



Matthew R. Bernier  
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Duke Energy Florida, LLC.

May 17, 2021

**VIA ELECTRONIC FILING**

Adam J. Teitzman, Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399-0850

Re: *2021 Ten-Year Site Plan Supplemental Data Request; Undocketed*

Dear Mr. Teitzman:

Please find enclosed for filing, Duke Energy Florida, LLC's Response to Staff's Supplemental Data Request #1, specifically questions 3 through 83, regarding the 2021 TYSP correspondence issued on March 16, 2021.

Thank you for your assistance in this matter. Please feel free to call me at (850) 521-1428 should you have any questions concerning this filing.

Respectfully,

*s/Matthew R. Bernier*

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MRB/mw  
Enclosures

cc: Donald Phillips and Damian Kistner, Division of Engineering, FPSC

**Duke Energy Florida, LLC's  
Response to Staff's Supplemental Data Request #1 (Nos. 3-83)**

**General Items**

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

**Response:**

Please see following tabs of the attached Excel File *Data Request #1 – Excel Tables*:

*Q03-Unit Performance*

*Q03-Firm Purchases*

*Q03-Financial Assumptions*

*Q03-Financial Escalation*

*Q03-LOLP.*

**Environmental Compliance Costs**

4. Please explain if the Company assumes CO<sub>2</sub> compliance costs in the resource planning process used to generate the resource plan presented in the Company's current planning period TYSP. If the response is affirmative:
  - a. Please identify the year during the current planning period in which CO<sub>2</sub> compliance costs are first assumed to have a non-zero value.
  - b. **[Investor-Owned Utilities Only]** Please explain if the exclusion of CO<sub>2</sub> compliance costs would result in a different resource plan than that presented in the Company's current planning period TYSP.
  - c. **[Investor-Owned Utilities Only]** Please provide a revised resource plan assuming no CO<sub>2</sub> compliance costs.

**Response:**

DEF assumes CO<sub>2</sub> compliance costs in the resource planning process used to generate the resource plan presented in the current TYSP.

- a. The year during the current planning period in which CO<sub>2</sub> compliance costs are first assumed to have a non-zero value is 2025.

- b. While DEF has not done an in-depth planning study to determine the resource plan without a CO2 compliance cost, any impacts would be to the quantity of solar PV selected. Project based evaluations, however, indicate that DEF solar provides cost-effective emission-free resources producing customer savings over the useful life of the solar power plants. These cost-effective emission-free resources are thoughtfully phased in over time so that DEF can continue to learn and further optimize its total resource mix while also being able to address future climate policies with consideration given to all emissions in general, (e.g. SO2, NOx, CO2, CH4, etc.) if needed. DEF does not expect a significant change to the TYSP resource plan.
- c. DEF has not performed an in-depth planning exercise to determine the resource plan assuming no CO2 compliance costs.

### **Flood Mitigation**

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

#### **Response:**

**Power Plants** - Each of Duke Energy Florida's (DEF) existing generating facilities have a Natural Disaster Emergency Response Plan that details the actions the facility will execute in the event of a forecasted or impending natural disaster. This includes attempts to mitigate the impacts of coastal floods, flash floods and high water events.

DEF's fossil engineering new power plant design criteria require all sites to have a grade level above the 100-year flood level. In some cases, this is addressed by raising the site elevation. DEF solar and storage sites are typically located above the 100-year flood level.

**Transmission/Distribution Substations** - DEF's Substation Flood Mitigation program builds in protection for substations most vulnerable to flood damage using flood plain and storm surge data. It includes a systematic review and prioritization of substations at risk of flooding to determine the proper mitigation solution, which may include elevating or modifying equipment, or relocating substations altogether.

Flood mitigation is a targeted application of mitigation measures for the 69kV to 12kV substations. New assets could include control houses, relays, or total station rebuilds to increase elevation, etc.

### **Load & Demand Forecasting**

6. **[Investor-Owned Utilities Only]** Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing, on a system-wide basis, the hourly system load in megawatts (MW) for the period January 1 through December 31 of the year prior to the current planning period. For leap years, please include load values for February 29. Otherwise, leave that row blank. Please also describe how loads are calculated for those hours just prior to and following Daylight Savings Time.

#### **Response:**

Please see tab *Q06-Hourly System load* of the attached Excel File *Data Request #1 – Excel Tables*.

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

#### **Response:**

Please see table below and tab *Q07-Historic Peak Demand* of the attached Excel File *Data Request #1 – Excel Tables*.

Year	Month	Actual	Demand	Estimated	Day	Hour	System-Average
		Peak Demand	Response Activated	Peak Demand			Temperature
		(MW)	(MW)	(MW)			(Degrees F)
2020	1	8,407	0	8,407	22	8	34.8
	2	6,312	0	6,312	13	17	80.1
	3	8,090	0	8,090	30	18	83.1
	4	8,146	0	8,146	13	17	85.3
	5	8,592	0	8,592	22	17	89.1
	6	9,647	0	9,647	25	17	91.0
	7	9,393	0	9,393	14	17	87.8
	8	9,623	0	9,623	25	17	88.9
	9	9,533	0	9,533	3	17	89.4
	10	8,468	0	8,468	7	16	86.6
	11	6,943	0	6,943	15	16	76.1
	12	7,551	0	7,551	27	9	40.5
2019	1	7,248	0	7,248	29	8	40.8
	2	6,784	0	6,784	22	17	86.0
	3	6,632	0	6,632	11	18	84.2
	4	7,521	0	7,521	30	17	88.8
	5	9,175	0	9,175	28	17	96.0
	6	9,970	0	9,970	25	17	95.7
	7	9,585	0	9,585	16	17	94.3
	8	9,190	0	9,190	21	17	92.7
	9	9,273	0	9,273	9	17	94.7
	10	8,393	0	8,393	4	17	93.0
	11	6,918	0	6,918	7	16	87.4
	12	5,895	0	5,895	19	8	46.0
2018	1	10,320	0	10,320	18	8	27.4
	2	6,980	0	6,980	26	16	83.8
	3	6,462	0	6,462	1	16	83.4
	4	6,524	0	6,524	9	18	85.5
	5	8,094	0	8,094	24	17	88.7
	6	8,894	0	8,894	22	16	91.2
	7	8,740	0	8,740	27	16	88.6
	8	9,271	0	9,271	8	17	92.6
	9	9,147	0	9,147	17	17	91.4
	10	8,656	0	8,656	16	17	90.8
	11	7,361	0	7,361	9	15	84.2
	12	7,621	0	7,621	12	8	40.4
<b>Notes</b>							
Temperatures are at hour ended peak hour. System weighted St Pete (45%), Orlando (45%), and Tallahassee (10%).							

- 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.

**Response:**

DEF uses dry bulb temperature readings from three weather stations - St Petersburg (45%), Orlando (45%) and Tallahassee (10%), weight included in parenthesis.

Weather station weightings are developed using “weather-sensitive” energy sales by customer building types reported by eighteen individual Operation Centers located around the service area. Energy sales by Operation Centers are grouped to its closest weather station to determine weather station weights.

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

**Response:**

The 2021 TYSP document describes the methodology, assumptions, data sources, third-party consultant(s) involved and anticipated forecast accuracy. As in every published DEF Load Forecast, the use of “most recently available” economic projections from a most-reliable source has been employed. Also, every TYSP Base Case planning projection is designed to result in a 50/50 probability of outcome.

Differences from the previous TYSP projection include an updated 30-Year normal weather assumption. The company applied a 30-Year average using 1990-2019. Updated EIA survey data for the South Atlantic EIA region involving end-use appliance saturation rates and average efficiency levels were incorporated as well.

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

**Response:**

2021 Settlement Agreement, including General Base Rate Increases: 20210016-EI.  
Standard Offer Contract docket number: 20210065-EQ.

11. Please explain if your Company evaluates the accuracy of its forecasts of customer growth and annual retail energy sales presented in its past TYSPs by comparing the actual data for a given year to the data forecasted one, two, three, four, five, or six years prior.

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

**Response:**

DEF maintains annual Forecast Evaluation Tables reflecting projection accuracy for all previous TYSP projections from 2002 to 2020 for Net Energy for Load (NEL), System Customers, System MW and Retail MW. Each previous projection's ten-year forecast horizon is compared to all existing comparable historical data-to date. For NEL and Customer data, reported actual company data is compared to projection. For System and Retail MW, both actual and forecast Summer and Winter MW peaks are evaluated on a comparable basis assuming no activated demand response. See attached file *TYSP Error Fan\_2021.xlsx*.

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

**Response:**

Please refer to response to Q11 and the corresponding excel file.

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

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

**Response:**

- a. DEF customer growth has always been dominated by the Residential and Commercial customer classes. Customer growth trends are driven by broad economic and demographic trends. These generic trends are typically covered in each year's assumptions section of the DEF's TYSP. Items like population growth, population migration, retirement demographic trends determine customer growth. Housing market issues like affordability, mortgage rates and job growth have always applied a significant influence on customer growth dynamics as well. More recent site plans reflect a return to the long-term trend of population migration into Florida. Commercial customer growth typically tracks residential growth supplying needed services.

One anomalous period of importance now buried in the middle of the error fan time horizon was the U.S. financial crisis. The severe financial crisis in the 2008-2010 timeframe caused many homeowners to lose substantial equity and in some cases their homes. This severely limited both retirees and other movers from migrating to Florida for a period. Negative forecast variances can be seen in the "System Customers" tab of the "error fan" all the way through projections made between 2003-2009 for the years 2009-2017.

There are no projections of future wars, pandemics, or abnormal weather events embedded in the customer growth forecast.

- b. Residential and commercial class per customer usage are driven, primarily, by fluctuations in electric price, end use appliance saturation, changing (improving) end use appliance efficiency, improved building codes, housing type/building size, and space conditioning equipment fuel type. More recently, the ability to self-generate has begun to make an impact. A small percentage of industrial/commercial customers have chosen to install their own natural gas generation, reducing KWh consumption from the power grid. Similarly, residential and some commercial accounts have reduced their utility requirements by installing solar panels behind their meter. Contrarily, the penetration of plug-in electric vehicles has grown, leading to an increase in residential use per customer, all else being equal. Each of these stated items are handled either implicitly in the economic scenario presented by Moody's Analytics or explicitly in the internal DEF projections of UEE, Solar PV and plug-in Electric Vehicles.
- c. This series is defined as the aggregation of all retail, wholesale, "company use" energy consumption. The resulting sum is grossed up to "generation level requirements" by applying a line-loss factor which estimates transmission line-losses. Non-weather trends

and variation in this series include all items listed in parts “a.” and “b.” above. A very significant item included in NEL is “Sales for Resale” MWh. Sales for Resale or Wholesale energy sales are bulk transactions to sell power through contractual obligations that typically include a maximum MW capacity. DEF was successful for winning many wholesale power contracts in past years but the non-renewal of many contracts of late has caused a significant drop in SFR sales and thus NEL.

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

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

**Response:**

- a. Conservation (utility-sponsored and “naturally occurring” appliance efficiency & building code improvements) and self-generation are primary contributors to the long-term trends in lower energy use per customer and resulting reductions in the growth of the peak demand. Stricter building codes and improved heating/cooling (as well as other) equipment efficiencies have been a steady and effective way to reduce the growth in Summer/Winter peak for all classes of customers. The forecast projects continuing improvement as newer homes and newer appliances replace older, less efficient homes and appliances. DEF’s conservation programs incentivize customers to purchase heating/cooling equipment at a level just above the required Federal Standards. In addition to conservation measures, customers in several different customer classes have installed “behind-the-meter” solar generation and more are projected to in the forecast. DEF has experienced a slight increase in installations of small gas turbines on-site of a paper manufacturer and a large hospital. If natural gas remains cheap and plentiful, we can expect to see more.

- b. DEF residential customers continue to allow the company to control their designated home appliances. The number of billed accounts on residential DR tariffs went from 396,000 in 2010 to 439,000 in 2020. It can be expected to continue trending upward in the projection period.
  - c. Please see response to Q13. Most factors that impact levels of “energy” have similar effects for energy at time of peak.
  - d. Please see response to Q13. Most factors that impact levels of “energy” have similar effects for energy at time of peak.
15. Please explain any anomalies caused by non-weather events with regard to annual historical data points for the period 10 years prior to the current planning period that have contributed to the Company's Summer/Winter Peak Energy Demand.

**Response:**

In the 10-year period beginning in 2011 there have been significant non-weather changes or anomalies impacting DEF's Summer/Winter Peak MW demand. One such “anomaly” involves served wholesale customers. Prior to 2010, DEF's service to wholesale jurisdictional demand and energy was a greater share of total company Summer Peak, Winter Peak and NEL. By 2020 the level of wholesale peak demand and energy requirements reduced to lower levels.

Secondly, seasonal peak demand has been affected by more efficient end-use appliances and lighting. Surely, all end uses drawing power on-peak will reflect the improved level of efficiency improvement mandated by the Federal governments “Codes & Standards” via previous national energy policy acts. Finally, other technological events impacting seasonal peak must include the broader saturation of self-generation like natural gas generators by manufacturers and universities and rooftop solar PV.

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.

**Response:**

Please refer to the DEF 2021 TYSP.

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

**Response:**

Yes, PEV loads were included in the Company's demand and energy forecasts for the 2021 TYSP. Load from existing PEVs was captured in the historical dataset used for load forecast modeling. Projected load from future PEVs was added to the base load forecast as a positive modifier.

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

**Response:**

The Company used a PEV market adoption dataset from the Electric Power Research Institute (EPRI) which estimates future scenarios of PEV penetration in DEF's service territory. EPRI published a public report titled "Transportation Electrification: A Technology Overview" that contains a high-level summary of its prediction model at a national level along with the assumptions related to the low, medium and high scenarios. The Company's projection of PEVs in operation was based on EPRI's medium scenario. This projection was combined with assumptions for energy consumption and load profiles to estimate the cumulative impact on system demand and energy. The Company developed estimates for average energy

consumption per vehicle and load profiles based on PEV charging data collected from its ChargeFL program.

19. Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing estimates of the requested information within the Company's service territory for the current planning period. Direct current fast charger (DCFC) PEV charging stations are those that require a service drop greater than 240 volts and/or use three-phase power.

**Response:**

Please see table below and tab *Q19-Electric Vehicle Charging* of the attached Excel File *Data Request #1 – Excel Tables*.

Year	Number of PEVs	Number of Public PEV Charging Stations	Number of Public DCFC PEV Charging Stations.	Cumulative Impact of PEVs		
				Summer Demand	Winter Demand	Annual Energy
				(MW)	(MW)	(GWh)
2021	17,473	1,006*	257*	1.1	0.1	7.6
2022	23,235	N/A	N/A	3.6	1.3	27.1
2023	31,809	N/A	N/A	7.1	2.9	54.1
2024	43,235	N/A	N/A	11.9	5.3	91.9
2025	57,796	N/A	N/A	18.1	8.5	140.7
2026	73,955	N/A	N/A	25.4	12.4	199.1
2027	91,689	N/A	N/A	33.6	16.8	263.8
2028	111,252	N/A	N/A	42.5	21.7	336.3
2029	132,778	N/A	N/A	52.4	27.1	414.9
2030	156,694	N/A	N/A	63.4	33.1	503.3
<b>Notes</b>						
1. Source: Fall 2020 EV Forecast						
2. "Number of PEVs" includes total cumulative PEV vehicles						
3. "Cumulative Impact of PEVs" includes only net-new vehicles beginning January 2021 as used in Load Forecast						
4. Summer Demand: July HE 17. Winter Demand: January HE 08						
5. *Duke is currently developing a charger forecasting tool, these are based on year end 2020 actuals						

The Company used a PEV market adoption dataset from the Electric Power Research Institute (EPRI) which estimates future scenarios of PEV penetration in DEF's service territory. EPRI published a public report titled "Transportation Electrification: A Technology Overview" that contains a high-level summary of its prediction model at a national level along with the assumptions related to the low, medium and high scenarios. The Company's projection of PEVs in operation was based on EPRI's medium scenario. This projection was combined with assumptions for energy consumption and load profiles to estimate the cumulative impact on system demand and energy. The Company developed estimates for average energy consumption per vehicle and load profiles based on PEV charging data collected from its

ChargeFL program. DEF currently does not directly monitor or project the number of public or commercial charging stations, but a tool is currently being developed to better project those stations.

20. Please describe any Company programs or tariffs currently offered to customers relating to PEVs, and describe whether any new or additional programs or tariffs relating to PEVs will be offered to customers within the current planning period.
- a. Of these programs or tariffs, are any designed for or do they include educating customers on electricity as a transportation fuel?
  - 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.

**Response:**

- a. The Company's Florida Pilot will spend up to \$400,000 over the pilot period through December 2022 on general electric vehicle education and awareness. The Company has also updated its website to enhance web pages for consumer information of electric vehicles.
- b. The Company launched its ChargeFL program in 2019. Customers who volunteer for the program install devices in their PEVs that collect data on charging behavior. Data will be collected over a three-year period for analysis of energy consumption and load profiles. The Company will also install 530 smart charging ports to collect and analyze PEV charging infrastructure data.

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

**Response:**

The Company monitors PEV public charging stations through the U.S. Department of Energy Alternative Fuels Data Center (<https://afdc.energy.gov>).

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

**Response:**

The Company is not aware of any upgrades to the distribution system since 1/1/2020 that would be specifically attributable to PEV loads. Distribution system upgrades often result

from a combination of factors and determining the existence and contribution of a single source such as PEV loads would be challenging.

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

**Response:**

The Company has not studied demographic characteristics. The Company launched its ChargeFL program in 2019 to better understand PEV charging behaviors, and data collected from the program may provide insights into PEV adoption.

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

**Response:**

At this time the Company does not have processes or technologies in place to be notified when a customer installs a PEV charging station. The deployment of advanced metering infrastructure (AMI) will potentially enable the company to identify probable EV charging loads at Level 2 and higher power levels.

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

**Response:**

Please see tables below and tab *Q25-DSM Customer Participation* of the attached Excel File *Data Request #1 – Excel Tables*.

All Demand Response Sources Combined									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	397,864	647	1,026	7,874	15	23	3,206	DNA	DNA
2012	402,379	696	920	5,582	11	16	1,953	DNA	DNA
2013	406,194	681	1,035	4,337	16	20	838	DNA	DNA
2014	409,689	724	1,014	3,156	23	27	1,977	DNA	DNA
2015	410,855	752	1,055	6,372	29	35	1,376	DNA	DNA
2016	415,838	714	1,014	8,782	79	88	1,569	DNA	DNA
2017	424,246	756	1,065	9,592	34	43	2,559	DNA	DNA
2018	429,750	783	1,090	6,478	42	51	2,545	DNA	DNA
2019	432,277	786	1,098	6,862	69	76	2,054	DNA	DNA
2020	435,224	876	1,143	2,758	97	85	1,982	DNA	DNA
Notes									

Residential Load Management									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	397,234	317	661	7,858	9	17	3,163	6.2	5.2
2012	401,929	326	639	5,570	6	12	1,762	4.5	2.8
2013	405,737	341	652	4,321	5	9	831	1.0	3.8
2014	409,227	355	654	3,145	3	7	1,976	2.2	4.1
2015	410,396	357	656	6,345	7	13	1,372	1.5	2.8
2016	415,369	366	669	8,634	10	19	1,300	1.2	6.0
2017	423,900	382	694	9,561	11	20	2,553	2.9	4.2
2018	429,403	388	698	6,424	7	13	2,542	2.8	4.2
2019	431,862	396	711	6,847	7	14	2,046	2.3	4.3
2020	434,807	394	671	2,735	3	6	1,980	2.2	4.1
Notes									

Commercial Load Management									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	250	6	0	0	0	0	12	2	0
2012	65	4	0	0	0	0	185	2	0
2013	65	4	0	0	0	0	0	0	0
2014	65	4	0	0	0	0	0	0	0
2015	64	4	0	0	0	0	1	0	0
2016	63	4	0	0	0	0	0	0	0
2017	63	4	0	0	0	0	0	0	0
2018	63	4	0	0	0	0	0	0	0
2019	63	4	0	0	0	0	0	0	0
2020	63	5	7	0	0	0	0	0	0
Notes									

Standby Generation <sup>(4)</sup>									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	234	97	94	16	5.8	5.8	19	DNA	DNA
2012	247	100	96	11	4.0	4.0	0	DNA	DNA
2013	253	98	98	12	4.7	4.7	4	DNA	DNA
2014	259	103	104	10	5.0	5.0	1	DNA	DNA
2015	260	108	109	25	19.5	19.5	2	DNA	DNA
2016	269	68	68	147	68	68	269	DNA	DNA
2017	145	77	77	28	7	7	5	DNA	DNA
2018	147	82	82	12.0	3.2	3.2	1	DNA	DNA
2019	178	83	83	1.0	0.2	0.2	3	DNA	DNA
2020	175	80	80	5	2	0	1	DNA	DNA
Notes									

Interruptible Service									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	142	221	264	0	0.0	0.0	11	DNA	DNA
2012	134	262	179	1	0.6	0.6	6	DNA	DNA
2013	135	233	278	4	6.6	6.6	3	DNA	DNA
2014	134	256	249	1	15.0	15.0	0	DNA	DNA
2015	131	277	283	2	2.6	2.6	1	DNA	DNA
2016	133	270	270	1	1	1	0	DNA	DNA
2017	134	287	287	3	16	16	1	DNA	DNA
2018	133	303	303	42	32	34	2	DNA	DNA
2019	170	297	297	14	62	62	5	DNA	DNA
2020	175	389	376	18	92	79	1	DNA	DNA
Notes									

Curtable Service									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	4	6	7	0	0	0	1	DNA	DNA
2012	4	5	7	0	0	0	0	DNA	DNA
2013	4	5	7	0	0	0	0	DNA	DNA
2014	4	6	7	0	0	0	0	DNA	DNA
2015	4	6	7	0	0	0	0	DNA	DNA
2016	4	6	7	0	0	0	0	DNA	DNA
2017	4	6	7	0	0	0	0	DNA	DNA
2018	4	6	7	0	0	0	0	DNA	DNA
2019	4	6	7	0	0	0	0	DNA	DNA
2020	4	8.4	8.5	0	0	0	0	DNA	DNA

Table Footnotes:									
(1) Total available capacity may change as a result of multiple factors including changes in participation, changes in contribution from existing participants, and periodic evaluation of system response. Thus, changes in total available capacity do not directly correlate to changes in participation.									
(2) Added capacity corresponds to the addition of new participants and those converted from suspended accounts.									
(3) Data is Not Available (DNA) on lost capacity for certain source programs and therefore is listed as DNA in their specific table and for the aggregated ALL Source Table.									
(4) During 2016 the Emergency Stand-by Tariff was closed and the customers were removed from the program. Customers whose generators met new EPS requirements were added to the non-emergency program.									

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

**Response:**

Please see tables below and tab *Q26-DSM Annual Use* of the attached Excel File *Data Request #1 – Excel Tables*.

All Sources of Demand Response Combined										
Year	Summer					Winter				
	Number of Events	Average Event Size		Maximum Event Size		Number of Events	Average Event Size		Maximum Event Size	
		MW	Number of Customers	MW	Number of Customers		MW	Number of Customers	MW	Number of Customers
2011	4	136	399,816	252	399,816	1	101	399,582	101	399,582
2012	2	16	404,080	16	404,080	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	1	48	174	79	180
Notes										

Residential Load Management										
Year	Summer					Winter				
	Number of Events	Average Event Size		Maximum Event Size		Number of Events	Average Event Size		Maximum Event Size	
		(MW)	Number of Customers	(MW)	Number of Customers		(MW)	Number of Customers	(MW)	Number of Customers
2011	2	101	399,582	188	399,582	1	101	399,582	101	399,582
2012	1	15	403,833	15	403,833	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0
Notes										
* Activations shown are limited to reliability events for capacity shortages.										

Commercial Load Management										
Year	Summer					Winter				
	Number of Events	Average Event Size		Maximum Event Size		Number of Events	Average Event Size		Maximum Event Size	
		(MW)	Number of Customers	(MW)	Number of Customers		(MW)	Number of Customers	(MW)	Number of Customers
2011	*	*	*	*	*	*	*	*	*	*
2012	*	*	*	*	*	*	*	*	*	*
2013	*	*	*	*	*	*	*	*	*	*
2014	*	*	*	*	*	*	*	*	*	*
2015	*	*	*	*	*	*	*	*	*	*
2016	*	*	*	*	*	*	*	*	*	*
2017	*	*	*	*	*	*	*	*	*	*
2018	*	*	*	*	*	*	*	*	*	*
2019	*	*	*	*	*	*	*	*	*	*
2020	*	*	*	*	*	*	*	*	*	*
Notes										
Commercial Demand Response is included in Residential Table Above										

Standby Generation										
Year	Summer					Winter				
	Number of Events	Average Event Size		Maximum Event Size		Number of Events	Average Event Size		Maximum Event Size	
		(MW)	Number of Customers	(MW)	Number of Customers		(MW)	Number of Customers	(MW)	Number of Customers
2011	2	35	234	64	234	0	0	0	0	0
2012	1	1	247	1	247	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	1	48	174	79	180
Notes										

Interruptible Service										
Year	Summer					Winter				
	Number of Events	Average Event Size		Maximum Event Size		Number of Events	Average Event Size		Maximum Event Size	
		(MW)	Number of Customers	(MW)	Number of Customers		(MW)	Number of Customers	(MW)	Number of Customers
2011	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0
Notes										

Curtable Service										
Year	Summer					Winter				
	Number of Events	Average Event Size		Maximum Event Size		Number of Events	Average Event Size		Maximum Event Size	
		(MW)	Number of Customers	(MW)	Number of Customers		(MW)	Number of Customers	(MW)	Number of Customers
2011	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0
Notes										

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

**Response:**

Please see tables below and tab *Q27-DSM Season Peak Activation* of the attached Excel File *Data Request #1 – Excel Tables*.

All Sources of Demand Response Combined							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2011	400,220	N	0	0	N	0	0
2012	404,286	N	0	0	N	0	0
2013	407,929	N	0	0	N	0	0
2014	410,267	N	0	0	N	0	0
2015	413,339	N	0	0	N	0	0
2016	419,444	N	0	0	N	0	0
2017	427,023	N	0	0	N	0	0
2018	431,007	N	0	0	N	0	0
2019	433,746	N	0	0	N	0	0
2020	435,037	N	0	0	N	0	0
Notes							

Residential Load Management							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2011	399,582	N	0	0	N	0	0
2012	403,833	N	0	0	N	0	0
2013	407,482	N	0	0	N	0	0
2014	409,812	N	0	0	N	0	0
2015	412,883	N	0	0	N	0	0
2016	419,036	N	0	0	N	0	0
2017	426,651	N	0	0	N	0	0
2018	430,633	N	0	0	N	0	0
2019	433,334	N	0	0	N	0	0
2020	434,604	N	0	0	N	0	0
Notes							

Commercial Load Management							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2011	250	*	*	*	*	*	*
2012	65	*	*	*	*	*	*
2013	65	*	*	*	*	*	*
2014	65	*	*	*	*	*	*
2015	64	*	*	*	*	*	*
2016	64	*	*	*	*	*	*
2017	63	*	*	*	*	*	*
2018	63	*	*	*	*	*	*
2019	63	*	*	*	*	*	*
2020	63	*	*	*	*	*	*
<b>Notes</b>							
* Commercial Demand Response is included in Residential Table above							

Standby Generation							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2011	242	N	0	0	N	0	0
2012	249	N	0	0	N	0	0
2013	253	N	0	0	N	0	0
2014	259	N	0	0	N	0	0
2015	259	N	0	0	N	0	0
2016	208	N	0	0	N	0	0
2017	172	N	0	0	N	0	0
2018	153	N	0	0	N	0	0
2019	176	N	0	0	N	0	0
2020	178	N	0	0	N	0	0
<b>Notes</b>							

Interruptible Service							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2011	142	N	0	0	N	0	0
2012	135	N	0	0	N	0	0
2013	125	N	0	0	N	0	0
2014	127	N	0	0	N	0	0
2015	129	N	0	0	N	0	0
2016	132	N	0	0	N	0	0
2017	133	N	0	0	N	0	0
2018	154	N	0	0	N	0	0
2019	169	N	0	0	N	0	0
2020	188	N	0	0	N	0	0
Notes							

Curtable Service							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2011	4	N	0	0	N	0	0
2012	4	N	0	0	N	0	0
2013	4	N	0	0	N	0	0
2014	4	N	0	0	N	0	0
2015	4	N	0	0	N	0	0
2016	4	N	0	0	N	0	0
2017	4	N	0	0	N	0	0
2018	4	N	0	0	N	0	0
2019	4	N	0	0	N	0	0
2020	4	N	0	0	N	0	0
Notes							

**Generation & Transmission**

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

**Response:**

Please see table below and tab *Q28-Utility Existing Traditional* of the attached Excel File *Data Request #1 – Excel Tables*.

