LAKELAND ELECTRIC
POWERED FOR LIFE

May 17, 2021

Office of Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850
Attn: Adam Teitzman

Re: 2021 Ten Year Site Plan Data Request #1

Dear Mr. Teitzman,

Pursuant to Section 186.801, Florida Statutes and Rules 25-22.070-072 of Florida Administrative Code, Lakeland Electric is submitting its 2021 Ten Year Site Plan Data Request #1 via the Commissions electronic platform.

If you have questions, please contact me at 863-834-6595.

Sincerely,
*/s/Cynthia Clemmons*

Cynthia Clemmons
City of Lakeland
Manager of Legislative and Regulatory Relations
Lakeland Electric
863-834-6595 Work
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501 E Lemon St.
Lakeland, Florida 33801

Enclosure

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# Lakeland Electric

# Ten-Year Site Plan 2021-2030

May 2021

Submitted to:

**Florida Public Service Commission**

LAKELAND ELECTRIC
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# 1.0 Introduction [SECTION 1]

This report contains the 2021 Lakeland Electric Ten-Year Site Plan (TYSP) pursuant to Florida Statutes and as adopted by Order No. PSC-97-1373-FOF-EU on October 30, 1997. The Lakeland TYSP reports the status of the utility's existing resources and identifies a coal unit to be retired in 2021 and be replaced with a combination of utility scale solar PV and gas based flexible resources in the future. TYSPs are non-binding in Florida, but they do provide state, regional, and local agencies a notice of proposed plants and transmission facilities in near future.

The TYSP 2021 is divided into the following eight sections:

- Section 1: Introduction
- Section 2: General Description of Utility
- Section 3: Forecast of Electric Demand and Energy
- Section 4: Energy Conservation & Management Programs
- Section 5: Forecasting Methods and Procedures
- Section 6: Forecast of New Capacity Requirements
- Section 7: Environmental and Land Use Information
- Section 8 Ten-Year Site Plan Schedules

The contents of each section are summarized briefly in the remainder of this Introduction.

## 1.1 General Description of the Utility [SECTION 2]

Section 2 of the TYSP discusses a historical overview of Lakeland Electric's system and a description of the existing power generating and transmission system. This section includes tables which show the source of the utility's current 907 MW of net winter generating capacity and 859 MW of net summer generating capacity (as of the end of calendar year 2020).

## 1.2 Forecast of Electric Demand and Energy [SECTION 3]

Section 3 of the TYSP provides a summary of Lakeland's load and energy forecast process. The forecasts included in this section are on population, customer classes, energy sales, net energy requirement, and system peak demand in an hourly basis in its service territory. In addition, sensitivity cases on high and low cases are developed on energy sales to customers, system net energy and peak load requirements.

## 1.3 Energy Conservation & Management Programs [SECTION 4]

Section 4 provides the description of the existing energy conservation & management programs as adopted by Lakeland Electric. Additional details regarding Lakeland Electric's energy conservation & management programs are on file with the Florida Public Service Commission (FPSC).

Lakeland Electric's existing energy conservation & management programs include the following programs which promote cost-effective measures for both electric demand and energy savings, especially during peak hours:

- Residential Programs:
  - Insulation rebate
  - Energy Savings Kits
  - HVAC Maintenance Incentive
  - Heat Pump Rebates
  - LED Lighting
  - On-Line Energy Audit
  - Energy Star Appliance Rebate

- Commercial Programs:
  - Conservation Rebate
  - Commercial Lighting Rebate

Section 4 also contains discussions on Lakeland Electric's solar programs. While these types of programs are not traditionally thought of as DSM, they have the same effect of conserving energy normally generated by fossil fuels as DSM programs do by virtue of their avoidance of fossil fuels through the use of renewable energy. Lakeland Electric has the capability to generate more than 14 MW of power from solar, sufficient to supply power for more than 7000 households during a sunny day in the summer. Lakeland Electric is determined to continuously increase the solar power for its customers with additional utility scale solar and customer's roof top program.

## 1.4 Forecasting Methods and Procedures [SECTION 5]

Forecasting long-term electric load and energy is the first step in planning future generation. Based on future energy requirements, Lakeland Electric coordinates and manages its existing resources to meet the future energy requirements at the lowest cost possible for its customers.

Section 5 summarizes the Integrated Resource Planning process utilized by Lakeland Electric and explains Lakeland Electric's participation in the Florida Municipal Power Pool (FMPP).

While Section 3 discusses the forecast methods used for the TYSP, Section 5 outlines the economic and fuel assumptions applied to planning capacity and energy in the future.

## 1.5 Forecast of New Capacity Requirements [SECTION 6]

Section 6 describes the process Lakeland Electric uses to assess the need for additional capacity to serve Lakeland Electric's customers. This section concludes by stating that Lakeland Electric plan to keep Reserve Margins greater than 15% during the current ten-year planning period and complies with the Florida Reliability Coordinating Council's (FRCC) minimum reserve margin criteria for the FRCC Region.

## 1.6 Environmental and Land Use Information [SECTION 7]

Section 7 addresses environmental and land use issues related to Lakeland Electric's recently added new 120 MW gas turbine in 2020 at Lakeland Electric's McIntosh Power Plant (see Table 7-1). This section also provides Table 7-2 which summarizes different control strategies adopted to comply with various environmental emissions for existing major generating units.

## 1.7 Ten-Year Site Plan Schedules [SECTION 8]

Section 8 presents the schedules required by the Florida Public Service Commission (FPSC) for the TYSP.

Tables 8-1 and 8-1a summarize the detailed information on existing generating units owned by Lakeland Electric. Tables 8-2 through 8-5 provide information by customer class. Tables 8-2 through 8-8 provide demand and energy history and forecasts. Table 8-9 provides a history and forecast of fuel requirements by fuel type. Tables 8-10 and 8-11 provide a history and forecast of energy produced by fuel type. Tables 8-12 and 8-13 provide comparisons of Lakeland Electric resources to Lakeland Electric demand. These tables demonstrate that Lakeland Electric's Reserve Margin forecast exceeds 15% each year included in this Ten-Year-Site Plan. Tables 8-14 provides information related to Lakeland Electric's planned new generating units and any changes/modifications on existing units.

# 2.0 General Description of the Utility

## 2.1 City of Lakeland: Historical Background

### *2.1.1 Generation*

The City of Lakeland was incorporated on January 1, 1885, when 27 citizens approved and signed the city charter. Shortly thereafter, the original light plant was built by Lakeland Light and Power Company at the corner of Cedar Street and Massachusetts Avenue. This plant had an original capacity of 50 kW. On May 26, 1891, plant manager Harry Sloan threw the switch to light Lakeland by electricity for the first time with five arc lamps. Incandescent lights were first installed in 1903.

Public power in Lakeland was established in 1904, when foresighted citizens and municipal officials purchased the small private 50 kW electric light plant from owner Bruce Neff for $7,500. The need for an expansion led to the construction of a new power plant on the north side of Lake Mirror in 1916. The initial capacity of the Lake Mirror Power Plant was 500 kW. The plant was expanded three times. The first expansion occurred in 1922 with the addition of 2,500 kW; in 1925, 5,000 kW additional capacity was added, followed by another 5,000 kW in 1938. With the final expansion, the removal of the initial 500 kW unit was required to make room for the addition of the 5,000 kW generating unit, resulting in a total peak plant capacity of 12,500 kW.

As the community continued to grow, the need for a new power plant emerged and the Charles Larsen Memorial Power Plant was constructed on the south-east shore of Lake Parker in 1949. The initial capacity of the Larsen Plant Steam was Unit No. 4 (20,000kW) and it was completed in 1950. The first addition to the Larsen Plant was Steam Unit No. 5 (1956) which had a capacity of 25,000 kW. In 1959, Steam Unit No. 6 was added and increased the plant capacity by another 25,000 kW. Three gas turbines, each with a nominal rating of 11,250 kW, were installed as peaking units in 1962. In 1966, a third steam unit capacity addition was made to the Larsen Plant. This was Steam Unit No.7 having a nominal 44,000 kW capacity and an estimated cost of $9.6 million. This brought the total Larsen Plant nameplate capacity up to a nominal 147,750 kW.

In the meantime, the Lake Mirror Plant, with its old and obsolete equipment, became relatively inefficient and hence was no longer in active use. It was kept in cold standby and then retired in 1971.

As the city continued to grow during the late 1960's, the demand for power and energy grew at a rapid rate, making evident the need for a new power plant site. A site was purchased on the north side of Lake Parker and construction commenced during 1970. Initially, two diesel units with a peaking capacity of a nominal rating 2,500 kW each were placed into commercial operation in 1970.

Steam Unit No. 1, with a nominal rating of 90 MW, was put into commercial operation in February 1971, for a total cost of $15.22 million. In June of 1976, Steam Unit No. 2 was placed into commercial operation, with a nominal rated capacity of 115 MW and at a cost of $25.77 million. This addition increased the total capacity of the Lakeland system to approximately 360 MW. At this time, the new plant site on the north shore of Lake Parker was renamed the C. D. McIntosh, Jr. Power Plant in recognition of the former Electric and Water Department Director.

On January 2, 1979, construction was started on McIntosh Unit No. 3, a nominal 334 MW coal fired steam generating unit which became commercial on September 1, 1982. The unit was designed to use low sulfur oil as an alternate fuel, but this feature was later decommissioned. McIntosh Unit No. 3 was later modified so that its nominal gross output was increased to 365 MW. The unit uses a minimal amount of natural gas for flame stabilization during startups. The plant utilizes sewage effluent for cooling tower makeup water. This unit is jointly owned with the Orlando Utilities Commission (OUC) which has a 40 percent undivided interest in the unit.

Larsen Unit No. 8, a natural gas fired combined cycle unit 8 has a nameplate generating capacity of 114 MW. Larsen Unit No. 8 began its simple cycle operation in July 1992, and combined cycle operation in November of that year.

In 1994, Lakeland made the decision to retire the first unit at the Larsen Plant, Steam Unit No. 4. This unit, put in service in 1950 with a capacity of 20 MW, had reached the end of its economic life. In March of 1997, Lakeland retired Larsen Unit No. 6, a 25 MW oil fired unit that was also nearing the end of its economic life. In October of 2004, Lakeland retired Larsen Unit 7, a 50 MW oil fired steam unit.

In 1999, the construction of McIntosh Unit No. 5, a simple cycle, natural gas fired combustion turbine was completed, having a summer nominal capacity of 225 MW. The unit was released for commercial operation in May 2001. Beginning in September 2001, the unit underwent conversion to a combined cycle unit through the addition of a nominal 120 MW steam turbine generator. Construction was completed in spring 2002 with the unit being declared commercial in May 2002. The resulting combined cycle gross capacity of the unit is 345 MW summer and 360 MW winter.

During the summer of 2001, Lakeland took its first step into the world of distributed generation with the groundbreaking of its Winston Peaking Station. The Winston Peaking Station consists of 20 quick start reciprocating engines each driving a 2.5 MW electric generator. This provides Lakeland with 50 MW of peaking capacity that can be started and put on line at full load in ten minutes. The Station was declared commercial in late December 2001.

In 2009, Lakeland Electric installed selective catalytic reduction (SCR) on the McIntosh Unit 3 for $NO_x$ control to provide full flexibility in implementing the Federal Cap and Trade program for nitrogen oxides (NOx) required under the Clean Air Interstate Rule (CAIR).

Steam Unit No. 1 at the McIntosh Plant was retired from service on December 31, 2015. This unit had a nominal rating of 90 MW and had been in service since 1971.

Steam Unit No. 2 at the McIntosh Plant was retired from service on June 22, 2020. This unit had a nominal rating of 120 MW (summer) and had been in service since 1976.

McIntosh Gas Turbine No. 2 at the McIntosh Plant went commercial on June 22, 2022. This unit has gross ratings of 125(120) MW in winter (summer).

McIntosh Unit No. 3 is scheduled to discontinue coal operations as of March 31, 2021 and is classified as an existing generator scheduled for retirement after it has reached the end of its economic life. This unit has been in operation since 1982.

### *2.1.2 Transmission*

The first phase of the Lakeland 69 kV transmission system was placed in operation in 1961 with a step-down transformer at the Lake Mirror Plant to feed the 4 kV bus, nine 4 kV feeders, and a new substation in the southwest section of the town with two step-down transformers feeding four 12 kV feeders.

In 1966, a 69 kV line was completed from the North west substation to the Southwest substation, completing the loop around the town. At the same time, the old tie to Bartow was reinsulated for a 69 kV line and went into operation, feeding a new step-down substation in Highland City with four 12 kV feeders. In addition, a 69 kV line was completed from Larsen Plant around the South east section of the town to the Southwest substation. By 1972, 20 sections of 69 kV lines, feeding a total of nine step-down substations, with a total of 41 distribution feeders, were completed and placed in service. By the fall of 1996, all of the original 4 kV equipment and feeders had been replaced and/or upgraded to 12 kV service. By 1998, 29 sections of 69 kV lines were in service feeding 20 distribution substations.

As the Lakeland system continued to grow, the need for additional and larger transmission facilities grew as well. In 1981, Lakeland's first 230 kV facilities went into service to accommodate Lakeland's McIntosh Unit No. 3 and to tie Lakeland into the State transmission grid at the 230 kV level. A 230 kV line was built from McIntosh Plant to Lakeland's West substation. A 230/69 kV autotransformer was installed at each of those substations to tie the 69 kV and 230 kV transmission systems together. In 1988, a second 230 kV line was constructed from the McIntosh Plant to Lakeland's Eaton Park substation along with a 230/69 kV autotransformer at Eaton Park. That line was the next phase of the long-range goal to electrically circle the Lakeland service territory with 230 kV transmission to serve as the primary backbone of the system.

In 1999, Lakeland added a generation unit at its McIntosh Power Plant that resulted in a new 230/69/12kV substation being built and energized in March of that year. The Tenoroc substation replaced the switching station called North McIntosh. In addition to Tenoroc, another new 230/69/12kV substation was built. The substation, Interstate, went into operation in June of 1999 and is connected by what was the McIntosh West 230 kV line. This station was built to address concerns on load growth in the areas adjacent to the I-4 corridor which were causing problems at both the 69kV and distribution levels in this area.

In 2001, Lakeland began its next phase of its 230kV transmission system with the construction of the Crews Lake 230/69kV substation. The substation was completed and placed in service in 2001. This project includes two 230kV ties and one 69kV tie with Tampa Electric Company (TECO), a 150MVA 230/69kV autotransformer and a 230kV line from Lakeland's Eaton Park 230kV substation to the Crews Lake substation.

Early transmission interconnections with other systems included a 69 kV tie at Larsen Plant with TECO, was established in mid-1960s. A second tie with TECO was later established at Lakeland's Highland City substation. A 115 kV tie was established in the 1970s with Progress Energy of Florida (PEF), now Duke Energy Florida (DEF) and Lakeland's West substation and was subsequently upgraded and replaced with the current two 230 kV lines to PEF in 1981. At the same time, Lakeland was interconnected with OUC at Lakeland's McIntosh Power Plant. In August 1987, the 69 kV TECO tie at Larsen Power Plant was taken out of service and a new 69 kV TECO tie was put in service connecting Lakeland's Orangedale substation to TECO's Polk City substation. In mid-1994, a new 69 kV line was energized connecting Larsen Plant to the Ridge Generating Station (Ridge), an independent power producer. Lakeland had a 30-year firm power-wheeling contract with Ridge to wheel up to 40 MW of their power to DEF. In early 1996, a new substation, East, was installed in the Larsen Plant to the Ridge 69 kV transmission line. However, as of January 31, 2019, Ridge Generating Station was permanently shut down. As a result, the 69 kV East to Ridge tie line is no longer in use. Later in 1996, the third tie line to TECO was built from East to TECO's Gapway substation. As mentioned above, in August of 2001, Lakeland completed two 230 kV ties and one 69 kV tie with TECO at Lakeland's Crews Lake substation. The multiple 230 kV interconnection configuration of Lakeland is also tied into the bulk transmission grid and provides access to the 500 kV transmission network via DEF, providing greater reliability. At present, Lakeland has a total of about 128 miles of 69 kV and 28 miles of 230 kV transmission lines in service along with six 150 MVA 230/69 kV autotransformers. In 2020, Lakeland added a 150 MVA 69/13.8 KV auto transformer to connect the recently installed McIntosh Gas Turbine No. 2 into the Distribution System.

## 2.2 General Description: Lakeland Electric

### *2.2.1 Existing Generating Units*

This section provides additional detail on Lakeland Electric's existing generating plants. Lakeland Electric's existing generating units are located at two different plant sites: Charles Larsen Memorial (Larsen) and C.D. McIntosh Jr. (McIntosh). Both plant sites are located at Lake Parker in Polk County, Florida. The two plants have multiple units with different technologies and fuel types. Table 2-1 provides technical and other general characteristics of all Lakeland Electric generating units.

The Larsen site is located on the south east shore of Lake Parker in Lakeland. The site has three units. Larsen Unit 8 (CC) has a net winter (summer) capacity of 125 MW (108 MW). The Unit's combustion turbine has a net winter (summer) rating of 90 MW (73 MW).

Larsen Units 2 and 3, General Electric combustion turbines, have a combined net winter (summer) rating of 27 MW (19 MW). The units burn natural gas as the primary fuel with diesel as the backup. These two units are temporarily out for major maintenance.

Historically, Larsen Unit No. 5 consisted of a boiler for steam generation and steam turbine generator to convert the steam to electrical power. When the boiler began to show signs of degradation beyond economical repair, a gas turbine with a heat recovery steam generator, Larsen Unit No. 8, was added to the facility. This allowed the gas turbine (Larsen Unit No. 8) to generate electricity and the waste heat from the gas turbine to repower the former Larsen Unit No. 5 steam turbine in a combined cycle configuration.

The McIntosh site is located in the City of Lakeland along the northeastern shore of Lake Parker and encompasses 513 acres. Electricity generated by the McIntosh units is stepped up in voltage by generator step-up transformers to 69 kV and 230 kV for transmission via the power grid. The McIntosh site currently includes six (6) units in commercial operation having a total net winter (summer) rating of 705 MW (682 MW).

McIntosh Gas Turbine 1 consists of a General Electric combustion turbine with a net winter (summer) output rating of 19 MW (17 MW).

McIntosh Unit No. 3 is a net 342 MW pulverized coal fired steam unit owned 60 percent by Lakeland and 40 percent by the OUC. Lakeland's share of the unit yields net winter and summer output of 205 MW. Two small internal combustion engines with a net output of 2.5 MW each are also located at the McIntosh site.

McIntosh Unit No. 3 includes a wet flue gas scrubber for $SO_2$ removal, uses treated sewage water for cooling water, and treats all waste water that it doesn't otherwise reuse before it leaves the plant site.

McIntosh Unit No. 5, a Siemens 501G combined cycle unit, was initially built and operated as a simple cycle combustion turbine that was placed into commercial operation in May 2001. The unit was taken off line for conversion to combined cycle starting in mid-September 2001 and was returned to commercial service in May 2002 as a combined cycle unit with a net winter (summer) rating of 354 MW (338 MW). The unit is equipped with Selective Catalytic Reduction (SCR) for $NO_x$ control. This unit has been recently modified by Siemens with their NextGen hardware upgrade increasing its net winter (summer) rating of 388 MW (368 MW).

Lakeland Electric constructed a 50 MW peaking units adjacent to its Winston Substation in 2001. The purpose of the peaking plant is to provide additional quick start generation capability for Lakeland's system during the times of high demand assuring extra reliability in Lakeland's System operation. Altogether, the Winston station consists of twenty (20) cylinder reciprocating engines driving 2.5 MW of generation each. Altogether, 20 diesel engines provide 50 MW of installed Capacity. The units are currently fueled by #2 fuel oil but have the capability to burn a mix of 5% #2 oil and 95% natural gas. Lakeland Electric currently does not have natural gas service to the site.

The plant has remote start/run capability for extreme emergencies at times when the plant is unmanned. The station does not use open cooling towers. This results in minimal water or wastewater requirements.

The engines are equipped with hospital grade noise suppression equipment on the exhausts. Emission control is achieved by Selective Catalytic Reduction (SCR) using 19% aqueous ammonia. The SCR system will allow the plant to operate within the Minor New Source levels permitted by the Florida Department of Environmental Protection (DEP).

Winston Peaking Station (WPS) was constructed adjacent to Lakeland's Winston Distribution Load Substation. Power generated at WPS goes directly into Winston Substation at 12.47 kV distribution level of the substation and has sufficient capacity to serve the substation loads. Winston Substation serves several of Lakeland Electric's largest and most critical accounts. Should the Winston Substation lose all three 69 kV circuits to the substation, the WPS can be on line and serving load within ten minutes. In addition to increasing the substation's reliability, this arrangement allows Lakeland to delay the installation of a third 69kV to 12.47kV transformer by several years and also contributes to lowering loads on Lakeland's transmission system.

### *2.2.2 Capacity and Power Sales Contracts*

Lakeland Electric currently has no long-term firm power sales contract in place as of December 31, 2020. Lakeland Electric makes sales contract on capacity and energy with neighboring utilities and other FMPP members on an as needed basis.

Lakeland Electric shares ownership of the C. D. McIntosh Unit 3 with OUC. The ownership breakdown is a 60 percent share for Lakeland Electric and a 40 percent share for OUC. The energy and capacity delivered to OUC from McIntosh Unit No. 3 is not considered a power sales contract because of OUC's ownership share.

### *2.2.3 Capacity and Power Purchase Contracts*

Lakeland Electric currently has no long-term firm power purchase contracts in place as of December 31, 2020. But, Lakeland Electric is anticipating to have a long-term power purchase contract coinciding with the retirement of McIntosh Unit 3 starting from April 1, 2021. Lakeland Electric anticipates to have capacity and energy contracts with neighboring utilities and other pool members on an as needed basis when the major units are on planned/forced outages.

### *2.2.4 Planned Unit Retirements*

Lakeland retired its McIntosh Unit No. 2 steam unit in June 2020 after McIntosh Gas Turbine 2 became commercial at the same time. As an enhanced fleet modernization effort, Lakeland Electric plans to retire its only coal-based McIntosh Unit No. 3 unit by the end of March, 2021.

### *2.2.5 Planned Unit Additions*

Lakeland is planning to add a combination of solar and the number of modular size (20 MW) reciprocating internal combustion engines (RICE) in 2024 to maintain the resource adequacy and flexibility in Lakeland System after McIntosh Unit 3 is retired. Before new units are installed, Lakeland is planning to have a firm contract on energy and capacity with the OUC to meet the resource adequacy requirement by FRCC and FMPP.

## 2.3 Service Area

Lakeland Electric's electric service area is shown on Figure 2-1 and is entirely located in Polk County. Lakeland Electric serves approximately 246 square miles, with approximately 174 square miles outside of Lakeland's city limits.

Table 2-1

Lakeland Electric Existing Generating Facilities

| | | | | Fuel[4] | | Fuel Transport[5] | | | | | | Net Capability[2] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Plant Name | Unit No. | Location | Unit Type[3] | Pri | Alt | Pri | Alt | Alt Fuel Days Use[1] | Commercial In-Service Month/Year | Expected Retirement Month/Year | Gen. Max. Nameplate kW | Summer MW | Winter MW |
| Charles Larsen Memorial | GT2 | 16-17/28S/24E | GT | NG | DFO | PL | TK | -- | 11/62 | Unknown | 11,250 | 10 | 14 |
| | GT3 | | GT | NG | DFO | PL | TK | -- | 12/62 | Unknown | 11,250 | 9 | 13 |
| | 8 | | CA | WH | --- | --- | | | 04/56 | Unknown | 26,000 | 35 | 35 |
| | 8 | | CT | NG | DFO | PL | TK | -- | 07/92 | Unknown | 88,000 | 73 | 90 |
| Plant Total | | | | | | | | | | | | 127 | 152 |

[1]LAK doesnot maintain records of the days the alternative fuel was used. ,[2]Net Normal.

[2]Net Normal

Source: Lakeland Energy Supply Unit Rating Group

| [3]**Unit Type** | [4]**Fuel Type** | [5]**Fuel Transportation Method** |
|---|---|---|
| CA Combined Cycle Steam Part | DFO Distillate Fuel Oil | PL Pipeline |
| CT Combined Cycle Combustion Turbine | RFO Residual Fuel Oil | TK Truck |
| GT Combustion Gas Turbine | BIT Bituminous Coal | RR Railroad |
| ST Steam Turbine | WH Waste Heat | |
| | NG Natural Gas | |

Table 2-1a
Lakeland Electric Existing Generating Facilities

| | | | | Fuel[4] | | Fuel Transport[5] | | | | | | Net Capability | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Plant Name | Unit No. | Location | Unit Type[3] | Pri | Alt | Pri | Alt | Alt Fuel Days Use[2] | Commercial In-Service Month/Year | Expected Retirement Month/Year | Gen. Max. Nameplate kW | Summer MW | Winter MW |
| Winston Peaking Station | 1-20 | 21/28S/23E | IC | DFO | --- | TK | --- | -- | 12/01 | Unknown | 2,500 each | 50 | 50 |
| Plant Total | | | | | | | | | | | | 50 | 50 |
| C.D. McIntosh, Jr. | D1 | 4-5/28S/24E | IC | DFO | --- | TK | --- | -- | 01/70 | Unknown | 2,500 | 2.5 | 2.5 |
| | D2 | | IC | DFO | --- | TK | --- | -- | 01/70 | Unknown | 2,500 | 2.5 | 2.5 |
| | GT1 | | GT | NG | DFO | PL | TK | -- | 05/73 | Unknown | 20,000 | 17 | 19 |
| | GT2 | | GT | NG | DFO | PL | TK | -- | 06/20 | Unknown | 130,000 | 117 | 122 |
| | 3[1] | | ST | BIT | --- | RR | TK | -- | 09/82 | Unknown | 219,000 | 205 | 205 |
| | 5 | | CT | NG | --- | PL | --- | -- | 05/01 | Unknown | 245,000 | 213 | 233 |
| | 5 | | CA | WH | --- | --- | --- | -- | 05/02 | Unknown | 120,000 | 125 | 121 |
| Plant Total | | | | | | | | | | | | 682 | 705 |
| **System Total** | | | | | | | | | | | | **859** | **907** |

[1] Lakeland's 60 percent portion of joint ownership with Orlando Utilities Commission.

