nFRONT CONSULTING LLC
Power Industry Planners • Analysts • Advisors

April 2, 2018

Carlotta Stauffer
Florida Public Service Commission
Office of Commission Clerk
2540 Shumard Oak Blvd
Tallahassee, Florida 32399-0850

Subject: 2018 Orlando Utilities Commission Ten-Year Site Plan

Dear Ms. Stauffer

Enclosed please find an electronic copy of the 2018 Orlando Utilities Commission (OUC) Ten-Year Site Plan (TYSP). The 2018 OUC TYSP was prepared by nFront Consulting LLC (nFront) and is being submitted by nFront on behalf of OUC.

If you have any questions about this TYSP, please do not hesitate to contact me.

Respectfully submitted,

/s/ Bradley Kushner

Bradley Kushner
Executive Consultant
nFront Consulting LLC
BradKushner@nFrontConsulting.com
(816) 547-1637

Orlando Utilities Commission

2018 Ten-Year Site Plan

Prepared by:
nFront Consulting LLC
April 2, 2018



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1.0 EXECUTIVE SUMMARY

This report documents the 2018 Orlando Utilities Commission (OUC) Ten-Year Site Plan pursuant to Section 186.801 Florida Statutes and Section 25-22.070 of Florida Administrative Code. OUC's 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)

OUC has assumed responsibility for supplying all of St. Cloud's loads through calendar year 2032. 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.

OUC has a contract to provide power to Bartow through calendar year 2020, a contract to sell power to Lake Worth through calendar year 2018, a contract to sell to the City of Vero Beach through calendar year 2018, a contract to sell power to Winter Park through calendar year 2019, and a contract to sell power to Florida Power & Light through October 2020. The power OUC is currently planning to provide to Vero Beach, Bartow, Lake Worth, Winter Park, and Florida Power & Light 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 and power purchases. OUC's available capacity as of January 1, 2018, including capacity from units owned by OUC, St. Cloud's entitlement to Stanton Energy Center Unit 2, and OUC's current power purchases (including natural gas, as well as landfill gas and solar resources), provides total net summer capacity of approximately 1,879 MW and total net winter capacity of approximately 1,916 MW[1].

As illustrated in Section 6.0 of this report, OUC is projected to have adequate capacity to maintain a 15 percent reserve margin throughout the 2018 through 2027 planning period reflected in this Ten-Year Site Plan; as such, no new capacity additions are included in this Ten-Year Site Plan.

[1] Net seasonal capacity ratings as of January 1, 2018. Includes capacity owned by OUC and St. Cloud, as well as OUC's contractual power purchases.

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 passed by a margin of 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. That year, 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 power purchase contracts. This agreement has been extended through 2032.

2.1 Existing Generation System

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

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

[2] As discussed throughout this report, OUC has purchased the steam units at the Indian River site; however, the units are currently in Extended Cold Shutdown and, therefore, are not included in calculations of OUC's available capacity.

Table 2-1 Summary of OUC Generation Facilities

(As of January 1, 2018)

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	15.6(1)	18.1(1)
Indian River	B	Brevard	GT	NG	FO2	PL	TK	07/89	Unknown	15.6(1)	18.1(1)
Indian River	C	Brevard	GT	NG	FO2	PL	TK	08/92	Unknown	83.0(2)	88.5(2)
Indian River	D	Brevard	GT	NG	FO2	PL	TK	10/92	Unknown	83.0(2)	88.5(2)
Stanton Energy Center	1	Orange	ST	BIT	NG	RR	PL	07/87	Unknown	302.3(3)	302.3(3)
Stanton Energy Center	2	Orange	ST	BIT	NG	RR	PL	06/96	Unknown	339.4(4)	339.4(4)
Stanton Energy Center	A	Orange	CC	NG	FO2	PL	TK	10/03	Unknown	184.2(5)	188.5(5)
Stanton Energy Center	B	Orange	CC	NG	FO2	PL	TK	02/10	Unknown	292.0	307.0
McIntosh	3	Polk	ST	BIT	--	RR	--	09/82	Unknown	133.0(6)	136.0(6)
St. Lucie(7)	2	St. Lucie	NP	UR	--	TK	--	06/83	Unknown	60.0	60.0

(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 3.4 percent.
(5)Reflects an OUC ownership share of 28.0 percent.
(6)Reflects an OUC ownership share of 40.0 percent.
(7)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 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 primarily by pulverized coal and can generate up to approximately 70 MW on natural gas, utilize natural gas igniters, 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 (PM). Stanton Unit 1 is a 441 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 453 MW net coal-fired generating facility. OUC maintains a 71.6 percent (324 MW) ownership share of this unit.

OUC has entered into an agreement with Kissimmee Utility Authority (KUA), FMPA, and Southern Company-Florida LLC (SCF), which governs 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 (and purchases 52 percent), 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.

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.

The Indian River Plant is located four 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 Energy in 1999, with OUC recently repurchasing the units. Given their current condition (the units are currently in Extended Cold Shutdown), the Indian River steam units do not provide generating capacity for OUC, but do provide OUC with future options for new generating capacity. 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 (approximately 31 MW summer and 36 MW winter) in Indian River Units A and B, as well as a partial ownership share of 79 percent (approximately 166 MW summer and 177 MW winter) in Indian River Units C and D.

McIntosh Unit 3 is a 340 MW net coal-fired unit operated by Lakeland Electric. McIntosh Unit 3 has supplementary natural gas and is capable of burning up to 20 percent petroleum coke. OUC has a 40 percent ownership share in McIntosh Unit 3, providing approximately 133 MW of capacity (summer capacity; winter capacity is 136 MW) to the OUC system.

OUC has a 6.08951 percent ownership share in St. Lucie Unit 2 (a nuclear generating facility operated by FPL), providing approximately 60 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. St. Cloud has an entitlement to capacity from Stanton Unit 2 associated with its purchase through FMPA (related to FMPA's participation in the Stanton II Project). FMPA's ownership

stake in Stanton Unit 2 through the Stanton II Project is 23.2 percent, and St. Cloud's purchase from FMPA's Stanton Unit 2 ownership is 14.67 percent (providing approximately 15 MW).

2.2 Purchase Power Resources[3]

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. Subsequent amendments to the original PPA continued OUC's capacity purchase until September 30, 2023. OUC and SCF have agreed to extend the Stanton A PPA through December 2031.

2.3 Power Sales Contracts

OUC is currently contractually obligated to supply supplementary power to Vero Beach under a partial requirements power sales contract through 2018. OUC also has a contract to provide power to Bartow through 2020. Bartow purchases the power from OUC and then distributes it to its customers through its existing infrastructure. OUC has a contract to provide power to Lake Worth through 2018, and a contract to sell power to Winter Park through 2019. OUC recently signed a contract to provide power to Florida Power & Light.

For purposes of this Ten-Year Site Plan, OUC has assumed the winter and summer capacities and annual energy presented in Table 2-2 will be provided to Vero Beach, Bartow, Lake Worth, Winter Park, and Florida Power & Light.

[3] OUC's renewable power purchases are discussed in Section 2.4 of this Ten-Year Site Plan.

Table 2-2 Projected Annual Summer and Winter Peak Capacity (MW) and Annual Net Energy for Load (GWh) to be Provided to Vero Beach, Bartow, Lake Worth, Winter Park, and Florida Power & Light

	SUMMER MW				
YEAR	VER	Bartow	Lake Worth	Winter Park	Florida Power & Light
2018	140	40	71	16	0
2019		40		17	100
2020		40			100
2021					
2022					
2023					
2024					
2025					
2026					
2027					
	WINTER MW				
YEAR	VER	Bartow	Lake Worth	Winter Park	Florida Power & Light
2018/19		40		17	70
2019/20		40			70
2020/21					
2021/22					
2022/23					
2023/24					
2024/25					
2025/26					
2026/27					
	ANNUAL GWh				
YEAR	VER	Bartow	Lake Worth	Winter Park	Florida Power
2018	370	279	223	57	9
2019		280		57	45
2020		280			46
2021					
2022					
2023					
2024					
2025					
2026					
2027					
All rounded to nearest MW or GWh					

2.4 OUC's Renewable Energy and Sustainability Initiatives and Community Activities

OUC is actively incorporating renewable technologies into its diverse generation portfolio and taking other steps to reduce carbon emissions. In 2015, OUC set a Clean Energy Strategy goal of 20 percent retail sales from renewables and conservation by 2020, and in 2017, the City of Orlando announced that it is committed to have the City of Orlando entirely powered by clean and renewable energy by 2050. These targets require investment in both landfill gas and solar generation. Technologies such as solar and landfill gas allow OUC to provide the necessary power demand to customers while reducing harmful effects on the environment.

Renewable energy, energy efficiency, sustainability and community activities are crucial to reducing the total needed demand for power. OUC's recent renewable energy and sustainability initiatives, as well as OUC's recent activities in the community and customer education initiatives, are discussed in the following sub-sections[4].

2.4.1 Solar

OUC is actively working to provide opportunities for its customers to participate in solar projects and programs. These initiatives include Solar Photovoltaic (PV) Net Metering, the Solar Aggregation Program, which produces electricity, and the Solar Thermal Program, which generates heat for domestic water heating systems. Customers who participate in the Solar PV Program receive the benefit of net metering, which provides the customers with a monthly credit on their utility bills for energy produced in excess of what the home or business can use. Any excess electricity generated and delivered by the solar PV systems back to OUC's electric grid is credited at the customer's retail electric rate. However, customers who take part in the Solar Aggregation Program will be able to reduce costs by leveraging economies of scale to drive down the costs for PV systems. Under the Solar Aggregation Program, OUC will offer turn-key PV systems using vetted contractors to furnish, design, and install PV-optimized systems for each home. Residential customers participating in the Solar Thermal Program receive a rebate of $900 for installing a solar hot water system. Federal incentives, such as the investment tax credit, are available to eligible customers to help minimize costs of solar PV and solar thermal systems.

To further facilitate development of solar energy, OUC supported Orange County in its efforts to obtain 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 U.S. Department of Energy (DOE). The ongoing partnership between OUC, the City and Orange County received $450,000 in funding and technical expertise to help develop solar projects in OUC's service area that can be replicated across the country.

In 2009, OUC and clean energy company Petra Solar teamed up to launch the first utility pole-mounted solar PV system in Florida. Ten of Petra Solar's SunWave™ intelligent PV solar systems have been installed on OUC utility poles along Curry Ford Road.

Together the panels can generate up to 2 kW, 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

[4] Please refer to Section 5.0 of this Ten-Year Site Plan for discussion of OUC's conservation and demand-side management programs.

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, but 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.

During 2010, OUC invested $100,000 in an educational partnership with the Orlando Science Center to build a 31 kW PV array atop the Science Center's observatory. The system provides about 42,660 kWh of electricity per year, or enough power to serve about four homes. The PV installation not only provides green power to the Science Center but also an educational experience on the science of solar energy for the thousands of children who visit the center each year.

OUC is adding additional solar to its fleet of natural gas, coal, solar, and landfill gas generation already on-site at Stanton Energy Center. The Stanton Solar Farm, constructed in partnership with Duke Energy, was brought online in late 2011 and produces about 6 MW – enough to power about 600 homes. The first Stanton Solar Farm consists of more than 25,000 modules featuring solar panels with a patented single-axis tracking system design that can withstand Category 4 hurricane winds while increasing electricity output by 30 percent. OUC purchases 100 percent of the output of this installation, which was the first solar farm in Orange County, for 20 years. In 2015, OUC signed a 20-year PPA for approximately 13 MW of solar energy from a second solar farm at the Stanton Energy Center. Brought on-line in 2017, the solar farm will provide enough electricity to power 2,100 homes. Only one other utility in the nation has placed panels over a coal ash byproduct landfill at a power plant. This solar farm is the latest addition to OUC's Community Solar program.

The OUC board voted to give OUC the authority to enter into a contract to purchase between 60 to 120 MW of solar power, significantly increasing OUC's investment in renewable energy. The agreement partners OUC with the Florida Municipal Power Agency (FMPA), which represents 31 municipal utilities, to jointly purchase energy from new solar farms to power homes and businesses across the state. OUC would serve as the anchor of the project by purchasing up to 54 percent of potentially as much as 223.5 megawatts of solar energy capacity from facilities that would be built in rural Orange and Osceola counties.

The partnership aims to have the project operational in mid-2020 with up to three 74.5-megawatt solar farms likely to be built near existing transmission lines for efficiency. A typical 74.5-megawatt solar farm is composed of more than 300,000 solar panels and generates enough energy to power approximately 15,000 homes. OUC and FMPA will receive the energy in the form of a Power Purchase Agreement, which means no upfront costs and the utilities only pay for energy when it is produced. FMPA is working with up to 11 of its members who are considering participating in the project. The ultimate participation levels will determine whether two or three solar farms will be built.

In 2013, OUC built the first Community Solar Farm in Central Florida. This innovative project allowed customers to "buy a piece of the sun" and receive the benefits of solar without having to install it on their own roof. The 400 kW system sold out in six days and had a total of 39 customers sign up. The American Public Power Association (APPA) awarded OUC the 2015 Energy Innovator award on June 9, 2015, for its groundbreaking Community Solar Farm program.

In February 2017, OUC began installing an innovative floating solar array on a water retention pond at its Gardenia Operations Center. The 31.5 kW pilot project is the first in Florida to send power directly to the grid. Comprised of 100 panels mounted on floats it produces enough energy to power five homes. This design appeals to developers who want to invest in solar but do not want to cut down trees or use valuable land resources. Also, OUC is evaluating performance gains in energy production as a result of the increased reflectance and cooling effect of the water. More than 9,000 potential sites within Orange and Osceola counties have been identified where floating solar may be a viable option.

OUC is further showcasing solar energy by installing high-visibility solar sculptures (or "solar trees"), like the structures seen at Camping World Stadium and the Orange County Convention Center. OUC has also invested in solar on utility poles and has been an area leader in installing utility-scale projects atop the Orange County Convention Center and the Stanton Energy Center. Additionally, OUC has deployed multiple solar mobile device charging stations at LYNX bus shelters to power up electronic devices while passengers are waiting.