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
ANCLOTE	1	PASCO	ST	NG	October	1974	522	534	508	521	508	521	27.8
ANCLOTE	2	PASCO	ST	NG	October	1978	520	527	505	514	505	514	21.6
CRYSTAL RIVER	4	CITRUS	ST	BIT	December	1982	769	778	712	721	712	721	20.6
CRYSTAL RIVER	5	CITRUS	ST	BIT	October	1984	767	778	710	721	710	721	31.3
P L BARTOW	4	PINELLAS	CC	NG	June	2009	1132	1279	1112	1259	1112	1259	59.4
CITRUS COUNTY COMBINED CYCLE	PB1	CITRUS	CC	NG	October	2018	825	959	807	941	807	941	69.2
CITRUS COUNTY COMBINED CYCLE	PB2	CITRUS	CC	NG	November	2018	821	961	803	943	803	943	71.8
HINES ENERGY COMPLEX	1	POLK	CC	NG	April	1999	495	534	490	528	490	528	57.7
HINES ENERGY COMPLEX	2	POLK	CC	NG	December	2003	529	563	524	557	524	557	58.9
HINES ENERGY COMPLEX	3	POLK	CC	NG	November	2005	528	559	521	553	521	553	64.3
HINES ENERGY COMPLEX	4	POLK	CC	NG	December	2007	527	552	519	544	519	544	62.9
OSPREY ENERGY CENTER POWER PLANT	1	POLK	CC	NG	May	2004	597	612	583	600	245	245	45.0
TIGER BAY	1	POLK	CC	NG	August	1997	203	234	200	231	200	231	37.7
BARTOW	P1	PINELLAS	GT	DFO	May	1972	41	52	41	52	41	52	0.2
BARTOW	P2	PINELLAS	GT	NG	June	1972	41	57	41	57	41	57	1.8
BARTOW	P3	PINELLAS	GT	DFO	June	1972	41	53	41	53	41	53	0.2
BARTOW	P4	PINELLAS	GT	NG	June	1972	45	61	45	61	45	61	1.7
BAYBORO	P1	PINELLAS	GT	DFO	April	1973	44	61	44	61	44	61	0.2
BAYBORO	P2	PINELLAS	GT	DFO	April	1973	41	58	41	58	41	58	0.2
BAYBORO	P3	PINELLAS	GT	DFO	April	1973	43	60	43	60	43	60	0.1
BAYBORO	P4	PINELLAS	GT	DFO	April	1973	43	59	43	59	43	59	0.1
DEBARY	P2	VOLUSIA	GT	DFO	December	1975	48	64	48	64	48	64	0.1
DEBARY	P3	VOLUSIA	GT	DFO	December	1975	50	65	50	65	50	65	0.1
DEBARY	P4	VOLUSIA	GT	DFO	December	1975	50	65	50	65	50	65	0.1
DEBARY	P5	VOLUSIA	GT	DFO	December	1975	49	65	49	65	49	65	0.1
DEBARY	P6	VOLUSIA	GT	DFO	December	1975	50	65	50	65	50	65	0.1
DEBARY	P7	VOLUSIA	GT	NG	October	1992	79	96	79	96	79	96	5.9
DEBARY	P8	VOLUSIA	GT	NG	October	1992	78	96	78	96	78	96	4.7
DEBARY	P9	VOLUSIA	GT	NG	October	1992	80	96	80	96	80	96	5.1
DEBARY	P10	VOLUSIA	GT	DFO	October	1992	75	95	75	95	75	95	0.3
INTERCESSION CITY	P1	OSCEOLA	GT	DFO	May	1974	47	64	47	64	47	64	0.2
INTERCESSION CITY	P2	OSCEOLA	GT	DFO	May	1974	46	63	46	63	46	63	0.1
INTERCESSION CITY	P3	OSCEOLA	GT	DFO	May	1974	46	63	46	63	46	63	0.2
INTERCESSION CITY	P4	OSCEOLA	GT	DFO	May	1974	46	63	46	63	46	63	0.2
INTERCESSION CITY	P5	OSCEOLA	GT	DFO	May	1974	45	62	45	62	45	62	0.2
INTERCESSION CITY	P6	OSCEOLA	GT	DFO	May	1974	47	64	47	64	47	64	0.1
INTERCESSION CITY	P7	OSCEOLA	GT	NG	October	1993	78	95	78	95	78	95	6.5
INTERCESSION CITY	P8	OSCEOLA	GT	NG	October	1993	79	96	79	96	79	96	5.3
INTERCESSION CITY	P9	OSCEOLA	GT	NG	October	1993	79	96	79	96	79	96	5.8
INTERCESSION CITY	P10	OSCEOLA	GT	NG	October	1993	78	96	78	96	78	96	5.0
INTERCESSION CITY	P11	OSCEOLA	GT	DFO	January	1997	140	161	140	161	140	161	0.3
INTERCESSION CITY	P12	OSCEOLA	GT	NG	December	2000	73	90	73	90	73	90	3.5
INTERCESSION CITY	P13	OSCEOLA	GT	NG	December	2000	75	93	75	93	75	93	5.4
INTERCESSION CITY	P14	OSCEOLA	GT	NG	December	2000	72	92	72	92	72	92	6.0
SUWANNEE RIVER	P1	SUWANNEE	GT	NG	October	1980	49	68	49	68	49	68	4.9
SUWANNEE RIVER	P2	SUWANNEE	GT	DFO	October	1980	50	67	50	67	50	67	0.1
SUWANNEE RIVER	P3	SUWANNEE	GT	NG	November	1980	50	68	50	68	50	68	4.9
UNIVERSITY OF FLORIDA	P1	ALACHUA	GT	NG	January	1994	42.5	50	42.5	50	42.5	50	81.8

Notes

29. Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each utility-owned traditional generation resource planned for in-service within the current planning period. For

multiple small (<250 kW per installation) distributed resources of the same type and fuel source, please include a single combined entry. For projected capacity factor, use the net capacity as a basis.

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

**Response:**

Please see table below and tab *Q29-Utility Planned Traditional* of the attached Excel File *Data Request #1 – Excel Tables*.

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Projected Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
Undesignated CT	P1	Unknown	GT	NG	June	2027	214	233	214	233	214	233	16.2
Undesignated CT	P2	Unknown	GT	NG	June	2029	214	233	214	233	214	233	16.2
<b>Notes</b>													

- a. Both projects are still in the planning status. They are not committed units yet, since DEF's TYSP Resource Plan might change depending on future year assumptions. It will take around 3 years to complete each project (siting, permitting, procurement, construction and testing), which means that we will start the process for the 2027 Combustion Turbine around 2024 and for the 2029 Combustion Turbine around 2026.

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

**Response:**

Please see table below and tab *Q30-Utility Existing Renewable* of the attached Excel File *Data Request #1 – Excel Tables*.

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor**
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
Econlockhatchee Photovoltaic Array	1	Volusia	PV	SO	1	1989	0.007	0.007	0.007	0.007	0	0	16
Osceola	1	Osceola	PV	SO	5	2016	3.8	3.8	3.8	3.8	1.7	0	16
Perry	1	Taylor	PV	SO	7	2016	5.1	5.1	5.1	5.1	2.3	0	20
Suwannee	1	Suwannee	PV	SO	12	2017	8.8	8.8	8.8	8.8	4.0	0	23
Hamilton	1	Hamilton	PV	SO	12	2018	74.9	74.9	74.9	74.9	42.7	0	27
Lake Placid	1	Highlands	PV	SO	12	2019	45.0	45.0	45.0	45.0	25.7	0	25
Trenton	1	Gilchrist	PV	SO	12	2019	74.9	74.9	74.9	74.9	42.7	0	26
St. Petersburg Pier	1	Pinellas	PV	SO	12	2019	0.35	0.35	0.35	0.35	0.2	0	11*
Columbia	1	Columbia	PV	SO	3	2020	74.9	74.9	74.9	74.9	42.7	0	29
DeBary	1	Volusia	PV	SO	5	2020	74.5	74.5	74.5	74.5	33.5	0	20
<b>Notes</b>													
**Solar CFs are from: Schedule A-4s or DEF's year-end Solar Plant Operation Status Report filed as requested under docket #20200007. *Includes events beyond the control of normal facility operations.													

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

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

**Response:**

Please see table below and tab *Q31-Utility Planned Renewable* of the attached Excel File *Data Request #1 – Excel Tables*.

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Projected Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
Twin Rivers	1	Hamilton	PV	SO	3	2021	74.9	74.9	74.9	74.9	42.7	0	~27%
Sante Fe	1	Columbia	PV	SO	3	2021	74.9	74.9	74.9	74.9	42.7	0	~29%
Duette	1	Manatee	PV	SO	12	2021	74.5	74.5	74.5	74.5	42.5	0	~28%
Charlie Creek	1	Hardee	PV	SO	12	2021	74.9	74.9	74.9	74.9	42.7	0	~29%
Fort Green	1	Hardee	PV	SO	1	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Bay Trail	1	Citrus	PV	SO	1	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Sandy Creek	1	Bay County	PV	SO	4	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #18	1	Unknown	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #19	1	Unknown	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #20	1	Unknown	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #21	1	Unknown	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #22	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #23	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #24	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #25	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #26	1	Unknown	PV	SO	12	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #27	1	Unknown	PV	SO	12	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #28	1	Unknown	PV	SO	12	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #29	1	Unknown	PV	SO	12	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #30	1	Unknown	PV	SO	12	2027	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #31	1	Unknown	PV	SO	12	2028	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #32	1	Unknown	PV	SO	12	2029	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #33	1	Unknown	PV	SO	1	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Solar #34	1	Unknown	PV	SO	1	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Solar #35	1	Unknown	PV	SO	1	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Solar #36	1	Unknown	PV	SO	1	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Solar #37	1	Unknown	PV	SO	12	2030	74.9	74.9	74.9	74.9	9.4	0	~29%

**Notes**  
Santa Fe was placed in service on March 5, 2021. Twin Rivers was placed in service March 24, 2021. Duette and Charlie Creek are under construction and expected to be in service December 2021. Bay Trail and Fort Green are expected to be in service Q1-2022. Sandy Creek is expected to be in service Q2-2022. The rest of the units are still in the development or planning stages.

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

**Response:**

The Archer solar project included in docket #20200153 did not receive permitting approval. DEF withdrew it on May 29, 2020 and replaced it with the Sandy Creek solar project. This project is described in docket #20200245 and was approved under Order PSC-2021-0111-CO-EI. The DeBary solar project experienced permitting delays and was placed in service May 14, 2020 which was 44 days beyond its original [Q1-2020] forecasted placed in-service date.

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

**Response:**

Please see table below and tab *Q33-PPA Existing Traditional* of the attached Excel File *Data Request #1 – Excel Tables*.

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
Polk Power Partners, LP	Mulberry	1	Polk	COG	NG	115	115	115	115	115	115	Jul-94	Aug-24
Orange Cogen, LP	Orange Cogen	1	Polk	COG	NG	104	104	104	104	104	104	Jun-95	Dec-25
Orlando Cogen, LP	Orlando Cogen	1	Orange	COG	NG	115	115	115	115	115	115	Sep-93	Dec-23
General Electric Financial Services	Shady Hills	1-3	Pasco	GT	NG	482	523	482	523	482	523	Apr-07	Apr-24
Southern Power	Franklin	1	Lec, AL	CC	NG	424	424	424	424	424	424	Jun-16	May-21
Northern Star Generation	Vandolah Power	1-4	Hardee	GT	NG	653	697	653	697	653	697	Jun-12	May-27
<b>Notes</b>													

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

**Response:**

Please see table below and tab *Q34-PPA Planned Traditional* of the attached Excel File *Data Request #1 – Excel Tables*.

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Notes</b>													

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

**Response:**

Please see table below and tab *Q35-PPA Existing Renewable* of the attached Excel File *Data Request #1 – Excel Tables*.

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
Pasco County	Pasco County Resource Recovery	1	Pasco	SPP	MSW	23	23	23	23	23	23	Jan-95	Dec-24
Pinellas County	Pinellas County Resource Recovery	1	Pinellas	SPP	MSW	54.75	54.75	54.75	54.75	54.75	54.75	Jan-95	Dec-24
Lake County	Lake County Resource Recovery	1	Lake	SPP	MSW	N/A	N/A	N/A	N/A	N/A	N/A	Mar-14	N/A
Dade County	Metro-Dade County Resource Recovery	1	Dade	SPP	MSW	N/A	N/A	N/A	N/A	N/A	N/A	Dec-13	N/A
Lee County	Lee County Resource Recovery	1	Lee	SPP	MSW	N/A	N/A	N/A	N/A	N/A	N/A	Jan-17	N/A
Citrus World	Citrus World	1	Polk	SPP	WH	N/A	N/A	N/A	N/A	N/A	N/A	Jan-91	N/A
PCS Phosphate	Swift Creek	1	Hamilton	SPP	WH	N/A	N/A	N/A	N/A	N/A	N/A	Nov-80	N/A

Notes

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

**Response:**

Please see table below and tab *Q36-PPA Planned Renewable* of the attached Excel File *Data Request #1 – Excel Tables*.

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
Various	tbd	tbd	tbd	PV	SO	N/A	N/A	N/A	N/A	N/A	N/A	2022	N/A

Notes

DEF had about 60 active solar PV projects totaling over 4,700 MWs in its FERC jurisdictional interconnection queue as of 12/31/2020.

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

**Response:**

The US EcoGen Polk biomass QF Agreement was terminated on October 3, 2018, by DEF due to default by US EcoGen Polk. On March 28, 2019, US EcoGen Polk filed for formal arbitration, the process for dispute resolution under the FPSC approved QF Agreement. The formal American Arbitration Association (AAA) hearing was held from December 7-11, 2020.

On March 3, 2021, the AAA panel issued an interim award finding that the termination of the QF contract by DEF was proper and dismissed with prejudice the claims of the QF counterparty. The panel further found that DEF is the prevailing party, entitled to attorneys' fees and expenses, which DEF has sought by filing a fee petition with the AAA panel. A final award addressing DEF's claims will be issued following the panel's ruling on DEF's fee and expense petition.

National Solar signed numerous As-Available Contracts with DEF almost a decade ago. The last 5 contracts were terminated during 2020 since the projects were not progressing, or the counterparty either withdrew or allowed their project interconnection application requests to terminate.

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

**Response:**

Please see the table below and tab *Q38-PSA Existing* of the attached Excel File *Data Request #1 – Excel Tables*.

Buyer Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)		Description	Status (Expired / Modified / Same)
						Sum	Win	Sum	Win	Sum	Win	Start	End		
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	100	0	6/1/2020	8/31/2020	Partial Req'ts	Expired
Seminole	N/A	N/A	N/A	N/A	Nat Gas	N/A	N/A	N/A	N/A	200-500	200-500	6/1/2016	12/31/2024	Partial Req'ts	Same
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	150	150	1/1/2014	12/31/2020	Partial Req'ts	Expired
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	100	0	6/1/2017	12/31/2020	Partial Req'ts	Expired
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	0	600	1/1/2014	12/31/2020	Partial Req'ts	Expired
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	0.014	0.014	6/1/1987	Evergreen	Partial Req'ts	Same
Reedy Creek	N/A	N/A	N/A	N/A	Nat Gas	N/A	N/A	N/A	N/A	141	81	1/1/2016	12/31/2022	Partial Req'ts	Modified
Reedy Creek	N/A	N/A	N/A	N/A	Solar	N/A	N/A	N/A	N/A	2-10	2-10	8/1/2019	12/31/2021	Partial Req'ts	Modified
Tampa Electric	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	0-515	0-515	1/26/2019	11/30/2021	Partial Req'ts	Modified
Chattahoochee	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	6	4	1/1/2016	12/31/2020	Full Req'ts	Expired
Mount Dora	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	21	23	1/1/2013	12/31/2020	Full Req'ts	Expired
Williston	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	8	9	1/1/2013	12/31/2020	Full Req'ts	Expired
<b>Notes</b>															

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

- a. For each power sale agreement in the table, provide a narrative response discussing the current status of the agreement.

**Response:**

Please see the table below and tab *Q39-PSA Planned* of the attached Excel File *Data Request #1 – Excel Tables*.

Buyer Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)		Description
						Sum	Win	Sum	Win	Sum	Win	Start	End	
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	0	50	1/1/2021	3/31/2027	Partial Req'ts
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	50-400	50-400	1/1/2021	12/31/2030	Partial Req'ts
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	50-400	50-400	1/1/2021	12/31/2035	Partial Req'ts
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	100-300	105	1/1/2021	9/30/2021	Partial Req'ts
<b>Notes</b>														
The Seminole agreements have optionality. The combined maximum is 450 MW through 2030.														
A system average product was added for summer and winter of 2021														

These agreements started in year 2021.

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

**Response:**

No contracts were cancelled during 2020. A column has been added to response Q38 that indicates what agreements have expired, changed, or kept the same.

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

**Response:**

Please see table below and tab *Q41-Annual Renewable Generation* of the attached Excel File *Data Request #1 – Excel Tables*.

Renewable Source	Annual Renewable Generation (GWh)										
	Actual	Projected									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Utility - Firm	706	1,235	2,132	2,895	3,624	3,619	3,977	4,323	4,500	4,655	5,572
Utility - Non-Firm	0	0	0	0	0	0	0	0	0	0	0
Utility - Co-Firing	0	0	0	0	0	0	0	0	0	0	0
Purchase - Firm	634	605	617	617	619	617	617	619	619	617	617
Purchase - Non-Firm	20	336	346	503	657	795	804	947	957	1,097	1,104
Purchase - Co-Firing	0	0	0	0	0	0	0	0	0	0	0
Customer - Owned	336	455	606	786	967	1,139	1,264	1,344	1,435	1,530	1,635
<b>Total</b>	<b>1,695</b>	<b>2,632</b>	<b>3,702</b>	<b>4,800</b>	<b>5,866</b>	<b>6,170</b>	<b>6,662</b>	<b>7,231</b>	<b>7,511</b>	<b>7,899</b>	<b>8,927</b>
<b>Notes</b>											

42. **[Investor-Owned Utilities Only]** Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing

information on all of the Company's plant sites that are potential candidates for utility-scale (>2 MW) solar installations.

**Response:**

Please see table below and tab *Q42-Potential Solar Sites* of the attached Excel File *Data Request #1 – Excel Tables*.

Plant Name	Land Available (Acres)	Potential Installed Net Capacity (MW)	Potential Obstacles to Installation
Anclote	50	9	Wetlands, geotechnical problems, power grid interconnection costs, coastal area
Avon Park	60	10	Wetlands, geotechnical problems, species impacts
Crystal River	150	25	Wetlands, geotechnical problems, non-contiguous land, power grid interconnection not studied, impact to existing power plant, coastal area, species impacts
DeBary	400	67	Wetlands, native species habitat, existing solar footprint, geotechnical problems, non-contiguous land for solar
Hines	150	25	Wetlands, geotechnical problems, native species habitat, non-contiguous land for solar, power grid interconnection not studied, impact to existing power plant, species impacts
Suwannee	60	10	Wetlands, geotechnical problems, archeological finds, native species habitat
Turner	15	2	Small site, non-contiguous land for solar, native species habitat
Higgins	75	12.7	Wetlands, geotechnical problems, power grid interconnection not studied and not in our territory, coastal area
Bartow	50	9	Wetlands, geotechnical problems, archeological finds, non-contiguous land for solar power grid interconnection not studied, impact to existing power plant, coastal area
Notes			

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

**Response:**

DEF encourages renewable energy advancement within its service territory as it continues to educate, engage, and discuss Florida renewable policy and regulation and the need for dependable and renewable energy that would contribute to reliable fuel diversity in Florida. DEF continues to address inquiries about developing renewable energy projects or initiatives in the state. DEF continues to explore renewable energy production through good faith purchased power discussions with qualified parties. In addition, DEF continues to educate interested parties at various industry conferences, local community events, and via our web site on renewable energy resources and innovative technologies. During 2020, using virtual mediums, DEF was able to engage individual participants, stakeholders, and potential new companies all interested in the production or use of renewable energy within the state.

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

**Response:**

DEF recorded 17 requests in 2020 from potential renewable energy providers and DEF responded to many more informal emails and phone conversations. As the cost of solar PV technology continues to decline and subsidies remain, there continues to be interest from various parties trying to utilize, develop, and learn how to interconnect solar PV technology to the Florida power grid. This interest can be seen in the continued solar PV generator interconnection requests that DEF receives from speculative parties. As of December 31, 2020, DEF had over 4,700 MW of potential solar PV generation projects in its interconnection queue. DEF continues to educate potential renewable energy generators on the Qualifying Facility structure requirements, pricing, and obligations under a negotiated renewable power purchase agreement and an agreement for purchase of as-available energy. Most of the inquiries during 2020 were for potential projects utilizing solar PV technology, but there were also inquiries about a waste-to-energy facilities and marine energy.

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

**Response:**

DEF has assigned DEF owned solar PV generation an equivalent summer capacity value equal to 57% of the nameplate capacity of the planned installations from 2021 to 2024. DEF modeling derives an equivalent summer non-coincident, but on-peak-hour capacity value equal to 25% of the facility's nameplate rating for planned PV installations from 2025 to 2029 and 12.5% for 2030. These assignments assume that the projects developed over the period of this plan will be single-axis tracking technology.

Other technologies may result in other values such as DEF's DeBary Solar Plant in a fixed tilt configuration has been assigned a 45% equivalent summer capacity value. DEF assigns no winter peak capacity value to solar PV. DEF recognizes that actual performance will differ from year to year; and, may differ from the model and that the correlation to peak load will change as the amount of solar is installed and there are changes in the load behavior. As a result, DEF expects that these values may be revised further as additional solar PV power plants are in service and there is longer-term demonstrated operating data.

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

**Response:**

Yes, Duke Energy has observed a declining trend in costs of energy storage. The declines may be attributed to the battery modules and the industry movement from larger, custom containers to smaller, standardized containers.

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

**Response:**

While many non-lithium battery companies exist and have promising technologies, few have been successful at scaling to commercial size or produced to prove theoretical performance. Duke Energy continues to monitor several non-lithium battery storage technologies, such as flow batteries, but is currently focused on deploying proven, safe, and cost-effective lithium-ion technology. Duke Energy participates in development and testing of battery technologies through its partnerships with entities such as EPRI and the National Renewable Energy Laboratory (NREL) as well as research and pilot projects across the Duke Energy regulated and non-regulated companies.

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

**Response:**

Duke Energy considers energy storage to be another power grid operator tool or resource for distribution, transmission, and generation solutions. The optimal positioning is very project specific and is dependent upon the problem being solved. Ultimately, energy storage projects are compared to traditional tools or methods to determine if energy storage is in fact a low cost and optimal solution. For example, Duke Energy is evaluating solar power plants with adjacent battery storage as well as investigating solutions to distribution reliability closer to the customer loads.

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

**Response:**

DEF's retail customers are showing an interest in energy storage by installing battery storage at their premise along with their customer-owned renewable generators. From DEF's annual report in accordance with FPSC Rule 25-6.065 F.A.C., DEF has recorded about 3% of customers utilizing the state's net metering policy have also installed energy storage equipment. DEF's commercial and industrial customers have inquired about using energy storage in various forms. Usually it is for business continuity whether post-hurricane or temporary interruptions. Some customers have developed their own back up strategy and few have found battery storage external to their business as the best, economical solution to date. The customer is often looking for days of backup power which presently prices Li-ion technology out of consideration.

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

**Response:**

Please see the table below and tab *Q50-Existing Energy Storage* of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Project Name	Pilot Program (Y/N)	In-Service/ Pilot Start Date (MM/YY)	Max Capacity Output (MW)	Max Energy Stored (MWh)	Conversion Efficiency (%)
USF Microgrid Energy Storage Pilot	Y	7/8/2018	0.25	0.475	88%
<b>Notes</b>					

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

**Response:**

Please see the table below and tab *Q51-Planned Energy Storage* of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Project Name	Pilot Program (Y/N)	In-Service/ Pilot Start Date (MM/YY)	Projected Max Capacity Output (MW)	Projected Max Energy Stored (MWh)	Projected Conversion Efficiency (%)
Cape San Blas	Y	3Q 2021	5.5	20.5	83.5%
Trenton	Y	3Q 2021	11	15.6	83.2%
Jennings	Y	3Q 2021	5.5	8.5	84.0%
Micanopy	Y	3Q 2021	8.25	18.2	83.5%
John Hopkins Microgrid	Y	4Q 2021	2.475	23.5	83.5%
Lake Placid BESS	Y	4Q 2021	17.275	50.6	83.5%
<b>Notes</b>					

52. Please identify and describe the objectives and methodologies of all energy storage pilot programs currently running or in development with an anticipated launch date within the

current planning period. If the Company is not currently participating in or developing energy storage pilot programs, has it considered doing so? If not, please explain.

- a. Please discuss any pilot program results, addressing all anticipated benefits, risks, and operational limitations when such energy storage technology is applied on a utility scale (> 2 MW) to provide for either firm or non-firm capacity and energy.
- b. Please provide a brief assessment of how these benefits, risks, and operational limitations may change over the current planning period.
- c. Please identify and describe any plans to periodically update the Commission on the status of your energy storage pilot programs.

**Response:**

- a. Duke Energy is currently developing energy storage projects as part of the 50 MW battery energy storage pilot program identified in the DEF Settlement Agreement. The pilot program is studying how energy storage is a cost-effective tool to improve customer reliability, defer or eliminate traditional distribution investment, and improve system operations at universal solar assets. As of this filing, six DEF pilot sites have been announced for energy storage projects and four have mobilized for construction. The total program costs, benefits, and results have not yet been realized.
  - b. DEF expects the current pilot program as well as future energy storage projects will help to better optimize the best blend of multiple use battery locations which may provide frequency management, capacity, and energy arbitrage values. These will include projects to mitigate intermittency from solar power and improve the coincidence between renewable generation and load. DEF also expects to better understand the benefits of energy storage as a key component of localized resiliency for locations as well as future uses of batteries to harden the local grids for counties and municipalities. As costs continue to decline on Li-ion batteries and perhaps other technologies provide additional paths to energy storage, storage will become a part of the myriad of tools DEF deploys to optimize grid resiliency and reduce certain transmission or distribution congestion/redundancy needs.
  - c. Duke Energy plans to update the Commission on the status of our energy storage pilot programs during future Ten Year Site Plan filings and during any ad hoc requests made by the Commission.
53. If the Company utilizes non-firm generation sources in its system portfolio, please detail whether it currently utilizes or has considered utilizing energy storage technologies to provide firm capacity from such generation sources. If not, please explain.
- a. Based on the Company's operational experience, please discuss to what extent energy storage technologies can be used to provide firm capacity from non-firm generation sources. As part of your response, please discuss any operational challenges faced and potential solutions to these challenges.

