Inspections Program. This program was developed to help customers uncover potential reliability and power quality problems. A highly trained and experienced technician performs the inspection using state-of-the-art equipment. The infrared inspection detects thermal energy and measures the temperature of wires, breakers, and other electrical equipment components. The information is transferred into actual images, and those images reveal potential problem areas and hot spots that are invisible to the naked eye. This information allows the customer to make repairs to or replace faulty equipment and prevent untimely breakdowns, equipment damage, and lost profits. Following the inspection, the customer receives a detailed analysis and written report, which includes a complete description of diagnostic recommendations.

OUCooling. OUCooling was originally formed in 1997 as a partnership between OUC and Trigen-Cinergy Solutions, and helps to lower air conditioning-related electric charges and reduce capital and operating costs. During 2004, OUC bought Trigen-Cinergy's rights and is now the sole owner of OUCooling. OUCooling will fund, install, and maintain a central chiller plant for each business district participating in the program. The main benefits to the businesses are lower electric energy consumption, increased reliability, and no environmental risks associated with the handling of chemicals. Other benefits for the businesses include avoided initial capital cost, lower maintenance costs, a smaller mechanical room (therefore more rental space), no insurance requirements, improved property resale value, and availability of maintenance personnel for other duties.

OUC currently has five chilled water districts: downtown Orlando, the Mall at Millenia, the Starwood Resort, Lake Nona, and the Orange County Convention Center including Lockheed Martin and neighboring hotels. OUC envisions building other chiller plants serving commercial campuses, hotels, retail shopping centers, and tourist attractions. OUC recently added its fifth district at Lake Nona, with the potential to provide up to 65,000 tons of chilled water to the medical complexes and research facilities located in the area. At full build out, this central chilled water system may be one of the largest in the US. The 17.6 million gallon chilled water thermal storage tank at the Orange County Convention Center is one of the largest in the world. The tank works in tandem with 18 water chillers and feeds a cooling loop that can handle more than 33,000 gallons of 37° F water per minute.

OUC's first chiller plant was installed at Lockheed Martin Corp. The plant was built in 1999 and serves eight customers. After that project, OUC began operation of a chilled water system serving downtown Orlando. In 1999, the downtown project won three awards. In 2000, the Downtown Orlando Partnership gave its Award of Excellence to OUC, based on the chilled water plant. The downtown Orlando "district cooling" division now provides air conditioning service to more than a dozen large commercial customers with a combined 2 million square feet of space.

In 2002, the International District Energy Association (IDEA) presented OUCooling a first-place award for signing up more customer square footage for its chilled-water business than any other company in 2001. OUCooling signed up 9 million square feet of new customer space in 2001. IDEA is an association representing more than 900 district heating and cooling executives, managers, engineers, consultants, and equipment suppliers from 20 countries.

OUC received three awards from the Associated Builders and Contractors Inc. for one of the top construction projects in Orlando. The awards included the Eagle Award for mechanical work, General Contractor Award of Merit, and the Subcontractor Award of Merit. OUCooling was also featured in the January-February 2003 issue of *Relay*, Florida's energy and electric utility magazine.

Renewable Energy Efforts

In addition to continuing to promote DSM and conservation, OUC is actively working to promote customer awareness of opportunities to increase the role of renewable energy. The following summarizes these initiatives:

Green Pricing Program. Participation in this program helps add renewable energy to OUC's generation portfolio, improves regional air and water quality, and assists OUC in developing additional renewable energy resources. Program participants may pay an additional \$5.00 on their monthly utility bills for each 200 kWh block blend of local bio-energy (75 percent), local solar energy (20 percent) and purchased wind power (5 percent); or \$10.00 for each 200 kWh block of 100 percent solar energy. There is no limit to the number of 200 kWh blocks that a participant may acquire to support funding of additional renewable energy to OUC's portfolio. Participation helps OUC develop cleaner alternative energy resources, such as solar, wind, and biomass. The annual per customer participation of 2,400 kWh is equivalent to the environmental

benefit of planting 3 acres of forest, taking three cars off the road, preventing the use of 27 barrels of oil, or bicycling more than 30,575 miles instead of driving.

Solar Photovoltaic (PV) and Solar Thermal Programs. Participating customers install a solar PV system, a solar thermal system, or both systems, on their homes and sign an agreement allowing OUC to retain the rights to the environmental benefits or attributes. Participating customers receive a monthly production credit on their utility bills for the energy the systems produce. Any excess electricity generated by the solar systems back to OUC's electric grid will be credited at the full applicable standard rate.

The solar PV systems are metered in kWh, while the solar thermal systems are metered in British Thermal Units (BTU) and converted to kWh. Participating customers save on normal electric consumption and also receive a monthly credit for the kWh production of the solar systems. The monthly production credit is \$0.03 and \$0.05 for each equivalent kWh produced for solar thermal and solar PV systems, respectively. An additional \$250 credit is provided for Solar Thermal customers to cover the cost of the BTU meter necessary to measure the BTU output to convert it to the kWh equivalent.