2.4.2 Landfill Gas

The gas produced by the biological breakdown of organic matter in landfills is known as methane or landfill gas. It is created by the decomposition of wet organic waste under anaerobic, or oxygen-less, conditions in a landfill. This gas is considered a renewable energy source because the anaerobic digestion process continues as waste materials are constantly added to the landfill.

In partnership with Orange County, OUC captures methane gas emissions from county landfill cells and pipes it to the Stanton Energy Center where it is co-fired with coal. In addition to helping to reduce greenhouse gas emissions, this 8 MW project has the potential to displace more than three percent of the coal burned at the Stanton Energy Center. It will be capable of producing in excess of 100,000 MWh of reduced-emissions power – offsetting about 44,000 tons of coal each year. OUC and Orange County have signed new agreements for future landfill projects, expanding capacity to 22 MW.

In December 2015, OUC began receiving energy from the CBI project at the John Drury Landfill, located in Holopaw in Osceola County, for a minimum of 9 MW with an option to expand up to 25 MW of landfill gas energy. For the CBI project, OUC built a new 25 kV distribution line that is comprised of 15.5 miles of overhead and nearly five miles of underground line. The new feeder line will send clean, renewable energy from the landfill to an OUC electric substation in St. Cloud and is the longest distribution feeder on the grid. This feeder will play a large role in OUC's clean energy strategy.

OUC has also entered into long-term PPAs for landfill gas projects with WMI in Broward County (6 MW) and GES in Charlotte County (2.56 MW).

2.4.3 Carbon Capture Project

OUC plans to participate in a $29 million U.S. Department of Energy joint demonstration project to study the use of algae for carbon capture, water Algae-Based Project treatment, and as a renewable fuel. As part of the proposal, a one-acre test site will be established at Stanton to grow algae and test the viability of algae as a method of capturing and consuming carbon from the coal-fired generation units. The algae will be sent to a bio-refinery where it will be converted to bio-fuel, pelletized, and sent back to the Stanton Energy Center as a renewable energy source.

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 its carbon footprint by using alternative fuels, purchasing more hybrids and recycling automotive products to help the environment. As part of an overall plan to reduce emissions in its fleet, OUC uses "B20" – a blend of 80 percent petroleum diesel and 20 percent biodiesel – a clean-burning alternative fuel made from new or used vegetable oils and animal fats, including recycled cooking grease. Compared to petroleum diesel, biodiesel produces lower emissions, so it 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. OUC uses biodiesel at the Pershing Fleet Center and the Gardenia site. OUC is also in the process of installing two new 10,000-gallon fuel tanks that will store E85 fuel at its Pershing and Gardenia sites. In the next year, OUC will have approximately 50 new vehicles that will be able to use this fuel.
As a result of 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 that will be used by both OUC and Orange County.

Embracing fuel-efficient technology as a commitment to green initiatives, OUC was the first municipal utility in Florida to acquire a plug-in hybrid vehicle that gets up to 99 miles per gallon. In addition to six fully electric vehicles, OUC has 42 hybrid vehicles in the fleet and is one of only a few other utilities throughout the country to test Nissan's new all-electric E-NV 200 cargo van. Additionally, OUC has installed 150 fleet/employee electric vehicle (EV) charging stations to meet the needs of its growing electric fleet. OUC also offers discounts to employees who choose to utilize the SunRail commuter train and LYNX city bus system to get to and from work.

OUC currently has 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 of the battery.

OUC's Fleet Division has incorporated a number of eco-conscious policies, including the use of earth-friendly products and special care taken to dispose contaminated fuels according to environmental standards. Tires, batteries, and oil filters are recycled through vendors, while antifreeze and motor oil are handled on-site. OUC recycles about 20,000 gallons of used oil each year. OUC also has a vehicle idling policy that requires the engine to be turned off after five minutes. Diesel engines use about one gallon of fuel per hour when idling, so this policy saves about $4 per hour per vehicle.

As part of OUC's commitment to alternative fuels and efficient transportation, three of the 32 EV charging stations at Reliable Plaza are powered by the sun. A 16-panel solar array provides a total of 2.8 kW of power to charge the vehicles at stations in the garage. 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. At night or on a cloudy day when the sun is not shining, the power is drawn from Reliable Plaza. When the sun is shining but no car is charging, the power is fed back into the building. OUC can access a special website to track real-time information and total system usage for its charging stations. A full charge takes about four hours for a Nissan LEAF. OUC also recently installed five Direct Current (DC) Fast Chargers in Orlando, which can charge up to 80 percent of an EV's battery capacity in 30 minutes or less. 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 ChargePoint to set up an account that links to their credit card. The power is billed through a third-party agreement with ChargePoint, which remits the electricity fees back to OUC each month.

To help prepare Central Florida to support plug-ins, OUC partnered with the City, Orange County, Rocky Mountain Institute and others as part of a national non-profit initiative called Project Get Ready. OUC and the City also hosted the national kickoff of the U.S. Department of Energy ChargePoint America Grant, which has provided nearly 300 public charging stations to Central Florida; 135 of these stations are located in OUC's service territory. Additionally, OUC offers a rebate of $200 per station to commercial businesses and multi-family buildings that install additional charging stations within its service territory.

In 2016, OUC enhanced its EV programs with the launch of a new Commercial EV Charging Station Program that encourages adoption of EVs by providing customers a turn-key option for charging stations at their facilities. The program offers two options: *Charge It*, where OUC owns and maintains the equipment with electric usage billed separately, and *Own It*, where OUC provides a turn-key solution and the commercial customer owns the equipment.

In 2015, OUC implemented a cost-effective solution that ensures compliance with the EPA's regulation on Mercury and Air Toxics Standards (MATS). OUC developed a testing program to evaluate injecting halogenated activated carbon into the path of the flue gas; this allows the mercury to change its chemical state thus allowing it to be captured by the electrostatic precipitator and scrubbers. Another test that is still in the research and development phase is how to grow and harvest algae using coal flue gas.

OUC is working on planting sections of the 3,280 acres at the Stanton Energy Center. The site uses less than 1,000 acres currently and by planting new trees, OUC will measure and track the recycling of CO_2 from the electric generating units to reduce its overall carbon footprint.

OUC continues to improve on operations at the Stanton Energy Center with a new design on the Unit 2 steam turbine that provides an additional 12 MW of output without increasing the fuel consumption or emissions. The improvement also includes adding natural gas ignitors on both units to enable them to run at lower loads and increase operation flexibility. This allows OUC to take advantage of lower natural gas prices and saves the expense of shutting the unit down for short periods of time. OUC recently completed installation of variable frequency drives on Unit 2 to improve efficiency while operating at low load levels, and is planning on similar upgrades to Unit 1 during 2019.

2.4.5 Energy Efficiency and Sustainability

OUC's commitment to efficiency and sustainability is also demonstrated by Reliable Plaza, OUC's energy and water efficient center in south downtown that opened in 2008 and replaced OUC's 40-year-old Administration Building on South Orange Avenue. Reliable Plaza earned Gold Leadership in Energy and Environmental Design (LEED) certification in 2009, 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 designed to use 28 percent less energy and 40 percent less water than a similarly sized facility. One of the more innovative offerings at Reliable Plaza is an interactive conservation education center.

To further demonstrate OUC's commitment to sustainability, many projects are active or are planned across its facilities. These projects focus on improving building efficiency through automation and control technology on its HVAC and lighting equipment in addition to smart irrigation and Xeriscape landscape designs. OUC recently built a living wall to showcase sustainable use of vertical space by replacing impervious surfaces, as well as to provide a vertical garden sitting area where employees may take breaks.

OUC's Commercial Indoor Lighting Program helps customers convert old, inefficient lighting to high-efficiency technology. OUC and Orlando Health have entered into agreements to upgrade indoor lighting at both the Arnold Palmer Hospital for Children and the Winnie Palmer Hospital for Women & Babies. More than 15,000 fixtures will be replaced, which will reduce demand by approximately 650 kilowatts with energy savings of more than 6.8 million kilowatt hours, or about $545,000 in cost savings annually. Since launching the program in 2002, more than 140,000 energy-efficient lighting fixtures have been installed in places such as public schools and hospitals, resulting in annual energy cost savings of about $4 million. Both projects are expected to be completed during 2018.

In 2012, OUC launched a program to replace 100-watt equivalent streetlights with LED fixtures. The initiative was expanded in 2016 and will now replace 12,000 fixtures used on larger roads and highways, which is about 41 percent of OUC's large roadway streetlights. These lights also will save the City 17 gigawatt-hours of annual energy once the program is complete. Equally important, LED lighting improves safety by emitting whiter, cleaner light that provides better visibility for motorists, pedestrians and law enforcement.

2.4.6 OUC's Green Team

With the philosophy that changing an organization's culture requires both corporate and individual accountability, OUC has established the Green Team – a dedicated group of employee volunteers who work to implement practical, sustainable operations in their respective work areas.

In addition to setting benchmarks and establishing metrics, the Green Team identifies ways to improve energy and water efficiency in OUC buildings, reduce waste, use product inventories more efficiently, lower emissions from operations, and create a healthier, happier environment for employees and customers.

With the Gold LEED-certified Reliable Plaza setting the standard, other OUC facilities have followed suit, implementing a number of environmental efforts, including:

- Retrofitting and upgrading light bulbs and ballasts
- Installing light sensors
- Turning up thermostats
- Cutting back on landscape and exterior building lighting
- Purchasing Energy Star-rated appliances when replacements are needed
- Using environmentally friendly cleaning products
- Upgrading HVAC systems
- Installing rain sensors on irrigation systems
- Cutting grass less frequently at water plants, substations and areas not highly visible to the public

Going forward, OUC is planning a number of new green initiatives. OUC currently has single stream recycling at all of its facilities and recycles industrial materials such as wood pallets, utility meters, wire reels and copper. It has developed internal policies such as electronic document storage, online document review, double-sided printing and specifies the use of recycled paper and office products whenever practical.

2.4.7 Sustainability Community Activities

In 2017, conservation specialists conducted presentations, provided face-to face consultations, scheduled audits, and disseminated information on conservation programs. Below is a list of events the OUC Sustainability Department participated in along with Community Relations:

- National Agriculture Day in St. Cloud
- Neighborhood & Community Summit
- Green Economy Summit
- Winter Park Earth Day
- Lake Eola Earth Day
- AAGO Trade Show
- Florida Fair Housing Summit
- Orange County Community Conference
- Fall Plant and Garden Festival
- Hispanic Business and Consumer Expo
- St. Cloud Life Expo and Extravaganza [Orlando or Central Florida] Home and Garden Show

2.4.8 Home Utility Report Program

The Home Utility Report Program (HUR) is a free service offered to OUC customers designed to help them save energy, water, and money. The report compares a customer's energy and water consumption to similar households, as well as provides personalized tips that show how much they can save by changing their behavior. Customers also can log on to the Home Utility Report website at www.oucsavingtool.com where they can customize an action plan and even get a list of preferred contractors who can help with any efficiency needs. Participants receive a free HUR bi-monthly via email or printed report. To administer the HUR program, OUC works with a third-party company that helps utilities meet their efficiency goals through effective customer engagement.

2.5 TRANSMISSION SYSTEM

OUC's existing transmission system in Orlando consists of 31 substations interconnected through approximately 335 miles of 230 kV, 115 kV, and 69 kV lines. OUC is integrated into the Florida Reliability Coordinating Council (FRCC) regional transmission grid through twenty-one 230 kV and one 69 kV metered interconnections with other utilities, as summarized in Table 2-3. Additionally, OUC is responsible via an Interlocal Agreement for planning, operating and maintaining St. Cloud's four substations, 55 miles of transmission lines and three interconnections, as summarized in Table 2-4.

Table 2-3 OUC Transmission Interconnections

UTILITY	KV	NUMBER OF INTERCONNECTIONS
FPL	230	2
Duke Energy Florida (DEF)	230	9
KUA	230	2
KUA/FMPA	230	2
Lakeland Electric	230	1
TECO	230	2
TECO/Reedy Creek Improvement District	230	2
DEF	69	1
Southern Company	230	1

Table 2-4 St. Cloud Transmission Interconnections

UTILITY	KV	NUMBER OF INTERCONNECTIONS
OUC	69	1
DEF	230	1
KUA	69	1

The $2.3 billion I-4 Ultimate project by the Florida Department of Transportation (FDOT) and its contractor is underway for 21 miles of roadway improvements between Kirkman Road and State Road 434. Coordination of construction activities and mitigation of conflicts around the America Substation, Robinson Substation and multiple transmission lines will occur through 2019.

To maintain reliable and economic service and proactively plan for the future, OUC is evaluating numerous upgrades to its transmission system. While these upgrades vary in scope and timing, the following list provides an overview of significant projects:

- Work is underway to upgrade the 230kV Stanton to Taft transmission corridor. Engineering and construction will proceed by segment during 2018-2020. Upgrade of this corridor is necessary to reliably meet growth and maintain adequate transfer capability.

- A transmission line routing and feasibility engineering study for the addition of a new 230kV source into downtown Orlando has been conducted. The need and timing of any such addition are dependent on continued growth in the core downtown area.
- Current growth rates support the need for addition of several substation distribution transformers during the next five years.

Planning and feasibility engineering are underway to evaluate options for potential projects to meet future growth on the St. Cloud system.

3.0 STRATEGIC CONSIDERATIONS

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: Electric and Water Production (EWP) and Electric and Water Delivery (EWD).

3.1.1 Electric and Water Production Business Unit

The EWP business unit has structured its operations based on a competitive environment that assumes that even OUC's customers are not captive. EWP will only be profitable if it can produce electricity and water 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 PPAs, and the repurchase of the Indian River steam units (which provides OUC with full control over the Indian River site and additional alternatives for future new generating resources, including possible repowering of the units)[5]. 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 longstanding 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 mix of wholly and jointly owned and purchased (under contract) fossil-fueled and nuclear capacity is summarized in Table 3-1.

As shown in Table 3-1, natural gas represents approximately 56.1 percent of the winter generating capacity (approximately 55.3 percent summer) and coal represents approximately 40.7 percent of the winter generating capacity (approximately 41.4 percent summer). The ability to generate up to approximately 70 MW while operating on natural gas in each of Stanton Units 1 and 2 further enhances the percentage of generating capacity fueled by natural gas.