**Response:**

DEF has an increasing amount of solar PV generation on its system and projects to have more through the forecast period. While a portion of that capacity is considered to be firm in the summer, i.e. coincident with the peak, some portion of that capacity is also considered to be non-firm. Only a minimal amount of the PV capacity is coincident with the winter peak. DEF continues to examine the opportunity to use energy storage in combination with solar generation and other sources to provide additional firm capacity. Under the terms of DEF's 2017 rate settlement DEF is currently constructing 50 MW of battery storage projects to pilot various uses of battery storage and evaluate the value to the DEF system, including the provision of firm capacity.

- a. At this time, DEF operates the small scale solar-battery pilot at USF St. Petersburg. As discussed above, DEF is working to extend that operating experience to larger scale pilots that will provide grid scale operating experience through the completion of the 50 MW of battery pilot projects still under construction.

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

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

**Response:**

Duke Energy Florida is excited to offer a new community solar program, offering customers subscriptions to local clean energy in Florida. DEF's Clean Energy Connection is an opportunity for our Florida customers who want access to renewable energy without the hassle of installing or maintaining solar equipment.

Program participants subscribe to kilowatt (kW) blocks of power associated with the program's solar plants for a fixed \$8.35/kW monthly subscription fee, where each block represents 1 kW. This subscription fee supports the operation of these solar plants and is added to the customer's regular monthly DEF bill. In return, the customer will receive monthly bill credits associated with their participation in the program.

The power generated by the solar plant feeds into the Duke Energy electric grid across Florida, and customers will have the ability to subscribe to enough solar generation to match their energy usage.

The Program has allocations for large commercial and industrial customers, local government customers, residential and small business customers, and low-income customers. Low-income participants will pay a fixed monthly-kW subscription fee for the life of the program and can expect to receive immediate and sustained savings, as the fixed credit rate will be higher than the subscription fee. DEF is working with local governments and community organizations, before the program opens, to help drive awareness of the program benefits to low income customers.

Depending on construction timelines, DEF expects the approved Clean Energy Connection Program to open for enrollment in December 2021 with a planned program launch in early 2022. Please see docket #20200176 and Order PSC-2021-0059-S-EI for additional details.

Further, DEF continues to offer another community type solar program through its Shared Solar Rider. This Rider is available to all Customers throughout the entire service area served by the Company on a first come first served basis subject. Customers can voluntarily subscribe to 50-kWh blocks of energy per month from solar photovoltaic (PV) facilities owned and operated by Duke Energy Florida. The subscription fee per 50 kWh-energy block is \$7.75 per month and the customer receives an as-available energy based bill credit. Multiple blocks may be subscribed qualifying customers up to a maximum of 25 blocks per month for residential, 150 blocks for commercial, and 2,000 blocks for industrial customers under this experimental pilot tariff. DEF reserves the right to close the program to new applicants at any time during the 5-year availability period.

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

**Response:**

Through our research and development efforts, Duke Energy's Emerging Technology Office continuously reviews technology trends that may provide benefit for our customers. We are active in industry groups such as the Electric Power Research Institute (EPRI), national labs (NREL, ORNL, PNNL, etc.) and the U.S. Department of Energy (DOE), where we collaborate with government, other utility, and industry experts on emerging technologies, including renewables and emission-free resources. The goal of our work is to monitor and assess technology readiness to solve current and future power system issues whether they be behind the meter or universally grid tied. New technologies like microgrids, energy storage, battery energy storage coupled with solar PV, hydrogen, and grid-connected/controlled devices are being tested to enable the Company to meet evolving customers' needs.

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

**Response:**

Please see table below and tab *Q56-As-available Energy Rate* of the attached Excel File *Data Request #1 – Excel Tables*.

Year		As-Available Energy (\$/MWh)	On-Peak Average (\$/MWh)	Off-Peak Average (\$/MWh)
Actual	2011	38.51	43.72	34.59
	2012	30.10	34.41	26.44
	2013	34.35	38.29	31.02
	2014	37.68	42.97	33.21
	2015	26.03	28.74	23.74
	2016	25.97	29.79	22.73
	2017	28.97	32.44	26.03
	2018	30.84	34.80	27.49
	2019	23.71	27.22	20.73
	2020	18.57	21.22	16.33
Projected	2021	22.75	24.02	21.68
	2022	20.48	21.27	19.81
	2023	17.91	18.47	17.44
	2024	16.97	17.47	16.56
	2025	18.07	18.54	17.67
	2026	20.57	21.09	20.12
	2027	22.99	24.02	22.12
	2028	26.76	28.87	24.98
	2029	30.30	32.34	28.57
	2030	33.70	35.65	32.05
<b>Notes</b>				
<p>This year, both the Actuals and the Projected As-Available payment rates shown reflect all components but for the delivery voltage adjustment (because the generator's interconnection level is unknown) defined under rule 25-17.0825(2)(a). These components include: identifiable variable operating and maintenance expenses, start up costs, and a reasonable as-available block size of solar QF generation for appropriate customer protections. The Projected values are only valid and effective as of May 1, 2021 due to the volume of potential solar QF activity. DEF also anticipates that at some point, the system will have increasing amounts of time when the required DEF system resources along with potential solar QF generation may exceed DEF load levels and that excess generation is not fully captured in the Projected values herein.</p>				

57. Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on all planned traditional units with an in-service date within the current planning period. For each planned unit, provide the

date of the Commission’s Determination of Need and Power Plant Siting Act certification, if applicable.

**Response:**

Please see the table below and tab *Q57-Planned Trad Units PPSA* of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Generating Unit Name	Summer Capacity (MW)	Certification Dates (if Applicable)		In-Service Date (MM/YY)
		Need Approved (Commission)	PPSA Certified	
<b>Nuclear Unit Additions</b>				
<b>Combustion Turbine Unit Additions</b>				
Undesignated CT	214	Not Required	Not Required	6/1/2027
Undesignated CT	214	Not Required	Not Required	6/1/2029
<b>Combined Cycle Unit Additions</b>				
<b>Steam Turbine Unit Additions</b>				
<b>Notes</b>				

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

**Response:**

In the DEF 2021 Ten-Year Site Plan, the in-service date for the two future simple cycle units were projected for 6/2027 and 6/2029. A "drop dead" decision date to proceed with the 6/2027 or later simple cycle units would typically occur 24-30 months prior to the in-service date. Therefore, the “drop dead” date will be year 2024 for the first unit and year 2026 for the second one. The major components of the “drop dead” date for the simple cycles’ schedule is shown below:

6/2027 Simple Cycle Unit	2024				2025				2026				2027				2028				2029			
	Q1	Q2	Q3	Q4																				
Evaluations																								
Regulatory/Licensing/Permitting																								
Engineer/Procure/Construct																								

  

6/2029 Simple Cycle Unit	2024				2025				2026				2027				2028				2029			
	Q1	Q2	Q3	Q4																				
Evaluations																								
Regulatory/Licensing/Permitting																								
Engineer/Procure/Construct																								

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

**Response:**

Please see the table below and tab *Q59-Capacity Factors* of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Plant	Unit No.	Unit Type	Fuel Type	Capacity Factor (%)											
				Actual	Projected										
					2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Anclote	1	Steam	Gas	27.8	3.6	4.2	3.9	4.6	4.7	5.6	4.8	5.6	5.0	5.4	
Anclote	2	Steam	Gas	21.6	4.3	4.8	4.4	4.1	5.2	6.2	5.9	6.7	5.5	5.5	
Crystal River	4	Steam	Coal	20.6	90.3	73.1	37.0	32.3	31.6	31.3	29.2	30.3	34.9	33.7	
Crystal River	5	Steam	Coal	31.3	73.4	55.0	36.1	33.0	24.7	31.5	26.8	31.3	23.3	33.1	
Bartow CC	4	Combined Cycle	Gas	59.4	48.9	52.4	58.3	58.7	60.7	55.8	57.2	54.9	57.9	57.2	
Citrus CC	1~2	Combined Cycle	Gas	70.5	77.2	79.5	82.8	82.4	77.0	76.8	82.4	77.0	82.7	81.4	
Hines Energy Complex	1~4	Combined Cycle	Gas	61.0	41.6	49.7	55.4	54.7	56.9	58.1	61.1	64.2	62.4	57.2	
Osprey CC	1	Combined Cycle	Gas	45.0	31.6	32.3	37.4	64.9	71.7	66.8	61.4	68.2	64.2	64.4	
Tiger Bay	1	Combined Cycle	Gas	37.7	54.6	72.6	69.8	67.5	76.3	72.6	72.0	80.0	70.3	82.2	
Bartow Peaker	1~4	Gas Turbine	Gas/Oil	1.0	0.3	0.5	0.2	0.5	0.5	1.3	2.0	3.8	2.7	2.0	
Bayboro	1~4	Gas Turbine	Oil	0.2	0.3	0.4	0.1	0.4	0.4	0.0	0.0	0.0	0.0	0.0	
DeBary	1~10	Gas Turbine	Gas/Oil	2.5	0.4	0.7	0.3	0.6	0.7	1.8	2.7	4.4	3.3	2.4	
Generic CTS	1~3	Gas Turbine	Gas		0.0	0.0	0.0	0.0	0.0	0.0	25.0	19.4	18.1	13.7	
Intercession City	1~14	Gas Turbine	Gas/Oil	3.1	0.7	1.2	0.6	1.2	1.4	3.1	3.4	4.4	3.3	2.6	
Suwannee Peaker	1~3	Gas Turbine	Gas/Oil	3.3	0.4	0.6	0.2	0.5	0.5	0.9	1.2	1.9	1.4	1.1	
University of Florida	1	Gas Turbine	Gas	81.8	85.7	86.8	86.8	86.3	86.3	79.7	89.2	0.0	0.0	0.0	
Solar	1	PV		24.6	28.1	28.2	28.1	28.1	28.0	28.1	28.1	28.2	28.2	28.3	

Notes

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

**Response:**

DEF does not strictly maintain a retirement schedule for each unit on the DEF system, but periodically evaluates each unit on a case by case basis, taking into account changes in many factors including unit dispatch (history and projections of starts and capacity factor), changes in upcoming maintenance, the anticipated impact of final or proposed environmental regulations, potential transmission impacts, and availability of parts and vendor maintenance

support. DEF uses the most recently approved depreciation schedules as a guideline. The table below presents the current depreciation schedules.

<b>DEPRECIABLE GROUP</b>	<b>Major Year in Service</b>	<b>Probable Retirement Year</b>	<b>Life Span</b>
<b><u>STEAM PRODUCTION</u></b>			
ANCLOTE	1974	2029	55
CRYSTAL RIVER UNITS 4 and 5	1982	2034	52
<b><u>OTHER PRODUCTION</u></b>			
<b><u>COMBINED-CYCLE</u></b>			
BARTOW	2009	2049	40
CITRUS	2018	2058	40
OSPREY ENERGY CENTER	2004	2044	40
HINES UNIT 1	1999	2039	40
HINES UNIT 2	2003	2043	40
HINES UNIT 3	2005	2045	40
HINES UNIT 4	2007	2047	40
TIGER BAY	1995	2035	40
<b><u>SIMPLE CYCLE</u></b>			
BARTOW UNITS 1 and 3	1972	2034	62
BARTOW UNITS 2 and 4	1972	2027	55
SUWANNEE RIVER	1980	2034	54
BAYBORO	1973	2024	51
DEBARY UNITS 2-6	1975	2027	52
DEBARY UNITS 7-10	1992	2037	45
INTERCESSION CITY UNITS 1-6	1974	2034	60
INTERCESSION CITY UNITS 7-10	1993	2038	45
INTERCESSION CITY UNITS 11	1997	2042	45
INTERCESSION CITY UNITS 12-14	2000	2045	45
UNIV. OF FLA.	1993	2027	34
<b><u>SOLAR</u></b>			
OSCEOLA	2016	2046	30
PERRY	2016	2046	30
SUWANNEE	2017	2047	30
HAMILTON	2018	2048	30
LAKE PLACID	2019	2049	30
TRENTON	2019	2049	30
COLUMBIA	2020	2050	30
DEBARY	2020	2050	30

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

**Response:**

Please see the table below and tab *Q61-Steam Unit CC Conversion* of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date (MM/YYYY)	Potential Conversion	Potential Issues
Anclote	NG	508	10/74	CC	Project Development
Anclote	NG	505	10/78	CC	Project Development
Crystal River	BIT	712	12/82	CC/IGCC	Project Development
Crystal River	BIT	710	10/84	CC/IGCC	Project Development
<b>Notes</b>					

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

**Response:**

Please see the table below and tab *Q62-Steam Unit Fuel Switching* of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date (MM/YYYY)	Potential Conversion	Potential Issues
Crystal River	BIT	712	12/82	CC/IGCC	Project Development
Crystal River	BIT	710	10/84	CC/IGCC	Project Development
<b>Notes</b>					

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

**Response:**

DEF does not presently have any proposed transmission lines in the planning period that require certification under the Transmission Line Siting Act. Please see the table below and tab Q63 of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Transmission Line	Line Length	Nominal Voltage	Date Need	Date	In-Service Date
	(Miles)	(kV)	Approved	TLSA Certified	
N/A	N/A	N/A	N/A	N/A	N/A
<b>Notes</b>					
DEF has no proposed transmission lines for the current planning period that require certification under the Transmission Line Siting Act, nor are there any that have already been approved, but are not yet in-service.					

**Environmental**

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

**Response:**

There were no impacts to unit dispatch, curtailments or retirements during 2020 due to environmental regulations. DEF is not planning to retire any units in the current planning period as a response to existing environmental regulations. In the past DEF has experienced curtailments of some units related to water temperature restrictions. Because these events are weather related, there is no anticipated curtailment in the plan.

65. For the U.S. EPA’s Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units Rule:

- a. Will your Company be materially affected by the rule?
- b. What compliance strategy does the Company anticipate employing for the rule?
- c. If the strategy has not been completed, what is the Company’s timeline for completing the compliance strategy?
- d. Will there be any regulatory approvals needed for implementing this compliance strategy? How will this affect the timeline?
- e. Does the Company anticipate asking for cost recovery for any expenses related to this rule? Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on the costs for the current planning period.

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

**Response:**

- a. The EPA combined several standards and issued the final rule as the “Standards of Performance for Greenhouse Gas Emissions from New, Modified and Reconstructed Stationary Sources: Electric Utility Generating Units” (CO2 NSPS). The new Citrus Combined Cycle units affected by these standards meet the compliance requirements outlined in the rule and DEF has not identified any units potentially affected as “Modified” or “Reconstructed” stationary sources. As such, DEF does not anticipate any reliability impacts of this rule. On March 27, 2017 President Trump signed an Executive Order (EO) entitled “Promoting Energy Independence and Economic Growth.” The EO directed federal agencies to “immediately review existing regulations that potentially burden the development or use of domestically produced energy resources and appropriately suspend, revise, or rescind those that unduly burden the development of domestic energy resources.”

The EO specifically directed the EPA to review the Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units Rule (among other rules) and determine whether to suspend, revise, or rescind the rule.

In response to the EO, the Department of Justice filed motions with the D.C. Circuit Court to stay the litigation of the CO2 NSPS rules, along with the Clean Power Plan for existing sources, while each was reviewed by EPA. The CO2 NSPS rules remained in effect through the conclusion of EPA’s review. The framework of the regulation of greenhouse gas emissions is now being evaluated by the new Biden administration and the CO2 NSPS rules remain in effect pending outcome of the review. DEF will continue to monitor the status of the rule and any proposed changes to ascertain any further compliance steps that may be required.

- b. DEF will ensure that all future new generating facilities comply with new standards and will monitor maintenance and compliance activities related to existing facilities that could potentially result in the facilities being identified as "Modified" or "Reconstructed" stationary sources under the rule.
- c. N/A
- d. There are no specific regulatory approvals identified as associated with compliance with this rule.

- e. Please see the table below and tab *Q65e-Emissions* of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Year	Estimated Cost of Standards of Performance for Greenhouse Gas Emissions Rule for New Sources Impacts (Present-Year \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2021	0	0	0	0
2022	0	0	0	0
2023	0	0	0	0
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
Notes				

- f. N/A

66. Explain any expected reliability impacts resulting from each of the EPA rules listed below. As part of your explanation, please discuss the impacts of transmission constraints and changes to units not modified by the rule that may be required to maintain reliability.
- Mercury and Air Toxics Standards (MATS) Rule.
  - Cross-State Air Pollution Rule (CSAPR).
  - Cooling Water Intake Structures (CWIS) Rule.
  - Coal Combustion Residuals (CCR) Rule.
  - Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units.
  - Affordable Clean Energy Rule or its replacement.
  - Effluent Limitations Guidelines and Standards (ELGS) from the Steam Electric Power Generating Point Source Category.

**Response:**

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

DEF has provided its compliance strategy for MATS in the Integrated Clean Air Compliance Plan submitted to the Commission on March 29, 2019 in Docket 20190007-EI and updated in Docket 20200007-EI, and this compliance strategy has been implemented and there are no reliability impacts from this regulation.

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

DEF sources are not subject to CSAPR and therefore there are no reliability impacts from this regulation.

c. Cooling Water Intake Structures (CWIS) Rule.

DEF has provided updates on the compliance strategy for CWIS at the Crystal River station in the testimony provided to the Commission on April 1, 2021, Docket No 20210007-EI. There are no reliability impacts from this regulation.

As explained in the prior testimonies of DEF witnesses Patricia West and Kim McDaniel in Dockets 20170007-EI, 20180007-EI, and 20190007-EI, DEF has been conducting 316(b) studies at the Anclote and Bartow stations and study results, along with proposed compliance strategies, were filed with the Florida Department of Environmental Protection ("FDEP") in July and August 2020, respectively, as part of the NPDES renewal process. Proposed compliance strategies for both are currently being evaluated by FDEP as part of the NPDES permit renewal. The full extent of compliance activities cannot be determined until FDEP's review of the proposed options has been completed and the NPDES permit renewal issued. There are no reliability impacts anticipated with the proposed compliance strategies.

d. Coal Combustion Residuals (CCR) Rule.

DEF expects to finalize its compliance strategy for the Coal Combustion Residuals (CCR) Rule in 2021. Specifically, actions to address groundwater exceedances and comply with groundwater assessment mandates resulting from the CCR landfill as described in Docket No. 20190007-EI and approved by PSC-2019-0500-FOF-EI. This compliance strategy is not expected to have any impacts on reliability.

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

The new units (Citrus Combined Cycle Units) affected by these standards meet the compliance requirements outlined in the rule. This compliance strategy is not expected to have any impacts on reliability.

f. Affordable Clean Energy Rule or its replacement.

On January 19, 2021, the court vacated the ACE rule and remanded it back to EPA. Currently, neither the ACE rule nor Clean Power Plan rule are in effect, therefore any potential reliability impacts are yet to be determined.

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

On November 22, 2019, EPA published a revised ELG rule with proposed changes to the FGD effluent and bottom ash transport water limits. EPA published the final ELG Reconsideration Rule on October 13, 2020, with an effective date of December 14, 2020. The rule has been challenged by environmental organizations and is also under review by the EPA under President Biden's administration. DEF has evaluated the changes in the ELG Reconsideration Rule and has determined that modifications completed at the Crystal River North station in 2020 under the original rule satisfy the requirements of the ELG Reconsideration Rule. DEF is working with FDEP to reflect this in the pending Crystal River Units 4 and 5 NPDES permit renewal. There are no reliability impacts from this rule.

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

**Response:**

Please see the table below and tab *Q67-EPA Operational Effects* of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA Rule Impacts: Operational Effects						
				ELGS	ACE or replacement	MATS	CSAPR/CAIR	CWIS	CCR	
									Non-Hazardous Waste	Special Waste
Anclote 1	Steam	NG	508	NA	NA	Convert to NG	Convert to NG	Impacted	NA	NA
Anclote 2	Steam	NG	505							
P L Bartow	CC	NG	1112	NA	NA	NA	Dispatch Changes	Impacted	NA	NA
Citrus Combined Cycle	CC	NG	1610	NA	NA	NA	NA	Compliant as Constructed	NA	NA
Crystal River 4	Steam	Coal	712	Impacted	Impacted	Reagent, CEMS	FGD, SCR, Dispatch	Impacted	Impacted	NA
Crystal River 5	Steam	Coal	710							
Osprey	CC	NG	245	NA	NA	NA	NA	NA	NA	NA
Hines PBI-4	CC	NG	2054	NA	NA	NA	Dispatch Changes	NA	NA	NA
Notes										

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

**Response:**

Please see the table below and tab *Q68-EPA Cost Effects* of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA Rule Impacts: Cost Effects (CPVRR \$ millions)						
				ELGS	ACE or replacement	MATS	CSAPR/CAIR	CWIS	CCR	
									Non-Hazardous Waste	Special Waste
Anclote 1	Steam	NG	508	NA	NA	0	0	15-130	NA	NA
Anclote 2	Steam	NG	505			0	0		NA	NA
P L Bartow	CC	NG	1112	NA	NA	0	0	10-170	NA	NA
Crystal River 4	Steam	Coal	712	TBD	TBD	0	0	10-20	TBD	0
Crystal River 5	Steam	Coal	710			0	0			
<b>Notes</b>										

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

**Response:**

Please see the table below and tab *Q69-EPA Unit Availability* of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA Rule Impacts: Unit Availability (Month/Year - Duration)						
				ELGS	ACE or replacement	MATS	CSAPR/CAIR	CWIS	CCR	
									Non-Hazardous Waste	Special Waste
Anclote 1	Steam	NG	508	NA	NA	NA	NA	TBD	NA	NA
Anclote 2	Steam	NG	505	NA	NA	NA	NA	TBD	NA	NA
P L Bartow	CC	NG	1112	NA	NA	NA	NA	TBD	NA	NA
Citrus Combined Cycle	CC	NG	1610	NA	NA	NA	NA	TBD	NA	NA
Crystal River 4	Steam	Coal	712	TBD	TBD	NA	NA	NA	TBD	NA
Crystal River 5	Steam	Coal	710	TBD	TBD	NA	NA	NA	TBD	NA
Osprey	CC	NG	245	NA	NA	NA	NA	NA	NA	NA
Hines 1-4	CC	NG	2054	NA	NA	NA	NA	NA	NA	NA
<b>Notes</b>										

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

**Response:**

DEF's currently approved costs for environmental compliance investments which may be considered in the EPA's future CO<sub>2</sub> regulations include plant conversions to natural gas, coal resource retirements, and utilizing advanced natural gas technologies as discussed in detail in question # 66. These plans were undertaken to address the requirements of various new or forthcoming rules. The retirement of Crystal River units 1 and 2 in response to MATS and the Regional Haze rule also reduced the impacts of the CCR rule, the CWIS rule and updates to the State Implementation Plan to achieve attainment with SO<sub>2</sub> and Ozone National Ambient Air Quality Standards (NAAQS). This retirement reduced DEF's CO<sub>2</sub> footprint. The conversion of the two units at Anclote to natural gas firing in response to MATS similarly reduced priority pollutant emissions and the resultant risk around future updates to the NAAQS as well as CO<sub>2</sub> emissions.

Until the EPA's CO<sub>2</sub> emission reduction regulations are clearly defined, DEF can only estimate which investments would contribute to compliance and to what degree. DEF does, however, have some approved renewable energy and energy efficiency investments, recovered or administered under the energy conservation cost recovery clause that may mitigate the need for some limited future investments that may be contemplated in the EPA's future CO<sub>2</sub> regulations; and, finally, DEF continues to evaluate clean energy technologies and prudently prepare now for a CO<sub>2</sub> constrained future.

**Fuel Supply & Transportation**

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

**Response:**

Please see the table below and tab *Q71-Fuel Usage* of the Excel File *Data Request #1 – Excel Tables.xlsx*.

Year		Uranium		Coal		Natural Gas		Residual Oil		Distillate Oil	
		GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU
Actual	2011	0	0	10,809	3.83	23,571	5.43	187	11	81	18.31
	2012	0	0	10,003	3.83	23,997	5.56	46	12	104	20.35
	2013	0	0	10,577	3.94	23,061	5.63	127	13	93	21.13
	2014	0	0	11,729	3.98	22,953	5.66	0	0	76	21.97
	2015	0	0	9,718	3.72	25,227	4.67	0	0	73	22.30
	2016	0	0	8,885	3.62	24,807	4.09	0	0	77	18.66
	2017	0	0	8,722	3.44	27,307	4.26	0	0	62	16.43
	2018	0	0	8,422	3.20	28,687	4.52	0	0	90	19.80
	2019	0	0	4,322	3.66	35,170	3.93	0	0	33	20.36
	2020	0	0	3,287	3.66	36,327	3.37	0	0	33	22.28
Projected	2021	0	0	10,268	1.79	27,521	3.10	0	0	16	9.26
	2022	0	0	8,035	1.87	30,192	2.72	0	0	22	9.36
	2023	0	0	4,583	2.06	32,397	2.54	0	0	7	9.88
	2024	0	0	4,107	2.13	34,029	2.52	0	0	25	11.31
	2025	0	0	3,531	2.20	34,488	2.69	0	0	22	12.40
	2026	0	0	3,938	2.29	34,081	3.02	0	0	54	13.28
	2027	0	0	3,509	2.39	35,599	3.36	0	0	65	14.22
	2028	0	0	3,869	2.50	35,673	3.83	0	0	91	14.86
	2029	0	0	3,654	2.49	36,006	4.46	0	0	68	15.36
	2030	0	0	4,190	2.56	34,928	5.05	0	0	52	15.75
Notes											

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

**Response:**

DEF's fuel price forecasts are developed based on the forward market price for the first five years, followed by the long-term fundamental forecast beyond year five. The fundamental forecast is a long-term proprietary forecast prepared by a nationally recognized third-party consulting company.

As part of its forecast comparison process, Duke Energy compares its own fundamental commodity price outlooks to both public forecasts like EIA, and proprietary outlooks from other leading energy consultants. Duke Energy also compares supply and demand fundamentals where they are available to review the underlying drivers. Natural gas and distillate fuel oil are widely traded commodities with multiple forecasts although these forecasts are influenced by views of not only domestic supply and demand effects, but also international market trends. Coal price forecast comparisons are more tenuous given the limited number of qualified outlooks, the significance of transportation cost and the non-homogeneous nature of the commodity itself. Duke Energy utilizes direct comparisons for select coal product qualities widely available in the market. Since the objective of Duke Energy fundamental forecasting process is to produce a comprehensive internally consistent forecast, Duke Energy also performs checks that the final price forecast is intuitively aligned with the supply/demand balances across the various commodities.

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

- a. Coal

- b. Natural Gas
- c. Nuclear
- d. Fuel Oil
- e. Other (please specify each, if any)

**Response:**

- a. Coal

With respect to coal, in the first half of the period the high-sulfur Illinois basin coal prices generally are in the low \$30's per ton escalating to mid-\$40's in the back half of the period; Central Appalachia coal prices are in the mid \$50's per ton in the first half of the period escalating to the low \$70's in the back half of the period; Northern Appalachia coal prices are in the mid \$30's per ton in the first half of the period escalating to mid-\$50's in the back half of the period; Powder River Basin coal prices are in the low teens escalating to mid-teens; and Colorado coal prices are in the high \$20's per ton escalating to high \$30's in the back half of the curve. Coal demand is primarily driven by changes in electric power consumption and is expected to continue to fluctuate based on changes in natural gas pricing, weather driven demand, purchase power costs and increasing availability of renewable generation. Looking forward, coal markets continue to be distressed and there has been increased market volatility due to a number of factors, including: (1) deteriorated financial health of coal suppliers due to declining demand for coal stemming from accelerated coal retirements and overall declines in coal generation demand resulting from the impacts of COVID-19 economic shutdowns in 2020; (2) continued abundant natural gas supply and storage resulting in lower natural gas prices, which has lowered overall domestic coal demand; (3) uncertainty around proposed, imposed, and stayed U.S. Environmental Protection Agency ("EPA") regulations for power plants; (4) changing demand in global markets for both steam and metallurgical coal; (5) uncertainty surrounding regulations for mining operations; (6) tightening access to investor financing coupled with deteriorating credit quality is increasing the overall costs of financing for coal producers; and, (7) corrections in production levels in an attempt to bring coal supply in balance with demand.