Solar 0% to Low-Interest Loan program

Residential customers may benefit from OUC's partnership with the Orlando Federal Credit Union to provide low interest loan options for solar installations, helping to keep the net monthly cost low, all of which can be included on the OUC bill. Through working with the Credit Union, OUC's customers have access to the following favorable rates:

<i>Terms (months)</i>	<i>Rate (APR)</i>
36	0.00%
36	2.00%
60	2.75%
60	4.00%
84	4.00%
84	4.75%
120	5.50%

The rates and terms above are subject to change.

Below are some general loan guidelines to consider:

1. The low interest loans are available to OUC's residential customers.

2. At the customer's convenience, the solar loan can be paid monthly as a line item on the utility bill.
3. Loan payments on the utility bill will be on a fixed payment schedule and are not conducive to multiple modifications. Any modifications to the loan principal must be made through Orlando Federal Credit Union. Customers who plan to make additional principal payments should opt to be billed from Orlando Federal Credit Union directly.
4. Solar loans will be removed from utility accounts and transferred to Orlando Federal Credit Union for billing if any of the following occurs:
 5. Upon customer request
 6. The customer closes the account
 7. The utility account becomes delinquent when two consecutive late payments are made.
 8. Multiple modifications to the principal occur

Additional Florida state rebates and federal tax credits may also be available to help minimize costs.

To further facilitate development of solar energy, OUC supported Orange County in its efforts to obtain an award of a \$2.5 million grant from the Florida Department of Environmental Protection to install a 1 MW solar array on the Orange County Convention Center. In 2008, Orlando was designated a "Solar American City" by the US DOE. The ongoing partnership between OUC, City of Orlando and Orange County received \$450,000 in funding and technical expertise to help develop solar projects in OUC's community that can be replicated across the country.

In addition, in 2008 OUC committed \$1 million toward the Dr. Phillips Orlando Performing Art Center in south downtown. This contribution will help the performing arts center with its green initiatives, specifically energy and water efficiency. With OUC's help, the facility's designers are keeping sustainability in mind and hope to incorporate green features and programs such as solar panels, energy efficient lighting and chilled water for air conditioning.

In 2008, OUC's commitment to efficiency and sustainability was further demonstrated by the completion of Reliable Plaza, OUC's new energy and water efficient center in south downtown which replaces OUC's previous South Orange Avenue home. Reliable Plaza, the "Greenest Building in Downtown Orlando," is designed to meet Gold Leadership in Energy and Environmental Design (LEED) certification. Reliable Plaza showcases a number of environmentally friendly features and uses 28 percent less energy and 40 percent less water than

a similarly sized facility. One of the more innovative offerings at Reliable Plaza is the interactive conservation education center. With a live link to the building's conservation systems, the center's touch screen gives customers real time data on how Reliable Plaza uses – and saves – energy and water. The center also can give information on green building ideas and conservation tips customers can use at home.

In 2008, OUC partnered with the Disney Entrepreneur Center for a pilot efficiency program that will offer conservation credits to small businesses that may be experiencing financial difficulties. OUC also began its "Power to Save" campaign, which allowed customers to view OUC conservation and education videos on demand on Bright House Networks. Viewers could access information around the clock and at no cost. The campaign provided access that customers requested and OUC saved money and resources by offering a waste-free alternative to mailing out conservation DVDs. OUC also used digital billboards along major thoroughfares as a low-cost means to deliver conservation messages to commuters in the community.

OUC also continues to play an active role in the local community. During 2008, OUC Conservation Support personnel participated in 46 community events to help promote OUC's conservation programs. Conservation Specialists conducted presentations, provided face-to-face consultations, scheduled audits, and provided information on OUC's conservation programs. Examples of the events that OUC representatives attended include Hispanic Business Expos, various home owner associations meetings, civic group meetings, Central Florida Hotel & Lodging Association (CFHLA) events, Florida Green Lodging events, Earth Day events, corporate employee events, and various other community events. OUC also helped to educate customers through its commitment to alternative fleet services. Every OUC Conservation Specialist drives a hybrid vehicle, generates discussion between customers and contributes to increased awareness of alternative fuel vehicles.

Programs Added After Publishing the 2009 Annual Conservation Report

Since the 2009 Annual Conservation Report summarizes activities for calendar year 2008 and OUC has added a few more energy conservation programs for its customers, the following lists these new programs:

Residential Envelope Improvements

Injected Wall insulation - \$300

High Performance Windows*- \$1 per Sq ft

Cool Reflective Roof*- \$150
*Must meet Energy Star standards

Commercial Building Envelope Improvements

Window Film or Solar Screen - \$0.75 /sq ft of window film or screen (\$55 max per room)
Installing solar window films on pre-existing buildings can help reflect the heat during hot summer days and retain heat on cool winter days. Your cooling and heating unit(s) will become more efficient.

Incentive requirements:

1. Applicable to commercial improvements projects.
2. Shading Coefficient (SC) of film or screen must be 0.5 or less.

Ceiling Insulation Upgrade - \$100 plus \$0.07 /sq ft above 1,500 sq ft
Adding insulation can increase your building's resistance to heat loss and gain. It can help lower your energy costs and keep your business comfortable through all seasons.

