



May 2, 2022

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

Re: 2022 Ten Year Site Plan – Staff’s Data Request #2

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 #2 in relation to Lakeland Electric’s 2020 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

1. Please refer to NERC's Level 2 Alert, issued August 18, 2021, titled Cold Weather Preparations for Extreme Weather Events. Please indicate what changes, if any, the Utility has implemented or intends to implement to address the recommendations contained within the alert.

Lakeland Electric (LE) – a Generator Operator - has implemented its Extreme Cold Weather Plan in the past winter. This plan includes generator preparedness, critical equipment readiness, supplemental equipment readiness, and verification of adequate primary fuel supplies including secondary fuels. The Balancing Authority (BA) is developing a written emergency plan with gas and fuel oil management and purchasing strategy in the future. Also, LE and BA members conduct a periodic load shed exercise for possible EEA events.

2. Please refer to FERC Order Approving Cold Weather Reliability Standards, issued August 24, 2021. Please indicate what changes, if any, the Utility has implemented or intends to implement to address the revisions to the NERC Reliability Standards that become effective April 2023.

LE has implemented its Extreme Cold Weather Plan. This plan meets the requirements of the NERC reliability standards. LE has implemented the following checklists as mandatory as a part of pre-extreme winter weather preparation:

- Test motor heaters
- Test heat trace path
- Perform fuel swap operations for dual fuel units in winter
- Perform layup procedure for a unit with fogger system
- Conduct an audit of all insulations (piping, transmitters, and sensing lines etc.) and
- Scheduling a joint meeting prior to the extreme weather event to ensure that all critical departments are prepared and ready.

Appendices 4A-4B and 6A-6C present the mandatory checklist for the winterization effort from LE production unit.

3. Please refer to NERC's Project 2021-07: Extreme Cold Weather Grid Operations, Preparedness, and Coordination. Is the Utility a participant in this project? If so, please explain what way.

LE is not an active participant of this project. However, LE will be actively participating on any issues in the future recommended by this project in terms of revisions and modifications on existing standards.

4. Please refer to the FERC, NERC, and Regional Entity Staff Report: The February 2021 Cold Weather Outages in Texas and the South Central United States (2021 Cold Weather Report), issued November 2021. Please indicate what changes, if any, the Utility has implemented or intends to implement to address the

recommended revisions listed below to the NERC Reliability Standards identified in the 2021 Cold Weather Report.

- a. Identify and protect cold-weather critical components.
- b. Build all new and retrofit existing units to operate during extreme weather conditions, which include the impact of wind and precipitation.
- c. Perform annual training on winterization plans. If already incorporated, please provide the most recent winterization plan.
- d. Develop Corrective Action Plans for any affected generating units.
- e. Provide the balancing authority the percentage of generating capacity that can be relied upon during forecasted cold weather.
- f. Account for wind and precipitation when providing temperature data to the balancing authority.

A check list on Power Plant equipment is developed and prepared a test protocol to be completed by December 1st of every year before the winter starts. The samples of checklist are presented in Appendices 4A and 6A-6C. The following checklist for actions before pre-extreme winter weather is developed and planned to execute from now onwards (See Appendix 4B). Appendix 4C provides the sample training the Balancing Authority planned during emergency alert situation. Appendix 4D-4E provides the load shed exercise BA plans to perform for control room operators. Appendix 4F presents the sample of Capacity Assessment sheet based on ambient temperatures and wind chills at the plant sites. Appendix 15 is the sample of available capacity that is readily available to meet the expected load at the extreme weather condition, and this is provided to the BA.

5. Will the Utility's current capacity shortage plan require updating following the revisions to the NERC Reliability Standards that will go into effect April 2023 or the recommended revisions from the 2021 Cold Weather Report? If so, please identify the changes.

BA and members are in preparation of procedures to assess the capacity of units that are capable of running based on firm gas pipeline capacity and liquid fuel storage at the site during the extreme weather event.