- b. Natural Gas

Over the planning horizon there are a number of trends that could have an impact on natural gas prices, and the overall supply and demand for domestic natural gas. First, is the level of production of domestic natural gas, particularly from unconventional resources. Second, is the forecasted growth in the use of natural gas from electric power generation, and the industrial sector. Third, is the level of natural gas exports via pipelines to Mexico, and LNG to the global natural gas market from U.S. export facilities.

Each year, the U.S. Energy Information Agency ("EIA") publishes a long-term forecast of energy market fundamentals, and for their 2021 outlook published February 3, 2021, in most scenarios, they forecast dry natural gas production continues to grow, even in the current low-price environment. In their reference case, the EIA projects total U.S. dry natural gas

production to grow from 93 Bcf/day in 2020 to approximately 104 Bcf/day on average for 2030, a slower rate of growth than the 2020 forecast of 108 Bcf/day. This growth will be primarily driven by horizontal drilling in shale formations which will continue to more than offset expected declines in traditional vertical drilling and offshore production. Although most of the projected production growth comes from the Marcellus and Utica plays in the Appalachian region, associated natural gas from the Permian region in Texas and New Mexico is also projected to be a significant contributor. In 2030, the EIA forecasts domestic natural gas consumption will be approximately 85 Bcf/day, with a total volume of exports at approximately 24 Bcf/day. Power generation is expected to be approximately 28 Bcf/day of the domestic natural gas demand in 2030. According to the EIA, U.S. exports of LNG reached 6.3 Bcf/d in 2020 and are expected to grow to an average of 13.5 Bcf/d in 2030.

Demand growth for natural gas from electric generation, industrial, and exports could result in additional upward pressure on prices over the planning horizon from 2021 through 2030. According to the EIA, spot prices at the Henry Hub averaged \$2.07 per MMBtu in 2020 and could increase to \$3.34/MMBtu by 2030 (in real terms).

c. Nuclear

DEF has retired the Crystal River 3 Nuclear plant and does not expect to be significantly impacted by trends and factors of nuclear fuel.

d. Fuel Oil

With respect to industry trends, per the EIA's Annual Energy Outlook ("AEO") 2021 Reference Case published in February 2021, domestic oil production levels are expected to rise throughout 2021 and return to pre-COVID 2019 levels by 2023. Starting in 2024 through the balance of the planning period, domestic production levels are expected to remain relatively flat as new drilling continues to rely more on cash flows from existing sources than new equity or debt as the market continues to look for higher returns in order to invest. Per EIA's AEO 2021 Reference Case, spot WTI (U.S. Midcontinent area) crude is expected to be approximately \$44.00 a barrel in 2021, rising to approximately \$49.00 a barrel in 2022. EIA's Short-Term Energy Outlook, published April 2021, following the February winter price shock, has increased the balance of 2021 WTI to \$59 a barrel and 2022 to \$57.00 a barrel. After 2022, EIA's AEO forecasts growth in global demand to result in a return to higher world oil prices with WTI area crude reaching approximately \$70.00 a barrel in 2029 and approximately \$95 a barrel in 2050. Price estimates are in real 2020 dollars.

DEF will continue to monitor oil prices, trends and its fuel forecast over time and will procure needed fuel oil supply and transportation services to meet its generation fleet needs over the planning horizon. As new information becomes available, DEF will monitor this information for potential developments.

e. Other (please specify each, if any)

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

**Response:**

DEF has broad contacts and relationships with natural gas suppliers and pipeline transportation providers. DEF performs short-term and long-term fuel forecasts to project estimated fuel usage for future periods. The short-term forecasts typically cover a period of five years, and the long-term forecasts cover years six through year twenty. Fuel forecasts includes items such as, but not limited to, load forecasts, fuel and emission prices, operational specifics of owned generation and contracted generation resources, wholesale power sales agreements, and unit maintenance schedules. The short-term forecast is performed approximately four times per year for a five-year period and currently covers years 2021 through 2026. The long-term forecast is performed two times per year and currently covers years 2027 through 2047.

To ensure that DEF has the needed natural gas supply to meets its generation needs over the planning horizon, DEF performs periodic competitive natural gas supply Request for Proposals ("RFP's") and market solicitations to procure the needed competitive natural gas supply consistent with its procurement approach. In addition, DEF also monitors potential pipeline expansion projects that can access competitively priced and secure natural gas for delivery to DEF's facilities. DEF monitors potential pipeline expansions through on-going discussions and periodic meetings with gas suppliers and pipeline providers, open seasons issued by pipelines, industry events, and publications.

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

**Response:**

The project descriptions outlined below are not intended to be an all-inclusive or exhaustive list of all the upstream pipeline projects that are in-service or proposed in the Gulf Coast and Southeast region, but those that DEF believes could have an impact on the natural gas supply available for DEF and the State of Florida.

**Callahan Pipeline**

Status: In-service as of November 2020

Peoples Gas expanded its natural gas service in Jacksonville, Fla., with the construction the Callahan Pipeline project. The pipeline starts at the Southern Natural Gas Cypress Interstate Pipeline in Callahan and travels east to Highway 17 in Yulee. The initiative was done through a partnership with Florida Public Utilities Co (FPU). TECO's affiliate, SeaCoast Gas Transmission, and FPU's affiliate, Peninsula Pipeline Co. Inc., are jointly developing the Callahan Pipeline. This will help the Company meet current and future natural gas demand in the Jacksonville area, including the planned Eagle LNG export terminal. The Eagle LNG

project is not yet under construction. Upon completion, Eagle is expected to be capable of exporting up to 49.8 Bcf of LNG per year.

### **Florida Gas Transmission – Putnam Expansion Project**

Status: Under Construction with projected in-service targeted for April 2022

FGT has proposed a 21-mile, 169,000 MMBtu/d, pipeline project to increase Seminole Electric Cooperative volumes at the SeaCoast Gas Transmission delivery point in Putnam County, Florida. The project would allow previously unsubscribed firm capacity available on FGT's West Leg system to be moved to FGT's East Leg mainline, according to an application filed with FERC (CP19-474). This would be accomplished through loop extensions on the East Leg mainline to meet SECI's contractual firm volumes at the SeaCoast Gas Transmission delivery point in Putnam County. Downstream of the delivery point, SeaCoast plans to build a roughly 21.3-mile pipeline to ship gas to an existing SECI power plant, which will be replaced by a gas-fired, combined-cycle unit. The project entails about 13.7 miles of 30-inch-diameter loop extension in Columbia and Union counties, along with seven miles of 30-inch-diameter loop extension in Clay and Putnam counties and other modifications in Orange County to FGT's existing Compressor Station 18 to allow for bi-directional flows. According to the application at FERC, CS-18 will be able to discharge and flow from south to north to accommodate the total deliveries at the FGT/SeaCoast interconnection.

### **Gulfstream Natural Gas – Phase VI Expansion**

Status: Under Construction with projected in-service targeted for December 2022

GNGS proposed the Phase VI Expansion project, designed to add about 78,000 Dt/d of mainline capacity from receipt points in Mississippi and Alabama, to a delivery point in Manatee County, Florida. Tampa Electric, which is transforming one unit at a coal-fired station in Hillsborough County, Florida, into a combined-cycle gas generating unit, has a 25-year Precedent Agreement for the full capacity. The project facilities entail one 16,000 hp compressor unit at an existing station in Mobile County, Alabama; four miles of 36-inch-diameter pipeline onshore in Mobile County; abandonment of a four-mile segment; uprating the MAOP of the 55-mile segment in offshore in Mobile County; metering equipment; and other facilities.

### **Sabal Trail Transmission**

Status: Phases I & II In-Service, Phase III Extension Request filed at FERC as of 4/14/2021

Sabal Trail Transmission, LLC is a joint venture of Spectra Energy Corp (an Enbridge subsidiary), NextEra Energy, and Duke Energy. Sabal Trail is an approximately 515-mile interstate pipeline extending from Transco Station 85 in Choctaw County, Alabama to the Central Florida Hub. It interconnects with FGT, Gulfstream, and the Florida Southeast Connection in Osceola County, Florida. Sabal Trail's Phase I facilities were placed into full commercial service on July 3, 2017. The full Phase I capacity of the Sabal Trail pipeline is 830,000 Dth/day with the ability to scale-up its design capacity of 1.1 Bcf/day with the implementation of the third and final phase. Adding this additional pipeline into the State will increase overall direct onshore supply access to the State of Florida. Sabal Trail has two foundation shippers, Florida Power & Light and DEF.

### **Transco - Hillabee Expansion Project**

Status: Phases I & II In-Service, Phase III not yet under construction

The Transco Hillabee Expansion Project will provide 1,131,730 MMBtu/day of incremental firm capacity in three phases. It originates at Transco Station 85 in Choctaw County, Alabama to a proposed interconnection between Transco and Sabal Trail in Tallapoosa County, Alabama. Sabal Trail acquired 100% of the project capacity via a long-term lease to provide Sabal Trail shippers gas supply access at Transco Station 85. Construction for Phase 1 began in 2016 and was placed in-service in July 2017. Phase II began construction in May of 2019 and was placed in-service on April 13, 2020. Phase III has yet to begin construction.

**Transco – Southeastern Trails Project**

Status: In-service as of January 1, 2021

The Southeastern Trail Expansion (SET) is a 296,375 MMBtu/day expansion of the Transco pipeline system designed to provide additional pipeline capacity to serve markets in the Mid-Atlantic and Southeastern states. It is an expansion from the existing Zone 5 Pleasant Valley Interconnect between Transco and Dominion Cove Point in Virginia to Transco's existing Zone 3 Pooling Point at Station 65 in Louisiana. The project is designed to provide additional reliable service to utility and local distribution companies located in Virginia, North Carolina, South Carolina and Georgia. The Southeastern Trails Project moves gas from north-to-south to various markets on the Transco mainline. DEF is not a shipper in this project but may benefit from incremental gas supply that could be available at Transco Station 85 where DEF could access this supply to transport into Florida on downstream capacity on Sabal Trail and/or Transco's Mobile Bay South Lateral.

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

**Response:**

Projections of LNG exports vary widely and will be influenced by global pricing and production. According to the Federal Energy Regulatory Commission, there are currently seven licensed and operational facilities in the United States, with a combined capacity of approximately 10.59 Bcf/day. There is another 9.09 Bcf/day approved and under construction, and another 23 Bcf/day approved, but not yet under construction.

The growth in U.S. LNG exports are supported by differences between domestic and international natural gas prices. However, according to the EIA, the difference between domestic and international natural gas prices is assumed to tighten later in the projection period as a result of growth in U.S. LNG export capacity. U.S. natural gas prices are currently determined primarily by the availability and cost of domestic natural gas resources.

The future trends of U.S. LNG exports are difficult to predict as it can be impacted by both domestic and global developments over the long-term period. These factors include, but are not limited to, global natural gas prices, fundamentals of supply and demand, storage levels, economic cycles, and government regulations. As the global LNG supply grows, U.S. gas

supply will compete with other global LNG exporters. DEF will continue to monitor LNG infrastructure projects and exports from these facilities.

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

**Response:**

DEF utilizes firm natural gas storage as part of its overall gas fuel contract portfolio. DEF has agreements with Bay Gas Storage Company LTD ("Bay Gas") and SG Resources Mississippi LLC ("Southern Pines") for firm storage capacity. Both gas storage facilities are directly connected to interstate pipelines (FGT, Gulfstream, SESH and Transco) on which DEF currently holds firm transportation. Bay Gas and Southern Pines both provide DEF with greater supply reliability, operational flexibility, and price protection during severe weather events and pipeline operational flow orders. DEF expects high deliverability storage to continue to be a critical component of its overall natural gas contract portfolio throughout the planning period. DEF will continue to evaluate any additional needs or changes in firm gas storage capacity throughout the planning period.

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

**Response:**

With respect to transportation by rail, increased mining costs, declining productivity combined with decreased demand as a result of low natural gas pricing continues to apply pressure for coal transported by rail to be cost competitive. Additionally, any increased demand for coal in foreign countries could put pressure on the railroads infrastructure to transport coal to the ports for export shipments. It is expected that rail providers over course of the planning period will continue to shift resources away from the coal sector into other business areas. DEF maintains communications with the rail transportation providers and actively monitors and explores opportunities to maintain rail transportation to its coal generation facilities. DEF expects the coal market will remain volatile during the planning period and that access to rail transportation will continue to provide flexibility to respond to rapidly changing generation needs.

With respect to water transportation, because of the addition of scrubbers to many coal generation plants in the Midwest and Southeast, use of higher sulfur coal originating from the Illinois Basin has increased with the main mode of transportation from this region being via water. Here again, decreased demand as a result of low natural gas prices continues to apply pressure for waterborne coal deliveries to be cost competitive. DEF expects waterborne transportation to remain a key component of its transportation portfolio during the planning

period. Terminal services in the Gulf will be critical to enable DEF to continue purchasing waterborne coals.

DEF has a long-term contract with a Gulf terminal for storage capacity along with a contract to load coal directly from a river barge to an ocean barge which allows DEF to mitigate unfavorable weather and operational impacts while ensuring reliable loading operations. DEF continuously communicates with barge companies, terminal facilities and Gulf barge companies to manage its coal transportation via water. DEF continuously seeks opportunities to diversify its water transportation and terminal portfolio to ensure a reliable fuel supply.

Having the ability to transport coal via waterborne barge and rail transportation creates opportunities for competition between transportation modes. Additionally, the ability to take coal from various coal basins promotes competition between the different modes of transportation as well as the competition of coal pricing between coal basins. DEF expects the coal market will remain volatile during the planning period and having varying modes of transportation will continue to provide valuable flexibility. DEF continues to monitor and explore opportunities to maintain competition between water and rail delivery of coal.

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

**Response:**

Coal handling, blending, unloading, and storage requirements for coals from different basins are a consideration when determining coals to purchase. Decreased demand as a result of lower natural gas prices are expected to reduce coal handling, blending, and unloading activities at its coal generating units. The Company expects to continue utilizing its Gulf terminal agreements to facilitate coal blending as needed. The Company will continue to require station resources to manage its contractual obligations. Continuous communications with the station, terminal facilities, river and gulf barge companies, and railroads are critical for DEF's coal transportation strategy in the future.

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

**Response:**

The United States Federal Government is legally obligated to take title and possession of all spent nuclear fuel. DEF will utilize on-site dry storage until the government fulfills its contractual obligations. All fuel at Crystal River #3 has been moved into dry cask storage. Reimbursement for costs incurred to store fuel on site is expected if the storage is as a result

of the DOE's breach of the standard contract for disposal of spent nuclear fuel. DEF cannot predict what future actions the government will take to fulfill its contractual obligations. The Nuclear Waste Policy Act of 1982, as amended cannot be changed except by an act of Congress.

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

**Response:**

DEF has retired the Crystal River 3 Nuclear plant and will not be affected by uranium production industry trends.

**Weatherization**

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

**Response:**

Regulated & Renewable Energy (RRE) has weathered 2 recent polar vortexes (2014 & 2015) and a severe cold weather event in Jan 2018 and implemented weather hardening procedures and projects to ensure enhanced reliability through future cold weather events. For example, heat tracing and insulation of key equipment has provided dividends. Through each winter event, we gather lessons learned and disseminate throughout the fleet to mitigate future weather risks. Since Florida is winter peaking, focusing on winter hardening provides the most benefit to our customers although we prepare our fleet for summer weather as well. During the recent Texas blackouts (Feb 2021), we understand that the deregulated energy providers had issues getting operators to plants. In times of system critical needs, we ensure adequate staffing of operating shifts and if needed, even have operators remain close to plants (and in some cases, sleep at plants) to minimize travel risk.

Each station has an extreme weather procedure and RRE has developed a fleet guidance document outlining general expectations and harnessing lessons learned from around the fleet. For example, while not the same extreme temperature, Florida stations can benefit from freezing events at our Indiana or North Carolina stations.

- Cold weather guidance document - fleet wide Stations have hot weather preparedness procedure/checklists (Spring)
- Station have cold weather preparedness procedure/checklist (Fall)
- Stations have standard Preventive Maintenance (PMs) associated with cold weather preparation entered into the Work Management System.
- Extreme weather Operations Protocol (Sterile control room, hands off, etc.)
- Preference to Spring / Fall outages to ensure reliability for peak Summer / Winter runs.

- Asset Inspection & Maintenance Programs (i.e., Reliability)

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

**Response:**

At this time, Regulated & Renewable Energy (RRE) has no specific winterization plans for the current planning period beyond what has been described in response to Q82. RRE has taken lessons learned from previous cold weather events and added protective systems to generation stations (e.g., heat tracing and insulation). During the coldest winter in recent Florida history (January 2010), Duke Energy Florida's Generation Fleet recorded its peak generation to our customers without issue. Since then, we have continued to review equipment performance and modify our systems as necessary to continue to reliably supply power when needed.

**Existing Generating Unit Operating Performance**

Plant Name	Unit No.	Planned Outage Factor (POF)		Forced Outage Factor (FOF)		Equivalent Availability Factor (EAF)		Average Net Operating Heat Rate (ANOHR)	
		Historical	Projected	Historical	Projected	Historical	Projected	Historical	Projected
ANCLOTE	1	3.08	3.08	0.83	0.83	90.38	90.38	11,446	11,446
	2	3.47	3.47	0.34	0.34	88.05	88.05	11,089	11,089
AVON PARK	P1	0.00	0.00	1.64	1.64	59.82	59.82	18,500	18,500
	P2	0.00	0.00	9.56	9.56	56.27	56.27	21,025	21,025
BARTOW	P1	2.23	2.23	1.56	1.56	88.81	88.81	16,951	16,951
	P2	0.00	0.00	0.73	0.73	95.16	95.16	16,424	16,424
	P3	7.54	7.54	9.48	9.48	79.57	79.57	13,988	13,988
	P4	0.10	0.10	12.80	12.80	82.21	82.21	14,971	14,971
BARTOW CC	4A	7.25	7.25	0.25	0.25	91.52	91.52	12,109	12,109
	4B	11.63	11.63	1.72	1.72	85.59	85.59	11,173	11,173
	4C	1.63	1.63	8.28	8.28	86.78	86.78	10,055	10,055
	4D	4.84	4.84	1.79	1.79	92.29	92.29	11,447	11,447
	4S	9.59	9.59	0.96	0.96	85.88	85.88	493	493
BAYBORO	P1	0.81	0.81	2.85	2.85	93.47	93.47	17,614	17,614

**Nominal, Firm Purchases**

Year	Firm Purchases	
	\$/MWh	Escalation %
<b>HISTORY:</b>		
2018	46.91	
2019	127.45	171.7%
2020	138.66	8.8%
<b>FORECAST:</b>		
2021	150.20	
2022	136.27	-9.3%
2023	145.40	6.7%
2024	138.83	-4.5%
2025	93.44	-32.7%
2026	62.47	-33.1%
2027	70.33	12.6%
2028	69.85	-0.7%
2029	79.65	14.0%
2030	89.28	12.1%

**Financial Assumptions****Base Case**

AFUDC RATE	<u>6.7</u>	%
CAPITALIZATION RATIOS:		
DEBT	<u>47</u>	%
PREFERRED	<u>0</u>	%
EQUITY	<u>53</u>	%
RATE OF RETURN		
DEBT	<u>3.15</u>	%
PREFERRED	<u>0</u>	%
EQUITY	<u>10.5</u>	%
INCOME TAX RATE:		
STATE	<u>5.08</u>	%
FEDERAL	<u>21</u>	%
EFFECTIVE	<u>25.02</u>	%
OTHER TAX RATE:	<u>N/A</u>	%
DISCOUNT RATE:	<u>6.7</u>	%
TAX		
DEPRECIATION RATE:	<u></u>	%

**Financial Escalation Assumptions**

Year	General	Plant Construction	Fixed O&M	Variable O&M
	Inflation	Cost <sup>(1)</sup>	Cost	Cost
	%	%	%	%
2021	2.50%		2.50%	2.50%
2022	2.50%		2.50%	2.50%
2023	2.50%		2.50%	2.50%
2024	2.50%		2.50%	2.50%
2025	2.50%		2.50%	2.50%
2026	2.50%		2.50%	2.50%
2027	2.50%		2.50%	2.50%
2028	2.50%		2.50%	2.50%
2029	2.50%		2.50%	2.50%
2030	2.50%		2.50%	2.50%

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

Year	Annual Isolated			Annual Assisted		
	Loss of Load Probability (Days/Yr)	Reserve Margin (%) (Including Firm Purchases)	Expected Unserved Energy (MWh)	Loss of Load Probability (Days/Yr)	Reserve Margin (%) (Including Firm Purchases)	Expected Unserved Energy (MWh)
2021						
2022						
2023						
2024						
2025	DUKE Energy Florida is required to maintain a 20% Reserve Margin, therefore no					
2026	LOLP study was conducted.					
2027						
2028						
2029						
2030						

Date	Hourly System Load (MW)																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1/1/2020	3255	3168	3049	3005	2977	3053	3234	3559	3867	4011	3980	3959	3882	3835	3812	3817	3877	4073	4361	4248	4052	3852	3571	3236
1/2/2020	3032	2906	2861	2872	2958	3196	3588	3953	4081	4054	4046	4080	4138	4222	4317	4413	4499	4575	4783	4674	4488	4225	3846	3400
1/3/2020	3092	2873	2754	2692	2730	2917	3241	3593	3906	4150	4391	4581	4801	5016	5267	5394	5455	5459	5525	5245	4894	4548	4169	3749
1/4/2020	3454	3222	3050	2975	2976	3029	3165	3451	3850	4259	4602	4736	4651	4466	4348	4202	4109	4112	4252	4113	3975	3796	3553	3226
1/5/2020	2994	2849	2781	2789	2848	3036	3307	3768	4188	4304	4286	4137	4039	3910	3813	3791	3868	4133	4578	4608	4588	4434	4202	3917
1/6/2020	3702	3615	3654	3814	4084	4708	5548	6059	6027	5567	4988	4511	4291	4108	4015	3956	4009	4246	4803	5016	5012	4786	4434	4047
1/7/2020	3854	3798	3822	3882	4168	4733	5662	6070	5866	5342	4527	4212	4079	3971	3905	3922	3963	4198	4536	4511	4343	4124	3778	3372
1/8/2020	3191	3094	3129	3219	3414	3976	4924	5573	5450	5010	4560	4285	4121	3997	3909	3892	4014	4311	4832	4886	4887	4649	4324	3930
1/9/2020	3746	3651	3649	3753	3956	4384	5263	5494	5234	4745	4298	4107	4046	4000	3992	4020	4101	4206	4517	4453	4271	3973	3608	3203
1/10/2020	2959	2795	2719	2715	2762	3026	3536	3899	3977	4000	4099	4219	4351	4415	4560	4651	4675	4721	4913	4736	4449	4109	3823	3416
1/11/2020	3103	2928	2804	2740	2738	2836	3027	3304	3714	4071	4386	4564	4693	4822	4932	5001	4975	4876	4954	4764	4521	4287	3970	3566
1/12/2020	3230	2980	2812	2755	2729	2801	2932	3182	3558	4028	4390	4685	4954	5204	5459	5544	5447	5318	5431	5168	4870	4412	4033	3555
1/13/2020	3197	2982	2828	2775	2831	3119	3562	3870	4048	4274	4519	4744	5015	5280	5497	5627	5616	5474	5538	5176	4795	4446	4004	3511
1/14/2020	3177	2929	2803	2701	2752	2969	3396	3738	3888	4087	4340	4579	4784	4964	5145	5264	5358	5320	5516	5232	4847	4459	4002	3512
1/15/2020	3161	2945	2814	2765	2822	3043	3498	3807	3913	4098	4331	4583	4882	5128	5382	5537	5592	5476	5542	5237	4867	4517	4054	3554
1/16/2020	3211	2967	2814	2756	2787	3026	3440	3769	3905	4097	4354	4596	4852	5042	5234	5374	5330	5261	5382	5159	4816	4444	4024	3557
1/17/2020	3247	3023	2853	2787	2819	3061	3508	3804	3942	4095	4242	4365	4501	4597	4629	4628	4587	4508	4620	4411	4240	4016	3749	3392
1/18/2020	3112	2897	2752	2694	2712	2800	2986	3293	3593	3840	3980	4089	4165	4240	4346	4412	4444	4430	4565	4454	4187	3961	3696	3324
1/19/2020	3044	2851	2704	2658	2673	2748	2899	3150	3483	3798	4021	4168	4265	4317	4348	4379	4389	4500	4706	4585	4376	4122	3769	3323
1/20/2020	3005	2789	2686	2676	2759	3168	3686	4199	4516	4719	4620	4392	4242	4145	4074	4045	4146	4426	4892	4960	4887	4706	4419	4101
1/21/2020	3917	3878	3958	4063	4354	5092	6054	6637	6507	6036	5486	5098	4905	4742	4640	4633	4872	5406	6329	6832	6970	6848	6498	6098
1/22/2020	5875	5904	5976	6186	6580	7195	8120	8407	8165	7364	6616	6217	5867	5601	5409	5288	5404	5713	6209	6255	5968	5465	4953	4478
1/23/2020	4222	4059	3964	3937	4048	4362	4898	5205	5101	4838	4529	4312	4186	4095	4101	4086	4123	4316	4595	4564	4422	4146	3759	3337
1/24/2020	3090	2955	2894	2868	2946	3250	3785	4094	4107	4093	4059	4053	4095	4099	4094	4113	4111	4157	4341	4276	4133	3885	3627	3284
1/25/2020	3004	2845	2746	2704	2717	2819	3109	3463	3827	3960	3958	3914	3873	3813	3787	3769	3810	3907	4145	4154	4085	4000	3832	3613
1/26/2020	3463	3395	3385	3399	3524	3693	3980	4430	4761	4698	4444	4219	4060	3929	3814	3804	3874	4063	4414	4456	4287	4071	3725	3301
1/27/2020	3132	2973	2948	2937	3063	3411	3967	4360	4429	4367	4398	4260	4185	4071	4021	3988	4081	4254	4554	4544	4373	4078	3679	3264
1/28/2020	3023	2914	2870	2889	3039	3441	4024	4440	4465	4300	4165	4030	3983	3911	3883	3902	3994	4154	4482	4559	4441	4235	3915	3570
1/29/2020	3441	3403	3445	3517	3779	4340	4953	5381	5205	4958	4587	4302	4186	4154	4151	4162	4223	4468	4846	4884	4729	4415	3970	3448
1/30/2020	3222	3082	3039	3047	3209	3552	4084	4440	4499	4514	4481	4400	4242	4126	4046	4025	4086	4202	4511	4524	4380	4120	3740	3379
1/31/2020	3119	2979	2930	2909	3023	3327	3925	4277	4374	4365	4316	4194	4133	4060	4081	4076	4165	4224	4378	4355	4161	3938	3651	3334
2/1/2020	3131	2934	2862	2800	2836	2922	3115	3456	3828	4139	4338	4356	4332	4284	4229	4140	4154	4189	4426	4439	4315	4183	4008	3717
2/2/2020	3549	3485	3482	3511	3596	3767	4131	4698	5088	4971	4699	4491	4269	4120	3998	3954	4006	4231	4485	4498	4439	4369	4229	3971
2/3/2020	3749	3694	3699	3792	4050	4573	5521	6105	5758	4986	4467	4189	4021	3919	3893	3870	3926	4085	4368	4443	4288	4038	3688	3318
2/4/2020	3126	3080	3104	3198	3344	3775	4581	5121	4882	4506	4263	3985	3925	3911	3910	3965	4094	4205	4437	4449	4279	3950	3572	3136
2/5/2020	2873	2714	2657	2654	2762	3086	3617	3955	3987	3950	3967	4012	4116	4139	4198	4303	4368	4439	4702	4746	4544	4275	3864	3396
2/6/2020	3076	2849	2709	2686	2751	3023	3533	3903	4092	4240	4406	4575	4683	4862	5009	5068	5109	5167	5323	5339	5118	4824	4365	3764
2/7/2020	3282	2929	2764	2680	2708	2943	3413	3775	3904	3962	4026	3963	3978	3927	3874	3862	3918	4042	4355	4444	4393	4299	4094	3819
2/8/2020	3705	3615	3632	3682	3848	4209	4828	5389	5671	5430	4961	4390	4077	3885	3756	3740	3812	3877	4075	4165	4082	3959	3772	3537
2/9/2020	3358	3239	3196	3221	3300	3501	3885	4395	4650	4380	4136	4001	3962	3917	3928	3961	4027	4121	4320	4394	4187	3905	3545	3136
2/10/2020	2891	2728	2686	2701	2798	3135	3682	4070	4060	4024	4110	4208	4367	4462	4641	4794	4940	4967	5148	5059	4780	4436	3996	3504
2/11/2020	3151	2922	2773	2715	2764	3026	3506	3806	3947	4129	4382	4667	4886	5069	5305	5485	5578	5533	5667	5486	5082	4661	4203	3652
2/12/2020	3292	3042	2880	2837	2858	3100	3576	3935	4103	4326	4633	4976	5205	5447	5642	5855	5953	5864	5864	5723	5320	4939	4444	3917
2/13/2020	3508	3253	3093	3005	3052	3279	3772	4138	4355	4510	4765	5046	5332	5588	5835	6140	6312	6121	6047	5784	5462	4994	4511	3942
2/14/2020	3538	3259	3107	3007	3042	3278	3739	4118	4303	4396	4443	4474	4543	4608	4621	4609	4523	4490	4541	4422	4212	3964	3690	3353
2/15/2020	3160	2971	2855	2747	2760	3004	3373	3869	4297	4399	4328	4261	4237	4238	4351	4421	4531	4579	4701	4649	4351	4030	3681	3318
2/16/2020	3038	2834	2723	2636	2644	2719	2875	3152	3512	3886	4143	4344	4575	4855	5064	5171	5174	5171	5287	5110	4699	4219	3849	3375
2/17/2020	3083	2842	2741	2681	2725	2954	3299	3647	3929	4158	4438	4664	4935	5153	5351	5561	5690	5654	5620	5463	5063	4576	4134	3591
2/18/2020	3219	3002	2914	2816	2852	3073	3554	3905	4106	4319	4690	4983	5309	5641	5903	6121	6145	6033	6060	5880	5412	4847	4346	3770
2/19/2020	3380	3155	3005	2927	2993	3241	3712	4044	4230	4410	4603	4824	5099	5390	5565	5727	5763	5684	5681	5577	5179	4739	4283	3768
2/20/2020	3360	3098	2971	2914	2934	3173	3671	4042	4202	4321	4482	4708	5011	5264	5498	5744	5779	5749	5725	5626	5211	4807	4307	3700
2/21/2020	3307	3054	2908	2806	2837	3015	3486	3889	4129	4277														