Incentive requirements:

1. Applicable to commercial improvements projects.
2. Final insulation level must be R-19 or higher.

Cool / Reflective Roof - \$0.10 /sq ft up to \$15,000
A cool/reflective roof reflects the sun's rays helping lower roof surface temperature and increasing roof life. It helps lower your energy bill during the summer by preventing heat absorption.

Incentive requirements:

1. Applicable to commercial improvements and new construction projects.
2. The cool roof product must be certified and approved by the ENERGY STAR® Roof Products program and have an initial Solar Reflectance greater than or equal to 0.70.

Commercial Cooling & Heating

Duct Repair / Replacement - Up to \$150

Duct leaks can cause a significant increase in air conditioning energy use thus increasing your energy bill. Properly sealed ducts will lower your energy bill and improve the efficiency and performance of your central heating and cooling systems.

Incentive requirements:

1. Applicable to commercial improvement projects.
2. Must have an existing central air conditioning system and must be 5.5 tons or less (66,000 BTUs).
3. Ducts must be sealed with mastic and Underwriters Laboratory (UL) approved duct tape

Heat Pump – SEER 14 = \$100/SEER 15 = \$200/SEER 16+ = \$300

Older central air units can be very costly to operate and maintain. New units are more efficient and use less energy while lowering your electric bill. Annual energy savings for a 15 Seasonal Energy Efficiency Rating (SEER) or greater unit could be up to 30 percent when compared to a 12 SEER unit.

Incentive requirements:

1. Applicable to commercial improvements and new construction projects.
2. Valid on units from 18,000 to 66,000 BTU/h.
3. New DX Package units and/or Package Terminal Heat Pump systems must have a Seasonal Energy Efficiency Rating (SEER) of 14 or higher.
4. Provide copy of Air Conditioning and Refrigeration Institute (ARI) certified efficiency data form.
5. Provide copy of invoices and model numbers for both the condenser and air handler units.

Docket No. 080412
Randy Halley
Exhibit No. ____ [RH-3]

Estimated Cumulative Annual Bill for 2010 through 2019 Residential Customers – DSM Measures Passing Both TRC and Participant Tests										
Calendar Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Percent Increase	0.6%	1.5%	2.7%	4.1%	5.6%	7.1%	8.6%	10.1%	11.4%	12.7%

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF BRADLEY E. KUSHNER

ON BEHALF OF

ORLANDO UTILITIES COMMISSION

DOCKET NO. 080412

JUNE 1, 2009

Q. Please state your name and business address.

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

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

A. I am employed by Black & Veatch Corporation as a Manager.

Q. Please describe your responsibilities in that position.

A. I am responsible for the management of various projects for utility and non-utility clients. These projects include production cost modeling associated with power system expansion planning, feasibility studies, and demand-side management (DSM) evaluations. I also have involvement in the issuance and evaluation of requests for proposals (RFPs).

Q. Please describe Black & Veatch Corporation.

A. Black & Veatch Corporation has provided comprehensive engineering, consulting, and management services to utility, industrial, and governmental

1 clients since 1915. Black & Veatch specializes in engineering, consulting, and
2 construction associated with utility services including electric, gas, water,
3 wastewater, telecommunications, and waste disposal. Service engagements
4 consist principally of investigations and reports, design and construction,
5 feasibility analyses, rate and financial reports, appraisals, reports on operations,
6 management studies, and general consulting services. Present engagements
7 include work throughout the United States and numerous foreign countries.
8

9 **Q. Please state your educational background and professional experience.**

10 A. I received my Bachelors of Science in Mechanical Engineering from the
11 University of Missouri – Columbia in 2000. I have more than 9 years of
12 experience in the engineering and consulting industry. I have experience in the
13 development of integrated resource plans, ten-year-site plans, DSM plans, and
14 other capacity planning studies for clients throughout the United States. Utilities
15 in Florida for which I have worked include OUC, Florida Municipal Power
16 Agency, JEA, Kissimmee Utility Authority, Lakeland Electric, Reedy Creek
17 Improvement District, Tampa Electric Company, and the City of Tallahassee. I
18 have performed production cost modeling and economic analysis, and otherwise
19 participated in five Need for Power Applications that have been filed on behalf
20 of Florida utilities and approved by the Florida Public Service Commission. I
21 have also testified before the FPSC in Need for Power proceedings.
22

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

2 A. The purpose of my testimony is to discuss the methodology used to develop the
3 avoided capacity costs that were provided to Itron for use in their analyses of
4 DSM measures for OUC. I will also discuss the fuel forecasts that were used by
5 OUC in their production cost modeling that was used as the basis for the
6 avoided energy costs provided to Itron for use in their analyses of DSM
7 measures for OUC.

8
9 **Q. Are you sponsoring any exhibits to your testimony?**

10 A. Yes. Exhibit No. __ [BEK-1] is a copy of my résumé. Exhibit No. __ [BEK-2]
11 presents the carbon dioxide emissions allowance prices considered in OUC's
12 analyses.