[2] Lakeland does not maintain records of the number of days that alternate fuel is used.

| [3] **Unit Type** | [4] **Fuel Type** | [5] **Fuel Transportation Method** |
|---|---|---|
| CA Combined Cycle Steam Part | DFO Distillate Fuel Oil | PL Pipeline |
| CT Combined Cycle Combustion Turbine | RFO Residual Fuel Oil | TK Truck |
| GT Combustion Gas Turbine | BIT Bituminous Coal | RR Railroad |
| ST Steam Turbine | WH Waste Heat | |
| | NG Natural Gas | |

Figure 2-1

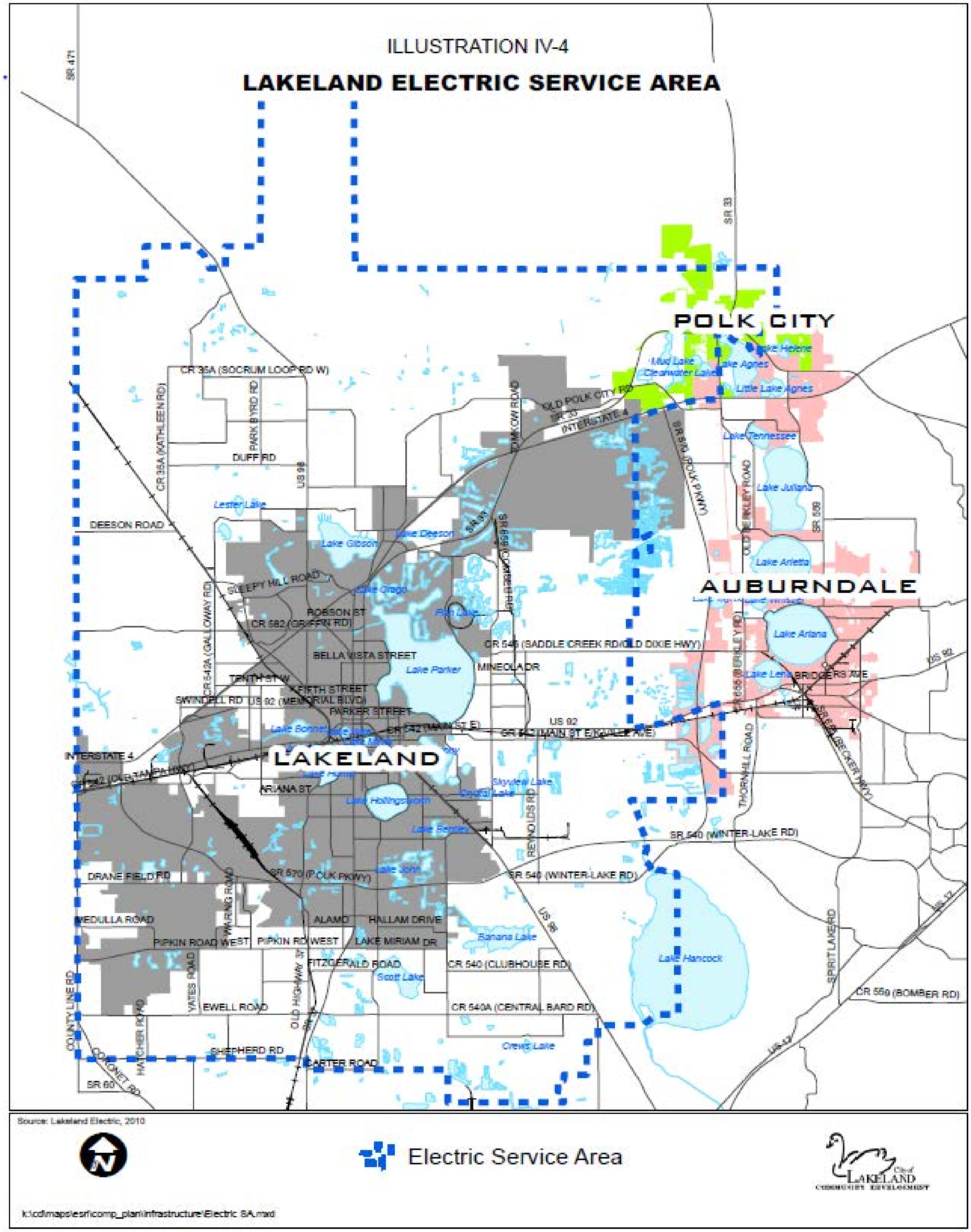
ILLUSTRATION IV-4
LAKELAND ELECTRIC SERVICE AREA
POLK CITY
AUBURNDALE
LAKELAND
SR 471
SR 33
CR 35A (SOCRUM LOOP RD W)
PARK BYRD RD
CR 35A (KATHLEEN RD)
DUFF RD
US 98
Lester Lake
DEESON ROAD
Lake Gibson
Lake Deeson
SLEEPY HILL ROAD
CR 542A (GALLOWAY RD)
ROBSON ST
CR 582 (GRIFFIN RD)
Lake Crago
Fish Lake
BELLA VISTA STREET
Lake Parker
MINEOLA DR
TENTH ST W
FIFTH STREET
SWINDELL RD
US 92 (MEMORIAL BLVD)
PARKER STREET
Lake Bonnet
US 92
INTERSTATE 4
ARIANA ST
Lake Hollingsworth
Skyview Lake
Crystal Lake
Lake Bentley
REYNOLDS RD
SR 540 (WINTER-LAKE RD)
DRANE FIELD RD
SR 570 (POLK PKWY)
Lake John
MEDULLA ROAD
WARING ROAD
ALAMO
HALLAM DRIVE
PIPKIN ROAD WEST
PIPKIN RD WEST
LAKE MIRIAM DR
Banana Lake
FITZGERALD ROAD
Scott Lake
CR 540 (CLUBHOUSE RD)
Lake Hancock
YATES ROAD
EWELL ROAD
OLD HIGHWAY 37
CR 540A (CENTRAL BARD RD)
COUNTY LINE RD
HATCHER ROAD
SHEPHERD RD
CARTER ROAD
Crews Lake
SR 60
OLD POLK CITY RD
INTERSTATE 4
Mud Lake
Clearwater Lake
Lake Agnes
Lake Helene
Little Lake Agnes
Lake Tennessee
Lake Juliana
Lake Arietta
SR 570 (POLK PKWY)
Lake Ariana
Lake Lena
BRIDGERS AVE
THORNHILL ROAD
CR 546 (SADDLE CREEK RD/OLD DIXIE HWY)
SR 659
SPIRIT LAKE RD
CR 559 (BOMBER RD)
US 17
US 98
Source: Lakeland Electric, 2010
Electric Service Area
k:\cd\maps\esri\comp_plan\infrastructure\Electric SA.mxd

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# 3.0 Forecast of Electric Demand and Energy

Annually, Lakeland Electric (LE) develops a detailed short-term (1 year) electric load and energy forecast for budget purposes and short-term operational studies. An annual long-term forecast is developed for the Utility's long-term planning studies (i.e., TYSP).

Sales and customer forecasts of monthly data are prepared by rate classification. Separate forecast models are developed for inside and outside the City of Lakeland corporate limits for the Residential, Commercial, Industrial and Other (municipal departments and outdoor lighting) rate classifications. Monthly forecasts are summarized annually using fiscal period ending September 30th for the short term budget forecast and by calendar year for long-term studies and reporting.

Lakeland Electric uses MetrixND, an advanced statistical forecasting software tool, developed by Itron, to assist with the development of LE's number of customers, energy and demand forecasts. Lakeland Electric uses MetrixLT, another Itron software tool, which integrates with MetrixND to develop the long-term system hourly load forecast.

The modeling techniques used to generate the forecasts include multiple regression, study of historical relationships and growth rates, trend analysis, and exponential smoothing. Lakeland Electric utilizes Itron's Statistically Adjusted End-Use (SAE) econometric modeling approach for the residential and commercial sectors. The SAE approach is designed to capture the impact of changing end-use saturation and efficiency trends, by building type, as well as economic conditions on long-term residential and commercial energy sales and demand.

Many variables are evaluated for the development of the forecasts. The variables that have proven to be significant and are included in the forecasts are weather, gross regional product, disposable personal income per household, persons per household, number of households, local population, electricity price, building type, appliance saturation and efficiency. Binary variables are used to explain outliers in historical billing discrepancies, trend shifts, monthly seasonality, rate migration between classes and other issues that could affect the accuracy of forecast models.

*Weather variables*

Heating and cooling degree days are weather variables that attempt to explain a customer's usage behavior as influenced by either hot or cold weather. Heating Degree Days (HDD) occur when the average daily temperature is less than Lakeland Electric's established base temperature of 65 degrees Fahrenheit. Cooling Degree Days (CDD) occur when the average daily temperature is greater than 65 degrees. The formulas used to determine the number of degree days are:

*HDD = Base Temperature (65) – Average Daily Temperature*

*CDD = Average Daily Temperature – Base Temperature (65)*

These HDD and CDD variables are used in the forecasting process to correlate electric consumption with weather. The HDD and CDD variables are weighted to capture the impacts of weather on revenue from monthly billed consumption.

Lakeland Electric uses weather data from its own weather stations, which are strategically placed throughout the electric service territory to provide the best estimate of overall temperature for the Lakeland Electric service area.

The most recent 20 years of historical normal weather is used as an input into the sales forecast models.

Normal peak-producing weather is also developed using historical 20 year weather. A weighted average of temperatures on both the day of historical monthly peak and day prior to peak is used to create the HDD and CDD variables.

*Economic and demographic variables*

The economic and demographic projections used in the forecasts are purchased from Moody's Analytics.

*Price variables*

A real price forecast by month and rate class is created based on Lakeland Electric historical price data, projections from the Lakeland Electric Rates and Fuel teams, the U.S. Energy Information Administration (EIA) Annual Energy Outlook (AEO) forecasted price of electricity, historical and projected Net Energy for Load, and the projected Consumer Price Index. The 12 month moving average of projected real price of electricity is the price variable used in the sales and demand SAE models.

*Structural Indices*

The end-use saturation and efficiency indices used in the models are purchased from Itron. Itron's Energy Forecasting Group (EFG) offers end-use data services and forecasting support. EFG's projections are based on data derived from the EIA's AEO forecast for the South Atlantic Census Division. Itron is also contracted to further calibrate the indices based on Lakeland Electric's service area using average square feet by building type for the Commercial Sector and average use by dwelling type for the Residential Sector.

Lakeland Electric reviews the forecasts for reasonableness, compares projections to historical patterns, and modifies the results as needed using informed judgment.

Historical monthly data is available and is analyzed for the 20 year period. Careful evaluation of the data and model statistics is performed; this often results in most models being developed using less than a 10 year estimation period.

Lakeland Electric currently does not have any specific energy savings goals through Demand Side Management (DSM) programs, therefore, Lakeland Electric does not assume any deductions in peak load for the forecast period.

## 3.1 Service Territory Population Forecast

Electric Service Territory Population Estimate

Lakeland Electric's service area encompasses approximately 246 square miles, approximately 171 square miles of which are outside the City of Lakeland's corporate limits. The estimated electric service territory population for Lakeland Electric in 2020 was 295,899 persons.

Population Forecast

Lakeland Electric's service territory population is projected to increase at an estimated 1.25% average annual growth rate (AAGR) for years 2021 – 2030.

Polk County's population (Lakeland / Winter Haven MSA) is expected to grow at 1.51% AAGR for the same 10 year period. Historically, Polk County's population has grown faster than LE's service territory population.

## 3.2 Accounts Forecast

Lakeland Electric forecasts the number of monthly electric accounts for the following categories and subcategories:

- Residential, Inside and Outside City Limits
- Commercial, Inside and Outside City Limits
- Industrial, Inside and Outside City Limits
- Other, Inside and Outside City Limits

### *3.2.1 Residential Accounts*

A regression model is used to develop the Residential account forecast using monthly customer data. Total Residential accounts are projected as a function of number of households in the Lakeland / Winter Haven Metropolitan Statistical Area (MSA). Binary variables are used to explain outliers in historical billing data and to account for seasonality.

### *3.2.2 Commercial Accounts*

Commercial accounts consist of the General Service (GS), General Service Business Demand (GSBD) and General Service Demand (GSD) rate classes.

Due in large part to energy efficiency, Lakeland Electric is experiencing a long-term trend of General Service Large Demand (GSLD) customers migrating to Commercial rate classes. For this reason, a regression model combining both Commercial and GSLD rate classes is being used. The number of Commercial and GSLD accounts is projected as a function of the moving average of projected residential accounts.

A ratio of the Commercial and GSLD rate classes is then applied to generate the Commercial and GSLD account forecasts.

### *3.2.3 Industrial Accounts*

Industrial accounts consist of General Service Large Demand (GSLD), Interruptible (INT) and Extra Large Demand Customer (ELDC) rate classes.

The GSLD rate class consists of customers with a billing demand greater than 500 kW, at least three times, over the past 12 months. As noted in section 3.2.2, the GSLD account forecast is a ratio of the combined Commercial and GSLD account forecast.

The INT rate class consists of customers with a billing demand greater than 1000 kW, at least three times, over the past 12 months.

The ELDC rate class consists of customers with a billing demand greater than 5000 kW at least three times over the past 12 months.

Projections for INT and ELDC accounts are modeled independently of MetrixND. Special consideration is given to account for new major commercial and industrial development projects that may impact future demand and energy requirements.

### *3.2.4 Other Accounts*

The Other account category consists of Municipal, Electric and Water Department accounts within the City of Lakeland, as well as private area lighting and roadway lighting.

Historical data for these classes is inconsistent and difficult to model. Therefore, account projections for this category are based on time trends and historical growth rates. Lakeland Electric also takes into consideration any future projects and potential developments. These forecasts are developed outside of MetrixND.

### *3.2.5 Total Accounts Forecast*

The Total Account Forecast for Lakeland Electric is the sum of all the individual forecasts mentioned above.

## 3.3 Energy Sales Forecast

Lakeland Electric's Energy Sales Forecast is the sum of the following forecasts:

- Residential, Inside and Outside City Limits
- Commercial, Inside and Outside City Limits
- Industrial, Inside and Outside City Limits
- Other, Inside and Outside City Limits

### *3.3.1 Residential Energy Sales Forecast*

The Residential energy sales forecast is developed using the Statistically Adjusted End-Use (SAE) econometric modeling approach.

The residential sales models are estimated with historical monthly energy sales data. They are average use models based on the following equation:

$$AvgUse_{y,m} = b_0 + b_1\,XCool_{y,m} + b_2\,XHeat_{y,m} + b_3\,XOther_{y,m} + \varepsilon_{y,m}$$

Where $XCool_{y,m}$ , $XHeat_{y,m}$ and $XOther_{y,m}$ are explanatory variables constructed from weather data, end use equipment efficiency and saturation trends, economic and demographic data, dwelling type (single family, multi family or mobile home) and square footage.

For example, *XCool* incorporates cooling equipment saturation levels, cooling equipment efficiency, thermal efficiency, thermal integrity and square footage by dwelling type, household income, persons per household, price of electricity and CDDs.

This cooling variable is represented by the product of an end use equipment index and a monthly usage multiplier.

That is,

$$XCool_{y,m} = CoolIndex_y \times CoolUse_{y,m}$$

*Where*

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

The $CoolIndex_{y,m}$ is calculated as follows:

$$CoolIndex_y = Structural\ Index_y \times \sum_{Type} Weight^{Type} \times \frac{\left( Saturation_y^{Type} \big/ Efficiency_y^{Type} \right)}{\left( Satataturation_Y^{Type} \big/ Efficiency_Y^{Type} \right)}$$

*Where*

The *StructuralIndex* is constructed by combining the EIA's building shell efficiency index trends with surface area estimates, indexed to the base year value:

$$StructuralIndex_y = \frac{BuildingShellEfficiencyIndex_y \times SurfaceArea_y}{BuildingShellEfficiencyIndex_Y \times SurfaceArea_Y}$$

*Type* is the cooling equipment type (Room Air Conditioning, Central Air Conditioning, Air Source Heat Pump, Ground Source Heat pump). Currently, the base year *Y* in the EFG residential end use energy projections is 2015.

$CoolUse_{y,m}$ is defined as follows:

$$CoolUse_{y,m} = \left(\frac{CDD_{y,m}}{CDD_Y}\right) \times \left(\frac{HHSize_{y,m}}{HHSize_Y}\right)^{\alpha} \times \left(\frac{HHIncome_{y,m}}{HHIncome_Y}\right)^{\beta} \times \left(\frac{Price_{y,m}}{Price_Y}\right)^{\gamma}$$

*Where*

*HHSize* is average household size (persons per household)

*HHIncome* is average income per household

$\alpha$ , $\beta$ , $\gamma$ are the elasticities

*Y* is the Base Year

The *XHeat* variable is constructed in the same manner as the XCool variable, with cooling equipment replaced by heating equipment and CDDs replaced by HDDs. The heating equipment types used to construct the XHeat variable are furnace, air-source heat pump, ground-source heat pump, secondary heating and furnace fans.

The corresponding $HeatUse_{y,m}$ variable is defined as follows:

$$HeatUse_{y,m} = \left(\frac{HDD_{y,m}}{HDD_Y}\right) \times \left(\frac{HHSize_{y,m}}{HHSize_Y}\right)^{\alpha} \times \left(\frac{HHIncome_{y,m}}{HHIncome_Y}\right)^{\beta} \times \left(\frac{Price_{y,m}}{Price_Y}\right)^{\gamma}$$

The *XOther* variable includes the equipment types that are not influenced by weather and constitute the base load portion of residential energy consumption. The equipment types included are electric water heating, electric cooking, refrigerator, freezer, dishwasher, electric clothes washer, electric clothes dryer, television, lighting and miscellaneous electric appliances.

The corresponding $OtherUse_{y,m}$ variable is defined as follows:

$$OtherUse_{y,m} = \left(\frac{BDays_{y,m}}{30.44}\right) \times \left(\frac{HHSize_{y,m}}{HHSize_{Y}}\right)^{\alpha} \times \left(\frac{HHIncome_{y,m}}{HHIncome_{Y}}\right)^{\beta} \times \left(\frac{Price_{y,m}}{Price_{Y}}\right)^{\gamma}$$

Instead of a weather variable, the OtherUse formula contains a BDays variable, which represents the number of billing days in year (y) and month (m). These values are normalized by 30.44, the average number of days in a month.

The equation used to develop the total residential energy sales forecast is:

$$ResidentialSales_{y,m} = ResidentialCustomer_{y,m} \times AverageUsePerCustomer_{y,m}$$

### 3.3.2 Commercial Energy Sales

As mentioned in section 3.2.2, there is an increase in rate migration between the GSLD and Commercial rate classes due to energy efficiency. Therefore, a combined Commercial and GSLD energy sales model is generated. This model is developed using the SAE modeling approach for Commercial building types using EFG projections derived from EIA data. The Commercial sales model is driven by Gross Regional Product, price of electricity, number of households, weather, commercial building type, appliance saturations and efficiencies. Binary variables are used to help explain fluctuations in historical billing data due to rate migrations, billing discrepancies, seasonality and other factors that may affect the accuracy of the forecast models.

The Commercial SAE model framework defines energy use in a year as the sum of energy used by the heating equipment, cooling equipment and other equipment. The formal model equation is:

$$USE_{y,m} = b_0 + b_1 \times XCool_{y,m} + b_2 \times XHeat_{y,m} + b_3 \times XOther_{y,m} + \varepsilon_{y,m}$$

Where $XCool_{y,m}$ , $XHeat_{y,m}$ and $XOther_{y,m}$ are explanatory variables constructed from weather data, end use equipment efficiency and saturation trends, economic projections, commercial building type and square footage.

The $XCool_{y,m}$ variable is the amount of energy used by cooling systems and is defined as:

$$XCool_{y,m} = CoolIndex_y \times CoolUse_{y,m}$$

*Where*

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

The cooling equipment index depends on equipment saturation levels (*CoolShare*) normalized by operating efficiency levels (*Efficiency*):

$$CoolIndex_y = CoolSales_Y \times \frac{\left({CoolShare_y}/{Efficiency_y}\right)}{\left({CoolShare_Y}/{Efficiency_Y}\right)}$$

Base year cooling sales are defined as:

$$CoolSales_Y = \left(\frac{kWh}{Sqft}\right)_{Cooling} \times \left(\frac{CommercialSales_Y}{\sum_e^{kWh}/Sqft_e}\right)$$

Base-year cooling sales are the product of the average space cooling intensity value and the ratio of the total commercial sales in the base year over the sum of the end use intensity values.

The monthly Commercial *CoolUse* variable is computed as:

$$CoolUse_{y,m} = \left(\frac{CDD_{\ y,m}}{CDD_{\ Y}}\right) \times \left(\frac{EconVar_{\ y,m}}{EconVar_{\ Y}}\right)^{\alpha} \times \left(\frac{Price_{\ y,m}}{Price_{\ Y}}\right)^{\beta}$$

Where

*EconVar* is a function of Household growth and Gross Regional Product

*α, β* are elasticities

The *XHeat* variable has the same structure as the *XCool* variable, with cooling equipment replaced by heating equipment, and CDDs replaced by HDDs. The corresponding monthly $HeatUse_{y,m}$ variable is defined as:

$$HeatUse_{y,m} = \left(\frac{HDD_{\ y,m}}{HDD_{\ Y}}\right) \times \left(\frac{EconVar_{\ y,m}}{EconVar_{\ Y}}\right)^{\alpha} \times \left(\frac{Price_{\ y,m}}{Price_{\ Y}}\right)^{\beta}$$

The *XOther* variable is also similar in struture to the XCool variable, and replaces cooling equipment with other equipment (ventilation, electric water heating, cooking equipment, refrigeration, lighting, office equipment and miscellaneous equipment). Instead of a weather variable there is a *BDays* variable, which represents the number billing days in year (y) and month (m), normalized by 30.44 days (the average number of billing days in a month.)

The corresponding $OtherUse_{y,m}$ variable is defined as:

$$OtherUse_{y,m} = \left(\frac{BDays_{\ y,m}}{30.44}\right) \times \left(\frac{EconVar_{\ y,m}}{EconVar_{\ Y}}\right)^{\alpha} \times \left(\frac{Price_{\ y,m}}{Price_{\ Y}}\right)^{\beta}$$

### *3.3.3 Industrial Energy Sales*

While the GSLD demand and energy sales are forecast in combination with Commercial energy sales, the remainder of the Industrial class – the INT and ELDC rate classes - are modeled independently of the SAE methodology. Each INT and ELDC customer is evaluated individually to account for their expected future energy and demand consumption, using average historical growth rates, monthly demand and expected future changes to load based on information provided by various sources, including account managers, LE engineering, local news and informed judgement.

### *3.3.4 Other Sales Forecast*

The Other energy sales forecast consists of sales for the City's Municipal, Electric and Water Departments, private area lighting, roadway lighting and unmetered street lighting rate classes. Models are difficult to develop for these rate classes due to the large fluctuations in the historical billing data. Therefore, the projections for this category are based on historical trends and growth rates. Special consideration is given to account for new projects and potential developments.

### *3.3.5 Total Sales Forecast*

The results of the energy sales forecasts for all revenue classes are added together to create a total sales forecast.

Lakeland Electric currently does not have any energy efficiency goals, therefore LE does not assume any deductions in peak load for the forecast period.

## 3.4 Net Energy for Load Forecast

A loss factor of approximately 2.4% is applied to convert total energy sales to Net Energy for Load (NEL). The loss factor is developed using a historical average of the estimated amount of energy lost during the generation, transmission and distribution while delivering energy to the customers.

## 3.5 Peak Demand Forecast

A regression model is estimated in MetrixND to forecast monthly peaks. The model is developed using Itron's SAE modeling approach to ensure that end-use appliance saturations and efficiencies that may affect peak are being accounted for. The models are driven by monthly energy coefficients and normal peak-producing weather conditions.

The winter peak forecast is developed under the assumption that its occurrence will be on a January weekday. Historical winter peaks have occurred between the months of December to March, between the hours of **7** a.m. and 9 a.m. Temperatures at time of winter peaks range from 19° F to 51° F.

The summer peak forecast is developed under the assumption that its occurrence will be on a July weekday. Historical summer peaks have occurred between the months of June to September, on weekdays, and between the hours of 3 p.m. and 6 p.m. Temperatures at time of summer peaks range from 90° F to 101° F.

## 3.6 Hourly Load Forecast

Twenty-four hourly regression models are developed in MetrixND to generate the 20 year hourly load shape. Each of these models relates weather and calendar conditions (day-of-week, month, holidays, seasonal periods, etc.) to load. The uncalibrated hourly load shape is then scaled to the energy forecast and the peak forecast using MetrixLT. The result is an hourly load shape that is calibrated to the system energy and system peak forecasts produced using MetrixND.

## 3.7 Sensitivity Cases

### *3.7.1 High & Low Load Forecast Scenarios*

A forecast is generated based on the projections of its drivers and assumptions at the time of forecast development. This base forecast (50/50) is intended to represent the forecast that is "most likely" to occur.

There may be some conditions arising that may cause variation from what is expected in the base forecast. For these reasons, high and low case scenario forecasts are developed for customers, energy sales, system net energy for load and peaks. The high and low forecasts are based on variations of the primary drivers including population and economic growth.

**Model Evaluation and Statistics**

The results of the Electric Load and Energy Forecast are reviewed by an outside consultant. Itron is contracted to review all sales, customer, peak and energy forecast models for reasonableness and statistical significance. Itron also evaluates and reviews all key forecast assumptions.

Additionally, the MetrixND software is used to calculate statistical tests for determining a significant model, including Adjusted R-Squared, Durbin-Watson Statistic, F-Statistic, Probability (F-Statistic), Mean Absolute Deviation (MAD) and Mean Absolute Percentage Error (MAPE).

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# 4.0 Energy Conservation & Management Programs

Lakeland Electric is committed to the efficient use of electric energy and provide cost effective energy conservation and demand reduction programs for all of its consumers. Lakeland Electric is not subject to the Florida Energy Efficiency and Conservation Act (FEECA) rules but has in place several Energy Conservation & Management Programs and remains committed to utilize cost effective conservation and Energy Conservation & Management Programs that will benefit its customers. Presented in this section are the currently active energy efficiency programs.

## *4.1 Conservation Programs 2021*

In keeping with Lakeland Electric's plan to promote retail conservation programs, the utility is continuing the following Energy Efficiency & Conservation Programs during 2021:

**Residential**

- Insulation rebate - $200 rebate for adding attic insulation to achieve R30 total. Certificate issued to resident at energy audit/visit and redeemed to Insulation Contractor. Can be homeowner installed.
- Energy Saving Kits – giveaway at audits contains weather-stripping, outlet gaskets, low flow showerhead, LED, etc.
- HVAC Maintenance Incentive - $50 rebate for residential customers that have A/C maintenance done.
- Heat Pump Rebate - $300 rebate for installing a SEER 15 or higher heat pump
- LED Lighting – giveaway at audits, up to 3 per residence
- On-line Energy Audit
- Energy Star Appliance Rebates

**Commercial**

- Conservation Rebate – rebate of $150/kW for GSLD, Contract, and Interruptible customers that make energy efficiency improvements. Promoted by Account Executives.
- Commercial Lighting – rebate of $150/kW reduced per customer for energy efficient lighting upgrades.

