May 1, 2024

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

Re: 2024 Ten Year Site Plan – Staff's 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 submits its responses to Staff's Data Request #1, in relation to Lakeland Electric's 2023 Ten Year Site Plan 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
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Enclosure

Lakeland Electric

Ten-Year Site Plan 2024-2033

April 2024

Submitted to:

Florida Public Service Commission

LAKELAND ELECTRIC

POWERED FOR LIFE

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1.0 Introduction [SECTION 1]

This report contains the 2024 Lakeland Electric (LE) 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 TYSP outlines a comprehensive strategy for Lakeland Electric (LE) to deliver affordable, dependable, and sustainable energy to its customers, thereby catalyzing economic growth in Lakeland over the coming decade. TYSPs are non-binding in Florida, but they do provide state, regional, and local agencies a notice of proposed power plants and transmission facilities in near future.

The TYSP 2023 is divided into the following eight sections:

- Section 1: Introduction
- Section 2: General Description of the 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 in the remainder of this section.

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 facilities. This section includes tables which show the source of the utility’s current 721 MW of net winter generating capacity and 658 MW of net summer generating capacity (as of the end of year 2023). To increase grid reliability and energy supply, LE plans to add 120 MW of gas based modular Reciprocating Internal Combustion Engines (RICE) by the end of 2024. This will bring LE’s total generation capacity to 841 MW in winter and 778 MW in summer from thermal resources in 2025. Lakeland also plans to add 74.8 MW of solar energy by 2026, bringing the total installed solar in the Lakeland System to 89 MW.

1.2 Forecast of Electric Demand and Energy [SECTION 3]

Section 3 of the TYSP offers a summary of Lakeland's electric load and energy forecast methodology. LE uses statistical and mathematical models that link electricity usage to several key input parameters such as region's economic activity, population growth, demographic data, and energy efficiency characteristics on electrical appliances. 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 load growth scenarios are developed on energy sales to customers, system net energy and peak load requirements for LE's customers.

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 and 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
  - Rebate on Electric Vehicle Purchase

Section 4 also contains discussions on Lakeland Electric's roof-top 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 with the use of renewable energy. Lakeland Electric has capacity to generate more than 14 MW of power from solar, enough to supply power for more than 7,000 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 solar.

1.4 Load 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). There are two other utilities which are the members of FMPP including Lakeland Electric. In FMPP, each member operates its power plants sharing the reserves and using the lowest cost of energy to balance the combined load by means of exchange of energy among the members.

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 at or 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 planned 120 MW new Reciprocating Internal Combustion Engines (RICE) to be available in late 2024 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 standards for existing major generating units. Also analyzed are the issues related to land use and air permits to build such new generating units in the McIntosh Power Plant site in future.

1.7 Ten-Year Site Plan Schedules [SECTION 8]

Section 8 presents the schedules of new generation and any retirements including any power purchase necessary to meet reliability 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 expected Reserve Margin exceeds 15% in each year in winter during this planning period. However, LE may need to have some capacity purchase necessary to meet the reserve margin of 15% in summer. Tables 8-14 provides information related to Lakeland Electric's planned new generating units and any changes/modifications on existing units. Tables 8.15-16 present the specifications of proposed new generating units and transmission lines within Lakeland's territory, aimed at meeting the impending increase in electricity demand.

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 used a minimal amount of natural gas for flame stabilization during startups. The plant utilized sewage effluent for cooling tower makeup water. This unit was 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 131.5 MW at present. Larsen Unit No. 8 began its simple cycle operation in July 1992, and combined cycle operation in November of that year. A fogger system was re-commissioned during the Fall of 2022, which provides an additional 3 MW of Summer Capacity. A new Peak Fire controls system was also implemented and commissioned during the Fall of 2022, which added 2 MW of year-round capacity.

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. In December of 2020, Unit No. 5 went through a major outage to install "NextGen Hardware" that increased the capacity of the combined cycle to 339 MW (net 332 MW) in summer and 385 MW (net 378 MW) in winter. Addition of Steam Power Augmentation (SPAG) increased the capacity to 349 MW (net 342 MW) in summer and 395 MW (net 388 MW) in winter. The final capacity was made achievable to 359 MW in summer and 405 MW in winter with SPAG and Flex Fire combined.

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 internal combustion (RICE) engines each driving a 2.5 MW electric generator. This provides Lakeland with 50 MW of peaking capacity that can be started and put online at full load in ten minutes. The Station went in commercial operation in December 2001.

McIntosh Gas Turbine No. 2 at the McIntosh Plant was online on June 22, 2022. This unit has gross ratings of 125 (120) MW in winter (summer). McIntosh Unit No. 3 (a coal unit) was retired from its operations on April 4, 2021. This unit had been in operation since 1982. The decision to retire this unit was made possible due to significant savings realized on fuel and operation cost compared to energy from natural gas-based generation. While ensuring that LE's capability grow and changes with time to supply low cost and environmentally friendly electricity to its customers, LE decided to build six (6) new small modular reciprocating internal combustion engines (RICE) in McIntosh power plant. Each unit will be capable of producing 20 MWs in less than 2 minutes for a total of 120 MWs in total. This enhanced flexibility of these units will help to firm up the energy variability of solar units being planned in Lakeland's territory in near

future. This plant is expected to be commercially available for operation by the 4th Quarter of 2024. LE is expected to install additional 74.8 MW solar capacity by 2026.

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 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 the 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. In February 2022, Lakeland completed building the new 69/12.47 kV Bridgewater substation to accommodate the rising electric demand in the northern part of the service area. In order to accommodate the rising electric demand in the southwest part of the service area, Lakeland is in the process of building a new 69/12.47 kV substation on Hamilton Rd. The new 69/12.47kV Hamilton substation will be served by the Hamilton-Dranefield 69kV line and is expected to be in service by the end of 2024. As Lakeland is installing 120 MW size new units at McIntosh Power Plant site. The McIntosh Reciprocating Engine Plant (MREP) will be linked to the grid via a new MREP-Tenoroc 69 kV line, set to be operational in January 2025.

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 plant 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 124 MW (114 MW). The Unit's combustion turbine has a net winter (summer) rating of 95 MW (85 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 of service 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 547 MW (494 MW).

McIntosh Gas Turbine 1 consists of a General Electric combustion turbine with a net winter (summer) output rating of 19 MW (17 MW). Whereas Gas Turbine No. 2 has a total net winter (summer) capacity of 125 MW (120 MW) and was installed in the summer of 2020.

McIntosh Unit No. 3 - a net 342 MW size pulverized coal fired steam unit was owned 60 percent by Lakeland Electric and 40 percent by the OUC. Unit 3 was retired on April 4, 2021. The decommissioning of this unit along with previously retired units 1 and 2 at Macintosh Plant is scheduled to take place by 2024. Two small internal combustion engines with a net output of 2.5 MW each are also located at the McIntosh site, and will remain at the 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 out of service 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. In December of 2020, Unit 5 went through a major outage, with Siemens' Next Gen Hardware, that increased the capacity of the combined cycle to 339 MW (net 332 MW) summer and 385 MW (net 378 MW) winter; the capacity with Steam Power Augmentation (SPAG) to 349 MW (net 342 MW) in summer and 395 MW (net 388 MW) in winter; and capacity with SPAG and Flex Fire to 359 MW (net 352 MW) summer and 405 MW (net 398 MW) winter.

Lakeland Electric constructed 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 changing system demand and during the times of high demand assuring extra reliability in Lakeland's System operation. The Winston station consists of twenty (20) cylinder RICE engines producing 2.5 MW of generation each. Altogether, the 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% by #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 online 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 contributes to lowering loads on Lakeland's transmission system.

2.2.2 Planned Unit Retirements

Lakeland Electric recently retired its McIntosh Unit No. 3 - a coal-fired steam unit in 2021. As an enhanced fleet modernization effort, Lakeland Electric will evaluate the performance of existing older peaking units and examine how LE can meet future power demand in a more innovative and reliable way. This may require retiring some additional older and less-efficient gas or oil units in the future.

2.2.3 Planned Unit Additions

Lakeland Electric has planned to add a combination of solar (74.8 MW) in 2026 and six (6) modular size (20 MW each, 120 MW total) reciprocating internal combustion engines (RICE) expected to be operational in 2024 to maintain the resource adequacy and flexibility in Lakeland

Electric System. Additionally, plans are underway to expand solar infrastructure, integrate battery storage, and develop microgrid solutions to best fulfill the future energy requirements of LE customers. LE is also exploring the feasibility of installing a 50 kW floating solar array in the Zero Discharge Pond at the McIntosh Power Plant.

2.2.4 Power Purchase Agreements (PPAs)

Lakeland Electric has secured a long-term (20-25 years) PPAs with various solar private developers in its territory. There are five different solar farms ranging from small installed capacity of 250 kW in Lakeland Center to 3.15 MW near the airport. The total installed capacity is about 14.4 MW which is available to Lakeland customers as of now. When energy is available during the daytime, Lakeland Electric obtains about 50% of the firm capacity from these solar farms during summer. Lakeland Electric is actively looking to add 74.8 MW of solar in its territory by year 2026.

In addition to solar PPAs, LE has a firm PPA with OUC up to 175 MW in 2024 and negotiations are underway to have additional firm capacity for years 2025 and 2026. This will make LE’s capacity reserve above 15% for maintaining adequate reliability in Florida Reliability Coordinating Council (FRCC). With various existing and planned PPAs along with LE’s existing/planned resources, LE is projected to have adequate capacity to satisfy reserve margin requirements through 2033 (see Table 6.2).

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.

Figure 2.1: Lakeland Electric Service Area Map

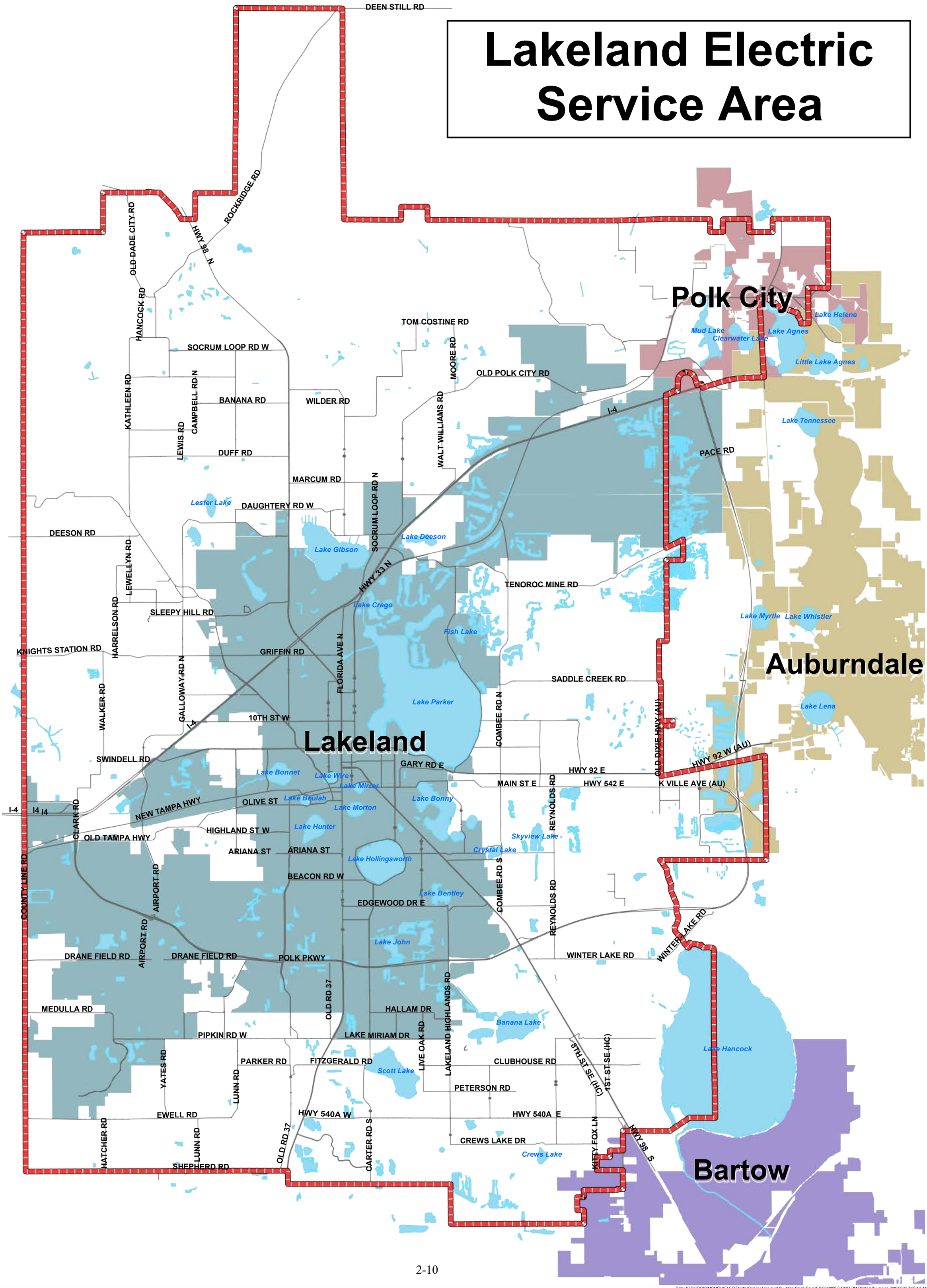

Table 2.1: Existing Generation Facilities

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	NR	11/62	Unknown	11,250	10.0	14.0
	GT3*		GT	NG	DFO	PL	TK	NR	12/62	Unknown	11,250	9.0	13.0
	8		CA	WH	---	---			04/56	Unknown	30,000	29.7	29.7
	8		CT	NG	DFO	PL	TK	NR	07/92	Unknown	101,520	84.7	94.7
Plant Total												114.4	124.4

[1]LAK doesnot maintain records of the days the alternative fuel is avalable in reserve.[2]Net Normal, * Long term scheduled maintenance

[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	WH Waste Heat	TK Truck
GT Combustion Gas Turbine	NG Natural Gas	
ST Steam Turbine		

Table 2.2: Existing Generation Facilities

Table 8-1a

Schedule 1.0: Existing Generating Facilities as of December 31, 2021

Plant Name	Unit No.	Location	[3]Unit Type	[4]Fuel Pri	[4]Fuel Alt	[5]Fuel Transport Pri	[5]Fuel Transport Alt	[1]Alt Fuel Days Use	Commercial In-Service Month/Year	Expected Retirement Month/Year	Gen. Max. Nameplate kW	[2]Net Capability Summer MW	[2]Net Capability Winter MW
Winston Peaking Station	1-20	21/28S/23E	IC	DFO	---	TK	---	---	12/01	Unknown	2,500 each	50.0	50.0
Plant Total												50.0	50.0
C.D. McIntosh, Jr.	D1	4-5/28S/24E	IC	DFO	---	TK	---	---	01/70	Unknown	2,600	2.5	2.5
	D2		IC	DFO	---	TK	---	---	01/70	Unknown	2,600	2.5	2.5
	GT1		GT	NG	DFO	PL	TK	---	05/73	Unknown	26,640	17.0	19.0
	GT2		GT	NG	DFO	PL	TK	---	06/20	Unknown	130,050	119.5	124.5
	5		CT	NG	---	PL	---	---	05/01	Unknown	292,950	234.0	280.0
	5		CA	WH	---	---	---	---	05/02	Unknown	135,000	118.0	118.0
Plant Total												493.5	546.5
System Total												**657.9**	**720.9**

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

[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	WH Waste Heat	TK Truck
GT Combustion Gas Turbine	NG Natural Gas	
IC Internal Combustion		
ST Steam Turbine		

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 (10 years) forecast is developed for the Utility's long-term planning studies including LE's Ten Year Site Plan (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-years 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 2023 was 312,872.

Population Forecast

Lakeland Electric's service territory population is projected to increase at an estimated 1.26% average annual growth rate (AAGR) for years 2024 – 2033.

Polk County's population (Lakeland / Winter Haven MSA) is expected to grow at 1.21% AAGR for the same 10-year period. Historically, Polk County's population has grown faster than LE's service territory population.

PEV Forecast

Lakeland Electric included Plug-In Electric Vehicles (PEV) loads in the demand and energy forecast for the current planning period TYSP. We used a load profile provided by Itron consultants (and verified with our known EV customer hourly loads) that assumed no incentives for charging. We estimated the number of electric vehicles in our service area based on Department of Motor Vehicles (DMV) data for Polk County and made projections based on historical trends and expected saturation rates for Electric Vehicles. The EV forecast was added to the total sales forecast. We scaled the hourly EV load profile to estimate the projected impact at time of peak demand.

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:

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

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

α , β , γ 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 structure 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 3.7% is applied through 2033 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. The actual loss factor in 2023 was 3.8% for Lakeland Electric System.

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.

We adjust our forecast to subtract out projected customer owned solar generation from total sales.

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 and Low Load Forecast Scenarios

A forecast is generated based on projections of its drivers and assumptions at the time of forecast development. This base load forecast ("50th percentile") which is the median of simulation values based on historical weather pattern is intended to represent "most likely" load 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. The 90th percentile forecast ("90/10") represents the high load scenario.

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 promoting the efficient use of electric energy and providing cost-effective energy conservation and demand reduction programs for 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 both supply- and demand-side options that will benefit its customers. Presented in this section are the currently active energy efficiency and solar incentive programs from Lakeland Electric.

4.1 Conservation Programs 2023

In keeping with Lakeland Electric's plan to promote retail energy conservation programs, the utility is continuing the following activities as of 2023:

Residential

- Insulation rebate – Up to $300 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.
- HVAC Maintenance Incentive - $100 rebate for residential customers that have A/C maintenance done.
- Heat Pump Rebate - $500 rebate for installing a SEER 15 or higher heat pump.
- LED Lighting – giveaway at audits, up to 3 per resident.
- Free Energy Audit
- Energy Star Appliance Rebates

Estimated Demand and Energy Savings for FY 2021

- 2.0 MW demand reduction and over 3,500 MWhs

The same level of savings on demand and energy was in year 2023.

4.2 Solar Program Activities

Lakeland Electric considers solar residential roof-top photovoltaic (PV) system as distributed generators irrespective of their connection to the grid. Solar being available during the daytime, it contributes to reduce system peak demand and energy, thereby

avoiding the need to generate or purchase at higher costs. This helps to reduce the average cost of electricity to LE Customers.

4.2.1 Utility Interactive Net Metered Photovoltaic Systems

As of December 2023, there were approximately 1877 PV residential customers in the Lakeland Electric service territory. These PV systems have about 18,882 KW (DC) of installed capacity. Lakeland Electric has allowed the interconnection of these systems in a "net meter" fashion. There are also 124 batteries + rooftop solar customers in LE Service Territory

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 was 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 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 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 Bird blue or by the road intersection Bellavista/Sutton. It began generating power on July 6, 2015
- Lakeland is currently in negotiations for a PPA with Edge Solar (a Williams company) to purchase 74.8MW of utility scale solar. This system would be expected to come on in early 2026.

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. At present, total production is approximately 25,000 MWhs annually.

4.2.3 Utility Solar Water Heating Program

During November 2007, LE issued a Request for proposal (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. There are about 179 customers left as of December 2023.

4.2.4 PHEV and Energy Storage Activities

There are presently eleven Level 2 charging stations supported by Lakeland Electric for the City of Lakeland, available to customers at different prime locations in the LE territory. Lakeland Electric is also supporting an Amazon EV fleet hub with 311 Level 2 chargers. At present Amazon is supporting 102 EV last mile delivery vans, however they are prepared for growth. Additionally, there are approximately 50 Level 2 and Level 3 chargers located within the Lakeland Electric service territory that are provided by businesses for their customers. Lakeland Electric has no plans to install additional EV chargers however, we will continue to support other entities looking to provide EV charging.

At present there are no definitive plans for an energy storage platform, however as the Solar resources continue to grow, Lakeland Electric is aware of the need for storage to ensure resiliency and to manage power supply vs load demand.

4.2.5 Community Microgrid Solution

Lakeland Electric is presently developing a Microgrid pilot project that will incorporate utility owned rooftop solar panels and battery storage including natural gas generation (microturbines as a back up) tied through a neighborhood DC loop. This system is not susceptible to typical AC feeder disturbances and is designed to supply the power requirements of a community at all the time. The microgrid is designed to be 77% energy self-sufficient, with the 23% balance being pulled from the traditional grid during off-peak hours. The microgrid will have backup generation from microturbines to ensure it is always “off-peak” with respect to the grid. This Microgrid will allow us to evaluate the feasibility and reliability of this new model for future new development. The application of this distributed energy resource will provide for the mitigation of population related load growth.

4.2.6 Renewable Energy Credit Trading

Lakeland Electric's Renewable Energy Credits (REC) are produced from its five solar energy purchases made through PPAs that have a 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 2024 fiscal year forecast for RECS is about 22,000 in total and a REC can sell for $3.00 to $4.00 in the state of Florida.

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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 shows Lakeland Electric's position in the economy energy purchase and sales, both within the Florida Municipal Power Pool (FMPP) and with external electric utilities. Also explained are fuel supply arrangement and fuel price projections to be used in the long-term resource planning process.

5.1 Integrated Resource Plan (IRP)

In addition to the Ten -Year Site Plan process, Lakeland Electric utilizes an IRP process for meeting up to 10 years of forecasted energy demand plus reserve capacity through a combination of supply and demand-side resources along with economy energy purchase from the Florida Municipal Power Pool (FMPP) while meeting the objectives of environmental responsibility, reliability, and affordability for its customers. 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 FMPP with the Orlando Utilities Commission (OUC) and the Florida Municipal Power Agency (FMPA). These three utilities operate as a single 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. Lakeland, therefore, must ultimately plan to meet its own load and reserve requirements as reflected in this document. Each member participates in a day ahead market in purchases or sales activities and all units are dispatched in an economic order. The FMPP provides an opportunity for members 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 2.6% in 2024, 2.2% in 2025 and 2.3% thereafter based on Moody's CPI forecast as of December 2023.

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 5.0 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 5.0 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 4.5 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 2023, natural gas trading averaged around $2.737 per MMBtu as the market reacted to increased natural gas production combined with a warmer than expected winter resulting in higher storage inventories. The five-year NYMEX Henry Hub Natural Gas forward curve is currently projected to average around $3.522 per MMBtu.

5.4.1.2 Natural Gas Transportation

There are 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 miles 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 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 33,000 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 744mile 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.

5.4.1.2.5 Transcontinental Gas Pipeline (TRANSCO)

The Transco Pipeline is a 10,000-mile interstate pipeline extending from south Texas to New York City. Lakeland Electric acquired 5,800 MMBtus/day beginning January 26, 2022 as a risk mitigation strategy to flow additional natural gas to both FGT and Gulfstream pipelines. The City entered into long-term prepaid Natural Gas baseload agreements until October 31, 2026 with an option to extend another five years.

5.4.2 Fuel Oil

5.4.2.1 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.

5.4.2.2 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.

5.4.3 Fuel Price Projections

This section presents the long-term price projections for natural gas and fuel oil. The fuel price forecast for solid fuel oil and natural gas is prepared by Lakeland Electric's Fuels Department. 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 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 2023.

5.4.3.1 Natural Gas Price Forecast

The price forecast for natural gas is based on historical prices 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 two rates in FGT's tariff; FTS-1 and FTS-3. Rates in FTS-1 are based on FGT's Phase II, III, IV, V, VI and VII, expansion. Rates in FTS-3 are based on the Phase VIII expansion, which went in service April 1, 2011. Lakeland added FTS-3 capacity to increase its capacity for new generation. Lakeland diversified its capacity with 56% Gulfstream, 38% FGT and 6% Transco. The FTS usage and fuel rates for FGT, Gulfstream and Transco listed below are effective from March 1, 2024.

Table 5-1
Natural Gas Tariff Transportation Rates

Rates And Schedules	Rate Schedules					
	FGT FTS-1 w/surcharges (cents/DTH)*	FGT FTS-3 w/surcharges (cents/DTH)*	FGT ITS-1	Transco FT	Gulfstream FTS-1	Gulfstream FTS-6%
Reservation	51.5	72.5	74.82	9.839	55.00	70.41
Usage	5.59	3.54	0.00	1.09	0.69	0.69
Total	57.09	76.04	74.82	10.93	55.69	71.1
Fuel Charge	2.01%	2.01%	2.01%	0.32%	1.50%	1.50%

* A DTH is equivalent to 1 MMBtu or 1 MCF

The average transportation rate of $0.56/MMBtu will be added for purposes of projecting delivered gas prices for existing gas units in Lakeland. This average rate is realized through a current mix of FGT, Gulfstream and Transco, including consideration of Lakeland Electric's ability to relinquish its FTS, Gulfstream and Transco transportation or acquire other firm and interruptible gas transportation on the market. The delivered natural gas price is projected to be volatile during the next twelve months with expectations of reduced production output and as LNG facilities gear up for increased exports . The volatility will be offset in the short-term due to higher storage inventories at the end of the 2023 withdrawal season. The long-term average price is forecasted to remain around $3.522 during the next five years. The average delivered gas price forecast in Lakeland will be around $3.196/MMBtu for the year 2024.

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.

5.4.4 Fuel Forecast Sensitivities

Lakeland Electric is not conducting any specific forecasted fuel price sensitivity analysis at this moment. Lakeland baseloads larger volumes during the winter and summer seasons to mitigate fuel price risk and ensure reliability. In addition, the utility financially hedges natural gas to manage fuel price risk. Lakeland Electric acquired FTS-3 capacity on the Florida Gas Transmission Company pipeline to increase its volume by October 2023.

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6.0 Forecast of New Capacity Requirements

6.1 Assessment of the Need for Capacity/Energy

This section outlines Lakeland Electric's methodology for evaluating capacity requirements to ensure reliable service for its customers in the future. Assessing the need for future capacity involves considering Lakeland Electric's long-term load forecast, reserve margin requirements defined by the Florida Reliability Coordinating Council (FRCC) and FMPP, as well as the existing generation capacity of Lakeland Electric. To effectively serve customers within its territory, Lakeland Electric must maintain sufficient resources to meet peak-hour demand, including reserves, at any hour of the day throughout the year.

6.1.1 Load Forecast

The load forecast outlined in Section 3.0 serves as the basis for assessing future capacity requirements. Total electricity sales and peak hour demand forecasts for this TYSP were established considering future economic expectations and population growth. Lakeland Electric (LE) generates a range of load forecasts, including base-expected, high, and low scenarios, ensuring flexibility to accommodate various outcomes. Tables 6-1 and 6-2 provide a summary of the annual peak load forecasts for winter and summer, respectively, under the base case (reference) scenario.

6.1.2 Reserve Requirements

A 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 changes. This additional capacity (i.e., reserve capacity) should be large enough to cover the loss of any unit in the system and be able to respond adequately to cover the moment to moment change in system load. Total reserves should also be able cover uncertainties such as planned outage, interruption on transmission system due to planned maintenance or weather events and load forecasting error. 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 looked at probabilistic approaches to determine its reliability needs in the past. The study has looked at reliability 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. Moreover, FRCC performs LOLP analysis every two years, and the reliability standards are adequate to operate the entire FRCC system reliably.

6.1.3 Existing Energy Supply

Availability factor on Generating Units is reviewed annually and is found to be within industry standards for the types of units that Lakeland Electric has in its generation fleet, indicating adequate and prudent maintenance is taking place.

Lakeland Electric is using a wide variety of resources (build and purchase) to meet its load and reserve obligations. Lakeland plans to add 74.8 MW of solar capacity in its territory to be available for generation in 2026. LE uses a production cost model – PCI GenTrader - to obtain an optimal capacity plan to meet its energy need with minimal unserved energy over the next 10 years. Table 6-1 shows the combination of purchase and LE owned resources for existing and planned capacity requirements. In addition, LE has secured firm Power Purchases necessary to meet load and reserve obligations with the new resources installed and operational. In 2024, 120 MW (6 units) of additional capacity will be available and will reduce the amounts of existing long-term power purchase contracts. These new generating units are highly reliable, efficient, flexible, and cost effective. The high flexibility and modularity of these Reciprocating Internal Combustion Engines (RICE) can provide a low-cost energy solution to Lakeland supporting an optimized

transition to additional solar energy in its energy portfolio. These new engines can quickly ramp up and down as needed to balance the variable nature of solar resources. This will help to improve the reliability in Lakeland System.

6.2 Seasonal 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. Since electric supply and demand differ in summer and winter, planning based on seasonal reserve margin is critical. This TYSP study also considers capabilities and performance of solar resources in both summer and winter. Lakeland Electric's Reserve Margins presented in Tables 6-1 and 6-2 in both seasons are at or higher than 15% in both cases.

Tables 6-1 and 6-2 indicate that using the base winter and base summer load forecasts, Lakeland Electric's Reserve Margins are at or greater than 15% throughout the year with additional external firm power purchases, repairing existing out of service gas turbines, or building new resources, during the current ten-year planning period. This complies with the FRCC's minimum reserve margin criteria to meet its reliability requirements.

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

Year	Net Generating Capacity	Net System Purchases	Net System Sales	Net System Capacity	System Peak Demand		Reserve Margin		Excess(Deficit) to Maintain 15% Reserve Margin	
					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
2024/25	841	50	0	891	647	647	38%	38%	147	147
2025/26	841	50	0	891	651	651	37%	37%	142	142
2026/27	841	0	0	841	655	655	28%	28%	88	88
2027/28	841	0	0	841	660	660	27%	27%	82	82
2028/29	841	0	0	841	663	663	27%	27%	78	78
2029/30	841	0	0	841	666	666	26%	26%	75	75
2030/31	841	0	0	841	670	670	26%	26%	70	70
2031/32	841	0	0	841	674	674	25%	25%	66	66
2032/33	841	0	0	841	677	677	24%	24%	67	67
2033/34	841	0	0	841	681	681	23%	23%	68	68

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 MW	Net System Purchases MW	Net System Sales MW	Net System Capacity MW	Before Interruptible and Load Management MW	After Interruptible and Load Management MW	Before Interruptible and Load Management %	After Interruptible and Load Management %	Before Interruptible and Load Management %	After Interruptible and Load Management MW
2024	658	182	0	840	702	702	20%	20%	33	33
2025	778	107	0	885	708	708	25%	25%	71	71
2026	778	144	0	922	714	714	29%	29%	101	101
2027	778	64	0	842	720	720	17%	17%	14	14
2028	778	69	0	847	727	727	16%	16%	11	11
2029	778	74	0	852	734	734	16%	16%	8	8
2030	778	84	0	862	740	740	16%	16%	11	11
2031	778	94	0	872	747	747	17%	17%	13	13
2032	778	99	0	877	754	754	16%	16%	10	10
2033	778	99	0	877	761	761	15%	15%	2	2

Solar resources – unlike traditional dispatchable generators – are highly variable resources that depend on the time of the day, season, and weather conditions. Hence, solar firm capacity is considered only 50% of the installed capacity during summer and 0% in winter in this study – which aligns the industry's general practice for planning purpose. Net system purchases include firm purchases from both thermal and solar resources.

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

6.3 Energy Resources Portfolio and Analysis

Table 6.3 summarizes the expected energy mix from different resources for Lakeland Electric in next 10 years from the Production Cost Analysis. This Table shows the different types of committed and planned resources to meet the future capacity and energy needs of LE customers.

This combination of resources is represented as a portfolio for Lakeland Electric under the base case assumptions and production cost analysis. The GenTrader software model provides the optimal energy generation from Lakeland units along with economy purchase from the FMPP members when Lakeland units are economically dispatched with the other Pool members. This portfolio is decided based on optimal optimization of cost,

risk, and environmental factors. As can be seen in Table 6.3, natural gas-fired resources are dominant in LE's future energy mix as more than 60% of energy is expected to come from these resources. Solar mix is still low until 2026. It is anticipated to increase up to 5.0% range when new solar units are added in the portfolio. Lakeland expects to purchase certain percentage of economy energy from the FMPP members and fixed firm contract energy purchases from a bilateral agreement with the OUC in addition to the new RICE resources. When LE's RICE engines and solar resources become available in 2024, LE becomes a net seller and a buyer based upon relative dispatch costs of LE units compared to the other units in FMPP.

Table 6.3: Energy Resource Mix

			Calendar Year										
Energy Source	Type	Units	2023 - Actual	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Coal		%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Distillate	Steam	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	CC	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	CT	%	0.00%	0.03%	0.03%	0.00%	0.03%	0.03%	0.00%	0.00%	0.00%	0.03%	0.03%
	Total	%	0.00%	0.03%	0.03%	0.00%	0.03%	0.03%	0.00%	0.00%	0.00%	0.03%	0.03%
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
	CC	%	56.7%	60.6%	63.2%	64.1%	67.9%	61.1%	65.8%	60.9%	67.2%	60.6%	55.8%
	CT	%	0.7%	0.9%	6.5%	6.9%	7.1%	6.7%	6.8%	6.5%	6.5%	6.3%	6.4%
	Total	%	57.4%	61.6%	69.7%	71.0%	75.0%	67.9%	72.6%	67.3%	73.7%	66.9%	62.2%
Solar		%	0.7%	0.7%	0.7%	4.0%	4.9%	5.3%	4.6%	5.3%	4.6%	4.7%	4.9%
Other (Specify)[1]		%	41.9%	37.7%	29.6%	25.0%	20.1%	26.8%	22.7%	27.4%	21.8%	28.4%	32.9%
Net Energy for Load		%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

1 Other Purchases

6.4 Summary - Study Results

Table 6-1 and 6-2 presents the schedules of new planned resources and anticipated future purchases in addition to the existing resources and purchases. The planned portfolio provides adequate resource adequacy (i.e., reserve margin) during the summer period based on existing and planned supply and demand. While Lakeland anticipates more than 5% of installed capacity coming from solar by 2026, there is a need of additional capacity which

may either come from external purchases or additional capacity from repairs from existing gas turbine units in 2027 and later. The capacity contribution from solar in meeting winter peak loads in the winter month's morning hours is assumed negligible. Table 6-3 presents the energy mix scenario for Lakeland Electric. LE starts to be more self-reliant in terms of energy after LE's new resources are installed in 2024 and the firm power purchase contract with the OUC may continue until acceptable reserve margin is attained.

7.0 Environmental and Land Use Information

As discussed in Section 6, Lakeland Electric added a new 125 MW McIntosh Gas Turbine No. 2 in 2020 and retired its coal unit (219 MW – LE's net share) at Lakeland Electric's McIntosh Power Plant site (See Figure 7.1). LE is replacing its retired coal unit with 120 MW RICE engines in 2024. LE has been issued Construction and Environmental Resource Permits for those Engines to be built at McIntosh Plant site (Figure 7-3 and 7-4) and the construction is in progress. Lakeland is currently in negotiations for a long-term Power Purchase Agreement (PPA) with Edge Solar to install a 74.8 MW utility-scale solar system within Lakeland territory (Refer to Figures 7.5 and 7.6). The anticipated availability of this solar system is projected for the year 2026.

Lakeland Electric is working on a floating solar project, with the aim of generating clean, renewable energy while gaining insights into the potential of innovative clean energy technology for its customers. Nearly 50 kW of floating solar panels will be installed over 3 Acres of water surface on an existing zero discharge pond at the McIntosh Power Plant. Currently, LE is looking into project logistics, funding procurement, and technical design aspects to ensure the project's successful completion by 2025.

To achieve LE's overall mission to provide affordable energy and environmental stewardship, LE has adopted different measures to maintain the environmental footprint of the new generating units, including air emissions, water, waste, and land use impacts within the state and federal standard.

Per the Ten-Year Site Plan definitions (rule 25-22-072), "Preferred Sites" include sites where a utility has taken action to site new generation. "Preferred Site" information of the Plant site for planned units is presented from Figures 7-1 – 7.6.

Table 7-1 summarizes different control strategies adopted to comply with various environmental emission regulations in LE's existing major generating units. The air pollution control technologies installed at those generating units meet all the state and federal regulations for all pollutants.

The retirement of our coal burning unit has prompted the closure of our coal combustion (CCR) residuals landfill. We have obtained State permits to begin final closure of the CCR landfill. Closing the landfill will significantly limit the exposure of the materials into the environment. Closure is likely to be completed by early 2025.

The coal burning unit retirement has also significantly reduced LAK's emissions of pollutants such as carbon monoxide, sulfur dioxide, nitrogen oxides, particulate matter, hazardous air pollutants, as well as greenhouse gases.

In May 2023, EPA presented changes to the Clean Air Act by proposing to regulate CO_2 emissions from existing natural gas combustion turbines for the first time. This rule is expected to be finalized by EPA in April 2024. Additionally, EPA is considering altering regulations to regulate closed CCR landfills. Both actions would have considerable impacts on LAK's operations. Until the new regulations are finalized, the actual impacts will not be fully known.

LAK has installed an epoxy coating on the once through cooling water tubes at Larsen Power Plant in 2022. This was done to help reduce the amount of copper that is picked up by the water and returned to the lake. Laboratory testing of the cooling water has shown the project to be effective in reducing the copper impacts to the lake.

Table 7-1: Emission Control Options in Major LE Units

Table 7-1
Lakeland Electric
Existing Generating Facilities
Environmental Emissions and Control Strategies for Major Existing Generating Units

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

PM Particulte matter	OTF Once-through flow	FGD Flue gas desulfurization
SO2 Sulfur dioxide	FGR Flue gas recirculation	OFA Overfire air
NOX Nitrogen oxides	IC Internal combustion	SCR Selective catalytic reduction
CO Carbon monoxide	NG Natural Gas	N/A Not Applicable
LS Low sulfur fuel	WCTM Water cooling tower mechanical	OC Oxidation catalyst
LNB Low Nox burners	ESP Electrostatic precipitator	DFO Distilate Fuel oil
WI Water injections	CC Combined Cycle	Alt Alterenate
GT Gas Turbine		

Source: Lakeland Environmental Staff

Figure 7-1: C.D. McIntosh Power Plant Topographic Map

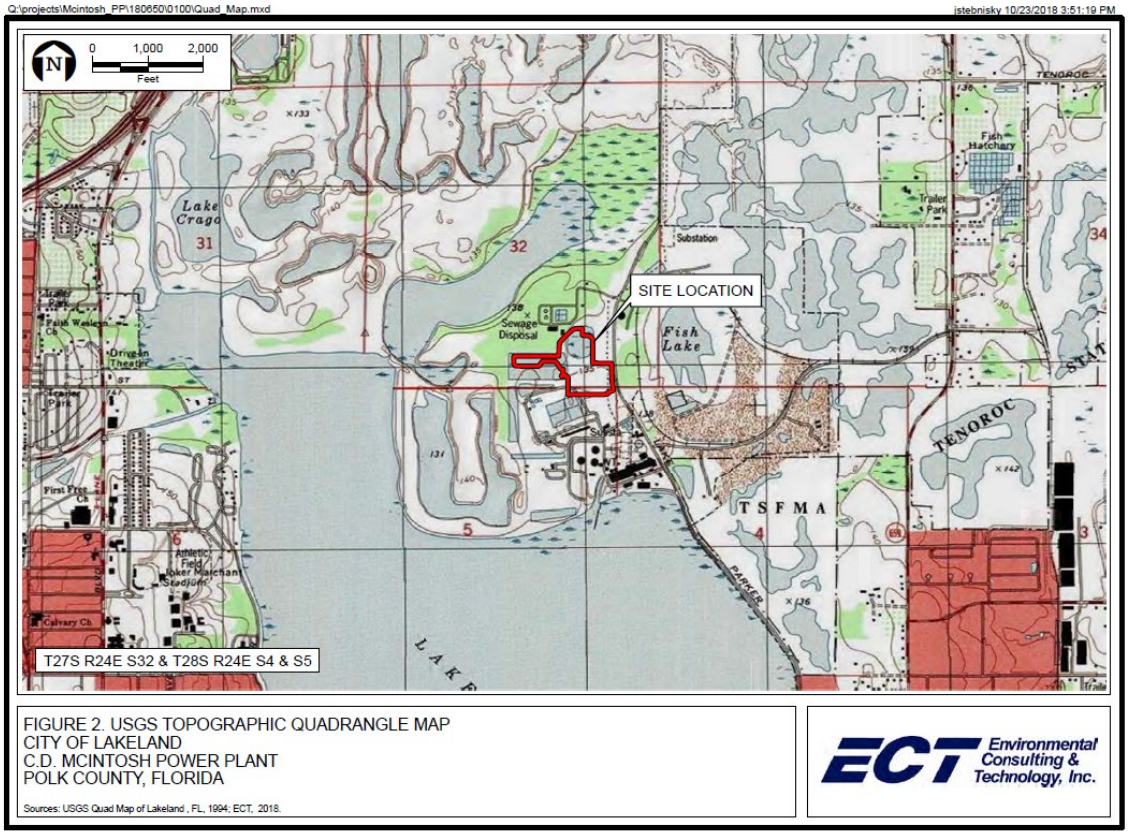


Figure 7-2: City of Lakeland – Zoning Map

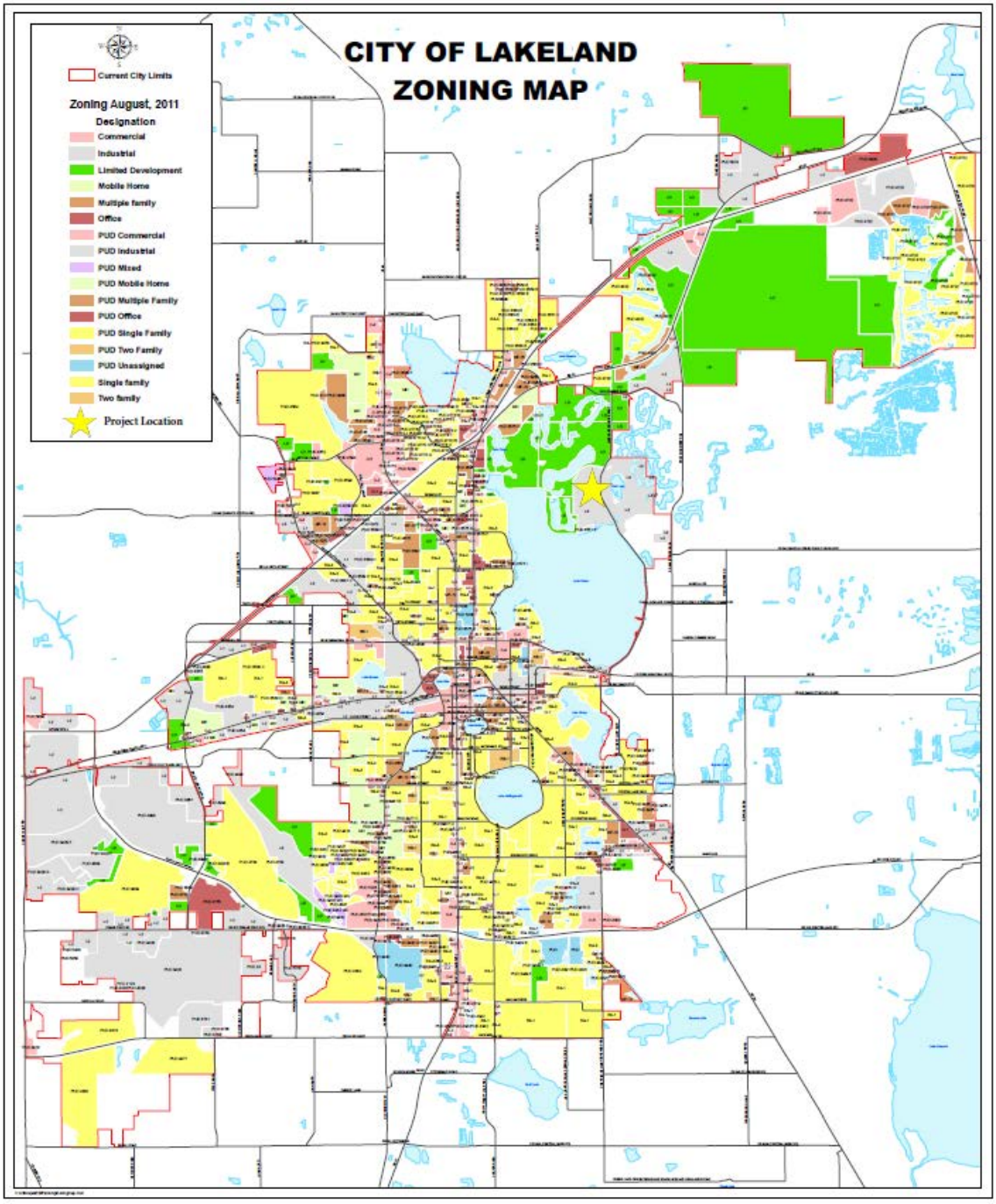


Figure 7-3: Site location of 120 MW RICE Engines in McIntosh Plant

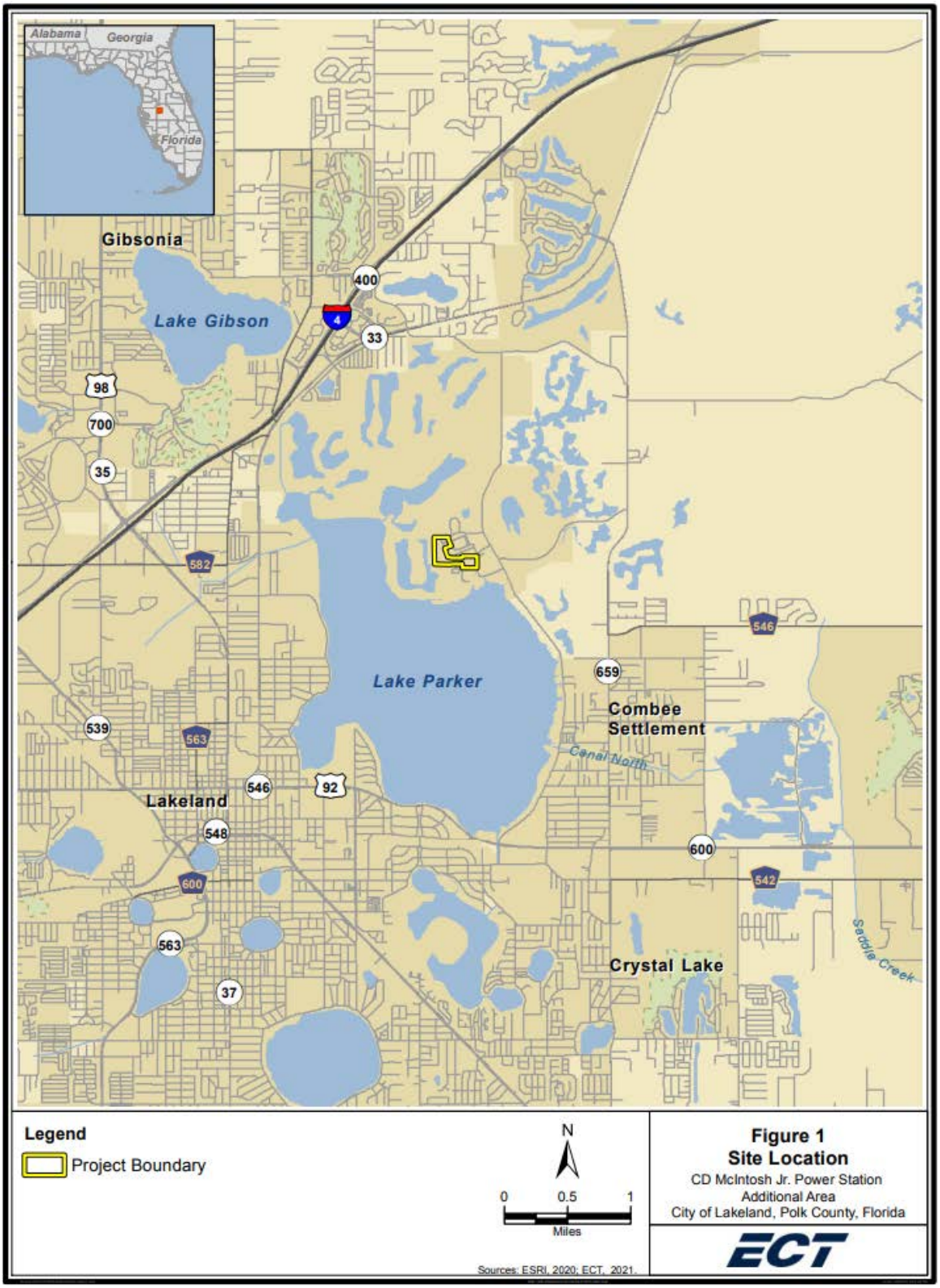


Figure 7-4: Site location of 120 MW RICE Engines in McIntosh Plant

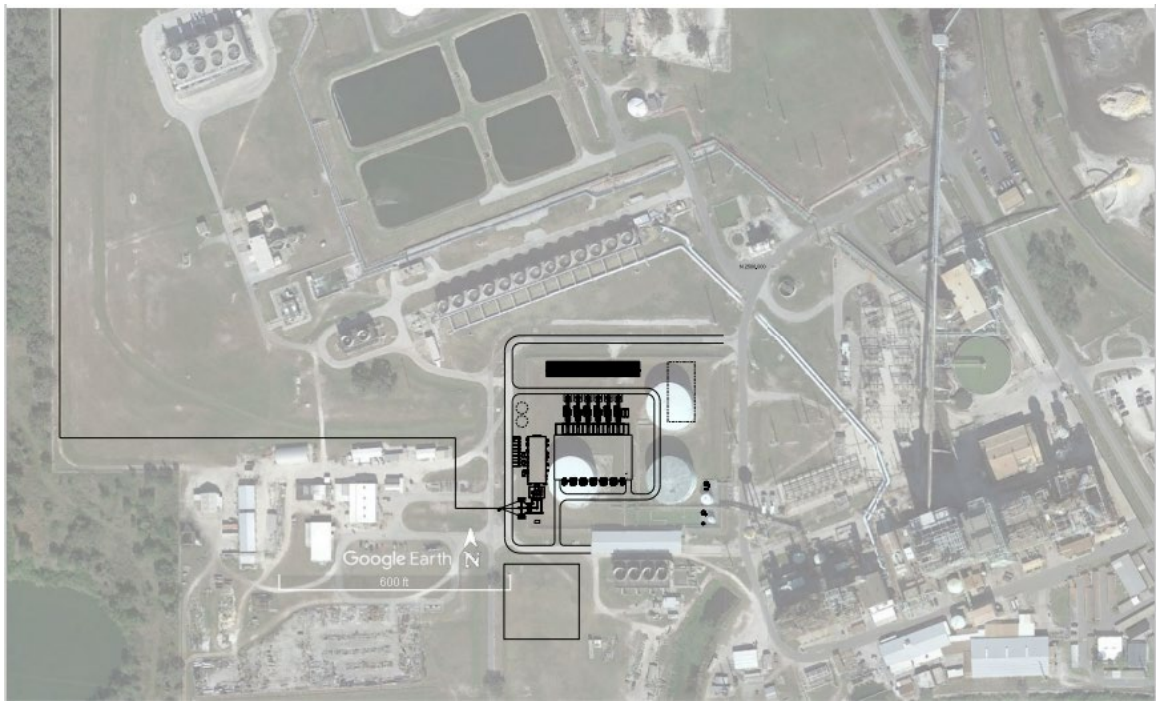


Figure 7.5: Edge Solar Site Topographic Map

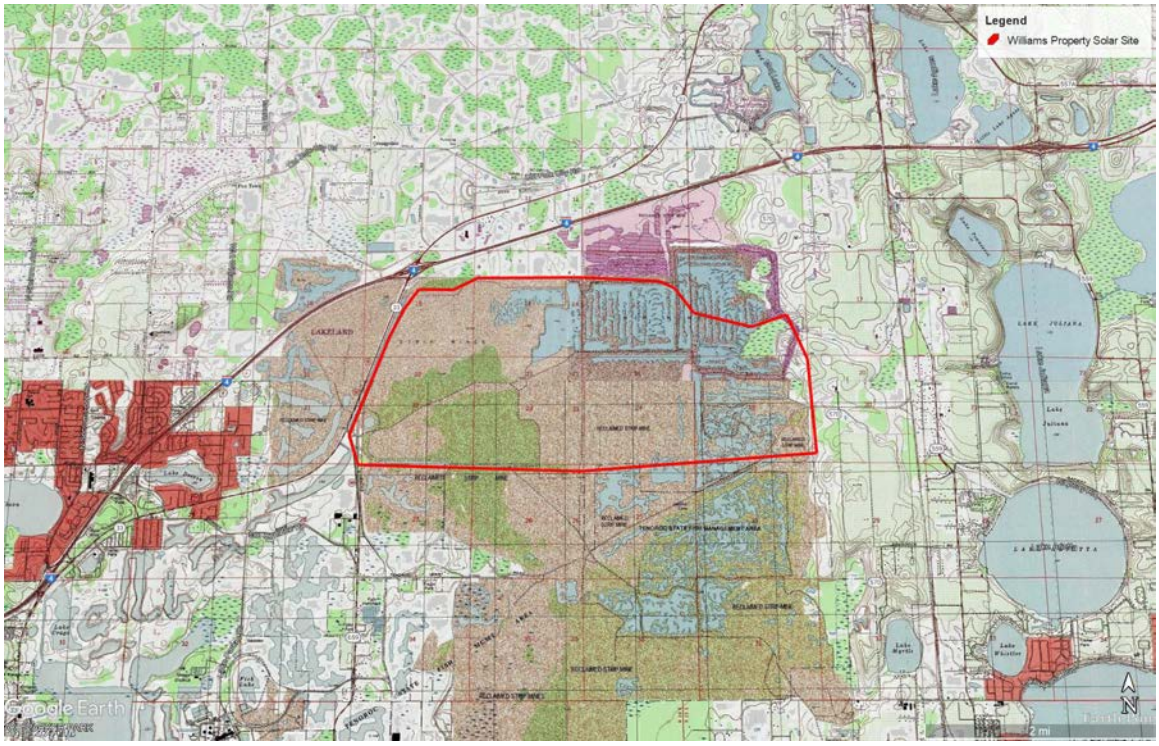
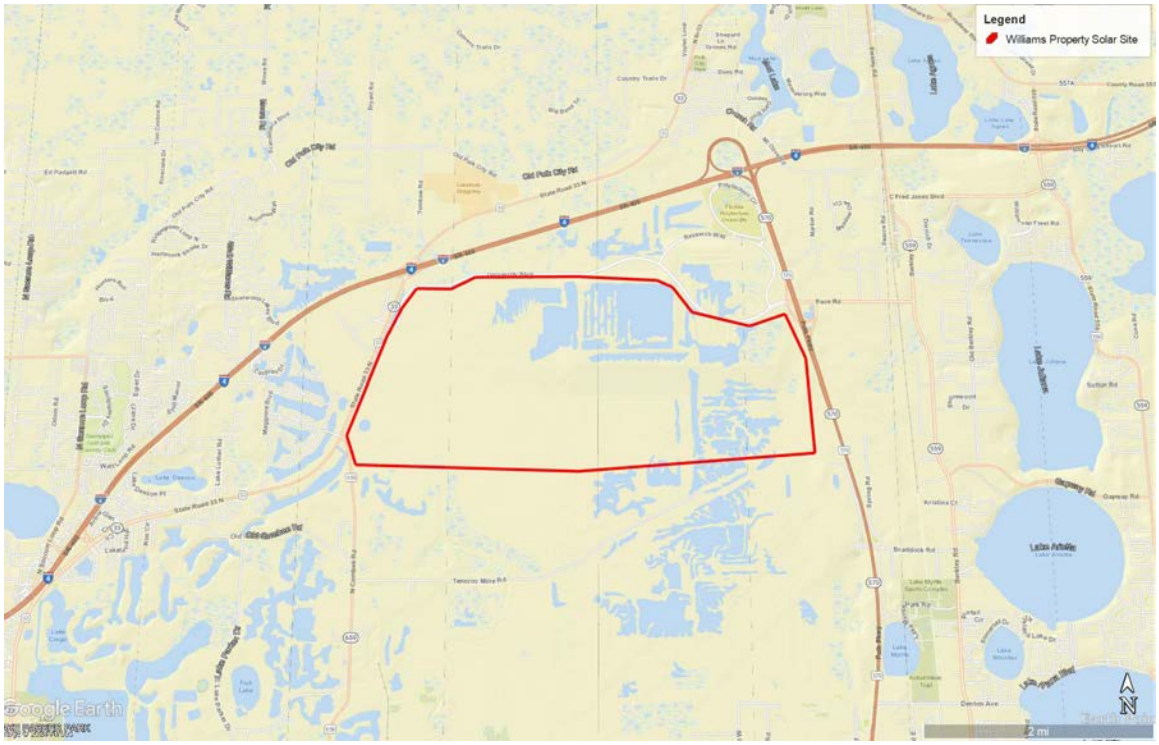


Figure 7.6: Edge Solar – Property Site Location



8.0 Ten-Year Site Plan Schedules

This section outlines the schedules mandated by the Ten-Year Site Plan for the Florida Public Service Commission. Each schedule provides comprehensive information on capacity and load positions for Lakeland Electric on a monthly basis for each year, demonstrating reserve positions across different seasons.

