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Subject:	**2010 OUC Ten-Year Site Plan**
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FINAL 2010
: Ten-Year Site

BLACK & VEATCH
Building a world of difference.

April 2, 2010

Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, Florida 32399-0688

Attached please find an electronic version (in PDF format) of the 2010 Orlando Utilities Commission (OUC) Ten-Year Site Plan (TYSP). The 2010 OUC TYSP was prepared by Black & Veatch and is being submitted by Black & Veatch on behalf of OUC.

Very truly yours,

BLACK & VEATCH CORPORATION

Bradley Kushner

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OUC

The Reliable One®

2010 Ten-Year Site Plan
Orlando Utilities Commission

B&V File Number
167052

April 2010

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1.0 Executive Summary

This report documents the 2010 Orlando Utilities Commission (OUC) Ten-Year Site Plan pursuant to Section 186.801 Florida Statutes and Section 25-22.070 of Florida Administrative Code. The Ten-Year Site Plan provides information required by this rule, and consists of the following additional sections:

- Utility System Description (Section 2.0)
- Strategic Issues (Section 3.0)
- Forecast of Peak Demand and Energy Consumption (Section 4.0)
- Demand-Side Management (Section 5.0)
- Forecast of Facilities Requirements (Section 6.0)
- Supply-Side Alternatives (Section 7.0)
- Economic Evaluation Criteria and Methodology (Section 8.0)
- Analysis and Results (Section 9.0)
- Environmental and Land Use Information (Section 10.0)
- Conclusions (Section 11.0)
- Ten-Year Site Plan Schedules (Section 12.0)

This Ten-Year Site Plan integrates the power sales, purchases, and loads for the City of St. Cloud (St. Cloud) and the partial requirements power sale to the City of Vero Beach (Vero Beach) into the analyses, as OUC has power supply agreements with St. Cloud and Vero Beach. OUC has assumed responsibility for supplying all of St. Cloud's loads through 2032 and supplementing Vero Beach's loads through 2029 (with provisions for further extension upon contract expiration). Load forecasts for OUC and St. Cloud have been integrated into one forecast, and details of the aggregated load forecast are provided in Section 4.0. A banded forecast is provided with base case growth, high growth, and low growth scenarios. The capacity OUC is currently planning on providing to Vero Beach is discussed in Section 2.0.

OUC is a member of the Florida Municipal Power Pool (FMPP), which consists of OUC, Lakeland Electric (Lakeland), and the Florida Municipal Power Agency (FMPA) All-Requirements Project. Power for OUC is supplied by units owned entirely by OUC, as well as units in which OUC maintains joint ownership as well as power purchases. OUC's installed capacity, as well as St. Cloud's entitlement to capacity from Stanton Energy Center Unit 2, provides for total net summer capacity of 1,515 MW and total net winter capacity of 1,587 MW. These net seasonal capacities reflect the addition of OUC's newest generating unit, Stanton Energy Center Unit B (Stanton B), which is a 1x1 combined cycle unit operating on natural gas as the primary fuel with the capability to utilize fuel oil as a secondary fuel source. OUC's existing generating units and power purchases provide for a broad range of generation technologies and fuel diversity.

As illustrated in Section 6.0 of this report, OUC is not forecasted to require any additional capacity to maintain a 15 percent reserve margin until the summer of 2019, which is the final year of the 10-year planning horizon considered in this report. It should be noted that four new nuclear generating units have been proposed to and approved by the FPSC since October 2007, including Florida Power & Light's Turkey Point Units 6 and 7 (Docket No. 070650) and Progress Energy Florida's Levy Units 1 and 2 (Docket No. 080148). OUC is aware of and closely monitoring opportunities to participate in new nuclear generating units and will continue to work diligently towards approaching the owners of these potential new units to secure allocations if possible and deemed appropriate as OUC continues its planning processes.

2.0 Utility System Description

At the turn of the 20th century, John M. Cheney, an Orlando, Florida judge, organized the Orlando Water and Light Company and supplied electricity on a part-time basis with a 100 kW generator. Twenty-four hour service began in 1903. The population of the City of Orlando (City) had grown to roughly 10,000 by 1922 and Cheney, realizing the need for wider services than his company was capable of supplying, urged his friends to work and vote for a $975,000 bond issue to enable the citizens of Orlando to purchase and municipally operate his privately owned utility. The bond issue carried almost three to one, as did a subsequent issue for additional improvements. The citizens of Orlando acquired Cheney's company and its 2,795 electricity and 5,000 water customers for a total initial investment of $1.5 million.

In 1923, OUC was created by an act of the state legislature and was granted full authority to operate electric and water municipal utilities. The business was a paying venture from the start. By 1924, the number of customers had more than doubled and OUC had contributed $53,000 to the City. When Orlando citizens took over operation of their utility, the City's population was less than 10,000; by 1925, it had grown to 23,000. In 1925, more than $165,000 was transferred to the City, and an additional $111,000 was transferred in 1926.

Today, OUC operates as a statutory commission created by the legislature of the State of Florida as a separate part of the government of the City. OUC has full authority over the management and control of the electric and waterworks plants in the City and has been approved by the Florida legislature to offer these services in Osceola County as well as Orange County. OUC's charter allows it to undertake, among other things, the construction, operation, and maintenance of electric generation, transmission, and distribution systems, chilled water systems, as well as water production, transmission, and distribution systems to meet the requirements of its customers.

In 1997, OUC entered into an Interlocal Agreement with the City of St. Cloud in which OUC assumed responsibility for supplying all of St. Cloud's loads for the 25 year term of the agreement, which added an additional 150 square miles of service area. OUC also assumed management of St. Cloud's existing generating units and purchase power contracts. This agreement has been extended through 2032.

2.1 Existing Generation System

Presently, OUC has ownership interests in five electric generating plants, which are described further in this section. Table 2-1 summarizes OUC's generating facilities, which include the following:

- Stanton Energy Center Units 1 and 2, Stanton A, and Stanton B.
- Indian River Plant Combustion Turbine Units A, B, C, and D.
- Progress Energy Florida (formerly Florida Power Corporation) Crystal River Unit 3 Nuclear Generating Facility.
- Lakeland Electric McIntosh Unit 3.
- Florida Power & Light Company (FPL) St. Lucie Unit 2 Nuclear Generating Facility.

The Stanton Energy Center is located 12 miles southeast of Orlando, Florida. The 3,280 acre site contains Units 1 and 2, as well as Units A and B, and the necessary supporting facilities. Stanton Unit 1 was placed in commercial operation on July 1, 1987, followed by Stanton Unit 2, which was placed in commercial operation on June 1, 1996. Both units are fueled by pulverized coal and operate at emission levels that are within the Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP) requirement standards for sulfur dioxide (SO_2), nitrogen oxides (NO_x), and particulates. Stanton Unit 1 is a 444 MW net coal fired facility. OUC has a 68.6 percent ownership share of this unit, which provides 302 MW of capacity to the OUC system. Stanton Unit 2 is a 446 MW net coal fired generating facility. OUC maintains a 71.6 percent (319 MW) ownership share of this unit.

OUC has entered into an agreement with Kissimmee Utility Authority (KUA), FMPA, and Southern Company - Florida LLC (SCF) governing the ownership of Stanton A, a combined cycle unit at the Stanton Energy Center that began commercial operation on October 1, 2003. OUC, KUA, FMPA, and SCF are joint owners of Stanton A, with OUC maintaining a 28 percent ownership share, KUA and FMPA each maintaining 3.5 percent ownership shares, and SCF maintaining the remaining 65 percent of Stanton A's capacity.

Stanton A is a 2x1 combined cycle utilizing General Electric combustion turbines. Stanton A is dual fueled with natural gas as the primary fuel and No. 2 oil as the backup fuel. OUC maintains a 28 percent equity share of Stanton A, while purchasing 52 percent as described further in Section 2.2.

Stanton B is a 1x1 combined cycle utilizing General Electric combustion turbines. Stanton B is dual fueled with natural gas as the primary fuel and No. 2 oil as the backup fuel. OUC is the sole owner of Stanton B.

Table 2-1
Summary of OUC Generation Facilities
(As of April 1, 2010)

Plant Name	Unit No.	Location (County)	Unit Type	Fuel		Fuel Transport		Commercial In-Service Month/Year	Expected Retirement Month/Year	Net Capability	
				Pri	Alt	Pri	Alt			Summer MW	Winter MW
Indian River	A	Brevard	GT	NG	FO2	PL	TK	06/89	Unknown	18(1)	23.4(1)
Indian River	B	Brevard	GT	NG	FO2	PL	TK	07/89	Unknown	18(1)	23.4(1)
Indian River	C	Brevard	GT	NG	FO2	PL	TK	08/92	Unknown	85.3(2)	100.3(2)
Indian River	D	Brevard	GT	NG	FO2	PL	TK	10/92	Unknown	85.3(2)	100.3(2)
Stanton Energy Center	1	Orange	ST	BIT	--	RR	--	07/87	Unknown	301.6(3)	303.7(3)
Stanton Energy Center	2	Orange	ST	BIT	--	RR	--	06/96	Unknown	337.9(4)	337.9(4)
Stanton Energy Center	A	Orange	CC	NG	FO2	PL	TK	10/03	Unknown	173.6(5)	184.8(5)
Stanton Energy Center(6)	B	Orange	CC	NG	FO2	PL	TK	02/10	Unknown	298	312
McIntosh	3	Polk	ST	BIT	--	RR	--	09/82	Unknown	133(7)	136(7)
Crystal River	3	Citrus	NP	UR	--	TK	--	03/77	Unknown	13	13
St. Lucie(8)	2	St. Lucie	NP	UR	--	TK	--	06/83	Unknown	51	52

(1)Reflects an OUC ownership share of 48.8 percent.
(2)Reflects an OUC ownership share of 79.0 percent.
(3)Reflects an OUC ownership share of 68.6 percent.
(4)Reflects an OUC ownership share of 71.6 percent and St. Cloud entitlement of 4.2 percent.
(5)Reflects an OUC ownership share of 28.0 percent.
(6)Although the title of this table indicates existing generation as of January 1, 2010, for the purpose of maintaining consistency with this Ten-Year Site Plan as a whole, Stanton B is shown as an existing generating unit as it began commercial operation in February 2010.
(7)Reflects an OUC ownership share of 40.0 percent.
(8)OUC owns approximately 6.1 percent of St. Lucie Unit No. 2. Reliability exchange divides 50 percent power from Unit No. 1 and 50 percent power from Unit No. 2.

The Indian River Plant is located 4 miles south of Titusville on US Highway 1. The 160 acre Indian River Plant site contains three steam electric generating units (No. 1, 2, and 3) and four combustion turbine units (A, B, C, and D). The three steam turbine units were sold to Reliant in 1999. The combustion turbine units are primarily fueled by natural gas, with No. 2 fuel oil as an alternative. OUC has a partial ownership share of 48.8 percent, or 36 MW, in Indian River Units A and B as well as a partial ownership share of 79 percent (approximately 171 MW) in Indian River Units C and D.

Crystal River Unit 3 is an 835 MW net nuclear generating facility operated by Progress Energy Florida, formerly Florida Power Corporation. OUC has a 1.6015 percent ownership share in this facility, providing approximately 13 MW to the OUC system.

McIntosh Unit 3 is a 340 MW net coal fired unit operated by Lakeland Electric. McIntosh Unit 3 has supplementary oil and refuse-derived fuel burning capability and is capable of burning up to 20 percent petroleum coke. Lakeland Electric has ceased burning refuse-derived fuel at McIntosh Unit 3 for operational and landfill reasons. For purposes of the analyses performed in this application, it was assumed that McIntosh Unit 3 would burn coal priced identically to that used for Stanton Units 1 and 2. OUC has a 40 percent ownership share in McIntosh Unit 3, providing approximately 133 MW of capacity to the OUC system.

St. Lucie Unit 2 is a 853 MW net nuclear generating facility operated by FPL. OUC has a 6.08951 percent ownership share in this facility, providing approximately 51 MW of generating capacity to OUC. A reliability exchange with St. Lucie Unit 1 results in half of the capacity being supplied by St. Lucie Unit 1 and half by St. Lucie Unit 2.

As part of the Interlocal Agreement with St. Cloud, OUC has operating control of the generating units owned by St. Cloud. The St. Cloud internal combustion generating units (totaling 21 MW of grid-connected capacity, and an additional 6 MW that has never been connected to the grid) were retired as of March 2008. St. Cloud also has an entitlement to capacity from Stanton Unit 2 associated with its purchase through FMPA. FMPA's ownership in Stanton Unit 2 is 28.41 percent and St. Cloud's purchase from FMPA's Stanton Unit 2 ownership is 14.67 percent, entitling St. Cloud to approximately 18.6 MW of capacity from Stanton Unit 2.

2.2 Purchase Power Resources

OUC has a purchase power agreement (PPA) with SCF for 80 percent of SCF's ownership share of Stanton A. Under the original Stanton A PPA OUC, KUA, and FMPA agreed to purchase all of SCF's 65 percent capacity share of Stanton A for 10 years, although the utilities retained the right to reduce the capacity purchased from SCF by

50 MW each year, beginning in the sixth year of the PPA, as long as the total reduction in capacity purchased did not exceed 200 MW. The utilities originally had options to extend the PPA beyond its initial term. OUC, KUA, and FMPA have unilateral options to purchase all of Stanton A's capacity for the estimated 30 year useful life of the unit. Subsequent amendments to the original PPA continue OUC's capacity purchase through the 20th year of the PPA. Beginning with the 16th contract year and ending with the 20th contract year, OUC will maintain the irrevocable right to reduce the amount of capacity purchased by either 20 MW or 40 MW per year, as long as the total reduction in purchased capacity does not exceed 160 MW. Additionally, OUC has the option of terminating the PPA after the 20th contract year, which ends September 30, 2023. Rather than terminating the PPA, OUC may elect to continue the PPA for an additional 5 years under the Extended Term option beginning October 1, 2023, and ending September 30, 2028. OUC may subsequently continue the PPA for an additional 5 years under the Further Extension option beginning October 1, 2028, and ending September 30, 2033.

St. Cloud has a Partial Requirements (PR) contract with Tampa Electric Company (TECO) for 15 MW, which expires December 31, 2012. As a result of the Interlocal Agreement with St. Cloud, OUC may schedule the TECO PR purchase.

2.3 Power Sales Contracts

OUC has had a number of power sales contracts with various entities over the past several years. OUC is currently contractually obligated to supply supplementary power to Vero Beach under a partial requirements power sales contract. The duration of the contract is twenty years (the contract went into effect January 1, 2010) with provisions for further extension upon contract expiration. Under the agreement, OUC will be the exclusive power provider and marketer for Vero Beach. Vero Beach will benefit from OUC's large system and generation fuel diversity to keep rates lower.

For purposes of this 10-Year Site Plan, OUC has assumed the winter and summer capacities presented in Table 2-2 will be provided to Vero Beach. OUC is also contractually obligated to provide an additional 15 percent reserve margin based on Vero Beach's annual peak demand. These reserves are not reflected in Table 2-2.

Table 2-2
Annual Summer and Winter Peak Capacity (MW) and
Annual Net Energy for Load (GWh) Sold to Vero Beach

Calendar Year	Summer Capacity (MW) [1]	Winter Capacity (MW) [1]	Annual Net Energy for Load (GWh)
2010	70	70	332
2011	71	71	346
2012	74	74	345
2013	77	77	387
2014	81	81	373
2015	84	84	405
2016	87	87	402
2017	90	90	414
2018	93	93	452
2019	96	96	439

[1]Seasonal peak capacity does not include the 15 percent reserves OUC is contractually obligated to provide to Vero Beach and represents capacity at time of OUC's seasonal peaks.

2.4 Renewable Generation and Carbon Emissions Reductions

OUC is actively incorporating renewable technologies in their generation portfolio and taking other steps to reduce carbon emissions. Technologies such as solar, biomass, and landfill gas allow OUC to provide the necessary power demand to customers while reducing harmful effects on the environment. Energy efficiency, sustainability and community activities are crucial to reducing the total needed demand for power.

2.4.1 Solar

OUC has several initiatives in place to increase the use of solar energy. One such initiative is OUC's 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.

OUC offers environmentally friendly solar pilot programs, which are available to both residential and commercial customers. These programs include the Solar Photovoltaic (PV) program (which generates electricity) and the Solar Thermal program (which generates heat for domestic water heating systems). 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. For reference, an average 2 kW solar PV system and a typical residential solar thermal system will each produce about 2,800 kWh per year. 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. Customers participating in the Solar Thermal program receive a $250 credit on their utility bill to cover the cost of having the BTU meter installed. 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. 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. The project "went live" in May 2009 and is currently producing clean, green power. 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 September 2009, OUC and clean energy company Petra Solar teamed up to launch the first utility pole-mounted solar photovoltaic system in Florida. Ten of Petra Solar's SunWave™ intelligent photovoltaic solar systems have been installed on OUC utility poles along Curry Ford Road. Together the panels can generate up to 2 kilowatts, about enough to power a small home. The innovative solar panel demonstration project is expected to help enhance the Smart Grid capabilities and reliability of the electric distribution grid. Petra Solar worked in collaboration with the University of Central Florida in developing the pole-mounted approach to clean energy generation. The SunWave systems not only turn street light and utility poles into solar generators, they also communicate with the electric grid and can offer smart grid capabilities. The systems can improve grid reliability through real-time communications between solar generators in the field and the utility control center. In addition, the systems enhance electric distribution grid reliability through a host of capabilities such as voltage and frequency monitoring and reactive power compensation.

On July 23, 2009, OUC released a request for Statement of Qualifications for photovoltaic system providers. OUC received responses from 27 vendors and pre-qualified 20 of these vendors based on their technical capabilities. On November 6, 2009, OUC issued a Request for Proposals (RFP) to the qualified vendors to finance, construct, own and operate solar photovoltaic energy to supply energy at OUC's Stanton and Jetport properties. The vendors were requested to provide proposals for a Solar Power Purchase Agreement (SPPA) that maximized either the 30 acres of land in Stanton's southwest quadrant near Innovation Way, or the westernmost 20 acres of the Jetport property, or both. Ten bidders responded to the RFP and their proposals were reviewed based on technical and financial merit. OUC is currently in negotiations with the top-ranked bidder.

2.4.2 Biomass

In partnership with Florida State University, OUC will participate in a 5 MW solar/biomass hybrid power plant to be located in Harmony's Florida Sustainable Energy Research Park in Osceola County. The project will use biomass (woodchips and sawdust) gasifiers to generate electricity. Osceola Renewable Energy will build, own and operate the project, and OUC will purchase renewable energy and receive the environmental attributes. The project consists of a power plant fueled by biomass that will produce syngas to fire a conventional boiler. Thirty acres of solar troughs will be installed to use the sun's energy to increase the efficiency of the project. Osceola Renewable Energy plans to apply for project funding from a DOE Stimulus Grant. The

FSU Energy and Sustainability Center will conduct research at the plant and provide an educational component.

In addition to the biomass project discussed above, OUC is evaluating the feasibility of biomass co-firing in Stanton Units 1 and 2.