**Estimated Demand and Energy Savings for FY 2021**

- 2.0 MW demand reduction and over 3,543 MWhs

## 4.2 Solar Program Activities

Lakeland Electric considers solar photovoltaic (PV) system as distributed generators irrespective of their connection to the grid. Solar being available during the day time, it contributes to reduce system peak demand/energy, linking it to energy conservation & management programs.

### *4.2.1 Utility Interactive Net Metered Photovoltaic Systems*

As of December 2020, there were approximately 530 PV systems that had been privately owned in the Lakeland Electric service territory. These systems now generate a total of about 4,000 kW of electric capacity. Lakeland Electric has allowed the interconnection of these systems in a "net meter" fashion.

### *4.2.2 Utility Scale Solar PV Program*

During November 2007, Lakeland Electric issued a Request for Proposal seeking an investor to purchase and install investor owned PV systems totaling 24 MW on customer owned sites as well as City of Lakeland properties. During December 2007, a successful bidder was identified, and installation of the following PV systems began:

- Lakeland Electric's first Solar Energy Purchase Agreement (SEPA) was signed on July 21, 2009 for an investor-owned 250 kW PV system for a twenty-year commitment. The roof top system began commercial operation at the RP Funding Center on April 4, 2010.
- Phase I solar array is installed at the Lakeland Linder Airport with a SEPA that was initiated on November 9, 2010. This 2.25 MW PV system began operation on December 22, 2011, for a twenty-five-year term.
- Phase II of the Lakeland Linder Airport site is located off Hamilton Road and began shortly after Phase I. The SEPA for Phase II was initiated on December 9,

2010. Phase II is a 2.75 MW PV system that began operation on September 16, 2012, for a twenty-five-year term.

- Phase III, is the most recent solar array added to the Lakeland Linder Airport site and is located off Medulla Road. Lakeland Electric entered into a SEPA on March 2, 2015, for 3.15 MW PV. This solar array operation began on December 21, 2016, for a twenty-five-years term.
- Lakeland entered into a SEPA with a solar vendor on November 25, 2013, for a 6.0 MW PV system located adjacent to the Sutton substation. The facility is commonly referred to as Birdblue or by the road intersection Bellavista/Sutton. It began generating power on July 6, 2015
- Lakeland issued an RFP (Request for Proposal) in the 4$^{th}$ quarter of 2020, requesting 50-74 MW of utility scale solar as a PPA to be in service in 2023. The RFP also includes an option for 5-10 MW of battery storage to be used as possible peak shaving or demand response program. The RFP responses are currently being evaluated.

In total, Lakeland Electric has 14.4 MW of solar capacity and has the potential to produce approximately 2% of the average daytime system-wide summer load. Total production is approximately 25,000 MWHs annually.

### *4.2.3 Utility Solar Water Heating Program*

During November 2007, LE issued a RFP for the expansion of its Residential Solar Water Heating Program. In this solicitation, Lakeland sought the services of a venture capital investor who would purchase, install, own, operate and maintain 3,000 – 10,000 solar water heaters on LE customers' residences in return for a revenue sharing agreement. LE would provide customer service and marketing support, along with meter reading, billing and collections. During December 2007, a successful bidder was identified and notified. In August 2009, LE approved a contract with the vendor with plans to resume installations of solar water heaters. Annual projected energy savings from this project will range between 7,500 and 25,000 MWh. These solar generators will also produce

Renewable Energy Credits that will contribute toward Florida's expected mandate for renewable energy as a part of the utility's energy portfolio.

During the summer of 2010, the "Solar for Lakeland" program began installing residential solar water heaters. Under this expanded program, the solar thermal energy was sold for the fixed monthly amount of $34.95. All solar heating systems continued to be metered for customers' verification of solar operation and for tracking green credits for the utility. Through the end of 2017, there were 259 solar heaters installed in Lakeland residences. The water heaters are currently being installed by the vendors for the residential customers in Lakeland.

### *4.2.4 Renewable Energy Credit Trading*

Lakeland Electric Renewable Energy Credits (REC) are produced from its five, long term, solar power purchase power agreements that have combined name plate capacity of 14.4 MW.

In January of 2019, Lakeland Electric set up an account with the North American Renewable Registry to start trading its solar RECs classified as Green-e-Eligible. A REC is created for every (1) Megawatt-hour of renewable electricity generated and delivered to the utility grid.

The utility's 2021 fiscal year forecast for an average of 25,000 RECs and a REC can sell for between $1.00 and $2.00 in the state of Florida.

# 5.0 Forecasting Method and Procedures

This section describes Lakeland's long-term Integrated Resource Planning (IRP) process in which economic and fuel parameters are the major drivers to develop a long-term plan that helps to develop a portfolio that focuses on a best forward path for Lakeland Electric. This chapter also explains the position of Florida Municipal Power Pool (FMPP) for economy energy purchase and sales plus the fuel supply arrangement and fuel price projections being used in the current resource planning process.

## 5.1 Integrated Resource Plan

In addition to the Ten -Year Site Plan process, Lakeland Electric utilizes an IRP process for meeting 10 to 20 years of forecasted energy demand plus reserve capacity through a combination of supply and demand-side resources along with economy energy purchase from FMPP while meeting the objectives of environmental responsibility, reliability and affordable cost. The IRP evaluates the risks and uncertainties related to regulation, marketplace and technologies based on known information and assumptions.

## 5.2 Florida Municipal Power Pool

Lakeland Electric is a member of the Florida Municipal Power Pool (FMPP) along with the Orlando Utilities Commission (OUC) and the Florida Municipal Power Agency (FMPA). The three utilities operate as one Balancing Authority (BA). All FMPP generating units are committed and dispatched together ensuring economic dispatch and reliability to the entire FMPP BA.

The FMPP is not a capacity pool meaning that each member must plan for and maintain sufficient capacity to meet their own individual electric demand and operating reserve obligations. Any member of the FMPP can withdraw from FMPP with a three-year written notice. Lakeland, therefore, must ultimately plan to meet its own load and reserve requirements as reflected in this document. Each member participates in daily energy purchase and sales activities through the FMPP as all units are dispatched in economic order. This provides opportunity for a member to purchase economy energy when available from other members.

## 5.3 Economic Parameters

Subsections of 5.3 present the assumed values adopted for economic parameters used in Lakeland Electric's planning process. The assumptions stated in this section are applied consistently throughout this document.

### *5.3.1 Inflation Rate*

The general inflation rate applied is assumed to be 2.0 percent, per year, based on the Congressional Budget Office's projection for the Gross Domestic Product deflator as of February 2021.

### *5.3.2 Bond Interest Rate*

Consistent with the traditional tax-exempt financing approach used by Lakeland, the self-owned supply-side alternatives assume 100 percent debt financing. Lakeland's long-term tax-exempt bond interest rate is assumed to be 4.0 percent.

### *5.3.3 Present Worth Discount Rate*

The present worth discount rate used in the analysis is set equal to Lakeland's assumed bond interest rate of 4.0 percent.

### *5.3.4 Interest During Construction*

During construction of the plant, progress payments will be made to the EPC contractor and interest charges will accrue on loan draw downs. The interest during construction rate is assumed to be 4.0 percent.

### *5.3.5 Fixed Charge Rate*

The fixed charge rate is the sum of the project fixed charges as a percent of the project's total initial capital cost. When the fixed charge rate is applied to the initial investment, the product equals the revenue requirements needed to offset fixed costs for a given year. A separate fixed charge rate can be calculated and applied to each year of an economic analysis, but it is most common to use a Levelized Fixed Charge Rate that has the same present value as the year by year fixed charged rates. Included in the fixed charged rate calculation is an assumed 0.7 percent issuance fee, a 0.0 percent annual insurance cost, and there is no 6 months' debt reserve for Lakeland.

## *5.4 Fuel Parameters*

Subsections of 5.4 below outline the basic fuel assumptions and fuel delivery arrangement for Lakeland.

### *5.4.1 Natural Gas*

Natural gas is a colorless, odorless fuel that burns cleaner than many other traditional fossil fuels. Natural gas can be used for heating, cooling, and production of electricity and other industrial uses.

Natural gas is found in the Earth's crust. Once the gas is brought to the surface, it is refined to remove impurities such as water, sand and other gases. The natural gas is then transported through pipelines and delivered to the customer either directly from the pipeline or through a distribution company or utility.

#### *5.4.1.1 Natural Gas Supply and Availability*

Significant natural gas reserves exist, both in the United States and throughout the North American mainland and coastal regions. Natural gas reserves are mostly dependent on domestic production. Production of natural gas from the Marcellus and Haynesville areas has increased due to advanced drilling technology which has lowered cost contributing to increased supply which reduces price volatility seen in recent years. During 2020, natural gas trading has averaged around $2.020 per MMBtu and the five-year NYMEX Henry Hub Natural Gas forward curve is projecting the price to continue to average around $2.672 per MMBtu.

### *5.4.1.2 Natural Gas Transportation*

There are now three transportation companies serving Peninsular Florida. Florida Gas Transmission Company (FGT), Sabal Trail Transmission, and Gulfstream Natural Gas System (GNGS). Lakeland Electric has interconnections and service agreements with GNGS and FGT to provide diversification and flexibility in gas delivery.

#### *5.4.1.2.1 Florida Gas Transmission Company*

FGT is an open access interstate pipeline company transporting natural gas for third parties through its 5,000 mile pipeline system extending from South Texas to Miami, Florida.

The FGT pipeline system accesses a diversity of natural gas supply regions, including:

- Anadarko Basin (Texas, Oklahoma, and Kansas)
- Arkona Basin (Oklahoma and Arkansas)
- Texas and Louisiana Gulf Areas (Gulf of Mexico)
- Black Warrior Basin (Mississippi and Alabama)
- Louisiana – Mississippi – Alabama Salt Basin

FGT's total receipt point capacity is in excess of 3.0 billion cubic feet per day and includes connections with 12 interstate and 12 intrastate pipelines to facilitate transfers of natural gas into its pipeline system. FGT reports a current delivery capability to Peninsular Florida of approximately 3.1 billion cubic feet per day. Lakeland Electric currently has in excess of 28,000 MMBtu/day of firm transportation with FGT for natural gas delivery to its generation facilities.

### *5.4.1.2.2 Florida Gas Transmission market area pipeline system*

The FGT multiple pipeline system corridor enters the Florida Panhandle in northern Escambia County and runs easterly to a point in southwestern Clay County, where the pipeline corridor turns southerly to pass west of the Orlando area. The mainline corridor then turns to the southeast to a point in southern Brevard County, where it turns south generally paralleling Interstate Highway 95 to the Miami area. A major lateral line (the St. Petersburg Lateral) extends from a junction point in southern Orange County westerly to terminate in the Tampa, St Petersburg and Sarasota area. A major loop corridor (the West Leg Pipeline) branches from the mainline corridor in southeastern Suwannee County to run southward through western Peninsular Florida to connect to the St. Petersburg Lateral system in northeastern Hillsborough County. Each of the above major corridors include stretches of multiple pipelines (loops) to provide flow redundancy and transport capability. Numerous lateral pipelines extend from the major corridors to serve major local distribution systems and industrial/utility customers.

FGT's Phase VIII Expansion Project came into full operation April 1, 2011. It consists of approximately 483.2 miles of multi diameter pipeline in Alabama, Mississippi and Florida with approximately 365.8 miles built parallel to existing pipelines. The project added 213,600 horsepower (HP) of additional mainline compression. One new compressor station was built in Highlands County, Florida. The project provides an annual average of 820,000 MMBtu/day of additional firm transportation capacity.

### *5.4.1.2.3 Gulfstream pipeline*

The Gulfstream pipeline is a 744 mile pipeline originating in the Mobile Bay region and crossing the Gulf of Mexico to a landfall in Manatee County (south Tampa Bay). The pipeline supplies Florida with up to 1.1 billion cubic feet of gas per day serving existing and prospective electric generation and industrial projects in southern Florida. Phase I of the pipeline is complete and ends in Polk County, Florida. The pipeline extends to Florida Power & Light's Martin Plant. Construction for the Gulfstream pipeline began in 2001 and it was placed in service in May 2002. Phase II was completed in 2005. Lakeland Electric added an additional 10,000 MMBtus/day of Gulfstream Pipeline capacity during 2017, for a total of 50,000 MMBtus/day.

#### *5.4.1.2.4 Sabal Trail Transmission*

The Sabal Trail pipeline is a 515 miles interstate pipeline originating in Central Alabama and terminating in Central Florida. The pipeline's Phase 1 facilities began commercial service July 3, 2017. The Phase 1 capacity of the pipeline is 830,000 Dth/day.
Lakeland Electric is not currently a customer of Sabal Trail Transmission.

### *5.4.2 Coal*

While coal has been a long standing and reliable fuel used primarily for electric generation, many utilities are ceasing coal operations for a variety of reasons including environmental concerns, efficiency, and primarily economics. Lakeland Electric plans to stop production of electricity using coal at the end of March 2021. Lakeland Electric's McIntosh Unit No. 3 is a 365 MW coal burning generator placed into service in the early 1980's. Lakeland Electric is planning to replace this coal unit with a combination of solar and gas based units in the future.

#### *5.4.2.1 Coal supply and availability*

In the past, Lakeland Electric had coal contracts to serve the fuel requirements for the McIntosh Unit 3 coal generation facility. Since the plant is planned to cease operation at the end of March 2021, the contract with CSX has been be terminated.

### *5.4.3 Fuel Oil*

#### *5.4.3.1 Fuel oil supply and availability*

Lakeland Electric obtains all fuel oil through spot market purchases and has no long-term contracts. This strategy provides the lowest cost for fuel oil consistent with usage, current price stabilization and on-site storage. Lakeland Electric's Fuels Section continually monitors the cost effectiveness of spot market purchasing.

#### *5.4.3.2 Fuel Oil Transportation*

Although Lakeland Electric is not a large consumer of fuel oils, a small amount is consumed during operations for backup fuel and diesel unit operations. Fuel oil is transported to Lakeland by truck.

### *5.4.4 Fuel Price Projections*

This section presents the fuel price projections for coal, natural gas and oil. The fuel price forecast for solid fuel, oil and natural gas is prepared by Lakeland Electric's Fuels Department. The transportation inflation rate is based off the January 2020-2030 Congressional Budget Office (CBO) Gross Domestic Product inflation rate of 1.7% through 2023 and 1.8% from 2025 through 2030. The natural gas forecast uses a blended average from a consultant forecast and the New York Mercantile Exchange (NYMEX) natural gas forward curve along with including the following: transport rate, usage and fuel to provide a total delivered price. The oil prices use the ten-year NYMEX crude oil forward curve. The diesel oil forecast is, with respect to the percentage of growth, based off the Energy Information Administration's Annual Energy Outlook 2019.

#### *5.4.4.1 Natural gas price forecast*

The price forecast for natural gas is based on historical experience and future expectations for the market. The forecast takes into account the spot purchases of gas to meet its needs along with its risk management holdings intended to reduce price volatility. To address the historic volatility of the natural gas market, Lakeland Electric initiated a formal fuel hedging program in 2003. The Energy Authority (TEA), a company located in Jacksonville, FL, is Lakeland Electric's consultant assisting in the administration and adjustment of policies and procedures, as well as the oversight of the program.

Lakeland Electric purchases "seasonal" gas to supplement the base requirement and purchases "as needed" daily gas, known commonly as "spot gas", to round out its supply needs.

Natural gas transportation from FGT is currently supplied under three rates in FGT's tariff; FTS-1, FTS-2 and FTS-3. Rates in FTS-1 are based on FGT's Phase II expansion and rates in FTS-2 are based on the Phase III expansion. Rates in FTS-3 are based on the Phase VIII expansion, which went in service April 1, 2011[1]. The FTS-1 and FTS-2 rates have the same reservation rate, but the FTS-2 has a $0.10 surcharge added to it effective February 1, 2016 for 66 months as part of the November 2014 rate case settlement. Rates for the Phase IV, Phase V, and Phase VI are included in the FTS-2 rate structure. Transportation rates are reflected in Table 5-1. Once the surcharge expires, the FTS-1 and FTS-2 rate classes will merge as a result of the settlement of FGT's rate case. Lakeland's rate for FGT transportation decreased on an overall basis, as a result of the rate case, lowering the FTS-2 rate. Lakeland owns 67% of its FGT capacity proving a savings to our ratepayers. The FGT usage and fuel rates listed below are effective, September 1, 2020.

[1] Lakeland does not currently subscribe to any FTS-3 capacity.

Table 5-1
Natural Gas Tariff Transportation Rates

| Rates And Surcharges | Rate Schedules | | | | | |
|---|---|---|---|---|---|---|
| | FGT FTS-1 w/surcharges (cents/DTH)* | FGT FTS-2 w/surcharges (cents/DTH)* | **FGT FTS-3 w/surcharges (cents/DTH)* | FGT ITS-1 | Gulfstream FTS-1 | Gulfstream FTS-6% |
| Reservation | 53.18 | 63.18 | 132.99 | 96.57 | 55.763 | 70.41 |
| Usage | 4.15 | 4.15 | 2.82 | 0.00 | 0.0213 | 0.0068 |
| Total | 57.33 | 67.33 | 135.81 | 96.57 | 55.7813 | 70.4168 |
| Fuel Charge | 2.78% | 2.78% | 2.78% | 2.78% | 1.85% | 1.85% |

* A DTH is equivalent to 1 MMBtu or 1 MCF
** Lakeland does not currently subscribe to any FTS-3 Capacity

A combination rate of $0.62/MMBtu will be used for purposes of projecting delivered gas prices and transportation charges applied to existing units as this is the average cost for Lakeland to obtain natural gas transportation for those units. This average rate is realized through a current mix of FTS-1, FTS-2 and Gulfstream transportation, including consideration of Lakeland Electric's ability to relinquish its FTS and Gulfstream transportation or acquire other firm and interruptible gas transportation on the market. The delivered natural gas price is projected to remain relatively flat during the next five years The average delivered gas price forecast for the year 2020 is below $2.20/MMBtu.

### *5.4.4.3 Fuel Oil Price Forecast*

Changes in production levels and methods are placing oil prices at a lower level in the world market. Lakeland adjusts its oil price forecast to reflect current market pricing and what the anticipated future price may be.

### *5.4.5 Fuel Forecast Sensitivities*

Lakeland Electric is not conducting any specific forecasted fuel price sensitivity analysis at this moment.

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# 6.0 Forecast of New Capacity Requirements

## 6.1 Assessment of the Need for Additional Capacity

This section describes the process Lakeland Electric uses to assess the need for capacity under the principle of resource adequacy to serve Lakeland Electric's customers reliably in the future. The need for capacity is based on Lakeland Electric's load forecast, FRCC and FMPP's reserve margin requirements, existing generating, plus planned new generation and less planned retirement of generation capacity.

### *6.1.1 Load Forecast*

The load forecast described in Section 3.0 is used to determine the need for capacity. A summary of the annual peak load forecast for winter and summer for base case (i.e., reference) scenario are presented in Tables 6-1 and 6-2.

### *6.1.2 Reserve Requirements*

Prudent utility planning requires that utilities secure firm generating resources over and above the expected peak system demand to account for unanticipated demand levels and supply constraints. Several methods of estimating the appropriate level of reserve capacity are used. A commonly used approach is the reserve margin method, which is calculated as follows:

$$\frac{\text{System net capacity - System net peak demand}}{\text{System net peak demand}}$$

Lakeland Electric has looked at probabilistic approaches to determine its reliability needs in the past. These have included indices such as Loss of Load Probability (LOLP) and Expected Unserved Energy (EUE). Lakeland Electric has found that due to the strength of its transmission system, and interconnection with neighboring utilities, operation within FMPP, LOLP and EUE values were so small in the past that reserve margin based reliability measures would be sufficient at this time.

Conversely, isolated probabilistic values come out overly pessimistic calling for excessively high levels of reserves due to more than 50% of Lakeland Electric's capacity being made up by only two units. As a result, Lakeland Electric has stayed with the reserve margin method based on the equation presented above. When combined with regular review of unit performance at times of system peak, Lakeland Electric finds reserve margin to be a proper reliability measure for its system.

### *6.1.3 Existing Generation and Retirements*

Generation availability is reviewed annually and is found to be within industry standards for the types of units that Lakeland Electric has in its fleet, indicating adequate and prudent maintenance is taking place.

Lakeland Electric plans to retire McIntosh Unit #3 by the end of March, 2021. Lakeland plans to add a combination of solar and multiple units of smaller and flexible gas based generation to replace Unit #3 in the long run. This will help to improve the reliability in Lakeland System. In the short run, Lakeland is planning to make a firm capacity and energy contract with the OUC to cover its need of 15% capacity reserve margin requirement.

## *6.2 Additional Capacity and Reserve Margins*

As discussed in Section 6.1.2 above, by comparing Lakeland Electric's load forecast plus reserves with firm supply, the Reserve Margins can be identified. Lakeland Electric's Reserve Margins are presented in Tables 6-1 and 6-2. The Net Generating Capacity includes the planned 120 MW new gas turbine, McIntosh Unit Gas Turbine 2 at McIntosh Power Plant in 2020, and is less 106 MWs due to the retirement of McIntosh Unit 2 after the new gas turbine became commercial. The new gas turbine added to Lakeland Electric's portfolio of resources will assure additional reliability.

Lakeland Electric's winter and summer reserve margin target is currently 15%. Tables 6-1 and 6-2 indicate that using the base winter and summer forecast, Lakeland Electric's Reserve Margins are greater than 15% during the current ten year planning period. This complies with the Florida Reliability Coordinating Council's (FRCC) minimum reserve margin criteria in the FRCC Region in terms of reliability requirement.

As Lakeland Electric's needs and fleet of resources continue to change through time, reserve margin levels will be reviewed and adjusted as appropriate.

Table 6-1
Projected Reliability Levels - Winter / Base Case

| | | | | | System Peak Demand | | Reserve Margin | | Excess(Deficit) to Maintain 15% Reserve Margin | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | Net Generating Capacity | Net System Purchases | Net System Sales | Net System Capacity | Before Interruptible and Load Management | After Interruptible and Load Management | Before Interruptible and Load Management | After Interruptible and Load Management | Before Interruptible and Load Management | After Interruptible and Load Management |
| | MW | MW | MW | MW | MW | MW | % | % | MW | MW |
| 2021/22 | 709 | 125 | 0 | 834 | 677 | 677 | 23% | 23% | 55 | 55 |
| 2022/23 | 709 | 125 | 0 | 834 | 682 | 682 | 22% | 22% | 50 | 50 |
| 2023/24 | 809 | 0 | 0 | 809 | 689 | 689 | 17% | 17% | 17 | 17 |
| 2024/25 | 809 | 0 | 0 | 809 | 691 | 691 | 17% | 17% | 14 | 14 |
| 2025/26 | 809 | 0 | 0 | 809 | 695 | 695 | 16% | 16% | 10 | 10 |
| 2026/27 | 809 | 0 | 0 | 809 | 699 | 699 | 16% | 16% | 5 | 5 |
| 2027/28 | 809 | 15 | 0 | 824 | 706 | 706 | 17% | 17% | 12 | 12 |
| 2028/29 | 809 | 15 | 0 | 824 | 708 | 708 | 16% | 16% | 10 | 10 |
| 2029/30 | 809 | 15 | 0 | 824 | 711 | 711 | 16% | 16% | 6 | 6 |
| 2030/31 | 809 | 15 | 0 | 824 | 714 | 714 | 15% | 15% | 3 | 3 |

Table 6-2
Projected Reliability Levels - Summer / Base Case

| | | | | | System Peak Demand | | Reserve Margin | | Excess(Deficit) to Maintain 15% Reserve Margin | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | Net Generating Capacity | Net System Purchases | Net System Sales | Net System Capacity | Before Interruptible and Load Management | After Interruptible and Load Management | Before Interruptible and Load Management | After Interruptible and Load Management | Before Interruptible and Load Management | After Interruptible and Load Management |
| | MW | MW | MW | MW | MW | MW | % | % | MW | MW |
| 2021 | 665 | 132 | 0 | 797 | 656 | 656 | 21% | 21% | 43 | 43 |
| 2022 | 665 | 132 | 0 | 797 | 661 | 661 | 21% | 21% | 37 | 37 |
| 2023 | 665 | 132 | 0 | 797 | 663 | 663 | 20% | 20% | 35 | 35 |
| 2024 | 765 | 32 | 0 | 797 | 668 | 668 | 19% | 19% | 29 | 29 |
| 2025 | 765 | 32 | 0 | 797 | 671 | 671 | 19% | 19% | 25 | 25 |
| 2026 | 765 | 32 | 0 | 797 | 674 | 674 | 18% | 18% | 22 | 22 |
| 2027 | 765 | 32 | 0 | 797 | 678 | 678 | 18% | 18% | 17 | 17 |
| 2028 | 765 | 32 | 0 | 797 | 683 | 683 | 17% | 17% | 12 | 12 |
| 2029 | 765 | 32 | 0 | 797 | 687 | 687 | 16% | 16% | 7 | 7 |
| 2030 | 765 | 32 | 0 | 797 | 691 | 691 | 15% | 15% | 2 | 2 |

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# 7.0 Environmental and Land Use Information

As discussed in Section 6, Lakeland Electric added a new 120 MW gas turbine in 2020 at Lakeland Electric's McIntosh Power Plant. "Preferred Site" information of the Plant site is presented in Table 7-1.

Per the Ten Year Site Plan definitions (rule 25-22-072), "Preferred Sites" include sites where a utility has taken action to site a new generation.

Table 7-2 summarizes different control strategies adopted to comply with various environmental emissions for existing major generating units.

All existing units are fully permitted and meet all regulatory requirements.

Lakeland Electric will meet or exceed all State and Federal environmental standards.