13
14 **Q. How was the timing of avoidable capacity additions determined?**

15 A. The timing of avoidable capacity additions was determined by comparing
16 OUC's existing and planned new generation resources to the forecast annual
17 peak demands over the 2010 through 2029 period. In developing this
18 comparison, a reserve margin of 15 percent was reflected. The first year in
19 which capacity requirements exceed available generating capacity is projected to
20 be 2018, at which time it has been assumed for purposes of this analysis that a
21 simple cycle combustion turbine (approximately 158 MW) would be added to
22 satisfy the capacity requirements. Subsequent capacity shortfalls were met by
23 the addition of similar simple cycle combustion turbines. Such additions were
24 necessary in 2021, 2024, and 2027.

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Q. How were capital costs for these combustion turbine additions calculated?

A. Overnight capital costs for the combustion turbines were based on the estimated capital costs for the General Electric 7FA simple cycle combustion turbine presented in JEA's Greenland Energy Center (GEC) Combined Cycle Conversion Need for Power Application, which was approved by the Public Service Commission in February 2009 (Docket No. 080614). The overnight capital costs were then escalated to the date each unit is assumed to be installed to satisfy capacity requirements, and interest during construction costs were also added. The resulting installed capital costs were multiplied by OUC's levelized fixed charge rate to determine a levelized installed capital cost, which was divided by the output of the combustion turbine to calculate the levelized installed capital cost per kW.

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

A. Fixed O&M costs were based on the estimated capital costs for the General Electric 7FA simple cycle combustion turbine presented in JEA's GEC Need for Power Application. The fixed O&M cost estimates were expressed in \$/kW, and were escalated from 2008 dollars to nominal dollars at a 2.5 percent escalation rate.

- 1 **Q. Please discuss how the total avoided costs per kW were calculated.**
- 2 A. Total avoided costs per kW were calculated by adding the avoided capital costs
3 per kW to the avoided fixed O&M costs per kW for each unit addition. The
4 total annual avoided costs were calculated by multiplying the costs per kW by
5 the kW output of the combustion turbines, and the resulting total costs for each
6 unit addition were aggregated for all unit additions. The resulting total annual
7 avoided costs were then divided by the total annual avoided capacity, and the
8 annual total avoided costs per kW for all avoided units were carried forward and
9 provided to Itron for use in their analyses of DSM measures for OUC.
10
- 11 **Q. Were any sensitivities to the capital cost of avoided capacity additions**
12 **considered.**
- 13 A. Yes. OUC considered a high capital cost case in which the capital cost of the
14 avoided capacity additions was increased by 20 percent and a low capital cost
15 case in which the capital cost of the avoided capacity additions was decreased
16 by 20 percent. The resulting avoided capacity costs for the high and low capital
17 cost cases were carried forward into development of total avoided costs per kW
18 as discussed previously in my testimony.
19
- 20 **Q. Please discuss the base case fuel price forecast.**
- 21 A. The base case fuel price forecast was developed by OUC and is consistent with
22 the forecast presented in OUC's 2009 Ten-Year Site Plan (which was filed with
23 the Florida Public Service Commission in April 2009). The forecast fuel prices
24 include applicable transportation costs and represent delivered fuel prices.

1

2 **Q. Did OUC consider high and low fuel price sensitivities?**

3 A. Yes. In addition to the base case fuel price forecasts, high and low coal and
4 natural gas price sensitivity forecasts were considered.

5

6 **Q. How did the fuel price forecasts consider of the possible costs associated
7 with potential regulation of carbon dioxide (CO₂) emissions?**

8 A. CO₂ emissions allowance prices were not reflected in the fuel price forecasts.
9 However, as will be discussed later in my testimony, sensitivity cases were
10 evaluated to address possible costs associated with the potential regulation of
11 CO₂ emissions.

12

13 **Q. Please explain the analyses that considered possible costs associated with
14 potential regulation of CO₂ emissions?**

15 A. There were three separate analyses performed that considered CO₂ emissions
16 allowance prices. The three analyses reflected a range of CO₂ emissions
17 allowance price projections.

18

19 Projected CO₂ emissions allowance prices were based on those presented in the
20 US Energy Information Administration's (EIA) April 2008 *Energy Market and
21 Economic Impacts of S.2191, the Lieberman-Warner Climate Security Act of
22 2007* report. The three cases that were used as the basis for the CO₂ emissions
23 allowance prices considered by OUC are the *S.1766 Update* case (representing
24 the low end of the range of the CO₂ emissions allowance price forecasts), the

1 *S.2191 Core* case (representing the middle of the range of the CO₂ emissions
2 allowance price forecasts), and the *S.2191 Limited Alternatives/No International*
3 case (representing the high end of the range of the CO₂ emissions allowance
4 price forecasts). Exhibit No. __ [BEK-2] presents the nominal CO₂ emissions
5 allowance price projections for each of these cases that were used in OUC's
6 analyses.