Tables 8-1 and 8-1a offer details on Lakeland Electric's current unit characteristics, categorized by fuel type (primary and secondary), fuel transportation method, and achievable net capacity across various seasons.

Tables 8-2 through 8-6 offer insights into the electric peak demand and energy usage patterns of diverse customers, spanning historical records and future projections. This comprehensive data is segmented by customer class, facilitating the assessment of future capacity and energy requirements for the entire customer base in Lakeland.

Table 8-7 provides a historical overview of energy consumption, detailing the breakdown between retail sales and utility uses and losses. Furthermore, this data includes the shape factor of energy consumption, which indicates the capacity factor of total energy usage. Table 8-8 compares the monthly peak electric demand and energy usage forecasts for the years 2024 and 2025 with the actual monthly figures from 2023.

Tables 8-9, 8-10, and 8-11 offer a comprehensive overview of fuel requirements by fuel type, the energy mix from different types of electric generators, and the percentage mix of various fuel types in the generation of electricity within the Lakeland Electric system, inclusive of purchases made for Lakeland Electric. These tables provide both historical data and forecasts, enabling a thorough analysis of fuel requirement trends and energy generation dynamics.

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 changes in the status of Lakeland Electric's existing and future units.

Tables 8-15 and 8-16 present the major technical and cost characteristics of new units to be installed at McIntosh Plant including solar and main transmission line to be built in its Transmission System.

Table 8-1
Lakeland Electric Existing Generating Facilities

Plant Name	Unit No.	Location	[3]Unit Type	[4]Fuel Pri	[4]Fuel Alt	[5]Fuel Transport Pri	[5]Fuel Transport Alt	[1]Alt Fuel Days Use	Commercial In-Service Month/Year	Expected Retirement Month/Year	Gen. Max. Nameplate kW	[2]Net Capability Summer MW	[2]Net Capability Winter MW
Charles Larsen Memorial	GT2*	16-17/28S/24E	GT	NG	DFO	PL	TK	NR	11/62	Unknown	11,250	10.0	14.0
	GT3*		GT	NG	DFO	PL	TK	NR	12/62	Unknown	11,250	9.0	13.0
	8		CA	WH	---	---			04/56	Unknown	30,000	29.7	29.7
	8		CT	NG	DFO	PL	TK	NR	07/92	Unknown	101,520	84.7	94.7
Plant Total												114.4	124.4

[1]LAK doesnot maintain records of the days the alternative fuel available in reserve. ,[2]Net Normal, * Long term scheduled maintenance - not included in available capacity.

[2]Net Normal

Source: Lakeland Production Department

[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	NG Natural Gas	TK Truck
GT Combustion Gas Turbine	WH Waste Heat	
ST Steam Turbine		

Table 8-1a
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	---	NR	12/01	Unknown	2,500 each	50.0	50.0
Plant Total												50.0	50.0
C.D. McIntosh, Jr.	D1	4-5/28S/24E	IC	DFO	---	TK	---	NR	01/70	Unknown	2,600	2.5	2.5
	D2		IC	DFO	---	TK	---	NR	01/70	Unknown	2,600	2.5	2.5
	GT1		GT	NG	DFO	PL	TK	NR	05/73	Unknown	26,640	17.0	19.0
	GT2		GT	NG	DFO	PL	TK	NR	06/20	Unknown	130,050	119.5	124.5
	5		CT	NG	---	PL	---	NR	05/01	Unknown	292,950	234.0	280.0
	5		CA	WH	---	---	---	NR	05/02	Unknown	135,000	118.0	118.0
Plant Total												493.5	546.5
System Total												**657.9**	**720.9**

[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	WH Waste Heat	TK Truck
GT Combustion Gas Turbine	NG Natural Gas	
ST Steam Turbine		
IC Internal Combustion		

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
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
2021	299,557	2.61	1,597	114,683	13,925	832	13,219	62,940
2022	303,910	2.61	1,637	116,907	14,003	843	13,452	62,667
2023	312,872	2.65	1,669	118,281	14,110	845	13,823	61,130
Forecast								
2024	316,175	2.64	1,627	119,926	13,567	850	14,017	60,641
2025	319,505	2.64	1,641	121,239	13,535	858	14,100	60,851
2026	322,907	2.63	1,660	122,825	13,515	866	14,274	60,670
2027	326,394	2.62	1,679	124,416	13,495	873	14,463	60,361
2028	329,974	2.62	1,699	126,010	13,483	880	14,653	60,056
2029	333,633	2.61	1,721	127,616	13,486	887	14,843	59,759
2030	337,334	2.61	1,742	129,207	13,482	893	15,034	59,399
2031	341,032	2.61	1,765	130,737	13,500	900	15,219	59,137
2032	344,700	2.61	1,787	132,226	13,515	906	15,398	58,839
2033	348,355	2.61	1,810	133,676	13,540	913	15,573	58,627

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
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
2021	679	71	9,563,380	0	35	67	3,210
2022	697	76	9,171,053	0	35	67	3,279
2023	696	73	9,534,247	0	34	67	3,311
Forecast							
2024	675	74	9,121,622	0	35	68	3,255
2025	679	74	9,175,676	0	35	67	3,280
2026	683	75	9,106,667	0	35	67	3,311
2027	687	76	9,039,474	0	35	67	3,341
2028	692	77	8,987,013	0	35	67	3,373
2029	695	77	9,025,974	0	35	67	3,405
2030	698	78	8,948,718	0	35	67	3,435
2031	702	79	8,886,076	0	34	68	3,469
2032	706	80	8,825,000	0	35	66	3,500
2033	709	80	8,862,500	0	34	67	3,533

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
2014	0	0	3,006	8,860	124,019
2015	0	0	3,126	8,921	125,674
2016	0	0	3,109	8,966	127,152
2017	0	0	3,086	8,997	129,113
2018	0	0	3,180	9,051	130,658
2019	0	0	3,189	9,051	132,217
2020	0	0	3,273	9,182	134,320
2021	65	0	3,305	9,189	137,162
2022	71	0	3,406	9,200	139,635
2023	104	0	3,442	8,929	241,224
Forecast					
2024	80	0	3,380	9,301	143,317
2025	50	0	3,408	9,346	144,760
2026	50	0	3,439	9,393	146,566
2027	0	0	3,471	9,439	148,394
2028	0	0	3,503	9,487	150,226
2029	0	0	3,536	9,534	152,071
2030	0	0	3,568	9,583	153,901
2031	0	0	3,602	9,632	155,667
2032	0	0	3,635	9,681	157,385
2033	0	0	3,670	9,731	159,061

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)
Year	Total	Wholesale	Retail	Interrupt.	Residential		Commercial/Industrial		Net Firm Demand
					Load Management	Conservation	Load Management	Conservation	
2014	627	0	627	0	0	0	0	0	627
2015	632	0	632	0	0	0	0	0	632
2016	649	0	649	0	0	0	0	0	649
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
2021	692	0	692	0	0	0	0	0	692
2022	704	0	704	0	0	0	0	0	704
2023	752	0	752	0	0	0	0	0	752
Forecast									
2024	702	0	702	0	0	0	0	0	702
2025	708	0	708	0	0	0	0	0	708
2026	714	0	714	0	0	0	0	0	714
2027	720	0	720	0	0	0	0	0	720
2028	727	0	727	0	0	0	0	0	727
2029	734	0	734	0	0	0	0	0	734
2030	740	0	740	0	0	0	0	0	740
2031	747	0	747	0	0	0	0	0	747
2032	754	0	754	0	0	0	0	0	754
2033	761	0	761	0	0	0	0	0	761

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)
Year	Total	Wholesale	Retail	Interrupt.	Residential		Commercial/Industrial		Net Firm Demand
					Load Management	Conservation	Load Management	Conservation	
2014	627	0	627	0	0	0	0	0	627
2015	632	0	632	0	0	0	0	0	632
2016	649	0	649	0	0	0	0	0	649
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
2021	692	0	692	0	0	0	0	0	692
2022	704	0	704	0	0	0	0	0	704
2023	752	0	752	0	0	0	0	0	752
Forecast									
2024	687	0	687	0	0	0	0	0	687
2025	693	0	693	0	0	0	0	0	693
2026	699	0	699	0	0	0	0	0	699
2027	706	0	706	0	0	0	0	0	706
2028	712	0	712	0	0	0	0	0	712
2029	719	0	719	0	0	0	0	0	719
2030	726	0	726	0	0	0	0	0	726
2031	732	0	732	0	0	0	0	0	732
2032	739	0	739	0	0	0	0	0	739
2033	746	0	746	0	0	0	0	0	746

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)
Year	Total	Wholesale	Retail	Interrupt.	Residential		Commercial/Industrial		Net Firm Demand
					Load Management	Conservation	Load Management	Conservation	
2014	627	0	627	0	0	0	0	0	627
2015	632	0	632	0	0	0	0	0	632
2016	649	0	649	0	0	0	0	0	649
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
2021	692	0	692	0	0	0	0	0	692
2022	704	0	704	0	0	0	0	0	704
2023	752	0	752	0	0	0	0	0	752
Forecast									
2024	706	0	706	0	0	0	0	0	706
2025	712	0	712	0	0	0	0	0	712
2026	719	0	719	0	0	0	0	0	719
2027	725	0	725	0	0	0	0	0	725
2028	731	0	731	0	0	0	0	0	731
2029	739	0	739	0	0	0	0	0	739
2030	745	0	745	0	0	0	0	0	745
2031	752	0	752	0	0	0	0	0	752
2032	759	0	759	0	0	0	0	0	759
2033	767	0	767	0	0	0	0	0	767

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	
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
2021/22	663	0	663	0	0	0	0	0	663
2022/23	620	0	620	0	0	0	0	0	620
2023/24	644	0	644	0	0	0	0	0	644
Forecast									
2024/25	647	0	647	0	0	0	0	0	647
2025/26	651	0	651	0	0	0	0	0	651
2026/27	655	0	655	0	0	0	0	0	655
2027/28	660	0	660	0	0	0	0	0	660
2028/29	663	0	663	0	0	0	0	0	663
2029/30	666	0	666	0	0	0	0	0	666
2030/31	670	0	670	0	0	0	0	0	670
2031/32	674	0	674	0	0	0	0	0	674
2032/33	677	0	677	0	0	0	0	0	677
2033/34	681	0	681	0	0	0	0	0	681

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	
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
2021/22	663	0	663	0	0	0	0	0	663
2022/23	620	0	620	0	0	0	0	0	620
2023/24	641	0	641	0	0	0	0	0	641
Forecast									
2024/25	643	0	643	0	0	0	0	0	643
2025/26	647	0	647	0	0	0	0	0	647
2026/27	651	0	651	0	0	0	0	0	651
2027/28	655	0	655	0	0	0	0	0	655
2028/29	659	0	659	0	0	0	0	0	659
2029/30	662	0	662	0	0	0	0	0	662
2030/31	666	0	666	0	0	0	0	0	666
2031/32	670	0	670	0	0	0	0	0	670
2032/33	673	0	673	0	0	0	0	0	673
2033/34	677	0	677	0	0	0	0	0	677

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	
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
2021/22	663	0	663	0	0	0	0	0	663
2022/23	620	0	620	0	0	0	0	0	620
2023/24	647	0	641	0	0	0	0	0	641
Forecast									
2024/25	651	0	651	0	0	0	0	0	651
2025/26	655	0	655	0	0	0	0	0	678
2026/27	659	0	659	0	0	0	0	0	659
2027/28	664	0	664	0	0	0	0	0	664
2028/29	668	0	668	0	0	0	0	0	668
2029/30	671	0	671	0	0	0	0	0	671
2030/31	674	0	674	0	0	0	0	0	674
2031/32	679	0	679	0	0	0	0	0	679
2032/33	682	0	682	0	0	0	0	0	682
2033/34	686	0	686	0	0	0	0	0	686

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 %
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%
2021	3,210	0	0	3,210	0	95	3,304	53%
2022	3,279	0	0	3,279	0	127	3,406	55%
2023	3,310	0	0	3,310	0	132	3,442	52%
Forecast								
2024	3254	0	0	3,254	0	126	3,380	55%
2025	3281	0	0	3,281	0	127	3,408	55%
2026	3311	0	0	3,311	0	128	3,439	55%
2027	3342	0	0	3,342	0	129	3,471	55%
2028	3373	0	0	3,373	0	130	3,503	55%
2029	3405	0	0	3,405	0	131	3,536	55%
2030	3436	0	0	3,436	0	132	3,568	55%
2031	3468	0	0	3,468	0	134	3,602	55%
2032	3500	0	0	3,500	0	135	3,635	55%
2033	3533	0	0	3,533	0	137	3,670	55%

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
2014	2903	0	0	2903	0	103	3006
2015	3034	0	0	3034	0	92	3126
2016	3030	0	0	3030	0	79	3109
2017	3018	0	0	3018	0	68	3086
2018	3118	0	0	3118	0	62	3180
2019	3117	0	0	3117	0	73	3190
2020	3163	0	0	3163	0	109	3273
2021	3210	0	0	3210	0	95	3304
2022	3279	0	0	3279	0	127	3406
2023	3310	0	0	3310	0	132	3442
Forecast							
2024	3,235	0	0	3,235	0	124	3,359
2025	3,261	0	0	3,261	0	126	3,387
2026	3,291	0	0	3,291	0	127	3,418
2027	3,321	0	0	3,321	0	128	3,449
2028	3,352	0	0	3,352	0	129	3,481
2029	3,384	0	0	3,384	0	130	3,514
2030	3,414	0	0	3,414	0	132	3,546
2031	3,446	0	0	3,446	0	133	3,579
2032	3,478	0	0	3,478	0	134	3,612
2033	3,510	0	0	3,510	0	136	3,646

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
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
2021	3,210	0	0	3,210	0	95	3,304
2022	3,279	0	0	3,279	0	127	3,406
2023	3,310	0	0	3,310	0	132	3,442
Forecast							
2024	3,274	0	0	3,274	0	126	3,400
2025	3,301	0	0	3,301	0	128	3,429
2026	3,331	0	0	3,331	0	129	3,460
2027	3,362	0	0	3,362	0	130	3,492
2028	3,394	0	0	3,394	0	131	3,525
2029	3,426	0	0	3,426	0	132	3,559
2030	3,457	0	0	3,457	0	134	3,591
2031	3,490	0	0	3,490	0	135	3,625
2032	3,522	0	0	3,522	0	136	3,658
2033	3,556	0	0	3,556	0	137	3,693

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	2023 Actual		2024 Forecast		2025 Forecast	
	[1]Peak Demand MW	NEL GWh	[1]Peak Demand MW	NEL GWh	[1]Peak Demand MW	NEL GWh
January	570	247	644	253	647	255
February	517	224	578	222	578	219
March	591	264	499	257	502	259
April	594	270	560	259	565	262
May	642	304	649	318	654	322
June	692	323	677	323	683	326
July	696	354	680	336	685	340
August	752	371	702	346	708	350
September	696	326	663	305	669	308
October	610	280	627	281	632	284
November	535	239	521	227	525	230
December	490	240	435	253	437	256

[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	2023-Actual	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
(1)	Nuclear		Trillion Btu	0	0	0	0	0	0	0	0	0	0	0
(2)	Coal		1000 Ton	0	0	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	2	2	1	0	2	1	0	0	1	1	1
(10)		Total	1000 BBL	2	2	1	0	2	1	0	0	1	1	1
(11)	Natural Gas	Steam	1000 MCF	0	0	0	0	0	0	0	0	0	0	0
(12)		CC	1000 MCF	14,347	15,056	15,837	16,192	17,329	15,738	17,101	15,965	17,783	16,192	15,056
(13)		CT	1000 MCF	298	398	2,779	2,979	3,098	2,965	3,045	2,912	2,952	2,899	2,952
(14)		Total	1000 MCF	14,645	15,454	18,616	19,171	20,427	18,703	20,146	18,877	20,735	19,091	18,008
(15)	Other		Trillion Btu	0	0	0	0	0	0	0	0	0	0	0

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	2023-Actual	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
(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	0	0	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	0	1	1	0	1	1	0	0	0	1	1
(11)		Total	GWh	0	1	1	0	1	1	0	0	0	1	1
(12)	Natural Gas	Steam	GWh	0	0	0	0	0	0	0	0	0	0	0
(13)		CC	GWh	1,952	2,049	2,154	2,203	2,358	2,141	2,326	2,172	2,420	2,203	2,048
(14)		CT	GWh	24	32	221	237	246	236	242	231	234	230	235
(15)		Total	GWh	1,976	2,081	2,375	2,440	2,604	2,377	2,568	2,403	2,654	2,433	2283
(16)	NUG													
(17)	Solar			25	24	23	139	170	187	164	188	164	170	178
(18)	[1]Other (Purchase/Sales)			1,441	1,274	1,009	860	696	938	804	977	784	1,031	1,208
(19)	Net Energy for Load		GWh	3,442	3,380	3,408	3,439	3,471	3,503	3,536	3,568	3,602	3,635	3,670

[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	2023-Actual	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
(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		%	0.0%	0.0%	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%
(5)		CC	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
(6)		CT	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
(7)		Total	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
(8)	Distillate	Steam	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(9)		CC	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(10)		CT	%	0.00%	0.03%	0.03%	0.00%	0.03%	0.03%	0.00%	0.00%	0.00%	0.03%	0.03%
(11)		Total	%	0.00%	0.03%	0.03%	0.00%	0.03%	0.03%	0.00%	0.00%	0.00%	0.03%	0.03%
(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	%	56.7%	60.6%	63.2%	64.1%	67.9%	61.1%	65.8%	60.9%	67.2%	60.6%	55.8%
(14)		CT	%	0.7%	0.9%	6.5%	6.9%	7.1%	6.7%	6.8%	6.5%	6.5%	6.3%	6.4%
(15)		Total	%	57.4%	61.6%	69.7%	71.0%	75.0%	67.9%	72.6%	67.3%	73.7%	66.9%	62.2%
(16)	NUG		%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Solar		%	0.7%	0.7%	0.7%	4.0%	4.9%	5.3%	4.6%	5.3%	4.6%	4.7%	4.9%
	[1]Other (Specify)		%	41.9%	37.7%	29.6%	25.0%	20.1%	26.8%	22.7%	27.4%	21.8%	28.4%	32.9%
(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	[1]Reserve Margin After Maintenance	
	MW	MW	MW	MW	MW	MW	MW	MW	%	MW	MW	%
2024	658	0	0	7	175	840	702	138	20	0	138	20
2025	778	0	0	7	100	885	708	177	25	0	177	25
2026	778	0	0	44	100	922	714	208	29	0	208	29
2027	778	0	0	44	20	842	720	122	17	0	122	17
2028	778	0	0	44	25	847	727	120	16	0	120	16
2029	778	0	0	44	30	852	734	118	16	0	118	16
2030	778	0	0	44	40	862	740	122	16	0	122	16
2031	778	0	0	44	50	872	747	125	17	0	125	17
2032	778	0	0	44	55	877	754	123	16	0	123	16
2033	778	0	0	44	55	877	761	116	15	0	116	15

[1] Includes conservation.

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	[1]Reserve Margin Before Maintenance		Scheduled Maintenance	Reserve Margin After Maintenance[1]	
	MW	MW	MW	MW		MW	MW	MW	%	MW	MW	%
2024/25	841	0	0	0	50	891	647	244	38	0	244	38
2025/26	841	0	0	0	50	891	651	240	37	0	240	37
2026/27	841	0	0	0	0	841	655	186	28	0	186	28
2027/28	841	0	0	0	0	841	660	181	27	0	181	27
2028/29	841	0	0	0	0	841	663	178	27	0	178	27
2029/30	841	0	0	0	0	841	666	175	26	0	175	26
2030/31	841	0	0	0	0	841	670	171	26	0	171	26
2031/32	841	0	0	0	0	841	674	167	25	0	167	25
2032/33	841	0	0	0	0	841	677	164	24	0	164	24
2033/34	841	0	0	0	0	841	681	160	23	0	160	23

[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		[1]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	CT	NG	DFO	PL	TK	-	Nov-62	-	11.2	10	14	OS
Charles Larsen Power Plant	Gas Turbine #3	Polk County	CT	NG	DFO	PL	TK	-	Dec-62	-	11.2	9	13	OS
Edge Solar	-	Polk County	PV	SUN	-	-	-	-	Mar-26	-	74.8	74.5	74.8	P
C.D. McIntosh Power Plant	ME1-ME6	Polk County	IC	NG	-	PL	-	-	Nov-24	-	120	120	120	P

[1]Notes: OS - On long-tem scheduled maintenance ; P - Planned for installation

Table 8-15

Schedule 9.1: Status Report and Specifications of Approved Generating Facilities (MREP)

(1)	Plant Name and Unit Number:	McIntosh MAN IC Engines, ME1-6
(2)	Nameplate Capacity:	120 MW (6 units)
(3)	Firm Summer MW	120 MW
(4)	Firm Winter MW	120 MW
(5)	Technology Type:	Reciprocating Internal Combustion Engine (RICE)
(6)	Anticipated Construction Timing:	
(7)	Field Construction Start-date:	2022
(8)	Commercial In-Service date:	Nov-24
(9)	Fuel	
(10)	Primary	Natural Gas
(11)	Alternate	N/A
(12)	Air Pollution Control Strategy:	Selectrive Catalytic Reduction (SCR) with anhydrous ammonia injection
(13)	Cooling Method:	Closed Cycle Radiator to Air
(14)	Total Site Area (Acres):	7.2
(15)	Construction Status:	In progress
(16)	Certification Status:	Air Construction permit and Environmental Resource Pernit in place from FDEP.
(17)	Status with Federal Agencies:	N/A
(18)	***Projected*** Unit Performance Data:	
(19)	Planned Outage Factor (POF):	2%
(20)	Forced Outage Factor (FOF):	2%
(21)	Equivalent Availability Factor (EAF):	98%
(22)	Resulting Capacity Factor (%):	20-30% (expected)
(23)	Average Net Operating Heat Rate (ANOHR):	8300 Btu/KWh
(24)	***Projected*** Unit Financial Data:	
(25)	Book Life:	25
(26)	Total Installed Cost* (2024 $/kW):	1455
(27)	Direct Construction Cost ($/kW):	1000
(28)	[1]AFUDC Amount (2021$/kW):	N/A
(29)	[2]Escalation ($/kW):	0
(30)	Fixed O&M ($/kW-yr):	12
	Variable O&M ($/MWh):	4
(31)	K-Factor	No Calculation

Note: *overnight cost without finance and escalation. , [1]Allowance for fund during construction. , [2]Based on escalation or inflation.

Table 8-16

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

(1)	Point of Origin and Termination:	Hamilton S/S to Dranefield S/S	MREP S/S to Tenoroc S/S
(2)	Number of Lines:	1	1
(3)	Right of Way:	Lakeland Electric owned	Lakeland Electric owned
(4)	Line Length:	5.5	0.66
(5)	Voltage:	69 KV	69 KV
(6)	Anticipated Construction Time:	Dec-24	Dec-24
(7)	Anticipated Capital Investment ($):	$5.6 Million	$650,000.00
(8)	Substations:	Hamilton, Dranefield	MREP , Tenoroc
(9)	Participation with Other Utilities:	None	None

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

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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	NR	11/62	Unknown	11,250	10.0	14.0
	GT3*		GT	NG	DFO	PL	TK	NR	12/62	Unknown	11,250	9.0	13.0
	8		CA	WH	---	---			04/56	Unknown	30,000	29.7	29.7
	8		CT	NG	DFO	PL	TK	NR	07/92	Unknown	101,520	84.7	94.7
Plant Total												114.4	124.4

[1]LAK doesnot maintain records of the days the alternative fuel is avalable in reserve.[2]Net Normal, * Long term scheduled maintenance

[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	WH Waste Heat	TK Truck
GT Combustion Gas Turbine	NG Natural Gas	
ST Steam Turbine		

Table 2-2
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	---	NR	12/01	Unknown	2,500 each	50.0	50.0
Plant Total												50.0	50.0
C.D. McIntosh, Jr.	D1	4-5/28S/24E	IC	DFO	---	TK	---	NR	01/70	Unknown	2,600	2.5	2.5
	D2		IC	DFO	---	TK	---	NR	01/70	Unknown	2,600	2.5	2.5
	GT1		GT	NG	DFO	PL	TK	NR	05/73	Unknown	26,640	17.0	19.0
	GT2		GT	NG	DFO	PL	TK	NR	06/20	Unknown	130,050	119.5	124.5
	5		CT	NG	---	PL	---	NR	05/01	Unknown	292,950	234.0	280.0
	5		CA	WH	---	---	---	NR	05/02	Unknown	135,000	118.0	118.0
Plant Total												493.5	546.5
System Total												**657.9**	**720.9**

[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	WH Waste Heat	TK Truck
GT Combustion Gas Turbine	NG Natural Gas	
ST Steam Turbine		
IC Internal Combustion		

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

Year	Net Generating Capacity	Net System Purchases	Net System Sales	Net System Capacity	System Peak Demand		Reserve Margin		Excess(Deficit) to Maintain 15% Reserve Margin	
					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
2024/25	841	50	0	891	647	647	38%	38%	147	147
2025/26	841	50	0	891	651	651	37%	37%	142	142
2026/27	841	0	0	841	655	655	28%	28%	88	88
2027/28	841	0	0	841	660	660	27%	27%	82	82
2028/29	841	0	0	841	663	663	27%	27%	78	78
2029/30	841	0	0	841	666	666	26%	26%	75	75
2030/31	841	0	0	841	670	670	26%	26%	70	70
2031/32	841	0	0	841	674	674	25%	25%	66	66
2032/33	841	0	0	841	677	677	24%	24%	67	67
2033/34	841	0	0	841	681	681	23%	23%	68	68

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

Year	Net Generating Capacity	Net System Purchases	Net System Sales	Net System Capacity	System Peak Demand		Reserve Margin		Excess(Deficit) to Maintain 15% Reserve Margin	
					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
2024	658	182	0	840	702	702	20%	20%	33	33
2025	778	107	0	885	708	708	25%	25%	71	71
2026	778	144	0	922	714	714	29%	29%	101	101
2027	778	64	0	842	720	720	17%	17%	14	14
2028	778	69	0	847	727	727	16%	16%	11	11
2029	778	74	0	852	734	734	16%	16%	8	8
2030	778	84	0	862	740	740	16%	16%	11	11
2031	778	94	0	872	747	747	17%	17%	13	13
2032	778	99	0	877	754	754	16%	16%	10	10
2033	778	99	0	877	761	761	15%	15%	2	2

Table 6.3: Energy R

Energy Source	Type	Units	2023 - Actual	2024	2025	2026
Coal		%	0.0%	0.0%	0.0%	0.0%
Distillate	Steam	%	0.00%	0.00%	0.00%	0.00%
	CC	%	0.00%	0.00%	0.00%	0.00%
	CT	%	0.00%	0.03%	0.03%	0.00%
	Total	%	0.00%	0.03%	0.03%	0.00%
Natural Gas	Steam	%	0.0	0.0	0.0	0.0
	CC	%	56.7%	60.6%	63.2%	64.1%
	CT	%	0.7%	0.9%	6.5%	6.9%
	Total	%	57.4%	61.6%	69.7%	71.0%
Solar		%	0.7%	0.7%	0.7%	4.0%
Other (Specify)[1]		%	41.9%	37.7%	29.6%	25.0%
Net Energy for Load		%	100%	100%	100%	100%

1 Other Purchases

esource Mix

Calendar Year

2027	2028	2029	2030	2031	2032	2033
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.03%	0.03%	0.00%	0.00%	0.00%	0.03%	0.03%
0.03%	0.03%	0.00%	0.00%	0.00%	0.03%	0.03%
0.0	0.0	0.0	0.0	0.0	0.0	0.0
67.9%	61.1%	65.8%	60.9%	67.2%	60.6%	55.8%
7.1%	6.7%	6.8%	6.5%	6.5%	6.3%	6.4%
75.0%	67.9%	72.6%	67.3%	73.7%	66.9%	62.2%
4.9%	5.3%	4.6%	5.3%	4.6%	4.7%	4.9%
20.1%	26.8%	22.7%	27.4%	21.8%	28.4%	32.9%
100%	100%	100%	100%	100%	100%	100%

Table 7-1
Lakeland Electric
Existing Generating Facilities
Environmental Emissions and Control Strategies for Major Existing G

Plant Name	Unit (Type)	Fuel		Air Pollutants and	
		Primary	Alt.	PM	SO2
Charles Larsen Memorial	8 (CC)	NG	DFO	None	LS
C.D. McIntosh, Jr.	GT2 (GT)	NG	DFO	None	LS
	5 (CC)	NG	N/A	None	LS
Winston	1-20 (IC)	DFO	N/A	None	LS

PM Particulte matter
SO2 Sulfur dioxide
NOX Nitrogen oxides
CO Carbon monoxide
LS Low sulfur fuel
LNB Low Nox burners
WI Water injections
GT Gas 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

Source: Lakeland Environmental Staff

enerating Units

Control Strategies		Cooling Type
Nox	CO	
LNB WI	None	OTF
WI	None	N/A
LNB SCR	OC	WCTM
SCR	OC	N/A

FGD Flue gas desulfurization
OFA Overfire air
SCR Selective catalytic reduction
N/A Not Applicable
OC Oxidation catalyst
DFO Distilate Fuel oil
Alt Alterenate

Instructions: Accompanying this data request is a Microsoft Excel (Excel) document titled "Data Request #1.Excel Tables," (Excel Tables File). For each question below that references the Excel Tables File, please complete the table and provide, in Excel Format, all data requested for those sheet(s)/tab(s) identified in parenthesis.

General Items

1. Please provide an electronic copy of the Company's Ten-Year Site Plan (TYSP) for the current planning period (2024-2033) in PDF format.

Submitted on April 1, 2024.

2. Please provide an electronic copy of all schedules and tables in the Company's current planning period TYSP in Excel format.

Submitted on April 1, 2024.

3. Please refer to the Excel Tables File (Financial Assumptions, Financial Escalation). Complete the tables by providing information on the financial assumptions and financial escalation assumptions used in developing the Company's TYSP. If any of the requested data is already included in the Company's current planning period TYSP, state so on the appropriate form.

Attached in Excel File.

Load & Demand Forecasting

Historic Load & Demand

4. **[Investor-Owned Utilities Only]** Please refer to the Excel Tables File (Hourly System Load). Complete the table 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.

    a. Please also describe how loads are calculated for those hours just prior to and following Daylight Savings Time (March 12, 2023, to November 5, 2023).

    Not applicable to LE.

5. Please refer to the Excel Tables File (Historic Peak Demand). Complete the table 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.

Excel File attached.

Forecasted Load & Demand

6. 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.

   We use nine (9) Davis Instrument WeatherLink stations located at substations throughout the Lakeland Electric service area. On a monthly basis, the hourly data from the weather stations are loaded into an Excel workbook for validation using descriptive statistics and line graphs. If there are any errors or outliers, these are eliminated. The averages of the validated temperatures are stored in a data bank and used for various reports including the monthly Peak Report.

7. 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.
   - Any difference/improvement(s) made compared with those forecasts used in the Company's most recent prior TYSP.

Methodology and assumptions

- 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 2024 TYSP.

Data Sources

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

Third Party Consultants

- 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

8. 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.

   There are none currently.

9. 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.

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

   a. If your response is affirmative, please explain the method used in your evaluation, and provide the corresponding results, including work papers, in 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.

      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 that year's data request.

   b. If your response is negative, please explain.

      Most recently, Lakeland has updated its forecast error fans to match the Calendar Year Ten Year Site Plan data back to 2008. Spreadsheet titled LAK2023TYSP_SUP_ErrorFans.xlsx contains both actual and weather normalized values where applicable. Data goes back to 2008 and has been updated with 2022 actuals.

10. 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 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.

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

Please see response to question 9 a.

11. Please explain any historic and forecasted trends or other information as requested below in each of the following:

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 MSA (Polk County) has seen a boom in e-commerce warehouse development, attributable to its central location. Notably, Amazon moved its airhub from Tampa to Lakeland in the summer of 2020 and is continuing to expand.

Florida in general benefited from the work from home trend accelerated by COVID and Lakeland was no exception. As a result, Lakeland Electric experienced a 1.1% increase in total customer growth in 2023.

Industrial customer grew 2.0% in 2023. Commercial rate class grew in 2023 at 4.3%.

	Residential	Commercial	Industrial	Total
2014-2023 AAGR	1.5%	1.5%	-0.3%	1.4%
2024-2033 AAGR	1.2%	1.0%	.0.6%	1.1%

Our customer forecast uses Moody's analytics and also 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 2022 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.

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
2014-2023 AAGR	2.0%	1.5%	1.8%
2024-2033 AAGR	0.9%	1.0%	0.3%

c. Total Sales (GWh) to Ultimate Customers, identify the major factors (historically, currently, and in the forecasted period) that contribute to 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.

d. Provide a detailed discussion of how the Company's demand-side management program(s) for each customer type (residential, commercial, industrial) impact the observed trends in gigawatt hour sales (Schedule 3.3).

Lakeland Electric does not use any firm demand side management programs in energy sales impact. But for future energy efficiency effects, LE uses the industry usage trends of energy efficient appliances in energy usage sales.

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

a. Demand Reduction due to the Company's demand-side management program(s) 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>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.

<u>Self Service – solar photovoltaic</u>

Lakeland tracks solar photovoltaic installations and generates a net metered 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 limited 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 forecast regarding demand response.

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 winter 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 11 c.

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 12 C.

13. **[FEECA Utilities Only]** Do the Company's energy and demand savings amounts reflected on the DSM and Conservation-related portions of Schedules 3.1, 3.2, and 3.3 reflect the Company's proposed goals in the 2024 FEECA Goalsetting dockets? If not, please explain what assumptions are incorporated within those amounts, and why.

Not Applicable (N/A)

14. 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 following, respectively:
    a. Summer Peak Demand.
    b. Winter Peak Demand.
    c. Annual Retail Energy Sales.

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.

15. Please provide responses to the following questions regarding the weather factors considered in the Company's retail energy sales and peak demand forecasts:

    Please refer to section 3 of the Lakeland Ten Year Site Plan, under Weather Variables header, for response to questions below.

    a. Please identify, with corresponding explanations, all the weather-related input variables that were used in the respective Retail Energy Sales, Winter Peak Demand, and Summer Peak Demand models.
    b. Please specify the source(s) of the weather data used in the aforementioned forecasting models.
    c. Please explain in detail the process/procedure/method, if any, the Company utilized to convert the raw weather data into the values of the model input variables.
    d. Please specify with corresponding explanations:
        i. How many years' historical weather data was used in developing each retail energy sales and peak demand model.
        ii. How many years' historical weather data was used in the process of these models' calibration and/or validation.
    e. Please explain how the projected values of the input weather variables (that were used to forecast the future sales or demand outputs for each planning years 2024 – 2033) were derived/obtained for the respective retail sales and peak demand models.

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.

    N/A

17. Please address the following questions regarding the impact of all customer-owned/leased renewable generation (solar and otherwise) and/or energy storage devices on the Utility's forecasts.

    a. Please explain in detail how the Utility's load forecast accounts for the impact of customer's renewables and/or storage.

       With the 2023 TYSP, we adjusted our forecast to subtract out projected customer owned solar generation from total sales.

    b. Please provide the annual impact, if any, of customer's renewables and/or storage on the Utility's retail demand and energy forecasts, by class and in total, for 2024 through 2033.

       We do not currently break down this model by class. The total net metered generation that is subtracted out is as follows:

Year	Net Metered Solar Forecast (MWh)
2024	9,858
2025	11,234
2026	12,642
2027	14,050
2028	15,507
2029	16,865
2030	18,273
2031	19,681
2032	21,156
2033	22,497

    c. If the Utility maintains a forecast for the planning horizon (2024-2033) of the number of customers with renewables and/or storage, by customer class, please provide.

Year	Roof top Solar Customers, residential
2024	2,477
2025	2,977
2026	3,377
2027	3,677
2028	3,977
2029	4,177
2030	4,377
2031	4,477
2032	4,577
2033	4,677

Plug-in Electric Vehicles (PEVs)

18. 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?

We did not include specific PEV loads in our current planning period as the general load growth on the system due to population growth was substantial and would cover any specific PEV related growth.

a. Has the Company also included the impact of demand response and time of use rates for the PEV loads? If so, please provide the impact of these measures. If not, please explain why not.

We do not have a specific PEV rate and demand response program; however, we are exploring the effects of PEV growth and will plan to craft an EV charging management plan to be instituted when conditions warrant.

19. Please discuss with detail any changes or modifications from the Company's previous TYSP report regarding the following PEV related topics:

We have not made changes or modifications to our outlook specifically based on PEVs

a. The major drivers of the Company's PEV growth.

Fleet electrification remains the largest PEV impact to our system. As these are large loads in single locations, they are easy to plan for as normal grid expansion and therefore do not require PEV specific strategies.

b. 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.

LE has engaged a Data Analytics firm to conduct a deep dive into PEV penetration and will utilize their methodology and assumptions for future planning. Preliminary results from their analysis indicate that our service territory lags Statewide averages for PEV penetration.

c. The Company's process for monitoring the installation of PEV public charging stations in its service area.

All new expansion to load goes through a significant engineering review, regardless of source. Public PEV charging is no different.

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

At present we have AMI meter data that can identify pattern changes in customer behavior, however we do not aggregate or utilize this data specifically for PEV identification.

e. 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.

A local last-mile delivery service recently installed a significant charging hub for their vans. Prior to beginning installation, the system was evaluated and the charging hub was located at a satellite facility for the company because the distribution system at that location would be able to handle the load without upgrade, whereas the main company location would have required significant work.

20. Please refer to the Excel Tables File (Electric Vehicle Charging). Complete the table 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.

Lakeland does not expect to see significant public charging increases as the preponderance of charging is done at home.

f. Please describe all significant technological, market, regulatory, or other events or announcements since the filing of the Company's 2023 TYSP which have impacted the metrics reported.

Since our metrics were reported, there isn't anything major that would have hit in 2023.

g. Please explain if and how the tax incentives and grants for transportation electrification associated with the IRA, adopted in August 2022, has impacted the Company's PEV and PEV charging station adoption/installation, as well as the PEV energy/demand forecast(s). If the provisions of the IRA are not reflected in such forecasts, please explain why.

Amazon was the only major transportation electrification we had so it does not look like this was a major player for us.

21. 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.

At present we have no rates or programs related to PEVs

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

22. 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.

Yes. We are in the process of a data analytics evaluation of the impact of PEV

23. Please describe if and how Section 339.287, Florida Statutes, (Electric Vehicle Charging Stations; Infrastructure Plan Development) has impacted the Company's projection of PEV growth and related demand and energy growth.

There are no major plans related to the plan developed under this rule that would impact our service load beyond normal growth.

24. What has the Company learned about the impact of PEV ownership on the Company's actual and forecasted peak demand?

PEV ownership is still too low to have a significant impact on load growth and peak demand at present.

25. If applicable, please list and briefly describe all PEV pilot programs the Company is currently implementing and the status of each program.

N/A

26. If applicable, please describe any key findings and metrics of the Company's PEV pilot program(s) which reveal the PEV impact to the demand and energy requirements of the Company.

N/A

Demand Response

27. **[FEECA Utilities Only]** Please refer to the Excel Tables File (DR Participation). Complete the table by providing for each source of demand response 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.

N/A

28. **[FEECA Utilities Only]** Please refer to the Excel Tables File (DR Annual Use). Complete the table by providing for each source of demand response annual usage information for 10

years prior to the current planning period. Please also provide a summary of all demand response using the table.

N/A

29. **[FEECA Utilities Only]** Please refer to the Excel Tables File (DR Peak Activation). Complete the table by providing for each source of demand response 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.

    N/A

30. Please refer to the Excel Tables File (LOLP). Complete the table by providing the loss of load probability, reserve margin, and expected unserved energy for each year of the planning period.

Attached in Excel file.

Generation & Transmission

Utility-Owned Generation

31. Please refer to the Excel Tables File (Unit Performance). Complete the table by providing information on each utility-owned generating resources' outage factors, availability factors, and average net operating heat rate (if applicable). For historical averages, use the past three years and for projected factors, use an average of the next ten-year period.

Attached in Excel File.

32. Please refer to the Excel Tables File (Utility Existing Traditional). Complete the table 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.

Attached in Excel File.

33. Please refer to the Excel Tables File (Utility Planned Traditional). Complete the table 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 status of the project.

Attached in Excel File. The project is more than 60% complete and expected to be commercial by the end of the year 2024.

34. Please refer to the Excel Tables File (Utility Existing Renewable). Complete the table 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.

    LE does not own any renewable generations. LE has its long-term renewable PPA.

35. Please refer to the Excel Tables File (Utility Planned Renewable). Complete the table 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.

LE does not have any plan to have its own renewable generation.

    a. For each planned utility-owned renewable resource in the table, provide a narrative response discussing the status of the project.

        N/A

36. 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?

Not applicable.

37. **[Investor-Owned Utilities Only]** Please refer to the Excel Tables File (As-Available Energy Rate). Complete the table 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.

    N/A

38. Please refer to the Excel Tables File (Planned PPSA Units). Complete the table 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.

Attached in Excel File.

39. 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.

    The construction has already been started for planned traditional generating unit.

40. Please refer to the Excel Tables File (Capacity Factors). Complete the table 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.

Attached in Excel File.

41. **[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.

N/A

42. Please refer to the Excel Tables File (Steam Unit CC Conversion). Complete the table by providing information on all the Company's steam units that are potential candidates for repowering to operation as Combined Cycle units.

Attached in Excel File. N/A

43. Please refer to the Excel Tables File (Steam Unit Fuel Switching). Complete the table by providing information on all of the Company's steam units that are potential candidates for fuel-switching.

Attached in Excel File. N/A

44. Please refer to the Excel Tables File (Transmission Lines). Complete the table 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.

Attached in Excel File.

<u>Purchases and Sales</u>

45. Please refer to the Excel Tables File (Firm Purchases). Complete the table by providing information on the Utility's firm capacity and energy purchases.

Attached in Excel File.

46. Please refer to the Excel Tables File (PPA Existing Traditional). Complete the table 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.

N/A

47. Please refer to the Excel Tables File (PPA Planned Traditional). Complete the table 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.

N/A

48. Please refer to the Excel Tables File (PPA Existing Renewable). Complete the table 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.

Attached in Excel File.

49. Please refer to the Excel Tables File (PPA Planned Renewable). Complete the table 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.

N/A

50. 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?

N/A

51. Please refer to the Excel Tables File (PSA Existing). Complete the table 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.

N/A

52. Please refer to the Excel Tables File (PSA Planned). Complete the table 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 status of the agreement.