2.4.3 Landfill Gas

The gas produced by the biological breakdown of organic matter in landfills is known as landfill gas. It is created by wet organic waste decomposing under anaerobic, or oxygen-less, conditions in a landfill. This gas is considered a renewable energy source because the anaerobic digestion of the waste materials ultimately reduces the amount of waste that accumulates on our planet. In partnership with Orange County, OUC captures methane emissions from county landfill cells and pipes it to Stanton Energy Center (SEC) where it is co-fired with coal. In addition to helping reduce greenhouse gas emissions from the landfills, the 8-megawatt (MW) green energy program displaces more than 3 percent of the fossil fuel required for SEC Units 1 and 2 and provides enough electricity every day for 10,000 homes. The OUC facility at the Orange County Landfill produces more than 100,000 MWh of reduced-emissions power – offsetting about 44,000 tons of coal each year. Looking to the future, OUC and Orange County have signed new agreements for future landfill projects – expanding capacity to 22 MW. OUC is also exploring landfill gas projects throughout the Central Florida area.

2.4.4 Carbon Reduction

With more than 775 vehicles – ranging from plug-in hybrids to bucket trucks – OUC's fleet logs more than 4.7 million miles annually. OUC reduces their carbon footprint by using alternative fuels, purchasing more hybrids and recycling automotive products to help our environment. As part of an overall plan to reduce emissions in fleet, OUC has begun using "B20" – a blend of 80 percent petroleum diesel and 20 percent biodiesel – a clean-burning alternative fuel made from new or used vegetables oils and animal fats, including recycled cooking grease. Compared to petroleum diesel, biodiesel produces lower emissions, which is better for the environment. B20 has been integrated seamlessly into the fueling system without any changes to vehicles or fuel storage and distribution equipment. Since 2006, 322,032 gallons of B20 have been purchased – and the reduction in diesel fuel has reduced OUC's carbon footprint by 44 metric tons of CO_2e (carbon dioxide equivalent). OUC uses biodiesel at the Pershing Fleet Center and plans to expand its use to the Gardenia site in the near future. Soon, biodiesel will be available in downtown Orlando - thanks to a $2.5 million grant from the Florida

Department of Environment Protection, Central Florida's LYNX transit system plans to open a biodiesel blending facility and fueling station at its Orlando Operations Center.

Embracing fuel-efficient technology as a commitment to green initiatives, OUC is the first municipal utility in Florida to acquire a plug-in hybrid that gets up to 99 mpg. In addition to the plug-in, OUC has 11 other traditional hybrids in the fleet. OUC is moving forward with an agreement to develop the charging infrastructure, test and possibly purchase an all-electric vehicle with a 100-mile range (the Nissan "Leaf"), which is slated for release in 2010. OUC has also reapplied for a Clean Cities grant to purchase additional electric vehicles.

As part of OUC's commitment to alternative fuels and efficient transportation, two of the three electric-vehicle charging stations at Reliable Plaza are powered by the sun. Located in the parking garage, the 16-panel solar array provides a total of 2.8 kW of power to charge the vehicles. The garage has been pre-wired for two more stations that can be connected to OUC power as more electric cars are added to the fleet. OUC can access a special website to track real time info and total system usage for its charging stations. A full charge takes about four hours. Users have a key fob for the charging station and supply their own power cord. Plug-in drivers can go to mychargepoint.net to locate available charging stations nationwide. Users register with Nova Charge to set up an account that links to their credit card. The power is billed by Nova. At night or on a cloudy day when the sun is not shining, the power is drawn from the Reliable Plaza. When the sun is shining but no car is charging, the power will be fed back into the building.

For linemen out in the field, OUC ordered four hybrid bucket trucks and one auxiliary battery system to operate the aerial tower hydraulics. Bucket trucks are a promising application for hybrid technology since much of the vehicle's work is done when stationary. The hybrid diesel-electric system allows the main engine to be turned off while crews operate entirely off the battery.

In addition to the renewable energy projects discussed previously, OUC continues to evaluate potential renewable energy and carbon reduction opportunities through the use of algae. Algae may provide benefits in the form of carbon capture, water treatment, or use as a renewable fuel.

2.4.5 Energy Efficiency and Sustainability

OUC's commitment to efficiency and sustainability is 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. OUC's Reliable Plaza has earned Gold Leadership in Energy and Environmental Design (LEED) certification, officially cementing the 10-story administration and customer service center as the "Greenest Building in downtown Orlando." The non-profit U.S. Green Building Council awarded the Gold level certification after completing a review of the building's design and construction. Reliable Plaza also holds a Florida Water Star certification, a voluntary program for new and existing construction that encourages water efficiency in appliances plumbing fixtures, irrigation systems and landscapes. 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.

OUC has 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.

2.4.6 Community Activities

OUC also continues to play an active role in the local community. OUC conservation support personnel have made hundreds of public appearances related to conservation at schools, business expos, professional associations, and homeowner association meetings. Conservation specialists conducted presentations, provided face to face consultations, scheduled audits, and disseminated information on conservation programs. OUC also sponsors energy-related events, such as the Florida Renewable Energy Association's Renewable Energy Expo, which stresses the importance of reducing individual carbon footprints and introduces the general public to entrepreneurs and educators who are working on the challenges of energy independence and global climate change.

Long a supporter of Habitat for Humanity Orlando, OUC saw Habitat's first town home project – Staghorn Villas – as an opportunity to provide local families with affordable homes that could also help them keep their utility costs in check. OUC donated $60,000 in energy-efficient features for Staghorn Villas, an $8 million town home community that will provide affordable housing for 58 local families when it is complete in spring 2011. OUC also provided more than 870 compact florescent light bulbs and upgraded all lighting systems throughout the community. Siemens also partnered on the project, matching OUC's $60,000 donation.

In partnership with the City of Orlando, the P.O.W.E.R. Program will target Carver Shores' homeowners and entails an extensive scope of work. Working with a City crew the homes will be evaluated not only for energy efficiency but also for health concerns like mold that often accompany home issues like leaky roofs, windows, etc. This program will target about 40 homes, including some that will receive complete upgrades involving new appliances, a new HVAC system, and other major home projects. A home could potentially be completely renovated and rehabilitated while families are moved into temporary housing during the upgrade process. OUC is rebating items related to energy efficiency to the City of Orlando.

OUC has partnered with the Orlando Science Center to deliver an interactive curriculum to Orange county public school classrooms within OUC's service territory. The Orlando Science Center, using content approved by OUC, has developed an electric and water conservation and renewable energy curriculum and designed activities that meet Sunshine State Standards and target fifth graders, who are preparing for their first Science FCAT test. The program includes two 90-minute classroom workshops for students as well as hands-on labs and pre- and post-classroom activities. OUC is also assisting the Science Center with the installation of a 31.5 kW photovoltaic array that will provide hands-on access to solar technology. The system is expected to be installed by April 22, 2010.

2.5 Transmission System

OUC's existing transmission system consists of 31 substations interconnected through approximately 341 miles of 230 kV, 115 kV, and 69 kV lines and cables. OUC is fully integrated into the state transmission grid through its twenty-two 230 kV, one 115 kV, and one 69 kV metered interconnections with other generating utilities that are members of the Florida Reliability Coordinating Council (FRCC), as summarized in Table 2-3. Additionally, OUC is responsible for St. Cloud's four substations, as well as approximately 57 miles of 230 kV and 69 kV lines and cables. As presented in Table 2-4, the St. Cloud transmission system includes three interconnections.

Table 2-3
OUC Transmission Interconnections

Utility	kV	Number of Interconnections
FPL	230	2
Progress Energy Florida (PEF)	230	8
KUA	230	2
KUA/FMPA	230	2
Lakeland Electric	230	1
TECO	230	2
TECO/Reedy Creek Improvement District	230	2
PEF	69	1
Southern Company	230	1
Reliant Energy	230	2
Reliant Energy	115	1

Table 2-4
St. Cloud Transmission Interconnections

Utility	kV	Number of Interconnections
OUC	69	1
PEF	230	1
KUA	69	1

The St. Cloud 69/25 kV Central Substation upgrade project was completed in late 2008 which completely upgraded the site's 25 kV distribution equipment and 69 kV and 25 kV protective relaying. The upgrade of the 69 kV tie line from the St. Cloud Central substation to KUA has been delayed because of a road widening project along its path.

The upgrade of the Taft-Lakeland 230 kV transmission line from the existing 954 ACSR conductor to 1272 ACSS/TW conductor is in progress. The conductor will be upgraded to increase the power transfer capability of the 230 kV transmission line sections. To date the Osceola Substation to Lake Agnes Substation, Taft Substation to Cane Island Tap, and Cane Island Tap to Osceola Substation line section conductor upgrades are complete. The Lake Agnes to McIntosh Substation line section conductor upgrade will be beginning construction in late 2012.

A new 115/12.47 kV Stanton North Substation (Sub 25) was built in the area adjacent to the Stanton Energy Center due to an increased distribution load. This center has three distribution transformers that will provide additional distribution capacity. The Stanton North Substation source is from a new 230/115 kV autotransformer that was installed in the 230 kV Stanton Substation and connects to Sub 35 via a short 115 kV transmission line. Sub 35 is interconnected to the 115 kV transmission line system by 115 kV transmission line connections to the Pershing Substation and the Indian River Substation.

At the Stanton Substation, 25 230 kV power circuit breakers are in the process of being replaced to increase the substation fault withstand capabilities from 44 kA to 63 kA. This project is scheduled to be completed in 2010.

A new 230 kV transmission line was added to the 230 kV Stanton Substation that connects to the new 230 kV Stanton Energy Center Generator B Substation (Sub 36) located on the Stanton Energy Center power plant property. Sub 36 is configured as a collector bus for the new Combustion Turbine Generator and Steam Generator being installed on the Generator B site. .

A third distribution transformer was added to the 230/12.47 kV Lake Nona Substation due to expected distribution load increases in the Lake Nona area. .

The 115/12.47 kV America Substation protective relaying and station power systems are in the process of being completely upgraded to increase system reliability and support modifications to the substation that must be completed to allow for the next phase of the FDOT I-4/408 interchange project. The America upgrade project will be completed in 2010, with coordination activities extending to 2011.

A new OUC – Progress Energy 230 kV tie line with terminals located at the OUC Stanton Substation and the Progress Energy Bithlo Substation is currently in the construction phase. Construction on the Stanton Substation line terminal is planned to be completed in 2010.

To maintain reliable and economic service and proactively plan for the future at key locations, OUC is evaluating numerous upgrades to its transmission system. While these upgrades vary in scope and timing, the following identifies the higher priority, near-term transmission system upgrades planned by OUC:

- Continued conceptual permitting and design for the future Stanton South 230 kV Substation for future generation needs. The site will address system stability and available fault current issues.
- Replacement and upgrade of aging transmission infrastructure within the corridor from Pershing to Stanton to Indian River. The 115 kV line from Pershing to Stanton will be upgraded from 150 MVA to 400 MVA. The

Stanton to Progress Energy Curry Ford (to Rio Pinar) transmission line will be upgraded to match or exceed the Progress Energy line rating.

- Various 115 kV transmission projects will be implemented to move power more effectively to the downtown Orlando region. Among lines under consideration are the transmission lines from Pershing to Stanton, Pershing to Michigan, and Pershing to Grant Substation.
- Addition of several distribution transformer additions to existing substations may be required; load growth will determine when these transformer additions will be required.

3.0 Strategic Issues

OUC incorporates a number of strategic considerations while planning for the electrical system. This section provides an overview of a number of these strategic considerations.

3.1 Strategic Business Units

OUC is currently organized into two strategic business units: the Power Resources Business Unit (PRBU) and the Energy Delivery Business Unit (EDBU).

3.1.1 Power Resources Business Unit

The PRBU has structured its operations based on a competitive environment that assumes that even OUC's customers are not captive. The PRBU will only be profitable if it can produce electricity that is competitively priced in the open market. In line with this strategy, OUC is continually studying strategic options to improve or reposition its generating assets, such as the sale of the Indian River Steam Units in 1999 and the addition of new units and power purchase agreements. In addition, OUC formally instituted its Energy Risk Management Program in 2000.

OUC's generating system has been designed over the years to take advantage of fuel diversity and the resultant system reliability and economic benefits. OUC's long-standing intent to achieve diversity in its fuel mix is evidenced by its participation in other generating facilities in the State of Florida. The first such endeavor occurred in 1977 when OUC secured a share of the Crystal River Unit 3 nuclear plant, followed by the acquisition of an ownership share in Lakeland Electric's McIntosh Unit 3 coal fired unit in 1982. In 1983, OUC also acquired a share of the St. Lucie Unit 2 nuclear unit. OUC's current capacity mix is summarized in Table 3-1.

As shown in Table 3-1, coal represents approximately 48.4 percent of the winter generating capacity (approximately 50.4 percent summer) and natural gas represents approximately 47.5 percent of the winter generating capacity (approximately 45.4 percent summer) either wholly or jointly owned by OUC. With the inclusion of OUC's purchased power resources, coal represents approximately 39.7 percent of the winter generating capacity (approximately 41.4 percent summer) and natural gas represents approximately 56.9 percent of the winter generating capacity (approximately 55.0 percent summer). The diversity of OUC's fuel supply provides protection against disruption of supply while simultaneously providing economic opportunities to reduce cost to customers. Additional details of OUC's generating facilities are presented in Schedule 1 of Section 12.0. Participation in future nuclear units, discussed throughout this Ten-Year Site Plan, would further diversify OUC's fuel supply.

Table 3-1
Generation Capacity (MW) Owned by OUC by Fuel Type
(as of March 1, 2010)

Plant Name	Winter Capacity				Summer Capacity			
	Coal	Nuclear	Gas/Oil	Total	Coal	Nuclear	Gas/Oil	Total
Stanton	623[1]		497	1,120	621		472	1,093
Indian River			248	248			207	207
Crystal River		13		13		13		13
C.D. McIntosh Jr.	136			136	133			133
St. Lucie		52		52		51		51
Total (MW)	759	65	745	1,569	754	64	679	1,497
Total (percent)	48.4	4.1	47.5	100.0	50.4	4.3	45.4	100.0

[1] Includes OUC's share of the landfill gas burned in Stanton Units 1 and 2.

OUC's use of alternative or renewable fuels is enhanced by burning a mixture of petroleum coke in McIntosh Unit 3, along with coal. Petroleum coke is a waste by-product of the refining industry and in addition to the benefits of using a waste product, petroleum coke's lower price results in significant savings over coal. Tests have been done that indicate the unit has the ability to use petroleum coke for approximately 20 percent of the fuel input. Permits have been modified and approved for this level of use and petroleum coke is being burned in the unit.

OUC's fuel diversity is further enhanced by the renewable energy technologies that contribute to OUC's generating resources. OUC's renewable resources are discussed in detail in Section 2.4 of this Ten-Year Site Plan.

In 2008 OUC completed a comprehensive Electric Integrated Resource Plan (IRP) performed by the Strategic Planning team. The IRP analyzed OUC's position in the light of current and possible future governmental regulation. The IRP covered all potential resources, including opportunities in energy efficiency, renewable energy, and conventional generation. The report will be a basis for future plans in power production, demand side management, and other business processes.

3.1.2 Energy Delivery Business Unit

OUC's EDBU focuses on providing OUC's customers with the most reliable electric service possible. Formerly called the Electric Distribution Business Unit, the unit was renamed after merging with OUC's Electric Transmission Business Unit, which was being phased out with the anticipated creation of a regional independent transmission organization.

OUC's leadership in providing reliable electric distribution service is demonstrated by its commitment to making initial investments in high quality material and equipment. Additionally, 60 percent of OUC's distribution system is underground, protecting it from trees and high winds. OUC's dependability is also attributable to its proactive maintenance programs to identify and correct potential problems, proactive replacement of old equipment, and a tree trimming program that minimizes tree-related service disruptions. OUC's reliability is demonstrated by the fact that during 2008, the average annual customer interruption for the combined Orlando-St. Cloud service area was below that of OUC's competition. For the eighth consecutive year, OUC ranked at or near the top in the state for reliability of electric service. OUC finished well ahead of Florida's investor-owned utilities in both L-Bar (the average number of minutes a customer is out of power during an outage) and system average interruption duration indices (SAIDI, a measure of average amount of time a customer is without power during the course of a year).

3.2 Reposition of Assets

As a strategic consideration, OUC has been working on repositioning its assets. One major issue is the sale of its Indian River power plant steam units to Reliant Energy in 1999. The sale of the Indian River steam units allowed OUC to take positions in Stanton A and B and to update and diversify its generation portfolio. The sale offered OUC the ability to replace the less competitive oil and gas steam units with more competitive combined cycle generation. In 2007 OUC broke ground on the Stanton B project[1] and, as part of the agreement associated with the termination of the gasification portion of Stanton B, acquired a 165 acre track of land in its service territory situated near it highest growth areas. The land is in an industrial area and is ideal for a new power generation site, having access to important infrastructure including a rail spur, natural gas lines, and OUC-owned and operated transmission lines.

3.3 Florida Municipal Power Pool

In 1988, OUC joined with Lakeland Electric and the FMPA's All-Requirements Project members to form the FMPP. Later, KUA joined FMPP. Over time, FMPA's All-

[1] Originally proposed to be an integrated gasification combined cycle (IGCC) unit, Stanton B was designed to be able to run as a stand alone natural gas unit with the gasification portion as an alternative fuel source. In 2007, OUC made the decision not to move forward with the gasification portion of Stanton B, and the unit began commercial operation in February 2010 as a 1x1 combined cycle unit operating on natural gas as the primary fuel with the capability to utilize fuel oil as a secondary fuel source.

Requirements Project has added members as well. FMPP is an operating-type electric pool, which dispatches all the pool members' generating resources in the most economical manner to meet the total load requirements of the pool. The central dispatch is providing savings to all parties because of reduced commitment costs and lower overall fuel costs. OUC serves as the FMPP dispatcher and handles all accounting for the allocation of fuel expenses and savings. The term of the pool agreement is 1 year and automatically renews from year to year until terminated by the consent of all participants.

OUC's participation in FMPP provides significant savings from the joint commitment and dispatch of FMPP's units. Participation in FMPP also provides OUC with a ready market for any excess energy available from OUC's generating units.

3.4 Security of Power Supply

OUC currently maintains interchange agreements with other utilities in Florida to provide electrical energy during emergency conditions. The reliability of the power supply is also enhanced by metered interconnections with other Florida utilities including nine interconnections with Progress Energy Florida (formerly Florida Power Corporation), four with KUA, two each with Tampa Electric Company and Reedy Creek Improvement District, two with FPL, and one each with Lakeland Electric and St. Cloud. In addition to enhancing reliability, these interconnections also facilitate the marketing of electric energy by OUC to and from other electric utilities in Florida.

In addition, OUC has entered into a five-year contract for the storage of natural gas to manage price volatility and provide backup fuel for emergency situations. The fuel will provide up to 30,000 MBtu/day to help ensure power reliability.