[See Table 7-1 on next page]

| Table 7-1<br>Preferred Site Report for McIntosh Power Plant<br>(McIntosh GT2) | | |
|---|---|---|
| a. | U.S. Geological Survey map | See attached figures. |
| b. | Map - general layout of preferred site facilities | |
| c. | Map - preferred site and adjacent areas | |
| d. | Description - existing land use preferred site and adjacent areas | Electrical generating facilities; low density rural, transportation, communication, utilities, commercial, water and conservation. |
| e. | Description - general vicinity environmental features | Former phosphate mined land that is predominately dry scrub uplands. Conservation lands, natural lakes, man-made water bodies, wetlands are also present. |
| $e_1$. | Description - natural environment | Site is comprised of facilities related to power generation. |
| $e_2$. | Description - Endangered animal and plant species | Listed animal species observed within and adjacent to the site include two avian species, little blue heron (Egretta caerulea) and wood stork (Mycteria americana). No adverse impacts to listed avian species are anticipated as a result of construction and operation of the Project. |
| $e_3$. | Statement - designated as significant natural resource | No natural resources of regional significance status at or adjacent to the site. |
| $e_4$. | Description - preferred site significant features | Lakeland Electric is not aware of any other significant features of the site. |
| f. | Description - Design features of preferred site | The project design includes an approximately 120 MW simple cycle, natural gas-fired combustion turbine (CT) generating unit and site stormwater system. |
| g. | Description - land use designations of site and adjacent areas. | The site is zoned General Industrial. |
| h. | Description - criteria used in site selection | The McIntosh plant has been selected as a preferred site due to consideration of various factors including system load and economics. Environmental issues were not a deciding factor since this site does not exhibit significant environmental sensitivity or other environmental issues. The project at this existing site will not require a new gas pipeline and will make use of the existing transmission facilities and water supply. |
| i. | Description - existing ground and surface water resources of preferred site and adjacent areas | Since this is simple cycle unit cooling water will not be needed. Process water for the operation of water injection system (for NOx control) will come from the existing water supply sources (City of Lakeland). |
| j. | Description - geological features, preferred site and adjacent areas. | Geologic units present near the MPP consist of (in descending order; youngest to oldest):<br>- Holocene to Pliocene-age sands and clays<br>- Miocene to Oligocene-age Hawthorn Group clayey-sand soils<br>- Older units, comprised primarily of limestone and/or dolostone, include the Suwannee Limestone, Ocala Limestone, Avon Park Formation, and Oldsmar Formation. |
| k. | Description - projected quantities of water needs | No new sources or additional quantities of water will be needed for the project. Existing water quantities will be reallocated to meet the needs of the project. |
| l. | Description - potential water supply sources | Process water: As existing, City of Lakeland<br>Potable water: As existing, City of Lakeland |
| m. | Description - available water conservation strategies | No additional water resources are required beyond current usage. |
| n. | Description - potential water pollution control | Best Management Practices will be employed to prevent and control inadvertent release of pollutants. |
| o. | Description - proposed fuel delivery, storage, disposal facilities | Natural gas will be transported via an existing pipeline. Ultra low sulfur diesel (ULSD) will be trucked to the facility and stored in the existing ULSD storage tank. |
| p. | Estimates - air emissions and control systems | Fuel: Use of cleaner natural gas and ULSD.<br>Water injection will be used to reduce NOx emissions. |
| q. | Estimates - noise and description potential | Noise from the operation of the new unit will be within allowable levels. |
| | | |
| r. | Status of application for certification of the preferred site with the DEP | Minor (non-PSD) Air Construction Permit received on July 23, 2018.<br>Environmental Resource Permit received on February 8, 2019. |

[See Table 7-2 on next page]

Table 7-2
Lakeland Electric
Existing Generating Facilities
Environmental Considerations for Major Generating Units

| Plant Name | Unit (Type) | Fuel | | Air Pollutants and Control Strategies | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Primary | Alt. | PM | SO2 | Nox | CO | Cooling Type |
| Charles Larsen Memorial | 8 (CC) | NG | DFO | None | LS | LNB<br>WI | None | OTF |
| C.D. McIntosh, Jr. | GT2 (GT) | NG | DFO | None | LS | WI | None | N/A |
| | 3 (ST) | Coal | --- | ESP | FGD | LNB<br>OFA<br>SCR | None | WCTM |
| | 5 (CC) | NG | --- | None | LS | LNB<br>SCR | OC | WCTM |
| Winston | 1-20 (IC) | DFO | --- | None | LS | OFA | OC | N/A |

PM Particulte matter
SO2 Sulfur dioxide
NOX Nitrogen oxides
CO Carbon monoxide
LS Low sulfur fuel
LNB Low Nox burners
WI Water injections
ST Steam turbine
OTF Once-through flow
FGR Flue gas recirculation
IC Internal combustion
NG Natural Gas
WCTM Water cooling tower mechanical
ESP Electrostatic precipitator
CC Combined Cycle
FGD Flue gas desulfurization
OFA Overfire air
SCR Selective catalytic reduction
GT Combustion Gas turbine
OC Oxidation catalyst
DFO Distilate Fuel oil
Alt Alterenate

Source: Lakeland Environmental Staff

Figure 7-1

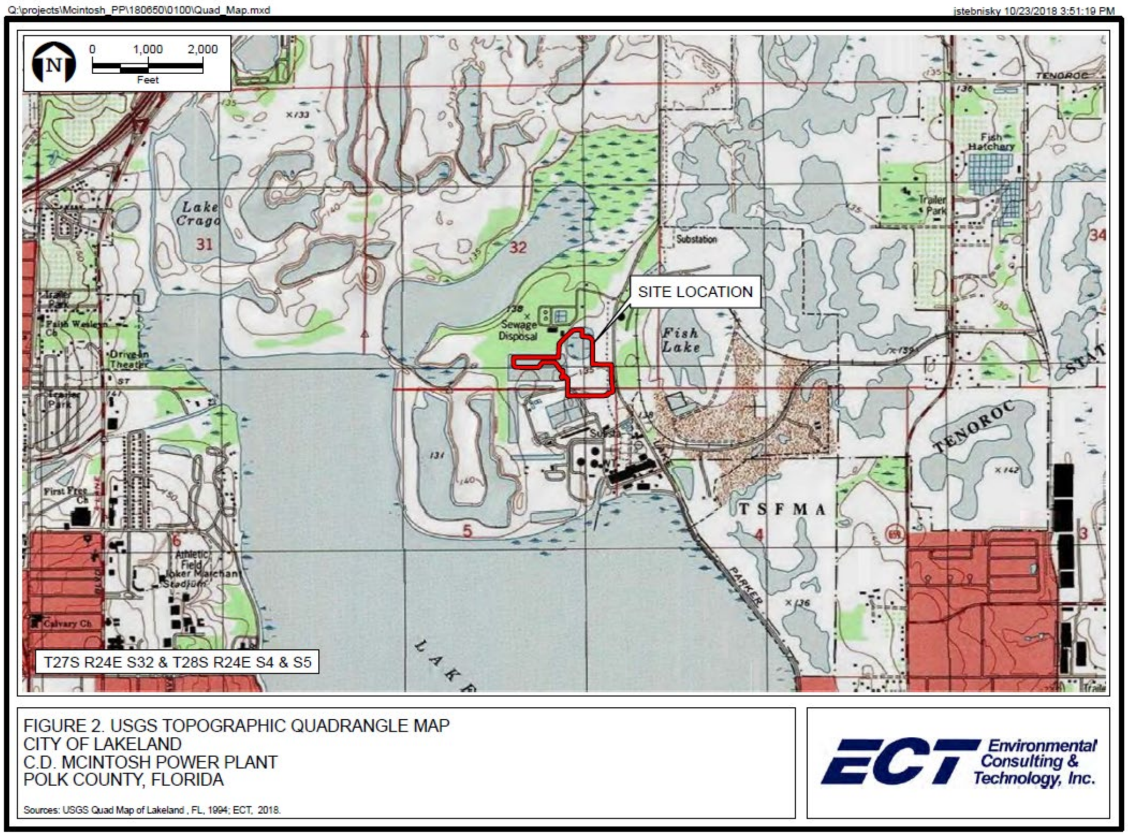



Figure 7-2

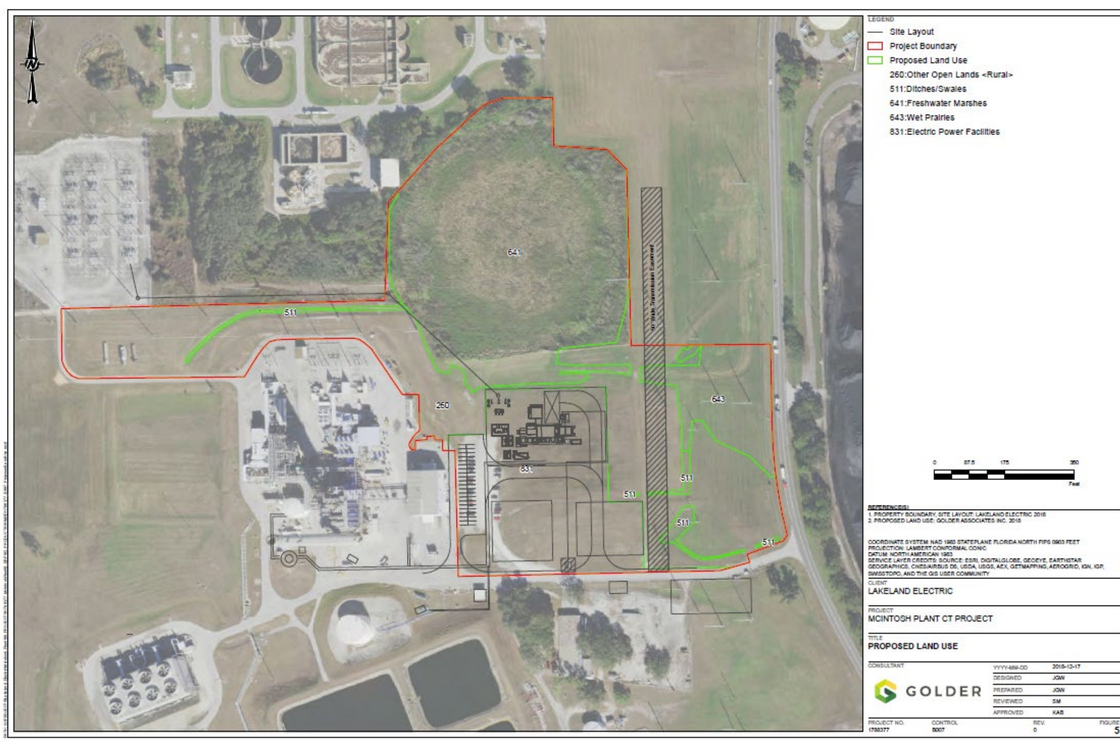
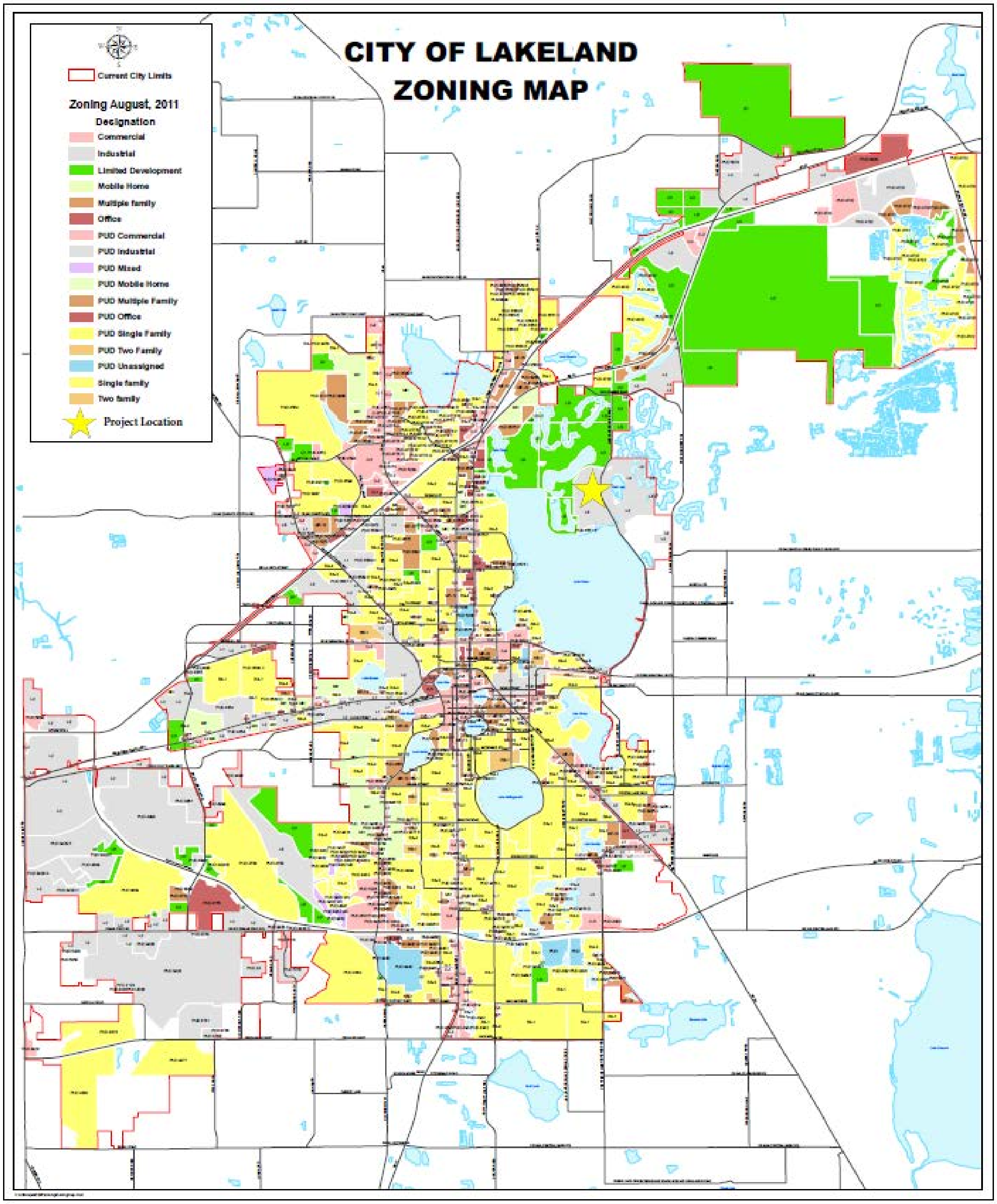


Figure 7-3


CITY OF LAKELAND
ZONING MAP
Current City Limits
Zoning August, 2011
Designation
Commercial
Industrial
Limited Development
Mobile Home
Multiple family
Office
PUD Commercial
PUD Industrial
PUD Mixed
PUD Mobile Home
PUD Multiple Family
PUD Office
PUD Single Family
PUD Two Family
PUD Unassigned
Single family
Two family
Project Location

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# 8.0 Ten-Year Site Plan Schedules

This section presents all the schedules as required by the Ten-Year Site Plan for the Florida Public Service Commission.

Tables 8-1 and 8-1a provide LE's existing unit characteristics.

Tables 8-2 through 8-5 provide information on energy usage characteristics by customer class in the past and the future.

Tables 8-2 through 8-8 provide history and forest on LE's electric demand and energy.

Table 8-9 provides a history and forecast of fuel requirements by fuel type.

Tables 8-10 and 8-11 provide a history and forecast of energy produced by fuel type.

Tables 8-12 and 8-13 provide comparisons of Lakeland Electric resources to Lakeland Electric demand. This table demonstrates that Lakeland Electric's Reserve Margin forecast will be maintained at 15% or higher each year in this Ten-Year-Site Plan period.

Tables 8-14 provides information related to Lakeland Electrics planned new units and recent changes in the existing units.

Table 8-1

Schedule 1.0: Existing Generating Facilities as of December 31, 2020

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Fuel | | Fuel Transport | | | | | | Net Capability[2] | |
| Plant Name | Unit No. | Location | Unit Type | Pri | Alt | Pri | Alt | Alt Fuel Days Use[1] | Commercial In-Service Month/Year | Expected Retirement Month/Year | Gen. Max. Nameplate kW | Summer MW | Winter MW |
| Charles Larsen Memorial | GT2 | 16-17/28S/24E | GT | NG | DFO | PL | TK | --- | 11/62 | Unknown | 11,250 | 10 | 14 |
| | GT3 | | GT | NG | DFO | PL | TK | --- | 12/62 | Unknown | 11,250 | 9 | 13 |
| | 8 | | CA | WH | --- | --- | --- | --- | 04/56 | Unknown | 26,000 | 35 | 35 |
| | 8 | | CT | NG | DFO | PL | TK | --- | 07/92 | Unknown | 88,000 | 73 | 90 |
| Plant Total | | | | | | | | | | | | 127 | 152 |

[1]LAK does not maintain records of the days the alternative fuel was used. ,[2]Net Normal.

Source: Lakeland Energy Supply Unit Rating Group

Table 8-1a

Schedule 1.0: Existing Generating Facilities as of December 31, 2020

| | | | | Fuel[4] | | Fuel Transport[5] | | | | | | Net Capability | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Plant Name | Unit No. | Location | Unit Type[3] | Pri | Alt | Pri | Alt | Alt Fuel Days Use[2] | Commercial In-Service Month/Year | Expected Retirement Month/Year | Gen. Max. Nameplate kW | Summer MW | Winter MW |
| Winston Peaking Station | 1-20 | 21/28S/23E | IC | DFO | --- | TK | --- | --- | 12/01 | Unknown | 2,500 each | 50 | 50 |
| Plant Total | | | | | | | | | | | | 50 | 50 |
| | | | | | | | | | | | | | |
| C.D. McIntosh, Jr. | D1 | 4-5/28S/24E | IC | DFO | --- | TK | --- | --- | 01/70 | Unknown | 2,500 | 2.5 | 2.5 |
| | D2 | | IC | DFO | --- | TK | --- | --- | 01/70 | Unknown | 2,500 | 2.5 | 2.5 |
| | GT1 | | GT | NG | DFO | PL | TK | --- | 05/73 | Unknown | 20,000 | 17 | 19 |
| | GT2 | | GT | NG | RFO | PL | TK | --- | 06/20 | Unknown | 130,000 | 117 | 122 |
| | 3[1] | | ST | BIT | --- | RR | TK | --- | 09/82 | Unknown | 219,000 | 205 | 205 |
| | 5 | | CT | NG | --- | PL | --- | --- | 05/01 | Unknown | 245,000 | 213 | 233 |
| | 5 | | CA | WH | --- | --- | --- | --- | 05/02 | Unknown | 120,000 | 125 | 121 |
| Plant Total | | | | | | | | | | | | 682 | 705 |
| **System Total** | | | | | | | | | | | | **859** | **907** |

[1]Lakeland's 60 percent portion of joint ownership with Orlando Utilities Commission.

[2]Lakeland does not maintain records of the number of days that alternate fuel is used.

Table 8-2

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 & 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 |
| 2011 | 260,567 | 2.59 | 1,437 | 100,784 | 14,258 | 744 | 11,786 | 63,126 |
| 2012 | 262,288 | 2.59 | 1,343 | 101,252 | 13,264 | 727 | 11,765 | 61,793 |
| 2013 | 264,023 | 2.59 | 1,368 | 101,968 | 13,416 | 742 | 11,864 | 62,542 |
| 2014 | 271,379 | 2.63 | 1,400 | 103,099 | 13,579 | 752 | 12,022 | 62,552 |
| 2015 | 274,861 | 2.63 | 1,468 | 104,581 | 14,037 | 789 | 12,157 | 64,901 |
| 2016 | 279,331 | 2.64 | 1,473 | 105,932 | 13,905 | 795 | 12,225 | 65,031 |
| 2017 | 283,626 | 2.63 | 1,460 | 107,703 | 13,556 | 803 | 12,372 | 64,905 |
| 2018 | 288,157 | 2.64 | 1,524 | 109,043 | 13,976 | 813 | 12,543 | 64,817 |
| 2019 | 292,465 | 2.65 | 1,540 | 110,403 | 13,949 | 806 | 12,687 | 63,530 |
| 2020 | 295,899 | 2.64 | 1,612 | 112,175 | 14,370 | 789 | 12,889 | 61,215 |
| Forecast | | | | | | | | |
| 2021 | 300,258 | 2.66 | 1,510 | 113,071 | 13,354 | 804 | 12,938 | 62,143 |
| 2022 | 304,130 | 2.65 | 1,523 | 114,568 | 13,293 | 809 | 13,078 | 61,860 |
| 2023 | 308,049 | 2.65 | 1,534 | 116,050 | 13,218 | 813 | 13,224 | 61,479 |
| 2024 | 311,996 | 2.66 | 1,547 | 117,489 | 13,167 | 817 | 13,365 | 61,130 |
| 2025 | 315,954 | 2.66 | 1,561 | 118,920 | 13,126 | 821 | 13,504 | 60,797 |
| 2026 | 319,908 | 2.66 | 1,573 | 120,324 | 13,073 | 824 | 13,641 | 60,406 |
| 2027 | 323,884 | 2.66 | 1,586 | 121,694 | 13,033 | 828 | 13,776 | 60,105 |
| 2028 | 327,885 | 2.67 | 1,602 | 123,031 | 13,021 | 833 | 13,907 | 59,898 |
| 2029 | 331,898 | 2.67 | 1,618 | 124,352 | 13,011 | 838 | 14,036 | 59,704 |
| 2030 | 335,903 | 2.67 | 1,632 | 125,664 | 12,987 | 841 | 14,163 | 59,380 |

Table 8-3
Schedule 2.2: History and Forecast of Energy Consumption and Number of Customers by Customer Class

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| | Industrial | | | | | | |
| Year | GWh | Average No. of Customers | Average kWh Consumption per Customer | Railroads and Railways | Street & Highway Lighting GWh | Other Sales to Public Authorities GWh | Total Sales to Ultimate Consumers GWh |
| 2011 | 578 | 86 | 6,720,930 | 0 | 33 | 73 | 2,864 |
| 2012 | 579 | 81 | 7,148,148 | 0 | 33 | 70 | 2,751 |
| 2013 | 618 | 79 | 7,822,785 | 0 | 33 | 70 | 2,831 |
| 2014 | 649 | 77 | 8,428,571 | 0 | 33 | 70 | 2,903 |
| 2015 | 670 | 76 | 8,815,789 | 0 | 34 | 73 | 3,034 |
| 2016 | 655 | 74 | 8,851,351 | 0 | 34 | 73 | 3,030 |
| 2017 | 648 | 72 | 9,000,000 | 0 | 35 | 72 | 3,018 |
| 2018 | 676 | 74 | 9,135,135 | 0 | 35 | 70 | 3,118 |
| 2019 | 667 | 76 | 8,776,316 | 0 | 35 | 69 | 3,117 |
| 2020 | 660 | 75 | 8,800,000 | 0 | 35 | 68 | 3,163 |
| Forecast | | | | | | | |
| 2021 | 670 | 77 | 8,701,299 | 0 | 35 | 67 | 3,086 |
| 2022 | 675 | 78 | 8,653,846 | 0 | 35 | 67 | 3,109 |
| 2023 | 679 | 79 | 8,594,937 | 0 | 35 | 67 | 3,128 |
| 2024 | 683 | 80 | 8,537,500 | 0 | 35 | 67 | 3,149 |
| 2025 | 686 | 81 | 8,469,136 | 0 | 35 | 67 | 3,170 |
| 2026 | 690 | 82 | 8,414,634 | 0 | 35 | 67 | 3,189 |
| 2027 | 693 | 83 | 8,349,398 | 0 | 35 | 67 | 3,209 |
| 2028 | 698 | 84 | 8,309,524 | 0 | 35 | 67 | 3,235 |
| 2029 | 702 | 85 | 8,258,824 | 0 | 35 | 68 | 3,261 |
| 2030 | 705 | 86 | 8,197,674 | 0 | 35 | 67 | 3,280 |

Table 8-4

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

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| Year | Wholesale Purchases for Resale GWh | Wholesale Sales for Resale GWh | Net Energy for Load GWh | Other Customers (Average No.) | Total No. of Customers |
| 2011 | 0 | 0 | 2,893 | 9,070 | 121,725 |
| 2012 | 0 | 0 | 2,873 | 8,953 | 122,050 |
| 2013 | 0 | 0 | 2,919 | 8,892 | 122,803 |
| 2014 | 0 | 0 | 3,006 | 8,820 | 124,019 |
| 2015 | 0 | 0 | 3,126 | 8,860 | 125,674 |
| 2016 | 0 | 0 | 3,109 | 8,921 | 127,152 |
| 2017 | 0 | 0 | 3,086 | 8,966 | 129,113 |
| 2018 | 0 | 0 | 3,180 | 8,997 | 130,658 |
| 2019 | 0 | 0 | 3,189 | 9,051 | 132,217 |
| 2020 | 0 | 0 | 3,273 | 9,182 | 134,320 |
| Forecast | | | | | |
| 2021 | 0 | 0 | 3,166 | 9,078 | 135,164 |
| 2022 | 0 | 0 | 3,190 | 9,100 | 136,824 |
| 2023 | 0 | 0 | 3,209 | 9,122 | 138,475 |
| 2024 | 0 | 0 | 3,231 | 9,144 | 140,078 |
| 2025 | 0 | 0 | 3,253 | 9,167 | 141,671 |
| 2026 | 0 | 0 | 3,272 | 9,189 | 143,237 |
| 2027 | 0 | 0 | 3,294 | 9,212 | 144,765 |
| 2028 | 0 | 0 | 3,319 | 9,235 | 146,257 |
| 2029 | 0 | 0 | 3,345 | 9,258 | 147,731 |
| 2030 | 0 | 0 | 3,366 | 9,282 | 149,195 |

Table 8-5
Schedule 3.1: History and Forecast of Summer Peak Demand Base Case (MW)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Residential | | Commercial/Industrial | | |
| Year | Total | Wholesale | Retail | Interrupt. | Load Management | Conservation | Load Management | Conservation | Net Firm Demand |
| 2011 | 611 | 0 | 611 | 0 | 0 | 0 | 0 | 0 | 611 |
| 2012 | 590 | 0 | 590 | 0 | 0 | 0 | 0 | 0 | 590 |
| 2013 | 602 | 0 | 602 | 0 | 0 | 0 | 0 | 0 | 602 |
| 2014 | 627 | 0 | 627 | 0 | 0 | 0 | 0 | 0 | 627 |
| 2015 | 630 | 0 | 630 | 0 | 0 | 0 | 0 | 0 | 630 |
| 2016 | 647 | 0 | 647 | 0 | 0 | 0 | 0 | 0 | 647 |
| 2017 | 644 | 0 | 644 | 0 | 0 | 0 | 0 | 0 | 644 |
| 2018 | 639 | 0 | 639 | 0 | 0 | 0 | 0 | 0 | 639 |
| 2019 | 667 | 0 | 667 | 0 | 0 | 0 | 0 | 0 | 667 |
| 2020 | 678 | 0 | 678 | 0 | 0 | 0 | 0 | 0 | 678 |
| Forecast | | | | | | | | | |
| 2021 | 656 | 0 | 656 | 0 | 0 | 0 | 0 | 0 | 656 |
| 2022 | 661 | 0 | 661 | 0 | 0 | 0 | 0 | 0 | 661 |
| 2023 | 663 | 0 | 663 | 0 | 0 | 0 | 0 | 0 | 663 |
| 2024 | 668 | 0 | 668 | 0 | 0 | 0 | 0 | 0 | 668 |
| 2025 | 671 | 0 | 671 | 0 | 0 | 0 | 0 | 0 | 671 |
| 2026 | 674 | 0 | 674 | 0 | 0 | 0 | 0 | 0 | 674 |
| 2027 | 678 | 0 | 678 | 0 | 0 | 0 | 0 | 0 | 678 |
| 2028 | 683 | 0 | 683 | 0 | 0 | 0 | 0 | 0 | 683 |
| 2029 | 687 | 0 | 687 | 0 | 0 | 0 | 0 | 0 | 687 |
| 2030 | 691 | 0 | 691 | 0 | 0 | 0 | 0 | 0 | 691 |