N/A

53. Please list and discuss any long-term power sale agreements within the past year that were cancelled, expired, or modified. What was the primary reason for the change? What, if any, were the secondary reasons?

N/A

Renewable Generation

54. Please refer to the Excel Tables File (Annual Renewable Generation). Complete the table 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.

Attached in Excel file.

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

    LE has a robust net-metering program that allows for customers of all size to install solar generation and battery backup. LE is also in talks for a utility scale solar farm and is working to develop a small-generator tariff to allow for generators who are larger than normal net-metering but will not look to connect to the Transmission system.

56. **[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.

    N/A

57. 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.

    We consider solar PV to contribute 50% firm peak only during summer only. This is based on last few years of solar output received minimum during peak hour of LE load.

58. 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.

    N/A

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

       N/A

Energy Storage

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

    LE has explored numerous battery technologies include vanadium and non-vanadium based flow batteries, sodium-ion batteries, and iron-air batteries. At present, while we have no definitive plans to develop a bulk energy storage system, we have a strategy to continue to observe improvements in performance and price and when the market is appropriate to develop a project for energy storage.

60. If applicable, please describe the strategy of how the Company charges and discharges its energy storage facilities. As part of the response discuss if any recent legislation, including the IRA has changed how the Company dispatches its energy storage facilities.

    N/A

61. 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).

    Most considerations has revolved around size and scale of the batteries, where we can locate them, and load-based needs.

62. Please explain whether customers have expressed interest in energy storage technologies. If so, describe the type of customer (residential, commercial industrial) and how have their interests been addressed.

    Interest has been limited.

63. Please refer to the Excel Tables File (Existing Energy Storage). Complete the table 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.
    N/A

64. Please refer to the Excel Tables File (Planned Energy Storage). Complete the table 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.

    N/A

65. 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.

    LE has been looking at the technical sides of installed small pilot solar program. At present, the unit is on outage and looking for parts to replace and get back to its operational stage. We continue to explore options and will develop an appropriate project at an appropriate time.

    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.
       N/A
    b. Please provide a brief assessment of how these benefits, risks, and operational limitations may change over the current planning period.
       N/A
    c. Please identify and describe any plans to periodically update the Commission on the status of your energy storage pilot programs.
       N/A

66. 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.

    LE's non-firm generation sources are not a major percentage of its system portfolio and therefore we would not receive a significant benefit to justify the costs. However, LE recognizes that adding batteries to non-firm generation is a valuable strategy and will continue to incorporate battery evaluation in all of its long-term planning.

    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.
       N/A

<u>Other</u>

67. Please identify and discuss the Company's role in the research and development of utility power technologies, including, but not limited to research programs that are funded through

the Energy Conservation Cost Recovery Clause. 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.

LE does not perform research and development and prefers to utilize technologies that have at least one commercial application in existence before developing a project around a new technology.

Environmental

68. Please explain if the Company assumes carbon dioxide (CO_2) compliance costs in the resource planning process used to generate the resource plan presented in the Company's current planning period TYSP.

No, Lakeland Electric does not assume these compliance costs.

If the response is affirmative, answer the following questions:

a. Please identify the year during the current planning period in which CO2 compliance costs are first assumed to have a non-zero value. N/A
b. **[Investor-Owned Utilities Only]** Please explain if the exclusion of CO2 compliance costs would result in a different resource plan than that presented in the Company's current planning period TYSP. N/A

c. **[Investor-Owned Utilities Only]** Please provide a revised resource plan assuming no CO2 compliance costs. N/A

69. 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 Cooling Water Intake Structures Rule (CWIS) Rule affects units that use surface water for cooling purposes. One of our units is affected by this rule – Larsen Unit 8. Due to Unit 8 exceeding a capacity factor of 15%, Lakeland is required to endeavor an intensive ecological study. Larsen intake structures will need to be reconfigured to meet the stricter standards as determined by the Florida Department of Environmental Protection prior to the NPDES (National Pollutant Discharge Elimination System) permit renewal in 2028. 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. However,

there are no off-site impacts. With the retirement of McIntosh Coal Unit 3, the landfill is undergoing permanent closure with an impermeable cap. The cap will eliminate rainwater from entering the landfill, which will help control the source material and its resulting groundwater impacts.

70. 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?

        No. Lakeland Electric does not have any generating units subject to the NSPS GHG rule. We are currently in the process of adding new generation in the form of six natural gas-powered Reciprocating Internal Combustion Engines (RICE), each rated at ~20 MW, but these units will be exempt from the NSPS GHG rule due to their size, unit type, and construction date.

    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? Refer to the Excel Tables File (Emissions Cost). Complete the table by providing information on the costs for the current planning period.
        See attached Excel file, tab "Emissions Cost."
    f. If the answer to any of the above questions is not available, please explain why.
    N/A

71. 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. Our only unit subject to MATS was the coal-fired Unit 3. This unit was permanently shut down and officially retired on April 4, 2021.
    b. Cross-State Air Pollution Rule (CSAPR).
        No reliability impact expected – Florida is not subject to CSAPR.
    c. Cooling Water Intake Structures (CWIS) Rule.
        If the cooling water intake structure at Larsen Unit 8 is not upgraded prior to the next permit renewal in 2028, it could still operate as simple cycle unit. However, it would operate at a reduced electricity output.
    d. Coal Combustion Residuals (CCR) Rule.
        While the coal burning unit has been retired, costs for compliance directed toward complying with the CCR rule and upcoming Legacy CCR rule divert money that could be used for reliability upgrades.

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 replacement as this rule has not been finalized yet.

g. Effluent Limitations Guidelines and Standards (ELGS) from the Steam Electric Power Generating Point Source Category.
No reliability impact is expected as we are no longer subject to the rule due to the retirement of Unit 3.

72. Please refer to the Excel Tables File (EPA Operational Effects). Complete the table 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 attached Excel file, tab "EPA Operational Effects."

73. Please refer to the Excel Tables File (EPA Cost Effects). Complete the table 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 attached Excel file, tab "EPA Cost Effects."

74. Please refer to the Excel Tables File (EPA Unit Availability). Complete the table 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 attached Excel file, tab "EPA Unit Availability."

75. 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 is in negotiations with a private company to provide 74.5 MWs of solar energy. This would potentially offset the need to provide a portion of this output with other generating options that may require environmental compliance investments.

Fuel Supply & Transportation

76. Please refer to the Excel Tables File (Fuel Usage & Price). Complete the table 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.

Attached in Excel file.

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

Lakeland Electric uses a hybrid method to determine fuel price forecasts for analysis purposes and reports. Various independent forecasts from respected energy sector trade publications are used to develop a weighted price. Our analysis incorporates the U.S. Energy Information Administration (EIA) outlook. We examine the basis differential for the Florida market zone 3 and use the NYMEX Henry Hub futures market as a benchmark. These are industry standard practices followed in the preparation of long-range forecasts.

78. 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

Not applicable to Lakeland Electric portfolio.

b. Natural Gas

Natural gas prices have continued to decline in 2024. The main drivers are milder winter weather at the end of 2023, strong production, and storage levels that are above the 5-year average. While this may change as producers have begun to decrease output and the potential La Nina summer conditions (hotter, drier summer), the fuel price has remained low due to the abundant supply compared to the current demand.

c. Nuclear

Not applicable to Lakeland Electric portfolio.

d. Fuel Oil

The U.S. Energy Information Administration (EIA) Short-Term Energy Outlook is projecting prices to be elevated in 2Q24. They project that prices will remain relatively flat for the remainder of 2024 but will fall by the end of 2025 as OPEC and supply cuts expire and production increases.

e. Other (please specify each, if any)

Not applicable to Lakeland Electric portfolio.

79. Please provide a comparison of the Utility's 2023 actual fuel price forecast and the actual 2023 delivered fuel prices.
    a. Coal – Not applicable.
    b. Natural Gas - Lakeland Electric predicted a 2023 average natural gas price of $3.45 per MMBtu. Due to higher natural gas production, lower winter demand, and high storage inventories price began to decline, the average calendar year was $3.10 per MMBtu.
    c. Nuclear - Not applicable.
    d. Fuel Oil – Lakeland Electric predicted a 2023 average distillate oil price of $22.73 per MMBtu. The true price was an average of $21.95.
    e. Other (please specify each, if any) – Not applicable.

80. Please explain any notable changes in the Utility's forecast of fuel prices used to prepare the Utility's current TYSP compared to the fuel process used to prepare the Utility's prior TYSP.

Lakeland Electric continues using best utility practices to develop rates using third-party subscriptions. We have included forecasting basis differential for Florida Gas Zone 3 into our prices to ensure potential market volatility is considered. Calendar year 2023 was less volatile than the previous calendar year. We model various low, medium, and high scenarios to determine what we believe to be the best projection possible.

81. 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 three (3) separate pipeline companies, Florida Gas Transmission Company (FGT), Transco, and Gulfstream Pipeline. Owning pipeline transportation contracts provides the shipper firm rights on nominations made on the pipeline, which is the most secure means for delivering natural gas to our plants. Additional capacity on FGT was purchased to secure more firm transportation rights to meet our peak load and future load growth.

Lakeland Electric maintains agreements with multiple suppliers to allow for diversity of daily, and monthly baseload supply. LE also has long-term prepaid agreements that offer larger discounts from the indexes and secured supply availability.

82. 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.

Lakeland Electric is unaware of any pipeline expansion projects impacting our ratepayers during 2024.

83. 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.

The LNG industry will continue to expand its export capacity in 2025 and 2026, which may create significant basis premiums to the Florida Gas Zone 3 index over the Henry hub price, as well as increased price volatility, not experienced before 2022. The Florida market will compete with LNG export prices to ensure domestic supply availability.

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

Lakeland Electric does not have plans to utilize natural gas storage at this time. We are able to use the imbalance on our two pipelines as temporary storage.

85. 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 closure. Any impacts on the utility will be indirect.

86. 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 matters no longer directly impact our utility due to our coal plant's closure.

87. 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.

88. 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.

89. **[FPL Only]** Please refer to FPL's Response to Staff's First Data Request (No. 90) for the 2023 Ten-Year Site Plan, received on May 1, 2023. Have FPL's plans to only self-consume the hydrogen produced at the Okeechobee Clean Energy Center changed? Please explain.

N/A

Extreme Weather

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

Lakeland prepared a winter weather readiness plan in accordance with NERC standard EOP-011-2. This Winter Readiness Plan is a plan to guide activities required to prepare for winter weather conditions (Extreme cold weather temp. (ECWT) = 29°F), and to satisfy the requirements of outside agencies such as FMPP and NERC for Lakeland Electric Energy Production (EP). The focus of this plan is on maintaining EP's readiness during an extreme winter weather event, and to prevent cold weather-related outages.

91. Please identify any future winterization plans, if any, the Company intends to implement over the current planning period.

All new generation facilities for Lakeland are built to meet our winter readiness plan standards, incorporating heat trace, insulation, etc. During the Summer months, we go through our checklist to ensure all heat trace is working correctly by December first each year.

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

Lakeland Electric production plant sites manage storm water pond levels to ensure we can withstand storm events. Lakeland also has a Storm Emergency Operations Plan with check sheets to ensure we are storm ready by June 1st each year (hurricane season). New plant sites have their own storm water ponds included in the site certification and design.

93. Please address the following questions regarding the impact of all major storm events, such as Hurricane Ian, with associated flooding, destruction of utility facilities and customer buildings, and forced customer permanent migration.

Lakeland has not experienced a storm event that forced customer permanent migration.

a. Based on actual data, please briefly summarize the impact that major storms have had on your utility's customer number, retail sales and peak load.

The utility has experienced little to no impact from major storms. We have experienced consistent growth in customer number, retail sales and peak load over the past 2 years.

b. Please explain whether the above discussed impact is include in your company's customer/retail energy sales/demand forecasts.

We have updated our short and long-term models to match the current growth patterns and forecast we are experiencing. But customers outage with hurricane activities is a random in nature and has not been modeled.

c. If your response to subpart (b) is affirmative, please explain how this impact is modeled.

94. Has the Company had to make any upgrades to any generating units or changes to operations practices as a result of any FERC Orders addressing extreme weather planning within the last two years? If so, please describe.

No, Lakeland had and maintains a winter readiness plan and a storm emergency operation plans.

95. **[FEECA Utilities Only]** Please refer to the Excel Tables File (Data Centers). As of today, there are 125 or more data centers located in the state of Florida. For the purpose of better understanding this recent load growth, please complete Tables I and II.

N/A

96. **[FEECA Utilities Only]** With respect to the load forecast included in the Utility's 2024 Ten-Year Site Plan to be filed in April of this year, does the load forecast include projections of

annual energy consumption and demand associated with data centers within your service area during the forecasting time horizon (2024-2033)?

a. If any such projections have been made, please provide details of the projections including the type of data centers expected to contribute to such energy/demand, and what factors are driving such energy consumption and demand.
b. If no specific projections have been made, what does the Utility believe is the likely pattern of load growth associated with this industry within its service territory?

N/A

97. **[FEECA Utilities Only]** Please identify the Utility's issues and/or concerns, if any, that are expected to result from the growth in data centers in the Utility's service territory.

a. Please specify how the Utility anticipates responding to such issues or concerns.
b. Please specify how the Utility responded to such issues or concerns in the past.

N/A

98. **[Non-FEECA Utilities Only]** For any data centers operating in the Utility's service territory and receiving electric service from the Utility, please describe the current number of the data centers, by type (e.g., colocation, enterprise, cloud, edge, and micro data, etc.) and, for each data center, the customer class served as well as the estimated load served (summer/winter demand and energy).

The utility does not have any sizable, recognized data centers listed in our service territory. The only customer we have listed, of this type operates under a Commercial Demand Rate and a General Commercial rate averaging 16,020 kWh per month for the last year.

99. **[Non-FEECA Utilities Only]** With respect to the load forecast included in the Utility's 2024 Ten-Year Site Plan to be filed in April this year, does the load forecast include projections of annual energy consumption and demand associated with data centers within your service area during the forecasting time horizon (2024-2033)?

LE has included the load and energy size of the data center presently available in its territory. And has not been analyzed extensively.

a. If any such projections have been made, please provide details of the projections including the type of data centers expected to contribute to such energy/demand, and what factors are driving such energy consumption and demand.

The only customer we have listed, of this type operates under a Commercial Demand Rate and a General Commercial rate averaging 16,020 kWh per month for the last year.

b. If no specific projections have been made, what does the Utility believe is the likely pattern of load growth associated with this industry within its service territory? N/A

100. **[Non-FEECA Utilities Only]** Please identify the Utility's issues and/or concerns, if any, that are expected to result from the growth in data centers in your utility's service territory. Please also specify how has, and how does, your utility anticipate responding to such issues or concerns.

The utility currently has no issues or concerns that are expected to result from the growth in data centers in your utility's service territory. We track and monitor any major energy consumer with intensions of operating in our service territory and currently have no identified restrictions.

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Financial Assumptions			
Base Case			
AFUDC RATE		4.5	%
CAPITALIZATION RATIOS:			
	DEBT	N/A, municipal	%
	PREFERRED	N/A, municipal	%
	EQUITY	N/A, municipal	%
RATE OF RETURN			
	DEBT	N/A, municipal	%
	PREFERRED	N/A, municipal	%
	EQUITY	N/A, municipal	%
INCOME TAX RATE:			
	STATE	N/A, municipal	%
	FEDERAL	N/A, municipal	%
	EFFECTIVE	N/A, municipal	%
OTHER TAX RATE:		N/A, municipal	%
DISCOUNT RATE:		N/A, municipal	%
TAX			
DEPRECIATION RATE:		4.5	%

Financial Escalation Assumptions				
	General	Plant Construction	Fixed O&M	Variable O&M
	Inflation	Cost	Cost	Cost
Year	%	%	%	%
2024	3.20%	17.05%	2.93%	2.98%
2025	2.20%	8.10%	2.43%	2.13%
2026	2.20%	-9.27%	2.27%	1.97%
2027	2.10%	1.11%	2.27%	1.90%
2028	2.20%	1.10%	2.27%	1.97%
2029	2.30%	1.09%	2.27%	2.00%
2030	2.30%	1.08%	2.27%	2.00%
2031	2.40%	1.06%	2.27%	2.03%
2032	2.40%	1.05%	2.27%	2.03%
2033	2.50%	1.04%	2.27%	2.07%

TYSP Year 2024
Staff's Data Request # 1
Question No. 4

Date						
	1	2	3	4	5	6
1/1/2023	259.313	249.463	236.811	232.371	223.745	225.37
1/2/2023	247.923	234.225	225.641	220.485	218.63	223.516
1/3/2023	260.135	242.395	227.448	227.003	227.59	248.84
1/4/2023	270.556	257.316	247.266	239.626	243.826	263.763
1/5/2023	284.8	269.746	260.846	254.111	258.424	277.183
1/6/2023	247.49	234.023	223.376	224.576	227.254	254.341
1/7/2023	282.44	272.352	270.637	270.99	278.995	293.435
1/8/2023	272.605	264.041	259.081	263.031	264.87	277.683
1/9/2023	237.648	228.45	226.136	225.706	235.434	267.165
1/10/2023	243.68	236.613	234.336	236.168	246.721	279.841
1/11/2023	277.64	272.878	272.898	277.03	296.078	335.045
1/12/2023	266.035	260.785	256.275	266.426	280.465	315.215
1/13/2023	252.595	239.025	231.72	233.665	239.206	260.441
1/14/2023	330.228	327.543	338.415	349.023	366.113	388.23
1/15/2023	431.128	426.085	433.866	445.8	464.683	487.616
1/16/2023	410.736	414.436	424.234	439.15	459.558	494.71
1/17/2023	348.8	351.748	353.865	366.29	388.329	432.851
1/18/2023	268.198	259.445	260.971	263.851	275.896	313.958
1/19/2023	251.307	236.665	234.934	236.947	243.337	276.552
1/20/2023	262.482	247.275	236.28	232.882	237.52	256.612
1/21/2023	247.821	231.078	222.933	216.506	218.956	223.818
1/22/2023	242.025	232.161	219.806	217.928	217.998	226.554
1/23/2023	262.275	245.38	232.808	222.275	230.655	249.385
1/24/2023	261.73	252.453	253.676	258.616	267.255	305.061
1/25/2023	247.825	235.108	225.656	228.548	232.14	259.733
1/26/2023	268.598	247.156	235.983	227.343	230.641	253.808
1/27/2023	285.523	281.856	283.471	289.203	306.803	345.843
1/28/2023	318.388	310.53	311.186	310.118	310.394	322.298
1/29/2023	249.132	237.295	233.977	230.097	232.34	238.054
1/30/2023	246.571	229.678	223.106	217.591	224.875	251.55
1/31/2023	276.99	256.736	241.945	236.488	238.366	257.771
2/1/2023	257.685	244.514	230.631	230.006	234.818	256.533
2/2/2023	266.18	245.64	236.646	228.338	234.296	256.23
2/3/2023	266.838	255.189	245.166	246.18	247.675	268.153
2/4/2023	259.538	250.646	245.386	249.43	251.86	269.993
2/5/2023	241.778	233.436	226.81	224.34	224.791	233.551
2/6/2023	238.621	224.73	219.485	217.138	224.081	253.405

2/7/2023	244.034	231.506	225.006	226.473	236.038	265.503
2/8/2023	247.518	230.481	228.135	224.56	228.04	256.911
2/9/2023	252.303	234.986	225.26	221.265	232.606	253.155
2/10/2023	283.108	265.052	251.827	245.26	245.002	264.207
2/11/2023	273.117	253.875	241.115	234.95	232.557	233.962
2/12/2023	269.048	248.734	235.321	223.103	216.41	221.708
2/13/2023	251.198	238.509	236.726	240.928	256.831	289.55
2/14/2023	277.475	271.695	270.616	278.663	293.058	329.879
2/15/2023	245.51	234.875	229.783	225.702	242.175	269.12
2/16/2023	255.045	238.212	229.999	223.754	233.545	254.177
2/17/2023	259.511	245.036	238.211	232.495	238.201	260.72
2/18/2023	283.356	253.791	237.468	224.515	222.038	224.261
2/19/2023	239.538	228.973	219.261	218.608	218.304	225.576
2/20/2023	248.075	229.901	220.356	218.626	219.386	239.066
2/21/2023	258.748	238.535	235.249	229.889	239.436	258.775
2/22/2023	266.333	246.333	238.133	232.1	238.883	259.65
2/23/2023	274.11	255.9	238.981	235.356	244.15	265.343
2/24/2023	290.063	268.163	259.638	248.978	246.833	267.45
2/25/2023	288.581	267.843	254.913	244.178	242.623	241.715
2/26/2023	271.31	249.365	233.856	226.815	221.685	225.533
2/27/2023	254.66	235.026	225.259	218.806	228.533	248.071
2/28/2023	270.275	252.537	243.91	240.092	247.994	264.775
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3/1/2023	274.377	252.853	191.172	238.642	246.488	265.222
3/2/2023	258.963	241.488	230.776	228.043	234.195	259.276
3/3/2023	279.125	262.964	250.408	241.743	243.566	264.643
3/4/2023	293.823	273.928	262.095	253.246	250.248	258.263
3/5/2023	285.968	264.751	256.434	247.155	248.278	252.036
3/6/2023	293.163	269.885	257.7	251.305	255.33	276.541
3/7/2023	296.738	269.748	259.761	247.308	254.081	273.965
3/8/2023	290.816	267.98	260.323	253.316	256.051	279.995
3/9/2023	268.333	249.903	237.013	233.85	234.783	256.335
3/10/2023	265.365	245.135	233.983	227.015	229.85	248.386
3/11/2023	275.168	257.983	245.998	235.966	237.668	238.781
3/12/2023	238.23	231.13	224.035	217.015	211.885	216.716
3/13/2023	277.2	263.429	249.645	249.202	256.219	271.415
3/14/2023	282.402	256.133	243.998	233.075	233.881	247.273
3/15/2023	248.316	232.068	225.015	223.818	231.666	247.631
3/16/2023	258.066	242.165	241.801	242.783	251.748	272.451
3/17/2023	252.315	234.101	226.031	218.918	223.716	237.96
3/18/2023	273.886	255.011	237.59	235.038	231.853	233.963
3/19/2023	259.413	234.808	220.043	213.998	210.851	216.798
3/20/2023	246.2	235.87	236.88	236.801	251.648	277.27
3/21/2023	268.166	259.836	260.88	269.651	281.698	320.151

3/22/2023	255.365	234.25	228.786	222.996	229.783	253.401
3/23/2023	279.366	251.266	239.885	230.948	232.865	252.566
3/24/2023	283.048	260.176	246.033	236.95	236.898	255.386
3/25/2023	295.046	272.571	250.566	241.251	247.59	255.173
3/26/2023	316.141	287.77	274.32	264.266	258.79	262.24
3/27/2023	327.388	300.643	286.433	277.448	276.611	295.578
3/28/2023	323.694	294.778	278.566	272.399	280.166	296.033
3/29/2023	332.791	305.748	288.78	275.323	281.884	299.503
3/30/2023	280.885	259.748	241.601	239.431	237.335	256.966
3/31/2023	279.045	252.655	238.35	234.295	234.102	252.819
4/1/2023	305	276	258	247	238	244
4/2/2023	318	295	278	265	261	265
4/3/2023	304	281	265	256	258	277
4/4/2023	308	282	265	253	255	272
4/5/2023	333	308	290	278	278	297
4/6/2023	327	300	281	272	268	290
4/7/2023	333	304	281	269	265	270
4/8/2023	331	301	282	270	257	258
4/9/2023	320	290	272	260	256	256
4/10/2023	244	227	221	214	224	246
4/11/2023	250	229	219	213	228	255
4/12/2023	272	254	245	185	244	265
4/13/2023	276	266	256	249	257	277
4/14/2023	306.696	288.791	273.258	266.805	269.748	287.205
4/15/2023	319.756	291.568	274.186	258.953	258.601	262.631
4/16/2023	320.424	298.266	281.969	274.03	262.985	263.586
4/17/2023	315.12	299.185	280.275	268.977	271.332	287.682
4/18/2023	256.213	235.712	225.465	219.105	225.686	244.581
4/19/2023	261.601	297.973	231.241	225.871	230.913	249.486
4/20/2023	283.49	256.548	241.546	235.793	235.601	256.25
4/21/2023	290.968	269.356	251.89	241.471	240.513	258.298
4/22/2023	310.07	287.966	267.933	258.553	253.778	255.764
4/23/2023	303.475	279.301	259.036	249.751	245.666	248.746
4/24/2023	307.263	277.888	262.551	252.466	256.43	273.61
4/25/2023	279.423	261.398	248.71	244.763	251.386	268.118
4/26/2023	272.815	255.388	241.038	234.113	187.881	260.85
4/27/2023	298.441	275.775	263.796	259.47	256.646	273.316
4/28/2023	295.571	275.235	255.725	250.68	252.665	270.596
4/29/2023	322.667	306.302	291.665	285.84	280.142	282.145
4/30/2023	296.746	275.825	264.77	254.568	259.275	264.611
5/1/2023	264.198	242.755	233.845	228.881	229.783	250.941
5/2/2023	271.121	252.801	238.241	234.853	235.193	255.653
5/3/2023	285.881	268.483	250.598	242.335	247.903	263.045
5/4/2023	267.846	245.765	236.451	227.45	233.986	251.996

5/5/2023	292.916	264.668	249.548	239.466	240.185	257.113
5/6/2023	309.816	288.453	273.546	264.45	264.3	264.201
5/7/2023	314.7	287.65	270.581	258.5	253.285	251.233
5/8/2023	292.895	267.618	252.548	241.483	244.25	262.885
5/9/2023	319.915	288.816	268.436	263.38	260.35	273.083
5/10/2023	330.835	302.765	284.501	272.4	264.431	288.785
5/11/2023	368.8	340.763	322.501	309.515	309.105	322.945
5/12/2023	379.057	348.75	326.452	307.277	301.632	314.955
5/13/2023	366.255	334.526	316.3	296.726	284.108	280.556
5/14/2023	319.751	296.681	274.568	266.333	259.415	257.136
5/15/2023	322.915	292.701	277.45	263.531	264.283	281.901
5/16/2023	347.753	321.631	302.615	289.418	286.25	300.065
5/17/2023	356.735	333.581	319.531	309.368	304.185	321.013
5/18/2023	352.9	321.815	302.518	290.498	289.12	302.08
5/19/2023	333.163	306.836	290.175	279.575	275.958	294.583
5/20/2023	352.815	328.698	310.895	299.291	292.413	293.185
5/21/2023	351.731	329.665	318.483	306.401	301.283	302.281
5/22/2023	350.815	327.583	309.401	301.233	298.248	314.818
5/23/2023	331.7	305.85	290.45	281.448	280.12	300.848
5/24/2023	313.768	294.516	282.498	272.27	281.146	296.935
5/25/2023	299.748	278.65	264.435	261.348	262.283	280
5/26/2023	290.765	267.585	249.5	244.283	244.2	263.08
5/27/2023	290.766	266.601	253.613	244.353	235.546	237.268
5/28/2023	301.831	275.733	261.435	251.366	246.283	246.298
5/29/2023	291.781	265.536	253.496	244.351	239.381	240.086
5/30/2023	304.783	277.65	258.615	256.136	253.248	268.048
5/31/2023	351.701	330.548	312.598	301.385	299.135	310.998
6/1/2023	315.651	294.648	287.318	275.4	280.116	292
6/2/2023	324.185	297.248	284.901	274.965	278.635	291.581
6/3/2023	296.246	275.15	261.82	250.98	249.718	253.731
6/4/2023	300.2	279.05	263.065	252.966	252.701	252.798
6/5/2023	304.48	281.082	268.117	258.05	263.552	277.35
6/6/2023	326.98	299.843	282.825	272.455	269.446	281.002
6/7/2023	345.139	317.849	299.011	290.735	288.436	302.363
6/8/2023	348.886	323.026	307.063	298.834	296.536	307.513
6/9/2023	361.198	331.688	309.468	297.496	295.431	303.955
6/10/2023	364.115	334.194	314.623	299.943	291.931	292.291
6/11/2023	346.246	319.15	297.558	289.53	277.6	278.973
6/12/2023	362.956	333.39	308.906	299.256	296.445	308.495
6/13/2023	375.446	344.315	326.198	311.74	312.385	319.971
6/14/2023	405.223	373.426	355.003	340.048	335.473	347.888
6/15/2023	423.542	394.812	364.85	334.947	323.377	327.195
6/16/2023	395.425	366.768	348.01	335.998	330.785	341.811
6/17/2023	339.863	317.373	304.511	299.58	298.811	300.963

6/18/2023	320.475	295.318	282.706	272.175	269.935	267.933
6/19/2023	377.473	353.3	337.265	324.118	324.883	333.455
6/20/2023	357.866	330.651	313.188	301.985	304.356	317.281
6/21/2023	374.333	350.705	332.993	322.473	321.119	329.261
6/22/2023	309.231	288.935	277.095	272.179	277.311	289.593
6/23/2023	333.261	310.97	297.325	289.725	295.303	308.281
6/24/2023	360.675	335.318	318.085	306.589	303.548	299.566
6/25/2023	355.738	330.321	309.151	300.048	293.901	297.438
6/26/2023	385.958	352.851	333.813	317.963	316.52	323.383
6/27/2023	425.833	392.55	368.4	352.266	348.066	330.3
6/28/2023	424.711	397.843	376.258	358.2	359.473	370.415
6/29/2023	433.927	401.507	379.25	367.779	364.867	379.62
6/30/2023	422.252	386.585	360.74	343.285	338.515	343.08
7/1/2023	406.81825	372.66834	346.43418	333.0207	319.8207	318.42129
7/2/2023	412.23622	381.51021	355.03939	340.04949	328.00373	325.93574
7/3/2023	447.03115	415.91614	384.13005	371.99604	360.7866	358.63455
7/4/2023	405.78333	372.25632	353.21407	337.46242	327.56467	324.64729
7/5/2023	442.49831	411.12129	387.00011	373.03009	364.83402	374.04101
7/6/2023	378.94849	359.32339	344.93873	336.43948	334.82465	347.38745
7/7/2023	424.16389	397.14934	367.88928	361.40222	357.07156	366.63615
7/8/2023	365.26529	345.62627	327.89646	320.52183	313.91283	318.32833
7/9/2023	348.24832	323.61035	313.76242	299.73698	299.79711	298.42555
7/10/2023	407.01326	380.93016	361.62013	349.69717	347.82924	363.4366
7/11/2023	361.56641	338.78101	320.7992	318.82929	319.39317	336.11886
7/12/2023	396.39435	368.10585	351.60884	339.11452	334.22155	346.09373
7/13/2023	406.10596	379.05095	358.54289	343.94135	342.6184	349.68298
7/14/2023	424.76122	388.11019	367.2432	350.6753	347.25329	354.0835
7/15/2023	424.83016	389.98115	368.75019	351.48618	338.61376	336.43376
7/16/2023	422.97525	391.0315	373.09542	356.9682	350.99619	343.03312
7/17/2023	342.91413	328.24115	319.74031	317.63331	319.27133	337.59059
7/18/2023	365.3762	343.56209	328.05736	322.19637	321.51167	335.36636
7/19/2023	373.44293	348.21983	332.36278	321.67779	322.18985	332.82152
7/20/2023	383.93037	361.47632	345.47023	338.42036	336.43152	346.13604
7/21/2023	410.3773	382.10222	363.1672	349.73221	344.72021	352.49851
7/22/2023	420.29149	387.63761	366.04153	347.80433	339.41132	340.38435
7/23/2023	417.41819	386.71037	363.87842	345.89837	338.61845	333.28958
7/24/2023	352.03427	337.53826	321.56642	310.1884	313.93368	329.04602
7/25/2023	361.52617	338.97327	325.62015	313.89527	312.81516	320.86326
7/26/2023	406.5532	370.89321	350.53539	337.51419	333.07118	342.14537
7/27/2023	388.6052	365.97126	347.21134	335.4932	333.53052	348.64363
7/28/2023	380.41846	361.90578	349.01774	336.61056	330.20984	339.44142
7/29/2023	386.11847	360.42651	344.26641	332.59353	325.61434	325.99115
7/30/2023	393.51098	370.97114	352.21113	339.51011	329.4661	329.20142
7/31/2023	378.91638	353.32414	338.34616	325.80814	325.60013	331.89317

8/1/2023	337.8431	316.84613	303.71612	298.97612	296.83534	313.81537
8/2/2023	407.05527	384.86619	364.53817	350.13823	349.30913	356.38012
8/3/2023	368.76438	348.92624	333.75118	324.64924	323.51621	338.74114
8/4/2023	410.51817	381.62214	361.98514	345.60713	339.44714	342.12728
8/5/2023	415.3123	387.29524	364.95517	348.11716	335.90213	336.77007
8/6/2023	421.38539	390.90319	369.82714	356.12314	347.14801	344.54151
8/7/2023	434.22616	405.37815	384.25022	372.00113	367.86613	376.45314
8/8/2023	473.02321	438.57126	416.46516	400.46513	398.82305	403.32301
8/9/2023	472.11132	436.09813	415.8331	401.53607	393.72802	402.64602
8/10/2023	474.62324	438.10611	423.83112	403.63814	400.35012	407.28102
8/11/2023	469.04613	435.75312	413.37009	396.08608	390.09602	403.47191
8/12/2023	471.09612	441.39102	416.71004	398.10803	390.62112	383.32102
8/13/2023	470.28112	445.01309	408.21606	383.40906	371.2	366.08301
8/14/2023	449.00309	423.82024	397.73515	382.05812	383.6682	398.45019
8/15/2023	428.83825	403.91115	390.61817	378.20617	377.31117	386.8383
8/16/2023	429.63622	398.61517	386.00413	377.539	374.056	384.816
8/17/2023	395.5802	375.33326	356.61118	347.84317	349.27313	367.00012
8/18/2023	343.0352	326.37518	307.81014	301.69814	304.84515	325.45114
8/19/2023	344.50513	331.3162	311.53113	306.48029	299.41815	299.39815
8/20/2023	417.63641	388.78026	366.66625	351.25513	344.70607	343.32176
8/21/2023	364.22014	349.83812	338.88114	333.68512	333.79612	360.44814
8/22/2023	418.52629	390.75819	371.51821	356.2532	353.64029	367.17037
8/23/2023	408.21644	380.55622	355.41816	342.21621	343.67114	354.71311
8/24/2023	397.68679	369.6669	359.07117	346.31324	351.80323	369.99313
8/25/2023	379.50937	348.76236	331.62025	320.27926	320.09734	332.91622
8/26/2023	411.76125	379.70215	356.97113	340.76801	333.967	333.041
8/27/2023	414.18825	380.65812	356.50002	337.219	330.508	322.926
8/28/2023	380.25521	359.24813	350.73812	345.88011	349.04512	370.14462
8/29/2023	411.67512	388.48113	375.80801	364.98	364.603	381.12
8/30/2023	364.52812	354.07112	348.49113	343.38413	349.69109	354.716
8/31/2023	351.11304	328.28026	326.13001	316.758	315.518	333.88802
9/1/2023	358.07115	333.31316	321.49319	317.17019	321.52529	338.80827
9/2/2023	350.81827	327.29121	317.46014	308.74512	306.04313	310.32606
9/3/2023	341.31829	316.11827	292.7883	283.05828	275.13123	275.59013
9/4/2023	342.73643	313.9784	298.65136	281.88025	277.76521	274.94621
9/5/2023	349.69043	324.51545	306.49828	294.1053	291.7363	309.40364
9/6/2023	386.78938	359.45336	338.44822	322.36625	322.19839	333.80333
9/7/2023	383.43239	351.68724	333.44725	317.88735	319.44921	334.31917
9/8/2023	391.65533	361.50018	349.39714	335.72615	329.20613	348.07811
9/9/2023	328.02833	300.26126	283.28021	276.21519	268.82318	272.8302
9/10/2023	358.63336	332.33627	312.92117	302.86515	294.63618	296.76119
9/11/2023	394.10435	363.11516	349.62015	336.8131	338.46814	350.01213
9/12/2023	384.56303	349.08803	326.86602	313.91302	309.27503	325.91602
9/13/2023	396.87539	377.31929	358.61119	345.91011	345.99509	361.93003

9/14/2023	402.16544	376.52329	358.1051	345.90118	343.83113	359.73012
9/15/2023	380.19829	352.85522	334.9952	325.8502	324.71613	339.74517
9/16/2023	380.47555	351.58038	338.31619	317.44916	318.87018	323.32409
9/17/2023	382.8782	356.93124	338.30819	329.05123	318.67321	319.8763
9/18/2023	385.96834	360.03028	345.93125	334.39115	338.62414	350.50013
9/19/2023	378.91018	354.01118	341.01316	328.21319	333.50622	345.30111
9/20/2023	359.66134	336.58315	321.4492	312.93917	314.66821	335.44819
9/21/2023	327.10334	312.43931	299.81022	292.32312	295.54311	315.16805
9/22/2023	341.26022	316.31333	297.31432	289.13321	285.65625	304.57824
9/23/2023	327.51035	301.43134	282.02122	269.99814	265.66916	264.02615
9/24/2023	307.92123	286.65126	271.1562	259.00126	252.90016	256.14314
9/25/2023	362.53025	340.93522	321.48522	313.49216	312.03229	324.57727
9/26/2023	350.01821	333.9951	325.53609	320.6801	321.78008	338.81118
9/27/2023	359.33556	335.69123	323.40107	318.97107	319.68606	342.71005
9/28/2023	350.38848	326.20053	310.85352	304.40534	311.18314	326.93509
9/29/2023	314.67355	343.29139	326.88643	321.68336	323.46839	338.84028
9/30/2023	364.57543	345.71143	332.32136	325.80646	318.1284	322.81829
10/1/2023	360.551	342.884	328.923	319.054	315.153	318.435
10/2/2023	324.538	303.342	294.438	289.081	288.106	309.526
10/3/2023	324.054	307.055	292.516	286.277	290.6	310.833
10/4/2023	331.292	311.6	294.262	293.777	296.626	315.652
10/5/2023	340.374	318.769	304.055	299.682	301.48	320.687
10/6/2023	355.953	329.611	310.786	306.942	303.442	318.036
10/7/2023	368.681	338.869	320.675	306.805	302.051	303.351
10/8/2023	334.663	313.99	301.19	287.225	276.052	269.145
10/9/2023	253.523	239.313	230.239	230.288	232.847	253.537
10/10/2023	264.517	249.819	238.662	237.69	240.529	264.865
10/11/2023	308.038	288.896	277.273	270.493	272.544	301.098
10/12/2023	357.158	344.581	337.786	339.346	349.602	376.227
10/13/2023	365.797	349.838	342.102	334.897	336.154	356.628
10/14/2023	358.323	338.893	316.842	305.854	301.151	304.024
10/15/2023	298.76	279.693	264.923	257.892	256.008	260.402
10/16/2023	265.653	248.363	240.11	233.288	235.142	254.547
10/17/2023	248.186	229.785	223.971	224.468	229.788	254.461
10/18/2023	244.99	229.043	227.697	226.203	235.913	262.037
10/19/2023	255.03	241.795	234.498	229.56	234.494	254.738
10/20/2023	271.72	253.479	238.721	235.33	236.162	254.958
10/21/2023	274.955	259.468	248.949	239.718	237.538	245.288
10/22/2023	286.945	261.333	243.174	233.93	224.928	228.515
10/23/2023	264.581	240.88	236.055	229	234.783	257.598
10/24/2023	294.432	269.307	253.252	244.238	250.971	267.801
10/25/2023	285.025	266.889	251.647	244.309	249.302	270.136
10/26/2023	295.044	277.859	266.859	263.629	265.544	280.327
10/27/2023	302.341	281.127	266.027	256.928	260.711	275.527

10/28/2023	297.077	275.435	259.541	250.427	251.26	251.965
10/29/2023	289.835	267.842	253.219	245.503	242.524	241.788
10/30/2023	291.925	269.352	253.539	248.36	249.655	273.572
10/31/2023	299.596	276.462	266.049	256.931	259.927	277.582
11/1/2023	296.81544	272.70042	263.45044	255.53153	258.2516	273.05727
11/2/2023	236.76637	222.63346	218.46637	215.54849	224.25145	248.88556
11/3/2023	249.25041	235.04756	225.24246	221.1005	229.58059	247.15558
11/4/2023	244.59779	233.67644	225.70045	224.71347	229.38054	239.82553
11/5/2023	229.49481	217.69567	211.50151	201.96028	202.68521	215.77818
11/6/2023	230.99537	222.04843	215.70544	215.20634	226.60652	256.30088
11/7/2023	243.55859	228.35159	223.97068	222.52356	229.77658	252.02557
11/8/2023	252.42549	235.77543	226.84647	224.73341	232.27147	254.82055
11/9/2023	264.15837	249.34335	237.59533	234.35126	241.47911	261.36703
11/10/2023	297.1415	276.74042	268.72942	264.56841	267.15541	279.88557
11/11/2023	308.9003	286.76625	276.66508	264.99508	272.07611	275.44701
11/12/2023	317.54134	299.49838	283.66341	278.48331	271.02412	271.68619
11/13/2023	280.63571	265.94168	255.08072	247.62364	256.35075	277.44576
11/14/2023	272.85059	259.61651	246.12544	246.49052	255.74394	277.23895
11/15/2023	278.6052	262.01012	253.89708	252.33507	261.95202	284.13715
11/16/2023	270.33009	254.65509	246.04109	246.29305	248.463	275.24653
11/17/2023	268.59	252.859	245.323	241.856	246.519	267.54444
11/18/2023	275.0481	261.52118	250.28607	243.51102	244.08808	250.29547
11/19/2023	262.30142	242.92118	233.84816	228.5862	224.2711	229.31322
11/20/2023	254.8533	238.66826	230.43534	229.80876	229.60368	249.17243
11/21/2023	287.20053	268.51049	257.77633	254.35551	255.57836	265.92567
11/22/2023	293.80224	275.84245	261.1653	255.92575	258.04239	270.38681
11/23/2023	265.64714	243.55006	228.95905	220.24108	216.1021	221.50615
11/24/2023	225.4034	218.71047	210.34046	210.29852	212.16852	221.93533
11/25/2023	241.67008	231.1731	222.64109	219.5491	222.94111	226.44314
11/26/2023	252.5065	233.91032	227.11032	218.73927	222.14011	226.0355
11/27/2023	273.33827	254.41318	242.4961	233.74519	239.3031	258.47647
11/28/2023	251.13655	238.31132	235.14957	235.0996	243.65532	273.10356
11/29/2023	319.43018	313.49533	310.64634	317.68035	338.25332	374.29763
11/30/2023	299.9667	294.19348	291.64131	297.69627	310.68157	350.33161
12/1/2023	246.4015	232.14137	224.53149	222.34177	227.32489	252.77738
12/2/2023	284.24654	263.3563	254.06034	241.91431	247.81031	252.14127
12/3/2023	294.32323	276.88812	265.39016	260.18507	260.49387	266.10587
12/4/2023	285.32018	267.10119	262.47312	261.12109	265.42614	286.93641
12/5/2023	260.21041	240.39529	229.07727	229.19027	236.70746	257.57296
12/6/2023	258.96844	248.36012	242.88865	243.77579	253.16039	279.45881
12/7/2023	307.58412	305.82565	303.83365	307.04521	325.68619	358.4502
12/8/2023	268.95879	253.6535	253.40063	247.00852	261.84656	287.27486
12/9/2023	259.37049	239.62841	232.1213	227.96904	228.78595	237.15826
12/10/2023	264.48829	249.74319	236.32319	231.47818	229.53118	231.36835

12/11/2023	251.2112	233.49319	226.02118	223.34351	233.62547	259.4658
12/12/2023	311.94907	305.11186	306.3764	308.85813	327.78012	360.3537
12/13/2023	265.92203	250.94893	250.01178	246.95193	253.19402	284.5726
12/14/2023	258.60854	244.13835	239.27833	240.47863	246.10552	269.89954
12/15/2023	257.07612	246.37315	240.30034	234.10343	242.25944	264.13148
12/16/2023	256.65821	240.56625	231.25308	229.42881	229.69592	236.87876
12/17/2023	261.76806	247.73315	240.51804	237.25311	233.95415	244.61816
12/18/2023	252.66727	241.28027	234.17525	232.92742	244.79481	265.09007
12/19/2023	295.2316	284.666	287.05589	291.03353	307.22656	336.41403
12/20/2023	337.49623	327.36859	330.83848	331.58818	345.26836	370.87114
12/21/2023	281.96839	272.95134	267.59722	267.50738	275.27232	296.64937
12/22/2023	278.52469	261.49342	259.93049	256.46753	262.31155	283.1601
12/23/2023	263.25543	250.31908	241.35604	234.42107	234.60304	243.36106
12/24/2023	255.86229	244.09448	232.29936	229.05238	230.96624	238.67021
12/25/2023	249.71004	231.01105	225.98003	215.67303	218.94103	221.95029
12/26/2023	246.64007	230.56616	224.00604	220.45803	226.49603	238.00637
12/27/2023	253.1004	237.85136	231.70034	228.74825	233.51833	246.08877
12/28/2023	256.49093	242.72871	232.86353	230.94252	237.49556	255.989
12/29/2023	270.27622	258.9861	253.49011	253.30107	259.29813	277.98574
12/30/2023	324.69677	313.67752	311.06027	313.63223	311.75021	320.28018
12/31/2023	336.39618	329.08009	322.40903	328.34401	333.02301	345.67701

Hourly System Load (MW)							
7	8	9	10	11	12	13	14
229.53	242.387802	260.760777	286.358461	303.058922	322.683114	340.760562	352.688912
238.35	253.185056	274.23097	298.741495	323.869282	348.578475	369.95818	391.705573
274.963	291.654185	306.677649	327.552482	342.546365	375.526597	388.237363	404.409862
293.6	310.555048	328.067601	346.613263	371.127962	388.381035	410.870948	431.999711
304.64	323.491454	338.207883	355.851202	376.190572	388.539557	378.127323	362.382075
288.331	316.801022	326.970164	331.235222	330.566388	327.892828	327.133278	325.836329
319.15	349.115426	368.447702	358.877573	344.903784	327.582244	316.586377	312.193539
292.551	315.655652	338.789812	330.469782	319.83664	313.175976	316.240938	321.537577
306.836	329.412538	333.72394	328.29067	328.492153	332.256792	344.02023	347.973716
321.306	342.691768	351.784994	343.734565	333.596373	335.295824	333.775757	331.835125
383.785	416.42	411.325589	382.666002	359.47602	341.497631	331.934201	330.880122
362.901	385.696006	376.730943	359.443418	341.365181	336.495077	340.424351	337.780941
292.365	310.602589	318.612055	327.214637	331.457748	331.417714	329.206467	327.409263
419.968	456.465452	481.944709	481.073805	462.034753	433.48971	406.008824	386.216482
522.416	559.456457	569.773305	536.996708	491.623502	445.314767	408.148184	375.751917
538.075	567.10445	563.450358	516.452722	458.721413	414.950659	380.904242	351.316961
480.603	502.405912	483.400278	437.874151	389.742198	354.751201	349.491839	330.361628
357.768	378.547093	370.842585	352.328179	375.659696	333.683561	333.014861	336.107745
314.742	328.67616	333.219791	331.328357	333.973218	343.286967	353.480144	365.902674
288.007	302.527776	317.338505	327.213934	344.266945	361.334743	381.340092	395.94697
235.11	257.036369	281.617964	301.642169	312.842445	314.998041	315.915048	314.248762
237.713	254.291483	279.3269	298.1992	314.67075	330.504326	349.606644	361.054885
282.74	296.011594	306.764212	319.228912	325.833753	335.688837	337.82543	335.856779
354.178	381.949713	381.968985	366.359125	340.782864	343.609022	330.265063	328.810842
287.831	307.978064	318.909423	332.426743	349.127764	366.058695	385.583131	397.513597
283.208	304.552155	307.951001	324.233826	321.155968	330.374757	330.225042	329.429819
392.225	427.827374	426.728527	410.60739	391.992195	373.053696	354.992617	338.867281
337.84	359.453185	385.799491	382.258751	380.919376	363.739546	346.36128	329.206249
252.142	267.724773	289.178624	304.941518	312.079094	321.570683	333.903739	355.91724
281.795	300.718049	313.338895	333.655737	359.642887	384.028944	402.943065	428.748517
286.715	304.489432	315.037908	330.560637	347.812712	381.123776	398.229006	415.842857
289.84901	308.849561	311.358242	333.051201	350.754661	375.09176	394.280143	416.463464
290.03676	301.877173	315.029504	336.002985	359.305056	383.720529	412.396315	426.98385
298.98583	313.981832	326.411847	348.753604	372.856949	381.001038	373.284841	358.632436
294.68692	321.358364	343.366337	341.094629	332.302666	321.948662	316.145253	312.333651
246.8761	265.845209	287.940172	306.871086	307.120469	311.737298	318.388603	325.513363
285.77053	305.46048	313.412956	319.067233	327.247256	336.051638	346.578609	357.680633