3.5 Environmental Performance[2]

As the quality of the environment is important to Florida, and especially important to the tourist-attracted economy in Central Florida, OUC is committed to protecting human health and preserving the quality of life and the environment in Central Florida. To demonstrate this commitment, OUC has chosen to operate their generating units with emission levels below those required by permits and licenses by equipping its power plants with the best available environmental protection systems. As a result, even with a second unit in operation, the Stanton Energy Center is one of the cleanest coal fired generating stations in the nation. Unit 2 is the first of its size and kind in the nation to use selective catalytic reduction (SCR) to remove nitrogen oxides (NO_x). Using SCR and low-NO_x burner technology, Stanton 2 successfully meets the stringent air quality

[2] Please refer to Section 2.4 of this Ten-Year Site Plan for a detailed discussion of OUC's renewable generating technologies and other environmental initiatives.

requirements imposed upon it. Stanton A incorporates environmentally advanced technology and enables OUC to diversify its fuel mix while adding more flexibility to OUC's portfolio of owned generation and purchased power. As its newest generating asset, Stanton B further contributes to OUC's environmentally responsible portfolio of generating resources.

This superior environmental performance not only preserves the environment, but also results in many economic benefits, which help offset the costs associated with the superior environmental performance. For example, the high quality coal burned at Stanton contributes to the high availability of the units as well as their low heat rates.

Further demonstrating its environmental commitment to clean air, OUC has signed a contract to burn the methane gas collected from the Orange County landfill adjacent to Stanton Energy Center. Methane gas, when released into the atmosphere, is considered to be 20 times worse than carbon dioxide in terms of possible global warming effects. Stanton 1 and Stanton 2 both have the capability of burning methane.

In 2006, OUC created two new environmental vice presidential positions – Environmental Affairs and Strategic Planning (who is responsible for renewable energy programs). In 2009, the title of Vice President Strategic Planning was changed to Vice President-Sustainable Services to more accurately reflect OUC's commitment to renewable energy and conservation efforts. These positions will enhance OUC's efforts to increase investments in renewables, conservation, energy efficiency, and other environmental initiatives.

OUC has also voluntarily implemented a product substitution program not only to protect workers' health and safety but also to minimize hazardous waste generation and to prevent environmental impacts. The Environmental Affairs and the Safety Divisions constantly review and replace products to eliminate the use of hazardous substances. To further prevent pollution and reduce waste generation, OUC also reuses and recycles many products.

3.5.1 Emphasis on Sustainability

OUC completed a greenhouse gas inventory for the entire company in 2008. This report was prepared to help OUC analyze how it impacts the environment, detailing both operating emissions and ways to reduce greenhouse gases. The greenhouse gas inventory was only a part of a larger initiative to perform a comprehensive sustainability audit of every department in the company. The goal of this effort is to understand both short-term and long-term opportunities to reduce the corporate carbon footprint in all departments and business functions. A comprehensive sustainability audit was completed in 2009 and will serve as a guide to help OUC develop new environmental initiatives.

OUC's commitment to efficiency and sustainability is 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. OUC's Reliable Plaza has earned Gold Leadership in Energy and Environmental Design (LEED) certification, officially cementing the 10-story administration and customer service center as the "Greenest Building in downtown Orlando." The non-profit U.S. Green Building Council awarded the Gold level certification after completing a review of the building's design and construction. Reliable Plaza also holds a Florida Water Star certification, a voluntary program for new and existing construction that encourages water efficiency in appliances plumbing fixtures, irrigation systems and landscapes. 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.

OUC has 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.

3.6 Community Relations

Owned by the City of Orlando and its citizens, OUC is especially committed to being a good corporate citizen and neighbor in the areas it serves or impacts.

In Orange, Osceola, and Brevard Counties, where OUC serves customers and/or has generating units, OUC gives its wholehearted support to education, diversity, the arts, and social-service agencies. An active Chamber of Commerce participant in all three counties, OUC also supports area Hispanic Chambers and the Metropolitan Orlando Urban League. As a United Arts trustee, OUC has allowed its historic Lake Ivanhoe Power Plant to be turned into a performing arts center. OUC is also a corporate donor for WMFE public television and has been a co-sponsor of the "Power Station" exhibit at the Orlando Science Center. OUC has also donated $100,000 to the Orlando Science Center to help sponsor the alternative-energy exhibit "Our Energy Future" that includes a permanent exhibit in Orlando and a component that travels to museums throughout the country.

OUC conservation support personnel have made hundreds of public appearances related to conservation at schools, business expos, professional associations, and homeowner association meetings. Conservation specialists conducted presentations, provided face to face consultations, scheduled audits, and disseminated information on conservation programs. OUC also sponsors energy-related events, such as the Florida Renewable Energy Association's Renewable Energy Expo, which stresses the importance of reducing individual carbon footprints and introduces the general public to entrepreneurs and educators who are working on the challenges of energy independence and global climate change.

Long a supporter of Habitat for Humanity Orlando, OUC saw Habitat's first town home project – Staghorn Villas – as an opportunity to provide local families with affordable homes that could also help them keep their utility costs in check. OUC donated $60,000 in energy-efficient features for Staghorn Villas, an $8 million town home community that will provide affordable housing for 58 local families when it is complete in spring 2011. OUC also provided more than 870 compact florescent light bulbs and upgraded all lighting systems throughout the community. Siemens also partnered on the project, matching OUC's $60,000 donation.

In partnership with the City of Orlando, the P.O.W.E.R. Program will target Carver Shores' homeowners and entails an extensive scope of work. Working with a City crew the homes will be evaluated not only for energy efficiency but also for health concerns like mold that often accompany home issues like leaky roofs, windows, etc. This program will target about 40 homes, including some that will receive complete upgrades involving new appliances, a new HVAC system, and other major home projects. A home could potentially be completely renovated and rehabilitated while families are moved into temporary housing during the upgrade process. OUC is rebating items related to energy efficiency to the City of Orlando.

OUC has partnered with the Orlando Science Center to deliver an interactive curriculum to Orange county public school classrooms within OUC's service territory. The Orlando Science Center, using content approved by OUC, has developed an electric and water conservation and renewable energy curriculum and designed activities that meet Sunshine State Standards and target fifth graders, who are preparing for their first Science FCAT test. The program includes two 90-minute classroom workshops for students as well as hands-on labs and pre- and post-classroom activities.

4.0 Forecast of Peak Demand and Energy Consumption

OUC retained Itron, formerly Regional Economic Research, Inc. (RER), to assist in the development of forecasts of peak demand and energy consumption. The project scope was to develop a set of sales, energy, and demand forecast models that could support OUC's budgeting and financial planning process as well as long-term planning requirements. OUC utilized its internal knowledge of the service area with the expertise of Itron in the development of the forecast models.

4.1 Forecast Methodology

There are two primary forecasting approaches used in forecasting electricity requirements: econometric-based modeling (such as linear regression) and end-use models. In general, econometric forecast models provide better forecasts in the short-term time frame, and end-use models are better at capturing long-term structural change resulting from competition across fuels, and changes in appliance stock and efficiency.

The difficulty of end-use modeling is that these models are extremely data-intensive and provide relatively poor short-term forecasts. End-use models require detailed information on appliance ownership, efficiency of the existing stock, new purchase behavior, utilization patterns, commercial floor-stock estimates by building type, and commercial end-use saturations and intensities in both new and existing construction. It typically costs several hundred thousand dollars to update and to maintain such a detailed database. Lack of detailed end-use information precluded developing end-use forecasts for the OUC/St. Cloud service territories. Furthermore, since there is virtually no retail natural gas in the OUC service territory, end-use modeling would provide little information on cross-fuel competition - one of the primary benefits of end-use modeling.

Since end-use modeling was not an option, the approach adopted was to develop linear regression sales models. To capture long-term structural changes, end-use concepts are blended into the regression model specification. This approach, known as statistically adjusted end-use (SAE) model, entails specifying end-use variables (heating, cooling, and other use) and utilizing these variables in sales regression models. While the SAE approach loses some end-use detail, it adequately forecasts short-term energy requirements, and it provides a reasonable structure for forecasting long-term energy requirements.

4.1.1 Residential Sector Model

The residential model consists of both an average use per household model and a customer forecast model. Monthly average use models were estimated over the period encompassing 1998 to 2009. This provides at least 10 years of historical data, with more than enough observations to estimate strong regression models. Once models were estimated, the residential energy requirement in month T was calculated as the product of the customer and average use forecast:

$$\text{Residential Sales}_T = \text{Average User Per Household}_T \text{ x Number of Customers}_T$$

4.1.1.1 Residential Customer Forecast. The number of customers was forecasted as a simple function of household projections for the Orlando Metropolitan Statistical Area (MSA). Models were estimated using MSA-level data, since county level economic data is only available on an annual basis. Not surprisingly, the historical relationship between OUC customers and households in the Orlando MSA is extremely strong. The OUC customer forecast model had an adjusted R^2 of 0.99, with an in-sample Mean Absolute Percent Error (MAPE) of 0.14 percent. For St. Cloud, the model performance was not as strong, given the “noise” in the historical monthly billing data. The adjusted R^2 was 0.98, with an in-sample MAPE of 1.9 percent. Since St. Cloud is a relatively small part of OUC’s service territory, the 2.0 percent average customer forecast error represents a relatively small number of total system customers.

4.1.1.2 Average Use Forecast. The SAE modeling framework begins by defining energy use ($USE_{y,m}$) in year (y) and month (m) as the sum of energy used by heating equipment ($Heat_{y,m}$), cooling equipment ($Cool_{y,m}$), and other equipment ($Other_{y,m}$), depicted as follows:

$$\mathbf{Use_{y,m} = Heat_{y,m} + Cool_{y,m} + Other_{y,m}}$$

Although monthly sales are measured for individual customers, the end-use components are not. Substituting estimates for end-use elements provides the following econometric equation:

$$\text{Use}_m = a + b_1 \times \text{XHeat}_m + b_2 \times \text{XCool}_m + b_3 \times \text{XOther}_m + \varepsilon_m$$

Here, $XHeat_m$, $XCool_m$, and $XOther_m$ are explanatory variables constructed from end-use information, dwelling data, weather data, and market data. The estimated model can then be thought of as an SAE model, where the estimated slopes are the adjustment factors.

XHeat captures the factors that affect residential space heating. These variables include the following:

- Heating degree-days.
- Heating equipment saturation levels.
- Heating equipment operating efficiencies.
- Average number of days in the billing cycle for each month.
- Thermal integrity and footage of homes.
- Average household size, household income, and energy price.

The heating variable is represented as the product of an annual equipment index and a monthly usage multiplier as follows:

$$\mathbf{XHeat_{y,m} = HeatIndex_y \times HeatUse_{y,m}}$$

where:

$XHeat_{y,m}$ is estimated heating energy use in year (y) and month (m).
$HeatIndex_y$ is the annual index of heating equipment.
$HeatUse_{y,m}$ is the monthly usage multiplier.

The heat index is defined as a weighted average energy intensity measured in kWh. Given a set of starting end-use energy intensities (EI), the index will change over time with changes in equipment saturations (*Sat*), operating efficiencies (*Eff*), and building structural index (*StructuralIndex*). Formally, the heating equipment index is defined as follows:

$$\mathbf{HeatIndex_y = StructuralIndex_y \times \sum_{Type} EI^{Type} \times \frac{\left(Sat_y^{Type} \big/ Eff_y^{Type} \right)}{\left(Sat_{98}^{Type} \big/ Eff_{98}^{Type} \right)}}$$

StructuralIndex is based on EIA square footage projections and thermal shell efficiency for the southeast census region. EIA's current projections show average square footage increasing slightly faster than thermal shell integrity improvements.

Electric heating saturation in the OUC service area is relatively high with approximately 85 percent of the homes using electric space heat. Heat pumps account for nearly half the existing stock and are projected to increase as a share of heating equipment over time. Given that heat pumps are significantly more efficient than resistance heat, efficiency gains are expected to outstrip increasing heat saturation, which in turn slows expected residential heating sales growth.

Heating sales are also driven by the factors that impact utilization of the appliance stock. Heating use depends on weather conditions, household size, household income, and prices. The heat use variable is constructed as follows:

$$HeatUse_{y,m} = \left(\frac{HDD_{y,m}}{HDD_{98}}\right) \times \left(\frac{HHSize_{y}}{HHSize_{98}}\right)^{0.20} \times \left(\frac{Income_{y}}{Income_{98}}\right)^{0.25} \times \left(\frac{\mathrm{Pr}\,ice_{y,m}}{\mathrm{Pr}\,ice_{98}}\right)^{-0.13}$$

where:

HDD is the number of heating degree days in year (y) and month (m).

HHSize is the average household size in a year (y).

Income is the average real income per household in a year (y).

Price is the average real price of electricity in month (m) and year (y).

By construction, $HeatUse_{y,m}$ has an annual sum that is close to 1.0 in the base year (1998). The index changes over time with changes in HDD, HHSize, Income, and Price. In this form, the coefficients represent end-use elasticity estimates. The elasticity estimates are based on a study performed by OUC's consultants. The elasticities are also validated by evaluating out-of-sample model fit statistics using different elasticity estimates.

The explanatory variable for cooling loads is constructed in a similar manner. The amount of energy used by cooling systems depends on the following types of variables.

- Cooling degree days.
- Cooling equipment saturation levels.
- Cooling equipment operating efficiencies.
- Thermal integrity and footage of homes.
- Average household size, household income, and energy price.

The cooling variable is represented as the product of an equipment-based index and monthly usage multiplier as follows:

$$\mathbf{XCool}_{\mathbf{y,m}} = \mathbf{CoolIndex}_{\mathbf{y}} \times \mathbf{CoolUse}_{\mathbf{y,m}}$$

where:

$XCool_{y,m}$ is the estimated cooling energy use in year (y) and month (m).
$CoolIndex_y$ is the cooling equipment index.
$CoolUse_{y,m}$ is the monthly usage multiplier.

The cooling equipment index is calculated as follows:

$$\mathbf{CoolIndex_y} = \mathbf{StructuralIndex_y} \times \sum_{\mathbf{Type}} \mathbf{EI^{Type}} \times \frac{\left(\mathbf{Sat_y^{Type}} \big/ \mathbf{Eff_y^{Type}}\right)}{\left(\mathbf{Sat_{98}^{Type}} \big/ \mathbf{Eff_{98}^{Type}}\right)}$$

As air conditioning saturation increases, the index increases. As efficiency increases, the index decreases. Again, because of the high current saturation of air conditioning, the index is largely driven by increasing overall air conditioning efficiency. A slight increase in the structural index (as a result of increasing square footage) results in a small increase in the cooling equipment index over time.

The cooling utilization variable is constructed similar to that of the heating use variable. *CoolUse* is defined as follows:

$$\text{CoolUse}_{\text{y,m}} = \left(\frac{\text{CDD}_{\text{y,m}}}{\text{CDD}_{98}}\right) \times \left(\frac{\text{HHSize}_{\text{y}}}{\text{HHSize}_{98}}\right)^{0.20} \times \left(\frac{\text{Income}_{\text{y}}}{\text{Income}_{98}}\right)^{0.25} \times \left(\frac{\text{Price}_{\text{y,m}}}{\text{Price}_{98}}\right)^{-0.07}$$

where:

CDD is the number of cooling degree days in year (y) and month (m).

Monthly estimates of nonweather sensitive sales can be derived in a similar fashion to space heating and cooling. Based on end-use concepts, other sales are driven by the following:

- Appliance and equipment saturation levels.
- Appliance efficiency levels.
- Average household size, real income, and real prices.

The explanatory variable for other uses is defined as follows:

$$XOther_{y,m} = OtherEqpIndex_{y,m} \times OtherUse_{y,m}$$

The first term on the right hand side of this expression (*OtherEqpIndex*$_{y,m}$) embodies information about appliance saturation and efficiency levels and monthly usage multipliers. The second term (*OtherUse*) captures the impact of changes in price, income, and household size on appliance utilization. The appliance index is defined as follows:

$$OtherIndex_{y,m} = EI^{Type} \times \frac{\left(Sat_y^{Type} \Big/ \frac{1}{Eff_y^{Type}} \right)}{\left(Sat_{98}^{Type} \Big/ \frac{1}{Eff_{98}^{Type}} \right)} \times MoMult_m^{Type}$$

where:

EI is the energy intensity for each appliance (annual kWh).

Sat represents the fraction of households who own an appliance type.

$MoMult_m$ is a monthly multiplier for the appliance type in month (m).

Eff is the average operating efficiency for water heaters.

This index combines information about trends in saturation levels and efficiency levels for the main appliance categories with monthly multipliers for lighting, water heating, and refrigeration. Saturation and efficiency trends are based on EIA projections for the southeast census region.

Economic activity is captured through the *OtherUse* variable, where *OtherUse* is defined as follows:

$$OtherUse_{y,m} = \left(\frac{HHSize_y}{HHSize_{98}}\right)^{0.20} \times \left(\frac{Income_y}{Income_{98}}\right)^{0.25} \times \left(\frac{\Pr ice_{y,m}}{\Pr ice_{98}}\right)^{-0.07}$$

Increase in household income translates into an increase in XOther, while increases in electricity prices result in a decrease in XOther. Decreasing household size (number per household) translates into a decrease in XOther.

4.1.1.3 Estimate Models. To estimate the forecast models, monthly average residential usage is regressed on XCool, XHeat, and XOther. Lagged *Use* values of XCool and Xheat are also included in the specification since these variables are constructed with calendar-month weather data, but the dependent variable (residential average use) is based on revenue-month sales. July residential sales, for example, reflect usage in both calendar months June and July. The end-use variables worked extremely well in the regression models. For OUC, the residential adjusted R^2 is 0.94 with an in-sample MAPE of approximately 4.1 percent. The mean absolute deviation (MAD) is 41.2 kWh compared to a residential monthly average usage of 1,008 kWh. All the model coefficients are highly significant (exhibited by t-statistics greater than 2.0). The St. Cloud model also explains average usage well with an R^2 of 0.93. The model coefficients are highly significant.

4.1.2 Nonresidential Sector Models

The nonresidential sector is segmented into two revenue classes:

- *Small General Service (GS Nondemand or GSND).*
- *Large General Service (GS Demand or GSD).*

The GSND class consists of small commercial customers with a measured demand of less than 50 kW. The GSD class consists of those customers with monthly maximum demand exceeding 50 kW.

The SAE approach is also used to develop models to forecast electricity sales for commercial nondemand and demand classes. The commercial SAE model framework begins by defining energy use ($Use_{y,m}$) in year (y) and month (m) as the sum of energy used by heating equipment ($Heat_{y,m}$), cooling equipment ($Cool_{y,m}$), and other equipment ($Other_{y,m}$) as follows:

$$Sales_{y,m} = Heat_{y,m} + Cool_{y,m} + \text{Other}_{y,m}$$

Although monthly sales are measured for individual customers, the end-use components are not. Substituting estimates for the end-use elements gives the following econometric equation:

$$Sales_m = a + b_1 \times XHeat_m + b_2 \times XCool_m + b_3 \times XOther_m + \varepsilon_m$$

The model parameters are then estimated using linear regression.

The constructed variables XHeat, XCool, and XOther capture structural as well as market condition changes. The end-use variables include the following:

- Heating and cooling degree days.
- End-use saturation and efficiency trends.
- Real regional output.
- Price.