6. For your generating units, please and provide the following information:
 - a. Identify any generating unit that has been winterized and describe the winterization activities that have been completed for each.
 - b. Identify any generating unit that still requires winterization and describe the winterization activities to be completed for each.
 - c. Identify any generating units the Utility does not intend to winterize and explain why.

Appendices 4A and 6A-6C present the scope and activities for generating units for winterization which has been completed and will continue in the future. All the generating units have been winterized in Lakeland.

7. Please list and describe all winterization activities the Utility has completed or intends to complete for its natural gas infrastructure. If none, please explain why.

As a reliability hedge for LE's new 120MWs of Natural Gas generation, LE is building a new Rice Plant loop natural gas infrastructure that allows single-unit isolation without losing all capacity. The majority of natural gas piping is below ground and therefore tends to remain at a constant temperature year-round. Also, the gas tends to be constantly flowing, so it is unnecessary for what little moisture is present in the gas to condense out or freeze in Florida. When the Utility does have an outage where it would not have gas flow, staff purges the system for safety. Lakeland Electric has two pipelines: Gulfstream and (FGT) which flow Natural Gas directly to its two power plants, McIntosh and Larsen.

Gulfstream has no plans for winterization of the pipeline because it is already well insulated from winter weather. Going from Coden, AL, across the Gulf of Mexico and being buried 3ft deep is excellent insulation from winter weather for the offshore portion. Then Gulfstream's route onshore in Florida is also buried 3ft deep, below-ground frost level. Gulfstream also has each compressor station in a building, further insulating the compressor stations from any inclement weather, which keeps housing temps above freezing.

FGT pipeline experienced good performance during the February 2021 winter event. This pipeline already has adequate procedures in place for its winterization.

8. Please identify any generating units that have experienced forced outages or derates due to cold weather conditions within the last ten-year period.
 - a. Please explain if these generating units have had corrective action plans developed for the identified equipment. If so, what has been done to evaluate whether the corrective action plan applies to similar equipment for other generating units in the Utility's generating fleet.

None of LE units had issues during cold weather conditions in the past 10 years. Nonetheless, LE production management has a solid winter readiness plan available to act upon for any future extreme weather conditions.

9. Please identify each of the Utility’s generating units that have dual fuel capabilities. As part of this response, please provide the following for each applicable generating unit.
 - a. Generating unit name and location, Net capacity by seasonal peak (Summer/Winter), Whether fuel switching derates/uprates the unit (and if so, by what amount).
 - b. Primary and secondary fuel type and sources, Number of days the generating unit could operate at full load using the secondary fuel source, Amount of time required to switch to secondary fuel.

Here are the LE’s generating units that have fuel capabilities and their capability to run in secondary fuel.

Generating Units (Lakeland, Polk County)	Net Capability (MW)	Fuel (Pri/Sec)	Fuel Switching	Days secondary fuel can run at full load (Liquid fuel storage)	Time (minutes) required to switch to secondary fuel
McIntosh Unit 5 Combined Cycle (CC)	378/332 (winter/summer)	Natural Gas (NG)	N/A	NA	N/A
With SPAG	388/342 (winter/summer)				
With Flex Fire	398/352 (winter/summer)				
McIntosh Gas Turbine 2	122/117 (winter/summer)	NG	Available	2	10
	115/112 (winter/summer)	#2 Oil			
Larsen Unit 8 Combined Cycle	118/106 (winter/summer)	NG	Available	2.7	10
	121/104 (winter/summer)	#2 Oil			
Winston – 20 RICE Units	50/50 (winter/summer)	#2 oil	N/A	N/A	N/A
McIntosh Gas Turbine 1	19/17 (winter/summer)	NG	Available	0.8	10
	16/14 (winter/summer)	#2 Oil			
McIntosh Diesels 1 & 2	2.5 Each (winter/summer)	#2 Oil	N/A	N/A	N/A

10. Please identify how many alerts and advisories, due to cold weather, have been issued within the last ten-year period, and describe each event that lead to the issuance of each alert/advisory.