303.76182	316.206244	323.503576	313.250245	328.72819	334.163111	347.163238	352.498393
295.16249	306.13745	314.500059	320.63894	332.210101	343.875003	360.442079	376.547454
288.71309	303.904421	315.183047	332.273626	345.30293	371.944528	397.010293	419.874519
291.70915	309.90813	330.167881	354.875741	381.145787	402.554299	424.42848	442.620639
249.7336	266.970636	294.184815	328.954491	365.989269	390.254903	411.111946	420.633182
231.9315	244.672006	276.564163	300.458685	307.5389	312.978511	315.047945	318.221419
337.31105	366.1376	368.493347	357.178184	348.652035	335.613163	330.405609	324.792413
380.16117	404.660374	390.849828	364.693212	339.408158	337.786088	326.067833	331.726359
301.97535	319.60248	323.094371	325.615647	331.629618	342.684651	358.617998	374.309539
287.34807	303.93221	315.41069	328.325432	346.83862	365.120606	386.372597	406.461316
285.09559	301.628855	325.230401	347.997703	380.38712	411.957478	438.418351	459.79286
238.26313	256.560858	283.796677	301.661254	309.45888	312.822232	310.751747	314.420647
240.15719	255.993365	281.634684	295.289836	311.555577	327.530348	348.192211	370.74107
265.36328	282.88306	301.762408	319.154562	338.29014	358.229549	384.145201	410.547076
288.60154	309.742327	325.801613	339.721398	356.882808	393.073643	416.030944	443.030266
288.19918	302.69152	320.731864	340.169434	364.386594	400.473612	429.638852	456.085303
294.12071	308.876546	332.918235	364.020845	399.9519	427.780149	463.82344	485.765808
291.59602	307.674217	322.072194	338.831741	358.70455	388.144353	431.346752	467.926373
256.452	270.740495	303.574096	342.35598	380.658275	416.613688	450.995678	476.317237
229.6337	246.886649	278.983301	302.453812	326.14127	355.049198	391.853925	422.345173
278.78875	293.474973	308.052063	325.81535	345.585779	366.060743	391.668515	419.868424
296.10839	310.964309	330.488898	354.080516	371.245171	400.290203	424.110271	446.591942
298.25448	314.34146	323.74218	342.297042	367.868444	396.997762	428.060558	458.994453
290.1836	306.510719	322.78081	346.329412	369.093013	399.965825	430.77228	462.788034
289.782126	311.539391	335.927252	367.530067	402.996021	427.169142	453.950637	477.687708
270.3961	286.650646	329.759381	376.723901	412.801259	440.862448	465.783024	481.546647
257.21945	274.458981	311.582637	357.818438	404.681985	446.362538	480.212169	501.610245
302.963146	317.208885	333.670655	311.623054	407.979687	456.033118	495.215778	524.023139
298.003639	314.90215	339.378955	372.969689	408.306081	433.276864	467.057781	495.772211
309.71514	326.678708	339.438722	364.63113	401.364189	432.137952	460.978035	488.866517
288.371613	299.777992	318.588501	335.845012	349.551066	384.733666	404.278536	426.620528
277.419374	294.92589	309.921429	330.900152	355.166163	380.568986	414.040381	442.050192
251.583897	265.243799	297.213108	326.949509	350.855386	376.392334	399.449113	414.594124
224.765	236.797503	253.923193	277.639698	296.145569	315.307765	341.404123	367.461692
294.712	312.95024	324.433115	356.854246	386.91443	413.867029	439.455582	418.085951
261.66	279.606578	282.554312	309.682813	314.779082	324.617303	334.618912	347.265162
272.483	294.33757	309.93894	330.297086	347.781337	355.070001	351.938994	340.763992
304.266	325.486371	334.568964	333.77101	327.31354	323.5359	323.853389	322.856463
262.881	282.481252	295.293626	306.748036	317.08653	330.456457	289.165295	357.758548
245.8	253.194069	277.161992	305.299596	330.59492	360.772388	386.188553	413.762702
229.486	247.613719	275.446759	297.485242	317.297367	329.051795	327.446563	325.889285
322.146	351.476714	361.067352	361.300595	357.236326	345.370695	334.957215	324.760373
365.05	389.513492	389.905835	371.882913	345.224519	340.898931	329.727423	330.502492

284.283	305.566756	306.89085	316.374611	330.410846	349.115007	363.640218	387.000861
281.318	298.534584	307.193141	323.807993	343.117563	367.093118	388.633984	422.387552
280.48	295.47285	308.083455	324.050047	350.450758	372.59866	405.189196	434.895953
270.05	281.706609	309.042477	334.761044	362.63449	406.095475	448.813098	483.332159
266.331	278.114351	304.21977	341.452163	383.894904	424.919034	467.756934	499.993858
322.745	335.877901	354.175118	385.597651	417.593545	443.680276	482.324736	526.433211
322.259	337.752689	346.253454	372.961499	400.711247	457.578033	494.241175	531.662931
329.594	341.119076	348.922198	369.854451	386.001278	405.394397	433.54114	455.910824
287.685	300.828794	312.053251	327.74784	349.298741	373.247569	398.41262	425.021088
279.625	298.806585	310.667822	332.191832	360.39089	385.197352	414.765277	442.828582
254.00091	261.105364	296.336699	332.990865	371.037553	411.788389	449.822365	486.37529
266.00129	280.147506	311.150072	354.980044	389.129701	431.812887	466.280084	497.698339
308.00523	323.010853	333.846008	360.579557	397.797641	443.723145	476.522195	512.148154
298.00038	304.119247	325.361053	355.705887	390.670695	442.749926	480.395415	516.101755
320.00017	328.170009	349.540893	385.010997	410.97818	465.637546	519.072204	530.036912
316.00129	333.016394	342.339579	378.876016	406.641024	439.583193	482.103191	512.956319
286.00852	298.092865	324.351799	366.784572	402.567953	435.493762	472.840381	508.491828
215.00131	272.531257	309.527953	354.930107	395.293629	430.720294	458.007823	492.135953
260.00041	268.011931	295.503186	324.668944	333.569763	345.556167	353.414043	357.937835
273.00039	287.201269	307.733681	332.05242	355.53806	377.9092	401.049553	416.83631
281.00931	297.159201	309.462403	321.697533	351.543577	370.645579	386.350062	403.871704
297.00051	307.001282	315.394734	324.370236	339.759133	361.397039	371.765113	377.215182
304.00037	319.139327	331.856794	357.79191	405.46116	429.388121	445.336529	478.833113
311.00133	320.935616	290.445893	374.475901	411.99325	445.58453	480.753508	512.988393
274.40212	283.390387	313.527343	353.481585	392.193423	446.416842	491.907123	530.873319
266.64877	276.689385	310.687787	352.599464	401.823351	446.135426	498.527834	519.547341
319.29993	323.61117	336.103141	344.706146	358.61574	365.817115	374.140108	385.845498
275.48179	292.815592	297.662549	303.57663	318.928192	336.409059	345.754379	361.59376
278.52273	292.72496	303.180929	316.557702	336.68844	360.050255	385.490353	416.64059
283.55108	300.207345	310.891924	336.542655	357.131824	384.243624	404.145599	438.45088
283.48529	297.575319	316.553502	351.284736	382.081865	413.397722	441.34858	470.049119
261.6108	266.22047	302.196641	342.355644	385.560046	423.508038	454.429009	481.319531
250.67547	256.234846	287.949498	318.639942	353.313725	388.5592	425.041384	462.687418
300.84465	310.61261	331.023042	349.556785	368.196608	395.905558	423.982513	445.561699
295.6433	308.22492	324.381002	347.113576	380.742432	413.556104	446.560949	482.558996
290.62475	305.981907	325.488639	352.66624	381.954947	436.573232	466.610514	503.649262
305.85824	315.541866	332.794916	361.26562	401.8295	448.42384	490.91135	530.86471
297.847788	314.57502	331.935187	346.706648	365.705154	388.071327	404.871447	448.400215
288.44399	301.284255	341.742471	384.211895	413.652945	437.572238	454.904051	449.054703
279.62627	282.992141	302.075477	329.508309	356.642541	375.41385	396.621045	352.885164
271.658032	287.146656	305.769632	329.069636	352.737474	381.370114	415.742779	439.987117
282.855234	294.598558	319.449398	344.083489	370.065266	411.786805	435.197151	464.969205
288.572441	300.789375	317.87577	345.603391	366.45957	386.839823	409.35434	434.459172
279.839674	292.879312	308.206366	332.751661	354.246126	383.487415	415.810428	448.612165

277.957835	292.84479	312.97505	346.061932	381.23566	421.216327	461.59223	496.030012
270.199416	283.765102	319.135136	365.13769	406.783538	446.434313	480.911915	509.595558
249.337846	265.905068	304.831233	340.279707	376.282534	406.845806	440.887336	465.750144
283.864695	299.911098	324.311746	349.596483	379.866139	417.556947	451.29917	488.004125
298.780936	314.776294	342.350293	375.646899	411.551159	468.26033	501.984856	539.826904
314.778756	331.880052	360.284967	392.96125	437.171299	486.570446	530.866704	577.37797
343.678555	360.708064	390.909502	432.518089	473.419026	520.780111	558.120352	590.603311
335.393994	349.000776	383.701655	423.550997	467.324215	508.982554	543.691566	571.849498
282.872511	302.293231	341.605922	391.945179	434.570123	477.377706	512.342971	534.804061
258.285639	280.864636	321.399911	367.780811	404.943111	444.130432	478.045081	503.955025
304.91861	325.92281	355.75477	391.105701	438.49592	478.807564	515.924208	552.31411
318.896259	339.796747	370.509574	407.696307	439.469109	501.138041	536.882482	577.716929
339.89532	356.847804	335.395222	431.181501	459.536041	519.758142	561.287941	591.196062
325.805107	341.929182	374.790673	416.020955	461.788075	504.092702	542.52684	574.04543
315.85649	334.45154	365.6933	408.76298	454.709	498.55135	538.09135	573.71506
297.25305	315.72756	355.121784	403.478041	447.721932	498.665292	542.121669	569.747192
302.40557	319.74162	361.30532	409.34069	436.88074	480.63686	525.32282	559.73034
335.94662	355.74867	394.31505	424.0366	487.91168	529.63388	569.9655	606.01349
328.83426	344.41168	366.97585	385.963273	429.18791	481.26398	512.27319	549.70547
321.89201	342.33218	360.98191	387.77558	423.05784	472.23664	507.90626	546.30386
307.83528	323.22457	350.37813	384.68045	415.8447	446.46246	467.62559	489.93466
285.92352	299.86515	326.48835	351.36827	384.33536	419.886648	457.331029	485.3344
242.12481	254.42132	282.98956	312.38694	341.12156	366.39738	397.80023	429.549973
245.232873	259.276455	287.73737	327.783869	360.698652	399.639222	433.68185	467.551284
243.26147	258.10043	288.6604	324.61347	358.97538	399.06214	431.72682	457.71807
288.87262	308.04816	343.10617	376.88128	406.26949	451.12486	478.82824	509.1113
328.90312	340.80698	376.10512	414.31623	438.42082	467.53346	502.90855	536.95426
312.95261	328.87091	362.49373	399.308	433.85628	462.52778	500.94814	531.62934
309.4062	327.44943	362.84527	403.55704	443.40003	466.1657	522.92227	544.84906
261.67147	278.60078	304.62743	334.90652	365.60843	404.7269	442.16233	483.32914
260.57449	277.62153	308.1078	343.36587	388.29574	426.98943	461.83902	489.3939
300.1433	317.49844	347.34023	379.21075	416.42633	446.7927	476.59734	501.88603
300.08751	316.3523	349.99716	380.45467	413.42095	466.64379	495.76775	528.86954
318.9315	341.69277	378.79629	424.58519	466.56425	506.5827	542.29995	558.47108
327.38258	347.68738	386.46957	420.01645	458.72451	498.78929	532.4193	551.29482
315.12029	339.67609	378.61194	421.52242	461.72625	503.99667	542.65483	573.10853
294.28032	309.32804	353.03824	402.76945	449.88225	492.54687	528.53411	560.65818
278.02383	297.71136	339.75127	392.30952	439.78828	491.69158	536.34418	561.66223
326.49973	351.55229	391.08643	439.67319	484.84133	531.38891	574.74545	601.22945
340.85248	363.50058	404.85098	453.91918	500.48439	552.16082	595.34875	630.51702
364.77721	386.39379	421.41877	470.86896	511.79985	571.94107	606.461	636.21643
343.78852	358.30242	382.19704	409.13576	460.03836	525.44326	578.57507	623.5845
354.3925	361.97256	387.89872	420.39457	457.31231	510.02809	557.42158	591.70498
313.09769	331.71192	367.93452	408.38978	413.45783	419.39302	452.51005	504.49329

270.08224	286.1002	330.82539	380.85796	422.57221	466.87179	501.66419	531.31117
350.12035	363.70819	403.71559	449.703737	490.363408	563.54571	595.95719	629.12736
336.391466	358.779885	389.491596	431.95312	477.44943	533.41596	553.4216	585.57721
333.53355	345.4066	351.04866	366.23324	385.02795	417.16199	469.4949	515.05806
309.46944	332.00726	371.0772	414.52831	455.74775	504.76704	549.91904	554.11958
333.1839	352.53807	370.06238	379.59681	402.34535	440.84245	481.99745	534.31317
304.32666	309.30838	344.38406	404.94087	459.07838	516.55639	557.41904	553.43064
296.22588	310.6759	345.29604	384.64918	434.47432	479.96528	526.62937	560.34161
343.08342	361.16309	391.85907	436.58107	489.26963	536.45484	587.33845	614.46698
360.48971	368.94152	407.3921	457.49075	501.61411	559.61257	597.68405	635.64413
388.10694	352.4421	437.08243	479.03015	515.62184	562.67604	582.39492	574.10186
395.60499	409.14661	441.56586	490.1671	541.13761	589.05758	628.91741	667.91159
349.41161	362.94781	396.11263	444.02583	490.17413	527.67447	570.69052	607.05448
318.31015	332.92879	372.73548	427.07146	471.53137	522.4373	570.10421	598.04804
320.99128	334.56509	382.18121	436.10613	489.68242	539.20778	574.48385	605.85502
366.46908	377.00307	421.34472	472.94337	535.03262	593.22415	630.75258	660.40115
326.27347	329.38539	361.66116	422.65082	488.3554	548.03082	590.64571	622.85556
384.82186	401.88613	443.46546	496.7953	550.74562	616.01704	658.37723	678.6024
359.9915	377.84934	418.67648	474.57113	527.36499	578.38678	620.64437	656.34193
379.58409	396.36953	438.03676	494.64332	542.05743	584.20455	616.77077	626.9745
323.12721	341.61586	376.39655	399.89085	398.49147	409.58641	435.62212	447.28349
302.73106	321.15434	371.66245	426.77158	481.00948	529.91568	572.84853	601.973
374.52235	397.16614	433.81915	484.79413	536.029354	575.898025	607.804451	632.747491
353.119484	371.221806	413.260125	462.593149	502.69077	534.272336	522.683115	498.906572
363.563508	382.529363	425.839764	478.740116	526.879229	578.299262	620.603465	633.546448
366.717931	389.308785	428.291685	475.757614	521.475176	574.792448	612.133119	633.731967
359.904134	378.249626	412.810661	469.694542	520.729699	579.486646	620.630165	651.789101
337.190001	353.140502	400.135593	454.202004	514.398058	556.656304	592.678886	600.427352
344.377311	352.616787	401.808391	458.888577	512.478231	548.000928	528.593947	488.420345
357.665796	374.290642	416.392022	471.058051	516.877632	567.501979	555.054016	515.874381
356.551751	367.227313	406.753404	442.766186	513.233156	541.913103	536.870092	548.232932
352.078793	368.085719	404.088093	451.232465	505.782092	563.314651	607.234067	640.666598
364.692381	379.58843	406.605424	440.478921	498.047209	557.009016	605.283505	639.721605
362.938801	381.561828	421.295235	478.449733	534.047237	582.339613	624.973003	630.505932
339.325558	357.619434	404.534132	461.235166	468.650785	569.619761	613.010062	637.076477
334.087312	342.771535	391.751465	453.464478	510.275749	546.257131	531.96149	547.84805
346.41221	369.083445	397.100502	441.454009	502.172575	558.703705	558.729202	522.215023
341.356289	358.743212	395.016516	446.058965	495.137093	567.569979	605.029778	640.14142
359.805032	372.026458	411.150406	460.505206	513.046127	566.041727	602.521715	634.522329
366.20692	380.89404	403.559059	447.000594	502.950544	543.786146	572.076321	568.112058
351.69553	365.516438	388.978278	440.542827	490.415372	550.766075	588.374791	613.838164
327.28139	341.341078	382.241439	440.004024	497.627434	547.039502	579.039099	609.904126
329.694756	340.635486	386.063756	439.082988	498.916461	550.131726	595.932036	633.665061
355.21487	373.003098	408.088375	450.216159	509.665289	576.043608	619.288913	657.233374

333.4785	351.06792	387.332194	439.797777	488.882307	560.337868	588.715237	562.075038
371.65232	383.951915	415.183459	464.337328	520.513412	580.318792	621.925266	646.186389
353.258172	372.258359	413.907221	459.448095	505.945067	548.493911	591.288377	629.651585
354.778392	373.530126	410.207639	462.588545	509.333518	561.782993	603.545793	609.040513
338.75619	348.757955	390.726749	444.274891	501.624058	567.616181	606.91036	644.810331
343.81251	354.240213	400.33732	455.8029	513.565339	563.157911	610.132502	591.809399
395.08791	413.601184	455.513243	508.525983	570.78316	625.77784	664.637729	695.286667
418.746812	427.867084	477.237209	523.69684	582.394185	645.069045	684.762859	716.014916
418.14013	427.593994	465.226353	524.500779	581.368821	634.272491	683.195218	711.351692
422.15104	433.136034	470.511128	525.599877	582.812065	638.099327	676.69855	709.468073
420.22092	426.47939	465.351396	520.485984	574.174303	624.449326	668.918455	698.925496
383.10303	392.573273	433.625152	486.859483	544.710248	595.136532	642.197741	674.456421
366.894623	373.107992	424.186099	481.326744	540.163947	593.875667	636.900701	670.89664
422.49606	431.957922	468.639185	518.787736	577.226541	621.073962	657.448834	645.232937
413.74613	418.889882	452.038692	507.4899	555.592188	623.250521	655.953923	691.631778
406.535	410.812839	435.548663	488.085554	552.572819	589.544444	629.685656	653.618899
390.90031	401.280914	421.088421	449.24177	491.130121	552.731498	598.698279	535.279812
349.21143	363.455741	395.615858	449.175676	506.155026	561.817585	595.908464	580.105601
306.87314	314.148179	351.326064	409.909531	468.480625	523.825895	569.886108	603.770044
348.02038	358.919571	399.227994	449.567233	491.746849	543.598681	572.028043	565.672407
387.06074	397.258189	428.134602	474.394612	519.62159	560.445115	596.458773	630.742177
383.23208	392.512919	417.400102	457.578477	504.691139	564.97071	605.683914	638.443532
376.34007	388.74149	413.429358	456.962079	508.691607	565.504314	614.092065	651.343018
397.35516	407.423606	425.103514	464.464571	505.826301	557.389291	596.615853	635.472509
354.54399	369.626312	399.957729	449.903132	495.635507	544.122987	584.140655	624.765808
334.7999	341.277291	383.486991	433.407774	488.671737	544.079878	586.490844	621.957674
327.095	332.823329	376.695801	433.774265	483.555716	539.233597	582.971035	617.782091
391.40372	407.134589	435.831461	476.072289	517.682909	560.683809	595.932704	629.902712
408.93351	419.221143	444.769922	499.97643	552.401682	584.275532	620.834393	616.417251
370.53332	377.146426	395.048892	412.623847	428.08504	447.461799	448.958365	459.607414
351.50628	367.148184	392.405987	426.451134	450.729236	511.316839	552.250464	582.198936
366.24109	378.354741	412.05974	457.672762	510.340811	558.125526	599.50497	626.323355
320.82583	331.018524	363.469069	402.582033	445.280082	486.511245	518.721013	553.804767
278.15954	286.074779	318.937238	365.769543	415.985981	459.21649	495.996054	525.940302
280.11321	284.675099	315.181253	370.338928	419.875122	466.757995	511.223401	537.064653
336.35852	348.103728	373.558447	418.510346	456.841277	519.661237	554.797488	587.352504
355.92918	364.539339	386.343609	432.604049	474.219193	526.350408	571.956431	604.833709
358.3953	369.744273	395.812774	437.86867	483.267517	535.591483	576.931834	609.707909
369.44403	379.31088	410.7277	460.838984	503.06816	504.61598	511.499063	515.744198
283.12629	293.421102	329.655319	374.331013	423.21263	476.129562	525.752377	557.53324
299.55316	299.950626	348.941118	400.29802	457.752533	512.100888	560.763015	592.332047
374.69213	383.349321	410.952645	453.190618	510.753814	562.529839	617.115886	646.018574
354.72072	362.083758	386.560189	427.800447	478.251143	541.620327	590.028897	636.300045
387.96453	391.678034	414.391402	458.607906	506.999465	563.313161	601.742001	637.498628

382.32112	390.228297	416.631335	459.882964	509.282214	562.505675	604.12316	633.975215
365.46813	374.687601	400.403847	449.441119	497.725546	551.127473	597.23752	630.5507
327.92318	337.080311	372.789906	426.193339	475.44009	523.803327	565.927645	594.289896
323.73664	335.126124	366.415454	420.03495	473.375413	527.817601	579.343917	613.070473
377.15102	391.333863	413.472272	459.49953	504.792156	549.556129	586.514488	615.445631
370.28006	371.661217	384.738657	404.605581	440.29168	480.396782	518.536678	548.075958
358.51527	372.008423	386.669631	430.674952	472.562821	526.156038	576.504464	605.959641
341.0662	351.455539	367.54929	401.639773	438.153536	476.96147	523.632717	558.16917
328.69622	336.390462	365.197938	399.89346	442.681277	482.662915	512.817466	543.320218
273.34125	278.042108	307.412585	340.803928	384.168936	421.160412	455.851488	481.25081
259.0588	270.039705	293.647504	336.871823	376.226231	422.806738	458.629869	500.753916
350.64018	359.8298	373.21248	412.0747	453.14004	502.80106	547.85656	582.33941
364.27305	375.78249	395.53877	421.80808	455.40776	488.79762	519.18574	542.19448
369.158	380.12467	393.7069	411.45522	428.48103	481.65644	508.62703	541.2761
353.84807	361.19452	376.53797	401.07709	433.29368	470.50915	499.96058	535.45441
366.63464	376.74575	386.41211	407.36823	427.97761	471.80767	514.21246	547.08658
331.25857	346.05524	365.4046	395.16663	433.51683	473.22212	513.78488	551.45878
323.211	333.518	359.169	395.773	431.41	478.111	512.217	528.302
336.245	345.654	366.879	401.346	439.143	465.012	498.744	512.677
334.185	343.355	349.609	380.322	411.766	463.41	490.784	515.811
344.492	352.181	368.778	394.29	442.958	475.418	507.111	529.136
347.071	355.407	374.768	414.143	453.239	491.943	531.933	564.518
343.557	357.225	371.218	404.772	435.401	474.907	518.219	554.546
310.16	322.108	345.555	380.52	429.703	474.808	514.22	538.13
268.002	269.867	291.071	308.854	324.976	340.142	351.842	357.092
279.752	290.721	301.909	309.431	321.212	334.116	348.724	370.344
294.088	304.52	311.29	326.094	343.993	377.018	411.029	442.795
327.541	340.666	354.53	368.882	394.835	435.068	474.081	494.547
408.144	425.002	440.225	464.681	499.878	511.922	518.887	494.531
385.198	397.782	410.385	429.782	460.662	489.919	522.37	551.559
312.826	319.961	341.125	378.311	411.182	437.963	468.919	470.853
273.85	285.689	306.542	335.342	355.511	377.669	403.237	426.585
278.377	294.021	302.328	316.129	330.277	339.048	349.203	356.021
285.95	303.008	309.367	314.267	312.071	314.21	321.133	324.366
292.664	309.014	317.735	317.406	310.521	323.83	327.804	338.752
282.907	301.183	308.761	325.604	338.593	356.021	376.416	406.295
279.96	296.016	308.384	325.234	345.172	364.671	395.52	414.508
253.679	263.441	290.932	323.313	356.961	390.822	416.905	449.333
232.868	244.591	264.54	288.364	304.626	327.539	356.215	388.632
287.288	300.89	313.049	329.46	349.438	380.797	415.854	446.826
296.011	311.434	317.959	338.552	359.73	402.842	422.82	449.523
297.239	314.41	321.683	345.926	373.237	398.084	415.051	435.176
306.242	317.411	327.604	352.998	378.898	410.111	439.603	465.285
300.459	316.611	329.806	349.713	383.046	416.414	397.003	470.235

260.827	276.612	297.006	332.653	371.204	401.223	428.972	454.762
248.955	261.958	286.03	319.555	356.763	389.088	424.987	449.795
299.643	314.137	325.837	349.794	379.846	412.414	436.731	458.15
306.692	320.158	328.461	341.6	381.246	410.978	440.563	469.122
300.94464	308.20448	310.10425	321.8508	338.46961	340.60036	349.90759	354.96764
284.79967	306.06964	311.15468	314.91286	321.13487	326.45713	335.24952	340.17106
278.90006	294.13763	303.17326	312.32788	324.09879	339.1595	356.54431	371.57322
255.93799	272.12605	298.23792	312.11484	329.78079	346.77038	362.38571	379.12593
226.52486	251.73116	277.9703	294.45848	305.8153	321.60273	348.42566	364.58896
294.56535	310.45882	317.49581	324.81753	329.72445	343.18864	364.03541	384.33257
288.98117	303.33236	315.29047	331.98976	342.28986	382.35694	402.24836	423.1823
287.25966	298.50533	319.11578	336.76759	367.92345	387.20543	423.35419	445.28351
294.46184	308.6598	331.7091	357.04834	394.35816	424.84593	449.76271	473.88453
291.62985	316.87459	354.06881	395.32146	433.88101	471.6587	504.67137	525.51872
283.95888	309.74614	344.35728	397.83315	444.27542	492.04926	518.65421	534.7679
272.68887	294.50172	327.46938	312.7951	401.604	439.39306	466.64748	486.20104
310.44811	323.66415	337.94555	351.92756	363.79819	380.4166	397.62885	413.14241
311.92139	325.57563	343.98176	364.75662	371.06084	396.6971	389.77913	380.93543
312.09742	329.69629	342.69668	354.24151	364.49547	372.10391	366.66154	365.62613
301.95586	319.68836	330.71453	343.77847	357.06627	362.74112	365.55769	364.85933
295.13923	312.63413	333.02874	346.50381	359.5441	372.74434	383.61555	386.41387
263.38081	278.20844	307.52848	325.62773	346.70776	369.79148	386.28311	394.32948
235.79318	256.25383	284.75852	314.43357	338.20441	361.97279	391.07187	411.90332
271.53606	291.33542	314.4637	338.07038	365.22184	392.87259	420.96472	443.1431
286.47309	303.4729	330.20765	362.12263	397.34462	415.05786	442.07024	463.25276
289.61718	310.84296	339.23696	367.71965	394.81462	417.86651	409.93042	406.12523
230.2852	253.08214	288.81516	316.4325	336.73702	353.83341	359.49789	358.1028
236.65479	253.46479	274.61826	291.24147	299.28285	305.97555	304.11256	302.56668
240.07403	254.99602	279.61073	297.85409	304.31417	306.49134	319.40565	328.32977
231.70584	247.4768	275.36664	299.39458	316.78059	331.5697	352.09844	367.95507
281.91228	297.10171	309.03766	322.42271	328.06599	330.79646	342.82068	352.31077
310.86947	334.07345	348.38425	351.35606	345.34433	358.21298	352.50961	349.19342
418.75961	444.18192	432.98836	413.07697	383.39485	362.5392	341.45005	329.59983
388.95875	400.2147	388.28514	364.3196	345.05723	335.77836	333.21524	331.47913
284.67386	300.84747	310.52319	321.05641	337.05924	359.72725	375.39315	394.21804
269.22521	285.84197	313.96466	344.55757	373.59984	398.93088	424.90808	447.96642
278.49418	294.07592	325.41142	354.05359	387.45133	421.50049	451.94874	472.56465
319.36194	338.24151	345.78703	371.3606	408.59492	433.34184	453.24064	462.76746
292.71924	308.24671	317.04515	318.8205	335.926	338.51622	347.21872	354.58649
315.49713	330.65661	339.69616	333.8727	334.44228	334.16882	333.62829	325.9128
409.74269	420.32871	417.35766	395.15342	375.23437	350.20637	342.50938	334.92244
324.39067	340.388	342.61982	342.95137	333.71518	333.65465	338.15362	341.04587
249.29669	267.34924	295.77052	317.24066	336.86895	357.86703	373.05022	385.63294
244.0856	260.05437	291.29932	320.61931	348.25304	375.58893	399.69858	409.99041

299.92299	326.60768	340.7828	346.6278	350.61369	347.08345	341.46922	332.66628
404.36641	419.60938	403.54139	388.98037	363.43915	358.83123	344.16744	338.27614
318.34209	335.53986	335.66639	337.78825	333.51071	339.83021	339.96138	341.16868
305.21088	319.65854	326.35769	328.77549	336.17565	338.93815	341.56627	341.07995
295.96785	310.7812	325.00367	326.9463	335.75955	334.82057	339.6968	337.31812
253.22596	270.61076	295.70987	312.37505	331.56249	338.52176	341.12947	337.41429
258.76337	268.4657	286.45712	310.97533	317.2688	321.14271	328.41917	325.52494
292.70738	319.21187	328.95876	338.25959	339.52616	338.13146	335.93184	337.06993
379.88495	403.12342	418.21769	414.20267	386.8782	381.68259	357.26009	343.96187
401.2927	422.1137	431.28201	418.5282	393.62565	374.00634	357.20453	344.91408
322.18399	348.44071	353.87943	351.99469	343.10254	337.46189	333.73947	330.29625
301.90254	323.32379	340.83198	344.83719	346.92622	341.84412	330.5007	329.68135
258.65159	277.14688	302.0132	316.78831	321.49063	323.49528	327.02175	335.16229
255.42066	277.65676	303.53364	321.82582	322.04323	321.00153	328.10175	329.47681
231.63691	253.92909	277.34102	299.13948	319.44372	327.57618	328.72455	325.01461
256.29385	274.30492	293.73586	314.71777	328.51844	347.14466	351.09703	362.45495
268.81933	284.74434	298.85518	312.14166	324.8481	333.06564	334.22132	338.69508
276.55753	297.74858	318.98688	335.27462	346.43241	353.821472	351.1589	341.21741
307.50873	327.80725	352.3526	358.60317	359.30526	343.99362	338.05838	333.57161
342.25097	358.98655	386.1707	380.15955	376.94666	354.15178	339.35559	325.8523
362.72023	388.48402	402.37281	386.51816	361.0622	339.38024	330.65677	321.05946

15	16	17	18	19	20	21	22
367.315028	374.310711	373.425064	367.189981	369.55847	351.703	329.078	311
406.221397	417.420071	412.893388	403.345348	404.28414	385.715	369.175	339.006
420.238961	422.997528	423.240523	420.123537	428.55352	407.066	386.541	360.633
443.470237	449.120551	440.237592	439.980549	451.01323	430.451	407.483	382.615
353.4212	359.205293	358.76934	362.079674	376.26132	365.486	350.451	325.321
327.57841	326.681649	329.789068	330.026093	343.9439	337.182	327.835	320.677
307.473777	308.918747	312.789097	312.380573	329.4583	326.556	319.518	310.451
325.421195	333.729063	338.702507	340.31896	357.01601	349.138	336.118	308.366
355.843876	356.783188	364.665648	365.241297	377.29692	370.125	344.531	320.598
331.927189	334.983407	339.979555	345.000635	364.47405	357.523	347.468	325.371
331.213843	334.054961	341.157691	347.677617	365.60085	356.066	346.066	327.118
341.206902	352.449997	355.361774	354.008898	366.39023	357.75	343.931	321.771
321.640928	326.109606	332.757344	348.783906	367.78372	365.641	361.666	354.618
370.72337	358.199881	368.323033	396.311595	440.26409	453.39	455.271	454.415
344.018743	339.625063	337.336364	357.55852	394.08376	414.17	421.186	423.66
341.62502	336.040713	336.815789	350.311995	385.21209	397.698	388.755	382.896
330.241711	329.058311	334.999365	342.931387	366.99862	362.385	349.615	330.421
336.832769	337.187149	345.983531	351.068461	367.03022	359.531	346.026	320.134
372.019874	375.877325	374.507076	382.021496	393.60902	385.807	371.072	343.985
410.243229	412.825019	415.186832	402.299012	393.15105	369.694	353.173	326.055
312.906077	311.438375	313.340954	317.017612	328.40574	322.798	310.506	293.681
365.136544	371.702461	376.065203	377.33836	390.66933	386.671	372.144	344.858
339.530314	340.241007	339.134023	345.594909	361.62822	361.998	345.578	324.551
332.905087	336.158946	340.952523	350.529144	369.77531	364.79	351.425	328.976
412.594195	418.759118	431.294159	424.579187	430.00378	419.086	401.79	371.901
329.172378	329.703254	334.354953	339.264897	353.86467	364.916	356.348	341.45
327.443555	322.544943	323.167251	333.427606	358.48569	361.456	362.974	355.133
320.155063	309.134852	312.340813	321.704598	334.18826	324.36	314.35	301.23
379.130118	388.570297	397.912498	396.654521	398.77092	391.487	370.256	337.432
442.448967	450.726375	458.009405	452.73427	454.27079	434.338	409.318	372.811
429.946412	442.707568	447.944675	438.239467	433.19998	422.873	392.413	358.368
432.55283	443.542353	441.7192	441.254657	440.43351	427.026	398.578	365.256
441.73895	451.957783	458.312766	449.244654	440.158007	425.25	394.91	366.866
332.380729	324.246048	323.985355	330.41327	339.15899	333.4	321.795	308.62
312.42899	308.546284	310.099588	315.577414	322.773381	319.556	311.731	296.456
333.529172	336.729267	332.582801	343.670099	354.51913	356.371	340.076	309.218
369.323564	378.079342	380.139944	378.583019	387.268915	377.173	355.465	325.698

366.734933	380.110047	386.323466	386.687015	389.453054	382.419	362.928	333.001
390.200574	400.577077	408.901453	400.692749	405.910814	395.675	369.933	343.736
438.03262	446.307081	446.586593	444.991037	442.34722	423.715	401.373	372.778
452.937271	453.363142	457.163968	437.639573	427.576611	405.557	378.285	352.932
421.375843	425.680011	417.592354	413.570213	403.569203	396.615	380.471	365.548
318.994692	315.887844	315.828404	325.382285	332.982839	328.183	316.791	308.143
322.821732	324.960228	327.343667	333.917137	345.924776	358.785	349.756	334.063
327.855853	340.717627	343.881061	350.606096	363.203844	361.728	341.148	323.689
391.095495	409.222475	419.137448	418.289215	417.05704	408.225	381.675	351.165
421.925108	434.993299	442.881646	436.289414	426.384665	414.793	391.884	356.886
473.319736	480.061407	477.051362	461.845632	445.379498	427.793	408.816	387.161
317.853871	327.924955	331.141759	326.810245	332.633454	329.553	311.505	298.416
386.849554	399.068384	408.854611	403.507895	390.843032	383.913	357.25	331.331
425.264805	437.673943	437.205661	424.22528	412.761648	409.844	384.528	353.321
462.076377	470.403424	477.141791	467.314047	446.370887	436.166	405.516	368.616
477.399679	509.035401	507.297513	496.426413	468.405701	453.936	416.825	381.881
501.604039	513.666247	464.817034	501.072587	480.474985	466.825	438.083	398.561
485.361446	505.52359	516.815807	490.339729	462.740056	439.485	411.566	377.273
494.893386	507.827999	509.241344	487.387744	461.679412	433.863	398.884	362.801
449.191514	465.611661	477.291132	460.217603	431.716136	416.941	387.298	349.335
438.203347	448.694151	453.541113	442.721534	428.952067	418.655	389.54	360.72
459.596937	418.677119	471.930275	460.650328	448.317595	433.375	409.015	376.81
486.979061	502.812196	504.752389	488.353234	459.523625	440.12339	404.596	366.24
486.023342	492.770063	497.753279	485.785933	465.210271	452.01922	421.218	385.791
491.497205	497.185082	486.091825	462.939331	445.48696	430.45105	409.353	378.713
488.593589	493.498562	487.72574	469.797842	444.398939	429.3474	399.108	369.001
514.669388	519.484415	518.440539	502.923876	485.817438	472.12573	444.563	411.355
540.306182	545.031665	541.827468	522.382591	498.956025	478.73637	450.08	412.626
511.085644	520.214015	520.919711	505.14002	476.058385	459.27633	425.763	394.028
498.247137	501.951498	499.407136	478.531932	455.651036	445.56624	413.933	373.87
440.414316	448.878004	452.499664	446.916816	426.344111	418.03676	392.235	361.316
458.98566	467.222428	465.88279	445.237807	425.834382	410.26067	383.45	358.318
428.869383	434.723634	425.554645	405.034687	377.300708	358.11687	335.183	309.135
395.006327	423.246285	438.672273	443.461523	431.540429	410.232495	400.632	377
440.325212	441.568795	455.066663	461.137487	449.811876	430.297992	414.755	384.901
359.440596	372.252299	380.606677	385.222823	380.845683	362.345712	356.885	331.331
323.439857	317.305921	320.019476	325.2255	329.965364	327.824899	334.78	323.001
333.288196	342.51713	355.890659	366.556529	367.811405	357.086624	357.881	335.283
373.589958	397.060128	415.691501	417.829843	405.802717	392.944761	385.62	358.065
420.003601	414.763759	415.301394	415.455643	402.342329	389.329412	373.268	346.155
317.245568	310.077443	307.368061	312.658985	316.1253	329.57499	332.848	316.183
323.89541	323.011059	326.097209	332.232066	335.099329	338.828011	349.715	333.183
337.977116	349.148261	369.42272	385.008942	390.900621	384.111989	384.785	353.431

315.257732	520.102604	452.629413	465.565319	457.502588	440.232182	430.95	397.366
445.912963	477.606365	499.386151	510.777596	498.221621	468.310205	445.181	416.283
468.800549	496.771291	519.214395	521.845055	500.710085	461.683671	438.185	404.366
517.447348	537.023719	541.79922	549.242635	525.367706	495.42531	467.856	431.114
522.662656	543.477637	558.473859	564.571791	547.721561	514.334525	493.345	397.518
557.132377	574.062293	582.726533	591.167722	575.02445	536.748815	515.153	467.6
558.947827	570.998163	583.704543	526.242621	556.67783	523.116691	501.553	462.161
468.054568	472.208129	473.116448	476.371141	466.315147	441.064409	427.421	396.913
445.890687	467.544999	485.979029	491.053262	476.734597	449.010166	380.255	396.21
473.442908	495.130334	509.523643	479.475173	428.618249	428.422604	434.44	415.294
510.572566	529.328871	528.305585	523.256397	505.218194	467.202037	451	419
526.168319	541.999441	547.945274	550.363856	530.674863	499.235852	479	438
541.472606	545.960289	560.950448	566.463993	551.664305	516.302926	495	451
549.617439	562.730884	580.824096	588.81377	574.693217	537.209943	465	474
556.628793	566.254787	573.408161	565.541545	542.982543	513.229122	494	458
537.364239	557.681557	571.450308	574.141086	554.375617	526.305214	503	465
536.668138	554.109919	567.196741	568.767391	551.057666	516.262748	490	448
515.323767	534.610308	545.678927	540.277997	520.97563	485.094669	467	432
370.880948	381.939889	379.969021	364.868554	349.437859	344.043281	344	327
427.66977	428.25192	421.042628	420.688918	408.244004	391.19557	386	353
416.535111	428.068735	422.923762	423.726866	414.203803	399.383142	396	372
376.060017	374.491315	377.447245	380.866824	380.210435	375.047429	376	362
512.763157	517.726624	527.845345	537.574493	526.057438	491.031036	476.63	436.575
536.888228	551.984018	563.201657	555.333873	521.184656	481.773724	464.578	432.046
558.466091	585.48468	594.306889	563.507268	528.992145	491.568256	459.00012	424.583
516.472005	467.417292	530.905306	539.043824	514.527443	485.826469	467.449	431.9
404.911637	421.710854	446.8759	461.388604	455.768252	425.413493	402.655	369.846
386.67979	405.744293	432.36166	450.472181	449.162844	424.371234	410.128	374.696
444.378707	470.029767	484.413344	487.582145	466.074867	438.426392	425.698	394.82
461.30998	484.725227	506.033379	508.61902	492.97891	462.290132	445.175	415.301
493.019181	460.355871	525.279824	529.515105	505.711141	469.23091	451.978	416.005
488.95392	502.540231	512.969901	504.097837	484.649866	459.46909	439.131	406.251
488.790403	509.811319	522.025838	527.347725	515.768695	481.13012	465.253	432.451
448.286826	429.976685	407.931397	406.928602	406.248364	390.106626	392.355	368.013
504.432183	507.084106	464.187107	453.731995	438.557122	410.589934	398.59	373.62
473.793501	537.545961	551.361268	559.898417	542.727177	500.878738	471.288	423.698
559.398248	568.063498	550.370434	509.711574	487.651506	471.182407	463.719	439.606
496.143014	530.142309	531.124427	503.460816	486.414259	462.390431	446.461	421.125
447.247333	453.63364	455.775788	453.214963	438.640987	404.539539	386.732	367.287
413.940219	421.967771	432.012892	435.667178	422.759311	402.461336	392.554	368.111
459.594656	477.998756	488.211672	488.89915	475.089518	440.570244	421.807	392.885
498.630658	511.104429	521.223296	520.353847	504.690104	471.286724	450.633	415.686
454.874554	471.673765	476.342562	481.219513	468.621777	442.066304	418.686	386.833
480.901797	510.081942	532.264875	541.519213	520.856581	494.32699	465.668	424.883

523.108426	539.596808	540.806313	533.294898	504.460125	467.157395	443.585	412.716
522.80007	523.893417	521.046328	512.954527	486.733755	452.254871	434.485	404.7
484.439639	493.425426	511.098984	509.398597	495.444365	464.20072	447.468	414.356
519.256468	543.338413	563.356057	569.139776	559.922807	526.22601	498.651	459.948
564.464154	584.970755	589.641593	580.227054	562.108311	533.290976	510.68	471.851
603.207747	622.040306	628.406138	626.227575	614.653383	584.697868	558.435	516.11
615.050044	630.614252	641.745352	640.953857	619.78314	582.502907	553.907	519.562
594.556321	602.165025	609.387691	606.208996	586.128812	543.31967	519.975	486.359
556.537466	565.599935	549.337547	527.350147	490.044348	451.563576	435.56	412.486
525.232784	547.91811	556.048409	561.487995	536.524967	500.911156	475.721	445.701
579.656597	599.732697	612.411692	615.480557	595.591233	559.282733	529.683	486.916
604.53502	620.109869	625.323862	606.07327	566.515288	528.876308	507.453	479.665
591.40374	623.648861	634.881036	625.479347	604.474174	568.187317	538.69	498.866
595.99525	612.39925	621.05038	609.09857	562.16766	498.5389	471.644	444.748
602.74593	621.64751	632.21205	616.15461	576.83342	531.72586	494.02	464.686
597.40397	616.692009	614.046076	589.385973	561.044919	517.931734	484.752	444.768
581.99879	586.3381	562.29348	544.83509	523.66337	508.83861	496.3	469.648
617.0136	596.57165	583.87053	583.81695	545.742	502.90946	477.822	442.685
579.9952	602.27703	594.7731	571.5828	536.18074	492.05956	460.718	428.733
567.8448	510.75288	465.59667	443.57254	418.67633	408.49949	404.268	384.533
500.22782	494.46511	489.03648	472.46964	461.59359	428.83762	405.388	378.548
489.935271	464.52462	460.61674	453.75577	438.19483	414.89816	401.326	379.761
457.680635	478.503621	494.662021	503.781963	494.301297	472.020195	436.890264	408.57
489.084564	507.11137	515.34061	510.77263	491.47626	455.42674	420.876	389.62
477.62063	502.42979	519.13746	526.27132	513.40031	480.33044	462.498	427.783
540.446522	544.41892	578.29319	581.07954	567.74373	540.11794	512.558	480.731
545.67751	542.32042	524.97843	494.85719	461.68099	434.75094	417.485	399.598
563.92328	577.21721	556.81516	515.86199	484.83738	452.7508	435.39626	417.301
557.0818	562.65347	538.81819	481.44507	432.2273	409.7723	392.88085	375.785
512.91652	534.49182	543.95011	535.35081	480.26688	439.3843	416.18461	393.871
523.97392	544.70089	554.76698	558.70126	514.90122	450.37272	425.30494	405.2
533.46471	548.91754	556.29541	551.74664	534.28769	507.15142	479.39173	449.691
557.20774	573.45965	594.08682	594.94766	583.9043	554.52832	523.4297	486.221
565.02715	579.60614	590.92809	587.84843	517.64946	530.14749	506.21317	480.921
571.32614	581.33872	587.88433	590.29478	578.6608	548.62541	518.32912	489.381
595.88143	613.89238	623.02849	623.26008	597.72395	553.80964	525.45659	489.993
584.78771	601.57794	616.17645	616.46329	601.66662	541.16496	497.2308	447.726
589.36677	603.4244	611.33231	610.905946	595.11562	568.53509	532.14887	499.935
623.51106	636.51866	647.8007	644.13684	629.22522	602.75144	560.13594	524.295
654.41878	668.44924	673.87592	666.8658	653.35886	619.51639	585.41342	551.268
661.54434	670.35018	674.05572	668.3328	649.74372	621.25767	587.73989	555.505
651.43869	664.547633	667.10944	666.78591	647.28774	609.69342	580.01528	545.083
605.2401	576.0099	521.15017	473.51612	462.95979	451.05974	440.12061	426.428
538.50868	568.2618	556.62836	528.51149	506.8377	485.32616	470.55334	429.393

557.59613	573.62156	584.06533	585.18107	568.27084	535.71438	514.55441	489.42
645.0085	655.37068	666.454576	666.398892	647.65031	616.351951	541.75682	474.911
605.38337	614.43393	597.6591	587.27583	581.76589	553.7406	522.07054	499.4734
535.36676	465.02538	471.45081	455.65923	433.282	413.78312	406.81532	400.505
482.65076	484.01809	514.89867	494.36383	462.8732	448.75808	433.35745	420.316
560.42124	577.36255	599.17608	606.98908	589.46848	551.15601	522.51267	492.696
514.69288	483.40306	494.55918	526.58312	537.70997	518.45724	499.11555	464.678
584.29302	603.00206	617.62158	614.43702	586.94208	555.84088	528.06179	499.575
642.18942	657.58985	669.10995	670.20238	662.07551	652.07456	622.50505	584.633
656.34765	674.1929	677.42708	679.53545	671.69362	640.18497	603.8476	570.946
564.97073	572.36741	621.55995	641.12564	644.05918	618.2305	586.75936	565.845
685.3444	691.8974	690.38571	685.52917	667.17815	630.20666	600.76174	567.142
633.15446	648.28902	658.94719	652.47715	634.12606	599.07472	571.47312	534.42
622.84146	635.99128	648.37959	639.8802	629.14699	600.68658	564.71583	535.48553
626.71245	647.89189	659.63547	663.75936	649.8013	619.22543	583.24132	557.52567
681.19439	680.62881	642.03711	636.47898	634.13741	601.47559	587.36932	561.72875
647.07762	661.86645	676.04208	678.22779	662.4275	620.677682	590.95266	552.73872
695.72896	694.5869	630.64883	570.0613	541.98573	512.05464	491.19354	474.96853
661.74569	598.59394	574.3967	600.79938	621.79938	610.06217	575.93872	549.24213
615.12572	610.7061	491.74856	504.70746	486.10479	478.86785	458.80752	446.20369
474.76313	516.22546	474.67807	448.09968	456.1109	459.66411	453.97015	441.90213
624.24923	635.06013	642.09102	640.98451	620.34797	595.41119	566.25979	536.79059
646.055511	653.644503	644.720995	568.032901	519.708856	486.46264	466.14106	450.85426
501.519708	528.36391	575.401614	593.857471	586.594196	570.290358	548.159219	519.42301
626.438884	617.757715	588.089057	573.489959	583.772528	577.52142	559.12985	529.79169
629.253224	630.778514	653.4614	663.842236	656.685536	620.28669	579.737716	554.21667
675.797002	677.145373	656.803167	639.802543	619.568526	587.902585	559.579035	533.82931
627.10715	642.263234	651.568004	644.789087	630.560417	598.688776	568.522954	540.07382
476.606416	483.535908	468.058587	464.034587	442.975074	426.091867	419.50867	410.55015
497.330824	491.081207	500.35136	499.194742	497.5931	482.470828	471.094442	458.90425
570.0457	613.51648	644.82272	652.409317	628.029668	548.264278	511.020071	484.6369
654.086695	666.444557	663.295333	660.632249	571.733819	536.081837	509.83575	481.47345
660.97309	678.348701	683.534478	660.64054	619.275988	579.829851	557.059308	521.88769
576.224149	565.339678	595.256183	627.206588	631.97337	605.105298	576.783907	544.22512
654.715518	662.013636	665.63593	665.63352	642.250419	599.033745	567.335062	534.94225
535.228362	535.461184	532.415802	507.593839	481.228546	465.523519	461.681705	446.55693
551.972494	582.874254	554.333199	530.039629	516.278918	504.317344	493.576575	467.63646
648.456011	603.062069	621.823232	641.751752	634.916785	604.155706	573.344126	538.777
659.956388	671.12564	678.7484	667.897698	624.08007	567.915789	535.441338	508.44853
589.875717	603.371165	589.968221	584.443968	565.850178	552.329857	530.791092	506.50582
641.731046	641.223616	637.483545	620.578126	563.270396	526.617355	503.100523	484.7057
625.324856	539.963109	534.983684	545.927263	539.045477	531.663587	519.253737	497.07225
643.021184	666.693033	651.929431	630.767944	634.912886	603.935453	536.960948	497.45435
610.923135	542.892633	511.556011	484.605722	473.686232	461.319947	451.465395	435.56608