7
8 **Q. How were the sensitivity fuel price forecasts and CO₂ emissions allowance**
9 **price projections considered in OUC's analyses?**

10 **A.** In addition to the base case fuel price forecast, OUC considered combinations of
11 fuel and CO₂ emissions allowance price projections. These combinations are
12 summarized as follows:

- 13 • “High Fuel Price with High CO₂ Emissions Allowance Costs” – reflects the
14 high fuel price forecasts with the *S.2191 Limited Alternatives/No*
15 *International* case CO₂ emissions allowance price projections.
- 16 • “Low Fuel Price with Low CO₂ Emissions Allowance Costs” – reflects the
17 low fuel price forecasts with the *S.1766 Update* case CO₂ emissions
18 allowance price projections.
- 19 • “Base Fuel Price with Mid CO₂ Emissions Allowance Costs” – reflects the
20 base fuel price forecasts with the *S.2191 Core* case CO₂ emissions allowance
21 price projections.

1

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

4 A. Under my supervision and direction, OUC performed detailed production cost
5 modeling using the GenTrader production cost model. Marginal energy costs
6 were extracted from the model for each year.

7

8 These costs were provided to Itron, Inc. (Itron) for use in their cost-effectiveness
9 analyses of DSM measures for OUC, which is discussed in the testimony of
10 Mike Rufo.

11

12 **Q. Were marginal energy costs developed for each of the fuel and CO₂**
13 **emissions allowance price cases discussed previously in your testimony?**

14 A. Yes. Marginal energy costs were developed for the base fuel price case, and
15 each of the combination of fuel and CO₂ emissions allowance price forecasts.
16 The marginal energy costs are identical for the base capital cost and the high and
17 low capital cost cases, as changes to the avoided units' capacity costs do not
18 affect production costs.

19

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

21 A. Yes it does.

Manager

*Utility System Planning,
Production Costing,
Economic Analysis, and
Demand-Side
Management*

Mr. Kushner is responsible for production costing associated with utility system expansion planning, as well as feasibility studies and economic analysis. He also provides demand-side management evaluation. Mr. Kushner has been involved in the issuance and evaluation of requests for proposals (RFPs) and portfolio evaluations. Mr. Kushner has also presented expert testimony and prepared other experts for testimony related to determination of need proceedings and has also testified under cross examination by intervening parties.

Representative Project Experience

Education

B.S., Mechanical Engineering,
University of Missouri –
Columbia, 2000

Experience

2000 – present

**Joined Black & Veatch
2000**

***Federal Loan Guarantee Application Support, Confidential Client
2009***

Serving in the role of Study Manager, Mr. Kushner provided support to facilitate completion of Part II of the Application to the US Department of Energy's Federal Loan Guarantee Program Office. The Part II Application submittal was structured to be consistent with the requirements set forth in the US Department of Energy solicitation number DE-FOA-0000008. The Part II Application consisted of a detailed project description, technical information related to the proposed project, the proposed project's business plan, and the proposed project's financial plan. Mr. Kushner's responsibilities included interfacing directly with the client and other consultants, working to coordinate the day-to-day activities of other Black & Veatch experts providing inputs for the Application, and drafting various sections of the submittal.

***Siting and Capacity Expansion Planning Study, Western Farmers
Electric Cooperative, Anadarko, Okla.
2008-2009***

Serving in the role of Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate completion of the Western Farmers Electric Cooperative (WFEC) Siting and Capacity Expansion Planning Study. The Study considered construction of three different combined cycle technologies at various sites as well as construction of coal fired capacity or purchase of nuclear power. The findings of the Study were presented to WFEC staff and will be presented to the WFEC Board of Directors in March 2009.

***Greenland Energy Center Combined Cycle Conversion Need for Power
Application, JEA, Jacksonville, Fla.
2008-2009***

As Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate the completion and filing of the Greenland Energy Center Need for Power Application (NFP). His work also included preparation of testimony related to the project to the Florida Public Service Commission (FPSC) as well as responding to interrogatories and production of documents requests throughout the discovery process. The NFP provides a determination of the most cost-effective capacity addition to satisfy forecasted capacity requirements.

The analysis considered self-build and purchase-power alternatives, including renewable energy technologies, and demand-side management. The project received approval from the FPSC in February 2009.

***Supply-Side Technologies Characterization, Tampa Electric Company, Tampa, Fla.
2007-2009***

As Study Manager, Mr. Kushner provided cost and performance estimates for various renewable, conventional and other generating technologies for client consideration in support of its determination of need filing. Technologies considered included approximately 20 renewable technologies, such as biomass, biogas, waste-to-energy, wind, solar, geothermal, hydroelectric and ocean energy; numerous conventional technologies, including simple and combined cycles; and two emerging technologies, both nuclear. Mr. Kushner also considered advanced, energy storage and distributed generation technologies.

***Cane Island 4 Need for Power Application, Florida Municipal Power Agency, Orlando, Fla.
2007-2008***

As Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate the completion and filing of the Cane Island 4 Need for Power Application (NFP). His work also included preparation of testimony related to the project to the Florida Public Service Commission (FPSC) as well as responding to interrogatories and production of documents requests throughout the discovery process. The NFP provides a determination of the most cost-effective capacity addition to satisfy forecasted capacity requirements. The analysis considered self-build and purchase-power alternatives, including renewable energy technologies, and demand-side management. The FPSC approved the Cane Island 4 NFP in August 2008.