To the best of knowledge, LE has not issued any alerts and advisories within the last ten-year period.

- a. As part of this response, please indicate whether interruptible/curtailable customers were interrupted during each event, and if so, the duration of the interruption.

N/A.

11. Please identify the number of times the Utility has had to perform rolling blackouts within the last ten-year period. As part of this response, please provide the reason for each rolling blackout, how many megawatts were impacted, and the duration of each rolling blackout.

LE has not performed rolling blackouts within the last ten-year period.

12. Please identify the total number of megawatts that can be controlled during rolling blackouts. As part of this response, please describe how this amount was determined, the priorities for interrupting firm load, and provide the anticipated duration between rolling blackouts.

LE's initial response to an interruption of firm load would be to deploy our interruptible customer load shed plan. This is a combined total of 16.7 MW. LE also has critical load that would be taken into consideration which include distribution circuits feeding hospitals and the utility control center. The rest of the event would be determined by MWs available and would be distributed evenly across the system, based on need. Lakeland is capable of controlling 100% of its 650MWs +/- for rolling blackout purposes.

13. Please explain how the Utility coordinates with co-generators, qualifying facilities, and other non-utility generators during cold weather events to maximize generating capacity. As part of this response, please explain how the Utility determines as-available energy prices if all available Utility assets are already dispatched.

LE has power purchase agreements with 14 MW of different size solar facilities (qualifying facilities) and LE has an obligation to purchase energy and capacity when becoming available. Since these purchase prices are fixed, energy prices from those facilities during the extreme cold weather event does not change. However, when purchasing additional energy from other non-utility generators (i.e., sellers) under the cold weather event, the purchased prices are based on contractual agreement between energy buyer (i.e., LE) and sellers.

14. Please list each form of communication (such as phone calls, text, utility website, social media, etc.) the Utility uses to inform customers of anticipated cold weather events. As part of this response, please provide a sample of such communications.

LE informs its customers through its social media such as Facebook and twitter to act for energy conservation when LE's electric demand is expected to be excessively high. Lakeland Electric customers are automatically enrolled to receive notifications if there is an outage due to high demand conditions in the territory and notification back when the power will be back normal. The customers can receive alerts by phone, text, or email to keep you informed about the power outage notification due to cold weather event. See Appendices 14A-14C for the sample of alert we send to the customers through Facebook.

15. Please refer to the Florida cold weather event from January 29-31, 2022, and provide the following for each day during the event.
 - a. Anticipated load forecast.
 - b. Anticipated operating reserve (with and without demand response).
 - c. Actual load, and if available, actual operating reserve.
 - d. Amount of customer outages due to cold weather that occurred, if any.
 - e. Amount of generating capacity de-rated or forced offline due to cold weather, if any. If forced outages occurred, identify each generating unit de-rated or forced offline, and the cause of the derating or forced outage, if known.
 - f. Whether demand response and/or interruptible/curtailable assets were activated. If so, please identify which programs, the number of customers interrupted, the amount of capacity interrupted, and the frequency of interruptions.

LE's BA produces load forecast before the operating day in order to commit units to assure resource adequacy and avoid future price volatility. Appendix 15 provides the Day Ahead Load forecast, actual load, and actual operating reserve during the cold weather event from January 29-31, 2022. None of the Lakeland units were de-rated and forced out during this period. As a result, the operating reserve remained more than 15% in all hours during the period. LE did not need any customers interrupted during this period.

16. Please refer to the Florida cold weather event from January 29-31, 2022. Please explain if any winterization plans were enacted during this time. If so, please describe what activities were involved.

The Energy Production department in Lakeland Electric prepared its comprehensive Winter Readiness Plan in October 2021. All generators at each plant site were enacted with further winterization performance checklists, expanding fuel storage and DI water storage and production before the weather event during January 29-31, 2022. All critical personnel were made readily available during the event with necessary re-positioning. There were multiple phone calls during the day as a part of coordinating effort within the BA members to monitor real time conditions on

fuel supply, generation and transmission availability. As a result, there were no de-rates and forced outage occurrence on LE's generating units during this period.