The end-use variables are represented as the product of an annual equipment index (Index) and a monthly usage multiplier (Use). The variables are defined as follows:

$$\mathbf{XHeat}_{\mathbf{y,m}} = \mathbf{HeatIndex}_{\mathbf{y}} \times \mathbf{HeatUse}_{\mathbf{y,m}}$$

$$\mathbf{XCool}_{\mathbf{y,m}} = \mathbf{HeatIndex}_{\mathbf{y}} \times \mathbf{HeatUse}_{\mathbf{y,m}}$$

$$\mathbf{XOther}_{\mathbf{y,m}} = \mathbf{OtherIndex}_{\mathbf{y,m}} \times \mathbf{OtherUse}_{\mathbf{y,m}}$$

The heating equipment index captures change in end-use saturation and efficiency. The heating index is defined as follows:

$$HeatIndex_y = HeatSales_{98} \times \frac{\left(HeatShare_y / Eff_y \right)}{\left(HeatShare_{98} / Eff_{98} \right)}$$

In this expression, 1998 is defined as the base year. The ratio on the right is equal to 1.0 in 1998. As end-use saturation increases, the index increases; as efficiency increases, the index decreases. The starting heating sales estimate (HeatSales98) is derived from the EIA end-use forecast database for the southeast census region.

Similarly, projections of saturation and efficiency changes are based on EIA's long-term outlook for the southeast region.

The heating variable *XHeat* is constructed by interacting the index variable (*HeatIndex*) with a variable that captures short-term stock utilization (*HeatUse*). Temperature data, prices, and regional output are incorporated into the HeatUse variable. The calculated heat utilization variable is computed as follows:

$$HeatUse_{y,m} = \left(\frac{HDD_{y,m}}{HDD_{98}}\right) \times \left(\frac{Output_y}{Output_{98}}\right)^{0.45} \times \left(\frac{\Pr ice_{y,m}}{\Pr ice_{98}}\right)^{-0.10}$$

where:

HDD is the number of heating degree days in year (y) and month (m).

Output is real gross regional product in year (y) and month (m).

Price is the average real price of electricity in year (y) and month (m).

As constructed, *HeatUse* is also an index value with a value of 1.0 in 1998. Furthermore, in this functional form, the coefficients of 0.45 and -0.1 can be interpreted as elasticities. A 1.0 percent change in output will translate into a 0.45 percent increase in the HeatUse index. A 1.0 percent increase in real price will translate into a -0.1 percent change in HeatUse.

The cooling variable (*XCool*) is constructed in a similar manner. Cooling requirements are driven by the following:

- Cooling degree days.
- Cooling equipment saturation levels.
- Cooling equipment operating efficiencies.
- Business activity (as captured by regional output).
- Price.

The following cooling variable is the product of an equipment-based index and monthly usage multiplier:

$$\mathbf{CoolIndex_y} = \mathbf{CoolSales_{98}} \times \frac{\left(\mathbf{CoolShare_y} / \mathbf{Eff_y}\right)}{\left(\mathbf{CoolShare_{98}} / \mathbf{Eff_{98}}\right)}$$

where:

$CoolIndex_y$ is an index of the cooling equipment.

As with heating, the cooling equipment index depends on equipment saturation levels (*CoolShare*) normalized by operating efficiency levels (*Eff*). Saturation and efficiency trends are derived from the EIA end-use database for the southeast census region. Given the nearly 100 percent saturation in air conditioning, the index is driven downwards by improving air conditioning efficiency.

The *CoolUse* variable is constructed similar to the *HeatUse* variable. *CoolUse* captures the interaction of temperature (*CDD*), regional output (*Output*), and price. The output and price elasticity are estimated to be 0.45 and -0.1, respectively. The constructed use variable is defined as follows:

$$CoolUse_{y,m} = \left(\frac{CDD_{y,m}}{CDD_{98}}\right) \times \left(\frac{Output_y}{Output_{98}}\right)^{0.45} \times \left(\frac{Price_{y,m}}{Price_{98}}\right)^{-0.1}$$

By construction, the *CoolUse* variable has an annual sum that is close to 1.0 in the base year (1998). The first two terms, which involve billing days and cooling degree days, serve to allocate annual values to months of the year. The remaining terms average to 1.0 in the base year. In other years, the values will vary to reflect changes in commercial output and prices.

Monthly estimates of nonweather sensitive sales can be derived in a similar fashion as space heating and cooling. Based on end-use concepts, other sales are driven by the following:

- Equipment saturation levels.
- Equipment efficiency levels.
- Average number of days in the billing cycle for each month.
- Real commercial output and real prices.

The explanatory variable for other uses is defined as follows:

$$\mathbf{XOther}_{\mathbf{y,m}} = \mathbf{OtherIndex}_{\mathbf{y,m}} \times \mathbf{OtherUse}_{\mathbf{y,m}}$$

The first term embodies information about equipment saturation levels and efficiency levels. The equipment index for other uses is defined as follows:

$$OtherIndex_{y,m} = \sum_{Type} OtherSales_{98}^{Type} \times \left(\frac{Share_y^{Type} / Eff_y^{Type}}{Share_{98}^{Type} / Eff_{98}^{Type}} \right)$$

where:

OtherSales represents starting base year non-heating, ventilating, and air conditioning (HVAC) sales.

Share represents saturation of other office equipment.

Eff is the average operating efficiency.

This index combines information about trends in saturation levels and efficiency levels for the primary commercial non-HVAC end-uses. End-uses embedded in *OtherIndex* include lighting, water heating, cooking, refrigeration, office equipment, and miscellaneous equipment. The equipment categories are based on EIA categorizations. Economic drivers interact with the *OtherIndex* through the utilization variable *OtherUse*. *OtherUse* is defined as follows:

$$OtherUse_{y,m} = \left(\frac{Output_y}{Output_{98}} \right)^{0.45} \times \left(\frac{Price_{y,m}}{Price_{98}} \right)^{-0.10}$$

4.1.2.1 GSND Sales Forecast. The GSND sales forecast is derived from a total sales forecast model where sales are specified as a function of regional output, (real) price, heating and cooling degree days, and end-use indices to account for changes in commercial sector end-use saturation and efficiency.

4.1.2.2 GSND Sales Models. GSND sales models are estimated for OUC and St. Cloud. Both models explain historical monthly sales variations. The adjusted R^2 for the OUC GSND sales model is 0.87 and the adjusted R^2 for St. Cloud is 0.88. The estimated end-use variable coefficients are statistically significant at the 5 percent level of confidence in both models.

4.1.2.3 GSD Models. The GSD class represents the largest nonresidential customer class. Over the past few years, OUC has seen solid sales gains in this customer class. While overall sales growth will slow significantly over the forecast period due to the recessionary conditions, GSD sales are expected to continue at a solid level of sales growth through the forecast horizon when the economic conditions improve.

The GSD models include *XCool* and *XOther*. Low t-statistics on the heating variables indicate that there is relatively little electric space heating in the GSD class. In the OUC model, *XCool* and *XOther* are highly significant with t-statistics over 2.0. The adjusted R^2 is 0.81 with an in-sample MAPE of 3.9 percent. The St. Cloud end-use variables are also statistically significant with t-statistics over 2.0. The St. Cloud model has an adjusted R^2 of 0.93 with an MAPE of 5.0 percent.

The seven largest OUC customers are backed out of OUC GSD sales data and forecasted separately. The companies include a defense contractor, the Orlando International Airport (OIA), two regional medical centers, a sewage treatment facility, and two theme parks. Forecasts are based on discussions with customer support staff and current economic projections. The large customer sales forecast is combined with the other GSD forecast to develop a total GSD forecast.

OUC's own electric use (OUC Use) is also forecasted separately. The forecast is primarily driven by expected demand for OUC's chilled water cooling plants in the metropolitan Orlando area. OUC chiller-related electricity requirements are backed out of the GSD sales forecast since chilled water sales are expected to directly displace GSD air conditioning load.

4.1.2.3.1 Street Lighting Sales. Street lighting sales are forecasted using a simple trend model. The forecast also includes sales from the *OUC Convenient Lighting Program*, which targets outdoor lighting use. It is assumed that the *Convenient Lighting Program* will grow by about 2.0 GWh a year through the forecast period.

4.1.3 Hourly Load and Peak Forecast

To capture the load diversity across the two retail companies, separate system hourly load forecasts are estimated for OUC and St. Cloud. The hourly load forecasts are then combined to generate a total system hourly load forecast. Summer and winter peak demands are then calculated from the combined utility system hourly load forecast.

The system load profiles are based on a set of hourly load models using load data covering the January 1997 to December 2009 period. Historical hourly loads are first expressed as a percentage of the total daily energy as follows:

$$\mathrm{Fraction}_{dh} = \mathrm{Load}_{hd} \div \mathrm{Energy}_{d}$$

where:

$Load_{hd}$ = the system load in hour (h) and day (d).

$Energy_{d}$ = the system energy in day (d).

Hourly fraction models are then estimated using the Ordinary Least Squares (OLS) regression where the hourly models are specified as a function of daily weather conditions, months, day of the week, and holidays. A second model is estimated for daily energy ($Energy_d$) where daily energy is specified as a function of daily temperatures, day of the week, holidays, seasons, and a trend variable to account for underlying growth over the estimation period.

The hourly fraction and daily energy models are used to simulate hourly fractions and daily energy for normal daily weather conditions. Normal daily temperatures are calculated by first ranking each year from the hottest to coldest day. The ranked data are then averaged to generate the hottest average temperature day to the coolest average temperature day. Daily normal temperatures are then mapped back to a representative calendar day based on a typical daily weather pattern. The hottest normal temperature is mapped to July and the coldest normal temperature to January.

Given weather normal hourly fractions (*WNFraction*) and weather normal daily energy (*WNDailyEnergy*), it is possible to calculate weather normal load for hour (h) in day (d) as follows:

$$WNLoad_{dh} = \mathrm{WNFraction}_{\mathrm{dh}} \times \mathrm{WNDailyEnergyt}_{\mathrm{dh}}$$

The system 8,760 hourly load forecast is generated by combining the weather normal system load shape with the energy forecast using *MetrixLT*. The energy forecast is allocated to each hour based on the weather normal hourly profile. Separate hourly load forecasts are derived for OUC and St. Cloud.

Under normal daily weather conditions OUC is just as likely to experience a winter peak as it is a summer peak. OUC experiences a “needle-like” peak in the winter months on the 1 or 2 days where the low temperature falls below freezing. The needle peak is largely driven by backup resistant heat built into the residential heat pumps.

A separate hourly load forecast is estimated for St. Cloud. Given that St. Cloud is dominated by the residential sector, St. Cloud is even more likely to peak during the winter season.

The hourly OUC and St. Cloud forecasts are aggregated to yield total system hourly load requirements. Forecasted seasonal peaks are then derived by finding the maximum hourly demand in January (for the winter peak) and August (for the summer peak).

4.2 Forecast Assumptions

The forecast is driven by a set of underlying demographic, economic, weather, and price assumptions. Given long-term economic uncertainty, the approach was to develop a set of reasonable, but conservative, set of forecast drivers.

4.2.1 Economics

The economic assumptions are derived from forecasts from Economy.com and the University of Florida. Economy.com's monthly economic forecast for the Orlando MSA is used to drive the forecast.

4.2.1.1 Employment and Regional Output. The nonresidential forecast models are driven by nonmanufacturing and regional output forecasts. Economy.com's employment forecasts were used. Table 4-1 shows the annual employment and gross state product projections.

4.2.1.2 Population, Households, and Income. The primary economic drivers in the residential forecast model are population, the number of households, and real personal income. Economy.com's projections for the Orlando MSA were used, and the projections are presented in Table 4-2.

4.2.2 Price Assumption

An aggregate retail price series was used as a proxy for effective prices in each of the model specifications. Since retail rates (across rate schedules) have generally moved in the same direction, an average retail price variable captures price movement across all the customer classes. The average annual price series is provided in Table 4-3.

The price series is calculated by first deflating historical monthly revenues by the Consumer Price Index. Real revenues are then divided by retail sales to yield a monthly revenue per kWh value. Since revenue is itself a function of sales, it is inappropriate to regress sales directly on revenue per kWh. To generate a price series, a 12 month moving average of the real revenue per kWh series is calculated. This is a more appropriate price variable, as it assumes that households and businesses respond to changes in electricity prices that have occurred over the prior year.

4.2.3 Weather

Weather is a key factor affecting electricity consumption for indoor cooling and heating. Monthly cooling degree days (CDDs) are used to capture cooling requirements while heating degree days (HDDs) account for variation in usage because of electric heating needs. CDDs and HDDs are calculated from the daily average temperatures for Orlando.

Table 4-1
Employment and Gross Regional Output Projections – Orlando MSA

Year	Total Employment (thousands)	Non-manufacturing Employment (thousands)	Gross Product (billion $)
2010	978.8	888.9	84.2
2015	1,150.5	1,028.9	105.4
2020	1,293.6	1,162.5	123.8
2025	1,445.3	1,302.6	143.3
Average Annual Increase			
10-15	2.5%	3.0%	4.6%
15-20	2.4%	2.5%	3.2%
20-25	2.2%	2.3%	3.0%

Table 4-2
Population, Household, and Income Projections – Orlando MSA

Year	Real Income per Household	Households (thousands)	Population (thousands)
2010	$76,928	798.6	2,101.1
2015	$83,195	895.6	2,359.1
2020	$86,198	1,030.3	2,715.5
2025	$89,558	1,168.8	3,081.1
Average Annual Increase			
10-15	1.6%	2.3%	2.3%
15-20	0.7%	2.8%	2.9%
20-25	0.8%	2.6%	2.6%

Table 4-3 Historical and Forecasted Price Series Average Annual Price	
Year	Real Price (cents/kWh)
2000	5.3
2005	5.7
2010	6.3
2015	6.3
2020	6.3
2025	6.3
Annual Increase	
00-05	1.5%
05-10	2.0%
10-15	0.0%
15-20	0.0%
20-25	0.0%

CDD is calculated using a 65° F base. First, a daily CDD is calculated as follows:

$$CDD_d = (AvgTemp_d - 65)\ when\ \ AvgTemp_d \rangle = 65$$

CDD_d has a value equal to the average daily temperature minus 65 when the average daily temperature is greater than or equal to 65° F, and equals zero if average daily temperature is less than 65° F. The daily CDD values are then aggregated to yield a monthly CDD as follows:

$$\mathbf{CCD_m = \sum CDD_{md}}$$

For each month, a normal CDD estimate is calculated using a 10 year average of the monthly values calculated from 1995 through 2004:

$$\mathbf{CDD_{nm} = \sum CDD_m \div 10}$$

Heating degree days are calculated in a similar manner. Daily HDD is first derived using a base temperature of 65° F as follows:

$$HDD_d = (65 - AvgTemp_d)\ when\ AvgTemp_d \langle = 65$$

HDD_d equals 65° F minus the average daily temperature if the average daily temperature is less than or equal to 65° F, and equals zero if the daily temperature is greater than 65° F. Aggregate monthly HDD (HDD_m) is then calculated by summing daily HDD over each month:

$$HDD_m = \sum HDD_{md}$$

The monthly normal HDD is calculated as a 10 year average of the calendar month HDD as follows:

$$\mathbf{HDD_{nm} = \sum HDD_m \div 10}$$

4.3 Base Case Load Forecast

A long-term annual budget forecast was developed through 2025. As outlined in the methodology section, the sales forecast is developed from a set of structured regression models that can be used for forecasting both monthly sales and customers for the forecast horizon. Forecast models are estimated for each of the major rate classifications including the following:

- Residential.
- GSND (small commercial customers).
- GSD (large commercial and industrial customers).
- Street lighting.

Models are estimated using monthly sales data covering the 1998 through 2009 period for the OUC residential model as well as for the OUC nonresidential models. St. Cloud residential, GSD, and GSND sales models are estimated using monthly data from 1998 through 2009.

To support production-costing modeling, an 8,760 hourly load forecast is derived for each of the forecast years. The hourly load forecasts are based on a set of hourly and daily energy statistical models. The models are estimated from hourly system load data over the January 1997 to December 2009 period. A separate set of models is estimated for OUC and St. Cloud. Seasonal peak demand forecasts are derived as the maximum hourly demand forecast occurring in the summer and winter months. Table 4-4 summarizes the annual net energy for load and seasonal peak demand forecasts for the combined OUC and St. Cloud service territories.

4.3.1 Base Case Economic Outlook

Economic projections are based on Economy.com's economic outlook for Orlando and the State of Florida. Projections are in line with economic projections by the University of Florida. The economic downturn has impacted all of the major rate sectors for both OUC and St. Cloud. Growth has slowed or stalled significantly for all areas of employment. Foreclosures in both service areas have affected the growth of residential usage and customers. OUC will continue to closely monitor the economic impact on sales and customer growth.

4.3.2 Forecast Results

Based upon the previously discussed economic assumptions, total retail sales for OUC are expected to increase from 5,513 GWh in 2010 to 7,413 GWh by 2025. St. Cloud sales are projected to increase from 573 GWh to 990 GWh over this same time period.

Table 4-4
Net System Peak (Summer and Winter) and
Net Energy for Load (Total of OUC and St. Cloud)(1)

Year	Summer (MW)	Winter (MW)	Net Energy (GWh)	Load Factor (%)
2010	1,240	1,170	6,359	58.5%
2015	1,392	1,305	7,057	57.8%
2020	1,555	1,465	7,887	57.7%
2025	1,737	1,648	8,779	57.7%
Average Annual Increase				
10-15	2.3%	2.2%	2.1%	-
15-20	2.2%	2.3%	2.2%	-
20-25	2.2%	2.4%	2.2%	-

(1). Net system peak demand and net energy for load forecasts reflect demand reductions associated with OUC's conservation and energy efficiency programs.

4.3.2.1 Residential Forecast. With high electric end-use saturation and projected appliance efficiency-gains, residential average use is projected to remain about flat over the forecast period. Since OUC average residential use is flat, residential sales growth will be driven largely by the addition of new customers. With slow population projections for the region, residential customers are expected to increase at an average annual rate of 2.3 percent for OUC and at 3.9 percent for St. Cloud for the next several years. The ten year residential sales average annual growth rate is 2.1 percent for OUC and 3.8 percent for St. Cloud. The OUC and St. Cloud residential sales forecasts are shown in Tables 4-5 through 4-8, respectively.

4.3.2.2 Small Commercial Sales Forecast. GSND sales are projected to grow at an average annual rate of 2.2 percent and 3.7 percent for OUC and St. Cloud, respectively, between 2010 and 2020. Projected GSND sales are driven by regional non-manufacturing employment and output growth. Average use is projected to be relatively flat, particularly for OUC. Average use growth is partly constrained by size limitation; as customers exceed the 50 kW rate class cutoff, they migrate to the appropriate GSD rate. For OUC, average GSND use has actually trended downward over the last few years. Small commercial customer growth accounts for most of the GSND sales gains. The GSND customer forecast is driven by regional non-manufacturing employment projections. The number of GSND customers is projected to grow at an average annual growth rate of 2.7 percent and 2.9 percent, respectively, for OUC and St. Cloud from

2010 through 2020. Tables 4-5 through 4-8 show annual GSND forecasts for OUC and St. Cloud.