[5] Based on the current condition of the Indian River steam units (Extended Cold Shutdown), OUC is not currently assigning a firm capacity value to the units for purposes of capacity planning.

Table 3-1 Fossil-Fueled and Nuclear Generation Capacity (MW) Owned and Purchased by OUC by Fuel Type

(As of January 1, 2018)

PLANT NAME	WINTER CAPACITY				SUMMER CAPACITY			
	Coal	Nuclear	Gas/Oil	Total	Coal	Nuclear	Gas/Oil	Total
Stanton[1][2]	627		839	1,466	627		819	1,446
Indian River			213	213			197	197
C.D. McIntosh Jr.	136			136	133			133
St. Lucie		60		60		60		60
Total (MW)	763	60	1,052	1,875	760	60	1,016	1,836
Total (percent)	40.7	3.2	56.10	100.0	41.4	3.3	55.3	100.0

[1] Includes OUC's share of the landfill gas burned in Stanton Units 1 and 2.
[2] Stanton Units 1 and 2 can each generate up to approximately 70 MW while operating on natural gas.

The diversity of OUC's fuel supply provides protection against disruption of supply while simultaneously providing economic opportunities to reduce cost to customers. OUC recently modified the Stanton Energy Center coal units to allow the units to offset a portion of its coal usage by burning natural gas while operating. Additional details of OUC's generating facilities are presented in Table 2-1 and Schedule 1 of Section 12.0 of this Ten-Year Site Plan.

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.

3.1.2 Electric and Water Delivery Business Unit

OUC's EWD business unit focuses on providing OUC's customers with the safest and most reliable electric service possible. In 2017, OUC once again provided the most reliable electric service of all major utilities in Florida.

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, approximately 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.

3.2 REPOSITION OF ASSETS

As a strategic consideration, OUC has been working on repositioning its assets. One major consideration was the sale of its Indian River power plant steam units to Reliant Energy in 1999[6]. 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. As part of the agreement associated with the termination of the gasification portion of Stanton B, OUC acquired a 165-acre tract of land in its service territory situated near its highest growth areas[7]. 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 Lakeland Electric and FMPA's All-Requirements Project members to form the Florida Municipal Power Pool (FMPP). Later, KUA joined FMPP. Over time, FMPA's All-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 provides 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 three years and automatically renews 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 enhanced by metered interconnections with other Florida utilities, including nine interconnections with Duke Energy Florida (formerly Progress Energy Florida), 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. Along with enhancing reliability, these interconnections also facilitate the marketing of electric energy by OUC to and from other electric utilities in Florida.

[6] As discussed previously, OUC recently repurchased the Indian River steam units. Given the current condition of the units (Extended Cold Shutdown), OUC is not assigning a capacity value for purposes of capacity planning. The purchase of the units provides OUC with full control over the Indian River site and additional alternatives for future generation, including possible repowering.

[7] 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.

In addition, in 2017, OUC entered into a new five-year contract for the storage of natural gas to manage price volatility and provide backup fuel during emergencies. The fuel will provide up to 30,000 MMBtu/day to help ensure power reliability.

3.5 ENVIRONMENTAL PERFORMANCE[8]

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 its 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 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. Additionally, OUC has installed natural gas igniters for both Stanton 1 and Stanton 2, eliminating the use of No. 6 fuel oil and reducing the amount of coal burned during operations when economical to do so. This allows OUC to dial down the units to as low as 90 MW each. For reference, most coal units are only able to operate at minimum loads around 50 to 60 percent of the maximum capability rating; however, the Stanton coal units are able to operate as low as 20 percent of maximum capability.

Further demonstrating its environmental commitment to clean air, OUC has signed a contract to burn methane gas collected from the Orange County landfill adjacent to Stanton Energy Center and John Drury Landfill. Methane gas, when released into the atmosphere, is considered 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.

OUC has also voluntarily implemented a product substitution program not only to protect workers' health and safety but to minimize hazardous waste generation and to prevent environmental impacts. The Environmental Affairs and 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.

[8] 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.

3.5.1 Emphasis on Sustainability

OUC completed its first greenhouse gas inventory for the entire company in 2008 and updates the inventory annually. This report helps 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 is produced annually, to 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 energy and water efficient center in south downtown, which replaced 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 administrative 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.

OUC is No. 1 for the 19th straight year for electric distribution and reliability compared to all Florida investor-owned utilities according to data submitted to the Public Service Commission. This is one reason why OUC was presented the Expanding Excellence Award for Innovation in Customer Service from *CS Week* and *Electric Light & Power Magazine.*

Building on a platform of advanced digital electric and water meters, OUC launched a series of technology enhancements to support mobile devices, automate its website, add a consumption dashboard, and synchronize its automated phone system with the website and new customer-facing products such as OUC's innovative Power Pass prepaid program. Now, customers can access detailed account information, including their power and water consumption, at any time and on any mobile device. Providing real-time information, combined with energy saving tips, empowers them to make better decisions, which in turn helps make us all more sustainable.

Additionally, smart grid advances are enabling OUC to pinpoint problems – from power outages to water leaks – the moment they occur while tracking crew locations to dispatch the closest truck to resolve customer issues quickly and saving precious resources at the same time.

3.6 COMMUNITY RELATIONS, CONNECTING OUR CUSTOMERS AND ECONOMIC DEVELOPMENT

3.6.1 Community Relations

As Orlando's hometown utility, OUC is committed to helping the community it serves. Individuals and organizations know they can rely on the utility when it matters most –through board involvement, support, employee volunteerism and more. OUC supports more than 400 non-profit and business-based organizations and participates in nearly 150 events each year, while employees volunteer more than

10,000 hours in the community. Many events incorporate sustainability messaging, encouraging the efficient use of energy and water.

From unique solar sculptures at high visibility locations like Camping World Stadium and St. Cloud's Lakefront Park, to solar mobile device charging stations at LYNX bus stations and H_2OUC Hydration Stations at parks and neighborhood centers, OUC's commitment to sustainability can be seen all around town. Additionally, OUC set out to make Orlando one of the most EV-friendly cities in the nation and has installed more than 150 EV charging stations in its service area.

OUC also supports a diverse group of business chambers within its service territory, including the Orlando Chamber, St. Cloud Chamber and Indian American, Hispanic, African-American, Asian, Caribbean, Disability and LGBT chambers. It is also actively involved with economic gardening organizations such as GrowFL, National Entrepreneur Center, Prospera (formerly the Hispanic Business Initiative Fund), Black Business Investment Fund, Athena and technical associations. OUC helped power OiX Orlando, a collective of tech experts, entrepreneurs, and tech industry leaders fueling the explosion of high-tech startups in the region.

3.6.1.1 Utility and Community Volunteerism

OUC launched Project Care, its utility assistance fund, in 1994. The program, managed by United Way 2-1-1, a local, non-profit organization, provides rapid response to customers in need through case management and home energy audits to help with energy efficiency. Since its inception, Project Care has raised more than $3 million, helping fund more than 19,000 households and thousands of families and individuals. For every $1 donated, OUC contributes $2 to the program.

In addition, OUC's Proud Volunteer program encourages and rewards employees for their volunteer work in the community. Employees volunteer more than 10,000 hours every year and help support a variety of non-profit organizations in the community.

The annual OUC Charity Golf Tournament has raised more than $646,000 for more than 50 Central Florida non-profits since its inception in 1995.

In November 2017, OUC participated in the annual Ride-4-Ronald bike ride to benefit Ronald McDonald House Charities of Central Florida. The OUC team raised over $15,000 from the event.

3.6.1.2 Water Color Project

Since 2006, OUC has hosted the Water Color Project, a conservation-themed art program that encourages students to highlight the importance of saving water through their artwork. More than 2,700 students from 29 schools have competed to have their artwork featured. Winning elementary school students' art is featured in an annual calendar, while middle and high school students decorate rain barrels. The barrels become a traveling exhibit throughout the community.

3.6.1.3 Project AWESOME

OUC and the Orlando Science Center deliver energy and water conservation workshops to every fifth grader in OUC's service territory via Project AWESOME (Alternative Water & Energy Supply; Observation, Methods & Education). The educational program promotes both water and energy conservation through a hands-on curriculum using content approved by OUC that meets Common Core Standards. As part of an

electric and water conservation and alternative sources educational program, the projects include making an aquifer, building a solar-powered car, and testing low-flow showerheads and compact fluorescent light bulbs (CFLs) against traditional fixtures. Project AWESOME, which launched in 2009, delivers two 90-minute classroom workshops, as well as hands-on labs and pre- and post-classroom activities—energy is covered as part of the earth science section and water during the life science section. More than 40,000 students have gone through the curriculum.

3.6.1.4 Strategic Partnerships Promote Awareness

OUC has leveraged highly visible, professional sports partnerships to highlight OUC's commitment to sustainability and high-impact economic development efforts.

In 2010, after assisting with energy and water efficiency features in the design phase of the Orlando Magic's LEED certified home, Amway Center, OUC has continued its green partnership with the NBA team, including promotion of the facility's LEED certification and its energy and water efficiency features through highly visible educational signage and on-going digital.

The Magic partnership served as a model for OUC's agreement with the United States Tennis Association (USTA). The new Home of American Tennis in Lake Nona meets LEED certification standards. OUC is exclusively designated as the "Official Sustainability & Utility Sponsor" and displays savings that can be achieved through initiatives such as EV charging stations, hydration stations, mobile device charging stations and solar arrays on the roofs of shade pavilions. The new facility is expected to bring more than 150 high-wage jobs to the community and attract 100,000 unique visitors per year.

In 2015, OUC became the exclusive electric, water and sustainability utility partner for Orlando City Soccer Club. Within the club's new MLS soccer stadium, OUC has branded all water fountains and showcases the savings that can be achieved through sustainability initiatives. Both permanent and transitional signage highlighting the energy and water efficiency features were incorporated into the facility along with OUC's role in helping it achieve LEED certification. In addition, a solar sculpture will be installed outside to demonstrate sustainability and clean energy features at the stadium.

3.6.2 Connecting Customers

From providing better online access to their consumption history to designing convenient and effective conservation programs, OUC arms customers with the information and tools they need to optimize the efficiency of their homes and businesses. This includes the community outreach previously discussed in this report as well as a mix of new technologies and programs designed to provide customers with the information, control and options they desire.

3.6.2.1 Self-Service Options

OUC's informational website, self-service portal and automated phone system – which see about 70 percent of total customer transactions – are used by nearly 100,000 customers each month.

Customers are able to find tips, videos on ways to save, as well as frequently asked questions regarding their services. Through their myOUC online profile, they are able to pay their bills, make service requests, request payment extensions and more. The Usage Dashboard and OUC Power Pass program continue to drive adoption of the website. The site is mobile friendly and accessible from a range of devices including tablets and smartphones.

3.6.2.2 Traditional Media and Digital Outreach

To reach the desired audience, OUC implements comprehensive, integrated media campaigns that utilize print, online, television, radio, social, outdoor media and community partnerships. By diversifying and targeting media, OUC can effectively reach the right customer with the right message. Campaigns cover a range of topics from safety to storm prep to sustainability. These campaigns reinforce OUC's commitment to showing customers how to reduce their energy and water use and ultimately their utility bills while promoting programs and initiatives important to the community.

3.6.2.3 Connections

Connections is a monthly newsletter sent to all OUC customers whether they receive a paper statement or e-bill. The newsletters are posted on www.OUC.com and feature information on OUC's programs, community events, sustainability initiatives, and energy- and water-saving tips.

3.6.2.4 Social Media

Facebook, Twitter, YouTube, and NextDoor allow OUC to update customers about the Commission's community involvement, as well as provide them with conservation tips, outage and restoration updates, and other need-to-know, real-time information that may affect them. Social media platforms also serve as additional customer service outlets, allowing customers to notify OUC about issues needing quick resolution, and provide additional opportunities for the Commission to build interactive relationships with customers and potentially diffuse negative situations.

3.6.2.5 Digital Meters

OUC's entire service area was upgraded with nearly 370,000 digital electric and water meters. The digital meters are easier to read and provide detailed information about customers' daily energy and water use. Meters can be monitored remotely, which reduces costs and time while ensuring an accurate and timely reading for the customer. Remote monitoring also allows OUC to better predict and prevent outages and restore power faster. OUC created Florida's first meter farm consisting of 120 electric meters and four water meters at its Pershing facility. The farm provides information and shows OUC exactly how updates are installed to ensure the meters are working correctly.

3.6.2.5 OUC Power Pass Program

OUC Power Pass is a program that allows customers to pay-as-you-go or pay in advance for utility services allowing the option of avoiding deposits, late fees and a monthly bill. Statistics have shown that pay-before-consumption programs result in less electricity usage and water because customers are more aware of how much they are using. Customers can check on their electric bill or water usage every day using the OUC Power Pass portal or receive alerts via text, email and/or phone. More than 7,000 customers are enrolled in the program to date.

3.6.2.6 Usage Dashboard

Digital meter technology allows customers to monitor electric consumption on an hourly basis and water on a daily basis instead of waiting until the end of the month to receive their bills. The ability to track usage patterns and make adjustments to lower energy bills was one of the items most frequently requested by OUC customers. To accommodate their needs, OUC released the OUC Usage Dashboard to most residential customers through their myOUC online profile. Because the new system also provides high-consumption alerts via email, changes in usage can be made immediately, and costs can be kept in check.

3.6.2.7 Online Rebate Application

In 2015, the Sustainability Department launched a new online rebate application tool that allows customers to apply for savings without the hassle of paperwork. It is more convenient for customers, reduces transaction times, and has almost eliminated the use of paper and mail for this type of service. Customers are able to access the tool through their myOUC online profile. The new system also streamlines internal work and provides more detailed reports on program enrollment and savings.