17. Please refer to the NERC 2021-2022 Winter Reliability Assessment, issued November 2021, for the following questions. Please provide load forecast and generation availability data provided to your regional entity for use in NERC's winter reliability assessment. As part of your response, explain how the data was derived and what assumptions were used.

Appendix 17 presents the extreme weather peak load forecast used by LE. The Extreme Weather Scenario aligns with more recent Florida Reliability Coordinating Council (FRCC)'s Load Forecasting Working Group definition of Extreme Weather – 95/5 forecast to accommodate the guidelines of NERC 2021-2022 Winter Reliability Assessment, issued November 2021. Extreme 95/5 weather load is such that 95% of the time the load is not expected to exceed. The extreme loads are expected to be 10% more than normal (50/50) winter peak. For this forecast, impact of DER (Electric Vehicles and Customer Photovoltaic) is included in the forecast assumptions. For this extreme case scenario, Lakeland has more capacity than expected load. But FRCC's anticipated reserve margin is expected to be more than 20%. Hence, the reliability in Florida Peninsula is adequate.

18. **[TECO & FPL Only]** Please identify and describe any actions undertaken to encourage adoption of natural gas heating over electric resistance (strip) heating. If no actions have been taken, please explain why.

Not Applicable to Lakeland Electric.

Appendix 4A: The extreme winter weather Checklist

<u>MPP Unit 5</u>			
Equipment	Breaker	Tested By	Work Order if needed
Heat Trace #5	M05E010-02		
Heat Trace #2 - <u>BFP Recric Lines</u>	M05E010-03		
SAT Transformer Heater	M05E011-08		
<u>SMT Tranformer Heater</u>	M05E014-03		
5KV Switchgear / MCC Heaters	M05E015-08		
480V Switchgear Heaters	M05E015-09		
5KV Bus duct Heaters	M05E015-10		
480V MCC Heaters MCC-05C003	M05E015-11		
480V MCC Heaters MCC-05C004	M05E015-12		
480V Bus Duct Heaters	M05E015-13		
MCC-05C003 Motor Space Heaters	M05E015-18		
MCC-05C004 Motor Space Heaters	M05E015-20		
DC Motor Space Heater	M05E015-22		
MCC-1 Motor Space Heaters	M05E015-23		
MCC-2 Motor Space Heaters	M05E015-25		
480 <u>SWGR</u> Space Heaters	M05E017-05		
480V BUS DUCT Space Heaters	M05E017-06		

Appendix 4B: The extreme winter weather Checklist

MCO / Craft

- Test Motor Heaters (checklist attached) and provide checklist to Operations Shift Supervisor.
- Test Heat Trace (checklist attached) and provide checklist to Operations Shift Supervisor.
- Perform Fuel swap on dual fuel unit if available (perform monthly fuel swap)
- Drain compressor wash systems prior to temperatures dropping below 55°F for longer than 4-hours.
- Unit 8 fogger system - perform layup procedure prior to temperatures dropping below 55°F for longer than 4-hours.
- Unit 5 and MGT2 evaporator cooler system - perform layup procedure prior to temperatures dropping below 55°F for longer than 4-hours.
- Conduct an audit of all insulation (piping, transmitters, sensing lines). Write work orders as needed and provide audit sheet to Operations Shift Supervisor.