***Valuation of Generating Unit Portfolio, Confidential Client
2008***

As Study Manager, Mr. Kushner provided oversight on modeling and evaluation of purchase power contracts related to the Client's portfolio of generation assets throughout North America. The purchase power contracts were modeled to assess a monetary value to be used as guidance for valuation of the overall generation portfolio.

The portfolio of assets and associated purchase power contracts includes more than 50 models. Mr. Kushner was involved in the modeling of the contracts and quality assurance/quality control related to the entire portfolio prior to delivering evaluations to the Client.

***Characterization and Selection of Nuclear Generating Technologies,
AmerenUE, Missouri
2007-2008***

As Project Analysis Engineer, Mr. Kushner provided assistance in the characterization and screening of various nuclear generating technologies for consideration by AmerenUE. The nuclear technology selected for further evaluation will be evaluated as part of the Client's Integrated Resource Plan (IRP) study.

The characterization included consideration of provisions of the Energy Policy Act of 2005 related to new qualifying nuclear plant capacity as well as relative comparisons of competing nuclear generating technologies. Client deliverables included two separate presentations to AmerenUE's Stakeholders.

***Power Supply Study, Western Farmers Electric Cooperative,
Anadarko, Okla.
2007***

Serving in the role of Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate completion of the Western Farmers Electric Cooperative (WFEC) Power Supply Study. The WFEC Power Supply Study was an update to previous capacity planning studies that evaluated the economics of various supply-side alternatives to satisfy forecast capacity requirements.

***Integrated Resource Plan, Village of Rockville Centre, N.Y.
2007***

As Study Manager, Mr. Kushner provided analysis and preparation related to the Village of Rockville Centre (RVC) Integrated Resource Plan (IRP). The IRP included consideration of RVC's existing generating system and strategic planning to satisfy forecasted system requirements. The strategic planning process included consideration of conventional supply-side options, interaction with the purchase power market, demand-side management measures, renewable supply-side alternatives and possible future environmental impacts.

***Taylor Energy Center Need for Power Application, Various Clients,
Florida
2005-2006***

As Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate the completion and filing of the Taylor Energy Center (TEC) Need for Power Application (NFP). His work also included preparation of testimony related to the project to the Florida Public Service Commission (FPSC). The NFP provides a determination of the most cost-effective capacity addition to satisfy forecasted capacity requirements for the four separate utilities participating in the project. The analysis considered self-build and purchase-power alternatives.

Integrated Resource Plan, City of Tallahassee, Tallahassee, Fla.

2005-2008

Serving as Study Manager, Mr. Kushner provided analysis and preparation related to the City of Tallahassee's (the City's) Integrated Resource Plan (IRP). The IRP included consideration of the City's existing generating system and strategic planning to satisfy forecasted system requirements. The strategic planning process included consideration of conventional supply-side options, demand-side management measures, renewable supply-side alternatives and possible future environmental impacts.

Integrated Resource Plan, Brazos Electric Power Cooperative, Texas

2006

Mr. Kushner, Project Analysis Engineer, provided assistance to Brazos Electric Power Cooperative (Brazos) in developing its Integrated Resource Plan (IRP). His work on this project included drafting a request for power supply proposals (RFP), analysis of responses to the RFP, review of Brazos production costing analysis and documentation of the final report. The IRP will provide strategic direction to Brazos, which is currently experiencing and is forecasted to continue to experience robust system growth.

Stanton Energy Center Unit B Need for Power Application, Orlando Utilities Commission, Orlando, Fla.

2005

As Study Manager, Mr. Kushner provided production costing, economic analysis and various other support to facilitate completion and filing of the Stanton Energy Center Unit B (Stanton B) Need for Power Application (NFP). His work also included preparation of testimony related to the project to the Florida Public Service Commission (FPSC).

The NFP provided a determination of the most cost-effective capacity addition to satisfy forecasted capacity requirements for the Orlando Utilities Commission. The FPSC approved the Stanton B NFP Application in May 2006, which represents the first coal-fired power plant approved in the State of Florida since 1991.

RFP Issuance and Evaluation, Western Farmers Electric Cooperative, Anadarko, Okla.

2005

As Project Analysis Engineer, Mr. Kushner coordinated with Western Farmers Electric Cooperative (WFEC) to draft, issue and evaluate a capacity solicitation (RFP) to secure forecast capacity requirements in the most cost-effective and reliable manner. The RFP process was undertaken through coordination with Rural Utilities Services (RUS) in an effort to obtain low-cost RUS project financing. This involved evaluation of numerous conventional as well as renewable technology proposals and culminated in the issuance of a short list and presentation to the WFEC Board of Directors.

***Saint Johns River Power Park Annual Review, JEA, Jacksonville, Fla.
Annually 2003 - Present***

As Engineering Manager, Mr. Kushner was responsible for the preparation of the annual report, which documented the previous year's operations of the St. Johns River Power Park. This included a summary of the findings of field activities, staff interviews, observations and document review associated with the Power Park.