3.6.2.8 Project Momentum

OUC upgraded its customer information system from PeopleSoft Enterprise Risk Management to Customer Care & Billing to improve the quality experience for all levels of customers. OUC undertook this major initiative to lay the foundation for future enhancements and new technologies. This complex endeavor took into account other affected systems such as Outage Management, Meter Data Management, Enterprise 1, Geographic Information System, the Web, and Interactive Voice Response. Kicked off in January 2015 and implemented in July 2017, Project Momentum required 200-plus employees from 17 OUC departments and partner contractors to understand and work through hundreds of business processes and thousands of data points. Delivering an improved quality experience for customers is a primary goal of OUC's Strategic Plan.

3.6.2.9 Outage Alerts

OUC launched the first phase of its Alerts program with Outage Alerts in December 2017. The system allows customers to receive information about service outages, including the cause and an estimated restoration time, via text, voice or email. Future Alerts program phases will include billing and consumption notifications, and marketing messages.

3.6.3 Economic Development

Orlando has undergone a radical transformation over the years to diversify its economy and attract high-wage positions in technology, medicine, life sciences, and modeling and simulation. With Orlando's increasing emphasis on recruiting, retaining and expanding commercial customers, OUC has become a major player in the region's economic development. Working in partnership with Enterprise Florida, the Orlando Economic Partnership, and city and county governments, the utility is attracting more companies to Orlando and St. Cloud and helping them grow into vital and valuable members of the business community.

To attract large businesses that enhance the vitality of the community, OUC offers two rates. For large power users who qualify, OUC is able to negotiate its already-affordable rates to fit their business needs. The Economic Development Rider (EDR) is available to new or expanding businesses representing select target industries. Companies must add a minimum of 500 kW demand of new electric load and must create at least 25 new jobs at or above the 150 percent median income level to qualify. The Commercial Industrial Service Rider (CISR) is available to companies that have minimum load of 2,000 kW or greater, served by a single meter. Companies must provide validation of a lower rate offering outside OUC's service territory to qualify.

Details of these rates and other incentives are outlined at www.oucpowersgrowth.com – a website that assists site selectors and businesses seeking to locate and learn more about Orlando and OUC. The site includes property search functionality and is mobile friendly.

4.0 FORECAST OF PEAK DEMAND AND ENERGY CONSUMPTION

OUC prepares a set of sales, energy, and demand forecast models each year to support its budgeting and financial planning process as well as long-term planning requirements. In preparing the forecasts, OUC uses internal records, company knowledge of the service territory and customers, and economic projections. OUC draws on outside expertise as needed. The economic projection data is provided by IHS, Inc. (Global Insights). Itron provides forecasting software, analysis of end-use equipment and efficiencies, and technical expertise.

4.1 FORECAST METHODOLOGY

OUC has adopted a Statistically Adjusted End-Use (SAE) modeling technique. This approach entails specifying end-use variables (xHeat for heating, xCool for cooling, and xOther for other use) and utilizing these variables in sales multi-regression models. SAE variables allow anticipated shifts in customer end-use consumption driven by the type and efficiency of heating and cooling equipment, appliances, and other load devices to be represented along with econometric drivers in the forecast models. The SAE approach was developed by Itron. Itron reviews OUC's application of these techniques and provides data on heating, cooling, and other end-use load trends. These techniques are used to develop the forecasts for both the OUC and St. Cloud service territories.

4.1.1 Residential

The residential model consists of both a customer forecast model and an average use per customer model. Monthly average use models were estimated using actual data for the period 2004 to 2017. This provides 14 years of historical data and enough observations to estimate strong regression models. Once models showing the number of expected customers and the expected average use per customer are developed, the projected residential sales by year (y) and month (m) are calculated as the product of the customer and average use forecasts:

$$Residential\ Sales = Customers_{y,m} \times Average\ Usage_{y,m}$$

4.1.1.1 Residential Customer Forecast

Residential customers are forecast as a function of household growth for Orange County for the OUC jurisdiction and Osceola County for the St. Cloud jurisdiction. There is a strong correlation (R^2 of 0.98 for inside the City and 0.96 for outside the City) between historical changes in customers and historical changes in the Orange County household growth. St. Cloud historical customers correlates well with the Osceola County household values (R^2 of 0.95). Approximately 71 percent of OUC's residential customers are inside the City. The multi-regression model for residential customers is represented as:

$$Customers_{y,m} = \beta_0 + \beta_1(Households_{y,m})$$

The coefficients (β) are outputs of the multi-regression models.

4.1.1.2 Average Use Forecast

The residential forecast models utilize multi-regression modeling made up of three major components:

1. Changes in the economy, such as median household income, household size, and the price of electricity.
2. End-use equipment index variables, which capture the long-term net effect of equipment saturation and equipment efficiency improvements.
3. Weather variables, which serve to allocate the seasonal impacts of weather throughout the year.

The SAE model framework begins by defining energy use for an average customer in year (y) and month (m) as the sum of energy used by heating equipment (xHeat y, m), cooling equipment (xCool y, m), and other equipment (xOther y, m). The xHeat, xCool and xOther variables are defined as a product of an annual equipment index and a monthly usage multiplier. This model is represented as:

$$Average\ Usage_{y,m} = \beta_1(xHeat_{y,m}) + \beta_2(xCool_{y,m}) + \beta_3(xOther_{y,m})$$

Where:

$xHeat_{y,m}$ = $Economics_{y,m}$ x $HeatingEquipment_{y,m}$ x $HDD\_Index_{y,m}$

$xCool_{y,m}$ = $Economics_{y,m}$ x $CoolingEquipment_{y,m}$ x $CDD\_Index_{y,m}$

$xOther_{y,m}$ = $Economics_{y,m}$ x $OtherEquipment_{y,m}$

A customer's monthly usage level is impacted by several economic factors, including the price of electricity, household size, and income levels.

$$Economics_{y,m} = \left(\frac{Price_{y,m}}{Price_{base\ y}}\right)^{-0.1} \times \left(\frac{HH\ Size_{y,m}}{HH\ Size_{base\ y,m}}\right)^{0.2} \times \left(\frac{HH\ Income_{y,m}}{HH\ Income_{base\ y,m}}\right)^{0.2}$$

The annual equipment variables (HeatEquip, CoolEquip, OtherEquip) are defined as a weighted average across equipment types multiplied by equipment saturation levels normalized by operating efficiency levels.

$$HeatEquip_y = \sum_{tech} Weight \times \left(\frac{Saturation_y / Efficieny_y}{Saturation_{base\ y} / Efficieny_{base\ y}}\right)$$

$$CoolEquip_y = \sum_{tech} Weight \times \left(\frac{Saturation_y / Efficieny_y}{Saturation_{base\ y} / Efficieny_{base\ y}}\right)$$

$$OtherEquip_y = \sum_{tech} Weight \times \left(\frac{Saturation_y / Efficieny_y}{Saturation_{base\ y} / Efficieny_{base\ y}}\right)$$

The following degree day index variables serve to allocate the seasonal impacts of weather throughout the year. For historic periods actual HDD's and CDD's are used. Normal HDD's and CDD's are used for forecast periods.

$$HDD\_Index_{y,m} = \frac{HDD_{y,m}}{Normal\ HDD_y}$$

$$CDD\_Index_{y,m} = \frac{CDD_{y,m}}{Normal\ CDD_y}$$

4.1.2 Non-Residential

4.1.2.1 General Service Non-Demand (GSND)

The General Service Non-Demand (GSND) and General Service Demand Secondary (GSD Secondary) classes are modeled as a combined General Service Secondary class (GS Secondary) using a single model because the historic data indicates customer migration has occurred back and forth between the two classes. The result is a single model, which produces predicted values with a higher correlation than that of two separate models.

The forecast is later split between GSND and GSD Secondary using the monthly relationships between the two classes in 2017.

The framework for the GS secondary class model is similar to the residential model. It also has three major components and utilizes the SAE model framework. General service customers and general service average use are modeled separately. The end-use equipment variables are based on commercial appliance / equipment saturation and efficiency projections. The economic drivers in the model are the commercial price of electricity and Consumer Price Index. The third component is the weather variable. HDD is not used in the GS Secondary model because no statistically valid correlation between heating days and sales could be identified. The GS Secondary class model uses CDD as the weather variable. The growth in residential customers is brought into the GS secondary model because growth in the residential sector is seen as a driver for the commercial sector.

The GS Secondary model is represented as:

$$General\ Service\ Secondary\ Sales = GS\_Customers_{y,m} \times GS\_Average\ Usage_{y,m}$$

Sales to six large GSD Secondary customers are excluded from the GS Secondary model discussed above. These six large customers are forecast individually using a combination of SAE techniques, individual customer trending, and customer-specific planning input. These six customers represent approximately five percent of OUC's total load and 10 percent of the GS Secondary Load. They are handled individually because each has identifiable growth plans or patterns and each individually represents a significant load.

4.1.2.2 General Service Demand (GSD)

Forecasted sales to GSD Secondary customers were modeled as discussed above. In addition to the customers taking service at secondary voltage, OUC serves 19 customers (excluding OUC water plants) at primary voltage. Of those 19, 14 are modeled as a group because they have exhibited a consistent load level over time. This group of customers represents about 19 percent of the GSD Primary sales.

The five remaining primary customers are forecast individually using a combination of techniques, which includes regression modeling, individual customer trending, and customer-specific planning input. These five customers represent approximately seven percent of OUC's total load and 81 percent of the GSD Primary sales.

Sales from the various GSD models are summed to complete the GSD forecast.

4.1.2.3 Streetlights

Private and public lighting consumption is forecast separately. Both classes are not impacted by the weather, and the SAE modeling approach does not apply. Therefore, simple exponential smoothing models with a linear trend are used to generate both forecasts. The forecast for public streetlights reflects the planned schedule for replacement of traditional HPS fixtures with LED fixtures.

4.1.2.4 OUC Use

OUC Use sales are those to OUC Water Plants, OUCooling Plants, and OUC facilities. The OUC Use models utilize CDD, but not HDD or the factors included in the "Other" SAE modeling variable.

Binary variables have been inserted in the multi-regression model coinciding with operations date for the three OUC Cooling Plants commissioned in the past 10 years.

4.1.3 Hourly Load and Peak Forecast

The monthly net energy for load (NEL) is estimated for OUC and St. Cloud based on the respective sales forecasts described above and the expected line loss factors. The system's 8,760 hourly load forecast is generated using the software package *MetrixLT*. Within MetrixLT, the monthly NEL forecast is allocated to each hour based on the weather normal hourly energy profile. The hourly load forecasts for OUC and St. Cloud are then combined to generate a total system hourly load forecast. Summer and winter peak demands are then extracted from the combined total system hourly load forecast.

4.2 BASE CASE FORECAST ASSUMPTIONS

Incorporated into the forecast models are sets of underlying economic and demographic, price of electricity, and weather assumptions.

4.2.1 Economics & Demographics

The economic and demographic assumptions are derived from forecasts for Orange County, Osceola County, and the Orlando SMSA by IHS Global Insights.

4.2.1.1 Median Household Income

The residential forecast model uses the Median Household Income, which is forecast to grow at an average annual rate of 1.0 percent (in fixed 2009 dollars) over the period 2017-2027 as shown in Table 4-1.

4.2.1.2 Gross Metro Product

The non-residential forecast models use Orlando SMSA Gross Metro Product. The Gross Metro Product for the Orlando SMSA is forecast to grow at an average annual rate of 2.6 percent over the ten-year period 2018 – 2028. Gross Metro Product is shown in Table 4-1.

Table 4-1 Economic & Demographic Projections

Year	Median Orange County Household Income [1]	Gross Metro Product Orlando MSA ($ Billions)[1]	Households Orange County (Thousands)	Population Orange County (Thousands)
2018	$47,603	118.4	498.9	1,375.3
2023	$50,796	135.5	543.8	1,482.1
2028	$53,843	153.0	584.8	1,584.8
2033	$57,881	176.3	637.2	1,703.1
Average Annual Increase				
18 - 23	1.3%	2.7%	1.7%	1.5%
18 - 28	1.2%	2.6%	1.6%	1.4%
(1) 2009 dollars				

4.2.1.3 Households and Population

The primary demographic drivers in the residential forecast model are the number of households and the population (see Table 4-1). Households are used in the residential customer forecast model. The population

data is divided by the household data to determine household size used in the residential average use forecast model.

4.2.2 Price of Electricity

The nominal price of electricity by customer class is forecast to increase at the same rate as inflation resulting in essentially no change to the real price of electricity. The real price of electricity by customer class is used in the residential and non-residential forecastmodels.

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 as reported by the National Weather Service for the weather station at the Orlando International Airport. CDD is calculated using a 65° F base temperature as follows:

$$CDD_d = (Avg\ Temp_d - 65°\ F)\ when\ Avg\ Temp_d \geq 65$$

The daily CDD values are then aggregated to yield a monthly CDD for each year as follows:

$$CDD_{y,m} = \sum CDD_{y,m,d}$$

Heating degree days are calculated in a similar manner use a base temperature of 65° F as follows:

$$HDD_d = (65°\ F - Avg\ Temp_d)\ when\ Avg\ Temp_d \leq 65$$

The daily HDD values are then aggregated to yield a monthly HDD for each year as follows:

$$HDD_{y,m} = \sum HDD_{y,m,d}$$

"Normal" monthly weather is assumed to be the median annual degree days during the 30-year period (1986 – 2015).

4.3 BASE-CASE LOAD FORECAST

A long-term annual budget forecast was developed through 2031 using the methodology and base-case assumptions outlined above.

4.3.1 Customer and Sales Forecast Results

Total retail sales for OUC are expected to increase from 6,054 GWh in calendar year 2018 to 7,009 GWh by 2028. St. Cloud sales are projected to increase from 719 GWh to 936 GWh over this same time period. Shown in Table 4-2 through Table 4-5 are the annual customer and sales forecasts for OUC and St. Cloud.

4.3.1.1 Residential Forecast

With increasing appliance efficiency, increased customer conservation, and declining household size, average use per residential customer is projected to decline over the forecast period 2018 through 2028. The number of residential customers is expected to increase at an average annual rate of 1.5 percent for OUC and at 3.2 percent for St. Cloud for the next 10 years. The ten-year residential sales average annual growth rate is 1.0 percent for OUC and 2.8 percent for St. Cloud.