Appendix 4C: Sample Load Management Procedure for Control Room Operators

- ▶ Ba should request an EEA-2 prior to implementing its load management procedures to maintain its Contingency Reserves
- ▶ Actions BA should consider during a declared EEA-2:
 - Implement public awareness program by all BA members if appropriate
 - Curtail non-firm customers by all BA members
 - Currently no BA member has non-firm customers
 - Implement Demand-Side Management (DSM)
 - Currently no BA member has DSM
 - BA could implement Voltage Reduction if appropriate
 - Utility load conservation measures

Appendix 4D-4E: Load Shed Exercise during Contingency Event

- ▶ Time 12:00
- ▶ Conventional Generation available
 - Stanton A Tripped
 - 3517 MW
- ▶ Resources
 - St Lucie – 135 MW
 - Solar (Peak) – 135 MW
 - Solar (Current) – 135 MW
- ▶ Scheduled Interchange
 - Total 223 MW
 - 228 MW of non-firm sales
- ▶ Expected peak load
 - 3700 MW
 - Previous BA Peak
 - 8/18/2021
 - 3675 MW
- ▶ Current load
 - 3250 MW
- ▶ Contingency Reserves Requirement
 - 144 MW

Appendix 4F: Temperature Dependent Capacity Assessment by BA

ORLANDO AREA WEATHER FCST
HIGH TEMP - 89° - 91°
LOW TEMP - 67° - 68°
WIND - NNE @ 10-15 MPH
% PRECIP - 30-40
DEW POINT - 61° - 66°

FRCC DAILY CAPACITY ASSESSMENT INPUT FORM

Submit by: 9:00 AM May 1st through October 31st
11:00 AM November 1st through April 31st

4/27/2022

OPERATING/BALANCING AUTHORITY: FMPP

- | | | |
|--|-------|----|
| 1. Your total capacity: | 4,496 | MW |
| 2. Your unscheduled but available capacity at peak: | 36 | MW |
| 3. Your total capacity unavailable or limited at peak (Including Forced, Scheduled, Cycled-off and Derations): | 899 | MW |

Appendix 6A: Larsen Power Plant Sample Check List (Larsen Combined Cycle)

LPP Unit 8			
Equipment	Breaker	Tested By	Work Order if needed
Switchgear Heaters	L04E003-01		
Switchgear Heaters	L04E003-02		
Switchgear Heaters	L06E002-015		
Circ Water Pump Motor Heaters	L06E009-20		
2.4Kv Motor Heaters	L06G001-07D		
Heat Trace	L08C002-04AL		
Heat Trace	L08C003-01B		

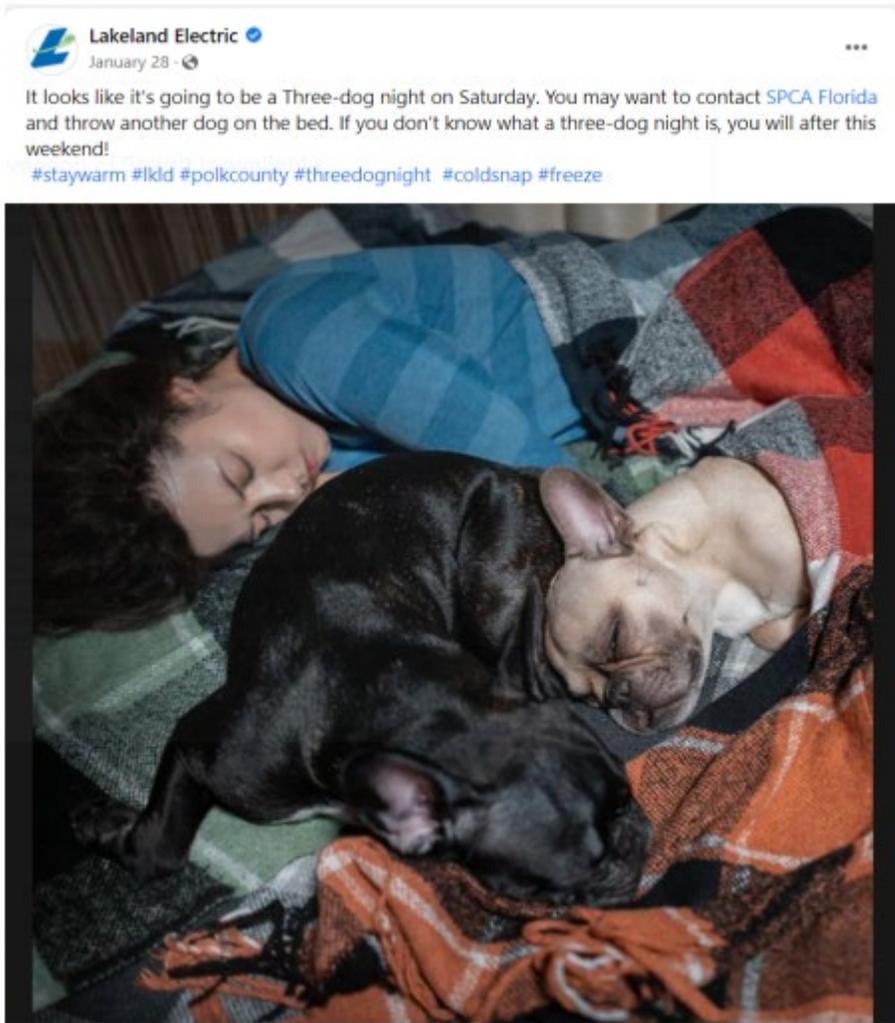
Appendix 6B: Power Plant Check List (McIntosh Gas Turbine)