3/2/2020	3100	3010	2986	2991	3156	3542	4151	4537	4343	4194	4059	4010	4046	4050	4079	4138	4218	4303	4495	4579	4397	4088	3618	3190
3/3/2020	2892	2712	2600	2592	2637	2913	3453	3725	3801	3873	3993	4166	4311	4497	4660	4800	4933	5010	5172	5235	4901	4465	3952	3454
3/4/2020	3077	2867	2748	2665	2734	2983	3458	3784	3990	4169	4454	4777	5205	5644	5899	6126	6307	6277	6061	5912	5470	4890	4375	3771
3/5/2020	3381	3135	2998	2947	3013	3245	3733	4038	4286	4583	5006	5490	6115	6412	6581	6703	6697	6533	6462	6414	5920	5380	4765	4166
3/6/2020	3767	3409	3159	3016	2972	3141	3612	3829	3947	4026	4078	4118	4166	4213	4228	4312	4390	4362	4343	4360	4096	3873	3540	3221
3/7/2020	2975	2828	2793	2787	2899	3092	3477	3942	4298	4364	4177	3981	3836	3719	3655	3646	3729	3806	4015	4180	4139	4017	3818	3594
3/8/2020	3486	3373	0	3353	3372	3473	3688	4153	4618	4725	4526	4183	3964	3879	3830	3825	3876	3927	3980	4106	4235	4024	3636	3224
3/9/2020	2926	2745	2684	2682	2775	3083	3655	4050	4100	4128	4088	4056	4085	4082	4058	4107	4240	4313	4352	4460	4533	4230	3803	3340
3/10/2020	3023	2810	2676	2636	2706	2981	3468	3807	3861	3928	4039	4184	4318	4445	4524	4559	4622	4746	4776	4884	4859	4441	3963	3488
3/11/2020	3120	2879	2751	2687	2703	2943	3404	3770	3848	3956	4091	4267	4449	4642	4927	5212	5443	5555	5481	5323	5239	4740	4176	3628
3/12/2020	3226	2963	2809	2689	2743	2952	3407	3769	3843	3948	4118	4303	4525	4847	5112	5546	5818	6049	5891	5658	5507	4883	4294	3748
3/13/2020	3325	2993	2837	2733	2748	2905	3285	3603	3769	3986	4232	4501	4949	5527	5947	6241	6475	6509	6224	5889	5589	5017	4348	3830
3/14/2020	3459	3124	2923	2801	2743	2734	2922	3182	3471	3847	4305	4733	5277	5783	6091	6400	6584	6589	6368	6014	5699	5222	4504	3880
3/15/2020	3435	3108	2898	2768	2706	2762	2877	3095	3380	3841	4401	4943	5540	6008	6300	6618	6767	6878	6618	6293	6039	5517	4708	3978
3/16/2020	3514	3166	2972	2848	2827	2974	3304	3565	3783	4106	4458	4890	5312	5698	5974	6224	6349	6294	6113	5938	5757	5181	4469	3922
3/17/2020	3491	3159	2952	2858	2841	2965	3276	3513	3714	4032	4371	4855	5436	5944	6395	6665	6722	6755	6661	6291	6028	5399	4662	3960
3/18/2020	3505	3205	3028	2921	2904	3039	3330	3541	3723	3961	4335	4851	5431	6042	6447	6667	6893	6911	6780	6399	6007	5283	4542	3979
3/19/2020	3540	3228	3003	2867	2834	2960	3214	3473	3670	4005	4440	4917	5516	6094	6555	6949	7061	7126	6926	6388	6109	5430	4661	4027
3/20/2020	3594	3284	3075	2914	2870	2966	3214	3485	3707	4066	4487	4934	5533	6094	6480	6706	6899	6974	6802	6318	5945	5295	4610	4085
3/21/2020	3627	3310	3082	2963	2890	2893	3001	3174	3419	3857	4367	4926	5574	6054	6360	6607	6844	7026	6715	6313	5970	5318	4585	4067
3/22/2020	3633	3314	3060	2907	2810	2800	2879	2992	3275	3770	4292	4842	5615	6184	6519	6698	6784	6774	6608	6255	5925	5236	4509	3978
3/23/2020	3526	3249	3042	2914	2906	3020	3307	3584	3816	4193	4642	5206	5866	6343	6687	6860	6997	7122	6930	6545	6143	5447	4661	4074
3/24/2020	3628	3270	3033	2906	2891	2986	3250	3491	3725	4074	4492	4908	5560	6103	6489	6772	7009	7055	6832	6407	6192	5493	4706	4065
3/25/2020	3613	3300	3090	2997	2975	3122	3403	3687	3931	4260	4706	5320	5947	6414	6785	6953	7077	7101	6873	6529	6284	5637	4871	4208
3/26/2020	3763	3434	3222	3115	3080	3172	3419	3654	3897	4267	4701	5262	5886	6211	6685	6996	7124	7231	6978	6532	6290	5700	4909	4212
3/27/2020	3745	3408	3191	3067	2994	3064	3286	3509	3779	4144	4574	5265	6048	6528	7049	7325	7522	7564	7374	6821	6334	5654	5011	4373
3/28/2020	3858	3479	3246	3100	3004	2977	3024	3129	3429	3916	4539	5318	6143	6700	7181	7429	7656	7728	7481	6826	6490	5710	4858+X117	4252
3/29/2020	3795	3451	3203	3054	2969	2939	2944	3049	3354	3859	4471	5235	6028	6642	7054	7378	7707	7828	7672	7172	6699	5855	4992	4387
3/30/2020	3814	3454	3206	3080	3007	3061	3276	3541	3833	4225	4688	5481	6284	6766	7182	7527	7841	8090	7835	7066	6765	5975	5057	4412
3/31/2020	3886	3558	3304	3173	3108	3192	3404	3644	3912	4250	4703	5286	5948	6395	6731	7017	7112	7059	6819	6401	6216	5641	4962	4398
4/1/2020	3942	3595	3353	3160	3046	3034	3134	3348	3502	3628	3732	3882	4012	4168	4339	4483	4665	4868	4845	4561	4448	4060	3662	3176
4/2/2020	2867	2645	2531	2472	2517	2654	2892	3159	3367	3467	3569	3688	3851	4015	4282	4505	4720	4996	4984	4681	4558	4107	3696	3190
4/3/2020	2849	2622	2515	2457	2496	2613	2861	3120	3324	3480	3630	3806	4045	4316	4674	5095	5509	5765	5570	5083	4859	4352	3916	3439
4/4/2020	3131	2840	2657	2575	2527	2548	2648	2764	2993	3293	3633	3986	4385	4786	5143	5446	5641	5703	5517	5222	5048	4599	4117	3627
4/5/2020	3263	2977	2830	2720	2674	2662	2727	2836	3058	3418	3718	3916	4026	4035	3965	3924	3912	3918	3889	3866	3883	3653	3379	3002
4/6/2020	2759	2583	2531	2469	2503	2644	2880	3131	3353	3518	3747	4047	4340	4547	4713	4829	4953	5052	4962	4828	4744	4404	3943	3502
4/7/2020	3130	2861	2701	2614	2622	2728	2919	3122	3359	3697	4068	4430	4870	5269	5758	6228	6641	6731	6495	6030	5806	5174	4488	3972
4/8/2020	3575	3253	3039	2908	2851	2944	3135	3291	3646	4007	4406	4856	5453	6161	6689	6947	7318	7405	7240	6716	6391	5861	5098	4307
4/9/2020	3890	3591	3429	3316	3303	3401	3619	3808	4157	4479	4873	5243	5693	6286	6722	7100	7389	7486	7291	6718	6330	5573	4976	4400
4/10/2020	3988	3662	3462	3372	3361	3426	3612	3808	4059	4382	4693	5062	5401	5635	5494	5579	5675	5694	5542	5053	4874	4476	4039	3623
4/11/2020	3246	2943	2741	2640	2595	2615	2685	2769	2956	3251	3577	3875	4268	4657	4997	5204	5222	5268	5159	4996	4935	4621	4222	3846
4/12/2020	3516	3259	3087	2978	2925	2947	3024	3127	3560	4147	4696	5307	5906	6494	6984	7367	7683	7757	7469	6862	6513	5952	5378	4856
4/13/2020	4455	4137	3955	3853	3852	3966	4125	4335	4674	5184	5837	6581	7160	7574	7917	8088	8146	8104	7767	7170	6892	6207	5418	4812
4/14/2020	4340	3997	3753	3602	3543	3589	3784	3998	4308	4650	4918	5432	6134	6570	7008	7235	7408	7588	7467	6962	6599	5846	5227	4640
4/15/2020	4309	3996	3786	3645	3615	3710	3908	4127	4497	4887	5378	5972	6572	6820	6782	6664	6403	5944	5554	5175	4955	4711	4318	3801
4/16/2020	3491	3198	3020	2898	2873	2933	3111	3358	3562	3710	3850	3926	3964	3935	3918	3869	3931	3977	3968	3947	4031	3813	3594	3090
4/17/2020	2854	2688	2564	2528	2527	2648	2869	3142	3364	3607	3856	4143	4496	4805	5030	5389	5657	5951	5834	5459	5197	4782	4414	3901
4/18/2020	3578	3304	3125	2974	2931	2927	3016	3126	3456	3950	4297	4395	4360	4344	4492	4702	4526	5381	5342	5037	4969	4690	4315	3862
4/19/2020	3533	3258	3033	2907	2854	2866	2892	2972	3364	3886	4475	5083	5706	6410	6903	7144	7291	7308	6980	6443	6120	5571	5050	4474
4/20/2020	4113	3843	3686	3639	3634	3752	3928	4212	4534	4836	5026	5176	5374	5469	5633	5951	6244	6400	6201	5718	5384	4897	4387	3786
4/21/2020	3367	3094	2928	2844	2808	2866	3025	3227	3594	3870	4059	4563	5045	5425	5689	6109	6414	6620	6386	5771	5432	4988	4443	3821
4/22/2020	3413	3119	2919	2808	2776	2879	3042	3242	3545	3786	4019	4374	4877	5348	5868	6221	6542	6585	6278	5759	5365	4772	4320	3742
4/23/2020	3387	3137	2952	2871	2847	2938	3154	3386	3731	4137	4682	5219	5738	6282										

5/9/2020	3392	3109	2929	2808	2766	2770	2819	2919	3344	3826	4294	4696	5159	5489	5665	5759	5767	5653	5349	5039	4911	4566	4158	3742
5/10/2020	3398	3124	2952	2853	2791	2770	2798	2901	3187	3588	3882	4065	4264	4552	4894	5106	5294	5401	5218	4881	4702	4401	4001	3538
5/11/2020	3186	2899	2749	2670	2657	2764	2993	3236	3541	3907	4296	4622	5018	5402	5727	6060	6322	6411	6256	5712	5332	4841	4285	3748
5/12/2020	3312	3008	2808	2713	2679	2786	2960	3159	3459	3750	4083	4462	4824	5305	5700	6118	6394	6495	6205	5644	5232	4895	4373	3814
5/13/2020	3375	3067	2868	2759	2736	2855	2994	3222	3589	3959	4339	4820	5409	5865	6254	6533	6654	6721	6552	5996	5629	5210	4456	3925
5/14/2020	3469	3184	3009	2907	2871	2944	3102	3359	3724	4086	4452	4814	5350	5817	6188	6454	6422	6461	6221	5698	5387	5080	4574	4041
5/15/2020	3589	3281	3075	2938	2912	2986	3136	3381	3809	4277	4764	5214	5640	5966	6332	6664	6754	6707	6295	5830	5544	5194	4804	4316
5/16/2020	3941	3607	3401	3258	3196	3203	3238	3388	3807	4325	4849	5305	5744	6050	6432	6651	6719	6730	6508	5981	5655	5321	4847	4357
5/17/2020	3959	3635	3369	3215	3121	3088	3091	3242	3647	4162	4717	5305	5966	6612	7137	7509	7863	7874	7613	6887	6377	5740	5158	4592
5/18/2020	4067	3698	3457	3315	3278	3364	3545	3822	4196	4486	4800	4871	4815	4959	5263	5376	5472	5523	5444	5269	5158	4933	4441	3977
5/19/2020	3597	3306	3133	3038	3024	3134	3326	3612	4011	4445	4918	5514	5959	6383	6737	7063	7245	7348	7081	6497	5995	5457	4849	4265
5/20/2020	3838	3509	3256	3076	3004	3101	3278	3553	3987	4431	4914	5535	5967	6483	6990	7336	7641	7658	7402	6772	6377	5829	5196	4579
5/21/2020	4078	3706	3465	3328	3260	3315	3455	3747	4246	4834	5436	6196	6791	7421	7906	8229	8533	8471	7978	7101	6337	5685	5099	4487
5/22/2020	3998	3630	3391	3246	3186	3235	3403	3655	4157	4758	5395	6208	7066	7788	8287	8540	8592	8342	7852	7044	6305	5683	5189	4656
5/23/2020	4259	3896	3618	3447	3333	3285	3295	3502	3999	4598	5203	5985	6696	7400	7648	7851	7997	8002	7638	6948	6399	5831	5330	4807
5/24/2020	4412	4075	3809	3658	3532	3473	3478	3593	3962	4500	5015	5478	5922	6349	6693	6834	6733	6561	6263	5777	5552	5182	4821	4459
5/25/2020	4093	3784	3572	3427	3375	3396	3474	3582	3829	4189	4522	4875	5241	5554	5773	5778	5685	5565	5430	5102	4862	4493	4241	3866
5/26/2020	3575	3334	3190	3158	3147	3269	3506	3816	4156	4624	5068	5628	6193	6705	7186	7428	7548	7632	7493	6856	6362	5803	5294	4737
5/27/2020	4325	3993	3761	3638	3600	3647	3815	4109	4566	5047	5597	6106	6491	6771	7131	7348	7494	7514	7376	6860	6263	5835	5225	4698
5/28/2020	4228	3905	3693	3562	3515	3602	3760	4115	4561	5101	5756	6418	7121	7741	8170	8234	7678	7056	6314	5815	5516	5217	4770	4168
5/29/2020	3808	3515	3325	3188	3188	3247	3440	3758	4224	4757	5387	6053	6799	7361	7864	7981	7912	7681	7257	6661	6010	5549	5135	4603
5/30/2020	4179	3837	3599	3446	3323	3323	3343	3541	4028	4665	5320	6001	6766	7452	7781	8057	8252	8162	7628	6921	6212	5666	5057	4513
5/31/2020	4123	3791	3559	3375	3277	3251	3242	3436	3944	4583	5258	6107	7125	7674	8054	8247	8342	8327	8092	7589	6924	6360	5640	5036
6/1/2020	4561	4195	3967	3752	3674	3765	3955	4281	4657	5179	5756	6585	7350	7852	8119	8123	8212	8139	7830	7250	6738	6194	5563	4921
6/2/2020	4481	4100	3886	3739	3668	3745	3928	4209	4602	5013	5466	5967	6380	6747	7021	7173	7286	7238	6880	6355	6008	5607	5133	4588
6/3/2020	4194	3890	3682	3557	3506	3567	3801	4065	4304	4641	5003	5419	5920	6132	6279	6252	6129	5973	5671	5379	5250	5074	4705	4214
6/4/2020	3878	3656	3466	3356	3361	3430	3657	4011	4237	4571	4824	4978	5165	5188	5298	5419	5444	5464	5312	5031	4921	4805	4461	3974
6/5/2020	3644	3367	3213	3149	3122	3231	3422	3744	4076	4517	4912	5384	5893	6352	6633	6796	6695	6317	5856	5435	5179	4960	4599	4159
6/6/2020	3841	3615	3435	3290	3261	3256	3327	3556	3877	4258	4621	4837	5011	5113	5131	5155	5148	5128	5013	4890	4834	4584	4302	3925
6/7/2020	3651	3437	3327	3221	3201	3254	3349	3592	4018	4537	4947	5235	5540	5602	5827	6031	6107	6084	5895	5635	5454	5301	4887	4408
6/8/2020	4035	3787	3624	3552	3557	3702	3962	4308	4748	5321	5882	6386	6945	7297	7270	7100	7112	7339	7344	7017	6621	6151	5583	4918
6/9/2020	4483	4119	3857	3688	3630	3691	3893	4305	4711	5177	5710	6252	6774	7322	7751	8077	8205	8250	8071	7313	6654	6168	5620	4952
6/10/2020	4425	4070	3868	3719	3657	3716	3921	4320	4820	5491	6153	6931	7776	8401	8733	8687	8408	7706	7129	6650	6213	5854	5368	4671
6/11/2020	4259	3916	3688	3527	3479	3561	3774	4200	4696	5275	5927	6579	7302	7678	8227	8222	8201	7980	7660	6938	6411	5922	5413	4734
6/12/2020	4315	3983	3745	3554	3485	3517	3638	3930	4370	4911	5461	6020	6641	7254	7659	7985	8117	8064	7707	7158	6581	6126	5491	4961
6/13/2020	4521	4169	3902	3722	3626	3626	3625	3745	4152	4579	5051	5472	5965	6414	6783	7003	6983	6847	6447	5905	5541	5269	4836	4357
6/14/2020	4006	3699	3470	3319	3230	3211	3200	3412	3941	4561	5179	5710	6283	6787	7176	7383	7405	7197	6831	6308	5856	5606	5111	4521
6/15/2020	4066	3735	3532	3387	3362	3448	3642	3997	4425	4880	5441	6044	6633	7171	7600	7900	8069	8060	7851	7154	6436	5908	5260	4647
6/16/2020	4172	3777	3500	3320	3261	3327	3449	3826	4168	4598	5000	5451	5996	6503	7006	7438	7640	7669	7303	6675	6150	5734	5178	4563
6/17/2020	4097	3736	3502	3336	3287	3363	3530	3844	4254	4727	5267	5851	6403	6990	7401	7659	7862	7762	7429	6784	6270	5831	5296	4716
6/18/2020	4251	3910	3631	3464	3406	3485	3633	3982	4481	5052	5628	6328	6922	7514	7829	8106	8102	7865	7456	6878	6337	5857	5305	4771
6/19/2020	4278	3956	3772	3616	3592	3658	3802	4064	4453	4955	5476	5923	6622	7318	7760	7886	7729	7422	6961	6345	5940	5681	5234	4769
6/20/2020	4313	3961	3712	3535	3439	3419	3456	3737	4260	4902	5539	6178	6868	7528	7942	8234	8437	8468	8264	7799	7099	6562	5829	5121
6/21/2020	4620	4218	3928	3717	3587	3526	3493	3782	4394	5105	5752	6557	7331	7805	8171	8402	8478	8506	8356	7872	7320	6764	6047	5248
6/22/2020	4663	4230	3932	3743	3649	3697	3864	4308	4846	5470	6061	6880	7670	8360	8772	9203	9421	9372	9110	8319	7669	6884	6071	5255
6/23/2020	4746	4349	4040	3891	3829	3893	4054	4341	4893	5505	6166	6896	7738	8388	8716	8624	8418	8342	8088	7639	7090	6602	6024	5370
6/24/2020	4812	4477	4195	4030	3967	4023	4217	4593	5186	5814	6487	7316	8240	8826	9156	9418	9532	9538	9293	8739	8067	7257	6384	5631
6/25/2020	5089	4664	4380	4150	4066	4084	4248	4617	5137	5762	6581	7531	8403	8902	9313	9562	9647	9469	9006	8357	7891	7222	6374	5574
6/26/2020	5045	4602	4334	4146	4032	4073	4206	4510	5050	5670	6476	7429	8333	9093	9365	9626	9631	9456	8989	8451	7758	7169	6428	5799
6/27/2020	5281	4893	4589	4374	4236	4173	4149	4368	4850	5451	6172	7061	7864	8387	8763	8891	8944	8785	8458	8045	7528	7007	6357	5749
6/28/2020	5230	4845	4507	4303	4151	4076	4015	4222	4747	5388	6085	6937	7780	8424	8804	9047	9184	9127	8819	8280	7766	7087	6359	5702
6/29/2020	5142	4736	4470	4282	4175	4218	4362	4717	5302	5966	6759	7667	8469	9052	9382	9493	9554	9487	9189	8612	7911	7427	6665	5907
6/30/2020	5381	4990	4670	4466	4318	4344	4489	4801	5391	6063	6765	7785	8600	9091										