4.3.1.2 GSND Forecast

GSND sales are projected to grow at an average annual rate of 1.8 percent and 2.3 percent for OUC and St. Cloud, respectively, between 2018 and 2028. The number of GSND customers is projected to grow at an

average annual growth rate of 1.9 percent and 2.2 percent, respectively, for OUC and St. Cloud from 2018 through 2028.

4.3.1.3 GSD Forecast

GSD is comprised of large commercial and industrial customers. Sales are projected to show solid gains as a result of new major commercial development such as the UCF medical school, VA hospital, and other related medical businesses coming online along with expansions being made for tourism. GSD sales are projected to grow at an average annual rate of 1.9 percent and 2.3 percent for OUC and St. Cloud, respectively, between 2018 and 2028. The number of GSND customers is projected to grow at an average annual growth rate of 1.9 percent and 2.2 percent, respectively, for OUC and St. Cloud from 2018 through 2028.

Table 4-2 OUC Long-Term Sales Forecast (GWh)

Year	Residential	GSND	GSD	Lighting	OUC Use	Total Retail
2018	2,066	384	3,408	52	144	6,054
2023	2,172	415	3,736	52	144	6,519
2028	2,289	460	4,060	56	144	7,009
2033	2,147	514	4,449	59	144	7,613
Average Annual Increase						
18- 23	1.0%	1.5%	2.0%	0.0%	0.0%	1.5%
18 - 28	1.0%	1.8%	1.9%	0.7%	0.0%	1.5%

Table 4-3 OUC Average Number of Customers Forecast

Year	Residential	GSND	GSD	Total Retail
2018	176,702	21,620	5,559	203,881
2023	191,638	23,717	6,095	221,450
2028	205,286	26,155	6,719	238,160
2033	222,703	28,885	7,418	259,006
Average Annual Increase				
18 - 23	1.6%	1.9%	1.9%	1.7%
18 - 28	1.5%	1.9%	1.9%	1.6%

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

Year	Residential	GSND	GSD	Lighting	Total Retail
2018	525	45	146	3	719
2023	602	49	159	3	813
2028	693	57	183	3	936
2033	781	67	215	3	1,066
	Average Annual Increase				
18 - 23	2.8%	1.7%	1.7%	0.0%	2.5%
18 - 28	2.8%	2.3%	2.3%	0.0%	2.7%

Table 4-5 St. Cloud Average Number of Customers Forecast

Year	Residential	GSND	GSD	Total Retail
2018	35,009	3,121	369	38,499
2023	41,215	3,473	410	45,098
2028	48,032	3,881	460	52,373
2033	54,853	4,339	514	59,706
Average Annual Increase				
18 - 23	3.3%	2.1%	2.1%	3.2%
18 - 28	3.2%	2.2%	2.2%	3.1%

4.3.2 Forecast Net Peak Demand and Net Energy for Load

Underlying hourly load growth is driven by the aggregate energy forecast. Thus, forecasted peaks grow at roughly the same rate as the energy forecast. OUC and St. Cloud peaks and NEL are presented in Tables 4-6 and 4-7, respectively. Table 4-8 presents the combined seasonal peak demand and net energy for load forecasts for OUC and St. Cloud.

Table 4-6 OUC Forecast Net Peak Demand (Summer and Winter) and Net Energy for Load

Year	Summer (MW)	Winter (MW)	Net Energy (GWh)
2018	1,212	1,053	6,280
2023	1,306	1,138	6,760
2028	1,401	1,222	7,270
2033	1,526	1,326	7,899
Average Annual Increase			
18 - 23	1.9%	2.1%	1.5%
18 - 28	1.8%	1.9%	1.5%

Table 4-7 St. Cloud Forecast Net Peak Demand (Summer and Winter) and Net Energy for Load

Year	Summer (MW)	Winter (MW)	Net Energy (GWh)
2018	187	169	762
2023	207	187	861
2028	233	210	992
2033	261	235	1,130
Average Annual Increase			
18 - 23	2.1%	2.0%	2.5%
18 - 28	2.2%	2.2%	2.7%

Table 4-8 Net System Peak (Summer and Winter) and Net Energy for Load (Total of OUC and St. Cloud)

Year	Summer (MW)	Winter (MW)	Net Energy (GWh)
2018	1,399	1,222	7,042
2023	1,514	1,324	7,621
2028	1,634	1,432	8,261
2033	1,787	1,561	9,028
Average Annual Increase			
18 - 23	1.6%	1.6%	1.6%
18 - 28	1.6%	1.6%	1.6%

4.4 HIGH AND LOW LOAD SCENARIOS

In addition to the base-case, two long-term forecast scenarios representing a high range and low range around the peak demand forecast were constructed. The high and low forecast scenarios are based on bands around the most likely combined household forecast for Orange County and Osceola County. The average annual household growth rate in the base case has Orange County growing at 1.6% and Osceola County growing at 3.3%. The two county combined growth rate in the base case is 2.3 percent for the period 2018 - 2028. In the high-case scenario, the two county household growth rate is forecasted to increase at 3.6 percent annually for the same time period. The high-growth scenario results in a forecasted average annual energy growth rate of 2.7 percent, with a 2028 system peak demand that is 189 MW higher than the base case. In the low-case scenario, the households are forecasted to increase at 1.0 percent annually, resulting in average annual energy increases of 0.7 percent over the 2018-2028 period. The 2028 low-case peak demand is 171 MW lower than the base-case. Table 4-9 presents a summary of the high- and low-load scenarios.

Table 4-9 Scenario Peak Forecasts OUC and St. Cloud

High Load Scenario			
Year	Summer (MW)	Winter (MW)	Net Energy (GWh)
2018	1,399	1,222	7,042
2023	1,594	1,395	8,028
2028	1,823	1,598	9,216
2033	2,104	1,839	10,633
Average Annual Increase			
18 - 23	2.6%	2.7%	2.7%
18 - 28	2.7%	2.7%	2.7%
Low Load Scenario			
Year	Summer (MW)	Winter (MW)	Net Energy (GWh)
2018	1,371	1,198	6,902
2023	1,419	1,242	7,145
2028	1,464	1,283	7,399
2033	1,517	1,326	7,666
Average Annual Increase			
18 - 23	0.7%	0.7%	0.7%
18 - 28	0.7%	0.7%	0.7%

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), OUC, and JEA (referred to collectively as the FEECA utilities).

OUC's residential and commercial/industrial numeric conservation goals for the 2015 through 2024 period were established by the PSC pursuant to Order No. PSC-13-0645-PAA-EU. These PSC-established annual goals are presented in Tables 5-1, 5-2 and 5-3.

Table 5-1 Residential DSM Goals Approved by the PSC

Calendar Year	Summer (MW)	Winter (MW)	Annual (GWh)
2015	0.05	0.04	0.14
2016	0.08	0.08	0.30
2017	0.12	0.12	0.45
2018	0.16	0.16	0.60
2019	0.20	0.21	0.72
2020	0.21	0.21	0.77
2021	0.21	0.22	0.80
2022	0.19	0.20	0.72
2023	0.19	0.18	0.66
2024	0.16	0.16	0.57
Total	**1.57**	**1.58**	**5.73**

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

Calendar Year	Summer (MW)	Winter (MW)	Annual (GWh)
2015	0.20	0.49	0.34
2016	0.28	0.57	0.50
2017	0.30	0.70	0.66
2018	0.36	0.70	0.75
2019	0.37	0.66	0.82
2020	0.39	0.70	0.85
2021	0.40	0.78	0.86
2022	0.37	0.78	0.85
2023	0.39	0.74	0.82
2024	0.36	0.70	0.80
Total	**3.42**	**6.82**	**7.25**

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

Calendar Year	Summer (MW)	Winter (MW)	Annual (GWh)
2015	0.25	0.54	0.48
2016	0.36	0.65	0.80
2017	0.42	0.82	1.11
2018	0.52	0.82	1.35
2019	0.57	0.86	1.54
2020	0.60	0.91	1.62
2021	0.61	1.00	1.66
2022	0.56	0.98	1.56
2023	0.57	0.92	1.48
2024	0.52	0.86	1.37
Total	**4.98**	**8.36**	**12.97**

OUC has been increasingly emphasizing its DSM and conservation programs to increase customer awareness of such programs. Not only do these programs help customers save money by saving energy, the programs help OUC reduce emissions of greenhouse gases and better position OUC to meet possible future greenhouse gas regulations. It should be noted that government mandates have forced manufacturers to increase their efficiency standards, thereby decreasing the incremental amount of energy savings achievable. In addition, the efficiency of new generation has increased and natural gas prices have remained at or near historic lows for the last several years, and look to continue to do so for the near future. These appliance and generating unit efficiency improvements, coupled with low natural

gas prices, have mitigated to some degree the effectiveness of DSM and conservation programs, as overall efficiency increases in the marketplace partially offset the benefit of such programs.

The conservation programs included in OUC's DSM Plan (filed with the PSC on March 16, 2015) and offered to its customers in 2017 consist of the following:

- Residential Home Energy Survey Program – Walk-Through and Online
- Residential Duct Repair/Replacement Rebate Program
- Residential Ceiling Insulation Upgrade Rebate Program
- Residential Window Film/Solar Screen Rebate Program
- Residential High Performance Windows Rebate Program
- Residential Efficient Electric Heat Pump Rebate Program
- Residential New Home Rebate Program
- Residential Efficiency Delivered Program
- Commercial Energy Survey Program
- Commercial Efficient Electric Heat Pump Rebate Program
- Commercial Duct Repair/Replacement Rebate Program
- Commercial Window Film/Solar Screen Rebate Program
- Commercial Ceiling Insulation Upgrade Rebate Program
- Commercial Cool/Reflective Roof Rebate Program

The remainder of this section describes each of the DSM and conservation programs outlined above. Incentives and rebate amounts included in the program descriptions are current as of the time this report was prepared. In addition to offering these 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 Energy Survey Programs

5.1.1 Residential Home Energy Survey Program

OUC has been offering home energy surveys dating back to the late 1970's. The home energy walk-through surveys were designed to provide residential customers with recommended energy efficiency measures and practices customers can implement. The Residential Energy Survey Program consists of two measures: the Residential Energy Walk-Through Survey and an interactive Online Energy Survey. These measures are available to both single family and multi-family residential customers.

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 using this walk-through type audit as a means of motivating OUC customers to participate in other conservation programs and qualify for appropriate rebates.

In addition to the Energy Walk-Through, OUC offers customers an interactive Online Home Energy Audit. The Online Home Energy Audit walks the customer through a complete visual assessment of energy and water efficiency in his or her home. The online audit has several benefits over the walk-through survey, including the convenience of viewing it at any time without a scheduled appointment and the ability to conduct it numerous times. The interactive Online Home Energy Audit is available on OUC's web site at http://www.OUC.com/energyaudit.

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, and decreased electric and water bills.

Participation in the Walk-Through Energy Survey has been consistently strong over the past several years and interest in the interactive Online Home Energy Audit has been high since the measure was first introduced. Feedback from customers who have taken advantage of the surveys has been very positive.

The Home Energy Audit rates how efficient a customer's home energy use is and where one can make improvements to lower utility bills. Participation is tracked through service orders that are produced when appointments are scheduled and completed. Online Surveys are tracked through the service provider (Schneider), who produces monthly activity reports.

5.1.2 Commercial Energy Survey Program

The Commercial/Industrial Energy Survey Program has been offered for several years and 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 equipment, 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.

OUC customers can participate by calling the OUC Customer Service Call Center and requesting an appointment for a Walk-Through Energy. Participation is tracked through service orders that are produced when appointments are scheduled and completed.

5.2 Rebate Programs

The following outlines the various rebate programs OUC offers to its customers. Customers can participate by submitting a rebate application online at http://www.OUC.com/rebates. Proofs of purchase and/or receipts are required to be attached to the application and repairs can be performed by a contractor or the customer. Participation is tracked based on the number of rebates processed. Typically these rebates are credited on the customer's bill, or a check can be processed and sent to the property owner who may have paid for the improvement.

5.2.1 Residential Duct Repair/Replacement Rebate Program

The Duct Repair Rebate Program originated in 2000 and is designed to encourage customers to repair leaking ducts on existing systems. To qualify, ducts must be sealed with mastic and fabric tape or any

other Underwriters Laboratory (UL) approved duct tape on all accessible boots, joints and seams of the air duct system in both the attic and in any accessible air handler closet. Any penetration of the air duct system through the ceiling must be enclosed with a proper draft stop seal. Participating customers receive a rebate for 100 percent of the cost of duct repairs on their homes, up to $100.

5.2.2 Residential Ceiling Insulation Upgrade Rebate Program

The attic is the easiest place to add insulation and lower total energy costs throughout the seasons. The Ceiling Insulation Rebate Program has been offered for several years and is designed to encourage customers to upgrade their attic insulation. Participating customers receive $0.10 per square foot for upgrading their attic insulation to R-30 or higher.

5.2.3 Residential Window Film/Solar Screen Rebate Program

Installing window film on pre-existing homes can help reflect the heat during hot summer days and help the efficiency of home cooling units. The Window Film/Solar Screen Rebate Program has been offered for several years and is designed to encourage customers to install solar shading on their windows. Participating customers will receive a rebate in the amount of $0.55 per square foot for installation of solar shading film with a shading coefficient of 0.5 or less on east-, west, and south-facing windows. ENERGY STAR® qualified double pane windows do not qualify for this rebate.

5.2.4 Residential High Performance Window Rebate Program

Energy-efficient windows can help minimize heating, cooling, and lighting costs. The High Performance Windows Rebate Program has been offered for several years and is designed to encourage customers to install windows that improve energy efficiency in their homes. Customers will receive a $1.50 rebate per square foot for the purchase of energy-efficient windows that are National Fenestration Rating Council certified and meet ENERGY STAR® southern regionally-accepted standards of a U-Factor of 0.4 or less and a Solar Heat Gain Coefficient of 0.25 or less.

5.2.5 Residential Efficient Electric Heat Pump Rebate Program

The Efficient Electric Heat Pump Rebate Program provides rebates to qualifying customers in existing homes who install heat pumps having a seasonal energy efficiency ratio (SEER) of 15.0 or higher. Customers will obtain a rebate in the form of a credit on their bill ranging from $90 to $1,630, depending upon the SEER rating and capacity (tons) of the new heat pump. The following table illustrates the incentives available depending on the size and efficiency of the Heat Pump installed.