Table 8-5a
Schedule 3.1a: History and Forecast of Summer Peak Demand Low Case (MW)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Residential | | Commercial/Industrial | | |
| Year | Total | Wholesale | Retail | Interrupt. | Load Management | Conservation | Load Management | Conservation | Net Firm Demand |
| 2011 | 611 | 0 | 611 | 0 | 0 | 0 | 0 | 0 | 611 |
| 2012 | 590 | 0 | 590 | 0 | 0 | 0 | 0 | 0 | 590 |
| 2013 | 602 | 0 | 602 | 0 | 0 | 0 | 0 | 0 | 602 |
| 2014 | 627 | 0 | 627 | 0 | 0 | 0 | 0 | 0 | 627 |
| 2015 | 630 | 0 | 630 | 0 | 0 | 0 | 0 | 0 | 630 |
| 2016 | 647 | 0 | 647 | 0 | 0 | 0 | 0 | 0 | 647 |
| 2017 | 644 | 0 | 644 | 0 | 0 | 0 | 0 | 0 | 644 |
| 2018 | 639 | 0 | 639 | 0 | 0 | 0 | 0 | 0 | 639 |
| 2019 | 667 | 0 | 667 | 0 | 0 | 0 | 0 | 0 | 667 |
| 2020 | 678 | 0 | 678 | 0 | 0 | 0 | 0 | 0 | 678 |
| Forecast | | | | | | | | | |
| 2021 | 653 | 0 | 653 | 0 | 0 | 0 | 0 | 0 | 653 |
| 2022 | 657 | 0 | 657 | 0 | 0 | 0 | 0 | 0 | 657 |
| 2023 | 660 | 0 | 660 | 0 | 0 | 0 | 0 | 0 | 660 |
| 2024 | 664 | 0 | 664 | 0 | 0 | 0 | 0 | 0 | 664 |
| 2025 | 667 | 0 | 667 | 0 | 0 | 0 | 0 | 0 | 667 |
| 2026 | 671 | 0 | 671 | 0 | 0 | 0 | 0 | 0 | 671 |
| 2027 | 674 | 0 | 674 | 0 | 0 | 0 | 0 | 0 | 674 |
| 2028 | 680 | 0 | 680 | 0 | 0 | 0 | 0 | 0 | 680 |
| 2029 | 684 | 0 | 684 | 0 | 0 | 0 | 0 | 0 | 684 |
| 2030 | 688 | 0 | 688 | 0 | 0 | 0 | 0 | 0 | 688 |

Table 8-5b
Schedule 3.1b: History and Forecast of Summer Peak Demand High Case (MW)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Residential | | Commercial/Industrial | | |
| Year | Total | Wholesale | Retail | Interrupt. | Load Management | Conservation | Load Management | Conservation | Net Firm Demand |
| 2011 | 611 | 0 | 611 | 0 | 0 | 0 | 0 | 0 | 611 |
| 2012 | 590 | 0 | 590 | 0 | 0 | 0 | 0 | 0 | 590 |
| 2013 | 602 | 0 | 602 | 0 | 0 | 0 | 0 | 0 | 602 |
| 2014 | 627 | 0 | 627 | 0 | 0 | 0 | 0 | 0 | 627 |
| 2015 | 630 | 0 | 630 | 0 | 0 | 0 | 0 | 0 | 630 |
| 2016 | 647 | 0 | 647 | 0 | 0 | 0 | 0 | 0 | 647 |
| 2017 | 644 | 0 | 644 | 0 | 0 | 0 | 0 | 0 | 644 |
| 2018 | 639 | 0 | 639 | 0 | 0 | 0 | 0 | 0 | 639 |
| 2019 | 667 | 0 | 667 | 0 | 0 | 0 | 0 | 0 | 667 |
| 2020 | 678 | 0 | 678 | 0 | 0 | 0 | 0 | 0 | 678 |
| Forecast | | | | | | | | | |
| 2021 | 659 | 0 | 659 | 0 | 0 | 0 | 0 | 0 | 659 |
| 2022 | 664 | 0 | 664 | 0 | 0 | 0 | 0 | 0 | 664 |
| 2023 | 667 | 0 | 667 | 0 | 0 | 0 | 0 | 0 | 667 |
| 2024 | 671 | 0 | 671 | 0 | 0 | 0 | 0 | 0 | 671 |
| 2025 | 674 | 0 | 674 | 0 | 0 | 0 | 0 | 0 | 674 |
| 2026 | 677 | 0 | 677 | 0 | 0 | 0 | 0 | 0 | 677 |
| 2027 | 681 | 0 | 681 | 0 | 0 | 0 | 0 | 0 | 681 |
| 2028 | 687 | 0 | 687 | 0 | 0 | 0 | 0 | 0 | 687 |
| 2029 | 691 | 0 | 691 | 0 | 0 | 0 | 0 | 0 | 691 |
| 2030 | 695 | 0 | 695 | 0 | 0 | 0 | 0 | 0 | 695 |

Table 8-6
Schedule 3.2: History and Forecast of Winter Peak Demand Base Case (MW)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|
| Year | Total | Wholesale | Retail | Interrupt. | Residential | | Comm./Ind. | | Net Firm Demand |
| | | | | | Load Management | Conservation | Load Management | Conservation | |
| 2011/12 | 612 | 0 | 612 | 0 | 0 | 0 | 0 | 0 | 612 |
| 2012/13 | 549 | 0 | 549 | 0 | 0 | 0 | 0 | 0 | 549 |
| 2013/14 | 577 | 0 | 577 | 0 | 0 | 0 | 0 | 0 | 577 |
| 2014/15 | 653 | 0 | 653 | 0 | 0 | 0 | 0 | 0 | 653 |
| 2015/16 | 583 | 0 | 583 | 0 | 0 | 0 | 0 | 0 | 583 |
| 2016/17 | 534 | 0 | 534 | 0 | 0 | 0 | 0 | 0 | 534 |
| 2017/18 | 701 | 0 | 701 | 0 | 0 | 0 | 0 | 0 | 701 |
| 2018/19 | 545 | 0 | 545 | 0 | 0 | 0 | 0 | 0 | 545 |
| 2019/20 | 600 | 0 | 600 | 0 | 0 | 0 | 0 | 0 | 600 |
| 2020/21 | 605 | 0 | 605 | 0 | 0 | 0 | 0 | 0 | 605 |
| Forecast | | | | | | | | | |
| 2021/22 | 677 | 0 | 677 | 0 | 0 | 0 | 0 | 0 | 677 |
| 2022/23 | 682 | 0 | 682 | 0 | 0 | 0 | 0 | 0 | 682 |
| 2023/24 | 689 | 0 | 689 | 0 | 0 | 0 | 0 | 0 | 689 |
| 2024/25 | 691 | 0 | 691 | 0 | 0 | 0 | 0 | 0 | 691 |
| 2025/26 | 695 | 0 | 695 | 0 | 0 | 0 | 0 | 0 | 695 |
| 2026/27 | 699 | 0 | 699 | 0 | 0 | 0 | 0 | 0 | 699 |
| 2027/28 | 706 | 0 | 706 | 0 | 0 | 0 | 0 | 0 | 706 |
| 2028/29 | 708 | 0 | 708 | 0 | 0 | 0 | 0 | 0 | 708 |
| 2029/30 | 711 | 0 | 711 | 0 | 0 | 0 | 0 | 0 | 711 |
| 2030/31 | 714 | 0 | 714 | 0 | 0 | 0 | 0 | 0 | 714 |

Table 8-6a
Schedule 3.2a: History and Forecast of Winter Peak Demand Low Case (MW)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|
| Year | Total | Wholesale | Retail | Interrupt. | Residential | | Comm./Ind. | | Net Firm Demand |
| | | | | | Load Management | Conservation | Load Management | Conservation | |
| 2011/12 | 612 | 0 | 612 | 0 | 0 | 0 | 0 | 0 | 612 |
| 2012/13 | 549 | 0 | 549 | 0 | 0 | 0 | 0 | 0 | 549 |
| 2013/14 | 577 | 0 | 577 | 0 | 0 | 0 | 0 | 0 | 577 |
| 2014/15 | 653 | 0 | 653 | 0 | 0 | 0 | 0 | 0 | 653 |
| 2015/16 | 583 | 0 | 583 | 0 | 0 | 0 | 0 | 0 | 583 |
| 2016/17 | 534 | 0 | 534 | 0 | 0 | 0 | 0 | 0 | 534 |
| 2017/18 | 701 | 0 | 701 | 0 | 0 | 0 | 0 | 0 | 701 |
| 2018/19 | 545 | 0 | 545 | 0 | 0 | 0 | 0 | 0 | 545 |
| 2019/20 | 600 | 0 | 600 | 0 | 0 | 0 | 0 | 0 | 600 |
| 2020/21 | 605 | 0 | 605 | 0 | 0 | 0 | 0 | 0 | 605 |
| Forecast | | | | | | | | | |
| 2021/22 | 673 | 0 | 673 | 0 | 0 | 0 | 0 | 0 | 673 |
| 2022/23 | 678 | 0 | 678 | 0 | 0 | 0 | 0 | 0 | 678 |
| 2023/24 | 685 | 0 | 685 | 0 | 0 | 0 | 0 | 0 | 685 |
| 2024/25 | 687 | 0 | 687 | 0 | 0 | 0 | 0 | 0 | 687 |
| 2025/26 | 690 | 0 | 690 | 0 | 0 | 0 | 0 | 0 | 690 |
| 2026/27 | 694 | 0 | 694 | 0 | 0 | 0 | 0 | 0 | 694 |
| 2027/28 | 701 | 0 | 701 | 0 | 0 | 0 | 0 | 0 | 701 |
| 2028/29 | 704 | 0 | 704 | 0 | 0 | 0 | 0 | 0 | 704 |
| 2029/30 | 707 | 0 | 707 | 0 | 0 | 0 | 0 | 0 | 707 |
| 2030/31 | 710 | 0 | 710 | 0 | 0 | 0 | 0 | 0 | 710 |

Table 8-6b
Schedule 3.2b: History and Forecast of Winter Peak Demand High Case (MW)

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|
| Year | Total | Wholesale | Retail | Interrupt. | Residential | | Comm./Ind. | | Net Firm Demand |
| | | | | | Load Management | Conservation | Load Management | Conservation | |
| 2011/12 | 612 | 0 | 612 | 0 | 0 | 0 | 0 | 0 | 612 |
| 2012/13 | 549 | 0 | 549 | 0 | 0 | 0 | 0 | 0 | 549 |
| 2013/14 | 577 | 0 | 577 | 0 | 0 | 0 | 0 | 0 | 577 |
| 2014/15 | 653 | 0 | 653 | 0 | 0 | 0 | 0 | 0 | 653 |
| 2015/16 | 583 | 0 | 583 | 0 | 0 | 0 | 0 | 0 | 583 |
| 2016/17 | 534 | 0 | 534 | 0 | 0 | 0 | 0 | 0 | 534 |
| 2017/18 | 701 | 0 | 701 | 0 | 0 | 0 | 0 | 0 | 701 |
| 2018/19 | 545 | 0 | 545 | 0 | 0 | 0 | 0 | 0 | 545 |
| 2019/20 | 600 | 0 | 600 | 0 | 0 | 0 | 0 | 0 | 600 |
| 2020/21 | 605 | 0 | 605 | 0 | 0 | 0 | 0 | 0 | 605 |
| Forecast | | | | | | | | | |
| 2021/22 | 681 | 0 | 681 | 0 | 0 | 0 | 0 | 0 | 681 |
| 2022/23 | 686 | 0 | 686 | 0 | 0 | 0 | 0 | 0 | 686 |
| 2023/24 | 693 | 0 | 693 | 0 | 0 | 0 | 0 | 0 | 693 |
| 2024/25 | 695 | 0 | 695 | 0 | 0 | 0 | 0 | 0 | 695 |
| 2025/26 | 699 | 0 | 699 | 0 | 0 | 0 | 0 | 0 | 699 |
| 2026/27 | 703 | 0 | 703 | 0 | 0 | 0 | 0 | 0 | 703 |
| 2027/28 | 710 | 0 | 710 | 0 | 0 | 0 | 0 | 0 | 710 |
| 2028/29 | 713 | 0 | 713 | 0 | 0 | 0 | 0 | 0 | 713 |
| 2029/30 | 716 | 0 | 716 | 0 | 0 | 0 | 0 | 0 | 716 |
| 2030/31 | 719 | 0 | 719 | 0 | 0 | 0 | 0 | 0 | 719 |

Table 8-7
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 Sales | Residential Conservation | Comm./Ind. Conservation | Retail | Wholesale | Utility Use & Losses | Net Energy for Load | Load Factor % |
| 2011 | 2,864 | 0 | 0 | 2,864 | 0 | 29 | 2,893 | 50% |
| 2012 | 2,751 | 0 | 0 | 2,751 | 0 | 122 | 2,873 | 54% |
| 2013 | 2,831 | 0 | 0 | 2,831 | 0 | 88 | 2,919 | 55% |
| 2014 | 2,903 | 0 | 0 | 2,903 | 0 | 103 | 3,006 | 55% |
| 2015 | 3,034 | 0 | 0 | 3,034 | 0 | 92 | 3,126 | 54% |
| 2016 | 3,030 | 0 | 0 | 3,030 | 0 | 79 | 3,109 | 55% |
| 2017 | 3,018 | 0 | 0 | 3,018 | 0 | 68 | 3,086 | 55% |
| 2018 | 3,118 | 0 | 0 | 3,118 | 0 | 62 | 3,180 | 55% |
| 2019 | 3,117 | 0 | 0 | 3,117 | 0 | 73 | 3,190 | 55% |
| 2020 | 3,163 | 0 | 0 | 3,163 | 0 | 109 | 3,273 | 55% |
| Forecast | | | | | | | | |
| 2021 | 3086 | 0 | 0 | 3086 | 0 | 80 | 3167 | 53% |
| 2022 | 3109 | 0 | 0 | 3109 | 0 | 81 | 3190 | 53% |
| 2023 | 3127 | 0 | 0 | 3127 | 0 | 81 | 3209 | 53% |
| 2024 | 3150 | 0 | 0 | 3150 | 0 | 82 | 3231 | 53% |
| 2025 | 3170 | 0 | 0 | 3170 | 0 | 83 | 3253 | 53% |
| 2026 | 3189 | 0 | 0 | 3189 | 0 | 83 | 3272 | 53% |
| 2027 | 3210 | 0 | 0 | 3210 | 0 | 84 | 3294 | 53% |
| 2028 | 3235 | 0 | 0 | 3235 | 0 | 84 | 3319 | 53% |
| 2029 | 3260 | 0 | 0 | 3260 | 0 | 85 | 3345 | 54% |
| 2030 | 3280 | 0 | 0 | 3280 | 0 | 85 | 3366 | 54% |

Table 8-7a
Schedule 3.3a: History and Forecast of Annual Net Energy for Load – GWh
Low Case

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| Year | Total Sales | Residential Conservation | Comm./Ind. Conservation | Retail | Wholesale | Utility Use & Losses | Net Energy for Load |
| 2011 | 2,864 | 0 | 0 | 2,864 | 0 | 29 | 2,893 |
| 2012 | 2,751 | 0 | 0 | 2,751 | 0 | 122 | 2,873 |
| 2013 | 2,831 | 0 | 0 | 2,831 | 0 | 88 | 2,919 |
| 2014 | 2,903 | 0 | 0 | 2,903 | 0 | 103 | 3,006 |
| 2015 | 3,034 | 0 | 0 | 3,034 | 0 | 92 | 3,126 |
| 2016 | 3,030 | 0 | 0 | 3,030 | 0 | 79 | 3,109 |
| 2017 | 3,018 | 0 | 0 | 3,018 | 0 | 68 | 3,086 |
| 2018 | 3,118 | 0 | 0 | 3,118 | 0 | 62 | 3,180 |
| 2019 | 3,117 | 0 | 0 | 3,117 | 0 | 73 | 3,190 |
| 2020 | 3,163 | 0 | 0 | 3,163 | 0 | 109 | 3,273 |
| Forecast | | | | | | | |
| 2021 | 3,070 | 0 | 0 | 3,070 | 0 | 80 | 3,150 |
| 2022 | 3,092 | 0 | 0 | 3,092 | 0 | 81 | 3,173 |
| 2023 | 3,111 | 0 | 0 | 3,111 | 0 | 81 | 3,192 |
| 2024 | 3,133 | 0 | 0 | 3,133 | 0 | 82 | 3,214 |
| 2025 | 3,153 | 0 | 0 | 3,153 | 0 | 83 | 3,235 |
| 2026 | 3,172 | 0 | 0 | 3,172 | 0 | 83 | 3,255 |
| 2027 | 3,192 | 0 | 0 | 3,192 | 0 | 84 | 3,276 |
| 2028 | 3,217 | 0 | 0 | 3,217 | 0 | 84 | 3,301 |
| 2029 | 3,241 | 0 | 0 | 3,241 | 0 | 85 | 3,326 |
| 2030 | 3,262 | 0 | 0 | 3,262 | 0 | 85 | 3,347 |

Table 8-7b
Schedule 3.3b: History and Forecast of Annual Net Energy for Load – GWh
High Case

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| Year | Total Sales | Residential Conservation | Comm./Ind. Conservation | Retail | Wholesale | Utility Use & Losses | Net Energy for Load |
| 2011 | 2,864 | 0 | 0 | 2,864 | 0 | 29 | 2,893 |
| 2012 | 2,751 | 0 | 0 | 2,751 | 0 | 122 | 2,873 |
| 2013 | 2,831 | 0 | 0 | 2,831 | 0 | 88 | 2,919 |
| 2014 | 2,903 | 0 | 0 | 2,903 | 0 | 103 | 3,006 |
| 2015 | 3,034 | 0 | 0 | 3,034 | 0 | 92 | 3,126 |
| 2016 | 3,030 | 0 | 0 | 3,030 | 0 | 79 | 3,109 |
| 2017 | 3,018 | 0 | 0 | 3,018 | 0 | 68 | 3,086 |
| 2018 | 3,118 | 0 | 0 | 3,118 | 0 | 62 | 3,180 |
| 2019 | 3,117 | 0 | 0 | 3,117 | 0 | 73 | 3,190 |
| 2020 | 3,163 | 0 | 0 | 3,163 | 0 | 109.3 | 3,273 |
| Forecast | | | | | | | |
| 2021 | 3,103 | 0 | 0 | 3,103 | 0 | 80 | 3,183 |
| 2022 | 3,125 | 0 | 0 | 3,125 | 0 | 81 | 3,206 |
| 2023 | 3,144 | 0 | 0 | 3,144 | 0 | 81 | 3,226 |
| 2024 | 3,167 | 0 | 0 | 3,167 | 0 | 82 | 3,248 |
| 2025 | 3,188 | 0 | 0 | 3,188 | 0 | 83 | 3,270 |
| 2026 | 3,207 | 0 | 0 | 3,207 | 0 | 83 | 3,290 |
| 2027 | 3,228 | 0 | 0 | 3,228 | 0 | 84 | 3,312 |
| 2028 | 3,253 | 0 | 0 | 3,253 | 0 | 84 | 3,337 |
| 2029 | 3,278 | 0 | 0 | 3,278 | 0 | 85 | 3,363 |
| 2030 | 3,299 | 0 | 0 | 3,299 | 0 | 85 | 3,385 |

Table 8-8

Schedule 4: Previous Year and Two Year Forecast of Retail Peak Demand and Net Energy for Load by Month

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|
| Month | 2020 Actual | | 2021 Forecast | | 2022 Forecast | |
| | Peak Demand[1] MW | NEL GWh | Peak Demand[1] MW | NEL GWh | Peak Demand[1] MW | NEL GWh |
| January | 600 | 230 | 673 | 253 | 677 | 254 |
| February | 468 | 219 | 570 | 202 | 573 | 203 |
| March | 579 | 259 | 480 | 236 | 483 | 237 |
| April | 585 | 249 | 550 | 250 | 554 | 252 |
| May | 633 | 279 | 609 | 298 | 614 | 301 |
| June | 678 | 309 | 638 | 298 | 643 | 300 |
| July | 659 | 325 | 656 | 312 | 661 | 314 |
| August | 657 | 325 | 650 | 321 | 655 | 324 |
| September | 666 | 302 | 618 | 291 | 623 | 294 |
| October | 608 | 294 | 579 | 254 | 583 | 256 |
| November | 510 | 239 | 483 | 210 | 485 | 211 |
| December | 519 | 242 | 488 | 242 | 490 | 243 |

[1]Includes Conservation

| Table 8-9 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Schedule 5: Fuel Requirements | | | | | | | | | | | | | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
| | | | | Calendar Year | | | | | | | | | | |
| | Fuel Requirements | Type | UNITS | 2020-Actual | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
| (1) | Nuclear | | Trillion Btu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | | |
| (2) | Coal[1] | | 1000 Ton | 296 | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | | |
| (3) | Residual | Steam | 1000 BBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (4) | | CC | 1000 BBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (5) | | CT | 1000 BBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (6) | | Total | 1000 BBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | | |
| (7) | Distillate | Steam | 1000 BBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (8) | | CC | 1000 BBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (9) | | CT | 1000 BBL | 3 | 4 | 11 | 7 | 11 | 6 | 4 | 4 | 3 | 4 | 1 |
| (10) | | Total | 1000 BBL | 3 | 4 | 11 | 7 | 11 | 6 | 4 | 4 | 3 | 4 | 1 |
| | | | | | | | | | | | | | | |
| (11) | Natural Gas | Steam | 1000 MCF | 888 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (12) | | CC | 1000 MCF | 15124 | 18192 | 19619 | 17794 | 13572 | 15542 | 18192 | 17302 | 16098 | 17332 | 19635 |
| (13) | | CT | 1000 MCF | 205 | 476 | 596 | 405 | 2451 | 2028 | 1253 | 1340 | 1092 | 1477 | 815 |
| (14) | | Total | 1000 MCF | 16217 | 18675 | 20215 | 18199 | 16023 | 17570 | 19445 | 18642 | 17190 | 18809 | 20450 |
| | | | | | | | | | | | | | | |
| (15) | Other | | Trillion Btu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| [1] Fuel required for LAK's share (60%) | | | | | | | | | | | | | | |

Table 8-10
Schedule 6.1: Energy Sources

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Calendar Year | | | | | | | | | | |
| | Energy Sources | Type | UNITS | 2020-Actual | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
| (1) | Inter-Regional Interchange | | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (2) | Nuclear | | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (3) | Coal | | GWh | 452 | 258 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (4) | Residual | Steam | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (5) | | CC | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (6) | | CT | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (7) | | Total | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (8) | Distillate | Steam | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (9) | | CC | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (10) | | CT | GWh | 1 | 2 | 6 | 4 | 6 | 4 | 2 | 2 | 2 | 2 | 1 |
| (11) | | Total | GWh | 1 | 2 | 6 | 4 | 6 | 4 | 2 | 2 | 2 | 2 | 1 |
| (12) | Natural Gas | Steam | GWh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (13) | | CC | GWh | 2,098 | 2,511 | 2,716 | 2,448 | 1,892 | 2,177 | 2,465 | 2,472 | 2,305 | 2,465 | 2,856 |
| (14) | | CT | GWh | 20 | 37 | 47 | 30 | 285 | 244 | 156 | 160 | 134 | 181 | 100 |
| (15) | | Total | GWh | 2,118 | 2,548 | 2,763 | 2,478 | 2,177 | 2,421 | 2,621 | 2,632 | 2,439 | 2,646 | 2956 |
| (16) | NUG | | | | | | | | | | | | | |
| (17) | Solar | | | 28 | 24 | 24 | 25 | 161 | 161 | 161 | 161 | 161 | 161 | 161 |
| (18) | Other (Purchase/Sales)[1] | | | 675 | 335 | 396 | 702 | 886 | 668 | 487 | 498 | 717 | 536 | 248 |
| (19) | Net Energy for Load | | GWh | 3,274 | 3,167 | 3,189 | 3,209 | 3,230 | 3,254 | 3,271 | 3,293 | 3,319 | 3,345 | 3,366 |

[1] Intra-Regional Purchase

Table 8-11
Schedule 6.2: Energy Sources

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Calendar Year | | | | | | | | | | |
| | Energy Source | Type | Units | 2020-Actual | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
| (1) | Inter-Regional Interchange | | % | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| (2) | Nuclear | | % | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| (3) | Coal | | % | 13.8% | 8.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| (4) | Residual | Steam | % | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| (5) | | CC | % | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| (6) | | CT | % | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| (7) | | Total | % | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| (8) | Distillate | Steam | % | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| (9) | | CC | % | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| (10) | | CT | % | 0.0% | 0.1% | 0.2% | 0.1% | 0.2% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.0% |
| (11) | | Total | % | 0.0% | 0.1% | 0.2% | 0.1% | 0.2% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.0% |
| (12) | Natural Gas | Steam | % | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| (13) | | CC | % | 64.1% | 79.3% | 85.2% | 76.3% | 58.6% | 66.9% | 75.4% | 75.1% | 69.4% | 73.7% | 84.8% |
| (14) | | CT | % | 0.6% | 1.2% | 1.5% | 0.9% | 8.8% | 7.5% | 4.8% | 4.9% | 4.0% | 5.4% | 3.0% |
| (15) | | Total | % | 64.7% | 80.5% | 86.6% | 77.2% | 67.4% | 74.4% | 80.1% | 79.9% | 73.5% | 79.1% | 87.8% |
| (16) | NUG | | % | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Solar | | % | 0.9% | 0.8% | 0.8% | 0.8% | 5.0% | 4.9% | 4.9% | 4.9% | 4.9% | 4.8% | 4.8% |
| | Other (Specify)[1] | | % | 20.6% | 10.6% | 12.4% | 21.9% | 27.4% | 20.5% | 14.9% | 15.1% | 21.6% | 16.0% | 7.4% |
| (18) | Net Energy for Load | | % | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