523.959479	534.497635	571.068415	606.923398	594.574016	570.880319	549.085375	522.44443
659.812094	610.148772	544.111418	527.006008	525.210362	506.076061	487.11413	466.54351
659.944586	670.302139	664.156058	656.64122	640.889369	610.753821	580.315515	548.62871
672.265707	677.563514	668.227401	661.009341	637.796695	607.538956	573.38663	534.96235
623.255719	604.25426	618.426421	631.896954	628.643283	604.013229	572.835619	541.88044
594.11545	615.860669	645.516964	655.869802	645.909616	624.52692	596.181905	563.15336
720.508623	738.252869	731.708822	719.250982	714.808567	680.581374	653.945858	617.31341
736.214281	724.374763	743.907555	731.981132	718.023254	692.065543	663.987588	621.71004
734.018784	748.292738	752.284391	746.057107	728.211025	696.780637	662.779285	623.3584
720.414846	728.908161	727.431471	714.166511	697.404781	678.214711	649.48527	612.02681
715.008247	726.971443	723.209835	707.086869	687.77673	669.745461	641.766164	546.50638
697.392849	715.500843	716.743448	718.320437	707.040142	679.31496	649.138955	613.29863
689.191067	702.226479	712.889702	717.669095	703.714994	680.683159	648.001391	607.00055
630.659327	626.508228	648.539842	654.760708	639.702099	613.535928	591.66287	560.42338
711.616862	710.057199	715.86719	707.204043	669.066711	634.760167	602.731128	564.73532
672.274085	658.377523	623.924483	597.031148	581.558691	559.271046	544.63884	513.72042
493.522863	473.902176	455.584089	453.452581	448.892327	449.338708	448.91442	432.57616
527.602983	488.913702	470.865256	456.491476	439.946108	430.602181	430.596262	418.30817
627.493626	640.871336	652.824909	650.206189	626.372569	593.40427	566.954015	527.26582
568.450432	572.994589	521.403488	487.222226	474.382587	463.359051	460.93698	438.97183
653.063251	670.295876	677.166097	671.359219	656.291093	623.961452	597.53623	554.32582
664.014711	677.175826	684.530311	683.911337	664.545218	625.492577	599.42743	556.32381
676.432872	689.231641	659.060982	616.638625	576.173861	544.25835	530.71928	501.59018
654.917091	657.468221	667.796789	650.356757	627.300569	592.554228	571.61191	523.61949
650.750615	670.122365	671.297528	667.933026	645.899917	607.604163	577.29609	536.14295
639.257778	654.215128	661.158741	644.961259	606.61105	576.17438	557.9938	522.88948
644.072664	650.192197	598.258382	569.784015	528.563266	504.281217	498.19151	473.51635
658.288024	676.130238	682.76936	655.895498	616.181234	587.951601	573.04373	535.82616
608.616399	583.473821	537.66291	516.459598	486.439066	468.529075	464.65819	444.34309
465.666437	450.345417	449.04159	448.033222	447.303475	442.279094	450.75759	437.82457
566.796629	562.965702	558.238202	515.026904	497.346713	485.269407	478.21582	454.89355
648.817694	660.903554	599.437962	532.359753	489.711261	458.028541	446.29018	426.23619
580.139446	581.190808	549.794974	535.002541	519.846775	491.479307	477.23144	443.7633
551.526592	565.5286	567.505563	562.486077	542.82144	496.186662	476.12598	442.56333
552.696987	567.618346	585.806618	591.789115	563.854564	537.219288	522.43946	484.14538
613.955986	622.355533	636.530824	640.169735	624.255205	592.768416	559.74871	515.54037
627.587103	647.237309	655.279929	654.689599	627.434484	597.174112	565.00015	521.68942
634.980667	653.088353	658.695982	654.87723	624.39013	584.054582	559.20889	521.65263
533.958911	540.644647	556.988845	536.482071	515.043543	487.905118	462.91626	428.67336
583.807208	598.245329	574.548607	554.332496	528.835714	510.124286	490.91725	458.34652
615.308741	627.695624	638.195728	638.379296	619.193553	589.843788	570.91148	529.49648
666.87839	687.795504	696.376525	680.131359	663.795967	632.40665	599.9407	549.74158
657.995135	671.836573	678.596652	676.529756	643.566428	625.428763	600.81061	549.07045
662.96945	677.38483	688.356837	684.260219	660.615074	628.743749	592.99576	545.88837

647.579275	615.698625	603.413939	596.825773	587.375279	560.100703	542.78544	499.7244
649.112883	660.140979	651.366084	602.458571	572.542215	547.579055	522.12163	485.90641
614.431662	606.897412	610.497305	587.636656	547.079544	525.920887	506.12575	474.33336
636.525488	639.127619	625.948389	627.577557	614.301443	582.612973	556.92595	511.75833
633.447481	639.938914	647.032591	641.17079	614.685881	587.75318	560.35629	515.74828
552.727428	571.609502	564.992343	552.123836	536.132888	520.277913	507.01855	468.25347
637.552121	640.664158	627.362275	590.081537	541.563325	501.16841	468.64066	433.19147
587.698907	608.979136	613.920467	603.810411	554.097691	519.271645	498.83638	456.02031
565.798099	581.254364	579.071411	561.0225	536.342129	500.721568	477.7786	440.32817
506.122554	523.495527	525.5006	527.039203	498.268804	456.898237	430.63364	397.35629
520.329784	543.403259	557.310581	566.875207	547.309378	519.024053	504.06465	467.52741
609.37063	627.76928	636.42816	613.00952	555.77728	533.07242	503.64054	464.64826
572.46773	596.82422	602.72138	589.27285	559.5235	537.37785	507.69634	467.2763
558.62563	531.29906	543.56452	557.23971	548.43715	528.07559	502.72372	466.80139
571.22494	591.76471	584.86379	573.24323	538.52167	524.03549	500.29826	472.36631
563.13903	578.60705	583.24481	574.63025	545.39307	524.94821	496.67347	463.15935
574.25083	588.04225	593.58113	577.0957	550.33495	524.65757	484.76829	445.75045
537.418	510.062	492.921	480.712	468.389	462.377	448.625	421.158
538.853	557.167	563.119	550.562	519.184	495.696	469.511	428.464
536.631	543.308	553.62	544.61	515.855	502.499	481.524	438.597
544.19	557.377	554.716	550.109	525.729	507.044	485.285	451.981
590.714	609.977	601.996	595.076	564.058	541.956	516.211	476.442
582.137	597.942	607.184	597.788	557.706	530.44	502.164	470.208
550.462	536.924	514.137	483.934	469.531	454.353	433.89	408.609
372.356	374.154	374.102	371.941	369.321	375.468	370.313	346.284
383.026	403.692	425.827	427.92	412.779	410.52	393.76	359.847
465.814	490.977	501.51	499.555	477.556	474.437	454.234	422.032
526.509	544.712	535.842	520.291	491.176	485.956	471.813	447.582
486.422	482.099	491.39	496.638	496.515	498.637	484.321	457.823
584.729	589.879	594.916	581.383	550.723	528.642	495.923	464.499
471.607	489.363	495.008	487.294	459.423	439.504	414.497	381.334
435.897	446.675	438.639	434.064	408.06	396.765	374.355	348.017
360.479	360.114	366.581	363.106	357.663	360.527	348.875	324.685
329.012	340.211	350.681	361.523	355.04	363.037	349.117	326.065
353.967	373.259	392.68	403.166	394.213	393.291	377.053	346.984
420.647	433.448	440.597	430.389	420.219	417.224	395.937	364.799
435.767	448.289	455.492	450.029	425.483	405.081	388.69	360.697
471.476	483.459	487.776	478.339	450.738	430.767	403.286	373.684
418.997	448.306	459.965	461.988	433.37	424.028	399.502	364.679
477.622	503.295	516.035	512.379	496.063	488.104	457.507	413.83
466.361	478.186	479.709	474.174	455.402	445.55	428.675	394.764
435.306	444.112	460.543	467.814	451.678	451.177	431.608	396.762
481.17	495.533	501.201	490.438	470.267	465.647	444.141	409.655
485.353	497.453	503.775	498.028	467.549	450.355	426.477	391.465

473.737	486.395	488.567	478.138	447.738	428.984	399.669	374.594
475.575	496.236	499.067	496.944	466.906	456.345	433.462	398.464
487.881	510.338	507.518	498.581	482.202	468.019	442.316	408.454
494.571	517.844	526.517	518.142	472.836	441.789	426.036	405.324
355.70103	367.33421	372.02755	370.37167	364.68177	364.21047	344.63342	320.79956
348.95165	358.00534	370.54825	372.02796	368.83526	373.48387	360.04928	333.3771
382.88656	393.54991	394.64692	393.31956	379.23048	377.34255	359.75276	335.40729
382.01942	383.86646	374.31305	369.47204	363.13955	340.48511	320.92562	294.83722
386.90724	392.55829	397.11541	385.98239	380.23233	356.20879	333.08622	306.05254
400.25903	413.80561	411.36971	405.22729	400.09374	381.91107	359.08317	326.34949
436.81438	453.93425	450.99782	437.6791	433.0838	409.10967	375.07034	346.47578
464.68477	470.64344	468.56742	454.50399	443.0029	415.17147	386.57753	362.10663
484.10253	487.0589	475.35877	457.07519	445.60013	426.62269	400.04593	377.67198
532.35796	526.31618	512.08002	493.77363	484.9572	453.53451	427.23708	401.03642
534.34785	523.55547	506.4543	494.74107	478.57342	460.01193	427.84062	400.94645
494.06682	491.12198	471.68172	453.48283	448.08883	422.33665	397.02148	366.60834
413.07964	401.14079	400.62914	412.04239	419.97293	405.64788	385.34073	360.81046
387.6798	386.66331	384.57092	395.44785	400.38634	393.09327	380.81062	357.97735
359.12962	355.10889	364.09423	376.87874	385.68598	379.31161	367.2071	346.05308
361.70481	356.41542	362.9227	373.7021	387.17771	377.86166	369.04633	343.62816
382.20207	373.03146	375.37269	375.91248	381.50873	370.1958	358.59376	338.14346
405.31125	409.16419	399.57589	393.49368	387.60066	367.73598	348.1269	327.54377
428.91887	428.11229	419.0458	406.36415	396.66501	377.13072	353.29901	330.67732
452.53337	462.28911	455.33513	441.79297	437.7774	417.93879	395.96707	370.62367
466.58534	472.17863	469.17064	453.4593	448.58479	421.56037	397.69713	379.89591
400.77489	392.73071	386.34768	387.48146	386.82144	370.12951	359.56038	341.55528
345.51342	333.74488	316.43051	301.4323	299.53523	285.34433	279.79132	269.57172
299.27614	295.50115	304.66916	315.72117	322.59141	313.55852	304.05848	291.11621
332.59993	328.63702	329.09808	333.46052	340.38626	328.20957	319.05215	308.08368
368.17214	361.47913	361.26917	370.3559	382.89138	378.77337	368.47336	354.04133
360.9371	362.90666	359.01972	358.27193	368.24281	359.45751	342.87948	324.90105
348.66882	351.20108	365.50973	395.22932	411.43841	412.58837	405.02856	390.0513
324.87487	324.29066	331.06723	348.40073	378.50182	377.43208	371.89512	360.98424
333.46038	331.72918	330.8949	351.68747	362.14501	355.22367	339.66237	322.48703
409.40386	404.67351	403.13334	405.70831	400.39438	381.43336	371.76822	354.30678
463.85346	461.26232	452.0573	443.50557	437.7137	407.91815	391.9719	366.53235
485.74758	490.48242	469.08019	457.23052	445.79217	421.90178	409.10931	379.0062
470.50302	461.05907	444.37752	437.43068	431.21043	405.04278	381.49283	352.28935
350.24833	348.78084	344.15572	358.77205	374.02043	363.87039	354.43748	334.70184
330.30706	332.19117	337.91022	361.23575	383.03978	381.92667	379.83686	359.15173
330.7756	330.62548	336.35056	350.07644	358.46885	355.55313	345.86554	339.50681
341.77008	340.72026	346.99051	351.05075	357.10292	344.51698	336.23771	320.66268
400.97837	408.6395	401.59345	399.59601	393.60301	375.50667	354.84631	284.88053
407.97579	394.19215	397.15864	394.25776	391.44762	374.38896	361.02204	337.69242

335.74937	331.9315	339.55394	361.68304	389.53923	388.62466	385.258	369.07502
332.65262	333.2674	337.74788	358.70424	373.95306	369.18776	359.75997	335.01767
341.82572	342.95231	348.57748	358.80439	374.73521	370.38112	355.35552	337.30214
337.73266	335.56707	345.41248	357.336	371.27019	365.30657	351.92727	335.67301
333.0886	336.18933	333.59891	347.67746	353.80283	342.4944	329.61698	319.27209
335.99316	333.80926	335.87871	348.58943	355.68421	342.42675	329.41681	314.35165
321.88318	322.06754	321.56527	332.92592	351.33502	342.83176	334.99543	317.05625
336.79465	335.63077	337.79703	353.20736	373.58784	373.90561	366.00392	352.13234
334.27183	330.88798	339.79153	364.48611	393.61967	399.61144	395.37735	388.12423
338.24875	329.62712	342.82487	363.5035	382.68803	372.09514	361.18924	350.3918
329.00766	326.71927	333.45659	339.00745	358.9629	354.58143	346.54227	334.31663
319.73662	316.77687	322.94632	334.54476	345.32872	337.4451	332.98125	319.43914
335.17507	336.8415	332.28561	335.87282	341.80668	331.96995	324.03306	311.21645
329.66226	328.75931	329.74843	331.62903	329.04466	320.54361	314.30336	298.27049
320.30217	317.22217	313.39796	319.7434	326.0938	320.98853	318.54009	300.70117
359.28676	366.84392	365.14549	367.03871	379.49006	361.41306	347.43261	327.33748
335.67164	337.72144	338.79558	350.42231	361.02707	350.38452	338.2045	319.1216
333.1115	328.58186	331.68617	339.92858	363.69752	357.11921	344.51155	328.76345
326.00162	324.5158	324.83606	350.08609	370.10541	371.9684	365.07932	359.3441
319.19617	314.85434	318.3241	330.37118	351.5656	359.60929	366.52903	364.04783
317.15583	312.3713	317.20391	327.29029	342.45059	335.32645	322.31947	310.59623

23	24
288.279	273.15
315.981	280.495
327.651	297.993
347.783	314.848
295.006	265.098
308.702	292.215
292.403	284.823
284.103	258.624
291.978	266.523
309.069	286.281
303.691	280.289
293.768	270.388
346.535	337.943
443.583	432.976
417.799	412.98
368.05	354.918
303.648	280.288
294.155	267.857
316.194	285.957
296.985	267.295
282.288	261.548
317.849	284.95
298.83	275.685
298.608	273.319
333.935	292.786
325.368	304.941
341.331	329.693
282.082	262.587
307.447	275.207
336.406	300.596
320.433	286.858
329.004	295.064
327.853	293.275
292.273	273.906
279.385	258.548
286.673	258.078
294.618	264.305

304.868	272.736
307.899	276.62
341.915	307.77
325.975	301.705
332.358	301.906
288.235	269.118
310.79	288.176
291.343	264.25
312.765	284.792
321.195	290.215
351.203	316.773
278.14	259.805
300.908	270.703
317.498	285.728
325.716	286.65
342.655	304.83
356.698	318.043
347.79	317.505
332.7	296.111
314.873	276.539
325.972	297.312
337.097	301.682
327.545	286.976
349.406	310.745
354.6	325.191
340.671	314.043
368.91	327.096
367.946	329.145
354.855	316.046
339.373	300.45
325.498	293.335
333.218	303.3
285.198	258.151
341.202	313
349.69	310.45
301.203	273.363
300.281	274.235
307.268	277.3
328.689	303.026
319.248	290.185
291.12	264.346
309.103	284.313
316.418	283.35

351.468	313.431
368.403	322.071
368.105	327.97
391.855	354.62
405.93	362.833
417.83	365.571
412.923	368.44
356.87	316.08
355.986	313.082
383.307	357.93
382	351
389	344
397	348
424	375
411	366
416	372
406	364
397	360
299	270
319	279
342	304
332	305
389.093	348.474
392.363	353.251
386.928	351.981
386.735	351.865
326.4	287.146
335.061	297.718
353.688	313.076
373.008	325.296
373.411	338.381
372.07	332.166
385.585	341.238
335.838	304.915
340.848	298.016
377.765	331.176
375.676	330.055
384.021	349.567
348.47	323.722
332.988	294.246
349.428	302.679
370.063	326.82
341.066	300.77
371.198	329.983

376.8	340.898
376.666	344.733
367.288	328.641
408.953	357.065
418.985	369.13
461.12	410.935
468.877	421.482
444.893	405.555
381.616	352.78
403.9	359.933
437.033	387.131
437.998	394.918
445.1	395.033
408.309	367.088
422.801	389.65
415.681	383.635
430.751	387.816
402.865	361.883
386.801	347.946
356.765	326.701
349.681	318.716
348.72	318.798
369.848	333.8
357.83	320.818
380.983	339.883
437.818	388.031
374.52	342.83
388.286	353.383
351.113	323.068
361.345	330.218
372.622	332.02
406.007	366.192
438.596	389.616
432.415	390.103
389.976	402.165
446.723	406.961
413.269	379.07
457.018	402.61
469.813	420.323
449.515	447.898
507.022	461.437
486.778	436.239
397.29	367.693
382.188	349.048

451.633	411.961
435.646	392.028
455.53821	360.203
371.785	341.111
393.451	361.041
440.771	401.156
423.291	388.085
460.553	419.583
528.933	475.883
520.938	467.59
515.645	471.217
515.502	468.375
491.32	444.088
492.71641	450.50341
528.58317	485.03016
510.95327	447.16617
518.07652	478.46139
446.97057	411.88649
506.41826	458.20534
422.40029	393.18818
410.23355	381.08549
490.87028	449.78315
422.18137	383.84119
475.41045	432.37427
487.01656	442.44581
507.48542	464.51523
496.91851	456.77022
497.41531	457.56333
388.57023	367.74619
425.66104	393.92824
442.30933	406.00321
448.74625	415.45535
484.4374	445.5722
499.05222	463.59026
502.63847	454.70337
420.24273	378.40123
427.76821	393.17517
491.98357	445.8684
473.38642	430.91036
459.29392	423.39544
453.22842	417.3004
462.57851	429.84542
453.92677	410.13038
403.53818	370.45116

482.56825	440.50119
432.07832	402.59019
501.68629	453.70018
491.97739	451.90024
497.51729	452.74025
520.51548	472.01029
563.20624	516.47642
565.63835	514.94332
566.74836	518.10847
558.20119	508.03518
557.78125	512.9632
567.66342	523.0433
549.00026	497.00019
507.58616	467.17018
511.3934	467.92124
468.85137	430.43827
400.14517	369.21413
394.59812	368.8301
489.43049	449.95843
411.95145	383.57321
506.49835	462.13839
500.53346	451.31835
459.0132	426.93115
474.13749	420.25037
492.03058	457.5655
490.53829	449.58427
443.99324	407.70613
496.45615	452.23812
415.38512	384.41611
404.55921	375.97531
417.82116	380.62014
400.72622	375.91327
409.27544	372.51341
406.60044	374.9265
435.31622	391.13532
468.58344	422.3704
468.63239	424.78937
470.84539	431.29238
391.61838	359.73037
423.87443	390.65332
478.65039	430.59937
487.14634	430.54112
483.98843	437.47034
493.37639	442.25135

452.38947	410.30022
451.86651	415.01447
442.13634	411.6084
462.12836	420.19636
466.02926	415.73821
427.08642	387.55848
400.44547	357.5185
416.95028	375.00019
402.53038	364.1404
368.57825	339.18923
429.74438	391.94531
426.75527	387.15534
428.9383	391.52356
422.24536	385.70633
431.48526	396.28542
422.48066	393.08645
412.15827	393.4083
387.753	351.403
386.966	347.138
399.625	362.106
410.223	373.534
427.886	390.692
434.471	404.965
382.625	358.185
305.561	274.653
322.894	291.007
380.394	341.528
414.332	380.343
421.585	391.18
428.28	391.389
352.753	327.597
317.191	288.356
294.089	266.831
294.802	263.893
310.587	282.151
332.615	298.446
332.496	301.758
339.263	314.298
323.777	288.281
369.83	327.007
354.275	317.116
361.171	323.21
375.742	336.335
358.034	327.092

343.104	317.207
361.199	319.08
370.713	330.654
369.577	327.972
285.9839	258.85089
304.23085	275.32274
311.69781	285.75075
270.11215	247.28125
272.26594	242.98641
296.10391	265.21586
307.05972	277.98185
324.03893	291.73636
347.21059	317.79057
367.16626	338.8703
373.85133	344.09623
335.32127	306.77544
279.96354	299.05345
334.19516	302.98514
319.0511	295.49208
313.79812	291.96102
321.28029	301.82517
305.86155	286.32562
304.24192	276.16885
344.83046	311.36077
350.05782	321.90264
318.67519	291.58016
255.53558	237.69864
275.85516	257.90012
286.26656	270.85545
330.20035	299.71026
292.44479	271.34892
362.95508	339.29326
336.31605	316.03676
297.91196	270.55667
332.0817	310.37143
345.55731	318.85934
346.34522	310.69527
318.84627	281.04752
306.02391	277.90345
346.31235	324.66448
314.42474	290.49977
301.42234	281.5323
314.67439	287.86358
305.73577	275.99534

348.05299	326.95291
312.18151	285.34955
310.15573	283.15055
309.73649	285.60138
298.25411	278.13626
295.90812	277.89911
297.97733	271.5653
334.64267	309.43557
372.17008	349.38292
328.87019	303.63036
319.06542	291.76712
302.69022	284.41615
294.2844	277.38228
285.41337	268.28612
287.42005	267.04103
302.02463	277.11565
295.39784	273.95707
310.89824	287.0003
344.08837	332.58664
356.59075	348.01654
308.53192	300.24104

TYSP Year 2024
Staff's Data Request # 1
Question No. 5

Year	Month	Actual Peak Demand (MW)	Demand Response Activated (MW)	Estimated Peak Demand (MW)	Day	Hour
2023	1	569	n/a	n/a	1/15/2023	9:00
	2	516	n/a	n/a	2/24/2023	17:00
	3	590	n/a	n/a	3/27/2023	18:00
	4	593	n/a	n/a	4/15/2023	17:00
	5	640	n/a	n/a	5/11/2023	18:00
	6	690	n/a	n/a	6/29/2023	16:00
	7	693	n/a	n/a	7/5/2023	15:00
	8	751	n/a	n/a	8/9/2023	17:00
	9	695	n/a	n/a	9/11/2023	17:00
	10	610	n/a	n/a	10/5/2023	16:00
	11	534	n/a	n/a	11/11/2023	15:00
	12	490	n/a	n/a	12/3/2023	16:00
2022	1	663	n/a	n/a	1/24/2022	8:00
	2	531	n/a	n/a	2/1/2022	8:00
	3	525	n/a	n/a	3/18/2022	18:00
	4	588	n/a	n/a	4/6/2022	17:00
	5	649	n/a	n/a	5/18/2022	17:00
	6	704	n/a	n/a	6/15/2022	17:00
	7	690	n/a	n/a	7/13/2022	17:00
	8	694	n/a	n/a	8/23/2022	15:00
	9	676	n/a	n/a	9/6/2022	17:00
	10	576	n/a	n/a	10/10/2022	18:00
	11	597	n/a	n/a	11/6/2022	13:00
	12	620	n/a	n/a	12/25/2022	9:00
2021	1	509	n/a	n/a	1/19/2021	8:00
	2	605	n/a	n/a	2/4/2021	8:00
	3	576	n/a	n/a	3/31/2021	17:00
	4	591	n/a	n/a	4/29/2021	18:00
	5	645	n/a	n/a	5/5/2021	18:00
	6	647	n/a	n/a	6/10/2021	17:00
	7	677	n/a	n/a	7/26/2021	16:00
	8	692	n/a	n/a	8/18/2021	17:00
	9	636	n/a	n/a	9/13/2021	15:00
	10	638	n/a	n/a	10/7/2021	17:00
	11	472	n/a	n/a	11/3/2021	17:00
	12	457	n/a	n/a	12/10/2021	15:00

Notes

(Include Notes Here)

System-Average Temperature
(Degrees F)
39.50
86.50
88.30
90.40
90.90
94.70
93.80
98.00
94.53
89.40
86.30
83.37
33.17
40.63
88.41
88.50
93.30
96.70
95.70
94.40
94.80
87.70
86.80
44.30
39.40
35.10
89.22
89.26
91.71
93.27
94.61
95.17
90.33
93.59
82.54
83.73

TYSP Year	2024
Staff's Data Request #	1
Question No.	20

Year	Number of PEVs	Number of Public PEV Charging Stations	Number of Public DCFC PEV Charging Stations.	Cumulative Impact of PEV	
				Summer Demand	Winter Demand
				(MW)	(MW)
2024	1844	25	1	1	1
2025	2379	30	1	1	1
2026	2983	40	1	2	2
2027	3650	50	1	3	3
2028	4382	55	1	3	3
2029	5183	60	2	3	3
2030	6024	65	2	5	5
2031	6873	70	2	5	5
2032	7735	75	2	6	6
2033	8595	80	2	6	6
Notes					
(Include Notes Here)					

Annual Energy
(GWh)
1.46
1.46
2.92
4.38
4.38
4.38
7.3
7.3
8.76
8.76

TYSP Year	2024
Staff's Data Request #	1
Question No.	27

[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**
		Sum	Win		Sum	Win	
2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2016	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes							
(Include Notes Here)							

Lost Capacity (MW)	
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
N/A	N/A
N/A	N/A
N/A	N/A

TYSP Year	2024
Staff's Data Request #	1
Question No.	28

[Demand Response Source or All Demand					
Year	**Summer**				
	Number of Events	**Average Event Size**		**Maximum Event Size**	
		MW	Number of Customers	MW	Number of Customers
2014	N/A	N/A	N/A	N/A	N/A
2015	N/A	N/A	N/A	N/A	N/A
2016	N/A	N/A	N/A	N/A	N/A
2017	N/A	N/A	N/A	N/A	N/A
2018	N/A	N/A	N/A	N/A	N/A
2019	N/A	N/A	N/A	N/A	N/A
2020	N/A	N/A	N/A	N/A	N/A
2021	N/A	N/A	N/A	N/A	N/A
2022	N/A	N/A	N/A	N/A	N/A
2023	N/A	N/A	N/A	N/A	N/A
Notes					
(Include Notes Here)					

Response Sources]				
Winter				
Number of Events	**Average Event Size**		**Maximum Event Size**	
	MW	Number of Customers	MW	Number of Customers
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	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	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	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

TYSP Year	2024
Staff's Data Request #	1
Question No.	29

[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
2014	N/A	N/A	N/A	N/A	N/A	N/A
2015	N/A	N/A	N/A	N/A	N/A	N/A
2016	N/A	N/A	N/A	N/A	N/A	N/A
2017	N/A	N/A	N/A	N/A	N/A	N/A
2018	N/A	N/A	N/A	N/A	N/A	N/A
2019	N/A	N/A	N/A	N/A	N/A	N/A
2020	N/A	N/A	N/A	N/A	N/A	N/A
2021	N/A	N/A	N/A	N/A	N/A	N/A
2022	N/A	N/A	N/A	N/A	N/A	N/A
2023	N/A	N/A	N/A	N/A	N/A	N/A
Notes						
(Include Notes Here)						

Capacity Activated
(MW)
N/A
N/A
N/A
N/A
N/A
N/A
N/A
N/A
N/A
N/A

Loss of Load Probability, Reserve Margin, and Expected Unserved Energy						
Base Case Load Forecast						
		Annual Isolated			Annual Assisted	
	Loss of Load	Reserve Margin (%)	Expected	Loss of Load	Reserve Margin (%)	Expected
	Probability	(Including Firm	Unserved Energy	Probability	(Including Firm	Unserved Energy
Year	(Days/Yr)	Purchases)	(MWh)	(Days/Yr)	Purchases)	(MWh)
2024	0.1	20	0	0.1	20	0
2025		25	0		25	0
2026		29	0		29	0
2027		17	0		17	0
2028		16	0		16	0
2029		16	0		16	0
2030		16	0		16	0
2031		17	0		17	0
2032		16	0		16	0
2033		15	0		15	0

Existing Generating Unit Operating Performance									
		Planned Outage Factor		Forced Outage Factor		Equivalent Availability Factor		Average Net Operating	
		(POF)		(FOF)		(EAF)		Heat Rate (ANOHR)	
Plant Name	Unit No.	Historical	Projected	Historical	Projected	Historical	Projected	Historical	Projected
Charles Larsen Memorial	GT2	0	0	100	100	0	0	0	0
Charles Larsen Memorial	GT3	0	0	100	100	0	0	0	0
Charles Larsen Memorial	8 CT	12.8	10	0.5	2	86.4	90	13.3	13
Charles Larsen Memorial	8 ST	13	10	5.5	4	69.1	90	0	0
Winston Peaking Station	1-20	0	0	0.1	3	99.5	99	12	12
C.D. McIntosh, Jr.	D1	0	0	1.5	3	98.2	99	38	20
C.D. McIntosh, Jr.	D2	0	0	8.2	5	91.8	99	57	20
C.D. McIntosh, Jr.	GT1	0.1	0	2.2	2	97.5	99	16.3	15
C.D. McIntosh, Jr.	GT2	3.3	3	0.2	0.2	92.2	99	12.7	12
C.D. McIntosh, Jr.	5 CT	6.3	5	12.8	3	80.1	90	11.5	11
C.D. McIntosh, Jr.	5 ST	6.5	5	13.1	3	79.6	90	0	0

NOTE: Historical - average of past three years

Projected - average of next ten years

TYSP Year	2024
Staff's Data Request #	1
Question No.	32

Facility Name	Unit No.	County Location	Unit Type[2]	Primary Fuel[3]	Commercial In-Service	
					Mo	Yr
Charles Larsen Memorial	GT2*	Polk	GT	NG	11	1962
Charles Larsen Memorial	GT3*	Polk	GT	NG	12	1962
Charles Larsen Memorial	8	Polk	CC	NG/DFO	4	1956
Winston Peaking Station	1-20	Polk	IC	DFO	12	2001
C.D. McIntosh, Jr.	D1	Polk	IC	DFO	1	1970
C.D. McIntosh, Jr.	D2	Polk	IC	DFO	1	1970
C.D. McIntosh, Jr.	GT1	Polk	GT	NG	5	1973
C.D. McIntosh, Jr.	GT2	Polk	ST	NG/DFO	6	2020
C.D. McIntosh, Jr.	5	Polk	CC	NG	5	2001

Notes

[2] Unit Type CC Combined Cycle CT Combined Cycle Combustion GT Combustion Gas Turbine ST Steam Turbine	[3] Primary Fuel DFO Distillate Fuel Oil BIT Bitumminous Coal NG Natural Gas	[4] 2023 Actual Capacity Fa * in long term maintenanc

Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor[4]
Sum	Win	Sum	Win	Sum	Win	(%)
10	14	10	14	10	14	0
9	13	9	13	9	13	0
110	126	115	125	114.5	124.5	23
50	50	50	50	50	50	0
2.5	2.5	2.5	2.5	2.5	2.5	0
2.5	2.5	2.5	2.5	2.5	2.5	0.4
17	19	17	19	17	19	0.3
120	125	120	125	119.5	124.5	2
359	405	352	398	352	398	53

ıctor

e and are not in operation at this time.

TYSP Year	2024
Staff's Data Request #	1
Question No.	33

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service	
					Mo	Yr
McIntosh Reciprocating Engine Plant(MREP)	ME01-06	Lakeland, Polk County	IC	Gas	12	2024

Notes

This project consists of installation of 6 units of 20 MW each RICE Engines.

Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Projected Capacity Factor
Sum	Win	Sum	Win	Sum	Win	(%)
120	120	120	120	120	120	20

TYSP Year	2024
Staff's Data Request #	1
Question No.	34

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service	
					Mo	Yr
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes						
There are no utility-owned existing renewable resources in Lakeland as of now.						

Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor
Sum	Win	Sum	Win	Sum	Win	(%)
N/A	N/A	N/A	N/A	N/A	N/A	N/A

TYSP Year	2024
Staff's Data Request #	1
Question No.	35

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service	
					Mo	Yr
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes						
(Include Notes Here)						

Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Projected Capacity Factor
Sum	Win	Sum	Win	Sum	Win	(%)
N/A	N/A	N/A	N/A	N/A	N/A	N/A

TYSP Year 2024
Staff's Data Request # 1
Question No. 37

Year		As-Available Energy ($/MWh)	On-Peak Average ($/MWh)	Off-Peak Average ($/MWh)
Actual	2014	N/A	N/A	N/A
	2015	N/A	N/A	N/A
	2016	N/A	N/A	N/A
	2017	N/A	N/A	N/A
	2018	N/A	N/A	N/A
	2019	N/A	N/A	N/A
	2020	N/A	N/A	N/A
	2021	N/A	N/A	N/A
	2022	N/A	N/A	N/A
	2023	N/A	N/A	N/A
Projected	2024	N/A	N/A	N/A
	2025	N/A	N/A	N/A
	2026	N/A	N/A	N/A
	2027	N/A	N/A	N/A
	2028	N/A	N/A	N/A
	2029	N/A	N/A	N/A
	2030	N/A	N/A	N/A
	2031	N/A	N/A	N/A
	2032	N/A	N/A	N/A
	2033	N/A	N/A	N/A
Notes				
N/A- Not Applicable				

TYSP Year	2024
Staff's Data Request #	1
Question No.	38

Generating Unit Name	Summer Capacity (MW)	Certification Dates (if Applicable)		In-Service Date (MM/YY)
		Need Approved (Commission)	PPSA Certified	
Nuclear Unit Additions				
N/A	N/A	N/A	N/A	N/A
Combustion Turbine/ RICE Unit Additions				
McIntosh Reciprocating Engine Plant(MREP), ME01-06*	120	N/A	N/A	Nov-24
Combined Cycle Unit Additions				
N/A	N/A	N/A	N/A	N/A
Steam Turbine Unit Additions				
N/A	N/A	N/A	N/A	N/A
Notes				
Note: RICE - Reciprocating Internal Combustion Engines (6 Units)				

TYSP Year 2024
Staff's Data Request # 1
Question No. 40

Plant	Unit No.	Unit Type	Fuel Type	Actual		
				2023	2024	2025
Charles Larsen Memorial	GT2	GT	NG	N/A	N/A	N/A
Charles Larsen Memorial	GT3	GT	NG	N/A	N/A	N/A
Charles Larsen Memorial	8	CC	NG	23.00	20.00	18.00
Winston Peaking Station	1-20	IC	DFO	<1	<1	<1
C.D. McIntosh, Jr.	D1	IC	DFO	<1	<1	<1
C.D. McIntosh, Jr.	D2	IC	DFO	<1	<1	<1
C.D. McIntosh, Jr.	GT1	GT	NG	<1	<1	<1
C.D. McIntosh, Jr.	5	CC	NG	53.00	65.00	60.00
C.D. McIntosh, Jr.	GT2	GT	NG	2.00	<5	<5
Reciprocating Engines	ME01-06	RICE	NG	N/A	N/A	N/A

Notes

* Net Capacity Factors.

Capacity Factor (%)*							
Projected							
2026	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
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	N/A	N/A
17.00	15.00	15.00	16.00	18.00	20.00	21.00	22.00
<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	<1	<1	<1	<1	<1	<1
70.00	72.00	65.00	56.00	55.00	72.00	70.00	65.00
<5	<5	<5	<5	<5	<5	<5	<5
~20	~20	~20	~20	~20	~20	~20	~20

TYSP Year	2024
Staff's Data Request #	1
Question No.	42

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					
(Include Notes Here)					

TYSP Year	2024
Staff's Data Request #	1
Question No.	43

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					
(Include Notes Here)					

TYSP Year	2024
Staff's Data Request #	1
Question No.	44

Transmission Line	Line Length (Miles)	Nominal Voltage (kV)	Date Need Approved	Date TLSA Certified
Hamilton-Dranefield 69 KV	5.5	69	N/A	N/A
MREP to Tenoroc	0.66	69	N/A	N/A
Notes				
These lines do not fall under Transmissin Line Siting Act.				

In-Service Date
Dec-24
Dec-24

Nominal, Firm Purchases		
	Firm Purchases	
Year	$/MWh	Escalation %
HISTORY:		
2021	56.89	
2022	69.71	
2023	40.50	
FORECAST:		
2024	34.48*	
2025	TBD	
2026	TBD	
2027		
2028		
2029		
2030		
2031		
2032		
2033		

TYSP Year	2024
Staff's Data Request #	1
Question No.	46

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes						
(Include Notes Here)						

acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
Win	Sum	Win	Sum	Win	Start	End
N/A	N/A	N/A	N/A	N/A	N/A	N/A

TYSP Year	2024
Staff's Data Request #	1
Question No.	47

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
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						
(Include Notes Here)						

‹acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
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

TYSP Year	2024
Staff's Data Request #	1
Question No.	48

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
Longroad Energy Holding LLC	RP Funding Center	n/a	Lakeland, Polk County, Fl	PV	Sunlight	0.25
Longroad Energy Holding LLC	Airport I	n/a	Lakeland, Polk County, Fl	PV	Sunlight	2.25
Toroise Clean Energy Partners, LLC	Airport II	n/a	Lakeland, Polk County, Fl	PV	Sunlight	2.75
TerraForm Power, LLC	Sutton	n/a	Lakeland, Polk County, Fl	PV	Sunlight	6
Clearway Energy Group, LLC	Airport III	n/a	Lakeland, Polk County, Fl	PV	Sunlight	3.15
Notes						
(Include Notes Here)						

acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
Win	Sum	Win	Sum	Win	Start	End
0.25	0.25	0.25	0.25	0.25	4/1/2010	3/30/2030
2.25	2.25	2.25	2.25	2.25	12/22/2011	11/1/2036
2.75	2.75	2.75	2.75	2.75	9/16/2012	8/31/2037
6	6	6	6	6	7/6/2015	7/1/2040
3.15	3.15	3.15	3.15	3.15	12/21/2016	11/30/2041

TYSP Year	2024
Staff's Data Request #	1
Question No.	49

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
Williams Solar	Edge Solar	N/A	Polk	PV	Sun	74.8
Notes						
(Include Notes Here)						

acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
Win	Sum	Win	Sum	Win	Start	End
74.8	74.8	74.8	74.8	74.8	TBD	TBD

TYSP Year	2024
Staff's Data Request #	1
Question No.	51

Buyer Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
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						
(Include Notes Here)						

acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
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

TYSP Year	2024
Staff's Data Request #	1
Question No.	52

Buyer Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
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						
(Include Notes Here)						

acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
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

TYSP Year	2024
Staff's Data Request #	1
Question No.	54

Renewable Source	Annual Renewable Generation (G					
	Actual	Projected				
	2023	2024	2025	2026	2027	2028
Utility - Firm						
Utility - Non-Firm						
Utility - Co-Firing						
Purchase - Firm						
Purchase - Non-Firm	25	24	23	139	170	187
Purchase - Co-Firing						
Customer - Owned	21	28	33	38	41	45
Total	46	52	56	177	211	232
Notes						
(Include Notes Here)						

GWh)				
ected				
2029	**2030**	**2031**	**2032**	**2033**
164	188	164	170	178
47	49	50	51	53
211	237	214	221	231

TYSP Year 2024
Staff's Data Request # 1
Question No. 63

Project Name	Pilot Program (Y/N)	In-Service/ Pilot Start Date (MM/YY)	Max Capacity Output (MW)	Max Energy Stored (MHh)	Conversion Efficiency (%)
Beirmann Tennis*	Y	2018	0.4	0.8	70

Notes

* The unit is on maintenance outage and is not operational at this moment.

TYSP Year 2024
Staff's Data Request # 1
Question No. 64

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
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	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	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
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

(Include Notes Here)

TYSP Year 2024
Staff's Data Request # 1
Question No. 71

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
2024	0	0	0	0
2025	0	0	0	0
2026	0	0	0	0
2027	0	0	0	0
2028	0	0	0	0
2029	0	0	0	0
2030	0	0	0	0
2031	0	0	0	0
2032	0	0	0	0
2033	0	0	0	0
Notes				
Not impacted by this rule.				

TYSP Year	2024
Staff's Data Request #	1
Question No.	72

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estin		
				ELGS	ACE or replacement	MATS
McIntosh GT2	CT	gas/oil	120		X	
McIntosh 3	Steam	coal/gas	342			
McIntosh 5	CC	gas	352		X	
McIntosh 8	CC	gas/oil	115		X	
Notes						
ACE: It is too early to know whether there will be any impacts to Units 5, 8, and MGT2 from the ACE rule replacement (						
MATS: Unit 3 had to have its scrubber upgraded (2015) to be able to comply with the rule. Unit 3 was retired in April 2						
CWIS: Unit 8's operation may be limited to simple cycle only, dependent on the costs of CWIS compliance strategies.						
CCR Non-Hazardous Waste: CCR Material from former Unit 3 continues to be regulated even though the Unit has been						

nated EPA Rule Impacts: Operational Effects			
CSAPR/ CAIR	CWIS	CCR	
		Non-Hazardous Waste	Special Waste
		X	
	X		
(yet to be finalized).			
021.			
retired.			

TYSP Year	2024
Staff's Data Request #	1
Question No.	73

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EP (C		
				ELGS	ACE or replacement	MATS
McIntosh GT2	CT	gas/oil	120		***	
McIntosh 3	steam	coal/gas	342			
McIntosh 5	CC	gas	352		***	
McIntosh 8	CC	gas/oil	115		***	

***McIntosh 8 - CWIS amount is dependent on the outcome of next permitting cycle and the engineering review of compliance s**

****McIntosh 3 - CCR non-hazardous waste amount is an estimate for closure of the on-site landfill and elimination of the pro closed prior to the CCR rule taking effect. This could lead to additional monitoring and closure costs. Until the rule is finali to be in the millions of dollars.**

*****ACE: McIntosh 3 was our only unit subject to ACE. It was retired in April 2021. It is too early to know whether there w replacement (yet to be finalized).**

'A Rule Impacts: Cost Effects
CPVRR $ millions)

CSAPR/ CAIR	CWIS	CCR	
		Non-Hazardous Waste	Special Waste
		15.6**	
	2.5*		

strategies.

ocess ponds. EPA has indicated additional regulation of landfills
zed, total economic effects cannot be quantified but are expected

will be any impacts to Units 5, 8, and MGT2 from the ACE rule

TYSP Year	2024
Staff's Data Request #	1
Question No.	74

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA (Mo		
				ELGS	ACE or replacement	MATS
McIntosh GT2	CT	gas/oil	120		**	
McIntosh 3	steam	coal/gas	342			
McIntosh 5	CC	gas	352		**	
McIntosh 8	CC	gas/oil	115		**	

Notes

***McIntosh 8 - CWIS amount is dependent on the outcome of next permitting cycle and the engineering review of compliance s**

****McIntosh 3 - CCR non-hazardous waste amount is an estimate for closure of the on-site landfill and elimination of the pro closed prior to the CCR rule taking effect. This could lead to additional monitoring and closure costs. Until the rule is finaliz**

*****ACE: McIntosh 3 was our only unit subject to ACE. It was retired in April 2021. It is too early to know whether there w replacement (yet to be finalized).**

Rule Impacts: Unit Availability nth/Year - Duration)			
CSAPR/ CAIR	CWIS	CCR	
		Non-Hazardous Waste	Special Waste
	*		

strategies.

ocess ponds. EPA has indicated additional regulation of landfills
ed, total economic effects cannot be quantified but are expected

will be any impacts to Units 5, 8, and MGT2 from the ACE rule

TYSP Year 2024
Staff's Data Request # 1
Question No. 76

Year		Uranium		Coal		Natur
		GWh	$/MMBTU	GWh	$/MMBTU	GWh
Actual	2014	0	N/A	278	3.59	1714
	2015	0	N/A	788	3.32	2204
	2016	0	N/A	805	3.16	1857
	2017	0	N/A	846	2.78	1589
	2018	0	N/A	969	2.76	2270
	2019	0	N/A	548	2.64	2382
	2020	0	N/A	385	2.45	2063
	2021	0	N/A	500	2.45	2258.59
	2022	0	N/A	0	N/A	2477
	2023	0	N/A	0	N/A	1976
Projected	2024	0	N/A	0	N/A	2081
	2025	0	N/A	0	N/A	2375
	2026	0	N/A	0	N/A	2440
	2027	0	N/A	0	N/A	2604
	2028	0	N/A	0	N/A	2377
	2029	0	N/A	0	N/A	2568
	2030	0	N/A	0	N/A	2403
	2031	0	N/A	0	N/A	2654
	2032	0	N/A	0	N/A	2433
	2033	0	N/A	0	N/A	2283

Notes

(Include Notes Here)

al Gas	Residual Oil		Distillate Oil		Hydrogen	
$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU
4.5299	0	20.22	0	26.18	0	N/A
2.7164	0	12.32	0	17.04	0	N/A
2.5385	0	10.75	0	15.72	0	N/A
3.0504	0	9.34	0	12.92	0	N/A
3.204	0	N/A	0	16.49	0	N/A
2.75	0	N/A	0	16.6	0	N/A
2.72	0	N/A	1	13.79	0	N/A
3.89	0	N/A	2	15.15	0	N/A
7.39	0	N/A	0	18.39	0	N/A
3.10	0	N/A	0	21.95	0	N/A
3.21	0	N/A	1	20.64	0	N/A
3.87	0	N/A	1	19.98	0	N/A
4.11	0	N/A	0	23.06	0	N/A
4.11	0	N/A	1	23.06	0	N/A
4.04	0	N/A	1	23.14	0	N/A
4.07	0	N/A	0	23.34	0	N/A
4.10	0	N/A	0	23.46	0	N/A
4.07	0	N/A	0	23.59	0	N/A
4.21	0	N/A	1	23.74	0	N/A
4.16	0	N/A	1	23.94	0	N/A

TYSP Year 2024
Staff's Data Request # 1
Question No. 95

Table I: Current Data Center Information

Data Centers Currently Located in Utility Service Area										
						For each of the Data Center				
Total No. of Data Centers	Customer Class Served	Total Energy Usage in 2023	Impact to Summer Peak Demand	Impact to Winter Peak Demand	Seasonality Observed, if any		Type of Data Center*	Energy Used in 2023	Hours of Peak Usage**	Impact to Peak Demand
		(MWHs)	(MWs)	(MWs)				(MWHs)		(MWs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	#	#	#	#	#	1	#	#	#	#
						2				
						3				
						...				

* Examples of the data center types: colocation, enterprise, cloud, edge, and micro data.
** Based on military time 1 - 24.
# No detail information on energy usage has been identified.

Table II: Planned Data Center Information

Planned Data Centers in Your Service Area						
	Type of Data Center*	Customer Class Served	Expected In-Service Data	Expected Annual Energy Usage	Expected Impact to Summer Peak Demand	Expected Impact to Winter Peak Demand
				(MWHs)	(MWs)	(MWs)
	(1)	(2)	(3)	(4)	(5)	(6)
1	N/A	N/A	N/A	N/A	N/A	N/A
2						
3						
...						

* Examples of the data center types: colocation, enterprise, cloud, edge, and micro data.