AC Size (Tons)	SEER Upgraded To:								
	15	16	17	18	19	20	21	22	23
1	-	-	$95	$135	$170	$205	$230	$260	$280
1.5	-	$105	$175	$230	$285	$330	$375	$415	$450
2	-	$160	$250	$325	$400	$460	$520	$570	$620
2.5	$90	$215	$325	$425	$510	$590	$660	$725	$785
3	$115	$270	$400	$520	$625	$720	$805	$885	$955
3.5	$145	$320	$475	$615	$740	$850	$950	$1,040	$1,125
4	$175	$375	$550	$710	$850	$975	$1,090	$1,195	$1,290
5	$230	$485	$705	$900	$1,075	$1,235	$1,380	$1,510	$1,630

5.2.6 Residential New Home Rebate Program

Previously named The Residential Gold Ring Home Program, the program has been transformed into a more flexible "a la carte" program offering a variety of choices for the builder or home buyer. This transformation was based on feedback OUC received from the residential building community in order to increase the level of participation in OUC's program. The table below reflects an example of the incentives available.

Rebates	Rate of Rebates
1. Ceiling Insulation Upgrade: Final R-Values greater than R-30 is required to receive this rebate.	($0.03 per sq. ft.) when processed with heat pump or ENERGY STAR® heat pump water heater
2. Heat Pump: Provide and upload a copy of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Certificate or the AHRI Reference number. Only SEER ratings of 15 or higher qualify.	(From $90-$1,635)
3. ENERGY STAR® Heat Pump Water Heater: Proof of Energy Star qualification is required to receive rebate.	(100% of cost up to $500)

Applications for the rebates must be submitted within six months from the closing date. Any existing construction is not eligible for this program.

5.2.7 Residential Efficiency Delivered Program

What was once referred to as the Home Energy Fix-Up Program has been revamped and expanded to allow for any OUC customer (both energy and water) to participate and renamed the Efficiency Delivered program. The program is available to residential customers (single family homes) and provides up to $2,000 of energy and water efficiency upgrades based on the needs of the customer's home. A Conservation Specialist from OUC performs a survey at the home and determines which home improvements have the potential of saving the customer the most money. The program is an income

based program which is the basis for how much OUC will help contribute toward the cost of improvements and consists of three household income tiers:

HOUSEHOLD INCOME	OUC CONTRIBUTION
Less than $40,000	85% (not to exceed $1,700)
$40,001–$60,000	50% (not to exceed $1,000)
Greater than $60,000	Rebates only

- $40,000 or less OUC will contribute 85 percent of the total cost (not to exceed $1,700),
- $40,001 to $60,000 OUC will contribute 50 percent of the total cost (not to exceed $1,000),
- Greater than $60,000 OUC will contribute the rebate incentives that apply toward the total cost.

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: however, customers may not have the discretionary income to implement these measures (especially those in the lower income tier). Under this program, OUC will arrange for a licensed, approved contractor to perform the necessary repairs based on a negotiated and contracted rate. The remaining portion of the cost the customer is responsible for can be paid directly to OUC 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 with the exception of low-income customers, who are only required to have a current balance. Some of the improvements covered under this program include ceiling insulation, duct system repair, pipe insulation, window film, window caulk, door caulk, door weather stripping, door sweep, threshold plate, air filter replacement, toilet replacement, irrigation repairs, water flow restrictors and minor plumbing repairs.

The purpose of the program is to reduce energy and water costs, especially for low-income households, and particularly those households with elderly persons, disabled persons and children. Through this program, OUC helps to lower the bills of customers who may have difficulty paying their bills, thereby decreasing the potential for costly service disconnect fees and late charges. OUC believes that this program will help customers afford other essential living expenses. For others, this program offers a one-stop-shop to facilitate the implementation of a whole suite of conservation measures at reasonable costs and pre-screened qualified contractors.

Efficiency Delivered contractor(s) are selected through a Request for Proposal (RFP) process on a routine basis. Eligible customers are referred to the participating contractor after the OUC Conservation Specialist inspection is complete. The Efficiency Delivered contractor then inspects the home and creates a proposal to install eligible measures. Once the customer accepts the proposal and signs the agreement the contractor calls the customer and schedules the work. Typically the work is completed within 45 days. Upon receipt of notice of completion and customer acceptance, payment to the contractor is processed and the customer's share of the conservation improvements is billed. Participation is tracked based on completed installations.

5.2.8 Commercial Efficient Electric Heat Pump Rebate Program

The Commercial Heat Pump Rebate Program provides rebates to qualifying customers in existing buildings who install heat pumps having a seasonal energy efficiency ratio (SEER) of 15.0 or higher. Customers will obtain a rebate in the form of a credit on their bill ranging from $90 to $1,630, depending upon the SEER

rating and capacity (tons) of the new heat pump. The following table illustrates the incentives available depending on the size and efficiency of the heat pump installed.

AC Size (Tons)	SEER Upgraded To:								
	15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
1	-	-	$95	$135	$170	$205	$230	$260	$280
1.5	-	$105	$175	$230	$285	$330	$375	$415	$450
2	-	$160	$250	$325	$400	$460	$520	$570	$620
2.5	$90	$215	$325	$425	$510	$590	$660	$725	$785
3	$115	$270	$400	$520	$625	$720	$805	$885	$955
3.5	$145	$320	$475	$615	$740	$850	$950	$1,040	$1,125
4	$175	$375	$550	$710	$850	$975	$1,090	$1,195	$1,290
5	$230	$485	$705	$900	$1,075	$1,235	$1,380	$1,510	$1,630

5.2.9 Commercial Duct Repair Rebate Program

The Duct Repair Rebate program started in 2009. OUC will rebate 100 percent of cost, up to $100. To qualify, ducts must be sealed with mastic and fabric tape or Underwriters Laboratory (UL) approved duct tape on all accessible boots, joints and seams of the air duct system in both the attic and in any accessible air handler closet. Any penetration of the air duct system through the ceiling must be enclosed with a proper draft stop seal.

5.2.10 Commercial Window Film/Solar Screen Rebate Program

The Commercial Window Film/Solar Screen rebate program started in 2009 and is designed to help reflect the heat during hot summer days and retain heat on cool winter days. OUC will rebate customers $0.55 per square foot for window tinting and solar screening with a shading coefficient of 0.5 or less on east-, west- and south-facing windows. ENERGY STAR® qualified double pane windows do not qualify for this rebate.

5.2.11 Commercial High Performance Windows Rebate Program

Energy-efficient windows can help minimize heating, cooling, and lighting costs. Customers will receive a $1.50 rebate per square foot for the purchase of energy-efficient windows that are National Fenestration Rating Council certified and meet ENERGY STAR® southern regionally-accepted standards of a U-Factor of 0.4 or less and a Solar Heat Gain Coefficient of 0.25 or less.

5.2.12 Commercial Ceiling Insulation Upgrade Rebate Program

The Commercial Ceiling Insulation Rebate Program started in 2009 and was designed to increase a building's resistance to heat loss and gain. Participating customers receive $0.10 per square foot, for upgrading their attic insulation to R-30 or higher.

5.2.13 Commercial Cool/Reflective Roof Rebate Program

The Commercial Cool/Reflective Roof Rebate Program started in 2009 and was designed to reflect the sun's rays and lower roof surface temperature while increasing the lifespan of the roof. OUC will rebate customers at $0.12 per square foot for ENERGY STAR® cool/reflective roofing that has an initial solar reflectance greater than or equal to 0.70.

6.0 FORECAST OF FACILITIES REQUIREMENTS

6.1 EXISTING CAPACITY RESOURCES AND REQUIREMENTS

6.1.1 Existing Generating Capacity

Tables 6-1 and 6-2, which are presented at the end of this section, indicate that the combined installed generating capability for OUC and St. Cloud (as of January 1, 2018) is 1,546 MW in the winter and 1,508 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 McIntosh Unit 3 and St. Lucie Unit 2

St. Cloud's entitlement to capacity from Stanton Unit 2 is included as generating capability in Tables 6-1 and 6-2, consistent with the Interlocal Agreement described in Section 2.0.

6.1.2 Power Purchase Agreements

Corresponding to 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. 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. Subsequent amendments to the original PPA continued OUC's capacity purchase until September 30, 2023. OUC and SCF have agreed to extend the Stanton A PPA through December 2031.

6.1.3 Power Sales Agreements

OUC's power sales to Vero Beach, Bartow, Lake Worth, Winter Park, and Florida Power & Light are described in Section 2.3.

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. One factor affecting potential unit modifications and/or retirements is the impact of pending future environmental regulations. OUC will continue to monitor future environmental regulations that may impact its operating fleet and decisions related to generating units, and develop appropriate corresponding compliance plans.

6.2 RESERVE MARGIN CRITERIA

The 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

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. 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 period considered in this Ten-Year Site Plan (i.e. through 2027). As such, this Ten-Year Site Plan does not include any new capacity additions.

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 Projected Winter Reserve Requirements – Base Case

	Retail and Wholesale Peak Demand (MW)[1]								Available Capacity (MW)				Reserves (MW)			Excess/ (Deficit) Capacity to Maintain 15% Reserve Margin (MW)[7]
Year	OUC	STC	Vero Beach	Bartow	Lake Worth	Winter Park	Florida Power & Light	Total	Installed[2]	SEC A PPA	Landfill Gas[3]	Solar[3]	Total[4]	Required[5]	Available[6]	
2018/19	1,074	173	0	40	0	17	70	1,373	1,546	350	20	0	1,916	206	543	345
2019/20	1,097	176	0	40	0	0	70	1,383	1,546	350	21	0	1,917	207	534	333
2020/21	1,109	179	0	0	0	0	0	1,288	1,546	350	23	0	1,919	193	631	438
2021/22	1,124	183	0	0	0	0	0	1,307	1,546	350	28	0	1,924	196	617	421
2022/23	1,138	187	0	0	0	0	0	1,324	1,546	350	30	0	1,926	199	602	403
2023/24	1,153	191	0	0	0	0	0	1,344	1,546	350	33	0	1,929	202	585	383
2024/25	1,165	196	0	0	0	0	0	1,361	1,546	350	33	0	1,929	204	568	364
2025/26	1,184	201	0	0	0	0	0	1,385	1,546	350	35	0	1,931	208	546	338
2026/27	1,203	205	0	0	0	0	0	1,408	1,546	350	35	0	1,931	211	523	311
2027/28	1,222	210	0	0	0	0	0	1,432	1,546	350	35	0	1,931	215	499	284

(1). Peak Demands shown are non-coincident.
(2). Includes existing net capability to serve OUC and St. Cloud.
(3). Capacity of LFG and Solar reflects capacity projected to be available at time of seasonal peak demand.
(4). "Totals" may not add due to rounding.
(5). "Required Reserves" include 15 percent reserve margin on OUC and St. Cloud retail peak demand as well as wholesale sales to Florida Power & Light. OUC is not responsible for providing reserves to or Winter Park. Wholesale sale shown to Vero Beach and Lake Worth include reserves; therefore, the 15 percent reserve margin is not included.
(6). "Available Reserves" equals the difference between total available capacity and total peak demand.
(7). Calculated as the difference between "Available Reserves" and "Required Reserves."

Table 6-2 Projected Summer Reserve Requirements – Base Case

	Retail and Wholesale Peak Demand (MW)[1]								Available Capacity (MW)				Reserves (MW)			Excess/ (Deficit) Capacity to Maintain 15% Reserve Margin (MW)[7]
Year	OUC	STC	Vero Beach	Bartow	Lake Worth	Winter Park	Florida Power & Light	Total	Installed[2]	SEC A PPA	Landfill Gas[3]	Solar[3]	Total[4]	Required[5]	Available[6]	
2018	1,212	187	140	40	71	16	0	1,666	1,508	342	20	9	1,879	229	213	3
2019	1,232	190	0	40	0	17	100	1,579	1,508	342	21	9	1,880	237	301	72
2020	1,254	194	0	40	0	0	100	1,588	1,508	342	23	9	1,882	238	294	62
2021	1,274	198	0	0	0	0	0	1,472	1,508	342	28	65	1,943	221	470	250
2022	1,290	203	0	0	0	0	0	1,493	1,508	342	30	65	1,945	224	452	228
2023	1,306	207	0	0	0	0	0	1,514	1,508	342	33	65	1,948	227	434	207
2024	1,321	212	0	0	0	0	0	1,533	1,508	342	33	65	1,948	230	415	185
2025	1,341	217	0	0	0	0	0	1,558	1,508	342	35	65	1,950	234	391	158
2026	1,360	222	0	0	0	0	0	1,582	1,508	342	35	65	1,950	237	367	130
2027	1,381	228	0	0	0	0	0	1,609	1,508	342	35	65	1,950	241	341	99

(1). Peak Demands shown are non-coincident.
(2). Includes existing net capability to serve OUC and St. Cloud.
(3). Capacity of LFG and Solar reflects capacity projected to be available at time of seasonal peak demand.
(4). "Totals" may not add due to rounding.
(5). "Required Reserves" include 15 percent reserve margin on OUC and St. Cloud retail peak demand as well as wholesale sales to Florida Power & Light. OUC is not responsible for providing reserves to or Winter Park. Wholesale sale shown to Vero Beach and Lake Worth include reserves; therefore, the 15 percent reserve margin is not included.
(6). "Available Reserves" equals the difference between total available capacity and total peak demand.
(7). Calculated as the difference between "Available Reserves" and "Required Reserves."

7.0 SUPPLY-SIDE ALTERNATIVES

As discussed previously, OUC is projected to have adequate capacity to satisfy forecast reserve margin requirements through 2027 (i.e. through the duration of this Ten-Year Site Plan). As such, no supply-side alternatives have been evaluated as part of this Ten-Year Site Plan.

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 2.0 percent.

8.1.2 Present Worth Discount Rate

The present worth discount rate is assumed to be 6.5 percent.