4.3.2.3 Large Nonresidential Sales Forecast. GSD represents the largest commercial and industrial customers. GSD sales grew 1.8 percent between 2001 and 2009. Sales are projected to continue to show solid gains as a result of new major developments such as the UCF medical school, Burnham institute, VA hospital, and other related medical businesses coming on line. The GSD customer forecast is driven by total employment projections and total sales by projected regional gross output. Tables 4-5 through 4-8 summarize the annual GSD forecasts for OUC and St. Cloud.

Table 4-5
OUC Long-Term Sales Forecast (GWh)

Year	Residential	GS Nondemand	GS Demand	St. Lighting	Conv. St. Lts.	OUC Use	Total Retail
2010	1,856	285	3,200	42	19	111	5,513
2015	2,016	324	3,526	47	29	112	6,054
2020	2,291	355	3,861	52	39	113	6,711
2025	2,617	387	4,189	57	49	114	7,413
Average Annual Increase							
10-15	1.7%	2.6%	2.0%	2.3%	8.8%	0.1%	1.9%
15-20	2.6%	1.8%	1.8%	2.0%	6.1%	0.2%	2.1%
20-25	2.7%	1.7%	1.6%	1.9%	4.7%	0.2%	2.0%

Table 4-6
OUC Average Number of Customers Forecast

Year	Residential	GS Nondemand	GS Demand	Total Retail
2010	151,745	19,008	6,992	177,745
2015	167,833	21,932	8,443	198,208
2020	189,283	24,819	10,080	224,182
2025	211,271	27,950	11,895	251,116
Average Annual Increase				
10-15	2.0%	2.9%	3.8%	2.2%
15-20	2.4%	2.5%	3.6%	2.5%
20-25	2.2%	2.4%	3.4%	2.3%

Table 4-7
St. Cloud Long-Term Sales Forecast (GWh)

Year	Residential	GS Nondemand	GS Demand	St. Lighting	Total Retail
2010	389	46	133	5	573
2015	470	57	168	5	700
2020	566	66	194	6	832
2025	675	75	233	7	990
Average Annual Increase					
10-15	3.9%	4.4%	4.8%	0.0%	4.1%
15-20	3.8%	3.0%	2.9%	3.7%	3.5%
20-25	3.6%	2.6%	3.7%	3.1%	3.5%

Table 4-8
St. Cloud Average Number of Customers Forecast

Year	Residential	GS Nondemand	GS Demand	Total Retail
2010	27,249	2,149	234	29,632
2015	33,384	2,523	253	36,160
2020	39,831	2,853	272	42,956
2025	46,297	3,195	290	48,782
Average Annual Increase				
10-15	4.1%	3.3%	1.6%	4.1%
15-20	3.6%	2.5%	1.5%	3.5%
20-25	3.1%	2.3%	1.3%	2.6%

4.4 Net Peak Demand and Net Energy for Load

Hourly load models are used to forecast the 8,760 hours of each of the forecast years. Underlying hourly load growth is driven by the aggregate energy forecast. Thus, forecasted peaks grow at roughly the same rate as the energy forecast. Tables 4-9 and 4-10 show seasonal peak demands and net energy for load forecasts for OUC and St. Cloud, respectively.

4.5 High and Low Load Scenarios

In addition to the base case, two long-term forecast scenarios contributed to the potential demand outcome. High and low case scenarios are based on long-term population trends projected by economy.com. The high and low forecast scenarios are based on bands around the most likely economy.com population forecast for the Orlando MSA. In the high case scenario, the population is forecasted to increase 3.3 percent on a compounded basis between 2005 and 2025. This is in comparison to the base case population projections of 2.3 percent. The high growth scenario results in a forecasted long-term annual energy growth rate of 3.3 percent, with system peak demand that is 299 MW higher than the base case by 2025. In the low case scenario, energy increases 1.3 percent on a compounded basis through 2025. Peak demand is 250 MW lower than the base case by 2025. Table 4-11 presents a summary of the high, base, and low load scenarios.

Table 4-9
OUC Forecast Net Peak Demand (Summer and Winter) and
Net Energy for Load (1)

Year	Summer (MW)	Winter (MW)	Net Energy (GWh)
2010	1,093	1,026	5,752
2015	1,214	1,131	6,315
2020	1,374	1,260	6,998
2025	1,492	1,410	7,730
Average Annual Increase			
10-15	2.1%	2.0%	1.9%
15-20	2.5%	2.2%	2.1%
20-25	1.7%	2.3%	2.0%

(1). Net system peak demand and net energy for load forecasts reflect demand reductions associated with OUC's conservation and energy efficiency programs.

Table 4-10
St. Cloud Forecast Net Peak Demand (Summer and Winter) and
Net Energy for Load

Year	Summer (MW)	Winter (MW)	Net Energy (GWh)
2010	147	144	608
2015	178	174	742
2020	209	205	888
2025	245	238	1,049
Average Annual Increase			
10-15	3.9%	3.9%	4.1%
15-20	3.3%	3.3%	3.7%
20-25	3.2%	3.0%	3.4%

Table 4-11
Scenario Peak Forecasts
OUC and St. Cloud [1]

Year	Summer (MW)	Winter (MW)	Net Energy (GWh)
High Load Scenario			
2010	1,240	1,170	6,359
2015	1,469	1,389	7,477
2020	1,733	1,618	8,817
2025	2,036	1,904	10,307
Average Annual Increase			
10-15	3.4%	3.2%	3.3%
15-20	3.4%	3.4%	3.4%
20-25	3.3%	3.3%	3.2%
Base Load Scenario			
Year	Summer (MW)	Winter (MW)	Net Energy (GWh)
2010	1,240	1,170	6,359
2015	1,392	1,302	7,057
2020	1,555	1,465	7,887
2025	1,737	1,648	8,779
Average Annual Increase			
10-15	2.3%	2.2%	2.1%
15-20	2.2%	2.3%	2.2%
20-25	2.2%	2.4%	2.2%
Low Load Scenario			
Year	Summer (MW)	Winter (MW)	Net Energy (GWh)
2010	1,240	1,170	6,359
2015	1,318	1,243	6,656
2020	1,396	1,318	7,045
2025	1,487	1,406	7,468
Average Annual Increase			
10-15	1.2%	1.2%	0.9%
15-20	1.2%	1.1%	1.1%
20-25	1.3%	1.3%	1.2%

[1]. Peak demand and net energy forecasts reflect demand reductions associated with OUC's conservation and energy efficiency programs.

5.0 Demand-Side Management

Sections 366.80 through 366.85, and 403.519, Florida Statutes (F.S.), are known collectively as the Florida Energy Efficiency and Conservation Act (FEECA). Section 366.82(2), F.S., requires the Florida Public Service Commission (PSC) to adopt appropriate goals designed to increase the conservation of expensive resources, such as petroleum fuels, to reduce and control the growth rates of electric consumption and weather-sensitive peak demand. Pursuant to Section 366.82(6), F.S., the PSC must review the conservation goals of each utility subject to FEECA at least every five years. The seven utilities subject to FEECA are Florida Power & Light Company (FPL), Progress Energy Florida, Inc. (PEF), Tampa Electric Company (TECO), Gulf Power Company (Gulf), Florida Public Utilities Company (FPUC), Orlando Utilities Commission (OUC), and JEA (referred to collectively as the FEECA utilities). Goals were last established for the FEECA utilities in August 2004 (Docket Nos. 040029-EG through 040035-EG). OUC’s 2005 Demand-Side Management (DSM) Plan was approved by the Florida Public Service Commission (FPSC) on September 1, 2004 (Docket No. 040035-EG). The FPSC determined that there were no cost-effective conservation measures available for use by OUC, and therefore established zero DSM and conservation goals for OUC’s residential, commercial, and industrial sectors through 2014. Although OUC’s FPSC-approved DSM and conservation goals were zero for the 2005 through 2014 period, OUC recognized the importance of energy efficiency and conservation and voluntarily maintained and continued to offer DSM programs that showed potential for high customer demand and participation.

Given that 5 years have elapsed since the FPSC’s August 2004 FEECA dockets, goals for the 2010 through 2019 period were required to be established by January 2010. OUC’s residential and commercial/industrial numeric conservation goals for the 2010 through 2019 period were established by the PSC in the *Final Order Approving Numeric Conservation Goals* (Order No. PSC-09-0855-FOF-EG, issued December 30, 2009). These FPSC-established annual goals are presented in Tables 1-1, 1-2 and 1-3.

Table 5-1
Residential DSM Goals Approved by the FPSC

Calendar Year	Summer (MW)	Winter (MW)	Annual (GWh)
2010	0.50	0.20	1.80
2011	0.50	0.20	1.80
2012	0.50	0.20	1.80
2013	0.50	0.20	1.80
2014	0.50	0.20	1.80
2015	0.50	0.20	1.80
2016	0.50	0.20	1.80
2017	0.50	0.20	1.80
2018	0.50	0.20	1.80
2019	0.50	0.20	1.80
Total	5.00	2.00	18.00

Table 5-2
Commercial/Industrial DSM Goals Approved by the FPSC

Calendar Year	Summer (MW)	Winter (MW)	Annual (GWh)
2010	0.70	0.70	1.80
2011	0.70	0.70	1.80
2012	0.70	0.70	1.80
2013	0.70	0.70	1.80
2014	0.70	0.70	1.80
2015	0.70	0.70	1.80
2016	0.70	0.70	1.80
2017	0.70	0.70	1.80
2018	0.70	0.70	1.80
2019	0.70	0.70	1.80
Total	7.00	7.00	18.00

Table 5-3
Total Residential and Commercial/Industrial DSM Goals Approved by the FPSC

Calendar Year	Summer (MW)	Winter (MW)	Annual (GWh)
2010	1.20	0.90	3.60
2011	1.20	0.90	3.60
2012	1.20	0.90	3.60
2013	1.20	0.90	3.60
2014	1.20	0.90	3.60
2015	1.20	0.90	3.60
2016	1.20	0.90	3.60
2017	1.20	0.90	3.60
2018	1.20	0.90	3.60
2019	1.20	0.90	3.60
Total	12.00	9.00	36.00

OUC has been increasingly emphasizing its DSM and conservation programs to increase customer awareness of such programs. This is beneficial to the customers, and also represents one way in which OUC is helping to reduce its emissions of greenhouse gases, consistent with Governor Crist's Executive Order 07-127 and better positioning OUC to meet possible future climate regulations.

It should also be noted that government mandates have forced manufacturers to increase their efficiency standards, thereby decreasing the incremental amount of energy savings achievable; and the efficiency of new generation has increased. These appliance and generating unit efficiency improvements have to some degree mitigated the effectiveness of DSM and conservation programs, as the incremental benefit of such programs is partially offset by overall efficiency increases in the marketplace as a whole.

The quantifiable DSM and conservation programs that OUC currently plans to offer to its customers to meet the FPSC-approved DSM goals include the following:

- Residential Home Energy Surveys – Walk-Through, DVD, and On-Line
- Residential Duct Repair Rebates
- Residential Ceiling Insulation Rebates
- Residential Window Film/Solar Screen Rebates
- Residential High Performance Windows Rebates
- Residential Caulking and Weather Stripping Rebates
- Residential Wall Insulation Rebates
- Residential Cool/Reflective Roof Rebates
- Residential Home Energy Fix-Up Program

- Residential Billed Solution Insulation Program
- Residential Efficient Electric Heat Pump Rebates
- Residential Gold Ring Homes Program
- Residential Compact Fluorescent Lighting
- Commercial Energy Surveys
- Commercial Indoor Lighting Retrofit Program
- Commercial Efficient Electric Heat Pump Rebates
- Commercial Duct Repair Rebates
- Commercial Window Film/Solar Screen Rebates
- Commercial Ceiling Insulation Rebates
- Commercial Cool/Reflective Roofs Rebates

In addition to quantifiable programs, OUC will continue to offer programs that have not been quantified, but aid OUC's customers in reliability, energy conservation, and education. Such programs include the following:

- Residential Energy Conservation Rate Program
- Commercial OUConsumption Online Program
- Commercial OUConvenient Lighting Program
- OUCooling

The remainder of this section describes each of the quantifiable and non-quantifiable DSM and conservation programs that OUC currently plans to offer to its customers to meet the FPSC-approved DSM goals. In addition to offering such programs, OUC continues to play an active role in promoting conservation through community relations as discussed in Section 2.4 and Section 3.6 of this Ten-Year Site Plan.

5.1 Quantifiable Conservation Programs

5.1.1 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 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.

A Residential Energy Survey Video was first offered in 2000 by OUC and is now available to OUC customers in an interactive DVD format. The 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 DVD 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 DVD. The DVD has many benefits over the walk-through survey, including the convenience of viewing the DVD at any time without a scheduled appointment and the ability to watch the DVD numerous times. In addition to the Energy Walk-Through and the DVD 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 the Energy Survey 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.

5.1.2 Residential Energy Efficiency Rebate Programs

These programs offer financial incentives to residential customers who implement efficiency measures including energy-efficient heat pumps, window film, solar screen, caulk and/or weather stripping, ceiling or wall insulation, high performance windows, duct repairs, and other energy-saving measures for their single-family homes. Under these programs, OUC will give specific tips to customers on conserving electricity and water, and offer details on the following customer rebate programs:

- OUC will rebate up to $300 on customer's purchase of an energy-efficient heat pump (refer to Section 2.2.1.5 for additional information)
- OUC will rebate customers 50 percent of the cost (up to $50) for the purchase of caulking and weather stripping

- OUC will rebate customers up to $100 for window film or solar shading for film or screen with a shading coefficient of 0.5 or less
- OUC will rebate customers $1 per square foot (up to $250) for the purchase of ENERGY STAR® rated energy efficient windows
- OUC will rebate customers up to $300 for injected wall insulation OUC will rebate customers up to $150 for ENERGY STAR® cool/reflective roofing that has an initial solar reflectance greater than or equal to 0.70
- OUC will rebate up to $100 to upgrade the customer's attic insulation to R-19 or higher
- OUC will rebate up to $150 on repairs made to leaking ducts

5.1.3 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. Some of the improvements covered under this program include ceiling insulation, duct system repair, pipe insulation, window caulk, door caulk, door weather stripping, door sweep, threshold plate, and minor plumbing repairs.

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.

5.1.4 Residential Billed Solution Insulation Program

This program 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 1 year (for amounts less than $500) or up to 2 years (for any amount above $500) 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.

5.1.5 Residential Efficient Electric Heat Pump Program

This program provides rebates to qualifying customers in existing homes 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.

5.1.6 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, solar 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 $700. 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 to 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.

5.1.7 Residential Compact Florescent Lighting Program

OUC will give away at least one compact fluorescent lamp to customers who have a walk-through Energy Survey. OUC will encourage their installation in fixtures that they use the most or at least 4 hours per day. This practice may be eliminated as incandescent lamps are curtailed from the market place due to legislation over the next few years. The loss of the energy savings will be made up through increases from other OUC programs.

5.1.8 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. Participating customers are encouraged to participate in other OUC commercial programs and directly benefit from energy conservation, which decreases their electric and water bills.

5.1.9 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.

5.1.10 Commercial Energy Efficiency Rebate Programs

These rebates offer financial incentives to commercial customers who implement efficiency measures including heat pump upgrades, window film/solar screen, ceiling insulation, cool/reflective roofing, and duct system repairs. Rebates under this program are as follows:

- OUC will rebate $100 for SEER 14, $200 for SEER 15, and $300 for SEER 16 and above for customers' purchase of an energy-efficient heat pump
- OUC will rebate customers at $0.75 per square foot, up to $55 per room for window tinting and solar screening with a shading coefficient of 0.5 or less
- OUC will rebate customers up to $100 plus $0.07 per square foot above 1,500 square feet for ceiling insulation of R-19 or higher.
- OUC will rebate customers at $0.10 per square foot up to $15,000 for ENERGY STAR® cool/reflective roofing that has an initial solar reflectance greater than or equal to 0.70
- OUC will rebate up to $150 on repairs made to leaking ducts on existing systems that are 5.5 tons (66,000 BTUs) or less

5.2 Additional Conservation Programs

OUC currently plans to continue to offer the following programs to its customers. Although the programs are neither directly nor easily quantifiable, each program provides a valuable service to OUC's customers.

5.2.1 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-conscientious and to encourage conservation of energy resources.

5.2.2 Commercial OUConsumption 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.

5.2.3 Commercial OUConvenient Lighting Program

OUConvenient 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.

5.2.4 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 50,000 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. In addition, a 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 37º F water per minute.

OUC's first chiller plant was installed at Lockheed Martin Corp. The plant was built in 1999. 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.

6.0 Forecast of Facilities Requirements

6.1 Existing Capacity Resources and Requirements

6.1.1 Existing and Planned Generating Capacity

Tables 6-1 and 6-2, which are presented at the end of this section, indicate that OUC and St. Cloud currently have a combined installed generating capability of 1,587 MW in the winter and 1,515 MW in the summer. OUC's existing generating capability (described in more detail in Section 2.0) consists of the following:

- A joint ownership share in the Stanton Energy Center (Units 1, 2, and Stanton A)
- Sole ownership of Stanton Energy Center Unit B (Stanton B)
- Joint ownership shares of the Indian River combustion turbine units
- Joint ownership shares of Crystal River Unit 3, McIntosh Unit 3, and St. Lucie Unit 2

Additionally, St. Cloud's entitlement to capacity from Stanton Unit 2 is included as generating capability, consistent with the Interlocal Agreement described in Section 2.0

6.1.2 Power Purchase Agreements

As described in Section 2.2, OUC schedules St. Cloud's power purchase from TECO. Corresponding with the construction of Stanton A, OUC entered into a PPA with SCF to purchase capacity from SCF's 65 percent ownership share of Stanton A. The original Stanton A PPA was for a term of 10 years and allowed OUC, KUA, and FMPA to purchase all of SCF's 65 percent capacity share of Stanton A for 10 years. The utilities retained the right to reduce the capacity purchased from SCF by 50 MW each year, beginning in the sixth year of the PPA, as long as the total reduction in capacity purchased did not exceed 200 MW. The utilities originally had options to extend the PPA beyond its initial term. OUC, KUA, and FMPA have unilateral options to purchase all of Stanton A's capacity for the estimated 30 year useful life of the unit. Subsequent amendments to the original PPA continue OUC's capacity purchase until the 16th year of the PPA. Beginning with the 16th contract year and ending with the 20th contract year, OUC will maintain the irrevocable right to reduce the amount of capacity purchased by either 20 MW or 40 MW per year, as long as the total reduction in purchased capacity does not exceed 160 MW. OUC has the option of terminating the PPA on September 30, 2023, or extending the PPA up to an additional 10 years through two separate 5 year extensions.

6.1.3 Power Sales Agreements

As described in Section 2.3, OUC currently has a contractual power sales contract to supplement Vero Beach's loads, which went into effect on January 1, 2010. The duration of the agreement is 20 years with provisions for further extension upon contract expiration.

6.1.4 Retirements of Generating Facilities

OUC has not scheduled any unit retirements over the planning horizon, but will continue to evaluate options on an ongoing basis. By the end of the Ten-Year Site Plan planning period, McIntosh 3 will be 37 years old and, therefore, increasing consideration should be given to life extension costs or its possible retirement.