Table 8-16

Schedule 10: Status Report and Specifications of Proposed Directly A

(1)	Point of Origin and Termination:	Hamilton S/S to Dranefield S/S
(2)	Number of Lines:	1
(3)	Right of Way:	Lakeland Electric owned
(4)	Line Length:	5.5
(5)	Voltage:	69 KV
(6)	Anticipated Construction Time:	Dec-24
(7)	Anticipated Capital Investment ($):	$5.6 Million
(8)	Substations:	Hamilton, Dranefield
(9)	Participation with Other Utilities:	None

Table 8-1a

Schedule 1.0: Existing Generating Facilities as of December 31, 2021

				[4]Fuel		[5]Fuel Transport						[2]Net Capability	
Plant Name	Unit No.	Location	[3]Unit Type	Pri	Alt	Pri	Alt	[1]Alt Fuel Days Use	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	50.0	50.0
Plant Total												50.0	50.0
C.D. McIntosh, Jr.	D1	4-5/28S/24E	IC	DFO	---	TK	---	---	01/70	Unknown	2,600	2.5	2.5
	D2		IC	DFO	---	TK	---	---	01/70	Unknown	2,600	2.5	2.5
	GT1		GT	NG	DFO	PL	TK	---	05/73	Unknown	26,640	17.0	19.0
	GT2		GT	NG	DFO	PL	TK	---	06/20	Unknown	130,050	119.5	124.5
	5		CT	NG	---	PL	---	---	05/01	Unknown	292,950	234.0	280.0
	5		CA	WH	---	---	---	---	05/02	Unknown	135,000	118.0	118.0
Plant Total												493.5	546.5
System Total												**657.9**	**720.9**

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

[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	WH Waste Heat	TK Truck
GT Combustion Gas Turbine	NG Natural Gas	
IC Internal Combustion		
ST Steam Turbine		

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
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
2021	299,557	2.61	1,597	114,683	13,925	832	13,219	62,940
2022	303,910	2.61	1,637	116,907	14,003	843	13,452	62,667
2023	312,872	2.65	1,669	118,281	14,110	845	13,823	61,130
Forecast								
2024	316,175	2.64	1,627	119,926	13,567	850	14,017	60,641
2025	319,505	2.64	1,641	121,239	13,535	858	14,100	60,851
2026	322,907	2.63	1,660	122,825	13,515	866	14,274	60,670
2027	326,394	2.62	1,679	124,416	13,495	873	14,463	60,361
2028	329,974	2.62	1,699	126,010	13,483	880	14,653	60,056
2029	333,633	2.61	1,721	127,616	13,486	887	14,843	59,759
2030	337,334	2.61	1,742	129,207	13,482	893	15,034	59,399
2031	341,032	2.61	1,765	130,737	13,500	900	15,219	59,137
2032	344,700	2.61	1,787	132,226	13,515	906	15,398	58,839
2033	348,355	2.61	1,810	133,676	13,540	913	15,573	58,627

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)
Year	Industrial			Railroads and Railways	Street & Highway Lighting GWh	Other Sales to Public Authorities GWh	Total Sales to Ultimate Consumers GWh
	GWh	Average No. of Customers	Average kWh Consumption per Customer				
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
2021	679	71	9,563,380	0	35	67	3,210
2022	697	76	9,171,053	0	35	67	3,279
2023	696	73	9,534,247	0	34	67	3,311
Forecast							
2024	675	74	9,121,622	0	35	68	3,255
2025	679	74	9,175,676	0	35	67	3,280
2026	683	75	9,106,667	0	35	67	3,311
2027	687	76	9,039,474	0	35	67	3,341
2028	692	77	8,987,013	0	35	67	3,373
2029	695	77	9,025,974	0	35	67	3,405
2030	698	78	8,948,718	0	35	67	3,435
2031	702	79	8,886,076	0	34	68	3,469
2032	706	80	8,825,000	0	35	66	3,500
2033	709	80	8,862,500	0	34	67	3,533

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
2014	0	0	3,006	8,860	124,019
2015	0	0	3,126	8,921	125,674
2016	0	0	3,109	8,966	127,152
2017	0	0	3,086	8,997	129,113
2018	0	0	3,180	9,051	130,658
2019	0	0	3,189	9,051	132,217
2020	0	0	3,273	9,182	134,320
2021	65	0	3,305	9,189	137,162
2022	71	0	3,406	9,200	139,635
2023	104	0	3,442	8,929	241,224
Forecast					
2024	80	0	3,380	9,301	143,317
2025	50	0	3,408	9,346	144,760
2026	50	0	3,439	9,393	146,566
2027	0	0	3,471	9,439	148,394
2028	0	0	3,503	9,487	150,226
2029	0	0	3,536	9,534	152,071
2030	0	0	3,568	9,583	153,901
2031	0	0	3,602	9,632	155,667
2032	0	0	3,635	9,681	157,385
2033	0	0	3,670	9,731	159,061

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
2014	627	0	627	0	0	0	0	0	627
2015	632	0	632	0	0	0	0	0	632
2016	649	0	649	0	0	0	0	0	649
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
2021	692	0	692	0	0	0	0	0	692
2022	704	0	704	0	0	0	0	0	704
2023	752	0	752	0	0	0	0	0	752
Forecast									
2024	702	0	702	0	0	0	0	0	702
2025	708	0	708	0	0	0	0	0	708
2026	714	0	714	0	0	0	0	0	714
2027	720	0	720	0	0	0	0	0	720
2028	727	0	727	0	0	0	0	0	727
2029	734	0	734	0	0	0	0	0	734
2030	740	0	740	0	0	0	0	0	740
2031	747	0	747	0	0	0	0	0	747
2032	754	0	754	0	0	0	0	0	754
2033	761	0	761	0	0	0	0	0	761

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
2014	627	0	627	0	0	0	0	0	627
2015	632	0	632	0	0	0	0	0	632
2016	649	0	649	0	0	0	0	0	649
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
2021	692	0	692	0	0	0	0	0	692
2022	704	0	704	0	0	0	0	0	704
2023	752	0	752	0	0	0	0	0	752
Forecast									
2024	687	0	687	0	0	0	0	0	687
2025	693	0	693	0	0	0	0	0	693
2026	699	0	699	0	0	0	0	0	699
2027	706	0	706	0	0	0	0	0	706
2028	712	0	712	0	0	0	0	0	712
2029	719	0	719	0	0	0	0	0	719
2030	726	0	726	0	0	0	0	0	726
2031	732	0	732	0	0	0	0	0	732
2032	739	0	739	0	0	0	0	0	739
2033	746	0	746	0	0	0	0	0	746

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
2014	627	0	627	0	0	0	0	0	627
2015	632	0	632	0	0	0	0	0	632
2016	649	0	649	0	0	0	0	0	649
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
2021	692	0	692	0	0	0	0	0	692
2022	704	0	704	0	0	0	0	0	704
2023	752	0	752	0	0	0	0	0	752
Forecast									
2024	706	0	706	0	0	0	0	0	706
2025	712	0	712	0	0	0	0	0	712
2026	719	0	719	0	0	0	0	0	719
2027	725	0	725	0	0	0	0	0	725
2028	731	0	731	0	0	0	0	0	731
2029	739	0	739	0	0	0	0	0	739
2030	745	0	745	0	0	0	0	0	745
2031	752	0	752	0	0	0	0	0	752
2032	759	0	759	0	0	0	0	0	759
2033	767	0	767	0	0	0	0	0	767

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	
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
2021/22	663	0	663	0	0	0	0	0	663
2022/23	620	0	620	0	0	0	0	0	620
2023/24	644	0	644	0	0	0	0	0	644
Forecast									
2024/25	647	0	647	0	0	0	0	0	647
2025/26	651	0	651	0	0	0	0	0	651
2026/27	655	0	655	0	0	0	0	0	655
2027/28	660	0	660	0	0	0	0	0	660
2028/29	663	0	663	0	0	0	0	0	663
2029/30	666	0	666	0	0	0	0	0	666
2030/31	670	0	670	0	0	0	0	0	670
2031/32	674	0	674	0	0	0	0	0	674
2032/33	677	0	677	0	0	0	0	0	677
2033/34	681	0	681	0	0	0	0	0	681

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	
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
2021/22	663	0	663	0	0	0	0	0	663
2022/23	620	0	620	0	0	0	0	0	620
2023/24	641	0	641	0	0	0	0	0	641
Forecast									
2024/25	643	0	643	0	0	0	0	0	643
2025/26	647	0	647	0	0	0	0	0	647
2026/27	651	0	651	0	0	0	0	0	651
2027/28	655	0	655	0	0	0	0	0	655
2028/29	659	0	659	0	0	0	0	0	659
2029/30	662	0	662	0	0	0	0	0	662
2030/31	666	0	666	0	0	0	0	0	666
2031/32	670	0	670	0	0	0	0	0	670
2032/33	673	0	673	0	0	0	0	0	673
2033/34	677	0	677	0	0	0	0	0	677

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	
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
2021/22	663	0	663	0	0	0	0	0	663
2022/23	620	0	620	0	0	0	0	0	620
2023/24	647	0	641	0	0	0	0	0	641
Forecast									
2024/25	651	0	651	0	0	0	0	0	651
2025/26	655	0	655	0	0	0	0	0	678
2026/27	659	0	659	0	0	0	0	0	659
2027/28	664	0	664	0	0	0	0	0	664
2028/29	668	0	668	0	0	0	0	0	668
2029/30	671	0	671	0	0	0	0	0	671
2030/31	674	0	674	0	0	0	0	0	674
2031/32	679	0	679	0	0	0	0	0	679
2032/33	682	0	682	0	0	0	0	0	682
2033/34	686	0	686	0	0	0	0	0	686

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 %
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%
2021	3,210	0	0	3,210	0	95	3,304	53%
2022	3,279	0	0	3,279	0	127	3,406	55%
2023	3,310	0	0	3,310	0	132	3,442	52%
Forecast								
2024	3254	0	0	3,254	0	126	3,380	55%
2025	3281	0	0	3,281	0	127	3,408	55%
2026	3311	0	0	3,311	0	128	3,439	55%
2027	3342	0	0	3,342	0	129	3,471	55%
2028	3373	0	0	3,373	0	130	3,503	55%
2029	3405	0	0	3,405	0	131	3,536	55%
2030	3436	0	0	3,436	0	132	3,568	55%
2031	3468	0	0	3,468	0	134	3,602	55%
2032	3500	0	0	3,500	0	135	3,635	55%
2033	3533	0	0	3,533	0	137	3,670	55%

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
2014	2903	0	0	2903	0	103	3006
2015	3034	0	0	3034	0	92	3126
2016	3030	0	0	3030	0	79	3109
2017	3018	0	0	3018	0	68	3086
2018	3118	0	0	3118	0	62	3180
2019	3117	0	0	3117	0	73	3190
2020	3163	0	0	3163	0	109	3273
2021	3210	0	0	3210	0	95	3304
2022	3279	0	0	3279	0	127	3406
2023	3310	0	0	3310	0	132	3442
Forecast							
2024	3,235	0	0	3,235	0	124	3,359
2025	3,261	0	0	3,261	0	126	3,387
2026	3,291	0	0	3,291	0	127	3,418
2027	3,321	0	0	3,321	0	128	3,449
2028	3,352	0	0	3,352	0	129	3,481
2029	3,384	0	0	3,384	0	130	3,514
2030	3,414	0	0	3,414	0	132	3,546
2031	3,446	0	0	3,446	0	133	3,579
2032	3,478	0	0	3,478	0	134	3,612
2033	3,510	0	0	3,510	0	136	3,646

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
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
2021	3,210	0	0	3,210	0	95	3,304
2022	3,279	0	0	3,279	0	127	3,406
2023	3,310	0	0	3,310	0	132	3,442
Forecast							
2024	3,274	0	0	3,274	0	126	3,400
2025	3,301	0	0	3,301	0	128	3,429
2026	3,331	0	0	3,331	0	129	3,460
2027	3,362	0	0	3,362	0	130	3,492
2028	3,394	0	0	3,394	0	131	3,525
2029	3,426	0	0	3,426	0	132	3,559
2030	3,457	0	0	3,457	0	134	3,591
2031	3,490	0	0	3,490	0	135	3,625
2032	3,522	0	0	3,522	0	136	3,658
2033	3,556	0	0	3,556	0	137	3,693

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	2023 Actual		2024 Forecast		2025 Forecast	
	[1]Peak Demand MW	NEL GWh	[1]Peak Demand MW	NEL GWh	[1]Peak Demand MW	NEL GWh
January	570	247	644	253	647	255
February	517	224	578	222	578	219
March	591	264	499	257	502	259
April	594	270	560	259	565	262
May	642	304	649	318	654	322
June	692	323	677	323	683	326
July	696	354	680	336	685	340
August	752	371	702	346	708	350
September	696	326	663	305	669	308
October	610	280	627	281	632	284
November	535	239	521	227	525	230
December	490	240	435	253	437	256

[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	2023-Actual	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
(1)	Nuclear		Trillion Btu	0	0	0	0	0	0	0	0	0	0	0
(2)	Coal		1000 Ton	0	0	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	2	2	1	0	2	1	0	0	1	1	1
(10)		Total	1000 BBL	2	2	1	0	2	1	0	0	1	1	1
(11)	Natural Gas	Steam	1000 MCF	0	0	0	0	0	0	0	0	0	0	0
(12)		CC	1000 MCF	14,347	15,056	15,837	16,192	17,329	15,738	17,101	15,965	17,783	16,192	15,056
(13)		CT	1000 MCF	298	398	2,779	2,979	3,098	2,965	3,045	2,912	2,952	2,899	2,952
(14)		Total	1000 MCF	14,645	15,454	18,616	19,171	20,427	18,703	20,146	18,877	20,735	19,091	18,008
(15)	Other		Trillion Btu	0	0	0	0	0	0	0	0	0	0	0

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	2023-Actual	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
(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	0	0	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	0	1	1	0	1	1	0	0	0	1	1
(11)		Total	GWh	0	1	1	0	1	1	0	0	0	1	1
(12)	Natural Gas	Steam	GWh	0	0	0	0	0	0	0	0	0	0	0
(13)		CC	GWh	1,952	2,049	2,154	2,203	2,358	2,141	2,326	2,172	2,420	2,203	2,048
(14)		CT	GWh	24	32	221	237	246	236	242	231	234	230	235
(15)		Total	GWh	1,976	2,081	2,375	2,440	2,604	2,377	2,568	2,403	2,654	2,433	2283
(16)	NUG													
(17)	Solar			25	24	23	139	170	187	164	188	164	170	178
(18)	[1]Other (Purchase/Sales)			1,441	1,274	1,009	860	696	938	804	977	784	1,031	1,208
(19)	Net Energy for Load		GWh	3,442	3,380	3,408	3,439	3,471	3,503	3,536	3,568	3,602	3,635	3,670

[1] Intra-Regional Purchase

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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	2023-Actual	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
(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		%	0.0%	0.0%	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%
(5)		CC	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
(6)		CT	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
(7)		Total	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
(8)	Distillate	Steam	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(9)		CC	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(10)		CT	%	0.00%	0.03%	0.03%	0.00%	0.03%	0.03%	0.00%	0.00%	0.00%	0.03%	0.03%
(11)		Total	%	0.00%	0.03%	0.03%	0.00%	0.03%	0.03%	0.00%	0.00%	0.00%	0.03%	0.03%
(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	%	56.7%	60.6%	63.2%	64.1%	67.9%	61.1%	65.8%	60.9%	67.2%	60.6%	55.8%
(14)		CT	%	0.7%	0.9%	6.5%	6.9%	7.1%	6.7%	6.8%	6.5%	6.5%	6.3%	6.4%
(15)		Total	%	57.4%	61.6%	69.7%	71.0%	75.0%	67.9%	72.6%	67.3%	73.7%	66.9%	62.2%
(16)	NUG		%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Solar		%	0.7%	0.7%	0.7%	4.0%	4.9%	5.3%	4.6%	5.3%	4.6%	4.7%	4.9%
	[1]Other (Specify)		%	41.9%	37.7%	29.6%	25.0%	20.1%	26.8%	22.7%	27.4%	21.8%	28.4%	32.9%
(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	[1]Reserve Margin After Maintenance	
	MW	MW	MW	MW	MW	MW	MW	MW	%	MW	MW	%
2024	658	0	0	7	175	840	702	138	20	0	138	20
2025	778	0	0	7	100	885	708	177	25	0	177	25
2026	778	0	0	44	100	922	714	208	29	0	208	29
2027	778	0	0	44	20	842	720	122	17	0	122	17
2028	778	0	0	44	25	847	727	120	16	0	120	16
2029	778	0	0	44	30	852	734	118	16	0	118	16
2030	778	0	0	44	40	862	740	122	16	0	122	16
2031	778	0	0	44	50	872	747	125	17	0	125	17
2032	778	0	0	44	55	877	754	123	16	0	123	16
2033	778	0	0	44	55	877	761	116	15	0	116	15

[1] Includes conservation.

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	[1]Reserve Margin Before Maintenance		Scheduled Maintenance	Reserve Margin After Maintenance[1]	
	MW	MW	MW	MW		MW	MW	MW	%	MW	MW	%
2024/25	841	0	0	0	50	891	647	244	38	0	244	38
2025/26	841	0	0	0	50	891	651	240	37	0	240	37
2026/27	841	0	0	0	0	841	655	186	28	0	186	28
2027/28	841	0	0	0	0	841	660	181	27	0	181	27
2028/29	841	0	0	0	0	841	663	178	27	0	178	27
2029/30	841	0	0	0	0	841	666	175	26	0	175	26
2030/31	841	0	0	0	0	841	670	171	26	0	171	26
2031/32	841	0	0	0	0	841	674	167	25	0	167	25
2032/33	841	0	0	0	0	841	677	164	24	0	164	24
2033/34	841	0	0	0	0	841	681	160	23	0	160	23

[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		[1]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	CT	NG	DFO	PL	TK	-	Nov-62	-	11.2	10	14	OS
Charles Larsen Power Plant	Gas Turbine #3	Polk County	CT	NG	DFO	PL	TK	-	Dec-62	-	11.2	9	13	OS

Table 8-15

Schedule 9.1: Status Report and Specifications of Approved Generating Facilities (MREP)

(1)	Plant Name and Unit Number:	McIntosh MAN IC Engines, ME1-6
(2)	Nameplate Capacity:	120 MW (6 units)
(3)	Firm Summer MW	120 MW
(4)	Firm Winter MW	120 MW
(5)	Technology Type:	Reciprocating Internal Combustion Engine (RICE)
(6)	Anticipated Construction Timing:	
(7)	Field Construction Start-date:	2022
(8)	Commercial In-Service date:	Nov-24
(9)	Fuel	
(10)	Primary	Natural Gas
(11)	Alternate	N/A
(12)	Air Pollution Control Strategy:	Selectrive Catalytic Reduction (SCR) with anhydrous ammonia injection
(13)	Cooling Method:	Closed Cycle Radiator to Air
(14)	Total Site Area (Acres):	7.2
(15)	Construction Status:	In progress
(16)	Certification Status:	Air Construction permit and Environmental Resource Pernit in place from FDEP.
(17)	Status with Federal Agencies:	N/A
(18)	***Projected*** Unit Performance Data:	
(19)	Planned Outage Factor (POF):	2%
(20)	Forced Outage Factor (FOF):	2%
(21)	Equivalent Availability Factor (EAF):	98%
(22)	Resulting Capacity Factor (%):	20-30% (expected)
(23)	Average Net Operating Heat Rate (ANOHR):	8300 Btu/KWh
(24)	***Projected*** Unit Financial Data:	
(25)	Book Life:	25
(26)	Total Installed Cost* (2024 $/kW):	1455
(27)	Direct Construction Cost ($/kW):	1000
(28)	[1]AFUDC Amount (2021$/kW):	N/A
(29)	[2]Escalation ($/kW):	0
(30)	Fixed O&M ($/kW-yr):	12
	Variable O&M ($/MWh):	4
(31)	K-Factor	No Calculation

Note: *overnight cost without finance and escalation. , [1]Allowance for fund during construction. , [2]Based on escalation or inflation.

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Financial Assumptions			
Base Case			
AFUDC RATE		4.5	%
CAPITALIZATION RATIOS:			
	DEBT	N/A, municipal	%
	PREFERRED	N/A, municipal	%
	EQUITY	N/A, municipal	%
RATE OF RETURN			
	DEBT	N/A, municipal	%
	PREFERRED	N/A, municipal	%
	EQUITY	N/A, municipal	%
INCOME TAX RATE:			
	STATE	N/A, municipal	%
	FEDERAL	N/A, municipal	%
	EFFECTIVE	N/A, municipal	%
OTHER TAX RATE:		N/A, municipal	%
DISCOUNT RATE:		N/A, municipal	%
TAX			
DEPRECIATION RATE:		4.5	%

Financial Escalation Assumptions				
	General	Plant Construction	Fixed O&M	Variable O&M
	Inflation	Cost	Cost	Cost
Year	%	%	%	%
2024	3.20%	17.05%	2.93%	2.98%
2025	2.20%	8.10%	2.43%	2.13%
2026	2.20%	-9.27%	2.27%	1.97%
2027	2.10%	1.11%	2.27%	1.90%
2028	2.20%	1.10%	2.27%	1.97%
2029	2.30%	1.09%	2.27%	2.00%
2030	2.30%	1.08%	2.27%	2.00%
2031	2.40%	1.06%	2.27%	2.03%
2032	2.40%	1.05%	2.27%	2.03%
2033	2.50%	1.04%	2.27%	2.07%

TYSP Year 2024
Staff's Data Request # 1
Question No. 4

Date						
	1	2	3	4	5	6
1/1/2023	259.313	249.463	236.811	232.371	223.745	225.37
1/2/2023	247.923	234.225	225.641	220.485	218.63	223.516
1/3/2023	260.135	242.395	227.448	227.003	227.59	248.84
1/4/2023	270.556	257.316	247.266	239.626	243.826	263.763
1/5/2023	284.8	269.746	260.846	254.111	258.424	277.183
1/6/2023	247.49	234.023	223.376	224.576	227.254	254.341
1/7/2023	282.44	272.352	270.637	270.99	278.995	293.435
1/8/2023	272.605	264.041	259.081	263.031	264.87	277.683
1/9/2023	237.648	228.45	226.136	225.706	235.434	267.165
1/10/2023	243.68	236.613	234.336	236.168	246.721	279.841
1/11/2023	277.64	272.878	272.898	277.03	296.078	335.045
1/12/2023	266.035	260.785	256.275	266.426	280.465	315.215
1/13/2023	252.595	239.025	231.72	233.665	239.206	260.441
1/14/2023	330.228	327.543	338.415	349.023	366.113	388.23
1/15/2023	431.128	426.085	433.866	445.8	464.683	487.616
1/16/2023	410.736	414.436	424.234	439.15	459.558	494.71
1/17/2023	348.8	351.748	353.865	366.29	388.329	432.851
1/18/2023	268.198	259.445	260.971	263.851	275.896	313.958
1/19/2023	251.307	236.665	234.934	236.947	243.337	276.552
1/20/2023	262.482	247.275	236.28	232.882	237.52	256.612
1/21/2023	247.821	231.078	222.933	216.506	218.956	223.818
1/22/2023	242.025	232.161	219.806	217.928	217.998	226.554
1/23/2023	262.275	245.38	232.808	222.275	230.655	249.385
1/24/2023	261.73	252.453	253.676	258.616	267.255	305.061
1/25/2023	247.825	235.108	225.656	228.548	232.14	259.733
1/26/2023	268.598	247.156	235.983	227.343	230.641	253.808
1/27/2023	285.523	281.856	283.471	289.203	306.803	345.843
1/28/2023	318.388	310.53	311.186	310.118	310.394	322.298
1/29/2023	249.132	237.295	233.977	230.097	232.34	238.054
1/30/2023	246.571	229.678	223.106	217.591	224.875	251.55
1/31/2023	276.99	256.736	241.945	236.488	238.366	257.771
2/1/2023	257.685	244.514	230.631	230.006	234.818	256.533
2/2/2023	266.18	245.64	236.646	228.338	234.296	256.23
2/3/2023	266.838	255.189	245.166	246.18	247.675	268.153
2/4/2023	259.538	250.646	245.386	249.43	251.86	269.993
2/5/2023	241.778	233.436	226.81	224.34	224.791	233.551
2/6/2023	238.621	224.73	219.485	217.138	224.081	253.405

2/7/2023	244.034	231.506	225.006	226.473	236.038	265.503
2/8/2023	247.518	230.481	228.135	224.56	228.04	256.911
2/9/2023	252.303	234.986	225.26	221.265	232.606	253.155
2/10/2023	283.108	265.052	251.827	245.26	245.002	264.207
2/11/2023	273.117	253.875	241.115	234.95	232.557	233.962
2/12/2023	269.048	248.734	235.321	223.103	216.41	221.708
2/13/2023	251.198	238.509	236.726	240.928	256.831	289.55
2/14/2023	277.475	271.695	270.616	278.663	293.058	329.879
2/15/2023	245.51	234.875	229.783	225.702	242.175	269.12
2/16/2023	255.045	238.212	229.999	223.754	233.545	254.177
2/17/2023	259.511	245.036	238.211	232.495	238.201	260.72
2/18/2023	283.356	253.791	237.468	224.515	222.038	224.261
2/19/2023	239.538	228.973	219.261	218.608	218.304	225.576
2/20/2023	248.075	229.901	220.356	218.626	219.386	239.066
2/21/2023	258.748	238.535	235.249	229.889	239.436	258.775
2/22/2023	266.333	246.333	238.133	232.1	238.883	259.65
2/23/2023	274.11	255.9	238.981	235.356	244.15	265.343
2/24/2023	290.063	268.163	259.638	248.978	246.833	267.45
2/25/2023	288.581	267.843	254.913	244.178	242.623	241.715
2/26/2023	271.31	249.365	233.856	226.815	221.685	225.533
2/27/2023	254.66	235.026	225.259	218.806	228.533	248.071
2/28/2023	270.275	252.537	243.91	240.092	247.994	264.775
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3/1/2023	274.377	252.853	191.172	238.642	246.488	265.222
3/2/2023	258.963	241.488	230.776	228.043	234.195	259.276
3/3/2023	279.125	262.964	250.408	241.743	243.566	264.643
3/4/2023	293.823	273.928	262.095	253.246	250.248	258.263
3/5/2023	285.968	264.751	256.434	247.155	248.278	252.036
3/6/2023	293.163	269.885	257.7	251.305	255.33	276.541
3/7/2023	296.738	269.748	259.761	247.308	254.081	273.965
3/8/2023	290.816	267.98	260.323	253.316	256.051	279.995
3/9/2023	268.333	249.903	237.013	233.85	234.783	256.335
3/10/2023	265.365	245.135	233.983	227.015	229.85	248.386
3/11/2023	275.168	257.983	245.998	235.966	237.668	238.781
3/12/2023	238.23	231.13	224.035	217.015	211.885	216.716
3/13/2023	277.2	263.429	249.645	249.202	256.219	271.415
3/14/2023	282.402	256.133	243.998	233.075	233.881	247.273
3/15/2023	248.316	232.068	225.015	223.818	231.666	247.631
3/16/2023	258.066	242.165	241.801	242.783	251.748	272.451
3/17/2023	252.315	234.101	226.031	218.918	223.716	237.96
3/18/2023	273.886	255.011	237.59	235.038	231.853	233.963
3/19/2023	259.413	234.808	220.043	213.998	210.851	216.798
3/20/2023	246.2	235.87	236.88	236.801	251.648	277.27
3/21/2023	268.166	259.836	260.88	269.651	281.698	320.151

3/22/2023	255.365	234.25	228.786	222.996	229.783	253.401
3/23/2023	279.366	251.266	239.885	230.948	232.865	252.566
3/24/2023	283.048	260.176	246.033	236.95	236.898	255.386
3/25/2023	295.046	272.571	250.566	241.251	247.59	255.173
3/26/2023	316.141	287.77	274.32	264.266	258.79	262.24
3/27/2023	327.388	300.643	286.433	277.448	276.611	295.578
3/28/2023	323.694	294.778	278.566	272.399	280.166	296.033
3/29/2023	332.791	305.748	288.78	275.323	281.884	299.503
3/30/2023	280.885	259.748	241.601	239.431	237.335	256.966
3/31/2023	279.045	252.655	238.35	234.295	234.102	252.819
4/1/2023	305	276	258	247	238	244
4/2/2023	318	295	278	265	261	265
4/3/2023	304	281	265	256	258	277
4/4/2023	308	282	265	253	255	272
4/5/2023	333	308	290	278	278	297
4/6/2023	327	300	281	272	268	290
4/7/2023	333	304	281	269	265	270
4/8/2023	331	301	282	270	257	258
4/9/2023	320	290	272	260	256	256
4/10/2023	244	227	221	214	224	246
4/11/2023	250	229	219	213	228	255
4/12/2023	272	254	245	185	244	265
4/13/2023	276	266	256	249	257	277
4/14/2023	306.696	288.791	273.258	266.805	269.748	287.205
4/15/2023	319.756	291.568	274.186	258.953	258.601	262.631
4/16/2023	320.424	298.266	281.969	274.03	262.985	263.586
4/17/2023	315.12	299.185	280.275	268.977	271.332	287.682
4/18/2023	256.213	235.712	225.465	219.105	225.686	244.581
4/19/2023	261.601	297.973	231.241	225.871	230.913	249.486
4/20/2023	283.49	256.548	241.546	235.793	235.601	256.25
4/21/2023	290.968	269.356	251.89	241.471	240.513	258.298
4/22/2023	310.07	287.966	267.933	258.553	253.778	255.764
4/23/2023	303.475	279.301	259.036	249.751	245.666	248.746
4/24/2023	307.263	277.888	262.551	252.466	256.43	273.61
4/25/2023	279.423	261.398	248.71	244.763	251.386	268.118
4/26/2023	272.815	255.388	241.038	234.113	187.881	260.85
4/27/2023	298.441	275.775	263.796	259.47	256.646	273.316
4/28/2023	295.571	275.235	255.725	250.68	252.665	270.596
4/29/2023	322.667	306.302	291.665	285.84	280.142	282.145
4/30/2023	296.746	275.825	264.77	254.568	259.275	264.611
5/1/2023	264.198	242.755	233.845	228.881	229.783	250.941
5/2/2023	271.121	252.801	238.241	234.853	235.193	255.653
5/3/2023	285.881	268.483	250.598	242.335	247.903	263.045
5/4/2023	267.846	245.765	236.451	227.45	233.986	251.996

5/5/2023	292.916	264.668	249.548	239.466	240.185	257.113
5/6/2023	309.816	288.453	273.546	264.45	264.3	264.201
5/7/2023	314.7	287.65	270.581	258.5	253.285	251.233
5/8/2023	292.895	267.618	252.548	241.483	244.25	262.885
5/9/2023	319.915	288.816	268.436	263.38	260.35	273.083
5/10/2023	330.835	302.765	284.501	272.4	264.431	288.785
5/11/2023	368.8	340.763	322.501	309.515	309.105	322.945
5/12/2023	379.057	348.75	326.452	307.277	301.632	314.955
5/13/2023	366.255	334.526	316.3	296.726	284.108	280.556
5/14/2023	319.751	296.681	274.568	266.333	259.415	257.136
5/15/2023	322.915	292.701	277.45	263.531	264.283	281.901
5/16/2023	347.753	321.631	302.615	289.418	286.25	300.065
5/17/2023	356.735	333.581	319.531	309.368	304.185	321.013
5/18/2023	352.9	321.815	302.518	290.498	289.12	302.08
5/19/2023	333.163	306.836	290.175	279.575	275.958	294.583
5/20/2023	352.815	328.698	310.895	299.291	292.413	293.185
5/21/2023	351.731	329.665	318.483	306.401	301.283	302.281
5/22/2023	350.815	327.583	309.401	301.233	298.248	314.818
5/23/2023	331.7	305.85	290.45	281.448	280.12	300.848
5/24/2023	313.768	294.516	282.498	272.27	281.146	296.935
5/25/2023	299.748	278.65	264.435	261.348	262.283	280
5/26/2023	290.765	267.585	249.5	244.283	244.2	263.08
5/27/2023	290.766	266.601	253.613	244.353	235.546	237.268
5/28/2023	301.831	275.733	261.435	251.366	246.283	246.298
5/29/2023	291.781	265.536	253.496	244.351	239.381	240.086
5/30/2023	304.783	277.65	258.615	256.136	253.248	268.048
5/31/2023	351.701	330.548	312.598	301.385	299.135	310.998
6/1/2023	315.651	294.648	287.318	275.4	280.116	292
6/2/2023	324.185	297.248	284.901	274.965	278.635	291.581
6/3/2023	296.246	275.15	261.82	250.98	249.718	253.731
6/4/2023	300.2	279.05	263.065	252.966	252.701	252.798
6/5/2023	304.48	281.082	268.117	258.05	263.552	277.35
6/6/2023	326.98	299.843	282.825	272.455	269.446	281.002
6/7/2023	345.139	317.849	299.011	290.735	288.436	302.363
6/8/2023	348.886	323.026	307.063	298.834	296.536	307.513
6/9/2023	361.198	331.688	309.468	297.496	295.431	303.955
6/10/2023	364.115	334.194	314.623	299.943	291.931	292.291
6/11/2023	346.246	319.15	297.558	289.53	277.6	278.973
6/12/2023	362.956	333.39	308.906	299.256	296.445	308.495
6/13/2023	375.446	344.315	326.198	311.74	312.385	319.971
6/14/2023	405.223	373.426	355.003	340.048	335.473	347.888
6/15/2023	423.542	394.812	364.85	334.947	323.377	327.195
6/16/2023	395.425	366.768	348.01	335.998	330.785	341.811
6/17/2023	339.863	317.373	304.511	299.58	298.811	300.963

6/18/2023	320.475	295.318	282.706	272.175	269.935	267.933
6/19/2023	377.473	353.3	337.265	324.118	324.883	333.455
6/20/2023	357.866	330.651	313.188	301.985	304.356	317.281
6/21/2023	374.333	350.705	332.993	322.473	321.119	329.261
6/22/2023	309.231	288.935	277.095	272.179	277.311	289.593
6/23/2023	333.261	310.97	297.325	289.725	295.303	308.281
6/24/2023	360.675	335.318	318.085	306.589	303.548	299.566
6/25/2023	355.738	330.321	309.151	300.048	293.901	297.438
6/26/2023	385.958	352.851	333.813	317.963	316.52	323.383
6/27/2023	425.833	392.55	368.4	352.266	348.066	330.3
6/28/2023	424.711	397.843	376.258	358.2	359.473	370.415
6/29/2023	433.927	401.507	379.25	367.779	364.867	379.62
6/30/2023	422.252	386.585	360.74	343.285	338.515	343.08
7/1/2023	406.81825	372.66834	346.43418	333.0207	319.8207	318.42129
7/2/2023	412.23622	381.51021	355.03939	340.04949	328.00373	325.93574
7/3/2023	447.03115	415.91614	384.13005	371.99604	360.7866	358.63455
7/4/2023	405.78333	372.25632	353.21407	337.46242	327.56467	324.64729
7/5/2023	442.49831	411.12129	387.00011	373.03009	364.83402	374.04101
7/6/2023	378.94849	359.32339	344.93873	336.43948	334.82465	347.38745
7/7/2023	424.16389	397.14934	367.88928	361.40222	357.07156	366.63615
7/8/2023	365.26529	345.62627	327.89646	320.52183	313.91283	318.32833
7/9/2023	348.24832	323.61035	313.76242	299.73698	299.79711	298.42555
7/10/2023	407.01326	380.93016	361.62013	349.69717	347.82924	363.4366
7/11/2023	361.56641	338.78101	320.7992	318.82929	319.39317	336.11886
7/12/2023	396.39435	368.10585	351.60884	339.11452	334.22155	346.09373
7/13/2023	406.10596	379.05095	358.54289	343.94135	342.6184	349.68298
7/14/2023	424.76122	388.11019	367.2432	350.6753	347.25329	354.0835
7/15/2023	424.83016	389.98115	368.75019	351.48618	338.61376	336.43376
7/16/2023	422.97525	391.0315	373.09542	356.9682	350.99619	343.03312
7/17/2023	342.91413	328.24115	319.74031	317.63331	319.27133	337.59059
7/18/2023	365.3762	343.56209	328.05736	322.19637	321.51167	335.36636
7/19/2023	373.44293	348.21983	332.36278	321.67779	322.18985	332.82152
7/20/2023	383.93037	361.47632	345.47023	338.42036	336.43152	346.13604
7/21/2023	410.3773	382.10222	363.1672	349.73221	344.72021	352.49851
7/22/2023	420.29149	387.63761	366.04153	347.80433	339.41132	340.38435
7/23/2023	417.41819	386.71037	363.87842	345.89837	338.61845	333.28958
7/24/2023	352.03427	337.53826	321.56642	310.1884	313.93368	329.04602
7/25/2023	361.52617	338.97327	325.62015	313.89527	312.81516	320.86326
7/26/2023	406.5532	370.89321	350.53539	337.51419	333.07118	342.14537
7/27/2023	388.6052	365.97126	347.21134	335.4932	333.53052	348.64363
7/28/2023	380.41846	361.90578	349.01774	336.61056	330.20984	339.44142
7/29/2023	386.11847	360.42651	344.26641	332.59353	325.61434	325.99115
7/30/2023	393.51098	370.97114	352.21113	339.51011	329.4661	329.20142
7/31/2023	378.91638	353.32414	338.34616	325.80814	325.60013	331.89317

8/1/2023	337.8431	316.84613	303.71612	298.97612	296.83534	313.81537
8/2/2023	407.05527	384.86619	364.53817	350.13823	349.30913	356.38012
8/3/2023	368.76438	348.92624	333.75118	324.64924	323.51621	338.74114
8/4/2023	410.51817	381.62214	361.98514	345.60713	339.44714	342.12728
8/5/2023	415.3123	387.29524	364.95517	348.11716	335.90213	336.77007
8/6/2023	421.38539	390.90319	369.82714	356.12314	347.14801	344.54151
8/7/2023	434.22616	405.37815	384.25022	372.00113	367.86613	376.45314
8/8/2023	473.02321	438.57126	416.46516	400.46513	398.82305	403.32301
8/9/2023	472.11132	436.09813	415.8331	401.53607	393.72802	402.64602
8/10/2023	474.62324	438.10611	423.83112	403.63814	400.35012	407.28102
8/11/2023	469.04613	435.75312	413.37009	396.08608	390.09602	403.47191
8/12/2023	471.09612	441.39102	416.71004	398.10803	390.62112	383.32102
8/13/2023	470.28112	445.01309	408.21606	383.40906	371.2	366.08301
8/14/2023	449.00309	423.82024	397.73515	382.05812	383.6682	398.45019
8/15/2023	428.83825	403.91115	390.61817	378.20617	377.31117	386.8383
8/16/2023	429.63622	398.61517	386.00413	377.539	374.056	384.816
8/17/2023	395.5802	375.33326	356.61118	347.84317	349.27313	367.00012
8/18/2023	343.0352	326.37518	307.81014	301.69814	304.84515	325.45114
8/19/2023	344.50513	331.3162	311.53113	306.48029	299.41815	299.39815
8/20/2023	417.63641	388.78026	366.66625	351.25513	344.70607	343.32176
8/21/2023	364.22014	349.83812	338.88114	333.68512	333.79612	360.44814
8/22/2023	418.52629	390.75819	371.51821	356.2532	353.64029	367.17037
8/23/2023	408.21644	380.55622	355.41816	342.21621	343.67114	354.71311
8/24/2023	397.68679	369.6669	359.07117	346.31324	351.80323	369.99313
8/25/2023	379.50937	348.76236	331.62025	320.27926	320.09734	332.91622
8/26/2023	411.76125	379.70215	356.97113	340.76801	333.967	333.041
8/27/2023	414.18825	380.65812	356.50002	337.219	330.508	322.926
8/28/2023	380.25521	359.24813	350.73812	345.88011	349.04512	370.14462
8/29/2023	411.67512	388.48113	375.80801	364.98	364.603	381.12
8/30/2023	364.52812	354.07112	348.49113	343.38413	349.69109	354.716
8/31/2023	351.11304	328.28026	326.13001	316.758	315.518	333.88802
9/1/2023	358.07115	333.31316	321.49319	317.17019	321.52529	338.80827
9/2/2023	350.81827	327.29121	317.46014	308.74512	306.04313	310.32606
9/3/2023	341.31829	316.11827	292.7883	283.05828	275.13123	275.59013
9/4/2023	342.73643	313.9784	298.65136	281.88025	277.76521	274.94621
9/5/2023	349.69043	324.51545	306.49828	294.1053	291.7363	309.40364
9/6/2023	386.78938	359.45336	338.44822	322.36625	322.19839	333.80333
9/7/2023	383.43239	351.68724	333.44725	317.88735	319.44921	334.31917
9/8/2023	391.65533	361.50018	349.39714	335.72615	329.20613	348.07811
9/9/2023	328.02833	300.26126	283.28021	276.21519	268.82318	272.8302
9/10/2023	358.63336	332.33627	312.92117	302.86515	294.63618	296.76119
9/11/2023	394.10435	363.11516	349.62015	336.8131	338.46814	350.01213
9/12/2023	384.56303	349.08803	326.86602	313.91302	309.27503	325.91602
9/13/2023	396.87539	377.31929	358.61119	345.91011	345.99509	361.93003

9/14/2023	402.16544	376.52329	358.1051	345.90118	343.83113	359.73012
9/15/2023	380.19829	352.85522	334.9952	325.8502	324.71613	339.74517
9/16/2023	380.47555	351.58038	338.31619	317.44916	318.87018	323.32409
9/17/2023	382.8782	356.93124	338.30819	329.05123	318.67321	319.8763
9/18/2023	385.96834	360.03028	345.93125	334.39115	338.62414	350.50013
9/19/2023	378.91018	354.01118	341.01316	328.21319	333.50622	345.30111
9/20/2023	359.66134	336.58315	321.4492	312.93917	314.66821	335.44819
9/21/2023	327.10334	312.43931	299.81022	292.32312	295.54311	315.16805
9/22/2023	341.26022	316.31333	297.31432	289.13321	285.65625	304.57824
9/23/2023	327.51035	301.43134	282.02122	269.99814	265.66916	264.02615
9/24/2023	307.92123	286.65126	271.1562	259.00126	252.90016	256.14314
9/25/2023	362.53025	340.93522	321.48522	313.49216	312.03229	324.57727
9/26/2023	350.01821	333.9951	325.53609	320.6801	321.78008	338.81118
9/27/2023	359.33556	335.69123	323.40107	318.97107	319.68606	342.71005
9/28/2023	350.38848	326.20053	310.85352	304.40534	311.18314	326.93509
9/29/2023	314.67355	343.29139	326.88643	321.68336	323.46839	338.84028
9/30/2023	364.57543	345.71143	332.32136	325.80646	318.1284	322.81829
10/1/2023	360.551	342.884	328.923	319.054	315.153	318.435
10/2/2023	324.538	303.342	294.438	289.081	288.106	309.526
10/3/2023	324.054	307.055	292.516	286.277	290.6	310.833
10/4/2023	331.292	311.6	294.262	293.777	296.626	315.652
10/5/2023	340.374	318.769	304.055	299.682	301.48	320.687
10/6/2023	355.953	329.611	310.786	306.942	303.442	318.036
10/7/2023	368.681	338.869	320.675	306.805	302.051	303.351
10/8/2023	334.663	313.99	301.19	287.225	276.052	269.145
10/9/2023	253.523	239.313	230.239	230.288	232.847	253.537
10/10/2023	264.517	249.819	238.662	237.69	240.529	264.865
10/11/2023	308.038	288.896	277.273	270.493	272.544	301.098
10/12/2023	357.158	344.581	337.786	339.346	349.602	376.227
10/13/2023	365.797	349.838	342.102	334.897	336.154	356.628
10/14/2023	358.323	338.893	316.842	305.854	301.151	304.024
10/15/2023	298.76	279.693	264.923	257.892	256.008	260.402
10/16/2023	265.653	248.363	240.11	233.288	235.142	254.547
10/17/2023	248.186	229.785	223.971	224.468	229.788	254.461
10/18/2023	244.99	229.043	227.697	226.203	235.913	262.037
10/19/2023	255.03	241.795	234.498	229.56	234.494	254.738
10/20/2023	271.72	253.479	238.721	235.33	236.162	254.958
10/21/2023	274.955	259.468	248.949	239.718	237.538	245.288
10/22/2023	286.945	261.333	243.174	233.93	224.928	228.515
10/23/2023	264.581	240.88	236.055	229	234.783	257.598
10/24/2023	294.432	269.307	253.252	244.238	250.971	267.801
10/25/2023	285.025	266.889	251.647	244.309	249.302	270.136
10/26/2023	295.044	277.859	266.859	263.629	265.544	280.327
10/27/2023	302.341	281.127	266.027	256.928	260.711	275.527

10/28/2023	297.077	275.435	259.541	250.427	251.26	251.965
10/29/2023	289.835	267.842	253.219	245.503	242.524	241.788
10/30/2023	291.925	269.352	253.539	248.36	249.655	273.572
10/31/2023	299.596	276.462	266.049	256.931	259.927	277.582
11/1/2023	296.81544	272.70042	263.45044	255.53153	258.2516	273.05727
11/2/2023	236.76637	222.63346	218.46637	215.54849	224.25145	248.88556
11/3/2023	249.25041	235.04756	225.24246	221.1005	229.58059	247.15558
11/4/2023	244.59779	233.67644	225.70045	224.71347	229.38054	239.82553
11/5/2023	229.49481	217.69567	211.50151	201.96028	202.68521	215.77818
11/6/2023	230.99537	222.04843	215.70544	215.20634	226.60652	256.30088
11/7/2023	243.55859	228.35159	223.97068	222.52356	229.77658	252.02557
11/8/2023	252.42549	235.77543	226.84647	224.73341	232.27147	254.82055
11/9/2023	264.15837	249.34335	237.59533	234.35126	241.47911	261.36703
11/10/2023	297.1415	276.74042	268.72942	264.56841	267.15541	279.88557
11/11/2023	308.9003	286.76625	276.66508	264.99508	272.07611	275.44701
11/12/2023	317.54134	299.49838	283.66341	278.48331	271.02412	271.68619
11/13/2023	280.63571	265.94168	255.08072	247.62364	256.35075	277.44576
11/14/2023	272.85059	259.61651	246.12544	246.49052	255.74394	277.23895
11/15/2023	278.6052	262.01012	253.89708	252.33507	261.95202	284.13715
11/16/2023	270.33009	254.65509	246.04109	246.29305	248.463	275.24653
11/17/2023	268.59	252.859	245.323	241.856	246.519	267.54444
11/18/2023	275.0481	261.52118	250.28607	243.51102	244.08808	250.29547
11/19/2023	262.30142	242.92118	233.84816	228.5862	224.2711	229.31322
11/20/2023	254.8533	238.66826	230.43534	229.80876	229.60368	249.17243
11/21/2023	287.20053	268.51049	257.77633	254.35551	255.57836	265.92567
11/22/2023	293.80224	275.84245	261.1653	255.92575	258.04239	270.38681
11/23/2023	265.64714	243.55006	228.95905	220.24108	216.1021	221.50615
11/24/2023	225.4034	218.71047	210.34046	210.29852	212.16852	221.93533
11/25/2023	241.67008	231.1731	222.64109	219.5491	222.94111	226.44314
11/26/2023	252.5065	233.91032	227.11032	218.73927	222.14011	226.0355
11/27/2023	273.33827	254.41318	242.4961	233.74519	239.3031	258.47647
11/28/2023	251.13655	238.31132	235.14957	235.0996	243.65532	273.10356
11/29/2023	319.43018	313.49533	310.64634	317.68035	338.25332	374.29763
11/30/2023	299.9667	294.19348	291.64131	297.69627	310.68157	350.33161
12/1/2023	246.4015	232.14137	224.53149	222.34177	227.32489	252.77738
12/2/2023	284.24654	263.3563	254.06034	241.91431	247.81031	252.14127
12/3/2023	294.32323	276.88812	265.39016	260.18507	260.49387	266.10587
12/4/2023	285.32018	267.10119	262.47312	261.12109	265.42614	286.93641
12/5/2023	260.21041	240.39529	229.07727	229.19027	236.70746	257.57296
12/6/2023	258.96844	248.36012	242.88865	243.77579	253.16039	279.45881
12/7/2023	307.58412	305.82565	303.83365	307.04521	325.68619	358.4502
12/8/2023	268.95879	253.6535	253.40063	247.00852	261.84656	287.27486
12/9/2023	259.37049	239.62841	232.1213	227.96904	228.78595	237.15826
12/10/2023	264.48829	249.74319	236.32319	231.47818	229.53118	231.36835

12/11/2023	251.2112	233.49319	226.02118	223.34351	233.62547	259.4658
12/12/2023	311.94907	305.11186	306.3764	308.85813	327.78012	360.3537
12/13/2023	265.92203	250.94893	250.01178	246.95193	253.19402	284.5726
12/14/2023	258.60854	244.13835	239.27833	240.47863	246.10552	269.89954
12/15/2023	257.07612	246.37315	240.30034	234.10343	242.25944	264.13148
12/16/2023	256.65821	240.56625	231.25308	229.42881	229.69592	236.87876
12/17/2023	261.76806	247.73315	240.51804	237.25311	233.95415	244.61816
12/18/2023	252.66727	241.28027	234.17525	232.92742	244.79481	265.09007
12/19/2023	295.2316	284.666	287.05589	291.03353	307.22656	336.41403
12/20/2023	337.49623	327.36859	330.83848	331.58818	345.26836	370.87114
12/21/2023	281.96839	272.95134	267.59722	267.50738	275.27232	296.64937
12/22/2023	278.52469	261.49342	259.93049	256.46753	262.31155	283.1601
12/23/2023	263.25543	250.31908	241.35604	234.42107	234.60304	243.36106
12/24/2023	255.86229	244.09448	232.29936	229.05238	230.96624	238.67021
12/25/2023	249.71004	231.01105	225.98003	215.67303	218.94103	221.95029
12/26/2023	246.64007	230.56616	224.00604	220.45803	226.49603	238.00637
12/27/2023	253.1004	237.85136	231.70034	228.74825	233.51833	246.08877
12/28/2023	256.49093	242.72871	232.86353	230.94252	237.49556	255.989
12/29/2023	270.27622	258.9861	253.49011	253.30107	259.29813	277.98574
12/30/2023	324.69677	313.67752	311.06027	313.63223	311.75021	320.28018
12/31/2023	336.39618	329.08009	322.40903	328.34401	333.02301	345.67701

Hourly System Load (MW)							
7	8	9	10	11	12	13	14
229.53	242.387802	260.760777	286.358461	303.058922	322.683114	340.760562	352.688912
238.35	253.185056	274.23097	298.741495	323.869282	348.578475	369.95818	391.705573
274.963	291.654185	306.677649	327.552482	342.546365	375.526597	388.237363	404.409862
293.6	310.555048	328.067601	346.613263	371.127962	388.381035	410.870948	431.999711
304.64	323.491454	338.207883	355.851202	376.190572	388.539557	378.127323	362.382075
288.331	316.801022	326.970164	331.235222	330.566388	327.892828	327.133278	325.836329
319.15	349.115426	368.447702	358.877573	344.903784	327.582244	316.586377	312.193539
292.551	315.655652	338.789812	330.469782	319.83664	313.175976	316.240938	321.537577
306.836	329.412538	333.72394	328.29067	328.492153	332.256792	344.02023	347.973716
321.306	342.691768	351.784994	343.734565	333.596373	335.295824	333.775757	331.835125
383.785	416.42	411.325589	382.666002	359.47602	341.497631	331.934201	330.880122
362.901	385.696006	376.730943	359.443418	341.365181	336.495077	340.424351	337.780941
292.365	310.602589	318.612055	327.214637	331.457748	331.417714	329.206467	327.409263
419.968	456.465452	481.944709	481.073805	462.034753	433.48971	406.008824	386.216482
522.416	559.456457	569.773305	536.996708	491.623502	445.314767	408.148184	375.751917
538.075	567.10445	563.450358	516.452722	458.721413	414.950659	380.904242	351.316961
480.603	502.405912	483.400278	437.874151	389.742198	354.751201	349.491839	330.361628
357.768	378.547093	370.842585	352.328179	375.659696	333.683561	333.014861	336.107745
314.742	328.67616	333.219791	331.328357	333.973218	343.286967	353.480144	365.902674
288.007	302.527776	317.338505	327.213934	344.266945	361.334743	381.340092	395.94697
235.11	257.036369	281.617964	301.642169	312.842445	314.998041	315.915048	314.248762
237.713	254.291483	279.3269	298.1992	314.67075	330.504326	349.606644	361.054885
282.74	296.011594	306.764212	319.228912	325.833753	335.688837	337.82543	335.856779
354.178	381.949713	381.968985	366.359125	340.782864	343.609022	330.265063	328.810842
287.831	307.978064	318.909423	332.426743	349.127764	366.058695	385.583131	397.513597
283.208	304.552155	307.951001	324.233826	321.155968	330.374757	330.225042	329.429819
392.225	427.827374	426.728527	410.60739	391.992195	373.053696	354.992617	338.867281
337.84	359.453185	385.799491	382.258751	380.919376	363.739546	346.36128	329.206249
252.142	267.724773	289.178624	304.941518	312.079094	321.570683	333.903739	355.91724
281.795	300.718049	313.338895	333.655737	359.642887	384.028944	402.943065	428.748517
286.715	304.489432	315.037908	330.560637	347.812712	381.123776	398.229006	415.842857
289.84901	308.849561	311.358242	333.051201	350.754661	375.09176	394.280143	416.463464
290.03676	301.877173	315.029504	336.002985	359.305056	383.720529	412.396315	426.98385
298.98583	313.981832	326.411847	348.753604	372.856949	381.001038	373.284841	358.632436
294.68692	321.358364	343.366337	341.094629	332.302666	321.948662	316.145253	312.333651
246.8761	265.845209	287.940172	306.871086	307.120469	311.737298	318.388603	325.513363
285.77053	305.46048	313.412956	319.067233	327.247256	336.051638	346.578609	357.680633