8.2 FUEL PRICE FORECASTS

The natural gas and fuel oil price forecasts reflected in this Ten-Year Site Plan were developed based on a combination of the NYMEX forward curve and projections provided by PIRA Energy Group (PIRA). PIRA was founded in 1976 and is an international energy consulting firm specializing in global energy market analysis and intelligence. Among other services, PIRA offers consulting on a broad range of subjects in the international crude oil, petroleum products, natural gas, electricity, coal, biofuels and emissions markets. PIRA's clients include international and national integrated oil and gas companies, independent producers, refiners, marketers, oil and gas pipelines, electric and gas utilities, industrials, trading companies, financial institutions and government agencies.

The coal forecast reflected in this Ten-Year Site Plan was developed based on projections by Energy Ventures Analysis, Inc. (EVA) for use by OUC as well as recent offers from coal suppliers of Illinois Basin coal. EVA is a consulting firm that engages in a variety of projects for private and public sector clients related to energy and environmental issues. In the energy area, much of EVA's work is related to analysis of the electric utility industry and fuel markets, particularly oil, natural gas, and coal. EVA's clients in these areas include coal, oil, and natural gas producers; electric utility and industrial energy consumers; and gas pipelines and railroads. EVA also works for a number of public agencies, such as state regulatory commissions, the US EPA, and the US DOE, as well as interveners in utility rate proceedings, such as consumer counsels and municipalities. Another group of clients include trade and industry associations, such as the Electric Power Research Institute, the Gas Research Institute, and the Center for Energy and Economic Development. EVA has provided testimony to numerous state public utility commissions, including the Florida Public Service Commission. Furthermore, the firm has filed testimony in a number of cases in both state and federal courts, as well as before the Federal Energy Regulatory Commission.

9.0 ANALYSIS AND RESULTS

As discussed previously, consideration of OUC's existing generating resources and OUC's current base-case load forecast indicates that OUC is projected to have adequate capacity to satisfy forecast reserve margin requirements through 2027 (the final year considered in this Ten-Year Site Plan). As such, no new capacity additions are included in this Ten-Year Site Plan.

For informational purposes, OUC utilized PCI GenTrader to obtain the annual production costs associated for various load, fuel, and other sensitivity cases. GenTrader is a computer-based chronological production costing model developed for use in power supply system planning. GenTrader 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.

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 2018 at the present worth discount rate of 6.5 percent. These annual present worth costs are then summed over the 2018 through 2027 period to calculate the total CPWC of the expansion plan being 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. The CPWC associated with the base case analysis is approximately $2.23 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 potentially impact the timing of unit additions as compared to the base-case analysis. 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; capacity additions may be required by the summer of 2027 to maintain the 15 percent reserve margin under the high load forecast sensitivity. The CPWC associated with the high load analysis is approximately $2.32 billion.

9.1.2.2 Low-Load Forecast Sensitivity

The low-load forecast is presented in Section 4.0; capacity additions may be required by the summer of 2024 to maintain the 15 percent reserve margin under the low-load forecast sensitivity. The CPWC associated with the low-load analysis is approximately $2.19 billion.

9.1.2.3 High Fuel Price Forecast Sensitivity

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 CPWC associated with the high natural gas and coal price forecast sensitivity is approximately $2.27 billion.

9.1.2.4 Low Fuel Price Forecast Sensitivity

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 CPWC associated with the low natural gas and coal price forecast sensitivity is approximately $2.05 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 differential in price between coal and natural gas projected for 2016 will remain constant through 2025. The CPWC associated with the constant differential natural gas and coal price forecast sensitivity is approximately $2.16 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 6.5 percent present worth discount rate used in the other economic analyses discussed in this section. The CPWC associated with the high present worth discount rate sensitivity is approximately $1.88 billion.

10.0 ENVIRONMENTAL AND LAND USE INFORMATION

As discussed previously, consideration of OUC's existing generating resources and OUC's current base-case load forecast indicates that OUC is projected to have adequate capacity to satisfy forecast reserve margin requirements through 2027 (the final year considered in this Ten-Year Site Plan). As such, no new capacity additions are included in this Ten-Year Site Plan. In general, it should be noted that OUC's existing Stanton Energy Center and Indian River sites may accommodate future generating unit additions.

11.0 CONCLUSIONS

As discussed previously, consideration of OUC's existing generating resources and OUC's current base-case load forecast indicates that OUC is projected to have adequate capacity to satisfy forecast reserve margin requirements through 2027 (the final year considered in this Ten-Year Site Plan). As such, no new capacity additions are included in this Ten-Year Site Plan. In general, it should be noted that OUC's existing Stanton Energy Center and Indian River sites may accommodate future generating unit additions.

12.0 TEN-YEAR SITE PLAN SCHEDULES

This section presents the schedules required by the Ten-Year Site Plan rules for the FPSC. 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 2018 OUC Ten-Year Site Plan.

Schedule 1
Existing Generating Facilities
As of December 31, 2017

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
								Alt.				Net Capability	
	Unit		Unit	Fuel		Fuel Transport		Fuel Days	Commercial In-Service	Expected Retirement	Gen. Max. 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	41,400	15.6[2]	18.1[2]
Indian River	B	Brevard	GT	NG	DFO	PL	TK	0.2	07/89	Unknown	41,400	15.6[2]	18.1[2]
Indian River	C	Brevard	GT	NG	DFO	PL	TK	0.2	08/92	Unknown	130,000	83.0[3]	88.5[3]
Indian River	D	Brevard	GT	NG	DFO	PL	TK	0.2	10/92	Unknown	130,000	83.0[3]	88.5[3]
Stanton Energy Center	1	Orange	ST	BIT	NA	RR	UN	UN	07/87	Unknown	464,500	302.3[4]	302.3[4]
Stanton Energy Center	2	Orange	ST	BIT	NA	RR	UN	UN	06/96	Unknown	464,500	339.4[5]	339.4[5]
Stanton Energy Center	A	Orange	CC	NG	DFO	PL	TK	3	10/01	Unknown		184.2[6]	188.5[6]
Stanton Energy Center	B	Orange	CC	NG	DFO	PL	TK	3	02/10	Unknown	333,000	292.0	307.0
McIntosh	3	Polk	ST	BIT	NA	REF	UN	UN	09/82	Unknown		133.0[7]	136.0[7]
St. Lucie[8]	2	St. Lucie	ST	NUC	NA	TK	UN	UN	08/83	Unknown		60.0	60.0

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 3.4 percent.

(6) Reflects an OUC ownership share of 28.0 percent.

(7) Reflects an OUC ownership share of 40.0 percent.

(8) Capacity from Crystal River Unit No. 3 Is not included as available capacity given it has not operated since summer of 2009 and is retired.

(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:								
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
2010	454,300	2.55	2,325	178,197	13,047	311	21,648	14,366
2011	458,940	2.55	2,223	180,072	12,347	311	22,138	14,026
2012	466,940	2.56	2,140	182,570	11,723	319	23,198	13,730
2013	476,916	2.56	2,153	186,455	11,549	345	22,585	15,254
2014	485,016	2.55	2,264	190,279	11,899	379	23,376	16,230
2015	496,659	2.54	2,430	195,606	12,421	393	23,705	16,579
2016	514,813	2.56	2,491	201,424	12,369	401	23,991	16,719
2017	576,536	2.79	2,481	206,959	11,987	424	24,323	17,440
FORECAST:								
2018	589,767	2.79	2,591	211,711	12,240	430	24,814	17,322
2019	602,591	2.79	2,625	216,140	12,146	435	25,225	17,264
2020	615,418	2.79	2,657	220,577	12,047	442	25,762	17,165
2021	627,749	2.79	2,694	224,853	11,979	449	26,266	17,095
2022	639,416	2.79	2,735	228,906	11,948	456	26,762	17,051
2023	650,753	2.79	2,774	232,853	11,912	464	27,270	17,029
2024	661,743	2.80	2,813	236,686	11,885	474	27,808	17,030
2025	672,651	2.80	2,850	240,497	11,849	483	28,363	17,043
2026	684,206	2.80	2,889	244,532	11,815	494	28,933	17,072
2027	696,310	2.80	2,932	248,745	11,787	505	29,520	17,113

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:							
2008	3,390	5,961	568,659	0	45	17	6,115
2009	3,418	6,725	508,217	0	46	15	6,031
2010	3,414	7,201	474,101	0	51	31	6,030
2011	3,422	7,428	460,737	0	34	30	6,021
2012	3,392	7,558	448,853	0	35	30	5,955
2013	3,467	5,718	606,442	0	29	30	6,025
2014	3,489	5,618	621,007	0	30	29	6,191
2015	3,514	5,793	606,546	0	61	139	6,537
2016	3,506	5,811	603,333	0	61	142	6,601
2017	3,480	5,839	595,929	0	59	124	6,568
FORECAST:							
2018	3,553	5,855	606,795	0	55	144	6,773
2019	3,635	5,950	610,865	0	53	144	6,893
2020	3,728	6,075	613,603	0	53	144	7,025
2021	3,785	6,193	611,198	0	54	144	7,126
2022	3,839	6,308	608,528	0	54	144	7,229
2023	3,894	6,427	605,929	0	55	144	7,332
2024	3,955	6,552	603,624	0	56	144	7,442
2025	4,017	6,680	601,367	0	56	144	7,551
2026	4,085	6,813	599,600	0	57	144	7,670
2027	4,163	6,950	599,053	0	58	144	7,803

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:					
2008	0	150	6,265	0	206,209
2009	0	223	6,252	0	204,650
2010	469	277	6,767	0	207,046
2011	768	188	6,977	0	209,638
2012	764	346	7,135	0	214,758
2013	769	272	7,065	0	214,758
2014	1,000	332	7,523	0	219,272
2015	1,317	268	8,120	0	225,104
2016	1,100	278	7,979	0	231,226
2017	1,032	302	7,902	0	237,121
FORECAST:					
2018	938	269	7,980	0	242,380
2019	381	270	7,543	0	247,315
2020	326	276	7,626	0	252,414
2021	0	280	7,406	0	257,312
2022	0	285	7,513	0	261,976
2023	0	289	7,621	0	266,550
2024	0	295	7,736	0	271,046
2025	0	300	7,850	0	275,540
2026	0	305	7,975	0	280,278
2027	0	311	8,113	0	285,215

Notes:
Represents total of OUC and St. Cloud.
2010 - 2012 "Sales for Resale" represent sales to City of Vero Beach.
2013-2017 "Sales for Resale" represents sales to City of Vero Beach, City of Winter Park, City of Lake Worth, and City of Bartow.
Forecast "Sales for Resale" include projected sales to City of Vero Beach, City of Winter Park, City of Lake Worth, City of Bartow, and Florida Power &
"Net Energy for Load" may not match other Schedules due to rounding.

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:									
2008	1,221	0	1,221	0	0	0.0	0.0	0.0	1,221
2009	1,244	0	1,244	0	0	0.0	0.0	0.0	1,244
2010	1,295	74	1,218	0	0	1.0	0.0	1.7	1,292
2011	1,371	164	1,205	0	0	1.0	0.0	0.6	1,369
2012	1,381	165	1,214	0	0	0.6	0.0	1.7	1,379
2013	1,413	157	1,256	0	0	0.7	0.0	0.9	1,411
2014	1,500	203	1,297	0	0	0.6	0.0	0.2	1,499
2015	1,531	206	1,325	0	0	0.4	0.0	2.2	1,528
2016	1,620	252	1,368	0	0	0.5	0.0	2.5	1,617
2017	1,638	255	1,383	0	0	0.4	0.0	5.0	1,633
FORECAST:									
2018	1,666	267	1,400	0	0	0.2	0	0.4	1,666
2019	1,580	157	1,423	0	0	0.4	0	0.7	1,579
2020	1,589	140	1,449	0	0	0.6	0	1.1	1,588
2021	1,474	0	1,474	0	0	0.8	0	1.5	1,472
2022	1,496	0	1,496	0	0	1.0	0	1.9	1,493
2023	1,517	0	1,517	0	0	1.1	0	2.3	1,514
2024	1,537	0	1,537	0	0	1.3	0	2.6	1,533
2025	1,563	0	1,563	0	0	1.4	0	3.0	1,558
2026	1,587	0	1,587	0	0	1.6	0	3.4	1,582
2027	1,614	0	1,614	0	0	1.8	0	3.7	1,609

Notes:
Represents total of OUC and St. Cloud. Peak demands may not match other schedules due to non-coincidence of OUC and St. Cloud peaks and/or rounding.
Historical "Residential Conservation" and "Comm/Ind. Conservation" represent annual demand reductions associated with new participants in OUC's DSM programs described in Section 5 of OUC's 2018 Ten-Year Site Plan.
Forecast "Residential Conservation" and "Comm/Ind. Conservation" represent cumulative annual demand reductions associated with new participants in OUC's DSM programs described in Section 5 of OUC's 2018 Ten-Year Site Plan.
2010 - 2012 "Wholesale" represent sales to City of Vero Beach.
2013-2017 "Wholesale" represents sales to City of Vero Beach, City of Winter Park, City of Lake Worth, and City of Bartow.
Forecast "Wholesale" include projected sales to City of Vero Beach, City of Winter Park, City of Lake Worth, City of Bartow, and Florida Power & Light.
Forecast "Net Firm Demand" may not exactly match up with peak demands presented in the 2017 OUC Ten-Year Site Plan due to coincidence and rounding.