7/16/2020	4381	4073	3837	3690	3628	3704	3915	4243	4734	5290	6149	7066	7825	8350	8687	8845	9061	9048	8599	7836	7354	6744	6022	5267
7/17/2020	4809	4415	4161	3987	3915	3952	4102	4482	4992	5628	6439	7223	7973	8447	8808	8980	8988	8547	7998	7371	6920	6459	5757	5103
7/18/2020	4664	4335	4087	3925	3839	3869	3892	4120	4672	5356	6188	6991	7590	8003	8107	7960	7589	7338	7071	6705	6410	6100	5555	4986
7/19/2020	4611	4254	4007	3837	3763	3744	3761	3977	4608	5333	6243	7041	7719	8090	8392	8433	8465	8515	8345	7831	7406	6910	6036	5240
7/20/2020	4728	4388	4118	3994	3918	3990	4176	4522	5090	5707	6582	7410	7998	8188	8434	8726	8877	8899	8702	8127	7569	7023	6119	5309
7/21/2020	4824	4427	4200	4038	4000	4117	4289	4640	5166	5792	6569	7416	8030	8188	7771	7557	7735	7886	7678	7255	6807	6341	5683	5037
7/22/2020	4622	4333	4169	4044	4060	4119	4288	4593	4962	5432	6069	6817	7428	7311	6926	6684	6573	6610	6678	6595	6336	5989	5400	4774
7/23/2020	4361	4094	3942	3839	3833	3944	4245	4561	4911	5411	5959	6405	6713	6581	6294	6232	6245	6302	6316	5996	5647	5300	4857	4311
7/24/2020	3949	3658	3484	3368	3322	3433	3670	4040	4590	5206	5837	6679	7495	8086	8401	8614	8729	8639	8169	7430	6855	6316	5730	5132
7/25/2020	4667	4280	4034	3855	3776	3761	3798	3992	4537	5086	5926	6739	7306	7807	8167	8372	8397	8243	7921	7450	6872	6418	5633	4989
7/26/2020	4512	4216	3953	3830	3755	3754	3766	3930	4516	5220	6095	6990	7681	8217	8514	8579	8420	8201	7891	7265	6769	6344	5676	4999
7/27/2020	4481	4149	3905	3796	3763	3871	4033	4379	4870	5480	6183	7073	7942	8468	8687	8689	8247	7832	7522	7025	6477	6097	5451	4788
7/28/2020	4319	4030	3847	3727	3698	3797	4025	4361	4655	5111	5686	6502	7272	7770	7664	7340	7145	6973	6699	6278	6037	5584	5128	4551
7/29/2020	4190	3934	3753	3652	3643	3766	3989	4330	4585	4932	5323	6022	6959	7579	8077	8389	8502	8124	7473	6888	6428	6014	5497	4913
7/30/2020	4510	4167	3966	3800	3789	3902	4116	4500	4897	5443	6069	6942	7771	8404	8793	8975	9090	8994	8689	8069	7637	7093	6348	5445
7/31/2020	4954	4551	4294	4128	4054	4081	4247	4593	4969	5471	6188	7158	7922	8466	8909	9147	9295	9317	9114	8479	7962	7313	6553	5831
8/1/2020	5345	4897	4570	4317	4199	4141	4174	4375	4903	5541	6278	7249	8160	8628	8942	9157	9287	9142	8936	8444	7837	7368	6617	5775
8/2/2020	5263	4871	4571	4357	4241	4178	4164	4330	4892	5504	6077	6832	7416	7392	7323	7739	8059	7967	7874	7418	6867	6335	5713	5096
8/3/2020	4605	4293	4071	3924	3890	4019	4208	4587	4959	5502	6136	7033	7842	8577	8847	9145	9330	9367	9128	8803	8298	7649	6728	5820
8/4/2020	5339	4880	4560	4369	4270	4363	4563	4908	5386	6090	6929	7814	8558	9048	9276	9390	9250	8799	8351	7835	7275	6679	5864	5151
8/5/2020	4697	4351	4097	3921	3889	3993	4233	4631	5050	5651	6329	7269	8057	8707	8785	8402	8050	7813	7524	7152	6710	6244	5703	5062
8/6/2020	4622	4312	4066	3881	3837	3910	4121	4477	4935	5519	6308	7093	7770	8208	8573	8895	8969	8785	8298	7767	7108	6526	5838	5159
8/7/2020	4706	4370	4117	3959	3915	3986	4183	4500	4996	5624	6496	7411	8145	8695	8974	9022	8955	8296	7859	7332	6802	6288	5674	5095
8/8/2020	4669	4309	4068	3870	3788	3749	3768	3978	4528	5178	6077	7028	7810	8279	8745	8968	9041	9022	8713	8060	7482	6867	6243	5632
8/9/2020	5127	4715	4431	4223	4097	4011	3990	4168	4745	5462	6402	7337	8151	8702	8865	8953	8923	8469	7852	7050	6493	5868	5384	4797
8/10/2020	4393	4080	3874	3739	3729	3806	4068	4405	4935	5510	6379	7282	8136	8728	9134	9323	9346	9093	8822	8208	7627	6877	6083	5395
8/11/2020	4861	4449	4197	4041	3991	4064	4300	4580	5048	5614	6478	7360	7962	8350	8549	8655	8366	7924	7560	7105	6752	6203	5481	4876
8/12/2020	4415	4115	3901	3756	3731	3833	4056	4351	4804	5320	6058	6876	7588	8067	8380	8484	8355	8166	7791	7325	6892	6320	5718	5060
8/13/2020	4681	4326	4110	3981	3972	4065	4335	4656	5097	5715	6502	7345	8009	8322	8615	8718	8577	8186	7822	7287	6969	6447	5725	5079
8/14/2020	4657	4346	4154	4020	3986	4078	4307	4602	5152	5779	6653	7508	8176	8522	8599	8607	8660	8400	8014	7478	7061	6455	5824	5250
8/15/2020	4857	4541	4282	4091	3995	3950	4003	4217	4801	5494	6367	7220	7824	8144	8303	8340	8248	8024	7733	7298	6887	6340	5811	5248
8/16/2020	4819	4544	4312	4137	4007	3986	4016	4189	4731	5405	6314	7132	7828	8232	8330	8258	8120	7974	7662	7192	6825	6293	5658	5076
8/17/2020	4641	4326	4134	4000	3963	4081	4372	4694	5192	5773	6510	7091	7513	7644	7218	6923	6844	6879	6776	6558	6355	5885	5259	4695
8/18/2020	4359	4062	3846	3737	3719	3849	4134	4423	4883	5429	6164	7027	7640	8060	8096	7652	7241	7131	6872	6465	6117	5648	5190	4619
8/19/2020	4268	3927	3709	3620	3636	3742	4027	4339	4670	5010	5328	5631	6298	6691	7053	7303	7423	7303	7266	6836	6499	5975	5423	4758
8/20/2020	4306	4008	3847	3688	3677	3802	4073	4371	4801	5252	5879	6495	7066	7443	7727	7564	7671	7626	6906	6284	5880	5520	4997	4528
8/21/2020	4117	3812	3676	3569	3541	3671	4012	4295	4599	4967	5489	6146	6774	7244	7452	7380	6820	6322	5956	5525	5416	5211	4917	4482
8/22/2020	4176	3902	3717	3590	3543	3560	3684	3864	4245	4715	5192	5633	6176	6774	6896	6823	6598	6365	5997	5722	5597	5236	4849	4405
8/23/2020	4078	3826	3595	3458	3406	3441	3507	3720	4307	4973	5704	6511	7279	7933	8274	8334	8342	8079	7680	7201	6921	6400	5815	5241
8/24/2020	4935	4648	4440	4291	4273	4377	4629	4900	5402	6015	6774	7601	8155	8518	8693	8794	8665	8420	8000	7526	7227	6686	5943	5255
8/25/2020	4859	4608	4461	4347	4349	4479	4766	5031	5426	5924	6728	7565	8232	8782	9189	9487	9623	9562	9240	8586	8129	7346	6618	5781
8/26/2020	5249	4898	4626	4416	4369	4468	4726	5008	5462	6010	6794	7634	8468	8887	9178	9510	9506	9263	8834	8327	7984	7235	6420	5538
8/27/2020	5096	4746	4507	4385	4373	4468	4715	4966	5365	5936	6765	7608	8284	8676	8802	8862	8611	8526	8261	7807	7485	6811	6045	5384
8/28/2020	4923	4586	4323	4176	4127	4262	4517	4808	5164	5742	6576	7434	8186	8779	9114	9285	9337	9125	8534	7958	7618	6952	6308	5638
8/29/2020	5215	4867	4600	4396	4321	4309	4376	4562	5046	5666	6349	7102	7578	7962	8273	8528	8178	7669	7188	6698	6326	5893	5467	4943
8/30/2020	4613	4273	4046	3871	3818	3779	3841	4004	4412	4829	5271	5682	6115	6339	6509	6328	6194	5933	5685	5410	5371	5080	4675	4208
8/31/2020	3879	3672	3523	3462	3540	3767	4135	4447	4844	5324	5983	6563	6896	6807	6686	6394	6294	6268	6085	5706	5624	5304	4872	4364
9/1/2020	4040	3826	3674	3584	3623	3754	4079	4419	4798	5319	5938	6583	7297	7860	8088	8302	8353	8358	8035	7747	7322	6535	5791	5152
9/2/2020	4656	4332	4118	4015	3970	4109	4370	4640	5070	5613	6283	7203	8076	8662	8976	8894	8715	8508	8106	7578	7217	6531	5807	5195
9/3/2020	4684	4383	4131	4004	3947	4038	4313	4548	4979	5559	6322	7265	8112	8658	9099	9373	9533	9477	9179	8615	8165	7485	6650	5751
9/4/2020	5263	4885	4622	4467	4382	4470	4708	4964	5374	5958	6669	7480	8513	9082	9307	9312	9075	8531	8063	7398	7131	6476	5833	5296
9/5/2020	4844	4533	4316	4188	4110	4088	4121	4304	4756	5455	6259	7142	7912	8482	8754	8925	8961	8870	8420	7868	7417	6671	5970	5329
9/6/2020	4896	4532	4255	4049	3933	3878	3875	4024	4514	5203	6118	7059	7627	8115										

9/22/2020	3881	3600	3424	3330	3325	3469	3767	4049	4256	4564	4946	5368	5715	5947	6132	6197	6328	6326	6148	5875	5690	5214	4685	4085
9/23/2020	3680	3431	3230	3113	3128	3296	3596	3887	4106	4424	4887	5339	5784	6213	6532	6795	6967	7171	6778	6363	5977	5441	4911	4353
9/24/2020	3958	3667	3464	3373	3386	3519	3833	4115	4356	4739	5221	5778	6394	6940	7481	7759	7922	7802	7449	7094	6611	5941	5356	4768
9/25/2020	4368	4063	3806	3669	3635	3809	4089	4361	4669	5197	5842	6690	7475	7987	8340	8619	8791	8716	8249	7648	7094	6341	5740	5175
9/26/2020	4626	4284	3986	3817	3720	3767	3861	4019	4438	5054	5680	6384	7125	7624	8068	8366	8470	8348	7894	7326	6763	6080	5543	5018
9/27/2020	4632	4305	4061	3865	3740	3671	3728	3883	4299	4926	5521	6237	7129	7654	7939	8039	7966	7620	7168	6725	6181	5620	5122	4539
9/28/2020	4159	3898	3688	3580	3598	3793	4123	4466	4663	4994	5355	5852	6490	6996	7213	7300	7040	6658	6395	6125	5850	5443	4916	4426
9/29/2020	3993	3753	3600	3522	3535	3710	4097	4404	4609	4977	5513	6158	6784	7223	7568	7167	6643	6326	6020	5842	5607	5115	4665	4166
9/30/2020	3737	3382	3144	3002	2962	3073	3336	3574	3695	3820	3995	4212	4423	4627	4850	4987	5188	5215	5000	4942	4804	4409	3939	3459
10/1/2020	3148	2913	2786	2759	2826	2990	3281	3553	3704	3931	4173	4527	4891	5176	5658	6012	6158	6120	5831	5648	5292	4771	4293	3795
10/2/2020	3433	3185	2999	2893	2863	2982	3279	3525	3724	3970	4197	4413	4742	5149	5560	5819	5933	5821	5501	5299	4979	4593	4224	3765
10/3/2020	3454	3226	3055	2935	2863	2903	2993	3159	3436	3823	4171	4503	4798	5086	5252	5353	5393	5337	5186	5092	4838	4502	4185	3800
10/4/2020	3494	3289	3157	3078	3034	3077	3129	3317	3583	3967	4265	4449	4659	4765	4882	4963	5058	4996	4832	4915	4725	4481	4143	3700
10/5/2020	3343	3136	3048	3022	3082	3313	3671	4043	4238	4493	4693	5138	5613	5996	6281	6526	6806	6832	6616	6493	6205	5638	4992	4458
10/6/2020	4040	3761	3607	3541	3566	3735	4051	4371	4635	5071	5809	6596	7359	7916	8215	8464	8534	8390	7985	7693	7150	6519	5745	5068
10/7/2020	4648	4269	4038	3918	3877	4030	4313	4667	4884	5350	6115	6855	7494	7930	8211	8468	8436	8261	7748	7342	6902	6258	5645	5070
10/8/2020	4583	4245	4035	3883	3852	3969	4303	4567	4854	5308	5863	6501	7287	7852	8306	8446	8505	8356	7922	7423	6892	6170	5618	4968
10/9/2020	4552	4212	3965	3809	3776	3912	4187	4440	4782	5278	5817	6431	7167	7710	7893	8016	8020	7772	7303	6807	6248	5743	5276	4733
10/10/2020	4360	4114	3901	3773	3717	3699	3753	3920	4301	4863	5422	6007	6539	6989	7353	7583	7676	7430	7012	6798	6337	5809	5378	4828
10/11/2020	4444	4139	3908	3775	3703	3683	3734	3953	4358	4965	5578	6011	6548	6701	6917	6972	7015	6995	6690	6401	6010	5510	5002	4414
10/12/2020	4021	3703	3515	3367	3333	3481	3788	4046	4373	4816	5242	5695	6254	6807	7268	7499	7622	7556	7030	6659	6152	5605	5053	4398
10/13/2020	3993	3678	3446	3332	3313	3476	3846	4164	4423	4797	5230	5646	6152	6715	7128	7471	7671	7636	7192	6766	6119	5511	4947	4300
10/14/2020	3927	3572	3384	3260	3279	3451	3774	4045	4296	4676	5154	5718	6420	7072	7577	7868	7992	7852	7397	7022	6341	5683	5087	4460
10/15/2020	4087	3753	3538	3390	3361	3483	3819	4100	4375	4816	5319	5892	6503	7096	7574	7861	8012	7883	7385	7030	6421	5821	5219	4583
10/16/2020	4164	3831	3609	3467	3456	3578	3877	4160	4398	4826	5338	5867	6470	7162	7538	7611	7650	7540	6933	6476	5916	5440	5000	4465
10/17/2020	4083	3780	3552	3405	3337	3313	3345	3449	3707	4119	4523	4973	5460	5964	6392	6644	6795	6701	6203	5852	5491	5043	4647	4176
10/18/2020	3898	3628	3424	3323	3245	3205	3263	3360	3686	4284	4846	5377	5873	6301	6604	6697	6557	6205	5792	5694	5387	5059	4616	4117
10/19/2020	3811	3587	3434	3351	3340	3497	3790	4047	4314	4715	5188	5643	6023	6358	6390	6200	5928	5657	5417	5466	5295	4957	4563	4100
10/20/2020	3756	3561	3442	3369	3407	3601	3974	4294	4494	4741	5027	5434	6051	6461	6615	6582	6474	6443	6320	6182	5709	5208	4764	4232
10/21/2020	3879	3618	3495	3416	3441	3607	3972	4245	4403	4550	4851	5125	5575	5852	6064	6207	6324	6280	6064	6051	5617	5184	4721	4158
10/22/2020	3783	3507	3354	3307	3339	3526	3852	4172	4378	4746	5180	5684	6330	6731	6857	6963	6870	6654	6346	6206	5726	5154	4731	4259
10/23/2020	3845	3592	3428	3325	3337	3509	3832	4146	4377	4775	5228	5743	6275	6480	6645	6670	6524	6285	5966	5850	5444	5102	4725	4306
10/24/2020	3852	3555	3369	3248	3191	3211	3324	3534	3861	4309	4758	5245	5746	6302	6583	6791	6834	6750	6269	6022	5631	5176	4785	4313
10/25/2020	3957	3645	3438	3322	3267	3265	3309	3490	3809	4266	4974	5611	6288	6813	7138	7301	7418	7260	6825	6591	6080	5583	5076	4482
10/26/2020	4075	3778	3550	3425	3416	3547	3904	4239	4538	4903	5416	6049	6737	7285	7678	7899	7945	7699	7238	7061	6629	5910	5351	4781
10/27/2020	4407	4092	3872	3750	3720	3879	4231	4561	4804	5253	5828	6469	7093	7597	7789	7890	7836	7645	7316	7118	6611	5889	5311	4730
10/28/2020	4320	3995	3797	3684	3710	3848	4192	4530	4752	5154	5794	6531	7159	7731	8065	8187	8113	8016	7708	7477	6857	6095	5390	4763
10/29/2020	4410	4154	3933	3806	3793	3942	4298	4650	4909	5292	5858	6566	7183	7654	7928	8045	8104	7950	7466	7174	6629	5907	5288	4745
10/30/2020	4361	4008	3766	3561	3471	3527	3753	3931	4037	4196	4381	4517	4742	5013	5265	5451	5570	5458	5201	4997	4534	4118	3819	3373
10/31/2020	3008	2767	2628	2681	2639	2670	2809	3030	3309	3648	3988	4331	4749	5150	5571	5889	6127	6067	5705	5439	5039	4656	4348	3932
11/1/2020	3650	6684	3215	3175	3144	3185	3207	3670	4200	4744	5308	5813	6392	6617	6686	6679	6476	6227	6108	5700	5192	4704	4226	3695
11/2/2020	3479	3213	3028	2872	2851	2972	3231	3484	3633	3754	3952	4060	4188	4254	4320	4386	4413	4462	4655	4442	4186	3834	3361	2981
11/3/2020	2769	2620	2515	2522	2600	2850	3237	3555	3646	3680	3772	3852	4013	4143	4291	4382	4490	4555	4753	4519	4221	3900	3474	3074
11/4/2020	2869	2692	2599	2575	2651	2836	3302	3525	3651	3852	4033	4245	4429	4600	4826	4926	5011	5080	5186	4937	4504	4087	3661	3251
11/5/2020	2973	2810	2722	2689	2735	2954	3290	3608	3917	4232	4597	4983	5420	5812	6106	6171	6116	6017	6020	5640	5196	4713	4180	3603
11/6/2020	3287	3064	2922	2870	2903	3087	3432	3761	4091	4456	4837	5255	5678	5892	6108	6171	6104	5916	5794	5391	4941	4556	4189	3799
11/7/2020	3505	3318	3106	3096	3065	3117	3260	3551	4071	4692	5292	5633	5789	5935	5897	5703	5489	5502	5366	5171	4833	4615	4304	3933
11/8/2020	3669	3489	3309	3228	3170	3188	3303	3520	3947	4389	4737	5056	5380	5437	5398	5275	5247	5236	5352	5192	4961	4684	4368	3987
11/9/2020	3730	3569	3464	3418	3496	3732	4183	4489	4723	4966	5189	5406	5536	5596	5570	5454	5453	5506	5786	5684	5396	5006	4670	4272
11/10/2020	3952	3753	3641	3609	3581	3706	4211	4650	4949	5312	5645	6078	6282	6393	6445	6507	6482	6362	6363	6015	5632	5304	4886	4385
11/11/2020	4027	3856	3759	3730	3778	3927	4281	4567	4757	5012	5213	5455	5547	5701	5613	5591	5513	5540	5631	5478	5101	4840	4528	4086
11/12/2020	3770	3574	3449	3402	3443	3590	3869	4232	4546	4827	5074	5398	5749	5973	6022	6064	6011	5907	5889	5531	5170	4825	4445	3990
11/13/2020	3652	3416	3272	3190	3208	3354	3677	4010	4288	4546														

11/29/2020	3236	3003	2844	2763	2722	2760	2822	3001	3366	3802	4168	4509	4888	5231	5476	5542	5507	5414	5452	5082	4714	4319	3945	3507
11/30/2020	3242	3043	2971	2936	3029	3263	3651	3958	4126	4198	4240	4335	4395	4440	4430	4362	4327	4461	4752	4594	4310	3939	3545	3164
12/1/2020	3099	3081	2877	2909	3170	3546	4267	4517	4499	4470	4317	4196	4092	4025	3964	4041	4192	4793	5479	5598	5483	5296	5010	4689
12/2/2020	4302	4218	4356	4516	4832	5461	6350	6853	6736	6277	5626	5143	4780	4452	4269	4333	4465	5013	5624	5797	5771	5488	5072	4689
12/3/2020	4719	4702	4654	4779	4917	5384	6041	6360	5981	5321	4668	4276	4092	4021	3978	3977	4032	4347	4605	4511	4344	4067	3686	3343
12/4/2020	3069	2898	2817	2786	2835	3046	3462	3807	3946	4035	4080	4095	4078	4094	4105	4138	4179	4405	4558	4414	4175	3890	3581	3266
12/5/2020	3027	2837	2751	2667	2683	2770	2938	3199	3479	3751	3938	3999	4018	4036	4058	4033	4067	4154	4409	4272	4080	3904	3625	3338
12/6/2020	3156	3007	2953	2977	2992	3303	3449	3753	4124	4178	4013	3897	3845	3812	3834	3894	4051	4303	4466	4364	4190	3921	3571	3184
12/7/2020	2946	2814	2780	2782	2858	3104	3502	3869	4027	4134	4227	4222	4248	4207	4029	3995	4084	4515	4858	4858	4675	4417	4062	3759
12/8/2020	3619	3505	3508	3624	3843	4293	4963	5597	5719	5329	5024	4705	4491	4325	4189	4204	4417	5340	6073	6162	6207	5937	5472	5081
12/9/2020	4855	4773	4843	4997	5394	5972	6634	7107	6881	6292	5609	4976	4571	4275	4179	4159	4275	4858	5486	5520	5497	5251	4914	4620
12/10/2020	4336	4248	4259	4352	4595	4998	5706	6115	5805	5126	4651	4217	4060	3937	3884	3933	4049	4369	4744	4725	4621	4316	4025	3687
12/11/2020	3518	3427	3454	3517	3763	4165	4968	5491	5365	4841	4486	4234	4049	3947	3978	3969	4077	4273	4539	4454	4300	4107	3860	3528
12/12/2020	3309	3179	3063	3026	3029	3100	3271	3525	3799	3995	4042	4032	3996	3997	4014	3999	4063	4208	4377	4236	4082	3896	3610	3273
12/13/2020	2980	2799	2698	2678	2676	2792	2894	3115	3404	3662	3828	3946	4120	4260	4349	4427	4495	4609	4806	4668	4423	4120	3703	3299
12/14/2020	3000	2794	2677	2655	2740	2952	3336	3643	3866	4079	4260	4334	4413	4476	4563	4611	4676	4845	5068	4864	4587	4290	3861	3388
12/15/2020	3032	2797	2713	2666	2725	2965	3364	3710	3875	3935	4062	4123	4197	4246	4309	4343	4351	4524	4774	4639	4389	4091	3746	3293
12/16/2020	3038	2843	2778	2775	2835	3064	3444	3754	3888	3969	4042	4127	4257	4349	4402	4463	4428	4591	4700	4578	4394	4133	3756	3292
12/17/2020	3063	2879	2800	2817	2871	3063	3455	3807	3972	4105	4115	4111	4079	4033	3973	4011	4149	4484	4964	4992	4935	4712	4288	3954
12/18/2020	3815	3730	3747	3818	4090	4683	5522	6225	6340	6095	5552	5087	4713	4407	4280	4253	4373	4740	5233	5303	5271	5248	4990	4679
12/19/2020	4415	4328	4296	4283	4348	4583	4982	5385	5484	5045	4575	4221	4006	3871	3831	3816	3893	4089	4294	4212	4109	3975	3751	3508
12/20/2020	3269	3110	3045	3043	3080	3212	3405	3651	3905	4047	4149	4176	4224	4120	4053	3996	4109	4335	4447	4354	4188	3951	3640	3254
12/21/2020	3002	2819	2717	2689	2711	2898	3196	3534	3763	3875	3950	3970	3977	3938	3949	3966	4047	4274	4564	4539	4418	4273	3959	3582
12/22/2020	3338	3206	3167	3199	3356	3721	4178	4727	4813	4520	4292	4096	3981	3903	3884	3917	4013	4258	4597	4571	4483	4345	4108	3830
12/23/2020	3637	3576	3602	3676	3880	4284	4974	5466	5405	4893	4479	4181	4034	3986	3959	4016	4086	4235	4462	4371	4239	4089	3820	3484
12/24/2020	3201	3023	2922	2878	2906	3010	3216	3499	3756	3915	4081	4218	4288	4397	4490	4543	4605	4710	4762	4474	4170	3860	3625	3363
12/25/2020	3161	3068	3090	3199	3414	3679	4182	5004	5725	5853	5565	5183	4883	4558	4350	4234	4272	4615	5025	5039	5106	5099	5013	4928
12/26/2020	4882	4882	5103	5384	5787	6108	6545	7165	7485	7360	6949	6372	5812	5140	4836	4724	4995	5699	6332	6467	6730	6799	6695	6519
12/27/2020	6412	6415	6426	6515	6581	6807	7105	7496	7551	6944	6119	5360	4685	4289	4091	3999	4084	4347	4716	4702	4629	4481	4243	3958
12/28/2020	3801	3671	3635	3691	3872	4152	4552	4912	4880	4631	4361	4218	4057	4032	3987	3999	4012	4220	4554	4465	4309	4043	3753	3458
12/29/2020	3216	3074	3045	3046	3188	3503	3899	4389	4523	4282	4138	3988	3967	3953	3906	3956	4024	4197	4501	4407	4237	4021	3685	3373
12/30/2020	3105	2927	2869	2877	2943	3144	3454	3811	3981	4051	3976	3984	4027	4049	4106	4074	4132	4295	4509	4449	4253	4018	3729	3336
12/31/2020	3062	2862	2716	2640	2655	2783	3015	3254	3569	3870	4104	4297	4440	4560	4667	4725	4800	4895	5047	4809	4490	4161	3850	3530

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

Year	Month	Actual Peak Demand	Demand Response Activated	Estimated Peak Demand	Day	Hour	System-Average Temperature
		(MW)	(MW)	(MW)			(Degrees F)
2020	1	8,407	0	8,407	22	8	34.8
	2	6,312	0	6,312	13	17	80.1
	3	8,090	0	8,090	30	18	83.1
	4	8,146	0	8,146	13	17	85.3
	5	8,592	0	8,592	22	17	89.1
	6	9,647	0	9,647	25	17	91.0
	7	9,393	0	9,393	14	17	87.8
	8	9,623	0	9,623	25	17	88.9
	9	9,533	0	9,533	3	17	89.4
	10	8,468	0	8,468	7	16	86.6
	11	6,943	0	6,943	15	16	76.1
	12	7,551	0	7,551	27	9	40.5
2019	1	7,248	0	7,248	29	8	40.8
	2	6,784	0	6,784	22	17	86.0
	3	6,632	0	6,632	11	18	84.2
	4	7,521	0	7,521	30	17	88.8
	5	9,175	0	9,175	28	17	96.0
	6	9,970	0	9,970	25	17	95.7
	7	9,585	0	9,585	16	17	94.3
	8	9,190	0	9,190	21	17	92.7
	9	9,273	0	9,273	9	17	94.7
	10	8,393	0	8,393	4	17	93.0
	11	6,918	0	6,918	7	16	87.4
	12	5,895	0	5,895	19	8	46.0
2018	1	10,320	0	10,320	18	8	27.4
	2	6,980	0	6,980	26	16	83.8
	3	6,462	0	6,462	1	16	83.4
	4	6,524	0	6,524	9	18	85.5
	5	8,094	0	8,094	24	17	88.7
	6	8,894	0	8,894	22	16	91.2
	7	8,740	0	8,740	27	16	88.6
	8	9,271	0	9,271	8	17	92.6
	9	9,147	0	9,147	17	17	91.4
	10	8,656	0	8,656	16	17	90.8
	11	7,361	0	7,361	9	15	84.2
	12	7,621	0	7,621	12	8	40.4
<b>Notes</b>							
Temperatures are at hour ended peak hour. System weighted St Pete (45%), Orlando (45%), and Tallahassee (10%).							

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Year	Number of PEVs	Number of Public PEV Charging Stations	Number of Public DCFC PEV Charging Stations.	Cumulative Impact of PEVs		
				Summer Demand	Winter Demand	Annual Energy
				(MW)	(MW)	(GWh)
2021	17,473	1,006*	257*	1.1	0.1	7.6
2022	23,235	N/A	N/A	3.6	1.3	27.1
2023	31,809	N/A	N/A	7.1	2.9	54.1
2024	43,235	N/A	N/A	11.9	5.3	91.9
2025	57,796	N/A	N/A	18.1	8.5	140.7
2026	73,955	N/A	N/A	25.4	12.4	199.1
2027	91,689	N/A	N/A	33.6	16.8	263.8
2028	111,252	N/A	N/A	42.5	21.7	336.3
2029	132,778	N/A	N/A	52.4	27.1	414.9
2030	156,694	N/A	N/A	63.4	33.1	503.3

**Notes**

1. Source: Fall 2020 EV Forecast
2. "Number of PEVs" includes total cumulative PEV vehicles
3. "Cumulative Impact of PEVs" includes only net-new vehicles beginning January 2021 as used in Load Forecast
4. Summer Demand: July HE 17. Winter Demand: January HE 08
5. \*Duke is currently developing a charger forecasting tool, these are based on year end 2020 actuals

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All Demand Response Sources Combined									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	397,864	647	1,026	7,874	15	23	3,206	DNA	DNA
2012	402,379	696	920	5,582	11	16	1,953	DNA	DNA
2013	406,194	681	1,035	4,337	16	20	838	DNA	DNA
2014	409,689	724	1,014	3,156	23	27	1,977	DNA	DNA
2015	410,855	752	1,055	6,372	29	35	1,376	DNA	DNA
2016	415,838	714	1,014	8,782	79	88	1,569	DNA	DNA
2017	424,246	756	1,065	9,592	34	43	2,559	DNA	DNA
2018	429,750	783	1,090	6,478	42	51	2,545	DNA	DNA
2019	432,277	786	1,098	6,862	69	76	2,054	DNA	DNA
2020	435,224	876	1,143	2,758	97	85	1,982	DNA	DNA
<b>Notes</b>									
See note below									

Residential Load Management									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	397,234	317	661	7,858	9	17	3,163	6.2	5.2
2012	401,929	326	639	5,570	6	12	1,762	4.5	2.8
2013	405,737	341	652	4,321	5	9	831	1.0	3.8
2014	409,227	355	654	3,145	3	7	1,976	2.2	4.1
2015	410,396	357	656	6,345	7	13	1,372	1.5	2.8
2016	415,369	366	669	8,634	10	19	1,300	1.2	6.0
2017	423,900	382	694	9,561	11	20	2,553	2.9	4.2
2018	429,403	388	698	6,424	7	13	2,542	2.8	4.2
2019	431,862	396	711	6,847	7	14	2,046	2.3	4.3
2020	434,807	394	671	2,735	3	6	1,980	2.2	4.1
<b>Notes</b>									

Commercial Load Management									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	250	6	0	0	0	0	12	2	0
2012	65	4	0	0	0	0	185	2	0
2013	65	4	0	0	0	0	0	0	0
2014	65	4	0	0	0	0	0	0	0
2015	64	4	0	0	0	0	1	0	0
2016	63	4	0	0	0	0	0	0	0
2017	63	4	0	0	0	0	0	0	0
2018	63	4	0	0	0	0	0	0	0

2019	63	4	0	0	0	0	0	0	0
2020	63	5	7	0	0	0	0	0	0
<b>Notes</b>									
See note below									

Standby Generation <sup>(4)</sup>									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	234	97	94	16	5.8	5.8	19	DNA	DNA
2012	247	100	96	11	4.0	4.0	0	DNA	DNA
2013	253	98	98	12	4.7	4.7	4	DNA	DNA
2014	259	103	104	10	5.0	5.0	1	DNA	DNA
2015	260	108	109	25	19.5	19.5	2	DNA	DNA
2016	269	68	68	147	68	68	269	DNA	DNA
2017	145	77	77	28	7	7	5	DNA	DNA
2018	147	82	82	12.0	3.2	3.2	1	DNA	DNA
2019	178	83	83	1.0	0.2	0.2	3	DNA	DNA
2020	175	80	80	5	2	0	1	DNA	DNA
<b>Notes</b>									
See note below									

Interruptible Service									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	142	221	264	0	0.0	0.0	11	DNA	DNA
2012	134	262	179	1	0.6	0.6	6	DNA	DNA
2013	135	233	278	4	6.6	6.6	3	DNA	DNA
2014	134	256	249	1	15.0	15.0	0	DNA	DNA
2015	131	277	283	2	2.6	2.6	1	DNA	DNA
2016	133	270	270	1	1	1	0	DNA	DNA
2017	134	287	287	3	16	16	1	DNA	DNA
2018	133	303	303	42	32	34	2	DNA	DNA
2019	170	297	297	14	62	62	5	DNA	DNA
2020	175	389	376	18	92	79	1	DNA	DNA
<b>Notes</b>									
See note below									

Curtailable Service									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
2011	4	6	7	0	0	0	1	DNA	DNA
2012	4	5	7	0	0	0	0	DNA	DNA
2013	4	5	7	0	0	0	0	DNA	DNA
2014	4	6	7	0	0	0	0	DNA	DNA
2015	4	6	7	0	0	0	0	DNA	DNA
2016	4	6	7	0	0	0	0	DNA	DNA

<b>2017</b>	4	6	7	0	0	0	0	DNA	DNA
<b>2018</b>	4	6	7	0	0	0	0	DNA	DNA
<b>2019</b>	4	6	7	0	0	0	0	DNA	DNA
<b>2020</b>	4	8.4	8.5	0	0	0	0	DNA	DNA
<b>Notes</b>									
See note below									

Table Footnotes:

- (1) Total available capacity may change as a result of multiple factors including changes in participation, changes in contribution from existing participants, and periodic evaluation of system response.  
Thus, changes in total available capacity do not directly correlate to changes in participation.
- (2) Added capacity corresponds to the addition of new participants and those converted from suspended accounts.
- (3) Data is Not Available (DNA) on lost capacity for certain source programs and therefore is listed as DNA in their specific table and for the aggregated ALL Source Table.
- (4) During 2016 the Emergency Stand-by Tariff was closed and the customers were removed from the program.  
Customers whose generators met new EPS requirements were added to the non-emergency program.