An additional factor affecting potential unit modifications and/or retirements is the US Environmental Protection Agency (EPA)'s Clean Air Interstate Rule (CAIR) and possible future regulations of emissions of mercury that may replace the EPA's Clean Air Mercury Rule (CAMR) following the recent US District Court of Appeals decision that vacated CAMR. CAIR and CAMR are discussed in more detail in Section 8.0. OUC has not announced final decisions on its compliance strategy for the regulatory requirements under CAIR or mercury emissions regulations, but OUC is prepared to meet strict interpretation of the CAIR requirements.

6.2 Reserve Margin Criteria

The Florida Public Service Commission (FPSC) has established a minimum planned reserve margin criterion of 15 percent in 25-6.035 (1) Florida Administrative Code for the purposes of sharing responsibility for grid reliability. The 15 percent minimum planned reserve margin criterion is generally consistent with practice throughout much of the industry. OUC has adopted the 15 percent minimum reserve margin requirement as its planning criterion.

6.3 Future Resource Needs

6.3.1 Generator Capabilities and Requirements Forecast

OUC has applied a minimum 15 percent reserve margin criterion to its own load, St. Cloud's load, the supplemental power to be supplied to Vero Beach, and the TECO partial requirements purchase. Tables 6-1 and 6-2 (presented at the end of this section) display the forecast reserve margins for the combined OUC and St. Cloud systems for the winter and summer seasons, respectively. The capacity associated with Stanton B is included in Tables 6-1 and 6-2 beginning in the summer of 2010. OUC's capacity from renewable projects discussed in Section 2.4 that is projected to be available at the time of peak demand is also reflected in Tables 6-1 and 6-2.

Table 6-1 and Table 6-2 indicate that OUC is projected to have adequate generating capacity to maintain the 15 percent reserve margin requirements through the summer of 2018 and throughout the winter seasons considered in this Ten-Year Site Plan. These projections consider OUC's capacity allocations associated with planned upgrades to the existing Crystal River and St. Lucie nuclear generating units.

6.3.2 Transmission Capability and Requirements Forecast

OUC continuously monitors and upgrades the bulk power transmission system as necessary to provide reliable electric service to its customers. OUC's current transmission system planning criteria are summarized in its annual filing to the Federal Energy Regulatory Commission. Please see OUC's FERC Form 715 for additional information.

Table 6-1
OUC and St. Cloud (STC) Forecast Winter Reserve Requirements – Base Case

Year	Retail Peak Demand (MW)		Vero Beach PR Power Sale (MW)	Total Peak Demand (MW)	Available Capacity (MW)					Reserves (MW)		Excess/(Deficit) Capacity to Maintain 15% Reserve Margin[6] (MW)
	OUC	STC			Installed[1]	SEC A PPA	TECO P.R.	Renewables[2]	Total[3]	Required[4]	Available[5]	
2009/10	1,026	144	70	1,240	1,587	343	15	0	1,945	202	707	506
2010/11	1,041	150	71	1,262	1,587	343	15	10	1,955	205	695	491
2011/12	1,064	156	74	1,294	1,589	343	15	10	1,958	209	666	457
2012/13	1,090	163	77	1,330	1,596	343	0	16.3	1,955	215	625	410
2013/14	1,110	169	81	1,360	1,596	343	0	16.3	1,955	220	595	375
2014/15	1,131	174	84	1,389	1,596	343	0	16.3	1,955	224	566	343
2015/16	1,154	180	87	1,421	1,596	343	0	16.3	1,955	229	534	305
2016/17	1,179	186	90	1,455	1,596	343	0	16.3	1,955	234	500	267
2017/18	1,202	192	93	1,487	1,596	343	0	16.3	1,955	238	468	230
2018/19	1,230	198	96	1,524	1,596	343	0	16.3	1,955	244	431	187

(1) Includes existing net capability to serve OUC and St. Cloud. Reflects OUC's share of the increased capacity associated with the planned upgrades of the existing Crystal River and St. Lucie nuclear generating units. Includes Stanton B beginning winter 2009/10; Stanton B began commercial operation in February 2010.
(2) Capacity of "Renewables" reflects capacity value projected to be available at time of peak demand.
(3) "Totals" may not add due to rounding.
(4) "Required Reserves" include 15 percent reserve margin on OUC retail peak demand and STC retail peak demand. Reserves associated with the Vero Beach contract are also reflected.
(5) "Available Reserves" equals the difference between total available capacity and total peak demand, plus 15 percent of the TECO P.R. purchase.
(6) Calculated as the difference between available reserves and required reserves.

Table 6-2
OUC and St. Cloud (STC) Forecast Summer Reserve Requirements – Base Case

Year	Retail Peak Demand (MW)		Vero Beach PR Capacity Sale (MW)	Total Peak Demand (MW)	Available Capacity (MW)					Reserves (MW)		Excess/(Deficit) Capacity to Maintain 15% Reserve Margin[6] (MW)
	OUC	STC			Installed[1]	SEC A PPA	TECO P.R.	Renewables[2]	Total[3]	Required[4]	Available[5]	
2010	1,093	147	70	1,310	1,515	322	15	5.4	1,858	212	550	338
2011	1,111	153	71	1,335	1,515	322	15	15.4	1,868	216	535	319
2012	1,143	160	74	1,377	1,524	322	15	15.4	1,877	221	502	280
2013	1,167	166	77	1,410	1,524	322	0	21.7	1,868	227	458	231
2014	1,190	172	81	1,443	1,524	322	0	21.7	1,868	232	425	193
2015	1,214	178	84	1,476	1,524	322	0	21.7	1,868	237	392	155
2016	1,239	184	87	1,510	1,524	322	0	21.7	1,868	242	358	115
2017	1,266	190	90	1,546	1,524	322	0	21.7	1,868	247	322	74
2018	1,291	196	93	1,580	1,524	322	0	21.7	1,868	252	288	36
2019	1,319	203	96	1,618	1,524	322	0	21.7	1,868	258	250	(8)

(1) Includes existing net capability to serve OUC and St. Cloud. Reflects OUC's share of the increased capacity associated with the planned upgrades of the existing Crystal River and St. Lucie nuclear generating units. Includes Stanton B beginning summer 2010; Stanton B began commercial operation in February 2010.
(2) Capacity of "Renewables" reflects capacity value projected to be available at time of peak demand.
(3) "Totals" may not add due to rounding.
(4) "Required Reserves" include 15 percent reserve margin on OUC retail peak demand and STC retail peak demand. Reserves associated with the Vero Beach contract are also reflected.
(5) "Available Reserves" equals the difference between total available capacity and total peak demand, plus 15 percent of the TECO P.R. purchase.
(6) Calculated as the difference between available reserves and required reserves.

7.0 Supply-Side Alternatives

As discussed previously, consideration of OUC's existing generating resources and OUC's current base case load forecast indicates that OUC is expecting to have adequate capacity to satisfy forecast reserve margin requirements through the summer of 2018. In the summer of 2019, OUC is expected to require 8 MW to maintain reserve margin requirements. Given that OUC is only projected to require a relatively small amount of capacity in the final year of the 10-year planning horizon considered in this Ten-Year Site Plan, no generating unit alternatives have been characterized in this report. OUC will continue to evaluate alternatives as part of its planning processes, including possible opportunities to participate in future nuclear generating units if such participation is deemed appropriate.

8.0 Economic Evaluation Criteria and Methodology

This section presents the economic evaluation criteria and methodology used for OUC's current planning processes.

8.1 Economic Parameters

The economic parameters are summarized below and are presented on an annual basis.

8.1.1 Inflation and Escalation Rates

The general inflation rate, construction cost escalation rate, fixed O&M escalation rate, and nonfuel variable O&M escalation rate are each assumed to be 2.5 percent.

8.1.2 Cost of Capital

OUC uses a weighted average cost of capital for economic evaluations. The weighted average cost of capital is based on the debt/equity ratio (approximately 65/35), the embedded rate for new debt (projected to be 5.5 percent), and the return on equity (approximately 9.5 percent). The resulting weighted average cost of capital is approximately 6.9 percent.

8.1.3 Present Worth Discount Rate

The present worth discount rate is assumed to be equal to OUC's weighted average cost of capital of 6.9 percent.

8.1.4 Interest During Construction Rate

The interest during construction (IDC) rate used by OUC for economic evaluations is 5.5 percent.

8.1.5 Fixed Charge Rate

The fixed charge rate (FCR) represents the sum of a project's fixed charges as a percent of the initial investment cost. When the FCR is applied to the initial investment, the product equals the revenue requirements needed to offset the fixed charges during a given year. A separate FCR can be calculated and applied to each year of an economic analysis, but it is common practice to use a single, levelized FCR that has the same present value as the year-by-year FCR. The FCR calculation includes 0.10 percent for property insurance. Bond issuance fees and insurance costs are not included in the calculation of the levelized FCR, since these are already considered in OUC's embedded debt rate. Assuming a 20 year financing term, the resulting levelized FCR is 9.47 percent. Assuming a 30 year financing term, the resulting levelized FCR is 8.08 percent.

8.2 Fuel Price Forecasts

8.2.1 Coal

Low sulfur Central Appalachian coal fuels the existing Stanton Units 1 and 2. OUC developed projections of delivered coal prices to the Stanton Energy Center based on input provided by Energy Ventures Analysis, Inc. (EVA). The delivered annual price projections for low sulfur Central Appalachian coal delivered to the Stanton Energy Center are presented in Table 8-1.

8.2.2 Natural Gas

Natural gas is the primary fuel for Stanton A and OUC's Indian River combustion turbines, and will also be the primary fuel for Stanton B. The forecasted price for natural gas delivered to the Indian River and Stanton Energy Center sites is presented in Table 8-1. The gas price includes the Florida Gas Transmission (FGT) Zone 3 basis adder for Henry Hub and fuel loss and usage charges. Firm natural gas transmission costs for existing firm natural gas transportation capacity are not included since such costs are associated with OUC's existing units and would not affect future resource decisions as they are considered to be "sunk costs."

8.2.3 No. 2 Fuel Oil

No. 2 fuel oil is the secondary fuel for Stanton A and B, as well as for OUC's Indian River combustion turbines. Fuel oil is not considered a primary fuel source for OUC's existing units. For informational purposes, OUC's current fuel oil price projections are presented in Table 8-1.

8.2.4 Nuclear

Forecast annual prices for nuclear fuel, which are required for OUC's ownership shares of St. Lucie Units 1 and 2 and Crystal River Unit 3, were carried forward from those presented in OUC's 2009 Ten-Year Site Plan and are presented in Table 8-1.

Table 8-1
Delivered Fuel Price Forecasts (Nominal $/MBtu)

Calendar Year	Stanton Energy Center Coal - Delivered	Delivered Natural Gas	Ultra-Low Sulfur Diesel (0.0015% sulfur)	Nuclear
2010	3.19	5.90	16.23	0.59
2011	3.74	6.60	17.10	0.62
2012	4.34	7.09	17.70	0.65
2013	4.47	7.21	17.60	0.68
2014	4.57	7.82	18.06	0.71
2015	4.54	8.44	18.56	0.75
2016	4.63	9.06	19.09	0.78
2017	4.78	9.67	19.63	0.82
2018	4.94	10.21	20.19	0.86
2019	5.07	10.71	20.77	0.91

8.3 Overview of the Clean Air Interstate Rule and SO_2 and NO_x Transport Regulation

On May 12, 2005 the EPA published the final Clean Air Interstate Rule (CAIR) mandating reductions in SO_2 and NO_x emissions in 28 states (including Florida) and the District of Columbia. The EPA structured CAIR to compel emission reductions from electric generating units (EGUs) and encourage participation in an interstate cap-and-trade market to address the interstate transport of precursor emissions that significantly contribute to downwind non-attainment areas for the new 8 hour and $PM_{2.5}$ national ambient air quality standards. While modeling was performed to determine the geographical extent of individual sources contributing to these downwind non-attainment areas, the EPA designated entire states (and thereby EGUs situated within these states) as being subject to regulation under CAIR. Thus, whether some or all of their emissions significantly contribute to downwind ozone and $PM_{2.5}$ non-attainment areas, individual EGUs located within the State of Florida have been included in and subject to CAIR.

The CAIR program sought to achieve emission reductions by establishing permanent cumulative EGU emission caps in two phases under three separate programs: an annual SO_2 emissions program, an annual NO_x emissions program, and a seasonal NO_x emissions program. These programs are presented in Table 8-2.

Table 8-2
CAIR Program Emission Caps

	2009	2010 through 2014	2015 and beyond
SO_2 Annual (tons)		3.6 million	2.5 million
NO_x Annual (tons)	1.5 million	1.5 million	1.3 million
NO_x Seasonal (tons)	0.58 million	0.58 million	0.48 million

CAIR sought to maintain SO_2 and NO_x emissions within the program caps through the establishment of emissions "budgets." Each affected state expected to receive a proportional distribution of the overall cap for each phase of each program. States could individually choose which sources to regulate, as well as whether to mandate controls or allow participation in the EPA's recommended model cap-and-trade program. States that chose to participate in the proposed interstate cap-and-trade program could also decide how to allocate allowances from their respective NO_x annual and seasonal budgets. States would then ultimately set forth their chosen measures for achieving compliance with the emission budgets in individual State Implantation Plans (SIPs). Florida was subject to regulation under all three CAIR programs and was provided with the emission budgets illustrated in Table 8-3.

Table 8-3
CAIR Emission Budgets for Florida

	2009 through 2014	2010 through 2014	2015 and beyond
SO_2 Annual (tons)		253,450	177,415
NO_x Annual (tons)	99,445(1)		82,871
NO_x Seasonal (tons)	47,912		39,926

(1)CAIR also apportions an additional 8,335 tons of annual NO_x emissions from the Supplemental Compliance Pool for control year 2009.

The CAIR SO_2 cap-and-trade program was expected to rely on the existing Acid Rain program allowance allocations. However, the Acid Rain SO_2 allowances would have reduced value, dependent on the allowance vintage year, for use in complying with the CAIR SO_2 cap-and-trade program.

Different aspects of CAIR were challenged by multiple litigants, including the State of Florida. In July 2008, the U.S. Court of Appeals for the District of Columbia (DC Circuit) issued a decision vacating the entire rule, which effectively eliminated both the annual and ozone season NO_x programs, as well as the annual CAIR SO_2 program. Subsequently, after reviewing petitions for rehearing, the DC Circuit court essentially reversed its decision to vacate and temporarily reinstated CAIR, allowing it to remain in effect until EPA replaces it with a rule consistent with its July 2008 ruling.

The EPA must now promulgate a new CAIR that addresses all the flaws and concerns identified in the court's July ruling. To meet the court's criteria, the new rule must "actually require elimination of emissions from sources that contribute significantly and interfere with maintenance of downwind non-attainment areas" and "be consistent with downwind states non-attainment compliance deadlines." The EPA has announced that it will release its proposed CAIR replacement rule, which it currently referred to as the "Transport Rulemaking" in May 2010, in the hope of finalizing the rule sometime in 2011. Because the new rule must specifically identify upwind sources and address their emissions that significantly contribute to downwind non-attainment areas, it is not clear if and to what extent emissions trading can or may be incorporated into the proposed rule. Additionally, EPA may choose to expand coverage beyond the original 28 eastern states.

As an alternative measure, Congress could enact legislation that implements CAIR's proposed SO_2 and NO_x emission reduction programs. A bill was introduced Congress on February 4, 2010 to implement a SO_2 and NO_x emission trading program very similar to the CAIR program. Known as the Carper-Alexander Clean Air Act Amendments of 2010, it would allow the first phase of CAIR's annual SO_2 and NO_x emission trading provisions to continue through the end of 2011, and retain the seasonal NO_x emission trading program in its entirety. Beginning in 2012, the SO_2 program would extend nationwide with three phases of cap reductions to achieve an 80 percent reduction of overall emissions by 2018. A nationwide annual NO_x emissions trading program, beginning in 2012 will be established in two zones in the eastern and western United States to achieve a 53 percent reduction in overall emissions in two phases by 2015. As of March 1, 2010 the Carper-Alexander bill was slated for a joint committee hearing in the Senate. It would have to be successfully voted out of committee and then assuming it is not stopped by a filibuster would have to be fully approved by Senate vote before it could be sent to the House of Representatives for their consideration and vote. All this would have to be completed before the current Congressional session concludes at the end of the year, and then be signed (unless vetoed) by the President to become law.

8.4 Overview of the Clean Air Mercury Rule and Regulation of Mercury Emissions

The Clean Air Mercury Rule (CAMR), finalized by EPA in 2005, sought to establish a cap-and-trade program to begin in 2010 to regulate mercury (Hg) emissions from coal-fired utility units (>25 MW) located in all 50 states, and performance standards for Hg emissions from new coal-fired units constructed or modified after January 30, 2004. The CAMR was challenged in court, and in February 2008 was vacated by the federal District of Columbia Circuit Court of Appeals. The court found that in the process of adopting this rule, the EPA had unlawfully removed electric generating units from regulation as a hazardous air pollutant (HAP) under Section 112 of the Clean Air Act, which invalidated the underlying basis for the EPA to implement the CAMR.

The EPA sought to implement the CAMR through rulemaking in the absence of any specific federal legislative mandate, EPA required all 50 states to enact and adopt laws and rules to implement the CAMR program through State Implementation Plans (SIPs). Although the EPA offered model rules to follow, as many as 19 states adopted more stringent programs to develop their individual SIPs. This has resulted in varying regulation of Hg emissions state to state, with emission limits for all new plants being established on a case-by-case basis since March 2008. Because Florida had proposed to adopt the model CAMR, its mercury program never took effect.

The EPA has now embarked on a new rulemaking effort to regulate Hg and other hazardous air pollutant emissions under Section 112 of the Clean Air Act. This will ultimately require establishing Maximum Available Control Technology (MACT) standards for new and existing regulated sources. In order to determine appropriate MACT standards, the EPA is seeking information from 531 power plants to analyze their performance based on controls and emissions. It is expected that once this information is evaluated, the EPA will incorporated it into a new Utility MACT rulemaking.

Pursuant to an October 2009 a consent decree filed with the D.C. Circuit Court of Appeals, EPA is required to issue finalize MACT standards for hazardous air pollutants from power plants by November 16, 2011. In order to meet this deadline, the EPA agreed to propose new MACT standards by March 2011.

While EPA is only currently in the information gathering stages, it is widely anticipated that a MACT standard of at least 90 percent reductions for new units will be proposed. The same month that the EPA consent decree was signed, the Government Accountability Office (GAO) issued a report indicating that commercial deployments and industry tests of sorbent injection systems have achieved, on average, 90 percent reductions of mercury emissions. According to the GAO report, the costs of purchasing and installing sorbent injection systems and monitoring equipment averaged approximately \$3.6 million. When plants also installed a fabric filter device primarily to assist the sorbent injection system in mercury reduction, the average cost increased to \$16 million. Additionally, the Carper-Alexander Clean Air Act Amendment bill, if passed, would require power plants to reduce Hg emissions by 90 percent by 2015.

OUC plans to meet the requirements for SO_2, NO_x, and Hg emissions when the requirements are finalized.