***10-Year Site Plan, FRCC Forms, EIA-860 and Annual Conservation Report Filings, Orlando Utilities Commission, Orlando, Fla.
Annually 2000 - Present***

As Engineering Manager, Mr. Kushner was responsible for production costing and the economic analysis necessary to complete the Orlando Utilities Commission's 2006 10-Year Site Plan, which was submitted to the Florida Public Service Commission (FPSC).

Related to the 10-Year Site Plan were the Florida Reliability Coordinating Council (FRCC) filings, which were submitted to the FRCC via electronic database and forwarded to the Energy Information Administration (EIA) by the FRCC. The EIA-860 collects data related to the specific utility's existing and planned generating units. The Annual Conservation Report was prepared and submitted to the FPSC in order to summarize the utility's conservation and demand-side management efforts.

***RFP Issuance and Evaluation, City of Columbia, Water & Light Department, Columbia, Mo.
2005***

Serving as Study Manager, Mr. Kushner coordinated with the City of Columbia, Water & Light Department (the City) to draft, issue and evaluate a capacity solicitation (RFP) to secure forecast capacity requirements in the most cost-effective and reliable manner. This involved evaluation of numerous conventional capacity options under consideration by the City, as well as options proposed by respondents to the RFP. Mr. Kushner provided continuous communication with City staff as well as presentations to the City's planning committee.

***Treasure Coast Energy Center Need for Power Application, Florida Municipal Power Agency, Orlando, Fla.
2005***

In the capacity of Project Analysis Engineer, Mr. Kushner provided production costing, economic analysis and various other support to facilitate completion and filing of the Florida Municipal Power Agency's (FMPA) Need for Power Application (NFP). He also provided testimony related to the project to the Florida Public Service Commission (FPSC).

The NFP provided a determination of the most cost-effective capacity addition to satisfy forecasted capacity requirements. The analysis

performed for FMPA considered self-build and purchase-power alternatives. The NFP Application was approved by the FPSC in July 2005, representing a critical step in the permitting and licensing process in the state of Florida.

Stock Island Combustion Turbine Evaluation, Florida Municipal Power Agency, Orlando, Fla.

2004

Serving in the role of Project Analysis Engineer, Mr. Kushner performed production costing and economic analysis to determine the most cost-effective capacity additions to be located at the Stock Island site. The analysis considered two different generating units from specific manufacturers who responded to FMPA's request for bids.

Generation Expansion Study, Oman

2004

As Project Analysis Engineer, Mr. Kushner performed production costing and economic analysis to determine the most cost-effective capacity additions to satisfy forecast capacity requirements in the country of Oman. The analysis considered seven different generating technologies.

Integrated Resource Plan, Golden Valley Electric Association, Fairbanks, Alaska

2004

As Project Analysis Engineer, Mr. Kushner provided economic analysis in support of the Golden Valley Electric Association's (GVEA) Integrated Resource Plan (IRP). The IRP provided GVEA with recommendations of capacity additions that would satisfy forecasted capacity requirements in the most cost-effective manner.

10-Year Site Plan and FRCC Forms, Florida Municipal Power Agency, Orlando, Fla.

2005

Serving as Engineering Manager, Mr. Kushner provided assistance and support to the Florida Municipal Power Agency (FMPA) related to its 2005 10-Year Site Plan and subsequent submission to the Florida Public Service Commission (FPSC). Related to the 10-Year Site Plan were the Florida Reliability Coordinating Council (FRCC) filings, which were submitted to the FRCC via electronic database and forwarded to the Energy Information Administration (EIA) by the FRCC.

Due Diligence and Economic Analysis, Dairyland Power Cooperative, La Crosse, Wis.

2003

Serving as the Project Analysis Engineer, Mr. Kushner performed a due diligence review of the power supply planning efforts undertaken by Dairyland Power Cooperative (DPC). His work included development of

numerous capacity expansion plans and associated system production costing.

The analysis was done in compliance with the requirements of the Rural Utilities Services (RUS) to potentially obtain low-cost RUS project financing. This project also included a presentation of the study's findings to the DPC Board of Directors. Following the issuance of a request for proposals (RFP) for capacity supplies, Black & Veatch was released to perform additional production costing and evaluations of the bids and self-build options were completed. The results were then presented to DPC project personnel as well as RUS staff.

***Numeric Conservation Goals Filing, JEA, Jacksonville, Fla.
2004***

Serving in the role of Project Analysis Engineer, Mr. Kushner provided analysis related to and preparation of the JEA 2004 Petition for Approval of Numeric Conservation Goals, as required by the Florida Public Service Commission (FPSC).

The submittal included analysis of numerous demand-side management (DSM) measures to be considered by JEA in order to determine their cost-effectiveness. The process was required to be completed by JEA every five years, culminating in the eventual determination by the FPSC of the conservation goals JEA must satisfy each year.

***Numeric Conservation Goals Filing, Orlando Utilities Commission,
Orlando, Fla.
2004***

As Project Analysis Engineer, Mr. Kushner was responsible for analysis related to and preparation of the Orlando Utilities Commission's (OUC) 2004 Petition for Approval of Numeric Conservation Goals, as required by the Florida Public Service Commission (FPSC).