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[Demand Response Source or All Demand Response Sources]										
Year	Summer					Winter				
	Number of Events	Average Event Size		Maximum Event Size		Number of Events	Average Event Size		Maximum Event Size	
		MW	Number of Customers	MW	Number of Customers		MW	Number of Customers	MW	Number of Customers
2011	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0
<b>Notes</b>										
(Include Notes Here)										

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All Sources of Demand Response Combined							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2011	400,220	N	0	0	N	0	0
2012	404,286	N	0	0	N	0	0
2013	407,929	N	0	0	N	0	0
2014	410,267	N	0	0	N	0	0
2015	413,339	N	0	0	N	0	0
2016	419,444	N	0	0	N	0	0
2017	427,023	N	0	0	N	0	0
2018	431,007	N	0	0	N	0	0
2019	433,746	N	0	0	N	0	0
2020	435,037	N	0	0	N	0	0
Notes							

Residential Load Management							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2011	399,582	N	0	0	N	0	0
2012	403,833	N	0	0	N	0	0
2013	407,482	N	0	0	N	0	0
2014	409,812	N	0	0	N	0	0
2015	412,883	N	0	0	N	0	0
2016	419,036	N	0	0	N	0	0
2017	426,651	N	0	0	N	0	0
2018	430,633	N	0	0	N	0	0
2019	433,334	N	0	0	N	0	0
2020	434,604	N	0	0	N	0	0
Notes							

Commercial Load Management							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated

		(Y/N)		(MW)	(Y/N)		(MW)
2011	250	*	*	*	*	*	*
2012	65	*	*	*	*	*	*
2013	65	*	*	*	*	*	*
2014	65	*	*	*	*	*	*
2015	64	*	*	*	*	*	*
2016	64	*	*	*	*	*	*
2017	63	*	*	*	*	*	*
2018	63	*	*	*	*	*	*
2019	63	*	*	*	*	*	*
2020	63	*	*	*	*	*	*

**Notes**

\* Commercial Demand Response is included in Residential Table above

Standby Generation							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2011	242	N	0	0	N	0	0
2012	249	N	0	0	N	0	0
2013	253	N	0	0	N	0	0
2014	259	N	0	0	N	0	0
2015	259	N	0	0	N	0	0
2016	208	N	0	0	N	0	0
2017	172	N	0	0	N	0	0
2018	153	N	0	0	N	0	0
2019	176	N	0	0	N	0	0
2020	178	N	0	0	N	0	0

**Notes**

Interruptible Service							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2011	142	N	0	0	N	0	0
2012	135	N	0	0	N	0	0
2013	125	N	0	0	N	0	0
2014	127	N	0	0	N	0	0
2015	129	N	0	0	N	0	0
2016	132	N	0	0	N	0	0
2017	133	N	0	0	N	0	0
2018	154	N	0	0	N	0	0

<b>2019</b>	169	N	0	0	N	0	0
<b>2020</b>	188	N	0	0	N	0	0
<b>Notes</b>							

<b>Curtable Service</b>							
<b>Year</b>	<b>Average Number of Customers</b>	<b>Summer Peak</b>			<b>Winter Peak</b>		
		<b>Activated During Peak?</b>	<b>Number of Customers Activated</b>	<b>Capacity Activated</b>	<b>Activated During Peak?</b>	<b>Number of Customers Activated</b>	<b>Capacity Activated</b>
		<b>(Y/N)</b>		<b>(MW)</b>	<b>(Y/N)</b>		<b>(MW)</b>
<b>2011</b>	4	N	0	0	N	0	0
<b>2012</b>	4	N	0	0	N	0	0
<b>2013</b>	4	N	0	0	N	0	0
<b>2014</b>	4	N	0	0	N	0	0
<b>2015</b>	4	N	0	0	N	0	0
<b>2016</b>	4	N	0	0	N	0	0
<b>2017</b>	4	N	0	0	N	0	0
<b>2018</b>	4	N	0	0	N	0	0
<b>2019</b>	4	N	0	0	N	0	0
<b>2020</b>	4	N	0	0	N	0	0
<b>Notes</b>							

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Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
ANCLOTE	1	PASCO	ST	NG	October	1974	522	534	508	521	508	521	27.8
ANCLOTE	2	PASCO	ST	NG	October	1978	520	527	505	514	505	514	21.6
CRYSTAL RIVER	4	CITRUS	ST	BIT	December	1982	769	778	712	721	712	721	20.6
CRYSTAL RIVER	5	CITRUS	ST	BIT	October	1984	767	778	710	721	710	721	31.3
P L BARTOW	4	PINELLAS	CC	NG	June	2009	1132	1279	1112	1259	1112	1259	59.4
CITRUS COUNTY COMBINED CYCLE	PB1	CITRUS	CC	NG	October	2018	825	959	807	941	807	941	69.2
CITRUS COUNTY COMBINED CYCLE	PB2	CITRUS	CC	NG	November	2018	821	961	803	943	803	943	71.8
HINES ENERGY COMPLEX	1	POLK	CC	NG	April	1999	495	534	490	528	490	528	57.7
HINES ENERGY COMPLEX	2	POLK	CC	NG	December	2003	529	563	524	557	524	557	58.9
HINES ENERGY COMPLEX	3	POLK	CC	NG	November	2005	528	559	521	553	521	553	64.3
HINES ENERGY COMPLEX	4	POLK	CC	NG	December	2007	527	552	519	544	519	544	62.9
OSPREY ENERGY CENTER POWER PLANT	1	POLK	CC	NG	May	2004	597	612	583	600	245	245	45.0
TIGER BAY	1	POLK	CC	NG	August	1997	203	234	200	231	200	231	37.7
BARTOW	P1	PINELLAS	GT	DFO	May	1972	41	52	41	52	41	52	0.2
BARTOW	P2	PINELLAS	GT	NG	June	1972	41	57	41	57	41	57	1.8
BARTOW	P3	PINELLAS	GT	DFO	June	1972	41	53	41	53	41	53	0.2
BARTOW	P4	PINELLAS	GT	NG	June	1972	45	61	45	61	45	61	1.7
BAYBORO	P1	PINELLAS	GT	DFO	April	1973	44	61	44	61	44	61	0.2
BAYBORO	P2	PINELLAS	GT	DFO	April	1973	41	58	41	58	41	58	0.2
BAYBORO	P3	PINELLAS	GT	DFO	April	1973	43	60	43	60	43	60	0.1
BAYBORO	P4	PINELLAS	GT	DFO	April	1973	43	59	43	59	43	59	0.1
DEBARY	P2	VOLUSIA	GT	DFO	December	1975	48	64	48	64	48	64	0.1
DEBARY	P3	VOLUSIA	GT	DFO	December	1975	50	65	50	65	50	65	0.1
DEBARY	P4	VOLUSIA	GT	DFO	December	1975	50	65	50	65	50	65	0.1
DEBARY	P5	VOLUSIA	GT	DFO	December	1975	49	65	49	65	49	65	0.1
DEBARY	P6	VOLUSIA	GT	DFO	December	1975	50	65	50	65	50	65	0.1
DEBARY	P7	VOLUSIA	GT	NG	October	1992	79	96	79	96	79	96	5.9
DEBARY	P8	VOLUSIA	GT	NG	October	1992	78	96	78	96	78	96	4.7
DEBARY	P9	VOLUSIA	GT	NG	October	1992	80	96	80	96	80	96	5.1
DEBARY	P10	VOLUSIA	GT	DFO	October	1992	75	95	75	95	75	95	0.3

INTERCESSION CITY	P1	OSCEOLA	GT	DFO	May	1974	47	64	47	64	47	64	0.2
INTERCESSION CITY	P2	OSCEOLA	GT	DFO	May	1974	46	63	46	63	46	63	0.1
INTERCESSION CITY	P3	OSCEOLA	GT	DFO	May	1974	46	63	46	63	46	63	0.2
INTERCESSION CITY	P4	OSCEOLA	GT	DFO	May	1974	46	63	46	63	46	63	0.2
INTERCESSION CITY	P5	OSCEOLA	GT	DFO	May	1974	45	62	45	62	45	62	0.2
INTERCESSION CITY	P6	OSCEOLA	GT	DFO	May	1974	47	64	47	64	47	64	0.1
INTERCESSION CITY	P7	OSCEOLA	GT	NG	October	1993	78	95	78	95	78	95	6.5
INTERCESSION CITY	P8	OSCEOLA	GT	NG	October	1993	79	96	79	96	79	96	5.3
INTERCESSION CITY	P9	OSCEOLA	GT	NG	October	1993	79	96	79	96	79	96	5.8
INTERCESSION CITY	P10	OSCEOLA	GT	NG	October	1993	78	96	78	96	78	96	5.0
INTERCESSION CITY	P11	OSCEOLA	GT	DFO	January	1997	140	161	140	161	140	161	0.3
INTERCESSION CITY	P12	OSCEOLA	GT	NG	December	2000	73	90	73	90	73	90	3.5
INTERCESSION CITY	P13	OSCEOLA	GT	NG	December	2000	75	93	75	93	75	93	5.4
INTERCESSION CITY	P14	OSCEOLA	GT	NG	December	2000	72	92	72	92	72	92	6.0
SUWANNEE RIVER	P1	SUWANNEE	GT	NG	October	1980	49	68	49	68	49	68	4.9
SUWANNEE RIVER	P2	SUWANNEE	GT	DFO	October	1980	50	67	50	67	50	67	0.1
SUWANNEE RIVER	P3	SUWANNEE	GT	NG	November	1980	50	68	50	68	50	68	4.9
UNIVERSITY OF FLORIDA	P1	ALACHUA	GT	NG	January	1994	42.5	50	42.5	50	42.5	50	81.8

**Notes**  
(Include Notes Here)

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Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Projected Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
Undesignated CT	P1	Unknown	GT	NG	June	2027	214	233	214	233	214	233	16.2
Undesignated CT	P2	Unknown	GT	NG	June	2029	214	233	214	233	214	233	16.2
<b>Notes</b>													
(Include Notes Here)													

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Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor**
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
Econolockhatchee Photovoltaic Array	1	Volusia	PV	SO	1	1989	0.007	0.007	0.007	0.007	0	0	16
Osceola	1	Osceola	PV	SO	5	2016	3.8	3.8	3.8	3.8	1.7	0	16
Perry	1	Taylor	PV	SO	7	2016	5.1	5.1	5.1	5.1	2.3	0	20
Suwannee	1	Suwannee	PV	SO	12	2017	8.8	8.8	8.8	8.8	4.0	0	23
Hamilton	1	Hamilton	PV	SO	12	2018	74.9	74.9	74.9	74.9	42.7	0	27
Lake Placid	1	Highlands	PV	SO	12	2019	45.0	45.0	45.0	45.0	25.7	0	25
Trenton	1	Gilchrist	PV	SO	12	2019	74.9	74.9	74.9	74.9	42.7	0	26
St. Petersburg Pier	1	Pinellas	PV	SO	12	2019	0.35	0.35	0.35	0.35	0.2	0	11*
Columbia	1	Columbia	PV	SO	3	2020	74.9	74.9	74.9	74.9	42.7	0	29
DeBary	1	Volusia	PV	SO	5	2020	74.5	74.5	74.5	74.5	33.5	0	20
<b>Notes</b>													
**Solar CFs are from: Schedule A-4s or DEF's year-end Solar Plant Operation Status Report filed as requested under docket #20200007. *Includes events beyond the control of normal facility operations.													

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

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Projected Capacity Factor (%)
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	
Twin Rivers	1	Hamilton	PV	SO	3	2021	74.9	74.9	74.9	74.9	42.7	0	~27%
Sante Fe	1	Columbia	PV	SO	3	2021	74.9	74.9	74.9	74.9	42.7	0	~29%
Duette	1	Manatee	PV	SO	12	2021	74.5	74.5	74.5	74.5	42.5	0	~28%
Charlie Creek	1	Hardee	PV	SO	12	2021	74.9	74.9	74.9	74.9	42.7	0	~29%
Fort Green	1	Hardee	PV	SO	1	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Bay Trail	1	Citrus	PV	SO	1	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Sandy Creek	1	Bay County	PV	SO	4	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #18	1	Unknown	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #19	1	Unknown	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #20	1	Unknown	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #21	1	Unknown	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #22	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #23	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #24	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #25	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Solar #26	1	Unknown	PV	SO	12	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #27	1	Unknown	PV	SO	12	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #28	1	Unknown	PV	SO	12	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #29	1	Unknown	PV	SO	12	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #30	1	Unknown	PV	SO	12	2027	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #31	1	Unknown	PV	SO	12	2028	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #32	1	Unknown	PV	SO	12	2029	74.9	74.9	74.9	74.9	18.7	0	~29%
Solar #33	1	Unknown	PV	SO	1	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Solar #34	1	Unknown	PV	SO	1	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Solar #35	1	Unknown	PV	SO	1	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Solar #36	1	Unknown	PV	SO	1	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Solar #37	1	Unknown	PV	SO	12	2030	74.9	74.9	74.9	74.9	9.4	0	~29%

**Notes**  
 Santa Fe was placed in service on March 5, 2021. Twin Rivers was placed in service March 24, 2021. Duette and Charlie Creek are under construction and expected to be in service December 2021. Bay Trail and Fort Green are expected to be in service Q1-2022. Sandy Creek is expected to be in service Q2-2022. The rest of the units are still in the development or planning stages.



TYSP Year 2021  
 Staff's Data Request # 1  
 Question No. 33

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
Polk Power Partners, LP	Mulberry	1	Polk	COG	NG	115	115	115	115	115	115	Jul-94	Aug-24
Orange Cogen, LP	Orange Cogen	1	Polk	COG	NG	104	104	104	104	104	104	Jun-95	Dec-25
Orlando Cogen, LP	Orlando Cogen	1	Orange	COG	NG	115	115	115	115	115	115	Sep-93	Dec-23
General Electric Financial Services	Shady Hills	1-3	Pasco	GT	NG	482	523	482	523	482	523	Apr-07	Apr-24
Southern Power	Franklin	1	Lee, AL	CC	NG	424	424	424	424	424	424	Jun-16	May-21
Northern Star Generation	Vandolah Power	1-4	Hardee	GT	NG	653	697	653	697	653	697	Jun-12	May-27
<b>Notes</b>													

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

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
Pasco County	Pasco County Resource Recovery	1	Pasco	SPP	MSW	23	23	23	23	23	23	Jan-95	Dec-24
Pinellas County	Pinellas County Resource Recovery	1	Pinellas	SPP	MSW	54.75	54.75	54.75	54.75	54.75	54.75	Jan-95	Dec-24
Lake County	Lake County Resource Recovery	1	Lake	SPP	MSW	N/A	N/A	N/A	N/A	N/A	N/A	Mar-14	N/A
Dade County	Metro-Dade County Resource Recovery	1	Dade	SPP	MSW	N/A	N/A	N/A	N/A	N/A	N/A	Dec-13	N/A
Lee County	Lee County Resource Recovery	1	Lee	SPP	MSW	N/A	N/A	N/A	N/A	N/A	N/A	Jan-17	N/A
Citrus World	Citrus World	1	Polk	SPP	WH	N/A	N/A	N/A	N/A	N/A	N/A	Jan-91	N/A
PCS Phosphate	Swift Creek	1	Hamilton	SPP	WH	N/A	N/A	N/A	N/A	N/A	N/A	Nov-80	N/A
<b>Notes</b>													

TYSP Year                    2021  
 Staff's Data Request #       1  
 Question No.                 36

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
Various	tbd	tbd	tbd	PV	SO	N/A	N/A	N/A	N/A	N/A	N/A	2022	N/A
<b>Notes</b>													
DEF had about 60 active solar PV projects totaling over 4,700 MWs in its FERC jurisdictional interconnection queue as of 12/31/2020.													

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

Buyer Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)		Description	Status (Expired / Modified / Same)
						Sum	Win	Sum	Win	Sum	Win	Start	End		
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	100	0	6/1/2020	8/31/2020	Partial Req'ts	Expired
Seminole	N/A	N/A	N/A	N/A	Nat Gas	N/A	N/A	N/A	N/A	200-500	200-500	6/1/2016	12/31/2024	Partial Req'ts	Same
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	150	150	1/1/2014	12/31/2020	Partial Req'ts	Expired
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	100	0	6/1/2017	12/31/2020	Partial Req'ts	Expired
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	0	600	1/1/2014	12/31/2020	Partial Req'ts	Expired
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	0.014	0.014	6/1/1987	Evergreen	Partial Req'ts	Same
Reedy Creek	N/A	N/A	N/A	N/A	Nat Gas	N/A	N/A	N/A	N/A	141	81	1/1/2016	12/31/2022	Partial Req'ts	Modified
Reedy Creek	N/A	N/A	N/A	N/A	Solar	N/A	N/A	N/A	N/A	2-10	2-10	8/1/2019	12/31/2021	Partial Req'ts	Modified
Tampa Electric	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	0-515	0-515	1/26/2019	11/30/2021	Partial Req'ts	Modified
Chattahoochee	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	6	4	1/1/2016	12/31/2020	Full Req'ts	Expired
Mount Dora	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	21	23	1/1/2013	12/31/2020	Full Req'ts	Expired
Williston	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	8	9	1/1/2013	12/31/2020	Full Req'ts	Expired
<b>Notes</b>															

TYSP Year            2021  
 Staff's Data Request #    1  
 Question No.            39

Buyer Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)		Description
						Sum	Win	Sum	Win	Sum	Win	Start	End	
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	0	50	1/1/2021	3/31/2027	Partial Req'ts
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	50-400	50-400	1/1/2021	12/31/2030	Partial Req'ts
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	50-400	50-400	1/1/2021	12/31/2035	Partial Req'ts
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	100-300	105	1/1/2021	9/30/2021	Partial Req'ts
<b>Notes</b>														
The Seminole agreements have optionality. The combined maximum is 450 MW through 2030.														
A system average product was added for summer and winter of 2021														

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

Renewable Source	Annual Renewable Generation (GWh)										
	Actual	Projected									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Utility - Firm	706	1,235	2,132	2,895	3,624	3,619	3,977	4,323	4,500	4,655	5,572
Utility - Non-Firm	0	0	0	0	0	0	0	0	0	0	0
Utility - Co-Firing	0	0	0	0	0	0	0	0	0	0	0
Purchase - Firm	634	605	617	617	619	617	617	617	619	617	617
Purchase - Non-Firm	20	336	346	503	657	795	804	947	957	1,097	1,104
Purchase - Co-Firing	0	0	0	0	0	0	0	0	0	0	0
Customer - Owned	336	455	606	786	967	1,139	1,264	1,344	1,435	1,530	1,635
<b>Total</b>	1,695	2,632	3,702	4,800	5,866	6,170	6,662	7,231	7,511	7,899	8,927
<b>Notes</b>											
(Include Notes Here)											

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

Plant Name	Land Available (Acres)	Potential Installed Net Capacity (MW)	Potential Obstacles to Installation
Anclote	50	9	Wetlands, geotechnical problems, power grid interconnection costs, coastal area
Avon Park	60	10	Wetlands, geotechnical problems, species impacts
Crystal River	150	25	Wetlands, geotechnical problems, non-contiguous land, power grid interconnection not studied, impact to existing power plant, coastal area, species impacts
DeBary	400	67	Wetlands, native species habitat, existing solar footprint, geotechnical problems, non-contiguous land for solar
Hines	150	25	Wetlands, geotechnical problems, native species habitat, non-contiguous land for solar, power grid interconnection not studied, impact to existing power plant, species impacts
Suwannee	60	10	Wetlands, geotechnical problems, archeological finds, native species habitat
Turner	15	2	Small site, non-contiguous land for solar, native species habitat
Higgins	75	12.7	Wetlands, geotechnical problems, power grid interconnection not studied and not in our territory, coastal area
Bartow	50	9	Wetlands, geotechnical problems, archeological finds, non-contiguous land for solar power grid interconnection not studied, impact to existing power plant, coastal area
<b>Notes</b>			

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

Project Name	Pilot Program (Y/N)	In-Service/ Pilot Start Date (MM/YY)	Max Capacity Output (MW)	Max Energy Stored (MWh)	Conversion Efficiency (%)
USF Microgrid Energy Storage Pilot	Y	7/8/2018	0.25	0.475	88%
<b>Notes</b>					
(Include Notes Here)					

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

Project Name	Pilot Program (Y/N)	In-Service/ Pilot Start Date (MM/YY)	Projected Max Capacity Output (MW)	Projected Max Energy Stored (MWh)	Projected Conversion Efficiency (%)
Cape San Blas	Y	3Q 2021	5.5	20.5	83.5%
Trenton	Y	3Q 2021	11	15.6	83.2%
Jennings	Y	3Q 2021	5.5	8.5	84.0%
Micanopy	Y	3Q 2021	8.25	18.2	83.5%
John Hopkins Microgrid	Y	4Q 2021	2.475	23.5	83.5%
Lake Placid BESS	Y	4Q 2021	17.275	50.6	83.5%
<b>Notes</b>					

(Include Notes Here)

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

Year		As-Available Energy (\$/MWh)	On-Peak Average (\$/MWh)	Off-Peak Average (\$/MWh)
Actual	2011	38.51	43.72	34.59
	2012	30.10	34.41	26.44
	2013	34.35	38.29	31.02
	2014	37.68	42.97	33.21
	2015	26.03	28.74	23.74
	2016	25.97	29.79	22.73
	2017	28.97	32.44	26.03
	2018	30.84	34.80	27.49
	2019	23.71	27.22	20.73
	2020	18.57	21.22	16.33
Projected	2021	22.75	24.02	21.68
	2022	20.48	21.27	19.81
	2023	17.91	18.47	17.44
	2024	16.97	17.47	16.56
	2025	18.07	18.54	17.67
	2026	20.57	21.09	20.12
	2027	22.99	24.02	22.12
	2028	26.76	28.87	24.98
	2029	30.30	32.34	28.57
	2030	33.70	35.65	32.05

**Notes**

This year, both the Actuals and the Projected As-Available payment rates shown reflect all components but for the delivery voltage adjustment (because the generator's interconnection level is unknown) defined under rule 25-17.0825(2)(a). These components include: identifiable variable operating and maintenance expenses, start up costs, and a reasonable as-available block size of solar QF generation for appropriate customer protections. The Projected values are only valid and effective as of May 1, 2021 due to the volume of potential solar QF activity. DEF also anticipates that at some point, the system will have increasing amounts of time when the required DEF system resources along with potential solar QF generation may exceed DEF load levels and that excess generation is not fully captured in the Projected values herein.