9.0 Analysis and Results

As discussed throughout this Ten-Year Site Plan, OUC is not reflecting any capacity additions (beyond the renewable resources discussed in Section 2.4 of this Ten-Year Site Plan) to satisfy the 15 percent reserve margin (summer and winter) criteria over the planning horizon considered in this Ten-Year Site Plan. OUC will continue to evaluate power supply alternatives during the timeframe considered in this Ten-Year Site Plan as well as beyond 2019, and in doing so will evaluate possible participation in new nuclear generating units if deemed appropriate.

For informational purposes, Black & Veatch's POWRPRO was used to obtain the annual production costs associated with various expansion plans (i.e. base case and several load, fuel, and other sensitivities). POWRPRO is a computer-based chronological production costing model developed for use in power supply system planning. POWRPRO simulates the hour-by-hour operation of a power supply system over a specified planning period. Required inputs include the performance characteristics of generating units, fuel costs, and the system hourly load profile for each year. POWRPRO has been used in numerous Need for Power Applications approved by the Florida Public Service Commission, including FMPA's Treasure Coast Energy Center Unit 1 Need for Power Application (approved in July 2005) and OUC's Stanton Energy Center Unit B Need for Power Application (approved in May 2006).

POWRPRO summarizes each unit's operating characteristics for every year of the planning horizon. These characteristics include, among others, each unit's annual generation, fuel consumption, fuel cost, average net operating heat rate, the number of hours the unit was on line, the capacity factor, variable O&M costs, and the number of starts and associated costs. Fixed O&M costs and debt service on existing generating units are generally considered sunk costs that will not vary from one expansion plan to another and were therefore not included for existing units. The annual capacity charges for the Stanton A and the TECO Partial Requirements purchase power agreements likewise were not included, as they also represent sunk costs. Similarly, fixed costs for firm natural gas transportation capacity from FGT for existing firm natural gas transportation capacity are considered sunk costs and are not included. The operating costs of each unit are aggregated to determine annual operating costs for each year of the expansion plan.

The cumulative present worth cost (CPWC) calculations presented in this section account for annual system costs (i.e. fuel and energy, non-fuel variable O&M, and startup costs) for each year of the expansion planning period and discounts each back to 2010 at the present worth discount rate of 6.9 percent. These annual present worth costs are then summed over the 2010 through 2019 period to calculate the total CPWC of the expansion plan being considered. Such analysis allows for a comparison of CPWC between various capacity expansion plans across the sensitivities considered

9.1 CPWC Analyses

9.1.1 Base Case Analysis

The base case considers the base load forecast presented in Section 4 and the base fuel price forecasts presented in Section 8 of this Ten-Year Site Plan. The CPWC for OUC's base case expansion plan is approximately $2.52 billion.

9.1.2 Sensitivity Analyses

As part of its capacity planning process, OUC considers a number of sensitivity analyses to measure the impact of variations to critical assumptions. Among the numerous sensitivities that OUC may consider in its planning processes are high and low fuel prices, high and low load and energy growth projections, a case in which the differential between natural gas and coal price projections is held constant over time, and a high present worth discount rate case. Of these sensitivities only the high and low load and energy growth projection sensitivities would impact the timing of unit additions. For informational purposes, the following subsections describe the high and low load and energy growth, the high and low fuel price, the constant differential fuel price, and the high present worth discount rate sensitivities.

9.1.2.1 High Load Forecast Sensitivity. The high load forecast is presented in Section 4.0, and under the high load forecast OUC will initially require additional capacity to maintain the 15 percent reserve margin in the summer of 2017. The capacity expansion plan under the high load forecast sensitivity scenario includes the addition of a 7FA simple cycle combustion turbine for operation in May 2017, followed by the addition of a second 7FA simple cycle combustion turbine for operation in May 2019. The CPWC for OUC's high load forecast sensitivity is approximately $2.73 billion.

9.1.2.2 Low Load Forecast Sensitivity. The low load forecast is presented in Section 4.0. Assuming the low load forecast, no capacity additions are required to maintain the 15 percent reserve margin. The CPWC for OUC's low load forecast sensitivity is approximately $2.40 billion.

9.1.2.3 High Natural Gas and Coal Price Forecast Sensitivity. OUC developed high natural gas price forecasts, and high coal price forecasts were developed by increasing the delivered coal price forecasts presented in Section 8.0 by 15 percent. The high natural gas and coal price forecasts are shown in Table 9-1. It should be noted that OUC's contractual arrangements for coal delivery will mitigate the effects of volatility in coal prices; however, for purposes of this analysis this factor was not considered. The fuel oil and nuclear fuel price forecasts presented in Section 8 have not been changed for this sensitivity.

As in the base case analysis, the capacity expansion plan under the high natural gas and coal price forecast sensitivity does not include any capacity additions. The CPWC for OUC's high natural gas and coal price forecast sensitivity is approximately $3.03 billion.

9.1.2.4 Low Natural Gas and Coal Price Forecast Sensitivity. OUC developed low natural gas price forecasts, and low coal price forecasts were developed by decreasing the delivered coal price forecasts presented in Section 8.0 by 20 percent. The resulting low natural gas and coal price forecasts are shown in Table 9-2. It should be noted that OUC's contractual arrangements for coal delivery will mitigate the effects of volatility in coal prices; however, for purposes of this analysis this factor was not considered. The fuel oil and nuclear fuel price forecasts presented in Section 8.0 have not been changed for this sensitivity.

As in the base case analysis, the capacity expansion plan under the high natural gas and coal price forecast sensitivity does not include any capacity additions. The CPWC for OUC's low natural gas and coal price forecast sensitivity is approximately $1.98 billion.

9.1.2.5 Constant Differential Natural Gas and Coal Price Forecast Sensitivity. The constant differential natural gas and coal price forecast sensitivity assumes that the delivered natural gas price and delivered coal price forecast for 2010 presented in Section 8.0 would remain constant in real terms. The constant differential price forecasts shown in Table 9-3 were developed by applying the general inflation rate (2.5 percent) to the base case 2010 natural gas and coal price forecasts to convert from real to nominal dollars. The fuel oil and nuclear fuel price forecasts presented in Section 8.0 have not been changed for this sensitivity.

As in the base case analysis, the capacity expansion plan under the constant differential natural gas and coal price forecast sensitivity does not include any capacity additions. The CPWC for OUC's constant differential natural gas and coal price forecast sensitivity is approximately $2.07 billion.

9.1.2.6 High Present Worth Discount Rate Sensitivity. The high present worth discount rate sensitivity assumes a 10 percent present worth discount rate instead of the 6.9 percent present worth discount rate used in the other economic analyses discussed in this section. As in the base case analysis, the capacity expansion plan under the high present worth discount sensitivity does not include any capacity additions. The CPWC for OUC's high present worth discount rate sensitivity is approximately $2.22 billion.

Table 9-1
Delivered Fuel Price Forecasts – High Fuel Price Sensitivity
(Nominal $/MBtu)

Calendar Year	Stanton Energy Center Coal - Delivered	Delivered Natural Gas	Ultra-Low Sulfur Diesel (0.0015% sulfur)	Nuclear
2010	3.66	8.87	16.23	0.59
2011	4.30	7.97	17.10	0.62
2012	4.99	8.67	17.70	0.65
2013	5.14	9.32	17.60	0.68
2014	5.25	10.37	18.06	0.71
2015	5.23	11.88	18.56	0.75
2016	5.33	13.32	19.09	0.78
2017	5.50	14.73	19.63	0.82
2018	5.68	16.29	20.19	0.86
2019	5.83	17.60	20.77	0.91

Table 9-2
Delivered Fuel Price Forecasts – Low Fuel Price Sensitivity
(Nominal $/MBtu)

Calendar Year	Stanton Energy Center Coal - Delivered	Delivered Natural Gas	Ultra-Low Sulfur Diesel (0.0015% sulfur)	Nuclear
2010	2.55	4.74	16.23	0.59
2011	2.99	4.63	17.10	0.62
2012	3.47	4.94	17.70	0.65
2013	3.58	4.98	17.60	0.68
2014	3.65	5.27	18.06	0.71
2015	3.64	5.51	18.56	0.75
2016	3.71	5.83	19.09	0.78
2017	3.82	6.11	19.63	0.82
2018	3.95	6.39	20.19	0.86
2019	4.06	6.72	20.77	0.91

Table 9-3
Delivered Fuel Price Forecasts – Constant Differential Fuel Price Sensitivity
(Nominal $/MBtu)

Calendar Year	Stanton Energy Center Coal - Delivered	Delivered Natural Gas	Ultra-Low Sulfur Diesel (0.0015% sulfur)	Nuclear
2010	3.19	5.90	16.23	0.59
2011	3.27	6.05	17.10	0.62
2012	3.35	6.20	17.70	0.65
2013	3.43	6.35	17.60	0.68
2014	3.52	6.51	18.06	0.71
2015	3.61	6.67	18.56	0.75
2016	3.70	6.84	19.09	0.78
2017	3.79	7.01	19.63	0.82
2018	3.88	7.19	20.19	0.86
2019	3.98	7.37	20.77	0.91

10.0 Environmental and Land Use Information

As discussed previously in this Ten-Year Site Plan, OUC is not projecting the need to construct additional generating capacity to meet reserve margin requirements during the 2010 through 2019 timeframe under the base case load forecast. Ultimate certification for 2,000 MW was obtained with the Site Certification for Stanton 1. Stanton 2, Stanton A, and Stanton B were certified under the Supplemental Site Certification provisions of the Florida Electrical Power Plant Siting Act. The Stanton Energy Center remains a viable site for future capacity additions.

11.0 Conclusions

As discussed throughout this Ten-Year Site Plan, the addition of Stanton B in February 2010 satisfies forecast capacity requirements through the summer of 2018 under the base case load forecast. The need for capacity in the summer of 2019 (8 MW) is relatively small and, given the magnitude and projected timing of this need, no new generating unit additions have been assumed (beyond the renewable resources discussed in Section 2.4). Under the high load forecast sensitivity, for purposes of this Ten-Year Site Plan it has been assumed that a simple cycle combustion turbine would be installed as needed to maintain the 15 percent reserve margin.

Various discussions related to unit additions and the potential for participation in new nuclear generating additions, if deemed appropriate, have been presented throughout this Ten-Year Site Plan. However, OUC has made no final decisions related to construction of new generation resources, and OUC will continue to evaluate alternative unit additions, including possible participation in new nuclear generating units, through its on-going planning efforts. Therefore, the discussion of future generating unit additions presented in this Ten-Year Site Plan is intended for informational purposes only.

12.0 Ten-Year Site Plan Schedules

This section presents the schedules required by the Ten-Year Site Plan rules for the Florida Public Service Commission (FPSC). For each table the FPSC Schedule number is included in parenthesis, and the Schedules are presented in the same format in which they will be provided in response to the FPSC's Supplemental Data Request. The information contained within the FPSC Schedules is representative of the combined OUC and City of St. Cloud systems, consistent with all sections of the 2010 OUC Ten-Year Site Plan.

Schedule 1
Existing Generating Facilities
As of December 31, 2009

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
								Alt.					
								Fuel	Commercial	Expected	Gen. Max.	Net Capability	
	Unit		Unit	Fuel		Fuel Transport		Days	In-Service	Retirement	Nameplate	Summer	Winter
Plant Name	No.	Location	Type	Pri	Alt	Pri	Alt	Use	Month/Year	Month/Year	KW(1)	MW	MW
Indian River	A	Brevard	GT	NG	DFO	PL	TK	0.2	06/89	Unknown	41.4	18(2)	23.4(2)
Indian River	B	Brevard	GT	NG	DFO	PL	TK	0.2	07/89	Unknown	41.4	18(2)	23.4(2)
Indian River	C	Brevard	GT	NG	DFO	PL	TK	0.2	08/92	Unknown	130	85.3(3)	100.3(3)
Indian River	D	Brevard	GT	NG	DFO	PL	TK	0.2	10/92	Unknown	130	85.3(3)	100.3(3)
Stanton Energy Center	1	Orange	ST	BIT	NA	RR	UN	UN	07/87	Unknown	464.5	301.6(4)	303.7(4)
Stanton Energy Center	2	Orange	ST	BIT	NA	RR	UN	UN	06/96	Unknown	464.5	337.9(5)	337.9(5)
Stanton Energy Center	A	Orange	CC	NG	DFO	PL	TK	3	10/01	Unknown		173.6(6)	184.8(6)
McIntosh	3	Polk	ST	BIT	NA	REF	UN	UN	09/82	Unknown		133(7)	136(7)
Crystal River	3	Citrus	ST	NUC	NA	TK	UN	UN	03/77	Unknown		13	13
St. Lucie(8)	2	St. Lucie	ST	NUC	NA	TK	UN	UN	08/83	Unknown		51	52

NOTES:
(1) Nameplate ratings are reported for units which OUC maintains majority ownership. Values reported are for the entire unit (not just OUC's ownership share)
(2) Reflects an OUC ownership share of 48.8 percent.
(3) Reflects an OUC ownership share of 79.0 percent.
(4) Reflects an OUC ownership share of 68.6 percent.
(5) Reflects an OUC ownership share of 71.6 percent and St. Cloud entitlement of 4.2 percent.
(6) Reflects an OUC ownership share of 28.0 percent.
(7) Reflects an OUC ownership share of 40.0 percent.
(8) OUC owns approximately 6.1 percent of St. Lucie Unit No. 2. Reliability exchange divides 50 percent power from Unit No. 1 and 50 percent power from Unit No. 2.

Schedule 2.1
History and Forecast of Energy Consumption and Number of Customers by Customer Class

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Rural and Residential				Commercial		
Year	Population	Members per Household	GWH	Average No. of Customers	Average KWH Consumption Per Customer	GWH	Average No. of Customers	Average KWH Consumption Per Customer
HISTORY:								
2000	362,000	2.55	1,821	141,993	12,825	320	17,236	18,566
2001	372,200	2.55	1,893	145,838	12,980	316	17,184	18,389
2002	383,200	2.55	1,973	150,194	13,136	315	17,669	17,828
2003	391,500	2.55	2,033	153,708	13,226	299	18,011	16,601
2004	403,900	2.54	2,082	158,755	13,115	300	18,866	15,902
2005	421,100	2.54	2,198	165,545	13,277	320	19,672	16,267
2006	436,000	2.55	2,241	170,765	13,125	340	20,034	16,960
2007	451,696	2.56	2,223	176,435	12,599	363	20,230	17,922
2008	457,897	2.55	2,269	179,785	12,622	395	20,463	19,283
2009	452,220	2.55	2,235	177,163	12,615	317	20,762	15,264
FORECAST:								
2010	454,600	2.54	2,245	178,993	12,543	331	21,156	15,663
2011	463,300	2.54	2,288	182,629	12,529	345	21,642	15,944
2012	473,700	2.54	2,346	186,747	12,563	357	22,479	15,880
2013	484,700	2.54	2,379	191,173	12,446	365	23,274	15,686
2014	497,100	2.53	2,434	196,124	12,411	372	23,910	15,549
2015	510,000	2.53	2,486	201,217	12,357	380	24,455	15,547
2016	523,300	2.53	2,552	206,537	12,357	389	25,043	15,514
2017	537,300	2.53	2,620	212,038	12,356	397	25,671	15,451
2018	551,400	2.53	2,695	217,639	12,384	404	26,318	15,370
2019	565,900	2.53	2,776	223,342	12,431	413	26,988	15,291

Notes:
Represents total of OUC and St. Cloud.

Schedule 2.2
History and Forecast of Energy Consumption and Number of Customers by Customer Class

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	GWH	Industrial Average No. of Customers	Average KWH Consumption Per Customer	Railroads and Railways GWH	Street & Highway Lighting GWH	Other Sales to Public Authorities GWH	Total Sales to Ultimate Consumers GWH
HISTORY:							
2000	2,861	4,420	647,358	0	28	6	5,036
2001	2,967	4,763	622,992	0	31	6	5,213
2002	3,033	4,980	609,036	0	40	6	5,367
2003	3,138	5,417	579,287	0	37	6	5,513
2004	3,221	5,500	585,636	0	42	6	5,651
2005	3,283	5,561	590,361	0	45	6	5,852
2006	3,347	5,675	589,871	0	49	6	5,984
2007	3,434	5,843	587,637	0	54	6	6,079
2008	3,390	5,961	568,659	0	45	17	6,115
2009	3,418	6,725	508,217	0	46	15	6,031
FORECAST:							
2010	3,414	7,233	471,930	0	48	19	6,056
2011	3,463	7,530	459,931	0	49	21	6,166
2012	3,557	7,805	455,712	0	50	23	6,332
2013	3,630	8,088	448,820	0	51	25	6,450
2014	3,694	8,388	440,432	0	52	27	6,579
2015	3,776	8,704	433,798	0	53	29	6,724
2016	3,852	9,025	426,774	0	54	31	6,877
2017	3,930	9,350	420,369	0	55	33	7,035
2018	3,999	9,681	413,053	0	56	35	7,189
2019	4,074	10,017	406,755	0	57	37	7,357

Notes:
Represents total of OUC and St. Cloud.

Schedule 2.3
History and Forecast of Energy Consumption and Number of Customers by Customer Class

(1)	(2)	(3)	(4)	(5)	(6)
Year	Sales for Resale GWH	Utility Use & Losses GWH	Net Energy for Load GWH	Other Customers (Average No.)	Total No. of Customers
HISTORY:					
2000	0	255	5,291	0	163,648
2001	969	191	6,373	0	167,785
2002	821	208	6,396	0	172,843
2003	920	249	6,682	0	177,136
2004	714	234	6,599	0	183,121
2005	704	219	6,775	0	190,778
2006	18	248	6,250	0	196,474
2007	0	262	6,341	0	202,508
2008	0	150	6,265	0	206,209
2009	0	223	6,252	0	204,650
FORECAST:					
2010	332.3	303	6,693	0	207,383
2011	346.3	307	6,820	0	211,800
2012	345.2	315	6,992	0	217,030
2013	387.1	321	7,156	0	222,536
2014	372.9	326	7,278	0	228,422
2015	405.1	333	7,462	0	234,376
2016	402.2	340	7,618	0	240,604
2017	413.7	346	7,795	0	247,059
2018	452.4	354	7,994	0	253,637
2019	439.4	361	8,159	0	260,347

Notes:
Represents total of OUC and St. Cloud.
Forecast Sales for Resale represent projected sales to City of Vero Beach.