MGT2			
Equipment	Breaker	Tested By	Work Order if needed
Motor Heater Fuse Block Compartment	MG2C001-03B		
Generator Space Heater	MG2C001-07A		
Mechanical Package Heater	MG2C001-07CL		
Lube Oil Reservoir Hater	MG2C001-09B		
5KV SWGR Space Heaters	MG2E003-06		
5KV MCC Space Heaters	MG2E003-07		
480V SWGR Space Heater	MG2E003-08		
AC & DC MCC Space Heaters	MG2E005-01		
Motor Space Heaters	MG2E005-09		
Lineside Cubicle Space Heaters	MG2E005-12		
Exciter Anticondensation Heater	MG2E005-20		
FM 200 Encl Space Heater	MG2E005-25		

Appendix 6C: Power Plant Check List (Winston RICE Engines)

Winston 1-25			
Equipment	Breaker	Tested By	Work Order if needed
ENGINE JACKET IMMERSION WATER HEATER 10	WGS1C001-02A		
ENGINE JACKET IMMERSION WATER HEATER 09	WGS1C001-03B		
ENGINE JACKET IMMERSION WATER HEATER 08	WGS1C001-05D		
ENGINE JACKET IMMERSION WATER HEATER 06	WGS1C001-06A		
ENGINE JACKET IMMERSION WATER HEATER 07	WGS1C001-06F		
ENGINE JACKET IMMERSION WATER HEATER 01	WGS1C002-01B		
ENGINE JACKET IMMERSION WATER HEATER 02	WGS1C002-01G		
ENGINE JACKET IMMERSION WATER HEATER 03	WGS1C002-02E		
ENGINE JACKET IMMERSION WATER HEATER 04	WGS1C002-04B		
ENGINE JACKET IMMERSION WATER HEATER 05	WGS1C002-05A		
ENGINE JACKET IMMERSION WATER HEATER 20	WGS1C003-02A		
ENGINE JACKET IMMERSION WATER HEATER 19	WGS1C003-03B		
ENGINE JACKET IMMERSION WATER HEATER 18	WGS1C003-05D		

Appendix 14A: Potential freeze alert through social media



Appendix 14B: Energy Conservation tips for Customers



Appendix 14C: Energy Conservation tips for Customers



Lakeland Electric ✓
January 9, 2020 · 🌐

Warmer temperatures are on the way, but if you're powering up your space heater during this cold snap, remember they pose significant fire and electric shock hazards if not used properly. Here are some tips for keeping your home safe and warm when it's cold outside:

- Never leave a space heater unattended.
- Heaters must be kept at least three feet away from anything that can burn, including paper, clothing, bedding, and rugs.
- Plug space heaters directly into a wall outlet.... [See more](#)