[1] Other = Purchase

Table 8-12

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) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Total Installed Capacity | Firm Capacity Import | Firm Capacity Export | Projected Firm Net To Grid from NUG | Firm Contracts | Total Capacity Available | System Firm Peak Demand | Reserve Margin Before Maintenance[1] | | Scheduled Maintenance | Reserve Margin After Maintenance[1] | |
| | MW | MW | MW | MW | MW | MW | MW | MW | % | MW | MW | % |
| 2021 | 665 | 0 | 0 | 7 | 125 | 797 | 656 | 141 | 21 | 0 | 141 | 21 |
| 2022 | 665 | 0 | 0 | 7 | 125 | 797 | 661 | 136 | 20 | 0 | 136 | 21 |
| 2023 | 665 | 0 | 0 | 7 | 125 | 797 | 663 | 134 | 19 | 0 | 134 | 20 |
| 2024 | 765 | 0 | 0 | 32 | 0 | 797 | 668 | 129 | 19 | 0 | 129 | 19 |
| 2025 | 765 | 0 | 0 | 32 | 0 | 797 | 671 | 126 | 18 | 0 | 126 | 19 |
| 2026 | 765 | 0 | 0 | 32 | 0 | 797 | 674 | 123 | 18 | 0 | 123 | 18 |
| 2027 | 765 | 0 | 0 | 32 | 0 | 797 | 678 | 119 | 17 | 0 | 119 | 18 |
| 2028 | 765 | 0 | 0 | 32 | 0 | 797 | 683 | 114 | 16 | 0 | 114 | 17 |
| 2029 | 765 | 0 | 0 | 32 | 0 | 797 | 687 | 110 | 15 | 0 | 110 | 16 |
| 2030 | 765 | 0 | 0 | 32 | 0 | 797 | 691 | 106 | 15 | 0 | 106 | 15 |

Table 8-13

Schedule 7.2: Forecast of Capacity, Demand, and Scheduled Maintenance at the time of Winter Peak

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Total Installed Capacity | Firm Capacity Import | Firm Capacity Export | Projected Firm Net To Grid from NUG | Firm Contracts | Total Capacity Available | System Firm Peak Demand | Reserve Margin Before Maintenance[1] | | Scheduled Maintenance | Reserve Margin After Maintenance[1] | |
| | MW | MW | MW | MW | | MW | MW | MW | % | MW | MW | % |
| 2021/22 | 709 | 0 | 0 | 0 | 125 | 834 | 677 | 157 | 23 | 0 | 157 | 23 |
| 2022/23 | 709 | 0 | 0 | 0 | 125 | 834 | 682 | 152 | 22 | 0 | 152 | 22 |
| 2023/24 | 809 | 0 | 0 | 0 | 0 | 809 | 689 | 120 | 17 | 0 | 120 | 17 |
| 2024/25 | 809 | 0 | 0 | 0 | 0 | 809 | 691 | 118 | 17 | 0 | 118 | 17 |
| 2025/26 | 809 | 0 | 0 | 0 | 0 | 809 | 695 | 114 | 16 | 0 | 114 | 16 |
| 2026/27 | 809 | 0 | 0 | 0 | 0 | 809 | 699 | 110 | 16 | 0 | 110 | 16 |
| 2027/28 | 809 | 0 | 0 | 0 | 15 | 824 | 706 | 118 | 17 | 0 | 118 | 17 |
| 2028/29 | 809 | 0 | 0 | 0 | 15 | 824 | 708 | 116 | 16 | 0 | 116 | 16 |
| 2029/30 | 809 | 0 | 0 | 0 | 15 | 824 | 711 | 113 | 16 | 0 | 113 | 16 |
| 2030/31 | 809 | 0 | 0 | 0 | 15 | 824 | 714 | 110 | 15 | 0 | 110 | 15 |

[1]Includes Conservation

Table 8-14
Schedule 8.0: 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 | | Fuel Transport | | Const Start | Commercial In-Service | Expected Retirement | Gen Max Nameplate | Net Capability | | Status |
| | | | | Pri. | Alt. | Pri. | Alt. | Mo/Yr | Mo/Yr | Mo/Yr | MW | Sum MW | Win MW | |
| Charles Larsen Power Plant | Gas Turbine #2 | Polk County | GT | NG | DFO | PL | TK | - | Nov-62 | - | 11.2 | 10 | 14 | OS |
| Charles Larsen Power Plant | Gas Turbine #3 | Polk County | GT | NG | DFO | PL | TK | - | Dec-62 | - | 11.2 | 9 | 13 | OS |
| C.D. McIntosh Power Plant | Gas Turbine #2 | Polk County | GT | NG | DFO | PL | TK | Apr-19 | Jun-20 | - | 130 | 117 | 122 | OP |
| C.D. McIntosh Power Plant | 2 | Polk County | ST | NG | RFO | PL | TK | - | Jun-76 | Jun-20 | 114.7 | 106 | 106 | RE |
| C.D. McIntosh Power Plant | 3 | Polk County | ST | BIT | - | RR | - | - | Sep-82 | 4/31/2020 | 365 | 205 | 205 | RT |
| C.D. McIntosh Power Plant | 5 | Polk County | CT | NG | - | PL | - | - | May-01 | - | 293 | 249.5 | 273.5 | A |
| C.D. McIntosh Power Plant | 5 | Polk County | CA | WH | - | - | - | - | May-02 | - | 135 | 118.5 | 114.5 | D |
| - | - | Polk County | PV | SUN | - | - | - | - | Jan-24 | - | 50 | 50 | 50 | P |
| C.D. McIntosh Power Plant | - | Polk County | IC | NG | DFO | PL | TK | - | Jan-24 | - | 100 | 100 | 100 | P |

| Table 8-15 | |
|---|---|
| Schedule 9.1: Status Report and Specifications of Approved Generating Facilities | |
| (1) Plant Name and Unit Number: | The planned units are not approved yet and are in planning stage. |
| (2) Capacity: | |
| (3) Summer MW | |
| (4) Winter MW | |
| (5) Technology Type: | |
| (6) Anticipated Construction Timing: | |
| (7) Field Construction Start-date: | |
| (8) Commercial In-Service date: | |
| (9) Fuel | |
| (10) Primary | |
| (11) Alternate | |
| (12) Air Pollution Control Strategy: | |
| (13) Cooling Method: | |
| (14) Total Site Area: | |
| (15) Construction Status: | |
| (16) Certification Status: | |
| (17) Status with Federal Agencies: | |
| (18) ***Projected*** Unit Performance Data: | |
| (19) Planned Outage Factor (POF): | |
| (20) Forced Outage Factor (FOF): | |
| (21) Equivalent Availability Factor (EAF): | |
| (22) Resulting Capacity Factor (%): | |
| (23) Average Net Operating Heat Rate (ANOHR): | |
| (24) ***Projected*** Unit Financial Data: | |
| (25) Book Life: | |
| (26) Total Installed Cost (In-Service year $/kW): | |
| (27) Direct Construction Cost ($/kW): | |
| (28) AFUDC Amount ($/kW): | |
| (29) Escalation ($/kW): | |
| (30) Fixed O&M ($/kW-yr): | |
| (31) Variable O&M ($/MWh): | |

Table 8-16
Schedule 10: Status Report and Specifications of Proposed
Directly Associated Transmission Lines

| | | |
|---|---|---|
| (1) | Point of Origin and Termination: | None planned. |
| (2) | Number of Lines: | None planned. |
| (3) | Right of Way: | None planned. |
| (4) | Line Length: | None planned. |
| (5) | Voltage: | None planned. |
| (6) | Anticipated Construction Time: | None planned. |
| (7) | Anticipated Capital Investment: | None planned. |
| (8) | Substations: | None planned. |
| (9) | Participation with Other Utilities: | None planned. |

## 8.1 Abbreviations and Descriptions

The following abbreviations are used throughout the Ten-Year Site Plan Schedules.

| Abbreviation | Description |
|---|---|
| **Unit Type** | |
| CA | Combined Cycle Steam Part |
| GT | Combustion Gas Turbine |
| ST | Steam Turbine |
| CT | Combined Cycle Combustion Turbine |
| CC | Combined Cycle |
| IC | Internal Combustion Engine |
| **Fuel Type** | |
| NG | Natural Gas |
| DFO | Distillate Fuel Oil |
| RFO | Residual Fuel Oil |
| BIT | Bituminous Coal |
| WH | Waste Heat |
| **Fuel Transportation Method** | |
| PL | Pipeline |
| TK | Truck |
| RR | Railroad |
| **Unit Status Code** | |
| RE | Retired |
| RT | To be Retired |
| SB | Cold Standby (Reserve) |
| TS | Construction Complete, not yet in commercial operation |
| U | Under Construction |
| P | Planned for installation |

Intentionally Blank

**1**
**General Items**

3. *Please refer to the Microsoft Excel document accompanying this data request titled "Data Request #1 – Excel Tables," (Excel Tables Spreadsheet). Please provide, in Microsoft Excel format, all data requested in the Excel Tables Spreadsheet for those sheets/tabs identified as associated with this question. If any of the requested data is already included in the Company's current planning period TYSP, state so on the appropriate form.*

   See completed EXCEL SHEETS 3-71 attached.

**Environmental Compliance Costs**

4. *Please explain if the Company assumes $CO_2$ compliance costs in the resource planning process used to generate the resource plan presented in the Company's current planning period TYSP.*

   $CO_2$ compliance costs are not included in Lakeland's future resource planning process for this TYSP planning period.

   *If the response is affirmative:*

   a. *Please identify the year during the current planning period in which $CO_2$ compliance costs are first assumed to have a non-zero value.*

   b. ***[Investor-Owned Utilities Only]*** *Please explain if the exclusion of $CO_2$ compliance costs would result in a different resource plan than that presented in the Company's current planning period TYSP.*
   c. ***[Investor-Owned Utilities Only]*** *Please provide a revised resource plan assuming no $CO_2$ compliance costs.*

**Flood Mitigation**

5. *Please explain the Company's planning process for flood mitigation for current and proposed power plant sites and transmission/distribution substations.*

All Lakeland Electric power plant sites and substations are located outside of FEMA flood zones. Therefore, no flood mitigation planning is performed.

***Load & Demand Forecasting***

6. ***[Investor-Owned Utilities Only]*** *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing, on a system-wide basis, the hourly system load in megawatts (MW) for the period January 1*

*through December 31 of the year prior to the current planning period. For leap years, please include load values for February 29. Otherwise, leave that row blank. Please also describe how loads are calculated for those hours just prior to and following Daylight Savings Time.*

7. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on the monthly peak demand experienced during the three-year period prior to the current planning period, including the actual peak demand experienced, the amount of demand response activated during the peak, and the estimated total peak if demand response had not been activated. Please also provide the day, hour, and system-average temperature at the time of each monthly peak.*

   See completed EXCEL SHEET 7.

8. *Please identify the weather station(s) used for calculation of the system-wide temperature for the Company's service territory. If more than one weather station is utilized, please describe how a system-wide average is calculated.*

The weather information is obtained from Lakeland Electric's own weather stations. Several weather stations are strategically placed throughout Lakeland's electric service territory to provide the best estimate of overall temperature for the service area. The data from these weather stations is averaged for the month, day, and for highs and lows.

9. *Please explain, to the extent not addressed in the Company's current planning period TYSP, how the reported forecasts of the number of customers, demand, and total retail energy sales were developed. In your response, please include the following information: methodology, assumptions, data sources, third-party consultant(s) involved, anticipated forecast accuracy, and any difference/improvement made compared with those forecasts used in the Company's most recent prior TYSP.*

<u>Methodology and assumptions</u>

- Lakeland explains the methodology and assumptions used to develop the load and demand forecast in Section 3.0 "Forecast of Electrical Power Demand and Energy Consumption" of the 2021 TYSP.

<u>Data Sources</u>

- Lakeland's own weather stations
- Customer Billing System Data
- SCADA Hourly Load Data/Solar Generation
- Census Data

<u>Third Party Consultants</u>

- Moody's Analytics for demographic/economic projections
- Woods and Poole for demographic/economic projections
- Bureau of Business and Economic Research for demographic projections

- Itron's Energy Forecasting Group for appliance indices
- Itron's expertise for forecast review

Forecast Improvements/Changes

- No significant changes since 2020 forecast.

10. *Please identify all closed and open Florida Public Service Commission (FPSC) dockets and all non-docketed FPSC matters which were/are based on the same load forecast used in the Company's current planning period TYSP.*

To our best knowledge, we do not have any closed/open FPSC dockets or non-docketed ongoing matters which were related to the Lakeland Load Forecast used in the current TYSP planning period.

11. *Please explain if your Company evaluates the accuracy of its forecasts of customer growth and annual retail energy sales presented in its past TYSPs by comparing the actual data for a given year to the data forecasted one, two, three, four, five, or six years prior.*
    a. *If your response is affirmative, please explain the method used in your evaluation, and provide the corresponding results, including work papers, in Microsoft Excel format for the analysis of each forecast presented in the TYSPs filed with the Commission during the 20-year period prior to the current planning period. If your Company limits its analysis to a period shorter than 20 years prior to the current planning period, please provide what analysis you have and a narrative explaining why your Company limits its analysis period.*

Lakeland generates a new long-term load forecast every year. As part of the forecasting process, the accuracy on previous forecast is assessed. Energy Sales and peak load values are weather normalized and forecast variance is assessed relative to the actual values as well as relative to weather normalized values in order to determine the underlying trends.

Previously Lakeland maintained annual forecast error fans aggregated by fiscal year (Fiscal Year = Oct 1st through Sept 30th). Error fans were created for population (vs customers), sales, summer peak and winter peak and are available for the late 1990s fiscal year through to 2009 fiscal year. This file was already submitted to PSC in 2020 as part of last year's data request.

Most recently, Lakeland has updated its forecast error fans to match the Calendar Year Ten Year Site Plan data back to 2008. Spreadsheet titled LAK2021TYSP_ErrorFans.xlsx contains both actual and weather normalized values where applicable. Data goes back to 2008 and has been updated with 2020 actuals.

    b. *If your response is negative, please explain why.*

12. *Please explain if your Company evaluates the accuracy of its forecasts of Summer/Winter Peak Energy Demand presented in its past TYSPs by comparing the actual data for a given year to the data forecasted one, two, three, four, five, or six years prior.*

a. *If your response is affirmative, please explain the method used in your evaluation, and provide the corresponding results, including work papers, in Microsoft Excel format for the analysis of each forecast presented in the TYSPs filed with the Commission during the 20-year period prior to the current planning period. If your Company limits its analysis to a period shorter than 20 years prior to the current planning period, please provide what analysis you have and a narrative explaining why your Company limits its analysis period.*

Please see response to question 11 a.

b. *If your response is negative, please explain why.*

13. *Please explain any historic and forecasted trends in:*

a. ***Growth of customers****, by customer type (residential, commercial, industrial) as well as Total Customers, and identify the major factors (historically, currently, and in the forecasted period) that contribute to the growth/decline of the trends.*

In recent years, the Lakeland Winter Haven Metropolitan Statistical Area (MSA) in Polk County has seen a boom in e-commerce warehouse development due to its central location in Florida. Notably, Amazon moved its air hub from Tampa to Lakeland in the summer of 2020. In addition, the local business community is very active in promoting central Florida and pushing for a diversity of industries to relocate here. The diversity of our customer base has made Lakeland more resilient during the COVID pandemic. The lower population density has also made smaller cities like Lakeland attractive to both work from home families and retirees. As a result, Lakeland Electric experienced 1.6% total customer growth in 2020 – the highest growth rate in the past 10 years.

Industrial customer growth was the only category that experienced negative growth in 2020 and that translated in the loss of just one average customer over the year.

| | Residential | Commercial | Industrial | Total |
|---|---|---|---|---|
| 2011-2020 AAGR | 1.1% | 0.9% | -1.1% | 1.0% |
| 2021-2030 AAGR | 1.1% | 0.9% | 1.4% | 1.1% |

Our customer forecast uses Moody's analytics and cross references locally produced forecasts from the Bureau of Economic and Business Research associated with the University of Florida.

b. ***Average KWh consumption per customer****, by customer type (residential, commercial, industrial), and identify the major factors (historically, currently, and in the forecasted period) that contribute to the growth/decline of the trends.*

Lakeland uses Itron Energy Forecasting Group data on Appliance Indices and Building characteristics which is derived from U.S. Energy Information Administration (EIA) research published in its 2019 Annual Energy Outlook (AEO). Lakeland uses the Southeast Census division data and contracts with Itron to adjust the indices based on Lakeland's mix of residential

and commercial building types. The EIA projections incorporate expected changes in appliance energy efficiency due to codes and standards as well as general advances in technology.
While the pandemic did change consumption trends in 2020, it is not expected to substantially alter the long-term trends.

Residential Average use has been declining in the Lakeland Service area and is expected to continue to decline. The main factors in the decline are increased appliance energy efficiency, improved building shell insulation, changes in residential building type mix. Commercial Average use has also been declining. It is expected to continue to do so according to EIA projections used in our models. Main contributors to the historical decline are lighting upgrades, appliance energy efficiency as well as the use of energy management systems. Lakeland is forecasting a flattening of Industrial average use mainly because a small number of customers are projected to get added to that rate class and those that do get added are expected to be mostly in the small Industrial category (billing demand between 500 KW and 1,000 KW).

| | Residential | Commercial | Industrial |
|---|---|---|---|
| 2011-2020 AAGR | -0.5% | -0.4% | 2.5% |
| 2021-2030 AAGR | -1.0% | -0.3% | -0.7% |

c. ***Total Billed Retail Energy Sales*** *(GWh)* ***[for FPL]****, or* ***Net Energy for Load*** *(GWh)* ***[for other companies]****, identify the major factors (historically, currently, and in the forecasted period) that contribute to the growth/decline of the trends. Please include a detailed discussion of how the Company's demand management program(s) and conservation/energy-efficiency program(s) impact the growth/decline of the trends.*

As discussed in previous section, average use is declining or flat for all three main rate classes. At this time, Net Energy for Load is expected to grow in the 10 year forecast horizon by 0.7 % a year. This is because positive customer growth rates are expected to compensate for average use declines. Lakeland assumes impact of conservation programs are already in the energy sales history and does not make any additional assumptions regarding their impact.

*14. Please explain any historic and forecasted trends in each of the following components of Summer/Winter Peak Demand:*

a. ***Demand Reduction due to Conservation and Self Service****, by customer type (residential, commercial, industrial) as well as Total Customers, and identify the major factors (historically, currently, and in the forecasted period) that contribute to the growth/decline in the trends.*

**<u>Conservation</u>**

Conservation impacts are assumed to be reflected in the historical time series.

**<u>Self Service – cogeneration non solar</u>**

Since Lakeland Electric rates are among the lowest in the state, it is not expected that it would be cost effective for a customer to self-serve. No non solar cogeneration is assumed in the models.

**Self Service – solar photovoltaic**

Lakeland tracks solar photovoltaic installations and generates a net metered energy forecast. Due to our low electric rates and rate structure, growth of self-service solar has been minimal and is expected to continue to be minimal and have negligible impact on demand.

*b.* ***Demand Reduction due to Demand Response,*** *by customer type (residential, commercial, industrial), and identify the major factors (historically, currently, and in the forecasted period) that contribute to the growth/decline of the trends.*

Lakeland does not currently have a demand response program in place and no assumptions are made in the load forecast from demand response for this planning period.

*c.* ***Total Demand****, and identify the major factors (historically, currently, and in the forecasted period) that contribute to the growth/decline in the trends.*

Lakeland is considered winter peaking. Lakeland's all-time annual peak was 804 MW in the winter of 2010. In recent years, Lakeland has experienced several mild winter seasons. Nonetheless, when Lakeland experiences a cold winter, the peak typically surpasses the summer peak. It is expected that Lakeland will remain winter peaking in the 10 year forecast horizon.

Summer peaks in Lakeland are less volatile than winter peaks and have been growing at a slightly faster pace, on a weather normalized basis.

Factors contributing to the total demand growth rate are same factors discussed in response to question No. 13.

*d.* ***Net Firm Demand,*** *by the sources of peak demand appearing in Schedule 3.1 and Schedule 3.2 of the current planning period TYSP, and identify the major factors (historically, currently, and in the forecasted period) that contribute to the growth/decline in the trends.*

Since no reductions are made for Load Management and Conservation, Net Firm Demand is the same as Total Demand. Please see response to question 14 C.

*15. Please explain any anomalies caused by non-weather events with regard to annual historical data points for the period 10 years prior to the current planning period that have contributed to the Company's Summer/Winter Peak Energy Demand.*

A review of Lakeland's Summer and Winter peak demand for the ten years prior to the current planning period do not reveal any anomalies caused by non-weather events. While pandemic did cause a shift in Residential and Commercial consumption; overall total demand was minimally impacted.

16. ***[Investor-Owned Utilities Only]*** *If not included in the Company's current planning period TYSP, please provide load forecast sensitivities (high band, low band) to account for the uncertainty inherent in the base case forecasts in the following TYSP schedules, as well as the methodology used to prepare each forecast:*
    a. *Schedule 2.1 – History and Forecast of Energy Consumption and Number of Customers by Customer Class.*
    b. *Schedule 2.2 - History and Forecast of Energy Consumption and Number of Customers by Customer Class.*
    c. *Schedule 2.3 - History and Forecast of Energy Consumption and Number of Customers by Customer Class.*
    d. *Schedule 3.1 - History and Forecast of Summer Peak Demand.*
    e. *Schedule 3.2 - History and Forecast of Winter Peak Demand.*
    f. *Schedule 3.3 - History and Forecast of Annual Net Energy for Load.*
    g. *Schedule 4 - Previous Year and 2-Year Forecast of Peak Demand and Net Energy for Load by Month.*

17. *Please discuss whether the Company included plug-in electric vehicle (PEV) loads in its demand and energy forecasts for its current planning period TYSP. If so, how were these impacts accounted for in the modeling and forecasting process?*

Lakeland Electric did not include PEV loads in its demand and energy forecast for the current planning period TYSP.

Growth in PEVs has varied widely within the United States depending on state and local incentives, charging infrastructure, electric rates, and income levels. Within Florida, PEVs growth has been concentrated in the larger and wealthier MSAs.

While Lakeland Electric monitors the growth of PEVs in our service area, based on DMV data for Polk County, we estimate that in 2020, PEV counts in our service area were insignificant (0.1% relative to our service area population count). PEVs are not expected to have a significant impact on our load in the next 10-year forecast horizon.

18. *Please discuss the methodology and the assumptions (or, if applicable, the source(s) of the data) used to estimate the number of PEVs operating in the Company's service territory and the methodology used to estimate the cumulative impact on system demand and energy consumption.*

Please see response to question 17

19. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing estimates of the requested information within the Company's service territory for the current planning period. Direct*

*current fast charger (DCFC) PEV charging stations are those that require a service drop greater than 240 volts and/or use three-phase power.*

See completed EXCEL SHEET 19.

20. *Please describe any Company programs or tariffs currently offered to customers relating to PEVs, and describe whether any new or additional programs or tariffs relating to PEVs will be offered to customers within the current planning period.*

Lakeland Electric does not have nor requires a PEV tariff or rates. Ideation around TOU programs will begin soon.

a. *Of these programs or tariffs, are any designed for or do they include educating customers on electricity as a transportation fuel?*

Education and advocacy will be a large part of the PEV transition for Lakeland customers.

b. *Does the Company have any programs where customers can express their interest or expectations for electric vehicle infrastructure as provided for by the Utility, and if so, please describe in detail.*

No, but Lakeland is always open to customers' input. Customer facing website has incentives and rebates available, our energy advisor team can go on-site to answer customer questions.

21. *Please describe how the Company monitors the installation of PEV public charging stations in its service area.*

Lakeland Electric worked with the City of Lakeland to add Level 1, 2, and 3 charging categories to our City's electrical inspection process - E-Trakit.

22. *Please describe any instances since January 1 of the year prior to the current planning period in which upgrades to the distribution system were made where PEVs were a contributing factor.*

No distribution upgrades have been required to facilitate PEV charging as of yet. We have done make-ready projects but haven't had to upgrade circuits.

23. *Has the Company conducted or contracted any research to determine demographic and regional factors that influence the adoption of PEVs applicable to its service territory? If so, please describe in detail the methodology and findings.*

No research around demographic or regional factors has occurred yet.

24. *What processes or technologies, if any, are in place that allow the Company to be notified when a customer has installed a PEV charging station in their home?*

Same as 21.

25. **[FEECA Utilities Only]** For each source of demand response, please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing annual customer participation information for 10 years prior to the current planning period. Please also provide a summary of all sources of demand response using the table.

26. ***[FEECA Utilities Only]*** *For each source of demand response, please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing annual usage information for 10 years prior to the current planning period. Please also provide a summary of all demand response using the table.*

27. ***[FEECA Utilities Only]*** *For each source of demand response, please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing annual seasonal peak activation information for 10 years prior to the current planning period. Please also provide a summary of all demand response using the table.*

## Generation & Transmission

28. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each utility-owned traditional generation resource in service as of December 31 of the year prior to the current planning period. For multiple small (<250 kW per installation) distributed resources of the same type and fuel source, please include a single combined entry. For capacity factor, use the net capacity as a basis.*

See completed EXCEL SHEET 28.

29. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each utility-owned traditional generation resource planned for in-service within the current planning period. For multiple small (<250 kW per installation) distributed resources of the same type and fuel source, please include a single combined entry. For projected capacity factor, use the net capacity as a basis.*
    a. *For each planned utility-owned traditional generation resource in the table, provide a narrative response discussing the current status of the project.*

See completed EXCEL SHEET 29.

30. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each utility-owned renewable generation resource in service as of December 31 of the year prior to the current planning period. For multiple small (<250 kW per installation) distributed resources of the same type and fuel source, please include a single combined entry. For capacity factor, use the net capacity as a basis.*

See completed EXCEL SHEET 30.

31. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each utility-owned renewable generation resource planned for in-service within the current planning period. For multiple small (<250 kW per installation) distributed resources of the same type and fuel source, please include a single combined entry. For projected capacity factor, use the net capacity as a basis.*
    a. *For each planned utility-owned renewable resource in the table, provide a narrative response discussing the current status of the project.*

See completed EXCEL SHEET 31.

32. *Please list and discuss any planned utility-owned renewable resources that have, within the past year, been cancelled, delayed, or reduced in scope. What was the primary reason for the changes? What, if any, were the secondary reasons?*

    There was no planned utility owned renewable projects in recent years. Hence there is no cancellation, delay or reduction in scope. All of the existing and planned renewable projects are PPA based.

33. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each purchased power agreement with a traditional generator still in effect by December 31 of the year prior to the current planning period pursuant to which energy was delivered to the Company during said year.*

See completed EXCEL SHEET 33.

34. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each purchased power agreement with a traditional generator pursuant to which energy will begin to be delivered to the Company during the current planning period.*
    a. *For each purchased power agreement in the table, provide a narrative response discussing the current status of the project.*

See completed EXCEL SHEET 34.

35. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each purchased power agreement with a renewable generator still in effect by December 31 of the year prior to the current planning period pursuant to which energy was delivered to the Company during said year.*

See completed EXCEL SHEET 35.

36. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each purchased power agreement with a renewable generator pursuant to which energy will begin to be delivered to the Company during the current planning period.*
    a. *For each purchased power agreement in the table, provide a narrative response discussing the current status of the project.*

See completed EXCEL SHEET 36.

37. *Please list and discuss any purchased power agreements with a renewable generator that have, within the past year, been cancelled, delayed, or reduced in scope. What was the primary reason for the change? What, if any, were the secondary reasons?*

There are no changes in existing PPAs on solar projects. However, Lakeland recently changed the size of the planned PPA (future solar) endeavor from 50-74 MW to about 20 MW to accommodate the land limitations that were created by exterior owners. The additional MW on solar solicitation through PPA will continue in the future.

38. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each power sale agreement still in effect by December 31 of the year prior to the current planning period pursuant to which energy was delivered from the Company to a third-party during said year.*

See completed EXCEL SHEET 38.

39. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each power sale agreement pursuant to which energy will begin to be delivered from the Company to a third-party during the current planning period.*
    a. *For each power sale agreement in the table, provide a narrative response discussing the current status of the agreement.*

See completed EXCEL SHEET 39.

40. *Please list and discuss any long-term power sale agreements within the past year that were cancelled, expired, or modified.*

There were no power sale agreements that were cancelled, expired, or modified within the past year for the case of Lakeland.

41. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing the actual and projected annual energy output of all renewable resources on the Company's system, by source, for the 11-year period beginning one year prior to the current planning period.*

See completed EXCEL SHEET 41.

42. ***[Investor-Owned Utilities Only]*** *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on all of the Company's plant sites that are potential candidates for utility-scale (>2 MW) solar installations.*

See completed EXCEL SHEET 42.

43. *Please describe any actions the Company engages in to encourage production of renewable energy within its service territory.*

Lakeland increases by about 20 solar residential customers a month. If a customer has questions about solar, our website and energy analysts are available to help. Lakeland is working on evaluation of RFPs for developing solar energy projects in Lakeland area from IPPs. Lakeland expects to add about 50 MW of community solar in early 2024.

44. ***[Investor-Owned Utilities Only]*** *Please discuss whether the Company has been approached by renewable energy generators during the year prior to the current planning period regarding constructing new renewable energy resources. If so, please provide the number and a description of the type of renewable generation represented.*

45. *Does the Company consider solar PV to contribute to one or both seasonal peaks for reliability purposes? If so, please provide the percentage contribution and explain how the Company developed the value.*

Lakeland has considered Solar PV to contribute for capacity during the summer peak only. Our study has suggested that solar can provide firm 50% capacity for Lakeland's summer peaking load. We looked at minimum capacity contribution from solar PV in last 3 years at the time of seasonal peaking hour.

46. *Please identify whether a declining trend in costs of energy storage technologies has been observed by the Company.*

Lakeland Electric has not noticed declining costs in energy storage, as it only has the one pilot project 40kWh (see question 47). Lakeland expects to monitor and evaluate more energy storage projects in the future.

47. *Briefly discuss any progress in the development and commercialization of non-lithium battery storage technology the Company has observed in recent years.*

The City of Lakeland is constantly looking to provide its customers with the highest value by offering creative solutions to improve reliability, resiliency, and efficiency. The City installed a 40 kWh pilot battery energy storage project in 2017. The energy storage solution is intended to provide energy during customer's peak demand which can potentially lead to monetary savings for customers. No other battery storage costs have been evaluated as of this time yet.

48. *Briefly discuss any considerations reviewed in determining the optimal positioning of energy storage technology in the Company's system (e.g., Closer to/further from sources of load, generation, or transmission/distribution capabilities).*

See responses in Question 47 above. This type of study regarding the optimal positioning of storage technology is not done yet. If a customer has questions about storage and its interest, our energy analysts are always available to help. Lakeland Electric will ensure all technical problems are non-existent while positioning any storage energy projects.

49. *Please explain whether ratepayers have expressed interest in energy storage technologies. If so, how have their interests been addressed?*

Lakeland offers a rebate of $4,000 to electric customers who would like to purchase an in-home battery storage system. In 2020, Lakeland Electric had four such customers taking advantages of the rebate.

50. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on all energy storage technologies that are currently either part of the Company's system portfolio or are part of a pilot program sponsored by the Company.*

See completed EXCEL SHEET 50.

51. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on all energy storage technologies planned for in-service during the current planning period either as part of the Company's system portfolio or as part of a pilot program sponsored by the Company.*

See completed EXCEL SHEET 51.

52. *Please identify and describe the objectives and methodologies of all energy storage pilot programs currently running or in development with an anticipated launch date within the current planning period. If the Company is not currently participating in or developing energy storage pilot programs, has it considered doing so? If not, please explain.*
    a. *Please discuss any pilot program results, addressing all anticipated benefits, risks, and operational limitations when such energy storage technology is applied on a utility scale (> 2 MW) to provide for either firm or non-firm capacity and energy.*
    b. *Please provide a brief assessment of how these benefits, risks, and operational limitations may change over the current planning period.*
    c. *Please identify and describe any plans to periodically update the Commission on the status of your energy storage pilot programs.*

The City of Lakeland is constantly looking to provide its customers with the highest value by offering creative solutions to improve reliability and efficiency. The COL installed a 40 kWh pilot battery energy storage solution in 2017. The energy storage solution is intended to provide energy storage capability to shave customer's peak demand which can potentially lead to monthly energy cost savings for its customers. No other battery storage costs have been evaluated as of this request.

53. *If the Company utilizes non-firm generation sources in its system portfolio, please detail whether it currently utilizes or has considered utilizing energy storage technologies to provide firm capacity from such generation sources. If not, please explain.*

    a. *Based on the Company's operational experience, please discuss to what extent energy storage technologies can be used to provide firm capacity from non-firm generation sources. As part of your response, please discuss any operational challenges faced and potential solutions to these challenges.*

Lakeland has about 14 MW of installed capacity for solar PV in its portfolio. For reliability purpose, only 50% of the installed capacity (i.e. 7 MW) is considered firm. At this time, the share of solar mix in its existing portfolio is very minimal and it is not expected to cause any supply-demand balance and create any operational challenges. But existing small prototype battery storage will help to determine the level of storage capacity needed in future if the share of solar generation increases significantly. We do not expect any operational challenges until we add about 15% of energy from no-firm energy resources (i.e. solar PV) – which we think Lakeland will not to that level in next 10 years. Moreover, since Lakeland is a member of the Florida Municipal Power Pool (FMPP), operational challenges are significantly reduced due to the fact that FMPP has increased number of resources in its portfolio.

54. *Please identify and describe any programs the Company offers that allows its customers to contribute towards the funding of specific renewable projects, such as community solar programs.*

Lakeland Electric is currently in the ideation phase of implementing community solar. But investment options on community solar programs for the customers has not been provided yet.

a. *Please describe any such programs in development with an anticipated launch date within the current planning period.*

At present, Lakeland has no such programs within the current planning period.

55. *Please identify and discuss the Company's role in the research and development of utility power technologies. As part of this response, please describe any plans to implement the results of research and development into the Company's system portfolio and discuss how any anticipated benefits will affect your customers.*

Lakeland Electric has created the position of Emerging Technology Manager, moved Smart Grid Department under its purview as well as LE's solar program. This department is responsible for the aforementioned Electric Vehicle and Battery Storage, Demand side Management, and other emerging technologies that have promising future in the Electric utility industry.

56. ***[Investor-Owned Utilities Only]*** *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing, on a system-wide basis, the historical annual average as-available energy rate in the Company's service territory for the 10-year period prior to the current planning period. Also, provide the projected annual average as-available energy rate in the Company's service territory for the current planning period. If the Company uses multiple areas for as-available energy rates, please provide a system-average rate as well.*

57. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on all planned traditional units with an in-service date within the current planning period. For each planned unit, provide the date of the Commission's Determination of Need and Power Plant Siting Act certification, if applicable.*

See completed EXCEL SHEET 57.

58. *For each of the planned generating units, both traditional and renewable, contained in the Company's current planning period TYSP, please discuss the "drop dead" date for a decision on whether or not to construct each unit. Provide a timeline for the construction of each unit, including regulatory approval, and final decision point.*

Both traditional and renewable energy generating units are in early stage of planning and are planned for early 2024 build out. Those projects are in the very early stages of solicitation and permitting. Construction will not start at least for one or two years.

59. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing the actual and projected capacity factors for each existing and planned unit on the Company's system for the 11-year period beginning one year prior to the current planning period.*

See completed EXCEL SHEET 59.

60. ***[Investor-Owned Utilities Only]*** *For each existing unit on the Company's system, please provide the planned retirement date. If the Company does not have a planned retirement date for a unit, please provide an estimated lifespan for units of that type and a non-binding estimate of the retirement date for the unit.*

61. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on all of the Company's steam units that are potential candidates for repowering to operation as Combined Cycle units.*

See completed EXCEL SHEET 61.

62. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on all of the Company's steam units that are potential candidates for fuel-switching.*

See completed EXCEL SHEET 62.

63. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing a list of all proposed transmission lines for the current planning period that require certification under the Transmission Line Siting Act. Please also include in the table transmission lines that have already been approved, but are not yet in-service.*

See completed EXCEL SHEET 63.

## ***Environmental***

64. *Provide a narrative explaining the impact of any existing environmental regulations relating to air emissions and water quality or waste issues on the Company's system during the previous year. As part of your narrative, please discuss the potential for existing environmental regulations to impact unit dispatch, curtailments, or retirements during the current planning period.*

    The Steam Electric Power Effluent Limitation Guidelines (ELG) rules have been reconsidered by EPA and a final rule went into effect on August 31, 2020. This rule impacted coal burning units. The rulemaking includes off ramps for those facilities that have plans for shuttering in the next couple years. With Unit 3 planning for retirement in 2021, we plan to comply by coal retirement.

    The Cooling Water Intake Structures (CWIS) Rule affects units that use surface water for cooling purposes. Two of our units are affected by this rule. Unit 8 is impacted by this rule. Due to Unit 8 exceeding a capacity factor of 8%, Lakeland is required to endeavor an intensive ecological study. At the end of the study, it is quite likely the intake structures will need to be reconfigured to meet the stricter standards. The reconfigured intake structures are estimated to about a million dollars. One alternative to reconfiguring the intake structures is to operate the unit in a simple cycle which would eliminate the need for the cooling water intake but reduce the electrical output of the unit.

    The Coal Combustion Residuals (CCR) rule took effect in 2015 by regulating the storage of coal combustion byproducts. Lakeland Electric stores only dry byproducts onsite. The regulations required additional monitoring of the groundwater around the byproduct storage site. Small, localized groundwater impacts have been determined and delineated. There are no off-site impacts. A remediation strategy is being developed and will be implemented in 2021.

65. *For the U.S. EPA's Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units Rule:*
    - a. *Will your Company be materially affected by the rule?*

      Future of the existing (2015) NSPS GHG rule is uncertain due to recent actions by the previous EPA administration. A revised NSPS GHG Rule was proposed in December 2018. LE is, however, not planning to add any new units that would be subject to the NSPS GHG rule.

    - b. *What compliance strategy does the Company anticipate employing for the rule?*
      N/A
    - c. *If the strategy has not been completed, what is the Company's timeline for completing the compliance strategy?*
      N/A

d. *Will there be any regulatory approvals needed for implementing this compliance strategy? How will this affect the timeline?*
N/A
e. *Does the Company anticipate asking for cost recovery for any expenses related to this rule? Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on the costs for the current planning period.*

See completed EXCEL SHEET 65 – not expected to be impacted by this rule.

f. *If the answer to any of the above questions is not available, please explain why.*
N/A

66. *Explain any expected reliability impacts resulting from each of the EPA rules listed below. As part of your explanation, please discuss the impacts of transmission constraints and changes to units not modified by the rule that may be required to maintain reliability.*

a. *Mercury and Air Toxics Standards (MATS) Rule.*

No reliability impact expected.

b. *Cross-State Air Pollution Rule (CSAPR).*

No reliability impact expected.

c. *Cooling Water Intake Structures (CWIS) Rule.*

Unit 8 may be impacted. Additional environmental studies will need to be completed. If state regulators review the studies and determine we must comply with each provision of the rule, a decision would be needed whether to invest in significant capital expenses or to limit the Unit to simple cycle operation. It is possible that the results of the studies and negotiations with regulators bring about very little changes to Unit 8.

d. *Coal Combustion Residuals (CCR) Rule.*

No reliability impact expected.

e. *Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units.*

No reliability impact expected.

*f. Affordable Clean Energy Rule or its replacement.*

No reliability impact expected from the ACE rule. Too early to know whether there will be any impacts from the ACE rule potential replacement.

*g. Effluent Limitations Guidelines and Standards (ELGS) from the Steam Electric Power Generating Point Source Category.*

No reliability impact expected.

67. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by identifying, for each unit affected by one or more of EPA's rules, what the impact is for each rule, including; unit retirement, curtailment, installation of additional emissions controls, fuel switching, or other impacts identified by the Company.*

See completed EXCEL SHEET 67

68. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by identifying, for each unit impacted by one or more of the EPA's rules, what the estimated cost is for implementing each rule over the course of the planning period.*

See completed EXCEL SHEET 68

69. *Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by identifying, for each unit impacted by one or more of EPA's rules, when and for what duration units would be required to be offline due to retirements, curtailments, installation of additional controls, or additional maintenance related to emission controls. Include important dates relating to each rule.*

See completed EXCEL SHEET 69

70. *If applicable, identify any currently approved costs for environmental compliance investments made by your Company, including but not limited to renewable energy or energy efficiency measures, which would mitigate the need for future investments to comply with recently finalized or proposed EPA regulations. Briefly describe the nature of these investments and identify which rule(s) they are intended to address.*

Lakeland has not identified and approved such investments which would mitigate the need for compliance on future EPA regulations

***<u>Fuel Supply & Transportation</u>***

71. *Please complete and return, in Microsoft Excel format, the table associated with this*

*question found in the Excel Tables Spreadsheet by providing, on a system-wide basis, the actual annual fuel usage (in GWh) and average fuel price (in nominal $/MMBTU) for each fuel type utilized by the Company in the 10-year period prior to the current planning period. Also, provide the forecasted annual fuel usage (in GWh) and forecasted annual average fuel price (in nominal $/MMBTU) for each fuel type forecasted to be used by the Company in the current planning period.*

See completed EXCEL SHEET 71.

72. *Please discuss how the Company compares its fuel price forecasts to recognized, authoritative independent forecasts.*

Lakeland Electric uses a combination of methods to determine fuel price forecasts for analysis purposes and reports. These include use of professionally prepared forecasts by respected industry sources such a Woods Mackenzie, EVA, and Energy Outlook, EIA. Additionally, examination and comparison of the NYMEX Henry Hub futures market in comparison to those figures is conducted. These are industry standard practices to follow in preparation of long-range fuel forecasts.

73. *Please identify and discuss expected industry trends and factors for each fuel type listed below that may affect the Company during the current planning period.*

*a.* *Coal*

Lakeland Electric ceased production from its coal plant on April 4th, 2021. Lakeland's expectation on Coal prices are flat in next few years until there are stricter regulations in the coal industry. But impact on Lakeland's generation business will have no impact as no coal units will be in operation in Lakeland's portfolio in future.

b. Natural Gas

With the pandemic's impacts being slowed by a gradual return to normalcy, natural gas prices seem to be strengthening. The new administration's policies and the non-renewal of certain leases for energy from the US government seem to also be causing price increases. Market expectations are gas prices to remain stronger in 2022 due to new regulations and by what is expected to be a slower than normal use of natural gas storage.

c. Nuclear

Nuclear costs have remained stable and expected to be stable in future. Lakeland is not impacted from Nuclear fuels.

d. Fuel Oil

Fuel oil prices fell to low levels but are not yet to the point where they would supplant coal or natural gas on an economic basis. Reduced loads due to the pandemic seem to have come to an end. Production levels have been lowered by some countries and large pipeline projects were halted, resulting in considerable cost increases in the United States. This should act to keep prices higher for the next several months.

e. Other (please specify each, if any)

Not applicable.

74. *Please identify and discuss steps that the Company has taken to ensure natural gas supply availability and transportation over the current planning period.*

Lakeland Electric has long term transportation contracts in place with two separate pipeline companies, Florida Gas Transmission Company and Gulfstream Pipeline Company. The transportation contracts allow for firm transportation of natural gas and are not scheduled to require renewal in most cases for several years.

Regarding supply, Lakeland Electric has agreements with multiple suppliers, allowing for diversity of supply. LE also participates in some supply agreements from time to time allowing for reductions in price.

75. *Please identify and discuss any existing or planned natural gas pipeline expansion project(s), including new pipelines and those occurring or planned to occur outside of Florida that would affect the Company during the current planning period.*

There are no known major expansion projects currently for pipelines serving Lakeland Electric.

76. *Please identify and discuss expected liquefied natural gas (LNG) industry factors and trends that will impact the Company, including the potential impact on the price and availability of natural gas, during the current planning period.*

LNG demand strengthened during late 2020 and early 2021. Though it should not impact Lakeland Electric directly, any strengthening of the natural gas market tends to increase Lakeland's costs for supply.

77. *Please identify and discuss the Company's plans for the use of firm natural gas storage during the current planning period.*

Lakeland Electric has no plans to use firm natural gas storage during the period.

78. *Please identify and discuss expected coal transportation industry trends and factors, for transportation by both rail and water that will impact the Company during the current planning period. Please include a discussion of actions taken by the Company to promote competition among coal transportation modes, as well as expected changes to terminals and port facilities that could affect coal transportation.*

Coal transportation is no longer necessary for our utility due to our coal plant's retirement in early April 2021.

79. *Please identify and discuss any expected changes in coal handling, blending, unloading, and storage at coal generating units during the current planning period. Please discuss any planned construction projects that may be related to these changes.*

Coal transportation is no longer necessary for our utility due to our recent coal plant's retirement.

80. *Please identify and discuss the Company's plans for the storage and disposal of spent nuclear fuel during the current planning period. As part of this discussion, please include the Company's expectation regarding short-term and long-term storage, dry cask storage, litigation involving spent nuclear fuel, and any relevant legislation*.

This is not applicable to Lakeland Electric.

81. *Please identify and discuss expected uranium production industry trends and factors that will affect the Company during the current planning period.*

This is not applicable to Lakeland Electric.

## ***<u>Weatherization</u>***

82. *Please identify and discuss steps that the Company has taken to ensure continued energy generation in case of a severe cold weather event.*

Lakeland is working on formulation of policy/plan for reliable generation during a severe cold condition.

83. *Please identify any future winterization plans the Company intends to implement over the current planning period.*

Please see answer in 82.

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 3 |

## Existing Generating Unit Operating Performance

| | | Planned Outage Factor (POF) | | Forced Outage Factor (FOF) | | Equivalent Availability Factor (EAF) | | Average Net Operating Heat Rate (ANOHR) | |
|---|---|---|---|---|---|---|---|---|---|
| Plant Name | Unit No. | Historical | Projected | Historical | Projected | Historical | Projected | Historical | Projected |
| Charles Larsen Memorial | GT2 | 0.00 | 4.00 | 100.00 | 5.00 | 0.00 | N/A | N/A | N/A |
| Charles Larsen Memorial | GT3 | 2.16 | 4.00 | 37.61 | 5.00 | 60.05 | N/A | 49.46 | N/A |
| Charles Larsen Memorial | 8 CT | 11.14 | 8.00 | 1.64 | 5.00 | 85.84 | 90 | 14.92 | 13 |
| Charles Larsen Memorial | 8 | 11.14 | 8.00 | 1.75 | 5.00 | 83.55 | 90 | 11.14 | 10 |
| Winston Peaking Station | 1-20 | 0.01 | 4.00 | 0.14 | 5.00 | 97.36 | 99 | N/A | 10 |
| C.D. McIntosh, Jr. | D1 | 0.80 | 4.00 | 4.74 | 5.00 | 94.46 | 99 | 13.68 | 12 |
| C.D. McIntosh, Jr. | D2 | 1.25 | 4.00 | 1.89 | 5.00 | 96.85 | 99 | 13.73 | 12 |
| C.D. McIntosh, Jr. | GT1 | 0.75 | 4.00 | 1.14 | 5.00 | 98.09 | 99 | 17.87 | 15 |
| C.D. McIntosh, Jr. | GT2 | 2.50 | 5.00 | 5.58 | 5.00 | 91.94 | 95 | 12.15 | 12 |
| C.D. McIntosh, Jr. | 3 | 20.42 | N/A | 11.60 | N/A | 66.11 | N/A | 11.69 | N/A |
| C.D. McIntosh, Jr. | 5 CT | 11.26 | 8.00 | 2.25 | 5.00 | 86.38 | 95 | 11.27 | 11 |
| C.D. McIntosh, Jr. | 5 | 11.26 | 8.00 | 2.25 | 5.00 | 86.38 | 95 | 7.31 | 7.2 |

Notes:

N/A: This signifies for the units which did not run in the past or not planned to run in the future, Historical average of past three years, Projected - Average of next ten years

| | | |
|---|---|---|
| TYSP Year | 2021 | |
| Staff's Data Request # | 1 | |
| Question No. | 3 | |

## Nominal, Firm Purchases

| | Firm Purchases | |
|---|---|---|
| Year | $/MWh | Escalation % |
| **HISTORY:** | | |
| 2018 | None | None |
| 2019 | None | None |
| 2020 | None | None |
| **FORECAST*:** | | |
| 2021 | Variable* | None |
| 2022 | Variable | None |
| 2023 | Variable | None |
| 2024 | None | None |
| 2025 | None | None |
| 2026 | None | None |
| 2027 | None | None |
| 2028 | None | None |
| 2029 | None | None |
| 2030 | None | None |

Notes

*Lakeland has a firm energy purchases up to 125 MW in a daily (as needed basis) from April 2021 to Dec 2023. But price will depend on system marginal prices and will be calculated based on Florida Municipal Power Pool hourly maket pricing rules.

| | | |
|---|---|---|
| TYSP Year | 2021 | |
| Staff's Data Request # | 1 | |
| Question No. | 3 | |
| **Financial Assumptions<br>Base Case** | | |
| AFUDC RATE | | 4.50% |
| **CAPITALIZATION RATIOS:** | | |
| DEBT | | N/A (mun.) |
| PREFERRED | | N/A (mun.) |
| EQUITY | | N/A (mun.) |
| **RATE OF RETURN** | | |
| DEBT | | N/A (mun.) |
| PREFERRED | | N/A (mun.) |
| EQUITY | | N/A (mun.) |
| **INCOME TAX RATE:** | | |
| STATE | | N/A (mun.) |
| FEDERAL | | N/A (mun.) |
| EFFECTIVE | | N/A (mun.) |
| OTHER TAX RATE: | | N/A (mun.) |
| DISCOUNT RATE: | | 4.50% |
| TAX | | |
| DEPRECIATION RATE: | | N/A (mun.) |

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 3 |

## Financial Escalation Assumptions

| | General Inflation | Plant Construction Cost | Fixed O&M Cost | Variable O&M Cost |
|---|---|---|---|---|
| Year | % | % | % | % |
| 2021 | 2.0% | 2.0% | 2.0% | 2.0% |
| 2022 | 2.0% | 2.0% | 2.8% | 2.0% |
| 2023 | 2.0% | 2.0% | 2.8% | 2.0% |
| 2024 | 2.0% | 2.0% | 2.8% | 2.0% |
| 2025 | 2.0% | 2.0% | 2.8% | 2.0% |
| 2026 | 2.0% | 2.0% | 2.8% | 2.0% |
| 2027 | 2.0% | 2.0% | 2.8% | 2.0% |
| 2028 | 2.0% | 2.0% | 2.8% | 2.0% |
| 2029 | 2.0% | 2.0% | 2.8% | 2.0% |
| 2030 | 2.0% | 2.0% | 2.8% | 2.0% |

Notes:

Assumes personal costs are fixed.

TYSP Year 2021
Staff's Data Request # 1
Question No. 3

## Loss of Load Probability, Reserve Margin, and Expected Unserved Energy
## Base Case Load Forecast

| | Annual Isolated | | | Annual Assisted | | |
|---|---|---|---|---|---|---|
| Year | Loss of Load Probability (Days/Yr) | Reserve Margin (%) (Including Firm Purchases) | Expected Unserved Energy* (MWh) | Loss of Load Probability (Days/Yr) | Reserve Margin (%) (Including Firm Purchases) | Expected Unserved Energy* (MWh) |
| 2021 | 0.1* | 23 | 1632 | 0.1* | 23 | 1632 |
| 2022 | | 22 | 1643 | | 22 | 1643 |
| 2023 | | 17 | 1650 | | 17 | 1650 |
| 2024 | | 17 | 1661 | | 17 | 1661 |
| 2025 | | 16 | 1668 | | 16 | 1668 |
| 2026 | | 16 | 1677 | | 16 | 1677 |
| 2027 | | 17 | 1686 | | 17 | 1686 |
| 2028 | | 16 | 1699 | | 16 | 1699 |
| 2029 | | 16 | 1709 | | 16 | 1709 |
| 2030 | | 15 | 1719 | | 15 | 1719 |

Notes:
*Planned.