Schedule 3.1
History and Forecast of Summer Peak Demand
Base Case

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Year	Total	Wholesale	Retail	Interruptible	Residential Load Management	Residential Conservation	Comm./Ind. Load Management	Comm./Ind. Conservation	Net Firm Demand
HISTORY:									
2000	1,026	0	1,026	1	0	0	0	0	1,025
2001	1,382	341	1,041	1	0	0	0	0	1,381
2002	1,408	319	1,089	1	0	0	0	0	1,407
2003	1,381	303	1,078	1	0	0	0	0	1,380
2004	1,311	231	1,080	1	0	0	0	0	1,310
2005	1,353	147	1,206	0	0	0	0	0	1,353
2006	1,230	22	1,208	0	0	0	0	0	1,230
2007	1,256	0	1,256	0	0	0	0	0	1,256
2008	1,221	0	1,221	0	0	0	0	0	1,221
2009	1,244	0	1,244	0	0	0	0	0	1,244
FORECAST:									
2010	1,311	70	1,241	0	0	0.5	0	0.7	1,310
2011	1,337	71	1,266	0	0	1.0	0	1.4	1,335
2012	1,380	74	1,307	0	0	1.5	0	2.1	1,377
2013	1,415	77	1,338	0	0	2.0	0	2.8	1,410
2014	1,449	81	1,368	0	0	2.5	0	3.5	1,443
2015	1,483	84	1,399	0	0	3.0	0	4.2	1,476
2016	1,519	87	1,431	0	0	3.5	0	4.9	1,510
2017	1,556	90	1,466	0	0	4.0	0	5.6	1,546
2018	1,591	93	1,498	0	0	4.5	0	6.3	1,580
2019	1,630	96	1,534	0	0	5.0	0	7.0	1,618

Notes:
Represents total of OUC and St. Cloud.
"Residential Conservation" and "Comm/Ind. Conservation" represent cumulative annual demand reductions.
Forecast Wholesale represents projected sales to City of Vero Beach.

Schedule 3.2
History and Forecast of Winter Peak Demand
Base Case

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Year	Total	Wholesale	Retail	Interruptible	Residential Load Management	Residential Conservation	Comm./Ind. Load Management	Comm./Ind. Conservation	Net Firm Demand
HISTORY:									
1999/00	1,060	0	1,060	1	0	0	0	0	1,059
2000/01	1,066	0	1,066	1	0	0	0	0	1,065
2001/02	1,345	302	1,044	1	0	0	0	0	1,345
2002/03	1,414	277	1,137	1	0	0	0	0	1,413
2003/04	1,196	241	955	1	0	0	0	0	1,195
2004/05	1,203	123	1,080	1	0	0	0	0	1,202
2005/06	1,117	22	1,095	0	0	0	0	0	1,117
2006/07	957	0	957	0	0	0	0	0	957
2007/08	1,104	0	1,104	0	0	0	0	0	1,104
2008/09	1,178	0	1,178	0	0	0	0	0	1,178
FORECAST:									
2009/10	1,241	70	1,171	0	0	0.2	0	0.7	1,240
2010/11	1,263	71	1,193	0	0	0.4	0	1.4	1,262
2011/12	1,296	74	1,223	0	0	0.6	0	2.1	1,294
2012/13	1,334	77	1,257	0	0	0.8	0	2.8	1,330
2013/14	1,364	81	1,284	0	0	1.0	0	3.5	1,360
2014/15	1,395	84	1,310	0	0	1.2	0	4.2	1,389
2015/16	1,428	87	1,340	0	0	1.4	0	4.9	1,421
2016/17	1,462	90	1,372	0	0	1.6	0	5.6	1,455
2017/18	1,495	93	1,402	0	0	1.8	0	6.3	1,487
2018/19	1,533	96	1,437	0	0	2.0	0	7.0	1,524

Notes:
Represents total of OUC and St. Cloud.
"Residential Conservation" and "Comm/Ind. Conservation" represent cumulative annual demand reductions.
Forecast Wholesale represents projected sales to City of Vero Beach.

Schedule 3.3
History and Forecast of Annual Net Energy for Load - GWH
Base Case

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year	Total	Residential Conservation	Comm./Ind. Conservation	Retail	Wholesale	Utility Use & Losses	Net Energy for Load	Load Factor %
HISTORY:								
2000	5,291	0	0	5,036	0	255	5,291	58.7%
2001	6,373	0	0	5,213	969	191	6,373	52.7%
2002	6,396	0	0	5,367	821	208	6,396	51.9%
2003	6,682	0	0	5,513	920	249	6,682	55.3%
2004	6,599	0	0	5,651	714	234	6,599	53.3%
2005	6,775	0	0	5,852	704	219	6,775	54.5%
2006	6,250	0	0	5,984	18	248	6,250	58.0%
2007	6,341	0	0	6,079	0	262	6,341	57.6%
2008	6,265	0	0	6,115	0	150	6,265	58.6%
2009	6,252	0	0	6,031	0	223	6,252	57.4%
FORECAST:								
2010	6,696	1.8	1.8	6,056	332	303	6,693	58.3%
2011	6,827	3.6	3.6	6,166	346	307	6,820	58.3%
2012	7,002	5.4	5.4	6,332	345	315	6,992	58.0%
2013	7,171	7.2	7.2	6,450	387	321	7,156	57.9%
2014	7,296	9	9	6,579	373	326	7,278	57.6%
2015	7,483	10.8	10.8	6,724	405	333	7,462	57.7%
2016	7,643	12.6	12.6	6,877	402	340	7,618	57.6%
2017	7,824	14.4	14.4	7,035	414	346	7,795	57.6%
2018	8,026	16.2	16.2	7,189	452	354	7,994	57.8%
2019	8,195	18	18	7,357	439	361	8,159	57.6%

Notes:
Represents total of OUC and St. Cloud.
"Residential Conservation" and "Comm/Ind. Conservation" represent cumulative annual energy reductions.
Forecast Wholesale represents projected sales to City of Vero Beach.

Schedule 4

Previous Year and 2-Year Forecast of Retail Peak Demand and Net Energy for Load by Month

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	2009 Actual		2010 Forecast		2011 Forecast	
	Peak Demand	NEL	Peak Demand	NEL	Peak Demand	NEL
Month	MW	GWH	MW	GWH	MW	GWH
January	1,178	480	1,170	475	1,191	485
February	1,175	427	956	430	972	437
March	869	463	878	460	889	470
April	899	464	942	480	954	488
May	1,116	551	1,034	546	1,047	558
June	1,244	602	1,129	596	1,146	607
July	1,149	611	1,194	639	1,216	652
August	1,163	624	1,240	655	1,264	667
September	1,083	577	1,182	601	1,205	610
October	1,142	556	1,095	544	1,119	549
November	883	439	974	458	996	466
December	851	460	921	476	942	484

Notes:
Represents the total of OUC and St. Cloud retail peak demands and net energy for load.
Peak demands may not match previous schedules due to non-coincidence of OUC and St. Cloud peaks.

Schedule 5
Fuel Requirements

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Fuel Requirements		Units	Actual 2008	Actual 2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
(1)	Nuclear		Trillion BTU	6	5	6	5	6	6	6	6	6	6	6	6
(2)	Coal		1000 Ton	2,060	1,949	2,171	2,077	2,088	2,091	2,121	2,138	2,158	2,179	2,198	2,211
(3)	Residual	Total	1000 BBL	0	13	0	0	0	0	0	0	0	0	0	0
(4)		Steam	1000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(5)		CC	1000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(6)		CT	1000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(7)		Other	1000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(8)	Distillate	Total	1000 BBL	1	5	0	0	0	0	0	0	0	0	0	0
(9)		Steam	1000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(10)		CC	1000 BBL	1	4	0	0	0	0	0	0	0	0	0	0
(11)		CT	1000 BBL	0	1	0	0	0	0	0	0	0	0	0	0
(12)		Other	1000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(13)	Natural Gas	Total	1000 MCF	4,496	7,564	3,770	5,422	5,744	6,652	7,282	8,233	8,991	10,147	11,053	12,030
(14)		Steam	1000 MCF	9	47	0	0	0	0	0	0	0	0	0	0
(15)		CC	1000 MCF	4,239	7,244	3,553	5,172	5,495	6,317	6,944	7,734	8,544	9,595	10,435	11,300
(16)		CT	1000 MCF	247	273	217	250	249	335	338	499	447	552	618	730
(17)	Other (Specify)		Trillion BTU	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
Represents fuel required to serve OUC and St. Cloud.

Schedule 6.1
Energy Sources

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Energy Sources		Units	Actual 2008	Actual 2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
(1)	Firm Inter-Region Interchange		GWH	0	0	0	0	0	0	0	0	0	0	0	0
(2)	Nuclear		GWH	475	313	519	492	564	560	510	541	541	510	541	541
(3)	Coal		GWH	5,109	4,791	5,498	5,314	5,344	5,368	5,452	5,493	5,546	5,603	5,654	5,690
(4)	Residual	Total	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(5)		Steam	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(6)		CC	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(7)		CT	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(8)		Other	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(9)	Distillate	Total	GWH	1	4	0	0	0	0	0	0	0	0	0	0
(10)		Steam	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(11)		CC	GWH	1	4	0	0	0	0	0	0	0	0	0	0
(12)		CT	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(13)		Other	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(14)	Natural Gas	Total	GWH	620	1,082	485	712	765	877	967	1,079	1,182	1,333	1,449	1,578
(15)		Steam	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(16)		CC	GWH	603	1,062	470	695	747	854	942	1,043	1,150	1,292	1,405	1,522
(17)		CT	GWH	17	20	15	17	18	23	25	36	32	41	44	56
(18)	NUG		GWH	0	0	0	0	0	0	0	0	0	0	0	0
(19)	Renewables	Total	GWH	61	62	179	286	305	351	349	349	349	349	349	349
(20)		Biofuels	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(21)		Biomass	GWH	0	0	0	0	0	31	31	31	31	31	31	31
(22)		Hydro	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(23)		Landfill Gas	GWH	61	62	179	272	291	299	297	297	297	297	297	297
(24)		MSW	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(25)		Solar	GWH	0	0	0	14	14	21	21	21	21	21	21	21
(26)		Wind	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(27)		Other	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(28)	Other (Specify)		GWH	0	0	12	15	13	0	0	0	0	0	0	0
	For 2010 and beyond, other includes TECO PR purchases														
(29)	Net Energy for Load		GWH	6,266	6,252	6,693	6,819	6,991	7,156	7,278	7,462	7,618	7,795	7,993	8,158

Notes:
Represents total energy requirements of OUC, St. Cloud, and projected (2010 and beyond) energy provided to City of Vero Beach.
Total Net Energy for Load may not correspond to other Schedules due to rounding.

Schedule 6.2
Energy Sources

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Energy Sources		Units	Actual 2008	Actual 2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
(1)	Firm Inter-Region Interchange		%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(2)	Nuclear		%	7.58%	5.01%	7.75%	7.22%	8.07%	7.83%	7.01%	7.25%	7.10%	6.54%	6.77%	6.63%
(3)	Coal		%	81.54%	76.63%	82.15%	77.93%	76.44%	75.01%	74.91%	73.61%	72.80%	71.88%	70.74%	69.75%
(4)	Residual	Total	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(5)		Steam	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(6)		CC	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(7)		CT	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(8)		Other	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(9)	Distillate	Total	%	0.02%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(10)		Steam	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(11)		CC	%	0.02%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(12)		CT	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(13)		Other	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(14)	Natural Gas	Total	%	9.89%	17.31%	7.25%	10.44%	10.94%	12.26%	13.29%	14.46%	15.52%	17.10%	18.13%	19.34%
(15)		Steam	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(16)		CC	%	9.62%	16.99%	7.02%	10.19%	10.69%	11.93%	12.94%	13.98%	15.10%	16.57%	17.58%	18.66%
(17)		CT	%	0.27%	0.32%	0.22%	0.25%	0.26%	0.32%	0.34%	0.48%	0.42%	0.53%	0.55%	0.69%
(18)	NUG		%												
(19)	Renewables	Total	%	0.97%	0.99%	2.67%	4.19%	4.36%	4.90%	4.80%	4.68%	4.58%	4.48%	4.37%	4.28%
(20)		Biofuels	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(21)		Biomass	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.43%	0.43%	0.42%	0.41%	0.40%	0.39%	0.38%
(22)		Hydro	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(23)		Landfill Gas	%	0.97%	0.99%	2.67%	3.99%	4.16%	4.18%	4.08%	3.98%	3.90%	3.81%	3.72%	3.64%
(24)		MSW	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(25)		Solar	%	0.00%	0.00%	0.00%	0.21%	0.20%	0.29%	0.29%	0.28%	0.28%	0.27%	0.26%	0.26%
(26)		Wind	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(27)		Other	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(28)	Other (Specify)		%	0.00%	0.00%	0.19%	0.24%	0.21%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(29)	Net Energy for Load		%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Notes:
Represents total energy requirements of OUC, St. Cloud, and projected (2010 and beyond) energy provided to City of Vero Beach.

Schedule 7.1
Forecast of Capacity, Demand, and Scheduled Maintenance at Time of Summer Peak

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total Installed Capacity	Firm Capacity Import	Firm Capacity Export	QF	Total Capacity Available	System Firm Summer Peak Demand	Reserve Margin before Maintenance		Scheduled Maintenance	Reserve Margin after Maintenance	
Year	MW	MW	MW	MW	MW	MW	MW	% of Peak	MW	MW	% of Peak
FORECAST:											
2010	1,515	343	0	0	1,858	1,310	524	40%	0	524	40%
2011	1,525	343	0	0	1,868	1,335	509	38%	0	509	38%
2012	1,534	343	0	0	1,877	1,377	476	35%	0	476	35%
2013	1,540	328	0	0	1,868	1,410	431	31%	0	431	31%
2014	1,540	328	0	0	1,868	1,443	397	27%	0	397	27%
2015	1,540	328	0	0	1,868	1,476	364	25%	0	364	25%
2016	1,540	328	0	0	1,868	1,510	329	22%	0	329	22%
2017	1,540	328	0	0	1,868	1,546	293	19%	0	293	19%
2018	1,540	328	0	0	1,868	1,580	259	16%	0	259	16%
2019	1,540	328	0	0	1,868	1,618	220	14%	0	220	14%

Notes:
Firm Capacity Import includes OUC's and St. Cloud's existing and future power purchase agreements
System Firm Summer Peak Demand includes OUC and St. Cloud peak demand, as well as OUC's supplemental power sale to City of Vero Beach.
Reserve Margin (MW) calculated as available capacity (including installed capacity and purchases, reflecting reserves provided by St. Cloud's TECO purchase) minus System Firm Summer Peak Demand, minus reserves that OUC plans on providing to City of Vero Beach.
Reserve Margin (% of Peak) calculated as Reserve Margin (MW) divided by System Firm Summer Peak Demand.
Scheduled Maintenance is zero, as no units are scheduled for maintenance during peak periods.

Schedule 7.2

Forecast of Capacity, Demand, and Scheduled Maintenance at Time of Winter Peak

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Year	Total Installed Capacity MW	Firm Capacity Import MW	Firm Capacity Export MW	QF MW	Total Capacity Available MW	System Firm Winter Peak Demand MW	Reserve Margin before Maintenance MW	Reserve Margin before Maintenance % of Peak	Scheduled Maintenance MW	Reserve Margin after Maintenance MW	Reserve Margin after Maintenance % of Peak
FORECAST:											
2009/10	1,587	358	0	0	1,945	1,240	681	55%	0	681	55%
2010/11	1,597	358	0	0	1,955	1,262	669	53%	0	669	53%
2011/12	1,599	358	0	0	1,958	1,294	640	49%	0	640	49%
2012/13	1,612	343	0	0	1,955	1,330	598	45%	0	598	45%
2013/14	1,612	343	0	0	1,955	1,360	567	42%	0	567	42%
2014/15	1,612	343	0	0	1,955	1,389	538	39%	0	538	39%
2015/16	1,612	343	0	0	1,955	1,421	505	36%	0	505	36%
2016/17	1,612	343	0	0	1,955	1,455	471	32%	0	471	32%
2017/18	1,612	343	0	0	1,955	1,487	439	30%	0	439	30%
2018/19	1,612	343	0	0	1,955	1,524	401	26%	0	401	26%

Notes:
Firm Capacity Import includes OUC's and St. Cloud's existing and future power purchase agreements
System Firm Winter Peak Demand includes OUC and St. Cloud peak demand, as well as OUC's supplemental power sale to City of Vero Beach.
Reserve Margin (MW) calculated as available capacity (including installed capacity and purchases, reflecting reserves provided by St. Cloud's TECO purchase) minus System Firm Winter Peak Demand, minus reserves that OUC plans on providing to City of Vero Beach.
Reserve Margin (% of Peak) calculated as Reserve Margin (MW) divided by System Firm Winter Peak Demand.
Scheduled Maintenance is zero, as no units are scheduled for maintenance during peak periods.

Schedule 8
Planned and Prospective Generating Facility Additions and Changes

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
								Const.	Commercial	Expected	Gen. Max.	Net Capability		
	Unit		Unit	Fuel		Fuel Transport		Start	In-Service	Retirement	Nameplate	Summer	Winter	
Plant Name	No.	Location	Type	Pri	Alt	Pri	Alt	Mo/Yr	Mo/Yr	Mo/Yr	KW	MW	MW	Status
Stanton Energy Center	B	Orange	CC	NG	DFO	PL	TK	10/07	02/10	Unknown		298	312	OP

Notes:
Stanton B began commercial operation in February 2010. Capacity from Stanton B is reflected in Schedules 7.1 and 7.2. Stanton B is not included in Schedule 1, as it was not commercial as of December 31, 2009. Information on Stanton B can be found in Section 2 of OUC's 2010 Ten-Year Site Plan.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1)	Plant Name and Unit Number:	OUC's 2010 Ten-Year Site Plan does not include any proposed units. Therefore, Schedule 9 is not applicable.
(2)	Capacity	
	a. Summer:	
	b. Winter:	
(3)	Technology Type:	
(4)	Anticipated Construction Timing	
	a. Field construction start-date:	
	b. Commercial in-service date:	
(5)	Fuel	
	a. Primary fuel:	
	b. Alternate fuel:	
(6)	Air Pollution Control Strategy:	
(7)	Cooling Method:	
(8)	Total Site Area:	
(9)	Construction Status:	
(10)	Certification Status:	
(11)	Status with Federal Agencies:	
(12)	Projected Unit Perfomance Data	
	Planned Outage Factor (POF):	
	Forced Outage Factor (FOF):	
	Equivalent Availability Factor (EAF):	
	Resulting Capacity Factor (%):	
	Average Net Operating Heat Rate (ANOHR):	
(13)	Projected Unit Financial Data	
	Book Life (Years):	
	Total Installed Cost (In-Service Year $/kW):	
	Direct Construction Cost ($/kW):	
	AFUDC Amount ($/kW):	
	Escalation ($/kW):	
	Fixed O&M ($/kW-Yr):	
	Variable O&M ($/MWH):	
	K Factor:	

Notes:
Stanton B began commercial operation in February 2010. Capacity from Stanton B is reflected in Schedules 7.1 and 7.2. Stanton B is not included in Schedule 1, as it was not commercial as of December 31, 2009. Information on Stanton B can be found in Section 2 of OUC's 2010 Ten-Year Site Plan as well as Schedule 8.

Schedule 10

Status Report and Specifications of Proposed Directly Associated Transmission Lines

(1)	Point of Origin and Termination:	OUC's 2010 Ten-Year Site Plan does not include any directly proposed transmission lines. Therefore, Schedule 10 is not applicable.
(2)	Number of Lines:	
(3)	Right-of-Way:	
(4)	Line Length:	
(5)	Voltage:	
(6)	Anticipated Construction Timing:	
(7)	Anticipated Capital Investment:	
(8)	Substations:	
(9)	Participation with Other Utilities:	