The submittal included analysis of numerous demand-side management (DSM) measures to be considered by OUC in order to determine their cost-effectiveness. The process was required to be completed by OUC every five years, culminating in the eventual determination by the FPSC of the conservation goals OUC must satisfy each year.

***Site Selection Study, Florida Municipal Power Agency, Orlando, Fla.
2003***

As Project Analysis Engineer, Mr. Kushner coordinated and prepared a site selection study related to the potential construction of a new combined-cycle unit to be installed by the Florida Municipal Power Agency.

***10-Year Site Plan, Florida Municipal Power Agency, Orlando, Fla.
2004***

Serving as Engineering Manager, Mr. Kushner provided assistance and support to the Florida Municipal Power Agency (FMPA) related to its 2004 10-Year Site Plan and subsequent submission to the Florida Public Service Commission (FPSC).

Due Diligence, City Utilities, Springfield, Mo.

2003

As Project Analysis Engineer, Mr. Kushner provided due diligence and economic analysis to determine the most cost-effective capacity additions to satisfy forecasted system requirements for City Utilities – Springfield. Two options were considered, which consisted of constructing a second unit at an existing site and an independent developer’s proposed construction of a unit at a new site.

Participation Agreement, Kissimmee Utility Authority, Orlando, Fla.

2002

In the role of Engineering Manager, Mr. Kushner led the development of a Participation Agreement between client (KUA) and another Florida utility governing ownership, construction and operation of a new generating unit at a KUA site. Mr. Kushner was active in meetings, coordinated with clients and incorporated various requirements to sufficiently complete the Agreement.

Capacity Planning Study, Western Farmers Electric Cooperative, Anadarko, Okla.

2002

Serving as the Project Analysis Engineer, Mr. Kushner handled the production costing and economic analysis to determine WFEC’s most cost-effective expansion options to meet forecast capacity requirements. The capacity planning study was performed in support of the RFP issuance described above.

Feasibility Study, Kissimmee Utility Authority, Kissimmee, Fla.

2002

In the role of Engineering Manager, Mr. Kushner assisted in the coordination and preparation of a preliminary study to evaluate the feasibility of constructing a new generating unit at an existing Kissimmee Utility Authority site.

Capacity Planning Study, Braintree Electric Light Department, Braintree, Mass.

2002

Serving as the Project Analysis Engineer, Mr. Kushner provided the production costing and economic analysis to determine Braintree Electric Light Department’s most cost-effective expansion options to meet forecast capacity requirements.

***Integrated Resource Plan, City of Tallahassee, Tallahassee, Fla.
2001***

As Project Analysis Engineer, Mr. Kushner assisted in the completion of the City of Tallahassee's Integrated Resource Plan (IRP), including evaluation of the City's demand-side management program alternatives.

***Capacity Planning Study, Basin Electric Power Cooperative, Bismarck, N.D.
2001***

Serving in the role of Project Analysis Engineer, Mr. Kushner managed the production costing and economic analysis necessary to provide Basin Electric Power Cooperative with recommendations as to which capacity additions would be most cost-effective to satisfy system requirements.

***10-Year Site Plan, Lakeland Electric, Lakeland, Fla.
2001***

As Project Analysis Engineer, Mr. Kushner assisted in the completion of Lakeland Electric's 2001 10-Year Site Plan, including consideration of Lakeland's capacity addition options.

***Stanton Energy Center A Need for Power Application, Various Clients, Florida
2000***

As Project Analysis Engineer, Mr. Kushner provided the production costing and economic analysis required in support of the determination of the most cost-effective expansion options to meet the individual needs of the Orlando Utilities Commission, Kissimmee Utility Authority and Florida Municipal Power Agency. His work also included preparation of a corresponding application to be presented to the Florida Public Service Commission, as well as written testimony in support of the commission.

CO ₂ Emissions Allowance Price (per EIA's Analysis of S.2191)			
Calendar Year	Nominal \$/Ton		
	S.1766 Update	S.2191 Core	S.2191 Limited Alternatives/No International
2010	N/A	N/A	N/A
2011	N/A	N/A	N/A
2012	7.72	17.76	53.26
2013	8.50	19.55	50.95
2014	9.35	21.52	55.09
2015	10.30	23.69	60.65
2016	11.33	26.08	66.77
2017	12.48	28.71	73.50
2018	13.74	31.60	80.91
2019	15.12	34.79	89.07
2020	16.65	38.30	98.06
2021	18.32	42.16	107.94
2022	20.17	46.41	118.83
2023	22.21	51.09	130.81
2024	24.45	56.24	144.01
2025	26.91	61.92	158.53
2026	29.63	68.16	174.52
2027	32.61	75.03	192.12
2028	35.90	82.60	211.49
2029	39.52	90.93	232.82

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the Direct Testimony of Randall E. Halley, on behalf of Orlando Utilities Commission has been provided by U.S. Mail and hand delivery this 1st day of June, 2009 to the following persons:

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By: 
W. CHRISTOPHER BROWDER

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the Direct Testimony of Bradley E. Kushner, on behalf of Orlando Utilities Commission has been provided by U.S. Mail and hand delivery this 1st day of June, 2009 to the following persons:

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