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Appendix 15: Forecast and Actual load during extreme weather event and Actual Operating reserve Available)

Capacity Available	Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Op Reserve (%)	01/29/2022	160%	155%	140%	129%	117%	64%	78%	66%	60%	61%	66%	75%	86%	95%	101%	105%	102%	86%	63%	53%	51%	49%	48%	50%
	01/30/2022	48%	48%	49%	48%	43%	35%	32%	25%	21%	31%	43%	58%	73%	89%	105%	117%	114%	105%	81%	68%	64%	63%	66%	68%
	01/31/2022	44%	38%	57%	53%	44%	34%	22%	18%	26%	47%	69%	88%	111%	121%	132%	136%	140%	130%	104%	96%	100%	107%	118%	123%
Op Reserve (MW)	01/29/2022	358	352	333	316	297	124	204	187	169	176	191	215	242	261	273	281	274	238	178	145	139	132	131	138
	01/30/2022	131	133	138	139	119	84	71	38	12	61	113	165	210	249	281	301	296	277	227	191	181	178	186	191
	01/31/2022	114	90	160	146	116	72	18	-3	38	126	196	245	290	307	324	330	334	319	275	258	267	280	300	308
Forecast error (%)	01/29/2022	25%	18%	10%	5%	2%	2%	5%	3%	3%	6%	9%	14%	19%	20%	20%	21%	22%	24%	21%	19%	18%	14%	9%	6%
	01/30/2022	2%	0%	0%	0%	-1%	0%	7%	7%	7%	10%	12%	13%	16%	20%	23%	25%	24%	30%	26%	21%	20%	17%	16%	14%
	01/31/2022	-9%	-13%	-1%	-2%	-3%	-3%	-3%	-2%	1%	8%	14%	17%	22%	19%	19%	19%	23%	26%	20%	17%	19%	19%	20%	17%
Actual Load (MW)	01/29/2022	301	307	326	343	362	392	423	472	493	491	477	453	426	407	395	387	391	422	481	514	520	527	528	521
	01/30/2022	528	534	540	547	565	600	615	643	650	606	555	503	458	418	385	365	368	382	432	468	478	481	473	468
	01/31/2022	545	569	499	513	543	587	639	660	622	538	468	420	375	357	340	334	328	341	384	401	392	379	359	351
Forecasted Load (MW)	01/29/2022	375	363	359	360	371	400	443	484	510	520	521	517	506	489	475	468	476	524	584	612	616	601	576	554
	01/30/2022	537	534	539	546	562	600	655	690	693	668	620	570	531	500	473	456	456	495	545	567	572	565	550	534
	01/31/2022	495	494	496	505	527	568	621	650	629	583	535	492	456	425	405	396	403	431	460	470	465	452	431	410
Capacity Available (MW)	1/29/2022	784	784	784	784	784	641	752	784	787	792	793	793	793	793	793	793	790	785	784	784	784	784	784	784
	1/30/2022	784	792	803	811	809	809	811	806	787	792	793	793	793	793	792	791	791	789	784	784	784	784	784	784
	1/31/2022	784	784	784	784	784	784	782	782	785	789	789	790	790	789	789	789	787	785	784	784	784	784	784	784

Appendix 17: LE’s expected load at extreme weather vs Capacity Available (expected)

Calendar Year	Winter Peak - Extreme Low Case (MW)	Winter Peak - Base Case (MW)	Winter Peak - Extreme High Case (MW)	Winter Capacity Available	Extreme Weather Winter Peak - % of Base Winter Peak	Reserve Margin (Expected)during extreme weather
2023	585	669	739	840	110%	14%
2024	591	674	745	835	110%	12%
2025	595	679	750	835	110%	11%
2026	599	683	754	835	110%	11%
2027	603	688	760	835	110%	10%
2028	609	695	766	835	110%	9%
2029	614	700	772	835	110%	8%
2030	617	704	776	835	110%	8%
2031	622	709	782	835	110%	7%
2032	627	715	789	835	110%	6%