303.76182	316.206244	323.503576	313.250245	328.72819	334.163111	347.163238	352.498393
295.16249	306.13745	314.500059	320.63894	332.210101	343.875003	360.442079	376.547454
288.71309	303.904421	315.183047	332.273626	345.30293	371.944528	397.010293	419.874519
291.70915	309.90813	330.167881	354.875741	381.145787	402.554299	424.42848	442.620639
249.7336	266.970636	294.184815	328.954491	365.989269	390.254903	411.111946	420.633182
231.9315	244.672006	276.564163	300.458685	307.5389	312.978511	315.047945	318.221419
337.31105	366.1376	368.493347	357.178184	348.652035	335.613163	330.405609	324.792413
380.16117	404.660374	390.849828	364.693212	339.408158	337.786088	326.067833	331.726359
301.97535	319.60248	323.094371	325.615647	331.629618	342.684651	358.617998	374.309539
287.34807	303.93221	315.41069	328.325432	346.83862	365.120606	386.372597	406.461316
285.09559	301.628855	325.230401	347.997703	380.38712	411.957478	438.418351	459.79286
238.26313	256.560858	283.796677	301.661254	309.45888	312.822232	310.751747	314.420647
240.15719	255.993365	281.634684	295.289836	311.555577	327.530348	348.192211	370.74107
265.36328	282.88306	301.762408	319.154562	338.29014	358.229549	384.145201	410.547076
288.60154	309.742327	325.801613	339.721398	356.882808	393.073643	416.030944	443.030266
288.19918	302.69152	320.731864	340.169434	364.386594	400.473612	429.638852	456.085303
294.12071	308.876546	332.918235	364.020845	399.9519	427.780149	463.82344	485.765808
291.59602	307.674217	322.072194	338.831741	358.70455	388.144353	431.346752	467.926373
256.452	270.740495	303.574096	342.35598	380.658275	416.613688	450.995678	476.317237
229.6337	246.886649	278.983301	302.453812	326.14127	355.049198	391.853925	422.345173
278.78875	293.474973	308.052063	325.81535	345.585779	366.060743	391.668515	419.868424
296.10839	310.964309	330.488898	354.080516	371.245171	400.290203	424.110271	446.591942
298.25448	314.34146	323.74218	342.297042	367.868444	396.997762	428.060558	458.994453
290.1836	306.510719	322.78081	346.329412	369.093013	399.965825	430.77228	462.788034
289.782126	311.539391	335.927252	367.530067	402.996021	427.169142	453.950637	477.687708
270.3961	286.650646	329.759381	376.723901	412.801259	440.862448	465.783024	481.546647
257.21945	274.458981	311.582637	357.818438	404.681985	446.362538	480.212169	501.610245
302.963146	317.208885	333.670655	311.623054	407.979687	456.033118	495.215778	524.023139
298.003639	314.90215	339.378955	372.969689	408.306081	433.276864	467.057781	495.772211
309.71514	326.678708	339.438722	364.63113	401.364189	432.137952	460.978035	488.866517
288.371613	299.777992	318.588501	335.845012	349.551066	384.733666	404.278536	426.620528
277.419374	294.92589	309.921429	330.900152	355.166163	380.568986	414.040381	442.050192
251.583897	265.243799	297.213108	326.949509	350.855386	376.392334	399.449113	414.594124
224.765	236.797503	253.923193	277.639698	296.145569	315.307765	341.404123	367.461692
294.712	312.95024	324.433115	356.854246	386.91443	413.867029	439.455582	418.085951
261.66	279.606578	282.554312	309.682813	314.779082	324.617303	334.618912	347.265162
272.483	294.33757	309.93894	330.297086	347.781337	355.070001	351.938994	340.763992
304.266	325.486371	334.568964	333.77101	327.31354	323.5359	323.853389	322.856463
262.881	282.481252	295.293626	306.748036	317.08653	330.456457	289.165295	357.758548
245.8	253.194069	277.161992	305.299596	330.59492	360.772388	386.188553	413.762702
229.486	247.613719	275.446759	297.485242	317.297367	329.051795	327.446563	325.889285
322.146	351.476714	361.067352	361.300595	357.236326	345.370695	334.957215	324.760373
365.05	389.513492	389.905835	371.882913	345.224519	340.898931	329.727423	330.502492

284.283	305.566756	306.89085	316.374611	330.410846	349.115007	363.640218	387.000861
281.318	298.534584	307.193141	323.807993	343.117563	367.093118	388.633984	422.387552
280.48	295.47285	308.083455	324.050047	350.450758	372.59866	405.189196	434.895953
270.05	281.706609	309.042477	334.761044	362.63449	406.095475	448.813098	483.332159
266.331	278.114351	304.21977	341.452163	383.894904	424.919034	467.756934	499.993858
322.745	335.877901	354.175118	385.597651	417.593545	443.680276	482.324736	526.433211
322.259	337.752689	346.253454	372.961499	400.711247	457.578033	494.241175	531.662931
329.594	341.119076	348.922198	369.854451	386.001278	405.394397	433.54114	455.910824
287.685	300.828794	312.053251	327.74784	349.298741	373.247569	398.41262	425.021088
279.625	298.806585	310.667822	332.191832	360.39089	385.197352	414.765277	442.828582
254.00091	261.105364	296.336699	332.990865	371.037553	411.788389	449.822365	486.37529
266.00129	280.147506	311.150072	354.980044	389.129701	431.812887	466.280084	497.698339
308.00523	323.010853	333.846008	360.579557	397.797641	443.723145	476.522195	512.148154
298.00038	304.119247	325.361053	355.705887	390.670695	442.749926	480.395415	516.101755
320.00017	328.170009	349.540893	385.010997	410.97818	465.637546	519.072204	530.036912
316.00129	333.016394	342.339579	378.876016	406.641024	439.583193	482.103191	512.956319
286.00852	298.092865	324.351799	366.784572	402.567953	435.493762	472.840381	508.491828
215.00131	272.531257	309.527953	354.930107	395.293629	430.720294	458.007823	492.135953
260.00041	268.011931	295.503186	324.668944	333.569763	345.556167	353.414043	357.937835
273.00039	287.201269	307.733681	332.05242	355.53806	377.9092	401.049553	416.83631
281.00931	297.159201	309.462403	321.697533	351.543577	370.645579	386.350062	403.871704
297.00051	307.001282	315.394734	324.370236	339.759133	361.397039	371.765113	377.215182
304.00037	319.139327	331.856794	357.79191	405.46116	429.388121	445.336529	478.833113
311.00133	320.935616	290.445893	374.475901	411.99325	445.58453	480.753508	512.988393
274.40212	283.390387	313.527343	353.481585	392.193423	446.416842	491.907123	530.873319
266.64877	276.689385	310.687787	352.599464	401.823351	446.135426	498.527834	519.547341
319.29993	323.61117	336.103141	344.706146	358.61574	365.817115	374.140108	385.845498
275.48179	292.815592	297.662549	303.57663	318.928192	336.409059	345.754379	361.59376
278.52273	292.72496	303.180929	316.557702	336.68844	360.050255	385.490353	416.64059
283.55108	300.207345	310.891924	336.542655	357.131824	384.243624	404.145599	438.45088
283.48529	297.575319	316.553502	351.284736	382.081865	413.397722	441.34858	470.049119
261.6108	266.22047	302.196641	342.355644	385.560046	423.508038	454.429009	481.319531
250.67547	256.234846	287.949498	318.639942	353.313725	388.5592	425.041384	462.687418
300.84465	310.61261	331.023042	349.556785	368.196608	395.905558	423.982513	445.561699
295.6433	308.22492	324.381002	347.113576	380.742432	413.556104	446.560949	482.558996
290.62475	305.981907	325.488639	352.66624	381.954947	436.573232	466.610514	503.649262
305.85824	315.541866	332.794916	361.26562	401.8295	448.42384	490.91135	530.86471
297.847788	314.57502	331.935187	346.706648	365.705154	388.071327	404.871447	448.400215
288.44399	301.284255	341.742471	384.211895	413.652945	437.572238	454.904051	449.054703
279.62627	282.992141	302.075477	329.508309	356.642541	375.41385	396.621045	352.885164
271.658032	287.146656	305.769632	329.069636	352.737474	381.370114	415.742779	439.987117
282.855234	294.598558	319.449398	344.083489	370.065266	411.786805	435.197151	464.969205
288.572441	300.789375	317.87577	345.603391	366.45957	386.839823	409.35434	434.459172
279.839674	292.879312	308.206366	332.751661	354.246126	383.487415	415.810428	448.612165

277.957835	292.84479	312.97505	346.061932	381.23566	421.216327	461.59223	496.030012
270.199416	283.765102	319.135136	365.13769	406.783538	446.434313	480.911915	509.595558
249.337846	265.905068	304.831233	340.279707	376.282534	406.845806	440.887336	465.750144
283.864695	299.911098	324.311746	349.596483	379.866139	417.556947	451.29917	488.004125
298.780936	314.776294	342.350293	375.646899	411.551159	468.26033	501.984856	539.826904
314.778756	331.880052	360.284967	392.96125	437.171299	486.570446	530.866704	577.37797
343.678555	360.708064	390.909502	432.518089	473.419026	520.780111	558.120352	590.603311
335.393994	349.000776	383.701655	423.550997	467.324215	508.982554	543.691566	571.849498
282.872511	302.293231	341.605922	391.945179	434.570123	477.377706	512.342971	534.804061
258.285639	280.864636	321.399911	367.780811	404.943111	444.130432	478.045081	503.955025
304.91861	325.92281	355.75477	391.105701	438.49592	478.807564	515.924208	552.31411
318.896259	339.796747	370.509574	407.696307	439.469109	501.138041	536.882482	577.716929
339.89532	356.847804	335.395222	431.181501	459.536041	519.758142	561.287941	591.196062
325.805107	341.929182	374.790673	416.020955	461.788075	504.092702	542.52684	574.04543
315.85649	334.45154	365.6933	408.76298	454.709	498.55135	538.09135	573.71506
297.25305	315.72756	355.121784	403.478041	447.721932	498.665292	542.121669	569.747192
302.40557	319.74162	361.30532	409.34069	436.88074	480.63686	525.32282	559.73034
335.94662	355.74867	394.31505	424.0366	487.91168	529.63388	569.9655	606.01349
328.83426	344.41168	366.97585	385.963273	429.18791	481.26398	512.27319	549.70547
321.89201	342.33218	360.98191	387.77558	423.05784	472.23664	507.90626	546.30386
307.83528	323.22457	350.37813	384.68045	415.8447	446.46246	467.62559	489.93466
285.92352	299.86515	326.48835	351.36827	384.33536	419.886648	457.331029	485.3344
242.12481	254.42132	282.98956	312.38694	341.12156	366.39738	397.80023	429.549973
245.232873	259.276455	287.73737	327.783869	360.698652	399.639222	433.68185	467.551284
243.26147	258.10043	288.6604	324.61347	358.97538	399.06214	431.72682	457.71807
288.87262	308.04816	343.10617	376.88128	406.26949	451.12486	478.82824	509.1113
328.90312	340.80698	376.10512	414.31623	438.42082	467.53346	502.90855	536.95426
312.95261	328.87091	362.49373	399.308	433.85628	462.52778	500.94814	531.62934
309.4062	327.44943	362.84527	403.55704	443.40003	466.1657	522.92227	544.84906
261.67147	278.60078	304.62743	334.90652	365.60843	404.7269	442.16233	483.32914
260.57449	277.62153	308.1078	343.36587	388.29574	426.98943	461.83902	489.3939
300.1433	317.49844	347.34023	379.21075	416.42633	446.7927	476.59734	501.88603
300.08751	316.3523	349.99716	380.45467	413.42095	466.64379	495.76775	528.86954
318.9315	341.69277	378.79629	424.58519	466.56425	506.5827	542.29995	558.47108
327.38258	347.68738	386.46957	420.01645	458.72451	498.78929	532.4193	551.29482
315.12029	339.67609	378.61194	421.52242	461.72625	503.99667	542.65483	573.10853
294.28032	309.32804	353.03824	402.76945	449.88225	492.54687	528.53411	560.65818
278.02383	297.71136	339.75127	392.30952	439.78828	491.69158	536.34418	561.66223
326.49973	351.55229	391.08643	439.67319	484.84133	531.38891	574.74545	601.22945
340.85248	363.50058	404.85098	453.91918	500.48439	552.16082	595.34875	630.51702
364.77721	386.39379	421.41877	470.86896	511.79985	571.94107	606.461	636.21643
343.78852	358.30242	382.19704	409.13576	460.03836	525.44326	578.57507	623.5845
354.3925	361.97256	387.89872	420.39457	457.31231	510.02809	557.42158	591.70498
313.09769	331.71192	367.93452	408.38978	413.45783	419.39302	452.51005	504.49329

270.08224	286.1002	330.82539	380.85796	422.57221	466.87179	501.66419	531.31117
350.12035	363.70819	403.71559	449.703737	490.363408	563.54571	595.95719	629.12736
336.391466	358.779885	389.491596	431.95312	477.44943	533.41596	553.4216	585.57721
333.53355	345.4066	351.04866	366.23324	385.02795	417.16199	469.4949	515.05806
309.46944	332.00726	371.0772	414.52831	455.74775	504.76704	549.91904	554.11958
333.1839	352.53807	370.06238	379.59681	402.34535	440.84245	481.99745	534.31317
304.32666	309.30838	344.38406	404.94087	459.07838	516.55639	557.41904	553.43064
296.22588	310.6759	345.29604	384.64918	434.47432	479.96528	526.62937	560.34161
343.08342	361.16309	391.85907	436.58107	489.26963	536.45484	587.33845	614.46698
360.48971	368.94152	407.3921	457.49075	501.61411	559.61257	597.68405	635.64413
388.10694	352.4421	437.08243	479.03015	515.62184	562.67604	582.39492	574.10186
395.60499	409.14661	441.56586	490.1671	541.13761	589.05758	628.91741	667.91159
349.41161	362.94781	396.11263	444.02583	490.17413	527.67447	570.69052	607.05448
318.31015	332.92879	372.73548	427.07146	471.53137	522.4373	570.10421	598.04804
320.99128	334.56509	382.18121	436.10613	489.68242	539.20778	574.48385	605.85502
366.46908	377.00307	421.34472	472.94337	535.03262	593.22415	630.75258	660.40115
326.27347	329.38539	361.66116	422.65082	488.3554	548.03082	590.64571	622.85556
384.82186	401.88613	443.46546	496.7953	550.74562	616.01704	658.37723	678.6024
359.9915	377.84934	418.67648	474.57113	527.36499	578.38678	620.64437	656.34193
379.58409	396.36953	438.03676	494.64332	542.05743	584.20455	616.77077	626.9745
323.12721	341.61586	376.39655	399.89085	398.49147	409.58641	435.62212	447.28349
302.73106	321.15434	371.66245	426.77158	481.00948	529.91568	572.84853	601.973
374.52235	397.16614	433.81915	484.79413	536.029354	575.898025	607.804451	632.747491
353.119484	371.221806	413.260125	462.593149	502.69077	534.272336	522.683115	498.906572
363.563508	382.529363	425.839764	478.740116	526.879229	578.299262	620.603465	633.546448
366.717931	389.308785	428.291685	475.757614	521.475176	574.792448	612.133119	633.731967
359.904134	378.249626	412.810661	469.694542	520.729699	579.486646	620.630165	651.789101
337.190001	353.140502	400.135593	454.202004	514.398058	556.656304	592.678886	600.427352
344.377311	352.616787	401.808391	458.888577	512.478231	548.000928	528.593947	488.420345
357.665796	374.290642	416.392022	471.058051	516.877632	567.501979	555.054016	515.874381
356.551751	367.227313	406.753404	442.766186	513.233156	541.913103	536.870092	548.232932
352.078793	368.085719	404.088093	451.232465	505.782092	563.314651	607.234067	640.666598
364.692381	379.58843	406.605424	440.478921	498.047209	557.009016	605.283505	639.721605
362.938801	381.561828	421.295235	478.449733	534.047237	582.339613	624.973003	630.505932
339.325558	357.619434	404.534132	461.235166	468.650785	569.619761	613.010062	637.076477
334.087312	342.771535	391.751465	453.464478	510.275749	546.257131	531.96149	547.84805
346.41221	369.083445	397.100502	441.454009	502.172575	558.703705	558.729202	522.215023
341.356289	358.743212	395.016516	446.058965	495.137093	567.569979	605.029778	640.14142
359.805032	372.026458	411.150406	460.505206	513.046127	566.041727	602.521715	634.522329
366.20692	380.89404	403.559059	447.000594	502.950544	543.786146	572.076321	568.112058
351.69553	365.516438	388.978278	440.542827	490.415372	550.766075	588.374791	613.838164
327.28139	341.341078	382.241439	440.004024	497.627434	547.039502	579.039099	609.904126
329.694756	340.635486	386.063756	439.082988	498.916461	550.131726	595.932036	633.665061
355.21487	373.003098	408.088375	450.216159	509.665289	576.043608	619.288913	657.233374

333.4785	351.06792	387.332194	439.797777	488.882307	560.337868	588.715237	562.075038
371.65232	383.951915	415.183459	464.337328	520.513412	580.318792	621.925266	646.186389
353.258172	372.258359	413.907221	459.448095	505.945067	548.493911	591.288377	629.651585
354.778392	373.530126	410.207639	462.588545	509.333518	561.782993	603.545793	609.040513
338.75619	348.757955	390.726749	444.274891	501.624058	567.616181	606.91036	644.810331
343.81251	354.240213	400.33732	455.8029	513.565339	563.157911	610.132502	591.809399
395.08791	413.601184	455.513243	508.525983	570.78316	625.77784	664.637729	695.286667
418.746812	427.867084	477.237209	523.69684	582.394185	645.069045	684.762859	716.014916
418.14013	427.593994	465.226353	524.500779	581.368821	634.272491	683.195218	711.351692
422.15104	433.136034	470.511128	525.599877	582.812065	638.099327	676.69855	709.468073
420.22092	426.47939	465.351396	520.485984	574.174303	624.449326	668.918455	698.925496
383.10303	392.573273	433.625152	486.859483	544.710248	595.136532	642.197741	674.456421
366.894623	373.107992	424.186099	481.326744	540.163947	593.875667	636.900701	670.89664
422.49606	431.957922	468.639185	518.787736	577.226541	621.073962	657.448834	645.232937
413.74613	418.889882	452.038692	507.4899	555.592188	623.250521	655.953923	691.631778
406.535	410.812839	435.548663	488.085554	552.572819	589.544444	629.685656	653.618899
390.90031	401.280914	421.088421	449.24177	491.130121	552.731498	598.698279	535.279812
349.21143	363.455741	395.615858	449.175676	506.155026	561.817585	595.908464	580.105601
306.87314	314.148179	351.326064	409.909531	468.480625	523.825895	569.886108	603.770044
348.02038	358.919571	399.227994	449.567233	491.746849	543.598681	572.028043	565.672407
387.06074	397.258189	428.134602	474.394612	519.62159	560.445115	596.458773	630.742177
383.23208	392.512919	417.400102	457.578477	504.691139	564.97071	605.683914	638.443532
376.34007	388.74149	413.429358	456.962079	508.691607	565.504314	614.092065	651.343018
397.35516	407.423606	425.103514	464.464571	505.826301	557.389291	596.615853	635.472509
354.54399	369.626312	399.957729	449.903132	495.635507	544.122987	584.140655	624.765808
334.7999	341.277291	383.486991	433.407774	488.671737	544.079878	586.490844	621.957674
327.095	332.823329	376.695801	433.774265	483.555716	539.233597	582.971035	617.782091
391.40372	407.134589	435.831461	476.072289	517.682909	560.683809	595.932704	629.902712
408.93351	419.221143	444.769922	499.97643	552.401682	584.275532	620.834393	616.417251
370.53332	377.146426	395.048892	412.623847	428.08504	447.461799	448.958365	459.607414
351.50628	367.148184	392.405987	426.451134	450.729236	511.316839	552.250464	582.198936
366.24109	378.354741	412.05974	457.672762	510.340811	558.125526	599.50497	626.323355
320.82583	331.018524	363.469069	402.582033	445.280082	486.511245	518.721013	553.804767
278.15954	286.074779	318.937238	365.769543	415.985981	459.21649	495.996054	525.940302
280.11321	284.675099	315.181253	370.338928	419.875122	466.757995	511.223401	537.064653
336.35852	348.103728	373.558447	418.510346	456.841277	519.661237	554.797488	587.352504
355.92918	364.539339	386.343609	432.604049	474.219193	526.350408	571.956431	604.833709
358.3953	369.744273	395.812774	437.86867	483.267517	535.591483	576.931834	609.707909
369.44403	379.31088	410.7277	460.838984	503.06816	504.61598	511.499063	515.744198
283.12629	293.421102	329.655319	374.331013	423.21263	476.129562	525.752377	557.53324
299.55316	299.950626	348.941118	400.29802	457.752533	512.100888	560.763015	592.332047
374.69213	383.349321	410.952645	453.190618	510.753814	562.529839	617.115886	646.018574
354.72072	362.083758	386.560189	427.800447	478.251143	541.620327	590.028897	636.300045
387.96453	391.678034	414.391402	458.607906	506.999465	563.313161	601.742001	637.498628

382.32112	390.228297	416.631335	459.882964	509.282214	562.505675	604.12316	633.975215
365.46813	374.687601	400.403847	449.441119	497.725546	551.127473	597.23752	630.5507
327.92318	337.080311	372.789906	426.193339	475.44009	523.803327	565.927645	594.289896
323.73664	335.126124	366.415454	420.03495	473.375413	527.817601	579.343917	613.070473
377.15102	391.333863	413.472272	459.49953	504.792156	549.556129	586.514488	615.445631
370.28006	371.661217	384.738657	404.605581	440.29168	480.396782	518.536678	548.075958
358.51527	372.008423	386.669631	430.674952	472.562821	526.156038	576.504464	605.959641
341.0662	351.455539	367.54929	401.639773	438.153536	476.96147	523.632717	558.16917
328.69622	336.390462	365.197938	399.89346	442.681277	482.662915	512.817466	543.320218
273.34125	278.042108	307.412585	340.803928	384.168936	421.160412	455.851488	481.25081
259.0588	270.039705	293.647504	336.871823	376.226231	422.806738	458.629869	500.753916
350.64018	359.8298	373.21248	412.0747	453.14004	502.80106	547.85656	582.33941
364.27305	375.78249	395.53877	421.80808	455.40776	488.79762	519.18574	542.19448
369.158	380.12467	393.7069	411.45522	428.48103	481.65644	508.62703	541.2761
353.84807	361.19452	376.53797	401.07709	433.29368	470.50915	499.96058	535.45441
366.63464	376.74575	386.41211	407.36823	427.97761	471.80767	514.21246	547.08658
331.25857	346.05524	365.4046	395.16663	433.51683	473.22212	513.78488	551.45878
323.211	333.518	359.169	395.773	431.41	478.111	512.217	528.302
336.245	345.654	366.879	401.346	439.143	465.012	498.744	512.677
334.185	343.355	349.609	380.322	411.766	463.41	490.784	515.811
344.492	352.181	368.778	394.29	442.958	475.418	507.111	529.136
347.071	355.407	374.768	414.143	453.239	491.943	531.933	564.518
343.557	357.225	371.218	404.772	435.401	474.907	518.219	554.546
310.16	322.108	345.555	380.52	429.703	474.808	514.22	538.13
268.002	269.867	291.071	308.854	324.976	340.142	351.842	357.092
279.752	290.721	301.909	309.431	321.212	334.116	348.724	370.344
294.088	304.52	311.29	326.094	343.993	377.018	411.029	442.795
327.541	340.666	354.53	368.882	394.835	435.068	474.081	494.547
408.144	425.002	440.225	464.681	499.878	511.922	518.887	494.531
385.198	397.782	410.385	429.782	460.662	489.919	522.37	551.559
312.826	319.961	341.125	378.311	411.182	437.963	468.919	470.853
273.85	285.689	306.542	335.342	355.511	377.669	403.237	426.585
278.377	294.021	302.328	316.129	330.277	339.048	349.203	356.021
285.95	303.008	309.367	314.267	312.071	314.21	321.133	324.366
292.664	309.014	317.735	317.406	310.521	323.83	327.804	338.752
282.907	301.183	308.761	325.604	338.593	356.021	376.416	406.295
279.96	296.016	308.384	325.234	345.172	364.671	395.52	414.508
253.679	263.441	290.932	323.313	356.961	390.822	416.905	449.333
232.868	244.591	264.54	288.364	304.626	327.539	356.215	388.632
287.288	300.89	313.049	329.46	349.438	380.797	415.854	446.826
296.011	311.434	317.959	338.552	359.73	402.842	422.82	449.523
297.239	314.41	321.683	345.926	373.237	398.084	415.051	435.176
306.242	317.411	327.604	352.998	378.898	410.111	439.603	465.285
300.459	316.611	329.806	349.713	383.046	416.414	397.003	470.235

260.827	276.612	297.006	332.653	371.204	401.223	428.972	454.762
248.955	261.958	286.03	319.555	356.763	389.088	424.987	449.795
299.643	314.137	325.837	349.794	379.846	412.414	436.731	458.15
306.692	320.158	328.461	341.6	381.246	410.978	440.563	469.122
300.94464	308.20448	310.10425	321.8508	338.46961	340.60036	349.90759	354.96764
284.79967	306.06964	311.15468	314.91286	321.13487	326.45713	335.24952	340.17106
278.90006	294.13763	303.17326	312.32788	324.09879	339.1595	356.54431	371.57322
255.93799	272.12605	298.23792	312.11484	329.78079	346.77038	362.38571	379.12593
226.52486	251.73116	277.9703	294.45848	305.8153	321.60273	348.42566	364.58896
294.56535	310.45882	317.49581	324.81753	329.72445	343.18864	364.03541	384.33257
288.98117	303.33236	315.29047	331.98976	342.28986	382.35694	402.24836	423.1823
287.25966	298.50533	319.11578	336.76759	367.92345	387.20543	423.35419	445.28351
294.46184	308.6598	331.7091	357.04834	394.35816	424.84593	449.76271	473.88453
291.62985	316.87459	354.06881	395.32146	433.88101	471.6587	504.67137	525.51872
283.95888	309.74614	344.35728	397.83315	444.27542	492.04926	518.65421	534.7679
272.68887	294.50172	327.46938	312.7951	401.604	439.39306	466.64748	486.20104
310.44811	323.66415	337.94555	351.92756	363.79819	380.4166	397.62885	413.14241
311.92139	325.57563	343.98176	364.75662	371.06084	396.6971	389.77913	380.93543
312.09742	329.69629	342.69668	354.24151	364.49547	372.10391	366.66154	365.62613
301.95586	319.68836	330.71453	343.77847	357.06627	362.74112	365.55769	364.85933
295.13923	312.63413	333.02874	346.50381	359.5441	372.74434	383.61555	386.41387
263.38081	278.20844	307.52848	325.62773	346.70776	369.79148	386.28311	394.32948
235.79318	256.25383	284.75852	314.43357	338.20441	361.97279	391.07187	411.90332
271.53606	291.33542	314.4637	338.07038	365.22184	392.87259	420.96472	443.1431
286.47309	303.4729	330.20765	362.12263	397.34462	415.05786	442.07024	463.25276
289.61718	310.84296	339.23696	367.71965	394.81462	417.86651	409.93042	406.12523
230.2852	253.08214	288.81516	316.4325	336.73702	353.83341	359.49789	358.1028
236.65479	253.46479	274.61826	291.24147	299.28285	305.97555	304.11256	302.56668
240.07403	254.99602	279.61073	297.85409	304.31417	306.49134	319.40565	328.32977
231.70584	247.4768	275.36664	299.39458	316.78059	331.5697	352.09844	367.95507
281.91228	297.10171	309.03766	322.42271	328.06599	330.79646	342.82068	352.31077
310.86947	334.07345	348.38425	351.35606	345.34433	358.21298	352.50961	349.19342
418.75961	444.18192	432.98836	413.07697	383.39485	362.5392	341.45005	329.59983
388.95875	400.2147	388.28514	364.3196	345.05723	335.77836	333.21524	331.47913
284.67386	300.84747	310.52319	321.05641	337.05924	359.72725	375.39315	394.21804
269.22521	285.84197	313.96466	344.55757	373.59984	398.93088	424.90808	447.96642
278.49418	294.07592	325.41142	354.05359	387.45133	421.50049	451.94874	472.56465
319.36194	338.24151	345.78703	371.3606	408.59492	433.34184	453.24064	462.76746
292.71924	308.24671	317.04515	318.8205	335.926	338.51622	347.21872	354.58649
315.49713	330.65661	339.69616	333.8727	334.44228	334.16882	333.62829	325.9128
409.74269	420.32871	417.35766	395.15342	375.23437	350.20637	342.50938	334.92244
324.39067	340.388	342.61982	342.95137	333.71518	333.65465	338.15362	341.04587
249.29669	267.34924	295.77052	317.24066	336.86895	357.86703	373.05022	385.63294
244.0856	260.05437	291.29932	320.61931	348.25304	375.58893	399.69858	409.99041

299.92299	326.60768	340.7828	346.6278	350.61369	347.08345	341.46922	332.66628
404.36641	419.60938	403.54139	388.98037	363.43915	358.83123	344.16744	338.27614
318.34209	335.53986	335.66639	337.78825	333.51071	339.83021	339.96138	341.16868
305.21088	319.65854	326.35769	328.77549	336.17565	338.93815	341.56627	341.07995
295.96785	310.7812	325.00367	326.9463	335.75955	334.82057	339.6968	337.31812
253.22596	270.61076	295.70987	312.37505	331.56249	338.52176	341.12947	337.41429
258.76337	268.4657	286.45712	310.97533	317.2688	321.14271	328.41917	325.52494
292.70738	319.21187	328.95876	338.25959	339.52616	338.13146	335.93184	337.06993
379.88495	403.12342	418.21769	414.20267	386.8782	381.68259	357.26009	343.96187
401.2927	422.1137	431.28201	418.5282	393.62565	374.00634	357.20453	344.91408
322.18399	348.44071	353.87943	351.99469	343.10254	337.46189	333.73947	330.29625
301.90254	323.32379	340.83198	344.83719	346.92622	341.84412	330.5007	329.68135
258.65159	277.14688	302.0132	316.78831	321.49063	323.49528	327.02175	335.16229
255.42066	277.65676	303.53364	321.82582	322.04323	321.00153	328.10175	329.47681
231.63691	253.92909	277.34102	299.13948	319.44372	327.57618	328.72455	325.01461
256.29385	274.30492	293.73586	314.71777	328.51844	347.14466	351.09703	362.45495
268.81933	284.74434	298.85518	312.14166	324.8481	333.06564	334.22132	338.69508
276.55753	297.74858	318.98688	335.27462	346.43241	353.821472	351.1589	341.21741
307.50873	327.80725	352.3526	358.60317	359.30526	343.99362	338.05838	333.57161
342.25097	358.98655	386.1707	380.15955	376.94666	354.15178	339.35559	325.8523
362.72023	388.48402	402.37281	386.51816	361.0622	339.38024	330.65677	321.05946

15	16	17	18	19	20	21	22
367.315028	374.310711	373.425064	367.189981	369.55847	351.703	329.078	311
406.221397	417.420071	412.893388	403.345348	404.28414	385.715	369.175	339.006
420.238961	422.997528	423.240523	420.123537	428.55352	407.066	386.541	360.633
443.470237	449.120551	440.237592	439.980549	451.01323	430.451	407.483	382.615
353.4212	359.205293	358.76934	362.079674	376.26132	365.486	350.451	325.321
327.57841	326.681649	329.789068	330.026093	343.9439	337.182	327.835	320.677
307.473777	308.918747	312.789097	312.380573	329.4583	326.556	319.518	310.451
325.421195	333.729063	338.702507	340.31896	357.01601	349.138	336.118	308.366
355.843876	356.783188	364.665648	365.241297	377.29692	370.125	344.531	320.598
331.927189	334.983407	339.979555	345.000635	364.47405	357.523	347.468	325.371
331.213843	334.054961	341.157691	347.677617	365.60085	356.066	346.066	327.118
341.206902	352.449997	355.361774	354.008898	366.39023	357.75	343.931	321.771
321.640928	326.109606	332.757344	348.783906	367.78372	365.641	361.666	354.618
370.72337	358.199881	368.323033	396.311595	440.26409	453.39	455.271	454.415
344.018743	339.625063	337.336364	357.55852	394.08376	414.17	421.186	423.66
341.62502	336.040713	336.815789	350.311995	385.21209	397.698	388.755	382.896
330.241711	329.058311	334.999365	342.931387	366.99862	362.385	349.615	330.421
336.832769	337.187149	345.983531	351.068461	367.03022	359.531	346.026	320.134
372.019874	375.877325	374.507076	382.021496	393.60902	385.807	371.072	343.985
410.243229	412.825019	415.186832	402.299012	393.15105	369.694	353.173	326.055
312.906077	311.438375	313.340954	317.017612	328.40574	322.798	310.506	293.681
365.136544	371.702461	376.065203	377.33836	390.66933	386.671	372.144	344.858
339.530314	340.241007	339.134023	345.594909	361.62822	361.998	345.578	324.551
332.905087	336.158946	340.952523	350.529144	369.77531	364.79	351.425	328.976
412.594195	418.759118	431.294159	424.579187	430.00378	419.086	401.79	371.901
329.172378	329.703254	334.354953	339.264897	353.86467	364.916	356.348	341.45
327.443555	322.544943	323.167251	333.427606	358.48569	361.456	362.974	355.133
320.155063	309.134852	312.340813	321.704598	334.18826	324.36	314.35	301.23
379.130118	388.570297	397.912498	396.654521	398.77092	391.487	370.256	337.432
442.448967	450.726375	458.009405	452.73427	454.27079	434.338	409.318	372.811
429.946412	442.707568	447.944675	438.239467	433.19998	422.873	392.413	358.368
432.55283	443.542353	441.7192	441.254657	440.43351	427.026	398.578	365.256
441.73895	451.957783	458.312766	449.244654	440.158007	425.25	394.91	366.866
332.380729	324.246048	323.985355	330.41327	339.15899	333.4	321.795	308.62
312.42899	308.546284	310.099588	315.577414	322.773381	319.556	311.731	296.456
333.529172	336.729267	332.582801	343.670099	354.51913	356.371	340.076	309.218
369.323564	378.079342	380.139944	378.583019	387.268915	377.173	355.465	325.698

366.734933	380.110047	386.323466	386.687015	389.453054	382.419	362.928	333.001
390.200574	400.577077	408.901453	400.692749	405.910814	395.675	369.933	343.736
438.03262	446.307081	446.586593	444.991037	442.34722	423.715	401.373	372.778
452.937271	453.363142	457.163968	437.639573	427.576611	405.557	378.285	352.932
421.375843	425.680011	417.592354	413.570213	403.569203	396.615	380.471	365.548
318.994692	315.887844	315.828404	325.382285	332.982839	328.183	316.791	308.143
322.821732	324.960228	327.343667	333.917137	345.924776	358.785	349.756	334.063
327.855853	340.717627	343.881061	350.606096	363.203844	361.728	341.148	323.689
391.095495	409.222475	419.137448	418.289215	417.05704	408.225	381.675	351.165
421.925108	434.993299	442.881646	436.289414	426.384665	414.793	391.884	356.886
473.319736	480.061407	477.051362	461.845632	445.379498	427.793	408.816	387.161
317.853871	327.924955	331.141759	326.810245	332.633454	329.553	311.505	298.416
386.849554	399.068384	408.854611	403.507895	390.843032	383.913	357.25	331.331
425.264805	437.673943	437.205661	424.22528	412.761648	409.844	384.528	353.321
462.076377	470.403424	477.141791	467.314047	446.370887	436.166	405.516	368.616
477.399679	509.035401	507.297513	496.426413	468.405701	453.936	416.825	381.881
501.604039	513.666247	464.817034	501.072587	480.474985	466.825	438.083	398.561
485.361446	505.52359	516.815807	490.339729	462.740056	439.485	411.566	377.273
494.893386	507.827999	509.241344	487.387744	461.679412	433.863	398.884	362.801
449.191514	465.611661	477.291132	460.217603	431.716136	416.941	387.298	349.335
438.203347	448.694151	453.541113	442.721534	428.952067	418.655	389.54	360.72
459.596937	418.677119	471.930275	460.650328	448.317595	433.375	409.015	376.81
486.979061	502.812196	504.752389	488.353234	459.523625	440.12339	404.596	366.24
486.023342	492.770063	497.753279	485.785933	465.210271	452.01922	421.218	385.791
491.497205	497.185082	486.091825	462.939331	445.48696	430.45105	409.353	378.713
488.593589	493.498562	487.72574	469.797842	444.398939	429.3474	399.108	369.001
514.669388	519.484415	518.440539	502.923876	485.817438	472.12573	444.563	411.355
540.306182	545.031665	541.827468	522.382591	498.956025	478.73637	450.08	412.626
511.085644	520.214015	520.919711	505.14002	476.058385	459.27633	425.763	394.028
498.247137	501.951498	499.407136	478.531932	455.651036	445.56624	413.933	373.87
440.414316	448.878004	452.499664	446.916816	426.344111	418.03676	392.235	361.316
458.98566	467.222428	465.88279	445.237807	425.834382	410.26067	383.45	358.318
428.869383	434.723634	425.554645	405.034687	377.300708	358.11687	335.183	309.135
395.006327	423.246285	438.672273	443.461523	431.540429	410.232495	400.632	377
440.325212	441.568795	455.066663	461.137487	449.811876	430.297992	414.755	384.901
359.440596	372.252299	380.606677	385.222823	380.845683	362.345712	356.885	331.331
323.439857	317.305921	320.019476	325.2255	329.965364	327.824899	334.78	323.001
333.288196	342.51713	355.890659	366.556529	367.811405	357.086624	357.881	335.283
373.589958	397.060128	415.691501	417.829843	405.802717	392.944761	385.62	358.065
420.003601	414.763759	415.301394	415.455643	402.342329	389.329412	373.268	346.155
317.245568	310.077443	307.368061	312.658985	316.1253	329.57499	332.848	316.183
323.89541	323.011059	326.097209	332.232066	335.099329	338.828011	349.715	333.183
337.977116	349.148261	369.42272	385.008942	390.900621	384.111989	384.785	353.431

315.257732	520.102604	452.629413	465.565319	457.502588	440.232182	430.95	397.366
445.912963	477.606365	499.386151	510.777596	498.221621	468.310205	445.181	416.283
468.800549	496.771291	519.214395	521.845055	500.710085	461.683671	438.185	404.366
517.447348	537.023719	541.79922	549.242635	525.367706	495.42531	467.856	431.114
522.662656	543.477637	558.473859	564.571791	547.721561	514.334525	493.345	397.518
557.132377	574.062293	582.726533	591.167722	575.02445	536.748815	515.153	467.6
558.947827	570.998163	583.704543	526.242621	556.67783	523.116691	501.553	462.161
468.054568	472.208129	473.116448	476.371141	466.315147	441.064409	427.421	396.913
445.890687	467.544999	485.979029	491.053262	476.734597	449.010166	380.255	396.21
473.442908	495.130334	509.523643	479.475173	428.618249	428.422604	434.44	415.294
510.572566	529.328871	528.305585	523.256397	505.218194	467.202037	451	419
526.168319	541.999441	547.945274	550.363856	530.674863	499.235852	479	438
541.472606	545.960289	560.950448	566.463993	551.664305	516.302926	495	451
549.617439	562.730884	580.824096	588.81377	574.693217	537.209943	465	474
556.628793	566.254787	573.408161	565.541545	542.982543	513.229122	494	458
537.364239	557.681557	571.450308	574.141086	554.375617	526.305214	503	465
536.668138	554.109919	567.196741	568.767391	551.057666	516.262748	490	448
515.323767	534.610308	545.678927	540.277997	520.97563	485.094669	467	432
370.880948	381.939889	379.969021	364.868554	349.437859	344.043281	344	327
427.66977	428.25192	421.042628	420.688918	408.244004	391.19557	386	353
416.535111	428.068735	422.923762	423.726866	414.203803	399.383142	396	372
376.060017	374.491315	377.447245	380.866824	380.210435	375.047429	376	362
512.763157	517.726624	527.845345	537.574493	526.057438	491.031036	476.63	436.575
536.888228	551.984018	563.201657	555.333873	521.184656	481.773724	464.578	432.046
558.466091	585.48468	594.306889	563.507268	528.992145	491.568256	459.00012	424.583
516.472005	467.417292	530.905306	539.043824	514.527443	485.826469	467.449	431.9
404.911637	421.710854	446.8759	461.388604	455.768252	425.413493	402.655	369.846
386.67979	405.744293	432.36166	450.472181	449.162844	424.371234	410.128	374.696
444.378707	470.029767	484.413344	487.582145	466.074867	438.426392	425.698	394.82
461.30998	484.725227	506.033379	508.61902	492.97891	462.290132	445.175	415.301
493.019181	460.355871	525.279824	529.515105	505.711141	469.23091	451.978	416.005
488.95392	502.540231	512.969901	504.097837	484.649866	459.46909	439.131	406.251
488.790403	509.811319	522.025838	527.347725	515.768695	481.13012	465.253	432.451
448.286826	429.976685	407.931397	406.928602	406.248364	390.106626	392.355	368.013
504.432183	507.084106	464.187107	453.731995	438.557122	410.589934	398.59	373.62
473.793501	537.545961	551.361268	559.898417	542.727177	500.878738	471.288	423.698
559.398248	568.063498	550.370434	509.711574	487.651506	471.182407	463.719	439.606
496.143014	530.142309	531.124427	503.460816	486.414259	462.390431	446.461	421.125
447.247333	453.63364	455.775788	453.214963	438.640987	404.539539	386.732	367.287
413.940219	421.967771	432.012892	435.667178	422.759311	402.461336	392.554	368.111
459.594656	477.998756	488.211672	488.89915	475.089518	440.570244	421.807	392.885
498.630658	511.104429	521.223296	520.353847	504.690104	471.286724	450.633	415.686
454.874554	471.673765	476.342562	481.219513	468.621777	442.066304	418.686	386.833
480.901797	510.081942	532.264875	541.519213	520.856581	494.32699	465.668	424.883

523.108426	539.596808	540.806313	533.294898	504.460125	467.157395	443.585	412.716
522.80007	523.893417	521.046328	512.954527	486.733755	452.254871	434.485	404.7
484.439639	493.425426	511.098984	509.398597	495.444365	464.20072	447.468	414.356
519.256468	543.338413	563.356057	569.139776	559.922807	526.22601	498.651	459.948
564.464154	584.970755	589.641593	580.227054	562.108311	533.290976	510.68	471.851
603.207747	622.040306	628.406138	626.227575	614.653383	584.697868	558.435	516.11
615.050044	630.614252	641.745352	640.953857	619.78314	582.502907	553.907	519.562
594.556321	602.165025	609.387691	606.208996	586.128812	543.31967	519.975	486.359
556.537466	565.599935	549.337547	527.350147	490.044348	451.563576	435.56	412.486
525.232784	547.91811	556.048409	561.487995	536.524967	500.911156	475.721	445.701
579.656597	599.732697	612.411692	615.480557	595.591233	559.282733	529.683	486.916
604.53502	620.109869	625.323862	606.07327	566.515288	528.876308	507.453	479.665
591.40374	623.648861	634.881036	625.479347	604.474174	568.187317	538.69	498.866
595.99525	612.39925	621.05038	609.09857	562.16766	498.5389	471.644	444.748
602.74593	621.64751	632.21205	616.15461	576.83342	531.72586	494.02	464.686
597.40397	616.692009	614.046076	589.385973	561.044919	517.931734	484.752	444.768
581.99879	586.3381	562.29348	544.83509	523.66337	508.83861	496.3	469.648
617.0136	596.57165	583.87053	583.81695	545.742	502.90946	477.822	442.685
579.9952	602.27703	594.7731	571.5828	536.18074	492.05956	460.718	428.733
567.8448	510.75288	465.59667	443.57254	418.67633	408.49949	404.268	384.533
500.22782	494.46511	489.03648	472.46964	461.59359	428.83762	405.388	378.548
489.935271	464.52462	460.61674	453.75577	438.19483	414.89816	401.326	379.761
457.680635	478.503621	494.662021	503.781963	494.301297	472.020195	436.890264	408.57
489.084564	507.11137	515.34061	510.77263	491.47626	455.42674	420.876	389.62
477.62063	502.42979	519.13746	526.27132	513.40031	480.33044	462.498	427.783
540.446522	544.41892	578.29319	581.07954	567.74373	540.11794	512.558	480.731
545.67751	542.32042	524.97843	494.85719	461.68099	434.75094	417.485	399.598
563.92328	577.21721	556.81516	515.86199	484.83738	452.7508	435.39626	417.301
557.0818	562.65347	538.81819	481.44507	432.2273	409.7723	392.88085	375.785
512.91652	534.49182	543.95011	535.35081	480.26688	439.3843	416.18461	393.871
523.97392	544.70089	554.76698	558.70126	514.90122	450.37272	425.30494	405.2
533.46471	548.91754	556.29541	551.74664	534.28769	507.15142	479.39173	449.691
557.20774	573.45965	594.08682	594.94766	583.9043	554.52832	523.4297	486.221
565.02715	579.60614	590.92809	587.84843	517.64946	530.14749	506.21317	480.921
571.32614	581.33872	587.88433	590.29478	578.6608	548.62541	518.32912	489.381
595.88143	613.89238	623.02849	623.26008	597.72395	553.80964	525.45659	489.993
584.78771	601.57794	616.17645	616.46329	601.66662	541.16496	497.2308	447.726
589.36677	603.4244	611.33231	610.905946	595.11562	568.53509	532.14887	499.935
623.51106	636.51866	647.8007	644.13684	629.22522	602.75144	560.13594	524.295
654.41878	668.44924	673.87592	666.8658	653.35886	619.51639	585.41342	551.268
661.54434	670.35018	674.05572	668.3328	649.74372	621.25767	587.73989	555.505
651.43869	664.547633	667.10944	666.78591	647.28774	609.69342	580.01528	545.083
605.2401	576.0099	521.15017	473.51612	462.95979	451.05974	440.12061	426.428
538.50868	568.2618	556.62836	528.51149	506.8377	485.32616	470.55334	429.393