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 7 |

| Year | Month | Actual Peak Demand (MW) | Demand Response Activated (MW) | Estimated Peak demand Response Activated (MW) | Day | Hour | System-Average Temp ($^{O}$F) |
|---|---|---|---|---|---|---|---|
| 2020 | 1 | 600 | N/A | N/A | 1/22/2020 | 8:00 | 32.9 |
| | 2 | 468 | N/A | N/A | 2/13/2020 | 16:00 | 85.5 |
| | 3 | 579 | N/A | N/A | 3/30/2020 | 18:00 | 90.4 |
| | 4 | 585 | N/A | N/A | 4/13/2020 | 16:00 | 89.4 |
| | 5 | 633 | N/A | N/A | 5/21/2020 | 17:00 | 94.4 |
| | 6 | 678 | N/A | N/A | 6/25/2020 | 16:00 | 96.7 |
| | 7 | 659 | N/A | N/A | 7/13/2020 | 16:00 | 93.6 |
| | 8 | 657 | N/A | N/A | 8/27/2020 | 17:00 | 93.9 |
| | 9 | 666 | N/A | N/A | 9/4/2020 | 17:00 | 95.1 |
| | 10 | 608 | N/A | N/A | 10/8/2020 | 17:00 | 91.5 |
| | 11 | 510 | N/A | N/A | 11/1/2020 | 16:00 | 87.9 |
| | 12 | 519 | N/A | N/A | 12/9/2020 | 8:00 | 38.3 |
| 2019 | 1 | 545 | N/A | N/A | 1/29/2019 | 8:00 | 50.7 |
| | 2 | 486 | N/A | N/A | 2/22/2019 | 17:00 | 82.9 |
| | 3 | 496 | N/A | N/A | 3/11/2019 | 18:00 | 80.8 |
| | 4 | 535 | N/A | N/A | 4/30/2019 | 18:00 | 83.7 |
| | 5 | 636 | N/A | N/A | 5/30/2019 | 17:00 | 95.0 |
| | 6 | 667 | N/A | N/A | 6/25/2019 | 17:00 | 95.8 |
| | 7 | 647 | N/A | N/A | 7/16/2019 | 17:00 | 91.6 |
| | 8 | 632 | N/A | N/A | 8/26/2019 | 17:00 | 92.2 |
| | 9 | 647 | N/A | N/A | 9/9/2019 | 17:00 | 94.8 |
| | 10 | 582 | N/A | N/A | 10/4/2019 | 17:00 | 91.5 |
| | 11 | 521 | N/A | N/A | 11/7/2019 | 16:00 | 87.3 |
| | 12 | 436 | N/A | N/A | 12/19/2019 | 8:00 | 45.2 |
| 2018 | 1 | 701 | N/A | N/A | 1/18/2018 | 8:00 | 29.7 |
| | 2 | 486 | N/A | N/A | 2/26/2018 | 16:00 | 84.3 |
| | 3 | 454 | N/A | N/A | 3/29/2018 | 18:00 | 83.0 |
| | 4 | 513 | N/A | N/A | 4/9/2018 | 18:00 | 83.3 |
| | 5 | 579 | N/A | N/A | 5/24/2018 | 17:00 | 87.0 |
| | 6 | 623 | N/A | N/A | 6/19/2018 | 17:00 | 92.3 |
| | 7 | 625 | N/A | N/A | 7/2/2018 | 18:00 | 88.0 |
| | 8 | 634 | N/A | N/A | 8/8/2018 | 17:00 | 91.7 |
| | 9 | 639 | N/A | N/A | 9/17/2018 | 17:00 | 92.2 |
| | 10 | 608 | N/A | N/A | 10/16/2018 | 17:00 | 89.6 |
| | 11 | 522 | N/A | N/A | 11/7/2018 | 16:00 | 87.4 |
| | 12 | 503 | N/A | N/A | 12/12/2018 | 8:00 | 47.0 |

**Notes**

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 19 |

| Year | Number of PEVs | Number of Public PEV Charging Stations | Number of Public DCFC PEV Charging Stations. | Cumulative Impact of PEVs | | |
|---|---|---|---|---|---|---|
| | | | | Summer Demand | Winter Demand | Annual Energy |
| | | | | (MW) | (MW) | (GWh) |
| 2021 | 477 | 18 | 4 | * | * | * |
| 2022 | | | | | | |
| 2023 | | | | | | |
| 2024 | | | | | | |
| 2025 | | | | | | |
| 2026 | | | | | | |
| 2027 | | | | | | |
| 2028 | | | | | | |
| 2029 | | | | | | |
| 2030 | | | | | | |

**Notes**

* insignificant at this time.

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 25 |

| [Demand Response Source or All Demand Response Sources] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Year** | **Beginning Year: Number of Customers** | **Available Capacity (MW)** | | **New Customers Added** | **Added Capacity (MW)** | | **Customers Lost** | **Lost Capacity (MW)** | |
| | | Sum | Win | | Sum | Win | | Sum | Win |
| **2011** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **2012** | | | | | | | | | |
| **2013** | | | | | | | | | |
| **2014** | | | | | | | | | |
| **2015** | | | | | | | | | |
| **2016** | | | | | | | | | |
| **2017** | | | | | | | | | |
| **2018** | | | | | | | | | |
| **2019** | | | | | | | | | |
| **2020** | | | | | | | | | |

**Notes**

N/A: Not Applicable. Lakeland Electric has no firm demand response customers finalized at this moment.

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Reque | 1 |
| Question No. | 26 |

| [Demand Response Source or All Demand Response Sources] | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | Summer | | | | | Winter | | | | |
| | Number of Events | Average Event Size | | Maximum Event Size | | Number of Events | Average Event Size | | Maximum Event Size | |
| | | MW | Number of Customers | MW | Number of Customers | | MW | Number of Customers | MW | Number of Customers |
| **2011** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **2012** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **2013** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **2014** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **2015** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **2016** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **2017** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **2018** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **2019** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Notes**

(Include Notes Here)

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 27 |

| [Demand Response Source or All Demand Response Sources] | | | | | | | |
|---|---|---|---|---|---|---|---|
| Year | Average Number of Customers | Summer Peak | | | Winter Peak | | |
| | | Activated During Peak? (Y/N) | Number of Customers Activated | Capacity Activated (MW) | Activated During Peak? (Y/N) | Number of Customers Activated | Capacity Activated (MW) |
| **2011** | 0 | N | 0 | 0 | N | 0 | 0 |
| **2012** | 0 | N | 0 | 0 | N | 0 | 0 |
| **2013** | 0 | N | 0 | 0 | N | 0 | 0 |
| **2014** | 0 | N | 0 | 0 | N | 0 | 0 |
| **2015** | 0 | N | 0 | 0 | N | 0 | 0 |
| **2016** | 0 | N | 0 | 0 | N | 0 | 0 |
| **2017** | 0 | N | 0 | 0 | N | 0 | 0 |
| **2018** | 0 | N | 0 | 0 | N | 0 | 0 |
| **2019** | 0 | N | 0 | 0 | N | 0 | 0 |
| **2020** | 0 | N | 0 | 0 | N | 0 | 0 |
| **Notes** | | | | | | | |
| (Include Notes Here) | | | | | | | |

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Reques | 1 |
| Question No. | 28 |

| Facility Name | Unit No. | County Location | Unit Type[2] | Primary Fuel[3] | Commercial In-Service | | Gross Capacity (MW) | | Net Capacity (MW) | | Firm Capacity (MW) | | Capacity Factor[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Mo | Yr | Sum | Win | Sum | Win | Sum | Win | (%) |
| Charles Larsen Memorial | GT2 | Polk | GT | NG | 11 | 1962 | 10 | 14 | 10 | 14 | 10 | 14 | 0 |
| Charles Larsen Memorial | GT3 | Polk | GT | NG | 12 | 1962 | 9 | 13 | 9 | 13 | 9 | 13 | 0 |
| Charles Larsen Memorial | 8 | Polk | CC | NG/DFO | 4 | 1956 | 110 | 123 | 108 | 125 | 108 | 125 | 13.76 |
| Winston Peaking Station | 1-20 | Polk | IC | DFO | 12 | 2001 | 50 | 50 | 50 | 50 | 50 | 50 | 0.11 |
| C.D. McIntosh, Jr. | D1 | Polk | IC | DFO | 1 | 1970 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 0.01 |
| C.D. McIntosh, Jr. | D2 | Polk | IC | DFO | 1 | 1970 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 0.01 |
| C.D. McIntosh, Jr. | GT1 | Polk | GT | NG | 5 | 1973 | 17 | 19 | 17 | 19 | 17 | 19 | 0.04 |
| C.D. McIntosh, Jr. | GT2 | Polk | GT | NG/DFO | 6 | 2020 | 120 | 125 | 117 | 122 | 117 | 122 | 1.64 |
| C.D. McIntosh, Jr.[1] | 3 | Polk | ST | BIT | 9 | 1982 | 219 | 219 | 205 | 205 | 205 | 205 | 23.5 |
| C.D. McIntosh, Jr. | 5 | Polk | CC | NG | 5 | 2001 | 375 | 395 | 368 | 388 | 368 | 388 | 59.76 |
| | | | | | | | | | | | | | |

**Notes**

[1] Lakeland's 60 percent portion of joint ownership with Orlando Utilities Commission. The unit is retired as of 4/4/2021.

[2] Unit Type
CC Combined Cycle
CT Combined Cycle Combustion Turbine
GT Combustion Gas Turbine
ST Steam Turbine

[3] Primary Fuel
DFO Distillate Fuel Oil
BIT Bitumminous Coal
NG Natural Gas

[4] 2020 Actual Gross Capacity Factor

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data | |
| Request # | 1 |
| Question No. | 29 |

| Facility Name | Unit No. [2] | County Location | Unit Type | Primary Fuel | Commercial In-Service[1] | | Gross Capacity (MW) | | Net Capacity (MW) | | Firm Capacity (MW) | | Projected Capacity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Mo | Yr | Sum | Win | Sum | Win | Sum | Win | (%) |
| C.D. McIntosh, Jr. | | Lakeland, Polk County | IC | Gas/DFO | 1 | 2024 | 100 | 100 | 100 | 100 | 100 | 100 | 20 |

Notes: [1] Expected service date. This plant is in early feasibility and planning stage. [2] Not yet finalized.

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 30 |

| Facility Name | Unit No. | County Location | Unit Type | Primary Fuel | Commercial In-Service | | Gross Capacity (MW) | | Net Capacity (MW) | | Firm Capacity (MW) | | Capacity Factor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Mo | Yr | Sum | Win | Sum | Win | Sum | Win | (%) |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

**Notes**

Lakeland does not own renewable generation units. All renewable feneration resources are under PPA,

TYSP Year 2021
Staff's Data
Request # 1
Question No. 31

| **Facility Name** | **Unit No.** | **County Location** | **Unit Type** | **Primary Fuel** | **Commercial In-Service** | | **Gross Capacity (MW)** | | **Net Capacity (MW)** | | **Firm Capacity (MW)** | | **Projected Capacity Factor** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Mo | Yr | Sum | Win | Sum | Win | Sum | Win | (%) |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

**Notes**

Lakeland has no plan to fund enewable energy projects on its own. Planned renewable generation (esp. solar) will be installed by a thrid party under PPA.

| | |
|---|---|
| TYSP Yea | 2021 |
| Staff's Dat | 1 |
| Question N | 33 |

| Seller Name | Facility Name | Unit No. | County Location | Unit Type | Primary Fuel | Gross Capacity (MW) | | Net Capacity (MW) | | Contracted Firm Capacity (MW) | | Contract Term Dates (MM/YY) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Sum | Win | Sum | Win | Sum | Win | Start | End |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

**Notes**

There was no PPA on firm capacity as of December 2020 for Lakeland.

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data | |
| Request # | 1 |
| Question No. | 34 |

| Seller Name | Facility Name | Unit No. | County Location | Unit Type | Primary Fuel | Gross Capacity (MW) | | Net Capacity (MW) | | Contracted Firm Capacity (MW) | | Contract Term Dates (MM/YY) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Sum | Win | Sum | Win | Sum | Win | Start | End |
| Orlando Utilities Commission (OUC) | System | N/A | Orange County, Orlando | System | N/A | 125 | 125 | 125 | 125 | 125 | 125 | Apr-21 | Dec-23 |

**Notes**

This contract is a firm capacity and energy contract. But, energy will be delivered to Lakeland upto 125 MW in An hourly needed basis.

TYSP Year 2021
Staff's Data Request # 1
Question No. 35

| Seller Name | Facility Name | Unit No. | County Location | Unit Type | Primary Fuel | Gross Capacity (MW) | | Net Capacity (MW) | | Contracted Firm Capacity (MW) | | Contract Term Dates (MM/YY) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Sum | Win | Sum | Win | Sum | Win | Start | End |
| **Longroad Energy Holding LLC** | **RP Funding Center** | **n/a** | **Lakeland, Polk County, Fl** | **PV** | **Sunlight** | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 4/1/2010 | 3/30/2030 |
| **Longroad Energy Holding LLC** | **Airport I** | **n/a** | **Lakeland, Polk County, Fl** | **PV** | **Sunlight** | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 12/22/2011 | 11/1/2036 |
| **Toroise Clean Energy Partners, LLC** | **Airport II** | **n/a** | **Lakeland, Polk County, Fl** | **PV** | **Sunlight** | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 | 9/16/2012 | 8/31/2037 |
| **TerraForm Power, LLC** | **Sutton** | **n/a** | **Lakeland, Polk County, Fl** | **PV** | **Sunlight** | 6 | 6 | 6 | 6 | 6 | 6 | 7/6/2015 | 7/1/2040 |
| **Clearway Energy Group, LLC** | **Airport III** | **n/a** | **Lakeland, Polk County, Fl** | **PV** | **Sunlight** | 3.15 | 3.15 | 3.15 | 3.15 | 3.15 | 3.15 | 12/21/2016 | 11/30/2041 |

**Notes**

(Include Notes Here)

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Re | 1 |
| Question No. | 36 |

| Seller Name | Facility Name | Unit No. | County Location | Unit Type | Primary Fuel | Gross Capacity (MW) | | Net Capacity (MW) | | Contracted Firm Capacity (MW) | | Contract Term Dates (MM/YY) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Sum | Win | Sum | Win | Sum | Win | Start | End |
| TBD | TBD | N/A | Lakeland, Polk County, FL | PV | SUN | 50 | 50 | 50 | 50 | TBD | TBD | Jan-24 | TBD |
| | | | | | | | | | | | | | |
| **Notes** | | | | | | | | | | | | | |
| TBD: To be determined. This utility scale solar project is under review on potential bidders for RFP requested by Lakeland. | | | | | | | | | | | | | |

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 38 |

| **Buyer Name** | **Facility Name** | **Unit No.** | **County Location** | **Unit Type** | **Primary Fuel** | **Gross Capacity (MW)** | | **Net Capacity (MW)** | | **Contracted Firm Capacity (MW)** | | **Contract Term Dates (MM/YY)** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Sum | Win | Sum | Win | Sum | Win | Start | End |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

**Notes**

There is no PSA in effcet from Lakeland to any thrird party until Dec 2020.

TYSP Year 2021
Staff's Data Request # 1
Question Nc 39

| Buyer Name | Facility Name | Unit No. | County Location | Unit Type | Primary Fuel | Gross Capacity (MW) | | Net Capacity (MW) | | Contracted Firm Capacity (MW) | | Contract Term Dates (MM/YY) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Sum | Win | Sum | Win | Sum | Win | Start | End |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

**Notes**

There is no PSA planned from Lakeland to any third parties during the next planning period.

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 41 |

| Renewable Source | Annual Renewable Generation (GWh) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Actual | Projected | | | | | | | | | |
| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
| **Utility - Firm** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Utility - Non-Firm** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Utility - Co-Firing** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Purchase - Firm** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Purchase - Non-Firm** | 28 | 24 | 24 | 25 | 161 | 161 | 161 | 161 | 161 | 161 | 161 |
| **Purchase - Co-Firing** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Customer - Owned** | 4 | 6 | 7 | 7 | 8 | 9 | 10 | 10 | 11 | 12 | 13 |
| **Total** | | | | | | | | | | | |

**Notes**

(Include Notes Here)

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 42 |

| Plant Name | Land Available (Acres) | Potential Installed Net Capacity (MW) | Potential Obstacles to Installation |
|---|---|---|---|
| N/A | N/A | N/A | N/A |
| | | | |
| | | | |

Notes:

This information is for IOUs only.

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 50 |

| Project Name | Pilot Program (Y/N) | In-Service/ Pilot Start Date (MM/YY) | Max Capacity Output (MW) | Max Energy Stored (MHh) | Conversion Efficiency (%)* |
|---|---|---|---|---|---|
| Bierman Tennis | Y | 2017 | 0.01 | 0.04 | 85 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
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**Notes**

* Approximate

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 51 |

| Project Name | Pilot Program (Y/N) | In-Service/ Pilot Start Date (MM/YY) | Projected Max Capacity Output (MW) | Projected Max Energy Stored (MHh) | Projected Conversion Efficiency (%) |
|---|---|---|---|---|---|
| N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | | |
| | | | | | |
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**Notes**

No energy storage resources are planned at this time.

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 56 |

| Year | | As-Available Energy ($/MWh) | On-Peak Average ($/MWh) | Off-Peak Average ($/MWh) |
|---|---|---|---|---|
| Actual | 2011 | | | |
| | 2012 | | | |
| | 2013 | | | |
| | 2014 | | | |
| | 2015 | | | |
| | 2016 | | | |
| | 2017 | | | |
| | 2018 | | | |
| | 2019 | | | |
| | 2020 | | | |
| Projected | 2021 | | | |
| | 2022 | | | |
| | 2023 | | | |
| | 2024 | | | |
| | 2025 | | | |
| | 2026 | | | |
| | 2027 | | | |
| | 2028 | | | |
| | 2029 | | | |
| | 2030 | | | |

**Notes**

This information is for IOUs only.

| | | | | |
|---|---|---|---|---|
| TYSP Year | 2021 | | | |
| Staff's Data Request # | 1 | | | |
| Question No. | 57 | | | |

| Generating Unit Name | Summer Capacity (MW) | Certification Dates (if Applicable) | | In-Service Date (MM/YY) |
|---|---|---|---|---|
| | | Need Approved (Commission) | PPSA Certified | |
| **Nuclear Unit Additions** | | | | |
| | | | | |
| **Combustion Turbine Unit Additions -** | | | | |
| RICE Units | 100 | Yes | No | 1/1/2024* |
| **Combined Cycle Unit Additions** | | | | |
| | | | | |
| **Steam Turbine Unit Additions** | | | | |
| | | | | |
| **Notes** | | | | |
| These generating resources are still in the planning stage. | | | | |

TYSP Year 2021
Staff's Data Request # 1
Question No. 59

| Plant | Unit No. | Unit Type | Fuel Type | Capacity Factor (%) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Actual | Projected | | | | | | | | | |
| | | | | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
| Charles Larsen Memorial | GT2 | GT | NG | 0.00 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Charles Larsen Memorial | GT3 | GT | NG | 0.00 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Charles Larsen Memorial | 8 | CC | NG | 13.76 | 20.00 | 22.00 | 20.00 | ~16% | ~16% | ~16% | ~16% | ~16% | ~16% | ~16% |
| Winston Peaking Station | 1-20 | IC | DFO | 0.11 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| C.D. McIntosh, Jr. | D1 | IC | DFO | 0.01 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| C.D. McIntosh, Jr. | D2 | IC | DFO | 0.01 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| C.D. McIntosh, Jr. | GT1 | GT | NG | 0.04 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| C.D. McIntosh, Jr.1 | 3 | ST | BIT | 23.50 | 12.00 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| C.D. McIntosh, Jr. | 5 | CC | NG | 59.67 | ~70 | ~75 | ~70 | ~70 | ~70 | ~70 | ~70 | ~70 | ~70 | ~70 |
| C.D. McIntosh, Jr. | GT2 | GT | NG | 1.64 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Rice Engines | New | RICE | NG/DFO | N/A | N/A | N/A | N/A | ~25 | ~20 | ~20 | ~20 | ~20 | ~20 | ~20 |

Notes

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 61 |

| Plant Name | Fuel Type | Summer Capacity (MW) | In-Service Date (MM/YYY) | Potential Conversion | Potential Issues |
|---|---|---|---|---|---|
| N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | | |
| | | | | | |
| **Notes** | | | | | |
| Notes: The conversion to Combined Cycle is not planned at this time for Lakeland. | | | | | |

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 62 |

| Plant Name | Fuel Type | Summer Capacity (MW) | In-Service Date (MM/YYY) | Potential Conversion | Potential Issues |
|---|---|---|---|---|---|
| N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | | |
| | | | | | |

**Notes**

Note: Fuel switching not yet planned for this planning period for any of the existing units.

TYSP Year 2021
Staff's Data Request # 1
Question No. 63

| Transmission Line | Line Length (Miles) | Nominal Voltage (kV) | Date Need Approved | Date TLSA Certified | In-Service Date |
|---|---|---|---|---|---|
| N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | | |
| | | | | | |

**Notes**

Notes: There are no proposed transmission lines during this planning period as of this time. .

TYSP Year 2021
Staff's Data Request # 1
Question No. 65 e

| Year | Estimated Cost of Standards of Performance for Greenhouse Gas Emissions Rule for New Sources Impacts (Present-Year $ millions) | | | |
|---|---|---|---|---|
| | Capital Costs | O&M Costs | Fuel Costs | Total Costs |
| 2021 | N/A | N/A | N/A | N/A |
| 2022 | N/A | N/A | N/A | N/A |
| 2023 | N/A | N/A | N/A | N/A |
| 2024 | N/A | N/A | N/A | N/A |
| 2025 | N/A | N/A | N/A | N/A |
| 2026 | N/A | N/A | N/A | N/A |
| 2027 | N/A | N/A | N/A | N/A |
| 2028 | N/A | N/A | N/A | N/A |
| 2029 | N/A | N/A | N/A | N/A |
| 2030 | N/A | N/A | N/A | N/A |

**Notes**

Notes: Not expected to be impacted by this rule.

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data | |
| Request # | 1 |
| Question No | 67 |

| Unit | Unit Type | Fuel Type | Net Summer Capacity (MW) | Estimated EPA Rule Impacts: Operational Effects | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ELGS | ACE or replacement | MATS | CSAPR/ CAIR | CWIS | CCR | |
| | | | | | | | | | Non-Hazardous Waste | Special Waste |
| MGT2 | CT | gas/oil | 117/112 | | X | | | | | |
| 3 | steam | coal/gas | 342 | X | | X | | | X | X |
| 5 | CC | gas | 338 | | X | | | | | |
| 8 | CC | gas/oil | 105 | | X | | | X | | |

**Notes**

**Notes:** ACE: Unit 3 will be retired before the ACE compliance date. It is too early to know whether there will be any impacts to Units 5, 8, and MGT2 from a potential ACE rule replacement.
MATS: Unit 3 had to have its scrubber upgraded (2015) to be able to comply with the rule.
CWIS: Unit 8's operation may be limited to simple cycle only, dependent on the costs of CWIS compliance strategies.
ELG: Unit 3 is subject to the rule and will comply by scheduling retirement in 2021.

TYSP Year 2021
Staff's Data Request # 1
Question No. 68

| Unit | Unit Type | Fuel Type | Net Summer Capacity (MW) | Estimated EPA Rule Impacts: Cost Effects (CPVRR $ millions) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ELGS | ACE or replacement | MATS | CSAPR/ CAIR | CWIS | CCR | |
| | | | | | | | | | Non-Hazardous Waste | Special Waste |
| MGT2 | CT | Gas/Oil | 117/112 | | *** | | | | | |
| 3 | steam | Coal/Gas | 342 | | | | | | 14.0** | 0.1 |
| 5 | CC | Gas | 368 | | *** | | | | | |
| 8 | CC | Gas/Oil | 108/105 | | *** | | | 0.6* | | |

**Notes:** *Unit 8 - CWIS amount is dependent on the outcome of next permitting cycle and the engineering review of compliance strategies.
**Unit 3 - CCR non-hazardous waste amount is an estimate for closure of the on-site landfill.
***ACE: Unit 3 will be retired before the ACE compliance date. It is too early to know whether there will be any impacts to Units 5, 8, and MGT2 from a potential ACE rule replacement.

| | |
|---|---|
| TYSP Year | 2021 |
| Staff's Data Request # | 1 |
| Question No. | 69 |

| Unit | Unit Type | Fuel Type | Net Summer Capacity (MW) | Estimated EPA Rule Impacts: Unit Availability (Month/Year - Duration) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ELGS | ACE or replacement | MATS | CSAPR/ CAIR | CWIS | CCR | |
| | | | | | | | | | Non-Hazardous Waste | Special Waste |
| MGT2 | CT | Gas/Oil | 117/112 | | ** | | | | | |
| 3 | steam | Coal/Gas | 342 | | | | | | | |
| 5 | CC | Gas | 368 | | ** | | | | | |
| 8 | CC | Gas/Oil | 108/105 | | ** | | | * | | |

**Notes: *Unit 8 CWIS - If physical changes are needed to comply with the rule, they will be combined with planned outages for implementation.**
****ACE: Unit 3 will be retired before the ACE compliance date. It is too early to know whether there will be any impacts to Units 5, 8, and MGT2 from a potential ACE rule replacement.**

TYSP Year 2021
Staff's Data Request # 1
Question No. 71

| Year | | Uranium | | Coal | | Natural Gas | | Residual Oil | | Distillate Oil | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GWh | $/MMBTU | GWh | $/MMBTU | GWh | $/MMBTU | GWh | $/MMBTU | GWh | $/MMBTU |
| Actual | **2011** | 0 | N/A | 821 | 3.93 | 2346 | 4.32 | 0 | 17.69 | 0 | 20.59 |
| | **2012** | 0 | N/A | 759 | 4.3 | 2464 | 2.97 | 0 | 19.84 | 0 | 22.82 |
| | **2013** | 0 | N/A | 786 | 3.99 | 2018 | 3.89 | 0 | 19.19 | 0 | 24.48 |
| | **2014** | 0 | N/A | 278 | 3.59 | 1714 | 4.53 | 0 | 20.22 | 0 | 26.18 |
| | **2015** | 0 | N/A | 788 | 3.32 | 2204 | 2.72 | 0 | 12.32 | 0 | 17.04 |
| | **2016** | 0 | N/A | 805 | 3.16 | 1857 | 2.54 | 0 | 10.75 | 0 | 15.72 |
| | **2017** | 0 | N/A | 846 | 2.78 | 1589 | 3.05 | 0 | 9.34 | 0 | 12.92 |
| | **2018** | 0 | N/A | 969 | 2.76 | 2270 | 3.20 | 0 | N/A | 0 | 16.49 |
| | **2019** | 0 | N/A | 548 | 2.64 | 2382 | 2.75 | 0 | N/A | 0 | 16.6 |
| | **2020** | 0 | N/A | 385 | 2.45 | 2063 | 2.72 | 0 | N/A | 1 | 13.79 |
| Projected | **2021** | 0 | N/A | 430 | 2.45 | 2763 | 3.01 | 0 | N/A | 6 | 13.79 |
| | **2022** | 0 | N/A | N/A | N/A | 2478 | 2.87 | 0 | N/A | 4 | 13.95 |
| | **2023** | 0 | N/A | N/A | N/A | 2177 | 2.97 | 0 | N/A | 6 | 14.42 |
| | **2024** | 0 | N/A | N/A | N/A | 2421 | 3.04 | 0 | N/A | 4 | 14.91 |
| | **2025** | 0 | N/A | N/A | N/A | 2621 | 2.93 | 0 | N/A | 2 | 15.42 |
| | **2026** | 0 | N/A | N/A | N/A | 2632 | 3.01 | 0 | N/A | 2 | 15.95 |
| | **2027** | 0 | N/A | N/A | N/A | 2439 | 3.07 | 0 | N/A | 2 | 16.49 |
| | **2028** | 0 | N/A | N/A | N/A | 2646 | 3.10 | 0 | N/A | 2 | 17.05 |
| | **2029** | 0 | N/A | N/A | N/A | 2956 | 3.14 | 0 | N/A | 1 | 17.63 |
| | **2030** | 0 | N/A | N/A | N/A | 2956 | 3.55 | 0 | N/A | 1 | 18.23 |

**Notes**

(Include Notes Here)