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:									
2007/08	957	0	957	0	0	0.0	0.0	0.0	957
2008/09	1,178	0	1,178	0	0	0.0	0.0	0.0	1,178
2009/10	1,337	36	1,299	0	0	0.8	0.0	0.9	1,335
2010/11	1,323	174	1,147	0	0	0.8	0.0	0.6	1,321
2011/12	1,216	182	1,032	0	0	0.5	0.0	1.8	1,214
2012/13	1,183	155	1,028	0	0	0.5	0.0	0.9	1,182
2013/14	1,275	201	1,074	0	0	0.4	0.0	0.2	1,275
2014/15	1,374	207	1,166	0	0	0.4	0.0	0.7	1,373
2015/16	1,320	243	1,077	0	0	0.4	0.0	1.3	1,319
2016/17	1,194	210	984	0	0	0.3	0.0	4.4	1,189
FORECAST:									
2017/18	1,488	265	1,223	0	0	0.2	0	0.7	1,487
2018/19	1,375	127	1,248	0	0	0.4	0	1.4	1,373
2019/20	1,386	110	1,276	0	0	0.6	0	2.1	1,383
2020/21	1,291	0	1,291	0	0	0.8	0	2.8	1,288
2021/22	1,312	0	1,312	0	0	1.0	0	3.6	1,307
2022/23	1,330	0	1,330	0	0	1.1	0	4.4	1,324
2023/24	1,350	0	1,350	0	0	1.3	0	5.1	1,344
2024/25	1,368	0	1,368	0	0	1.5	0	5.8	1,361
2025/26	1,393	0	1,393	0	0	1.6	0	6.5	1,385
2026/27	1,417	0	1,417	0	0	1.8	0	7.2	1,408

Notes:
Represents total of OUC and St. Cloud. Peak demands may not match other schedules due to non-coincidence of OUC and St. Cloud peaks and/or rounding.
Historical "Residential Conservation" and "Comm/Ind. Conservation" represent annual demand reductions associated with new participants in OUC's DSM programs described in Section 5 of OUC's 2018 Ten-Year Site Plan.
Forecast "Residential Conservation" and "Comm/Ind. Conservation" represent cumulative annual demand reductions associated with new participants in OUC's DSM programs described in Section 5 of OUC's 2018 Ten-Year Site Plan.
2010/11 - 2012/13 "Wholesale" represent sales to City of Vero Beach.
2013/14-2016/17 "Wholesale" represents sales to City of Vero Beach, City of Winter Park, City of Lake Worth, and City of Bartow.
Forecast "Wholesale" include projected sales to City of Vero Beach, City of Winter Park, City of Lake Worth, City of Bartow, and Florida Power & Light.
Forecast "Net Firm Demand" may not exactly match up with peak demands presented in the 2017 OUC Ten-Year Site Plan due to coincidence and rounding.

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:								
2008	6,265	0	0	6,115	0	150	6,265	58.6%
2009	6,253	0	0	6,031	0	223	6,253	57.4%
2010	6,785	3.0	5.8	6,030	469	277	6,776	58.2%
2011	6,983	2.7	3.0	6,021	768	188	6,977	58.2%
2012	7,074	1.9	7.3	5,955	764	346	7,065	58.2%
2013	7,072	1.9	4.5	6,025	769	272	7,065	57.2%
2014	7,526	1.8	1.0	6,191	1,000	332	7,523	57.3%
2015	8,136	0.8	13.4	6,537	1,317	268	8,122	57.3%
2016	7,992	1.2	12.3	6,601	1,100	278	7,979	55.4%
2017	7,934	0.8	31.0	6,568	1,032	302	7,902	55.3%
FORECAST:								
2018	7,981	0.6	0.8	6,773	938	269	7,980	54.7%
2019	7,546	1.3	1.6	6,893	381	270	7,543	54.5%
2020	7,630	2.1	2.4	7,025	326	276	7,626	54.8%
2021	7,411	2.9	3.0	7,126	0	280	7,406	57.4%
2022	7,521	3.6	3.8	7,229	0	285	7,513	57.5%
2023	7,630	4.3	4.7	7,332	0	289	7,621	57.5%
2024	7,746	4.8	5.5	7,442	0	295	7,736	57.6%
2025	7,862	5.4	6.3	7,551	0	300	7,850	57.5%
2026	7,988	6.0	7.1	7,670	0	305	7,975	57.5%
2027	8,128	6.6	7.9	7,803	0	311	8,113	57.6%

Notes:
Represents total of OUC and St. Cloud. NEL may not match other schedules due to rounding.
Historical "Residential Conservation" and "Comm/Ind. Conservation" represent annual demand reductions associated with new participants in OUC's DSM programs described in Section 5 of OUC's 2018 Ten-Year Site Plan.
Forecast "Residential Conservation" and "Comm/Ind. Conservation" represent cumulative annual demand reductions associated with new participants in OUC's DSM programs described in Section 5 of OUC's 2018 Ten-Year Site Plan.
Historical "Wholesale" includes power sales to Vero Beach in 2010 through 2014, and to Bartow in 2013 through 2016.
Forecast "Wholesale" include projected sales to City of Vero Beach, City of Winter Park, City of Lake Worth, City of Bartow, and Florida Power & Light.

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)
	2017 Actual		2018 Forecast		2019 Forecast	
	Peak Demand	NEL	Peak Demand	NEL	Peak Demand	NEL
Month	MW	GWH	MW	GWH	MW	GWH
January	979	509	1,221	538	1,245	547
February	955	445	1,179	473	1,202	480
March	1,037	507	1,053	518	1,073	527
April	1,216	543	1,109	541	1,129	551
May	1,280	628	1,258	620	1,280	632
June	1,293	623	1,316	655	1,339	667
July	1,378	684	1,392	700	1,415	712
August	1,343	711	1,398	711	1,421	725
September	1,281	627	1,324	648	1,347	659
October	1,226	597	1,261	598	1,282	607
November	992	492	1,073	509	1,092	513
December	952	506	1,043	531	1,062	542

Notes:
Represents the total of OUC and St. Cloud retail peak demands and net energy for load. Wholesale sales are not included.
Peak demands may not match other schedules due to non-coincidence of OUC and St. Cloud peaks and/or rounding.

Schedule 5
Fuel Requirements

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Fuel Requirements		Units	Actual 2016	Actual 2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
(1)	Nuclear		Trillion BTU	5	5	5	5	5	5	5	5	5	5	5	5
(2)	Coal		1000 Ton	1,518	1,634	1,348	1,452	1,632	1,649	1,926	1,743	1,945	1,978	1,997	2,032
(3)	Residual	Total	1000 BBL	0	0	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	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0
(11)		CT	1000 BBL	0	0	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	33,070	23,667	27,238	22,396	19,799	15,549	11,693	15,385	12,661	12,861	13,315	13,629
(14)		Steam	1000 MCF	2,531	1,080	45	35	45	30	44	45	45	45	45	45
(15)		CC	1000 MCF	26,625	22,351	27,020	22,264	19,713	15,446	11,608	15,173	12,592	12,802	13,237	13,554
(16)		CT	1000 MCF	236	236	173	97	41	72	41	167	24	14	33	29
(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, and sales to wholesale customers.
Natural gas CC includes SEC A purchases from Southern - Florida, LLC

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 2016	Actual 2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
(1)	Firm Inter-Region Interchange		GWH	0	0	0	0	0	0	0	0	0	0	0	0
(2)	Nuclear		GWH	464	467	572	572	572	586	566	578	575	565	566	560
(3)	Coal		GWH	3,464	3,955	3,264	3,515	3,951	3,993	4,663	4,221	4,708	4,788	4,836	4,920
(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	0	0	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	0	0	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	3,903	3,326	3,882	3,194	2,825	2,217	1,667	2,189	1,806	1,835	1,899	1,944
(15)		Steam	GWH	219	114	5	4	5	3	5	5	5	5	5	5
(16)		CC	GWH	3,667	3,193	3,860	3,181	2,816	2,207	1,658	2,168	1,799	1,829	1,891	1,936
(17)		CT	GWH	17	19	17	10	4	7	4	17	2	1	3	3
(18)	NUG		GWH	0	0	0	0	0	0	0	0	0	0	0	0
(19)	Renewables	Total	GWH	148	154	262	262	278	610	617	633	647	662	674	689
(20)		Biofuels	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(21)		Biomass	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(22)		Hydro	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(23)		Landfill Gas	GWH	138	142	219	219	235	243	250	267	281	298	311	326
(24)		MSW	GWH	0	0	0	0	0	0	0	0	0	0	0	0
(25)		Solar	GWH	10	12	43	43	43	367	367	366	366	364	363	363
(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	0	0	0	0	0	0	0	0	0	0
(29)	Net Energy for Load		GWH	7,979	7,902	7,980	7,543	7,626	7,406	7,513	7,621	7,736	7,850	7,975	8,113

Notes:
Represents GWh required to serve OUC and St. Cloud, and sales to wholesale customers.
Total Net Energy for Load may not correspond to other Schedules due to rounding.
Natural gas CC includes SEC A purchases from Southern - Florida, LLC

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 2016	Actual 2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
(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		%	5.82%	5.91%	7.17%	7.58%	7.50%	7.91%	7.53%	7.58%	7.43%	7.20%	7.10%	6.90%
(3)	Coal		%	43.41%	50.05%	40.90%	46.60%	51.81%	53.92%	62.07%	55.39%	60.86%	60.99%	60.64%	60.64%
(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	%	0.00%	0.00%	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	%	0.00%	0.00%	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	%	48.92%	42.09%	48.65%	42.34%	37.04%	29.94%	22.19%	28.72%	23.35%	23.38%	23.81%	23.96%
(15)		Steam	%	2.74%	1.44%	0.06%	0.05%	0.06%	0.04%	0.06%	0.06%	0.06%	0.06%	0.06%	0.06%
(16)		CC	%	45.96%	40.41%	48.37%	42.17%	36.93%	29.79%	22.07%	28.44%	23.25%	23.30%	23.71%	23.87%
(17)		CT	%	0.21%	0.24%	0.22%	0.13%	0.05%	0.10%	0.06%	0.22%	0.03%	0.02%	0.04%	0.04%
(18)	NUG		%												
(19)	Renewables	Total	%	1.85%	1.95%	3.28%	3.47%	3.65%	8.24%	8.21%	8.31%	8.36%	8.43%	8.45%	8.49%
(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%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(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	%	1.73%	1.80%	2.74%	2.90%	3.08%	3.28%	3.33%	3.50%	3.63%	3.80%	3.90%	4.02%
(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	%	0.13%	0.15%	0.54%	0.57%	0.56%	4.96%	4.88%	4.80%	4.73%	4.64%	4.55%	4.47%
(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%	0.00%	0.00%	0.00%	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 GWh required to serve OUC and St. Cloud, and sales to wholesale customers.
Natural gas CC includes SEC A purchases from Southern - Florida, LLC

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)
Year	Total Installed Capacity MW	Firm Capacity Import MW	Firm Capacity Export MW	QF MW	Total Capacity Available MW	System Firm Summer 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:											
2018	1,508	371	0	0	1,879	1,666	213	15%	0	213	15%
2019	1,508	372	0	0	1,880	1,579	301	20%	0	301	20%
2020	1,508	374	0	0	1,882	1,588	294	19%	0	294	19%
2021	1,508	434	0	0	1,943	1,472	470	32%	0	470	32%
2022	1,508	436	0	0	1,945	1,493	452	30%	0	452	30%
2023	1,508	439	0	0	1,948	1,514	434	29%	0	434	29%
2024	1,508	439	0	0	1,948	1,533	415	27%	0	415	27%
2025	1,508	441	0	0	1,950	1,558	391	25%	0	391	25%
2026	1,508	441	0	0	1,950	1,582	367	23%	0	367	23%
2027	1,508	441	0	0	1,950	1,609	341	21%	0	341	21%

Notes:

"Firm Capacity Import" includes OUC's existing and future power purchase agreements, including renewables.

"System Firm Summer Peak Demand" includes OUC and St. Cloud peak demand, as well as OUC's wholeslae power sales.

"Reserve Margin (MW)" calculated as available capacity minus "System Firm Summer Peak Demand."

"Reserve Margin (% of Peak)" calculated as "Reserve Margin (MW)" divided by "System Firm Summer Peak Demand." OUC's agreements with Vero and LWU already include reserve calculationss and OUC does not carry reserves under the Winter Park or Bartow agreements.

"Scheduled Maintenance (MW)" 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:											
2018/19	1,546	370	0	0	1,916	1,373	543	41%	0	543	41%
2019/20	1,546	371	0	0	1,917	1,383	534	40%	0	534	40%
2020/21	1,546	373	0	0	1,919	1,288	631	49%	0	631	49%
2021/22	1,546	378	0	0	1,924	1,307	617	47%	0	617	47%
2022/23	1,546	380	0	0	1,926	1,324	602	45%	0	602	45%
2023/24	1,546	383	0	0	1,929	1,344	585	44%	0	585	44%
2024/25	1,546	383	0	0	1,929	1,361	568	42%	0	568	42%
2025/26	1,546	385	0	0	1,931	1,385	546	39%	0	546	39%
2026/27	1,546	385	0	0	1,931	1,408	523	37%	0	523	37%
2027/28	1,546	385	0	0	1,931	1,432	499	35%	0	499	35%

Notes:
"Firm Capacity Import" includes OUC's existing and future power purchase agreements, including renewables.
"System Firm Summer Peak Demand" includes OUC and St. Cloud peak demand, as well as OUC's wholeslae power sales.
"Reserve Margin (MW)" calculated as available capacity minus "System Firm Summer Peak Demand."
"Reserve Margin (% of Peak)" calculated as "Reserve Margin (MW)" divided by "System Firm Summer Peak Demand." OUC's agreements with Vero and LWU already include reserve calculationss and OUC does not carry reserves under the Winter Park or Bartow agreements.
"Scheduled Maintenance (MW)" 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)
Plant Name	Unit No.	Location	Unit Type	Fuel Pri	Fuel Alt	Transport Pri	Transport Alt	Const. Start Mo/Yr	Commercial In-Service Mo/Yr	Expected Retirement Mo/Yr	Gen. Max. Nameplate KW	Net Capability Summer MW	Net Capability Winter MW	Status

Notes:

As discussed throught OUC's 2018 Ten-Year Site Plan, OUC is projected to have sufficient capacity to maintain a 15% reserve margin for the 2018 through 2027 period. As such, there are no planned or prospective generating facility additions to include in this schedule.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) Plant Name and Unit Number:

(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 Performance 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:
As discussed throught OUC's 2018 Ten-Year Site Plan, OUC is projected to have sufficient capacity to maintain a 15% reserve margin for the 2018 through 2027 period. As such, there are no proposed generating facilities to include in this schedule.

Schedule 10
Status Report and Specifications of Proposed Directly Associated Transmission Lines

(1) Point of Origin and Termination:

(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:

Notes:
OUC's 2018 Ten-Year Site Plan does not include any directly proposed transmission lines. Therefore, Schedule 10 is not applicable.