557.59613	573.62156	584.06533	585.18107	568.27084	535.71438	514.55441	489.42
645.0085	655.37068	666.454576	666.398892	647.65031	616.351951	541.75682	474.911
605.38337	614.43393	597.6591	587.27583	581.76589	553.7406	522.07054	499.4734
535.36676	465.02538	471.45081	455.65923	433.282	413.78312	406.81532	400.505
482.65076	484.01809	514.89867	494.36383	462.8732	448.75808	433.35745	420.316
560.42124	577.36255	599.17608	606.98908	589.46848	551.15601	522.51267	492.696
514.69288	483.40306	494.55918	526.58312	537.70997	518.45724	499.11555	464.678
584.29302	603.00206	617.62158	614.43702	586.94208	555.84088	528.06179	499.575
642.18942	657.58985	669.10995	670.20238	662.07551	652.07456	622.50505	584.633
656.34765	674.1929	677.42708	679.53545	671.69362	640.18497	603.8476	570.946
564.97073	572.36741	621.55995	641.12564	644.05918	618.2305	586.75936	565.845
685.3444	691.8974	690.38571	685.52917	667.17815	630.20666	600.76174	567.142
633.15446	648.28902	658.94719	652.47715	634.12606	599.07472	571.47312	534.42
622.84146	635.99128	648.37959	639.8802	629.14699	600.68658	564.71583	535.48553
626.71245	647.89189	659.63547	663.75936	649.8013	619.22543	583.24132	557.52567
681.19439	680.62881	642.03711	636.47898	634.13741	601.47559	587.36932	561.72875
647.07762	661.86645	676.04208	678.22779	662.4275	620.677682	590.95266	552.73872
695.72896	694.5869	630.64883	570.0613	541.98573	512.05464	491.19354	474.96853
661.74569	598.59394	574.3967	600.79938	621.79938	610.06217	575.93872	549.24213
615.12572	610.7061	491.74856	504.70746	486.10479	478.86785	458.80752	446.20369
474.76313	516.22546	474.67807	448.09968	456.1109	459.66411	453.97015	441.90213
624.24923	635.06013	642.09102	640.98451	620.34797	595.41119	566.25979	536.79059
646.055511	653.644503	644.720995	568.032901	519.708856	486.46264	466.14106	450.85426
501.519708	528.36391	575.401614	593.857471	586.594196	570.290358	548.159219	519.42301
626.438884	617.757715	588.089057	573.489959	583.772528	577.52142	559.12985	529.79169
629.253224	630.778514	653.4614	663.842236	656.685536	620.28669	579.737716	554.21667
675.797002	677.145373	656.803167	639.802543	619.568526	587.902585	559.579035	533.82931
627.10715	642.263234	651.568004	644.789087	630.560417	598.688776	568.522954	540.07382
476.606416	483.535908	468.058587	464.034587	442.975074	426.091867	419.50867	410.55015
497.330824	491.081207	500.35136	499.194742	497.5931	482.470828	471.094442	458.90425
570.0457	613.51648	644.82272	652.409317	628.029668	548.264278	511.020071	484.6369
654.086695	666.444557	663.295333	660.632249	571.733819	536.081837	509.83575	481.47345
660.97309	678.348701	683.534478	660.64054	619.275988	579.829851	557.059308	521.88769
576.224149	565.339678	595.256183	627.206588	631.97337	605.105298	576.783907	544.22512
654.715518	662.013636	665.63593	665.63352	642.250419	599.033745	567.335062	534.94225
535.228362	535.461184	532.415802	507.593839	481.228546	465.523519	461.681705	446.55693
551.972494	582.874254	554.333199	530.039629	516.278918	504.317344	493.576575	467.63646
648.456011	603.062069	621.823232	641.751752	634.916785	604.155706	573.344126	538.777
659.956388	671.12564	678.7484	667.897698	624.08007	567.915789	535.441338	508.44853
589.875717	603.371165	589.968221	584.443968	565.850178	552.329857	530.791092	506.50582
641.731046	641.223616	637.483545	620.578126	563.270396	526.617355	503.100523	484.7057
625.324856	539.963109	534.983684	545.927263	539.045477	531.663587	519.253737	497.07225
643.021184	666.693033	651.929431	630.767944	634.912886	603.935453	536.960948	497.45435
610.923135	542.892633	511.556011	484.605722	473.686232	461.319947	451.465395	435.56608

523.959479	534.497635	571.068415	606.923398	594.574016	570.880319	549.085375	522.44443
659.812094	610.148772	544.111418	527.006008	525.210362	506.076061	487.11413	466.54351
659.944586	670.302139	664.156058	656.64122	640.889369	610.753821	580.315515	548.62871
672.265707	677.563514	668.227401	661.009341	637.796695	607.538956	573.38663	534.96235
623.255719	604.25426	618.426421	631.896954	628.643283	604.013229	572.835619	541.88044
594.11545	615.860669	645.516964	655.869802	645.909616	624.52692	596.181905	563.15336
720.508623	738.252869	731.708822	719.250982	714.808567	680.581374	653.945858	617.31341
736.214281	724.374763	743.907555	731.981132	718.023254	692.065543	663.987588	621.71004
734.018784	748.292738	752.284391	746.057107	728.211025	696.780637	662.779285	623.3584
720.414846	728.908161	727.431471	714.166511	697.404781	678.214711	649.48527	612.02681
715.008247	726.971443	723.209835	707.086869	687.77673	669.745461	641.766164	546.50638
697.392849	715.500843	716.743448	718.320437	707.040142	679.31496	649.138955	613.29863
689.191067	702.226479	712.889702	717.669095	703.714994	680.683159	648.001391	607.00055
630.659327	626.508228	648.539842	654.760708	639.702099	613.535928	591.66287	560.42338
711.616862	710.057199	715.86719	707.204043	669.066711	634.760167	602.731128	564.73532
672.274085	658.377523	623.924483	597.031148	581.558691	559.271046	544.63884	513.72042
493.522863	473.902176	455.584089	453.452581	448.892327	449.338708	448.91442	432.57616
527.602983	488.913702	470.865256	456.491476	439.946108	430.602181	430.596262	418.30817
627.493626	640.871336	652.824909	650.206189	626.372569	593.40427	566.954015	527.26582
568.450432	572.994589	521.403488	487.222226	474.382587	463.359051	460.93698	438.97183
653.063251	670.295876	677.166097	671.359219	656.291093	623.961452	597.53623	554.32582
664.014711	677.175826	684.530311	683.911337	664.545218	625.492577	599.42743	556.32381
676.432872	689.231641	659.060982	616.638625	576.173861	544.25835	530.71928	501.59018
654.917091	657.468221	667.796789	650.356757	627.300569	592.554228	571.61191	523.61949
650.750615	670.122365	671.297528	667.933026	645.899917	607.604163	577.29609	536.14295
639.257778	654.215128	661.158741	644.961259	606.61105	576.17438	557.9938	522.88948
644.072664	650.192197	598.258382	569.784015	528.563266	504.281217	498.19151	473.51635
658.288024	676.130238	682.76936	655.895498	616.181234	587.951601	573.04373	535.82616
608.616399	583.473821	537.66291	516.459598	486.439066	468.529075	464.65819	444.34309
465.666437	450.345417	449.04159	448.033222	447.303475	442.279094	450.75759	437.82457
566.796629	562.965702	558.238202	515.026904	497.346713	485.269407	478.21582	454.89355
648.817694	660.903554	599.437962	532.359753	489.711261	458.028541	446.29018	426.23619
580.139446	581.190808	549.794974	535.002541	519.846775	491.479307	477.23144	443.7633
551.526592	565.5286	567.505563	562.486077	542.82144	496.186662	476.12598	442.56333
552.696987	567.618346	585.806618	591.789115	563.854564	537.219288	522.43946	484.14538
613.955986	622.355533	636.530824	640.169735	624.255205	592.768416	559.74871	515.54037
627.587103	647.237309	655.279929	654.689599	627.434484	597.174112	565.00015	521.68942
634.980667	653.088353	658.695982	654.87723	624.39013	584.054582	559.20889	521.65263
533.958911	540.644647	556.988845	536.482071	515.043543	487.905118	462.91626	428.67336
583.807208	598.245329	574.548607	554.332496	528.835714	510.124286	490.91725	458.34652
615.308741	627.695624	638.195728	638.379296	619.193553	589.843788	570.91148	529.49648
666.87839	687.795504	696.376525	680.131359	663.795967	632.40665	599.9407	549.74158
657.995135	671.836573	678.596652	676.529756	643.566428	625.428763	600.81061	549.07045
662.96945	677.38483	688.356837	684.260219	660.615074	628.743749	592.99576	545.88837

647.579275	615.698625	603.413939	596.825773	587.375279	560.100703	542.78544	499.7244
649.112883	660.140979	651.366084	602.458571	572.542215	547.579055	522.12163	485.90641
614.431662	606.897412	610.497305	587.636656	547.079544	525.920887	506.12575	474.33336
636.525488	639.127619	625.948389	627.577557	614.301443	582.612973	556.92595	511.75833
633.447481	639.938914	647.032591	641.17079	614.685881	587.75318	560.35629	515.74828
552.727428	571.609502	564.992343	552.123836	536.132888	520.277913	507.01855	468.25347
637.552121	640.664158	627.362275	590.081537	541.563325	501.16841	468.64066	433.19147
587.698907	608.979136	613.920467	603.810411	554.097691	519.271645	498.83638	456.02031
565.798099	581.254364	579.071411	561.0225	536.342129	500.721568	477.7786	440.32817
506.122554	523.495527	525.5006	527.039203	498.268804	456.898237	430.63364	397.35629
520.329784	543.403259	557.310581	566.875207	547.309378	519.024053	504.06465	467.52741
609.37063	627.76928	636.42816	613.00952	555.77728	533.07242	503.64054	464.64826
572.46773	596.82422	602.72138	589.27285	559.5235	537.37785	507.69634	467.2763
558.62563	531.29906	543.56452	557.23971	548.43715	528.07559	502.72372	466.80139
571.22494	591.76471	584.86379	573.24323	538.52167	524.03549	500.29826	472.36631
563.13903	578.60705	583.24481	574.63025	545.39307	524.94821	496.67347	463.15935
574.25083	588.04225	593.58113	577.0957	550.33495	524.65757	484.76829	445.75045
537.418	510.062	492.921	480.712	468.389	462.377	448.625	421.158
538.853	557.167	563.119	550.562	519.184	495.696	469.511	428.464
536.631	543.308	553.62	544.61	515.855	502.499	481.524	438.597
544.19	557.377	554.716	550.109	525.729	507.044	485.285	451.981
590.714	609.977	601.996	595.076	564.058	541.956	516.211	476.442
582.137	597.942	607.184	597.788	557.706	530.44	502.164	470.208
550.462	536.924	514.137	483.934	469.531	454.353	433.89	408.609
372.356	374.154	374.102	371.941	369.321	375.468	370.313	346.284
383.026	403.692	425.827	427.92	412.779	410.52	393.76	359.847
465.814	490.977	501.51	499.555	477.556	474.437	454.234	422.032
526.509	544.712	535.842	520.291	491.176	485.956	471.813	447.582
486.422	482.099	491.39	496.638	496.515	498.637	484.321	457.823
584.729	589.879	594.916	581.383	550.723	528.642	495.923	464.499
471.607	489.363	495.008	487.294	459.423	439.504	414.497	381.334
435.897	446.675	438.639	434.064	408.06	396.765	374.355	348.017
360.479	360.114	366.581	363.106	357.663	360.527	348.875	324.685
329.012	340.211	350.681	361.523	355.04	363.037	349.117	326.065
353.967	373.259	392.68	403.166	394.213	393.291	377.053	346.984
420.647	433.448	440.597	430.389	420.219	417.224	395.937	364.799
435.767	448.289	455.492	450.029	425.483	405.081	388.69	360.697
471.476	483.459	487.776	478.339	450.738	430.767	403.286	373.684
418.997	448.306	459.965	461.988	433.37	424.028	399.502	364.679
477.622	503.295	516.035	512.379	496.063	488.104	457.507	413.83
466.361	478.186	479.709	474.174	455.402	445.55	428.675	394.764
435.306	444.112	460.543	467.814	451.678	451.177	431.608	396.762
481.17	495.533	501.201	490.438	470.267	465.647	444.141	409.655
485.353	497.453	503.775	498.028	467.549	450.355	426.477	391.465

473.737	486.395	488.567	478.138	447.738	428.984	399.669	374.594
475.575	496.236	499.067	496.944	466.906	456.345	433.462	398.464
487.881	510.338	507.518	498.581	482.202	468.019	442.316	408.454
494.571	517.844	526.517	518.142	472.836	441.789	426.036	405.324
355.70103	367.33421	372.02755	370.37167	364.68177	364.21047	344.63342	320.79956
348.95165	358.00534	370.54825	372.02796	368.83526	373.48387	360.04928	333.3771
382.88656	393.54991	394.64692	393.31956	379.23048	377.34255	359.75276	335.40729
382.01942	383.86646	374.31305	369.47204	363.13955	340.48511	320.92562	294.83722
386.90724	392.55829	397.11541	385.98239	380.23233	356.20879	333.08622	306.05254
400.25903	413.80561	411.36971	405.22729	400.09374	381.91107	359.08317	326.34949
436.81438	453.93425	450.99782	437.6791	433.0838	409.10967	375.07034	346.47578
464.68477	470.64344	468.56742	454.50399	443.0029	415.17147	386.57753	362.10663
484.10253	487.0589	475.35877	457.07519	445.60013	426.62269	400.04593	377.67198
532.35796	526.31618	512.08002	493.77363	484.9572	453.53451	427.23708	401.03642
534.34785	523.55547	506.4543	494.74107	478.57342	460.01193	427.84062	400.94645
494.06682	491.12198	471.68172	453.48283	448.08883	422.33665	397.02148	366.60834
413.07964	401.14079	400.62914	412.04239	419.97293	405.64788	385.34073	360.81046
387.6798	386.66331	384.57092	395.44785	400.38634	393.09327	380.81062	357.97735
359.12962	355.10889	364.09423	376.87874	385.68598	379.31161	367.2071	346.05308
361.70481	356.41542	362.9227	373.7021	387.17771	377.86166	369.04633	343.62816
382.20207	373.03146	375.37269	375.91248	381.50873	370.1958	358.59376	338.14346
405.31125	409.16419	399.57589	393.49368	387.60066	367.73598	348.1269	327.54377
428.91887	428.11229	419.0458	406.36415	396.66501	377.13072	353.29901	330.67732
452.53337	462.28911	455.33513	441.79297	437.7774	417.93879	395.96707	370.62367
466.58534	472.17863	469.17064	453.4593	448.58479	421.56037	397.69713	379.89591
400.77489	392.73071	386.34768	387.48146	386.82144	370.12951	359.56038	341.55528
345.51342	333.74488	316.43051	301.4323	299.53523	285.34433	279.79132	269.57172
299.27614	295.50115	304.66916	315.72117	322.59141	313.55852	304.05848	291.11621
332.59993	328.63702	329.09808	333.46052	340.38626	328.20957	319.05215	308.08368
368.17214	361.47913	361.26917	370.3559	382.89138	378.77337	368.47336	354.04133
360.9371	362.90666	359.01972	358.27193	368.24281	359.45751	342.87948	324.90105
348.66882	351.20108	365.50973	395.22932	411.43841	412.58837	405.02856	390.0513
324.87487	324.29066	331.06723	348.40073	378.50182	377.43208	371.89512	360.98424
333.46038	331.72918	330.8949	351.68747	362.14501	355.22367	339.66237	322.48703
409.40386	404.67351	403.13334	405.70831	400.39438	381.43336	371.76822	354.30678
463.85346	461.26232	452.0573	443.50557	437.7137	407.91815	391.9719	366.53235
485.74758	490.48242	469.08019	457.23052	445.79217	421.90178	409.10931	379.0062
470.50302	461.05907	444.37752	437.43068	431.21043	405.04278	381.49283	352.28935
350.24833	348.78084	344.15572	358.77205	374.02043	363.87039	354.43748	334.70184
330.30706	332.19117	337.91022	361.23575	383.03978	381.92667	379.83686	359.15173
330.7756	330.62548	336.35056	350.07644	358.46885	355.55313	345.86554	339.50681
341.77008	340.72026	346.99051	351.05075	357.10292	344.51698	336.23771	320.66268
400.97837	408.6395	401.59345	399.59601	393.60301	375.50667	354.84631	284.88053
407.97579	394.19215	397.15864	394.25776	391.44762	374.38896	361.02204	337.69242

335.74937	331.9315	339.55394	361.68304	389.53923	388.62466	385.258	369.07502
332.65262	333.2674	337.74788	358.70424	373.95306	369.18776	359.75997	335.01767
341.82572	342.95231	348.57748	358.80439	374.73521	370.38112	355.35552	337.30214
337.73266	335.56707	345.41248	357.336	371.27019	365.30657	351.92727	335.67301
333.0886	336.18933	333.59891	347.67746	353.80283	342.4944	329.61698	319.27209
335.99316	333.80926	335.87871	348.58943	355.68421	342.42675	329.41681	314.35165
321.88318	322.06754	321.56527	332.92592	351.33502	342.83176	334.99543	317.05625
336.79465	335.63077	337.79703	353.20736	373.58784	373.90561	366.00392	352.13234
334.27183	330.88798	339.79153	364.48611	393.61967	399.61144	395.37735	388.12423
338.24875	329.62712	342.82487	363.5035	382.68803	372.09514	361.18924	350.3918
329.00766	326.71927	333.45659	339.00745	358.9629	354.58143	346.54227	334.31663
319.73662	316.77687	322.94632	334.54476	345.32872	337.4451	332.98125	319.43914
335.17507	336.8415	332.28561	335.87282	341.80668	331.96995	324.03306	311.21645
329.66226	328.75931	329.74843	331.62903	329.04466	320.54361	314.30336	298.27049
320.30217	317.22217	313.39796	319.7434	326.0938	320.98853	318.54009	300.70117
359.28676	366.84392	365.14549	367.03871	379.49006	361.41306	347.43261	327.33748
335.67164	337.72144	338.79558	350.42231	361.02707	350.38452	338.2045	319.1216
333.1115	328.58186	331.68617	339.92858	363.69752	357.11921	344.51155	328.76345
326.00162	324.5158	324.83606	350.08609	370.10541	371.9684	365.07932	359.3441
319.19617	314.85434	318.3241	330.37118	351.5656	359.60929	366.52903	364.04783
317.15583	312.3713	317.20391	327.29029	342.45059	335.32645	322.31947	310.59623

23	24
288.279	273.15
315.981	280.495
327.651	297.993
347.783	314.848
295.006	265.098
308.702	292.215
292.403	284.823
284.103	258.624
291.978	266.523
309.069	286.281
303.691	280.289
293.768	270.388
346.535	337.943
443.583	432.976
417.799	412.98
368.05	354.918
303.648	280.288
294.155	267.857
316.194	285.957
296.985	267.295
282.288	261.548
317.849	284.95
298.83	275.685
298.608	273.319
333.935	292.786
325.368	304.941
341.331	329.693
282.082	262.587
307.447	275.207
336.406	300.596
320.433	286.858
329.004	295.064
327.853	293.275
292.273	273.906
279.385	258.548
286.673	258.078
294.618	264.305

304.868	272.736
307.899	276.62
341.915	307.77
325.975	301.705
332.358	301.906
288.235	269.118
310.79	288.176
291.343	264.25
312.765	284.792
321.195	290.215
351.203	316.773
278.14	259.805
300.908	270.703
317.498	285.728
325.716	286.65
342.655	304.83
356.698	318.043
347.79	317.505
332.7	296.111
314.873	276.539
325.972	297.312
337.097	301.682
327.545	286.976
349.406	310.745
354.6	325.191
340.671	314.043
368.91	327.096
367.946	329.145
354.855	316.046
339.373	300.45
325.498	293.335
333.218	303.3
285.198	258.151
341.202	313
349.69	310.45
301.203	273.363
300.281	274.235
307.268	277.3
328.689	303.026
319.248	290.185
291.12	264.346
309.103	284.313
316.418	283.35

351.468	313.431
368.403	322.071
368.105	327.97
391.855	354.62
405.93	362.833
417.83	365.571
412.923	368.44
356.87	316.08
355.986	313.082
383.307	357.93
382	351
389	344
397	348
424	375
411	366
416	372
406	364
397	360
299	270
319	279
342	304
332	305
389.093	348.474
392.363	353.251
386.928	351.981
386.735	351.865
326.4	287.146
335.061	297.718
353.688	313.076
373.008	325.296
373.411	338.381
372.07	332.166
385.585	341.238
335.838	304.915
340.848	298.016
377.765	331.176
375.676	330.055
384.021	349.567
348.47	323.722
332.988	294.246
349.428	302.679
370.063	326.82
341.066	300.77
371.198	329.983

376.8	340.898
376.666	344.733
367.288	328.641
408.953	357.065
418.985	369.13
461.12	410.935
468.877	421.482
444.893	405.555
381.616	352.78
403.9	359.933
437.033	387.131
437.998	394.918
445.1	395.033
408.309	367.088
422.801	389.65
415.681	383.635
430.751	387.816
402.865	361.883
386.801	347.946
356.765	326.701
349.681	318.716
348.72	318.798
369.848	333.8
357.83	320.818
380.983	339.883
437.818	388.031
374.52	342.83
388.286	353.383
351.113	323.068
361.345	330.218
372.622	332.02
406.007	366.192
438.596	389.616
432.415	390.103
389.976	402.165
446.723	406.961
413.269	379.07
457.018	402.61
469.813	420.323
449.515	447.898
507.022	461.437
486.778	436.239
397.29	367.693
382.188	349.048

451.633	411.961
435.646	392.028
455.53821	360.203
371.785	341.111
393.451	361.041
440.771	401.156
423.291	388.085
460.553	419.583
528.933	475.883
520.938	467.59
515.645	471.217
515.502	468.375
491.32	444.088
492.71641	450.50341
528.58317	485.03016
510.95327	447.16617
518.07652	478.46139
446.97057	411.88649
506.41826	458.20534
422.40029	393.18818
410.23355	381.08549
490.87028	449.78315
422.18137	383.84119
475.41045	432.37427
487.01656	442.44581
507.48542	464.51523
496.91851	456.77022
497.41531	457.56333
388.57023	367.74619
425.66104	393.92824
442.30933	406.00321
448.74625	415.45535
484.4374	445.5722
499.05222	463.59026
502.63847	454.70337
420.24273	378.40123
427.76821	393.17517
491.98357	445.8684
473.38642	430.91036
459.29392	423.39544
453.22842	417.3004
462.57851	429.84542
453.92677	410.13038
403.53818	370.45116

482.56825	440.50119
432.07832	402.59019
501.68629	453.70018
491.97739	451.90024
497.51729	452.74025
520.51548	472.01029
563.20624	516.47642
565.63835	514.94332
566.74836	518.10847
558.20119	508.03518
557.78125	512.9632
567.66342	523.0433
549.00026	497.00019
507.58616	467.17018
511.3934	467.92124
468.85137	430.43827
400.14517	369.21413
394.59812	368.8301
489.43049	449.95843
411.95145	383.57321
506.49835	462.13839
500.53346	451.31835
459.0132	426.93115
474.13749	420.25037
492.03058	457.5655
490.53829	449.58427
443.99324	407.70613
496.45615	452.23812
415.38512	384.41611
404.55921	375.97531
417.82116	380.62014
400.72622	375.91327
409.27544	372.51341
406.60044	374.9265
435.31622	391.13532
468.58344	422.3704
468.63239	424.78937
470.84539	431.29238
391.61838	359.73037
423.87443	390.65332
478.65039	430.59937
487.14634	430.54112
483.98843	437.47034
493.37639	442.25135

452.38947	410.30022
451.86651	415.01447
442.13634	411.6084
462.12836	420.19636
466.02926	415.73821
427.08642	387.55848
400.44547	357.5185
416.95028	375.00019
402.53038	364.1404
368.57825	339.18923
429.74438	391.94531
426.75527	387.15534
428.9383	391.52356
422.24536	385.70633
431.48526	396.28542
422.48066	393.08645
412.15827	393.4083
387.753	351.403
386.966	347.138
399.625	362.106
410.223	373.534
427.886	390.692
434.471	404.965
382.625	358.185
305.561	274.653
322.894	291.007
380.394	341.528
414.332	380.343
421.585	391.18
428.28	391.389
352.753	327.597
317.191	288.356
294.089	266.831
294.802	263.893
310.587	282.151
332.615	298.446
332.496	301.758
339.263	314.298
323.777	288.281
369.83	327.007
354.275	317.116
361.171	323.21
375.742	336.335
358.034	327.092

343.104	317.207
361.199	319.08
370.713	330.654
369.577	327.972
285.9839	258.85089
304.23085	275.32274
311.69781	285.75075
270.11215	247.28125
272.26594	242.98641
296.10391	265.21586
307.05972	277.98185
324.03893	291.73636
347.21059	317.79057
367.16626	338.8703
373.85133	344.09623
335.32127	306.77544
279.96354	299.05345
334.19516	302.98514
319.0511	295.49208
313.79812	291.96102
321.28029	301.82517
305.86155	286.32562
304.24192	276.16885
344.83046	311.36077
350.05782	321.90264
318.67519	291.58016
255.53558	237.69864
275.85516	257.90012
286.26656	270.85545
330.20035	299.71026
292.44479	271.34892
362.95508	339.29326
336.31605	316.03676
297.91196	270.55667
332.0817	310.37143
345.55731	318.85934
346.34522	310.69527
318.84627	281.04752
306.02391	277.90345
346.31235	324.66448
314.42474	290.49977
301.42234	281.5323
314.67439	287.86358
305.73577	275.99534

348.05299	326.95291
312.18151	285.34955
310.15573	283.15055
309.73649	285.60138
298.25411	278.13626
295.90812	277.89911
297.97733	271.5653
334.64267	309.43557
372.17008	349.38292
328.87019	303.63036
319.06542	291.76712
302.69022	284.41615
294.2844	277.38228
285.41337	268.28612
287.42005	267.04103
302.02463	277.11565
295.39784	273.95707
310.89824	287.0003
344.08837	332.58664
356.59075	348.01654
308.53192	300.24104

TYSP Year 2024
Staff's Data Request # 1
Question No. 5

Year	Month	Actual Peak Demand (MW)	Demand Response Activated (MW)	Estimated Peak Demand (MW)	Day	Hour
2023	1	569	n/a	n/a	1/15/2023	9:00
	2	516	n/a	n/a	2/24/2023	17:00
	3	590	n/a	n/a	3/27/2023	18:00
	4	593	n/a	n/a	4/15/2023	17:00
	5	640	n/a	n/a	5/11/2023	18:00
	6	690	n/a	n/a	6/29/2023	16:00
	7	693	n/a	n/a	7/5/2023	15:00
	8	751	n/a	n/a	8/9/2023	17:00
	9	695	n/a	n/a	9/11/2023	17:00
	10	610	n/a	n/a	10/5/2023	16:00
	11	534	n/a	n/a	11/11/2023	15:00
	12	490	n/a	n/a	12/3/2023	16:00
2022	1	663	n/a	n/a	1/24/2022	8:00
	2	531	n/a	n/a	2/1/2022	8:00
	3	525	n/a	n/a	3/18/2022	18:00
	4	588	n/a	n/a	4/6/2022	17:00
	5	649	n/a	n/a	5/18/2022	17:00
	6	704	n/a	n/a	6/15/2022	17:00
	7	690	n/a	n/a	7/13/2022	17:00
	8	694	n/a	n/a	8/23/2022	15:00
	9	676	n/a	n/a	9/6/2022	17:00
	10	576	n/a	n/a	10/10/2022	18:00
	11	597	n/a	n/a	11/6/2022	13:00
	12	620	n/a	n/a	12/25/2022	9:00
2021	1	509	n/a	n/a	1/19/2021	8:00
	2	605	n/a	n/a	2/4/2021	8:00
	3	576	n/a	n/a	3/31/2021	17:00
	4	591	n/a	n/a	4/29/2021	18:00
	5	645	n/a	n/a	5/5/2021	18:00
	6	647	n/a	n/a	6/10/2021	17:00
	7	677	n/a	n/a	7/26/2021	16:00
	8	692	n/a	n/a	8/18/2021	17:00
	9	636	n/a	n/a	9/13/2021	15:00
	10	638	n/a	n/a	10/7/2021	17:00
	11	472	n/a	n/a	11/3/2021	17:00
	12	457	n/a	n/a	12/10/2021	15:00

Notes

(Include Notes Here)

System-Average Temperature
(Degrees F)
39.50
86.50
88.30
90.40
90.90
94.70
93.80
98.00
94.53
89.40
86.30
83.37
33.17
40.63
88.41
88.50
93.30
96.70
95.70
94.40
94.80
87.70
86.80
44.30
39.40
35.10
89.22
89.26
91.71
93.27
94.61
95.17
90.33
93.59
82.54
83.73

TYSP Year	2024
Staff's Data Request #	1
Question No.	20

Year	Number of PEVs	Number of Public PEV Charging Stations	Number of Public DCFC PEV Charging Stations.	Cumulative Impact of PEV	
				Summer Demand	Winter Demand
				(MW)	(MW)
2024	1844	25	1	1	1
2025	2379	30	1	1	1
2026	2983	40	1	2	2
2027	3650	50	1	3	3
2028	4382	55	1	3	3
2029	5183	60	2	3	3
2030	6024	65	2	5	5
2031	6873	70	2	5	5
2032	7735	75	2	6	6
2033	8595	80	2	6	6
Notes					
(Include Notes Here)					

Annual Energy
(GWh)
1.46
1.46
2.92
4.38
4.38
4.38
7.3
7.3
8.76
8.76

TYSP Year	2024
Staff's Data Request #	1
Question No.	27

[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**
		Sum	Win		Sum	Win	
2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2016	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2019	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes							
(Include Notes Here)							

Lost Capacity (MW)	
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
N/A	N/A
N/A	N/A
N/A	N/A

TYSP Year	2024
Staff's Data Request #	1
Question No.	28

[Demand Response Source or All Demand					
Year	**Summer**				
	Number of Events	**Average Event Size**		**Maximum Event Size**	
		MW	Number of Customers	MW	Number of Customers
2014	N/A	N/A	N/A	N/A	N/A
2015	N/A	N/A	N/A	N/A	N/A
2016	N/A	N/A	N/A	N/A	N/A
2017	N/A	N/A	N/A	N/A	N/A
2018	N/A	N/A	N/A	N/A	N/A
2019	N/A	N/A	N/A	N/A	N/A
2020	N/A	N/A	N/A	N/A	N/A
2021	N/A	N/A	N/A	N/A	N/A
2022	N/A	N/A	N/A	N/A	N/A
2023	N/A	N/A	N/A	N/A	N/A
Notes					
(Include Notes Here)					

Response Sources]				
Winter				
Number of Events	**Average Event Size**		**Maximum Event Size**	
	MW	Number of Customers	MW	Number of Customers
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	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	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	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

TYSP Year	2024
Staff's Data Request #	1
Question No.	29

[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
2014	N/A	N/A	N/A	N/A	N/A	N/A
2015	N/A	N/A	N/A	N/A	N/A	N/A
2016	N/A	N/A	N/A	N/A	N/A	N/A
2017	N/A	N/A	N/A	N/A	N/A	N/A
2018	N/A	N/A	N/A	N/A	N/A	N/A
2019	N/A	N/A	N/A	N/A	N/A	N/A
2020	N/A	N/A	N/A	N/A	N/A	N/A
2021	N/A	N/A	N/A	N/A	N/A	N/A
2022	N/A	N/A	N/A	N/A	N/A	N/A
2023	N/A	N/A	N/A	N/A	N/A	N/A
Notes						
(Include Notes Here)						

Capacity Activated
(MW)
N/A
N/A
N/A
N/A
N/A
N/A
N/A
N/A
N/A
N/A

Loss of Load Probability, Reserve Margin, and Expected Unserved Energy						
Base Case Load Forecast						
		Annual Isolated			Annual Assisted	
	Loss of Load	Reserve Margin (%)	Expected	Loss of Load	Reserve Margin (%)	Expected
	Probability	(Including Firm	Unserved Energy	Probability	(Including Firm	Unserved Energy
Year	(Days/Yr)	Purchases)	(MWh)	(Days/Yr)	Purchases)	(MWh)
2024	0.1	20	0	0.1	20	0
2025		25	0		25	0
2026		29	0		29	0
2027		17	0		17	0
2028		16	0		16	0
2029		16	0		16	0
2030		16	0		16	0
2031		17	0		17	0
2032		16	0		16	0
2033		15	0		15	0

Existing Generating Unit Operating Performance									
		Planned Outage Factor		Forced Outage Factor		Equivalent Availability Factor		Average Net Operating	
		(POF)		(FOF)		(EAF)		Heat Rate (ANOHR)	
Plant Name	Unit No.	Historical	Projected	Historical	Projected	Historical	Projected	Historical	Projected
Charles Larsen Memorial	GT2	0	0	100	100	0	0	0	0
Charles Larsen Memorial	GT3	0	0	100	100	0	0	0	0
Charles Larsen Memorial	8 CT	12.8	10	0.5	2	86.4	90	13.3	13
Charles Larsen Memorial	8 ST	13	10	5.5	4	69.1	90	0	0
Winston Peaking Station	1-20	0	0	0.1	3	99.5	99	12	12
C.D. McIntosh, Jr.	D1	0	0	1.5	3	98.2	99	38	20
C.D. McIntosh, Jr.	D2	0	0	8.2	5	91.8	99	57	20
C.D. McIntosh, Jr.	GT1	0.1	0	2.2	2	97.5	99	16.3	15
C.D. McIntosh, Jr.	GT2	3.3	3	0.2	0.2	92.2	99	12.7	12
C.D. McIntosh, Jr.	5 CT	6.3	5	12.8	3	80.1	90	11.5	11
C.D. McIntosh, Jr.	5 ST	6.5	5	13.1	3	79.6	90	0	0

NOTE: Historical - average of past three years

Projected - average of next ten years

TYSP Year	2024
Staff's Data Request #	1
Question No.	32

Facility Name	Unit No.	County Location	Unit Type[2]	Primary Fuel[3]	Commercial In-Service	
					Mo	Yr
Charles Larsen Memorial	GT2*	Polk	GT	NG	11	1962
Charles Larsen Memorial	GT3*	Polk	GT	NG	12	1962
Charles Larsen Memorial	8	Polk	CC	NG/DFO	4	1956
Winston Peaking Station	1-20	Polk	IC	DFO	12	2001
C.D. McIntosh, Jr.	D1	Polk	IC	DFO	1	1970
C.D. McIntosh, Jr.	D2	Polk	IC	DFO	1	1970
C.D. McIntosh, Jr.	GT1	Polk	GT	NG	5	1973
C.D. McIntosh, Jr.	GT2	Polk	ST	NG/DFO	6	2020
C.D. McIntosh, Jr.	5	Polk	CC	NG	5	2001

Notes

[2] Unit Type CC Combined Cycle CT Combined Cycle Combustion GT Combustion Gas Turbine ST Steam Turbine	[3] Primary Fuel DFO Distillate Fuel Oil BIT Bitumminous Coal NG Natural Gas	[4] 2023 Actual Capacity Fa * in long term maintenanc

Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor[4]
Sum	Win	Sum	Win	Sum	Win	(%)
10	14	10	14	10	14	0
9	13	9	13	9	13	0
110	126	115	125	114.5	124.5	23
50	50	50	50	50	50	0
2.5	2.5	2.5	2.5	2.5	2.5	0
2.5	2.5	2.5	2.5	2.5	2.5	0.4
17	19	17	19	17	19	0.3
120	125	120	125	119.5	124.5	2
359	405	352	398	352	398	53

ıctor

e and are not in operation at this time.

TYSP Year	2024
Staff's Data Request #	1
Question No.	33

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service	
					Mo	Yr
McIntosh Reciprocating Engine Plant(MREP)	ME01-06	Lakeland, Polk County	IC	Gas	12	2024

Notes

This project consists of installation of 6 units of 20 MW each RICE Engines.

Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Projected Capacity Factor
Sum	Win	Sum	Win	Sum	Win	(%)
120	120	120	120	120	120	20

TYSP Year	2024
Staff's Data Request #	1
Question No.	34

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service	
					Mo	Yr
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes						
There are no utility-owned existing renewable resources in Lakeland as of now.						

Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor
Sum	Win	Sum	Win	Sum	Win	(%)
N/A	N/A	N/A	N/A	N/A	N/A	N/A

TYSP Year	2024
Staff's Data Request #	1
Question No.	35

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service	
					Mo	Yr
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes						
(Include Notes Here)						

Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Projected Capacity Factor
Sum	Win	Sum	Win	Sum	Win	(%)
N/A	N/A	N/A	N/A	N/A	N/A	N/A

TYSP Year 2024
Staff's Data Request # 1
Question No. 37

Year		As-Available Energy ($/MWh)	On-Peak Average ($/MWh)	Off-Peak Average ($/MWh)
Actual	2014	N/A	N/A	N/A
	2015	N/A	N/A	N/A
	2016	N/A	N/A	N/A
	2017	N/A	N/A	N/A
	2018	N/A	N/A	N/A
	2019	N/A	N/A	N/A
	2020	N/A	N/A	N/A
	2021	N/A	N/A	N/A
	2022	N/A	N/A	N/A
	2023	N/A	N/A	N/A
Projected	2024	N/A	N/A	N/A
	2025	N/A	N/A	N/A
	2026	N/A	N/A	N/A
	2027	N/A	N/A	N/A
	2028	N/A	N/A	N/A
	2029	N/A	N/A	N/A
	2030	N/A	N/A	N/A
	2031	N/A	N/A	N/A
	2032	N/A	N/A	N/A
	2033	N/A	N/A	N/A
Notes				
N/A- Not Applicable				

TYSP Year	2024
Staff's Data Request #	1
Question No.	38

Generating Unit Name	Summer Capacity (MW)	Certification Dates (if Applicable)		In-Service Date (MM/YY)
		Need Approved (Commission)	PPSA Certified	
Nuclear Unit Additions				
N/A	N/A	N/A	N/A	N/A
Combustion Turbine/ RICE Unit Additions				
McIntosh Reciprocating Engine Plant(MREP), ME01-06*	120	N/A	N/A	Nov-24
Combined Cycle Unit Additions				
N/A	N/A	N/A	N/A	N/A
Steam Turbine Unit Additions				
N/A	N/A	N/A	N/A	N/A
Notes				
Note: RICE - Reciprocating Internal Combustion Engines (6 Units)				

TYSP Year 2024
Staff's Data Request # 1
Question No. 40

Plant	Unit No.	Unit Type	Fuel Type	Actual		
				2023	2024	2025
Charles Larsen Memorial	GT2	GT	NG	N/A	N/A	N/A
Charles Larsen Memorial	GT3	GT	NG	N/A	N/A	N/A
Charles Larsen Memorial	8	CC	NG	23.00	20.00	18.00
Winston Peaking Station	1-20	IC	DFO	<1	<1	<1
C.D. McIntosh, Jr.	D1	IC	DFO	<1	<1	<1
C.D. McIntosh, Jr.	D2	IC	DFO	<1	<1	<1
C.D. McIntosh, Jr.	GT1	GT	NG	<1	<1	<1
C.D. McIntosh, Jr.	5	CC	NG	53.00	65.00	60.00
C.D. McIntosh, Jr.	GT2	GT	NG	2.00	<5	<5
Reciprocating Engines	ME01-06	RICE	NG	N/A	N/A	N/A

Notes

* Net Capacity Factors.

Capacity Factor (%)*							
Projected							
2026	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
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	N/A	N/A
17.00	15.00	15.00	16.00	18.00	20.00	21.00	22.00
<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	<1	<1	<1	<1	<1	<1
<1	<1	<1	<1	<1	<1	<1	<1
70.00	72.00	65.00	56.00	55.00	72.00	70.00	65.00
<5	<5	<5	<5	<5	<5	<5	<5
~20	~20	~20	~20	~20	~20	~20	~20

TYSP Year	2024
Staff's Data Request #	1
Question No.	42

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					
(Include Notes Here)					

TYSP Year	2024
Staff's Data Request #	1
Question No.	43

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					
(Include Notes Here)					

TYSP Year	2024
Staff's Data Request #	1
Question No.	44

Transmission Line	Line Length (Miles)	Nominal Voltage (kV)	Date Need Approved	Date TLSA Certified
Hamilton-Dranefield 69 KV	5.5	69	N/A	N/A
MREP to Tenoroc	0.66	69	N/A	N/A
Notes				
These lines do not fall under Transmissin Line Siting Act.				

In-Service Date
Dec-24
Dec-24

Nominal, Firm Purchases		
	Firm Purchases	
Year	$/MWh	Escalation %
HISTORY:		
2021	56.89	
2022	69.71	
2023	40.50	
FORECAST:		
2024	34.48*	
2025	TBD	
2026	TBD	
2027		
2028		
2029		
2030		
2031		
2032		
2033		

TYSP Year	2024
Staff's Data Request #	1
Question No.	46

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes						
(Include Notes Here)						

acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
Win	Sum	Win	Sum	Win	Start	End
N/A	N/A	N/A	N/A	N/A	N/A	N/A

TYSP Year	2024
Staff's Data Request #	1
Question No.	47

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
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						
(Include Notes Here)						

‹acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
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

TYSP Year	2024
Staff's Data Request #	1
Question No.	48

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
Longroad Energy Holding LLC	RP Funding Center	n/a	Lakeland, Polk County, Fl	PV	Sunlight	0.25
Longroad Energy Holding LLC	Airport I	n/a	Lakeland, Polk County, Fl	PV	Sunlight	2.25
Toroise Clean Energy Partners, LLC	Airport II	n/a	Lakeland, Polk County, Fl	PV	Sunlight	2.75
TerraForm Power, LLC	Sutton	n/a	Lakeland, Polk County, Fl	PV	Sunlight	6
Clearway Energy Group, LLC	Airport III	n/a	Lakeland, Polk County, Fl	PV	Sunlight	3.15
Notes						
(Include Notes Here)						

acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
Win	Sum	Win	Sum	Win	Start	End
0.25	0.25	0.25	0.25	0.25	4/1/2010	3/30/2030
2.25	2.25	2.25	2.25	2.25	12/22/2011	11/1/2036
2.75	2.75	2.75	2.75	2.75	9/16/2012	8/31/2037
6	6	6	6	6	7/6/2015	7/1/2040
3.15	3.15	3.15	3.15	3.15	12/21/2016	11/30/2041

TYSP Year	2024
Staff's Data Request #	1
Question No.	49

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
Williams Solar	Edge Solar	N/A	Polk	PV	Sun	74.8
Notes						
(Include Notes Here)						

acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
Win	Sum	Win	Sum	Win	Start	End
74.8	74.8	74.8	74.8	74.8	TBD	TBD

TYSP Year	2024
Staff's Data Request #	1
Question No.	51

Buyer Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
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						
(Include Notes Here)						

acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
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

TYSP Year	2024
Staff's Data Request #	1
Question No.	52

Buyer Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capa
						Sum
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						
(Include Notes Here)						

acity (MW)	Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
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

TYSP Year	2024
Staff's Data Request #	1
Question No.	54

Renewable Source	Annual Renewable Generation (G					
	Actual	Projected				
	2023	2024	2025	2026	2027	2028
Utility - Firm						
Utility - Non-Firm						
Utility - Co-Firing						
Purchase - Firm						
Purchase - Non-Firm	25	24	23	139	170	187
Purchase - Co-Firing						
Customer - Owned	21	28	33	38	41	45
Total	46	52	56	177	211	232
Notes						
(Include Notes Here)						

GWh)				
ected				
2029	**2030**	**2031**	**2032**	**2033**
164	188	164	170	178
47	49	50	51	53
211	237	214	221	231

TYSP Year 2024
Staff's Data Request # 1
Question No. 63

Project Name	Pilot Program (Y/N)	In-Service/ Pilot Start Date (MM/YY)	Max Capacity Output (MW)	Max Energy Stored (MHh)	Conversion Efficiency (%)
Beirmann Tennis*	Y	2018	0.4	0.8	70

Notes

* The unit is on maintenance outage and is not operational at this moment.

TYSP Year 2024
Staff's Data Request # 1
Question No. 64

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
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	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	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
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

(Include Notes Here)

TYSP Year 2024
Staff's Data Request # 1
Question No. 71

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
2024	0	0	0	0
2025	0	0	0	0
2026	0	0	0	0
2027	0	0	0	0
2028	0	0	0	0
2029	0	0	0	0
2030	0	0	0	0
2031	0	0	0	0
2032	0	0	0	0
2033	0	0	0	0
Notes				
Not impacted by this rule.				

TYSP Year	2024
Staff's Data Request #	1
Question No.	72

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estin		
				ELGS	ACE or replacement	MATS
McIntosh GT2	CT	gas/oil	120		X	
McIntosh 3	Steam	coal/gas	342			
McIntosh 5	CC	gas	352		X	
McIntosh 8	CC	gas/oil	115		X	
Notes						
ACE: It is too early to know whether there will be any impacts to Units 5, 8, and MGT2 from the ACE rule replacement (						
MATS: Unit 3 had to have its scrubber upgraded (2015) to be able to comply with the rule. Unit 3 was retired in April 2						
CWIS: Unit 8's operation may be limited to simple cycle only, dependent on the costs of CWIS compliance strategies.						
CCR Non-Hazardous Waste: CCR Material from former Unit 3 continues to be regulated even though the Unit has been						

nated EPA Rule Impacts: Operational Effects			
CSAPR/ CAIR	CWIS	CCR	
		Non-Hazardous Waste	Special Waste
		X	
	X		
(yet to be finalized).			
021.			
retired.			

TYSP Year	2024
Staff's Data Request #	1
Question No.	73

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EP (C		
				ELGS	ACE or replacement	MATS
McIntosh GT2	CT	gas/oil	120		***	
McIntosh 3	steam	coal/gas	342			
McIntosh 5	CC	gas	352		***	
McIntosh 8	CC	gas/oil	115		***	

***McIntosh 8 - CWIS amount is dependent on the outcome of next permitting cycle and the engineering review of compliance s**

****McIntosh 3 - CCR non-hazardous waste amount is an estimate for closure of the on-site landfill and elimination of the pro closed prior to the CCR rule taking effect. This could lead to additional monitoring and closure costs. Until the rule is finali to be in the millions of dollars.**

*****ACE: McIntosh 3 was our only unit subject to ACE. It was retired in April 2021. It is too early to know whether there w replacement (yet to be finalized).**

'A Rule Impacts: Cost Effects
CPVRR $ millions)

CSAPR/ CAIR	CWIS	CCR	
		Non-Hazardous Waste	Special Waste
		15.6**	
	2.5*		

strategies.

ocess ponds. EPA has indicated additional regulation of landfills
zed, total economic effects cannot be quantified but are expected

will be any impacts to Units 5, 8, and MGT2 from the ACE rule

TYSP Year	2024
Staff's Data Request #	1
Question No.	74

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA (Mo		
				ELGS	ACE or replacement	MATS
McIntosh GT2	CT	gas/oil	120		**	
McIntosh 3	steam	coal/gas	342			
McIntosh 5	CC	gas	352		**	
McIntosh 8	CC	gas/oil	115		**	

Notes

***McIntosh 8 - CWIS amount is dependent on the outcome of next permitting cycle and the engineering review of compliance s**

****McIntosh 3 - CCR non-hazardous waste amount is an estimate for closure of the on-site landfill and elimination of the pro closed prior to the CCR rule taking effect. This could lead to additional monitoring and closure costs. Until the rule is finaliz**

*****ACE: McIntosh 3 was our only unit subject to ACE. It was retired in April 2021. It is too early to know whether there w replacement (yet to be finalized).**

Rule Impacts: Unit Availability nth/Year - Duration)			
CSAPR/ CAIR	CWIS	CCR	
		Non-Hazardous Waste	Special Waste
	*		

strategies.

ocess ponds. EPA has indicated additional regulation of landfills
ed, total economic effects cannot be quantified but are expected

will be any impacts to Units 5, 8, and MGT2 from the ACE rule

TYSP Year 2024
Staff's Data Request # 1
Question No. 76

Year		Uranium		Coal		Natur
		GWh	$/MMBTU	GWh	$/MMBTU	GWh
Actual	2014	0	N/A	278	3.59	1714
	2015	0	N/A	788	3.32	2204
	2016	0	N/A	805	3.16	1857
	2017	0	N/A	846	2.78	1589
	2018	0	N/A	969	2.76	2270
	2019	0	N/A	548	2.64	2382
	2020	0	N/A	385	2.45	2063
	2021	0	N/A	500	2.45	2258.59
	2022	0	N/A	0	N/A	2477
	2023	0	N/A	0	N/A	1976
Projected	2024	0	N/A	0	N/A	2081
	2025	0	N/A	0	N/A	2375
	2026	0	N/A	0	N/A	2440
	2027	0	N/A	0	N/A	2604
	2028	0	N/A	0	N/A	2377
	2029	0	N/A	0	N/A	2568
	2030	0	N/A	0	N/A	2403
	2031	0	N/A	0	N/A	2654
	2032	0	N/A	0	N/A	2433
	2033	0	N/A	0	N/A	2283

Notes

(Include Notes Here)

al Gas	Residual Oil		Distillate Oil		Hydrogen	
$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU
4.5299	0	20.22	0	26.18	0	N/A
2.7164	0	12.32	0	17.04	0	N/A
2.5385	0	10.75	0	15.72	0	N/A
3.0504	0	9.34	0	12.92	0	N/A
3.204	0	N/A	0	16.49	0	N/A
2.75	0	N/A	0	16.6	0	N/A
2.72	0	N/A	1	13.79	0	N/A
3.89	0	N/A	2	15.15	0	N/A
7.39	0	N/A	0	18.39	0	N/A
3.10	0	N/A	0	21.95	0	N/A
3.21	0	N/A	1	20.64	0	N/A
3.87	0	N/A	1	19.98	0	N/A
4.11	0	N/A	0	23.06	0	N/A
4.11	0	N/A	1	23.06	0	N/A
4.04	0	N/A	1	23.14	0	N/A
4.07	0	N/A	0	23.34	0	N/A
4.10	0	N/A	0	23.46	0	N/A
4.07	0	N/A	0	23.59	0	N/A
4.21	0	N/A	1	23.74	0	N/A
4.16	0	N/A	1	23.94	0	N/A

TYSP Year 2024
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Table I: Current Data Center Information

Data Centers Currently Located in Utility Service Area										
						For each of the Data Center				
Total No. of Data Centers	Customer Class Served	Total Energy Usage in 2023	Impact to Summer Peak Demand	Impact to Winter Peak Demand	Seasonality Observed, if any		Type of Data Center*	Energy Used in 2023	Hours of Peak Usage**	Impact to Peak Demand
		(MWHs)	(MWs)	(MWs)				(MWHs)		(MWs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	#	#	#	#	#	1	#	#	#	#
						2				
						3				
						...				

* Examples of the data center types: colocation, enterprise, cloud, edge, and micro data.
** Based on military time 1 - 24.
# No detail information on energy usage has been identified.

Table II: Planned Data Center Information

Planned Data Centers in Your Service Area						
	Type of Data Center*	Customer Class Served	Expected In-Service Data	Expected Annual Energy Usage	Expected Impact to Summer Peak Demand	Expected Impact to Winter Peak Demand
				(MWHs)	(MWs)	(MWs)
	(1)	(2)	(3)	(4)	(5)	(6)
1	N/A	N/A	N/A	N/A	N/A	N/A
2						
3						
...						

* Examples of the data center types: colocation, enterprise, cloud, edge, and micro data.