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

Generating Unit Name	Summer Capacity (MW)	Certification Dates (if Applicable)		In-Service Date (MM/YY)
		Need Approved (Commission)	PPSA Certified	
<b>Nuclear Unit Additions</b>				
<b>Combustion Turbine Unit Additions</b>				
Undesignated CT	214	Not Required	Not Required	6/1/2027
Undesignated CT	214	Not Required	Not Required	6/1/2029
<b>Combined Cycle Unit Additions</b>				
<b>Steam Turbine Unit Additions</b>				
<b>Notes</b>				
(Include Notes Here)				

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

Plant	Unit No.	Unit Type	Fuel Type	Capacity Factor (%)										
				Actual	Projected									
				2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Anclote	1	Steam	Gas	27.8	3.6	4.2	3.9	4.6	4.7	5.6	4.8	5.6	5.0	5.4
Anclote	2	Steam	Gas	21.6	4.3	4.8	4.4	4.1	5.2	6.2	5.9	6.7	5.5	5.5
Crystal River	4	Steam	Coal	20.6	90.3	73.1	37.0	32.3	31.6	31.3	29.2	30.3	34.9	33.7
Crystal River	5	Steam	Coal	31.3	73.4	55.0	36.1	33.0	24.7	31.5	26.8	31.3	23.3	33.1
Bartow CC	4	Combined Cycle	Gas	59.4	48.9	52.4	58.3	58.7	60.7	55.8	57.2	54.9	57.9	57.2
Citrus CC	1~2	Combined Cycle	Gas	70.5	77.2	79.5	82.8	82.4	77.0	76.8	82.4	77.0	82.7	81.4
Hines Energy Complex	1~4	Combined Cycle	Gas	61.0	41.6	49.7	55.4	54.7	56.9	58.1	61.1	64.2	62.4	57.2
Osprey CC	1	Combined Cycle	Gas	45.0	31.6	32.3	37.4	64.9	71.7	66.8	61.4	68.2	64.2	64.4
Tiger Bay	1	Combined Cycle	Gas	37.7	54.6	72.6	69.8	67.5	76.3	72.6	72.0	80.0	70.3	82.2
Bartow Peaker	1~4	Gas Turbine	Gas/Oil	1.0	0.3	0.5	0.2	0.5	0.5	1.3	2.0	3.8	2.7	2.0
Bayboro	1~4	Gas Turbine	Oil	0.2	0.3	0.4	0.1	0.4	0.4	0.0	0.0	0.0	0.0	0.0
DeBary	1~10	Gas Turbine	Gas/Oil	2.5	0.4	0.7	0.3	0.6	0.7	1.8	2.7	4.4	3.3	2.4
Generic CTs	1~3	Gas Turbine	Gas		0.0	0.0	0.0	0.0	0.0	0.0	25.0	19.4	18.1	13.7
Intercession City	1~14	Gas Turbine	Gas/Oil	3.1	0.7	1.2	0.6	1.2	1.4	3.1	3.4	4.4	3.3	2.6
Suwannee Peaker	1~3	Gas Turbine	Gas/Oil	3.3	0.4	0.6	0.2	0.5	0.5	0.9	1.2	1.9	1.4	1.1
University of Florida	1	Gas Turbine	Gas	81.8	85.7	86.8	86.8	86.3	86.3	79.7	89.2	0.0	0.0	0.0
Solar	1	PV		24.6	28.1	28.2	28.1	28.1	28.0	28.1	28.1	28.2	28.2	28.3
<b>Notes</b>														
(Include Notes Here)														

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

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date (MM/YYY)	Potential Conversion	Potential Issues
Anclote	NG	508	10/74	CC	Project Development
Anclote	NG	505	10/78	CC	Project Development
Crystal River	BIT	712	12/82	CC/IGCC	Project Development
Crystal River	BIT	710	10/84	CC/IGCC	Project Development
<b>Notes</b>					
(Include Notes Here)					

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

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date (MM/YYY)	Potential Conversion	Potential Issues
Crystal River	BIT	712	12/82	CC/IGCC	Project Development
Crystal River	BIT	710	10/84	CC/IGCC	Project Development
<b>Notes</b>					
(Include Notes Here)					

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

Transmission Line	Line Length	Nominal Voltage	Date Need	Date	In-Service Date
	(Miles)	(kV)	Approved	TLSA Certified	
N/A	N/A	N/A	N/A	N/A	N/A
<b>Notes</b>					
DEF has no proposed transmission lines for the current planning period that require certification under the Transmission Line Siting Act, nor are there any that have already been approved, but are not yet in-service.					

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

Year	Estimated Cost of Standards of Performance for Greenhouse Gas Emissions Rule for New Sources Impacts (Present-Year \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2021	0	0	0	0
2022	0	0	0	0
2023	0	0	0	0
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
<b>Notes</b>				
(Include Notes Here)				

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

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA Rule Impacts: Operational Effects						
				ELGS	ACE or replacement	MATS	CSAPR/CAIR	CWIS	CCR	
									Non-Hazardous Waste	Special Waste
Anclote 1	Steam	NG	508	NA	NA	Convert to NG	Convert to NG	Impacted	NA	NA
Anclote 2	Steam	NG	505							
P L Bartow	CC	NG	1112	NA	NA	NA	Dispatch Changes	Impacted	NA	NA
Citrus Combined Cycle	CC	NG	1610	NA	NA	NA	NA	Compliant as Constructed	NA	NA
Crystal River 4	Steam	Coal	712	Impacted	Impacted	Reagent, CEMS	FGD, SCR, Dispatch	Impacted	Impacted	NA
Crystal River 5	Steam	Coal	710							
Osprey	CC	NG	245	NA	NA	NA	NA	NA	NA	NA
Hines PB1-4	CC	NG	2054	NA	NA	NA	Dispatch Changes	NA	NA	NA
<b>Notes</b>										
(Include Notes Here)										

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

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA Rule Impacts: Cost Effects (CPVRR \$ millions)						
				ELGS	ACE or replacement	MATS	CSAPR/CAIR	CWIS	CCR	
									Non-Hazardous Waste	Special Waste
Anclore 1	Steam	NG	508	NA	NA	0	0	15-130	NA	NA
Anclore 2	Steam	NG	505			0	0		NA	NA
P L Bartow	CC	NG	1112	NA	NA	0	0	10-170	NA	NA
Crystal River 4	Steam	Coal	712	TBD	TBD	0	0	10-20	TBD	0
Crystal River 5	Steam	Coal	710			0	0			
<b>Notes</b>										
(Include Notes Here)										

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

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA Rule Impacts: Unit Availability (Month/Year - Duration)						
				ELGS	ACE or replacement	MATS	CSAPR/CAIR	CWIS	CCR	
									Non-Hazardous Waste	Special Waste
Anclote 1	Steam	NG	508	NA	NA	NA	NA	TBD	NA	NA
Anclote 2	Steam	NG	505	NA	NA	NA	NA	TBD	NA	NA
P L Bartow	CC	NG	1112	NA	NA	NA	NA	TBD	NA	NA
Citrus Combined Cycle	CC	NG	1610	NA	NA	NA	NA	TBD	NA	NA
Crystal River 4	Steam	Coal	712	TBD	TBD	NA	NA	NA	TBD	NA
Crystal River 5	Steam	Coal	710	TBD	TBD	NA	NA	NA	TBD	NA
Osprey	CC	NG	245	NA	NA	NA	NA	NA	NA	NA
Hines 1-4	CC	NG	2054	NA	NA	NA	NA	NA	NA	NA
<b>Notes</b>										
(Include Notes Here)										

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

Year		Uranium		Coal		Natural Gas		Residual Oil		Distillate Oil	
		GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU
Actual	2011	0	0	10,809	3.83	23,571	5.43	187	11	81	18.31
	2012	0	0	10,003	3.83	23,997	5.56	46	12	104	20.35
	2013	0	0	10,577	3.94	23,061	5.63	127	13	93	21.13
	2014	0	0	11,729	3.98	22,953	5.66	0	0	76	21.97
	2015	0	0	9,718	3.72	25,227	4.67	0	0	73	22.30
	2016	0	0	8,885	3.62	24,807	4.09	0	0	77	18.66
	2017	0	0	8,722	3.44	27,307	4.26	0	0	62	16.43
	2018	0	0	8,422	3.20	28,687	4.52	0	0	90	19.80
	2019	0	0	4,322	3.66	35,170	3.93	0	0	33	20.36
	2020	0	0	3,287	3.66	36,327	3.37	0	0	33	22.28
Projected	2021	0	0	10,268	1.79	27,521	3.10	0	0	16	9.26
	2022	0	0	8,035	1.87	30,192	2.72	0	0	22	9.36
	2023	0	0	4,583	2.06	32,397	2.54	0	0	7	9.88
	2024	0	0	4,107	2.13	34,029	2.52	0	0	25	11.31
	2025	0	0	3,531	2.20	34,488	2.69	0	0	22	12.40
	2026	0	0	3,938	2.29	34,081	3.02	0	0	54	13.28
	2027	0	0	3,509	2.39	35,599	3.36	0	0	65	14.22
	2028	0	0	3,869	2.50	35,673	3.83	0	0	91	14.86
	2029	0	0	3,654	2.49	36,006	4.46	0	0	68	15.36
	2030	0	0	4,190	2.56	34,928	5.05	0	0	52	15.75
<b>Notes</b>											
(Include Notes Here)											

**DUKE ENERGY FLORIDA**  
**TYSP Forecast Error Evaluation Form**  
 Data is NOT weather adjusted

Year	Actual Sys NEL (GWH)	Net Energy for Load (NEL) Forecast GWH																		
		TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	42,567	42,200																		
2003	43,911	42,440	43,108																	
2004	45,268	43,223	43,962	45,161																
2005	46,878	44,148	45,206	45,745	46,722															
2006	46,041	45,280	46,521	47,120	46,993	46,167														
2007	47,633	45,944	47,413	48,044	48,329	47,759	48,194													
2008	47,658	46,943	48,348	49,047	49,446	49,076	49,468	48,734												
2009	44,124	48,123	49,399	50,147	50,299	50,148	50,609	49,768	48,556											
2010	46,160	49,284	50,467	51,263	51,998	52,006	52,516	51,615	48,765	43,819										
2011	42,490	50,437	51,583	52,356	53,052	53,219	53,776	52,913	49,846	42,750	42,047									
2012	41,214		52,722	53,478	54,278	54,434	55,017	54,695	52,485	44,443	44,253	41,534								
2013	40,772			54,608	55,516	55,704	56,321	56,045	53,647	45,877	45,637	40,973	40,786							
2014	40,975				56,999	56,948	57,732	56,905	52,759	46,458	46,367	42,552	41,565	39,801						
2015	42,280					58,211	59,074	58,166	53,117	46,815	46,794	43,633	42,549	40,490	41,426					
2016	42,854						60,460	59,448	53,644	46,477	46,176	43,596	43,421	41,098	41,947	41,277				
2017	42,919							60,836	54,612	46,343	46,128	43,823	43,824	41,375	42,365	41,932	41,475			
2018	44,224								55,614	46,932	46,674	44,533	44,452	41,995	42,779	42,417	41,887	43,060		
2019	44,801									47,922	47,814	45,854	45,037	43,013	43,572	43,044	42,520	43,331	43,206	
2020	44,814										48,390	46,576	45,654	43,998	44,069	43,559	43,127	44,063	43,620	43,645

Year	Actual NEL (GWH)	DEF System Net Energy For Load Forecast Variances - %																		
		TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	42,567	0.9%																		
2003	43,911	3.5%	1.9%																	
2004	45,268	4.7%	3.0%	0.2%																
2005	46,878	6.2%	3.7%	2.5%	0.3%															
2006	46,041	1.7%	-1.0%	-2.3%	-2.0%	-0.3%														
2007	47,633	3.7%	0.5%	-0.9%	-1.4%	-0.3%	-1.2%													
2008	47,658	1.5%	-1.4%	-2.8%	-3.6%	-2.9%	-3.7%	-2.2%												
2009	44,124	-8.3%	-10.7%	-12.0%	-12.3%	-12.0%	-12.8%	-11.3%	-9.1%											
2010	46,160	-6.3%	-8.5%	-10.0%	-11.2%	-11.2%	-12.1%	-10.6%	-5.3%	5.3%										
2011	42,490	-15.8%	-17.6%	-18.8%	-19.9%	-20.2%	-21.0%	-19.7%	-14.8%	-0.6%	1.1%									
2012	41,214		-21.8%	-22.9%	-24.1%	-24.3%	-25.1%	-24.6%	-21.5%	-7.3%	-6.9%	-0.8%								
2013	40,772			-25.3%	-26.6%	-26.8%	-27.6%	-27.3%	-24.0%	-11.1%	-10.7%	-0.5%	0.0%							
2014	40,975				-28.1%	-28.0%	-29.0%	-28.0%	-22.3%	-11.8%	-11.6%	-3.7%	-1.4%	2.9%						
2015	42,280					-27.4%	-28.4%	-27.3%	-20.4%	-9.7%	-9.6%	-3.1%	-0.6%	4.4%	2.1%					
2016	42,854						-29.1%	-27.9%	-20.1%	-7.8%	-7.2%	-1.7%	-1.3%	4.3%	2.2%	3.8%				
2017	42,919							-29.5%	-21.4%	-7.4%	-7.0%	-2.1%	-2.1%	3.7%	1.3%	2.4%	3.5%			
2018	44,224								-20.5%	-5.8%	-5.3%	-0.7%	-0.5%	5.3%	3.4%	4.3%	5.6%	2.7%		
2019	44,801									-6.5%	-6.3%	-2.3%	-0.5%	4.2%	2.8%	4.1%	5.4%	3.4%	3.7%	
2020	44,814										-7.4%	-3.8%	-1.8%	1.9%	1.7%	2.9%	3.9%	1.7%	2.7%	2.7%

**DUKE ENERGY FLORIDA**  
**TYSP Forecast Error Evaluation Form**

Year	Actual System Customers	DEF System Customer Forecast																		
		TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	1,475,773	1,468,003																		
2003	1,510,526	1,489,564	1,500,477																	
2004	1,548,617	1,508,795	1,523,708	1,540,101																
2005	1,583,387	1,528,789	1,546,102	1,567,693	1,574,447															
2006	1,620,354	1,551,611	1,570,755	1,595,069	1,603,600	1,608,403														
2007	1,632,359	1,576,834	1,596,923	1,623,037	1,632,925	1,639,122	1,645,969													
2008	1,638,929	1,603,431	1,624,099	1,651,611	1,662,016	1,669,301	1,679,343	1,662,325												
2009	1,630,166	1,630,482	1,651,774	1,680,503	1,690,993	1,699,499	1,712,064	1,694,687	1,639,432											
2010	1,634,191	1,657,236	1,679,447	1,708,932	1,719,780	1,729,379	1,744,641	1,727,055	1,649,751	1,629,536										
2011	1,642,376	1,686,942	1,710,533	1,736,295	1,748,339	1,758,708	1,777,280	1,759,469	1,670,011	1,642,845	1,642,842									
2012	1,655,546		1,733,663	1,762,757	1,776,709	1,787,722	1,810,126	1,791,810	1,696,126	1,663,026	1,663,023	1,651,398								
2013	1,671,220			1,788,650	1,804,949	1,816,528	1,843,147	1,824,240	1,726,408	1,688,549	1,688,549	1,669,205	1,673,018							
2014	1,695,711				1,833,114	1,845,178	1,876,090	1,856,553	1,757,554	1,715,811	1,715,811	1,696,574	1,696,482	1,692,614						
2015	1,721,551					1,873,800	1,908,680	1,888,544	1,788,202	1,743,531	1,743,531	1,729,077	1,723,531	1,718,930	1,719,415					
2016	1,748,131						1,940,633	1,918,178	1,817,295	1,770,640	1,770,640	1,758,211	1,750,008	1,745,332	1,745,429	1,748,147				
2017	1,775,472							1,947,284	1,844,978	1,797,062	1,797,062	1,786,510	1,777,249	1,771,848	1,772,592	1,776,705	1,778,929			
2018	1,802,714								1,871,706	1,823,014	1,823,014	1,813,830	1,805,116	1,797,281	1,800,353	1,805,008	1,809,791	1,806,086		
2019	1,831,269									1,848,690	1,848,690	1,840,809	1,833,202	1,821,256	1,828,216	1,833,370	1,840,246	1,835,638	1,832,032	
2020	1,863,385										1,874,295	1,867,682	1,861,162	1,844,727	1,855,717	1,861,625	1,870,068	1,865,057	1,857,355	1,856,728

Year	Actual System Customers	DEF System Customer Forecast Variances - %																		
		TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	1,475,773	0.5%																		
2003	1,510,526	1.4%	0.7%																	
2004	1,548,617	2.6%	1.6%	0.6%																
2005	1,583,387	3.6%	2.4%	1.0%	0.6%															
2006	1,620,354	4.4%	3.2%	1.6%	1.0%	0.7%														
2007	1,632,359	3.5%	2.2%	0.6%	0.0%	-0.4%	-0.8%													
2008	1,638,929	2.2%	0.9%	-0.8%	-1.4%	-1.8%	-2.4%	-1.4%												
2009	1,630,166	0.0%	-1.3%	-3.0%	-3.6%	-4.1%	-4.8%	-3.8%	-0.6%											
2010	1,634,191	-1.4%	-2.7%	-4.4%	-5.0%	-5.5%	-6.3%	-5.4%	-0.9%	0.3%										
2011	1,642,376	-2.6%	-4.0%	-5.4%	-6.1%	-6.6%	-7.6%	-6.7%	-1.7%	0.0%	0.0%									
2012	1,655,546		-4.5%	-6.1%	-6.8%	-7.4%	-8.5%	-7.6%	-2.4%	-0.4%	-0.4%	0.3%								
2013	1,671,220			-6.6%	-7.4%	-8.0%	-9.3%	-8.4%	-3.2%	-1.0%	-1.0%	0.1%	-0.1%							
2014	1,695,711				-7.5%	-8.1%	-9.6%	-8.7%	-3.5%	-1.2%	-1.2%	-0.1%	0.0%	0.2%						
2015	1,721,551					-8.1%	-9.8%	-8.8%	-3.7%	-1.3%	-1.3%	-0.4%	-0.1%	0.2%	0.1%					
2016	1,748,131						-9.9%	-8.9%	-3.8%	-1.3%	-1.3%	-0.6%	-0.1%	0.2%	0.2%	0.0%				
2017	1,775,472							-8.8%	-3.8%	-1.2%	-1.2%	-0.6%	-0.1%	0.2%	0.2%	-0.1%	-0.2%			
2018	1,802,714								-3.7%	-1.1%	-1.1%	-0.6%	-0.1%	0.3%	0.1%	-0.1%	-0.4%	-0.2%		
2019	1,831,269									-0.9%	-0.9%	-0.5%	-0.1%	0.5%	0.2%	-0.1%	-0.5%	-0.2%	0.0%	
2020	1,863,385										-0.6%	-0.2%	0.1%	1.0%	0.4%	0.1%	-0.4%	-0.1%	0.3%	0.4%

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 Data is NOT weather adjusted

**DEF Retail Summer Peak Forecast, No DR Activated**

Year	Actual Retail Summer Pk (MW)	DEF Retail Summer Peak Forecast, No DR Activated																		
		TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	7,842	7,365																		
2003	7,593	7,567	7,684																	
2004	8,058	7,689	7,853	7,942																
2005	8,565	7,817	8,002	8,122	8,154															
2006	8,432	7,962	8,164	8,303	8,357	8,352														
2007	8,861	8,115	8,334	8,486	8,554	8,576	8,816													
2008	8,524	8,279	8,510	8,672	8,727	8,786	9,044	8,746												
2009	8,643	8,448	8,691	8,863	8,899	8,986	9,247	8,953	8,631											
2010	8,328	8,624	8,879	9,047	9,089	9,181	9,453	9,138	8,687	8,428										
2011	8,343	8,800	9,070	9,224	9,278	9,376	9,661	9,340	8,837	8,461	8,488									
2012	7,946		9,259	9,395	9,465	9,568	9,864	9,544	9,021	8,562	8,564	8,536								
2013	8,195			9,561	9,651	9,759	10,069	9,747	9,267	8,723	8,705	8,611	8,732							
2014	8,404				9,836	9,946	10,270	9,941	9,465	8,822	8,791	8,759	8,871	8,705						
2015	8,446					10,142	10,479	10,146	9,667	8,905	8,870	8,972	9,038	8,944	8,843					
2016	8,779						10,698	10,326	9,813	8,956	8,933	9,146	9,199	9,207	9,073	9,018				
2017	8,520							10,506	9,991	9,042	9,027	9,330	9,381	9,477	9,235	9,140	8,866			
2018	8,492								10,163	9,137	9,120	9,503	9,561	9,626	9,387	9,315	8,992	8,691		
2019	8,985									9,238	9,215	9,689	9,756	9,806	9,576	9,485	9,107	8,813	8,791	
2020	8,746										9,314	9,872	9,950	9,959	9,775	9,615	9,244	8,907	8,858	8,781

**DEF Retail Summer Peak Forecast Variances - %**

Year	Actual Retail Summer Pk (MW)	DEF Retail Summer Peak Forecast Variances - %																		
		TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	7,842	6.5%																		
2003	7,593	0.3%	-1.2%																	
2004	8,058	4.8%	2.6%	1.5%																
2005	8,565	9.6%	7.0%	5.4%	5.0%															
2006	8,432	5.9%	3.3%	1.5%	0.9%	1.0%														
2007	8,861	9.2%	6.3%	4.4%	3.6%	3.3%	0.5%													
2008	8,524	3.0%	0.2%	-1.7%	-2.3%	-3.0%	-5.7%	-2.5%												
2009	8,643	2.3%	-0.5%	-2.5%	-2.9%	-3.8%	-6.5%	-3.5%	0.1%											
2010	8,328	-3.4%	-6.2%	-8.0%	-8.4%	-9.3%	-11.9%	-8.9%	-4.1%	-1.2%										
2011	8,343	-5.2%	-8.0%	-9.6%	-10.1%	-11.0%	-13.6%	-10.7%	-5.6%	-1.4%	-1.7%									
2012	7,946		-14.2%	-15.4%	-16.0%	-17.0%	-19.4%	-16.7%	-11.9%	-7.2%	-7.2%	-6.9%								
2013	8,195			-14.3%	-15.1%	-16.0%	-18.6%	-15.9%	-11.6%	-6.1%	-5.9%	-4.8%	-6.2%							
2014	8,404				-14.6%	-15.5%	-18.2%	-15.5%	-11.2%	-4.7%	-4.4%	-4.1%	-5.3%	-3.5%						
2015	8,446					-16.7%	-19.4%	-16.8%	-12.6%	-5.2%	-4.8%	-5.9%	-6.6%	-5.6%	-4.5%					
2016	8,779						-17.9%	-15.0%	-10.5%	-2.0%	-1.7%	-4.0%	-4.6%	-4.6%	-3.2%	-2.7%				
2017	8,520							-18.9%	-14.7%	-5.8%	-5.6%	-8.7%	-9.2%	-10.1%	-7.7%	-6.8%	-3.9%			
2018	8,492								-16.4%	-7.1%	-6.9%	-10.6%	-11.2%	-11.8%	-9.5%	-8.8%	-5.6%	-2.3%		
2019	8,985									-2.7%	-2.5%	-7.3%	-7.9%	-8.4%	-6.2%	-5.3%	-1.3%	2.0%	2.2%	
2020	8,746										-6.1%	-11.4%	-12.1%	-12.2%	-10.5%	-9.0%	-5.4%	-1.8%	-1.3%	-0.4%

Actual Retail		DEF Retail Winter Peak Forecast, No DR Activated																		
Year	Winter Pk (MW)	TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	8,590	8,147																		
2003	8,974	8,413	8,397																	
2004	7,585	8,581	8,577	8,676																
2005	8,627	8,695	8,726	8,842	8,865															
2006	8,679	8,818	8,880	9,009	9,035	9,066														
2007	7,607	8,957	9,042	9,171	9,214	9,252	9,426													
2008	8,454	9,101	9,195	9,336	9,386	9,456	9,701	9,447												
2009	9,085	9,260	9,355	9,506	9,556	9,632	9,881	9,578	9,371											
2010	10,686	9,419	9,516	9,677	9,723	9,810	10,059	9,754	9,345	9,159										
2011	8,909	9,603	9,705	9,839	9,890	9,984	10,244	9,931	9,427	9,122	9,173									
2012	7,817		9,890	9,995	10,049	10,149	10,422	10,102	9,561	9,203	9,247	9,045								
2013	7,201			10,145	10,208	10,312	10,601	10,282	9,761	9,343	9,379	9,056	9,224							
2014	7,671				10,367	10,477	10,781	10,450	9,927	9,438	9,464	9,141	9,309	9,070						
2015	8,438					10,641	10,951	10,616	10,087	9,523	9,542	9,316	9,443	8,881	9,222					
2016	7,649						11,174	10,783	10,217	9,571	9,604	9,488	9,585	9,133	9,399	9,227				
2017	6,837							10,939	10,378	9,641	9,695	9,650	9,739	9,385	9,517	9,353	8,941			
2018	9,249								10,531	9,737	9,785	9,815	9,904	9,654	9,630	9,460	9,063	8,985		
2019	6,707									9,836	9,877	9,984	10,086	9,807	9,782	9,608	9,174	9,118	8,949	
2020	7,794										9,971	10,148	10,261	9,926	9,942	9,764	9,313	9,211	9,054	9,191

Actual Retail		DEF Retail Winter Peak Forecast Variances - %																		
Year	Winter Pk (MW)	TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	8,590	5.4%																		
2003	8,974	6.7%	6.9%																	
2004	7,585	-11.6%	-11.6%	-12.6%																
2005	8,627	-0.8%	-1.1%	-2.4%	-2.7%															
2006	8,679	-1.6%	-2.3%	-3.7%	-3.9%	-4.3%														
2007	7,607	-15.1%	-15.9%	-17.1%	-17.4%	-17.8%	-19.3%													
2008	8,454	-7.1%	-8.1%	-9.4%	-9.9%	-10.6%	-12.9%	-10.5%												
2009	9,085	-1.9%	-2.9%	-4.4%	-4.9%	-5.7%	-8.1%	-5.2%	-3.1%											
2010	10,686	13.5%	12.3%	10.4%	9.9%	8.9%	6.2%	9.6%	14.3%	16.7%										
2011	8,909	-7.2%	-8.2%	-9.5%	-9.9%	-10.8%	-13.0%	-10.3%	-5.5%	-2.3%	-2.9%									
2012	7,817		-21.0%	-21.8%	-22.2%	-23.0%	-25.0%	-22.6%	-18.2%	-15.1%	-15.5%	-13.6%								
2013	7,201			-29.0%	-29.5%	-30.2%	-32.1%	-30.0%	-26.2%	-22.9%	-23.2%	-20.5%	-21.9%							
2014	7,671				-26.0%	-26.8%	-28.8%	-26.6%	-22.7%	-18.7%	-18.9%	-16.1%	-17.6%	-15.4%						
2015	8,438					-20.7%	-22.9%	-20.5%	-16.3%	-11.4%	-11.6%	-9.4%	-10.6%	-5.0%	-8.5%					
2016	7,649						-31.5%	-29.1%	-25.1%	-20.1%	-20.4%	-19.4%	-20.2%	-16.2%	-18.6%	-17.1%				
2017	6,837							-37.5%	-34.1%	-29.1%	-29.5%	-29.2%	-29.8%	-27.2%	-28.2%	-26.9%	-23.5%			
2018	9,249								-12.2%	-5.0%	-5.5%	-5.8%	-6.6%	-4.2%	-4.0%	-2.2%	2.1%	2.9%		
2019	6,707									-31.8%	-32.1%	-32.8%	-33.5%	-31.6%	-31.4%	-30.2%	-26.9%	-26.4%	-25.1%	
2020	7,794										-21.8%	-23.2%	-24.0%	-21.5%	-21.6%	-20.2%	-16.3%	-15.4%	-13.9%	-15.2%

**DUKE ENERGY FLORIDA**  
**TYSP Forecast Error Evaluation Form**  
 Data is NOT weather adjusted

Year	Act System	DEF System Summer Peak Forecast, No DR Activated																		
	Summer Pk (MW)	TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	9,034	8,524																		
2003	8,476	8,305	8,371																	
2004	9,125	8,402	8,533	8,716																
2005	9,681	8,580	8,666	8,812	9,102															
2006	9,689	8,757	9,013	9,193	9,350	9,458														
2007	10,449	8,915	9,250	9,414	9,617	9,758	10,137													
2008	10,036	9,153	9,414	9,576	9,820	10,008	10,382	10,089												
2009	10,261	9,397	9,579	9,711	9,962	10,187	10,439	10,144	10,242											
2010	9,600	9,616	9,750	9,899	10,302	10,538	10,722	10,402	10,220	9,715										
2011	9,277	9,866	9,943	10,047	10,496	10,748	10,948	10,622	10,358	9,571	9,436									
2012	9,026		10,131	10,187	10,695	10,964	11,160	10,983	10,713	9,841	9,610	9,629								
2013	8,776			10,356	10,902	11,165	11,389	11,210	10,983	10,025	9,761	9,415	9,669							
2014	9,218				11,106	11,375	11,739	11,403	11,000	9,915	9,766	9,464	9,742	9,509						
2015	9,218					11,589	11,962	11,621	11,225	10,004	9,848	9,677	9,911	9,750	9,655					
2016	9,646						12,196	11,817	11,400	10,161	9,762	9,701	10,176	9,865	9,720	9,533				
2017	9,293							12,016	11,602	10,301	9,859	9,986	10,275	10,064	9,986	9,770	9,617			
2018	9,271								11,801	10,452	9,954	10,159	10,455	10,213	10,139	9,893	9,745	9,497		
2019	9,970									10,859	10,301	10,595	10,650	10,643	10,580	10,319	10,111	9,817	9,770	
2020	9,647										10,403	10,778	10,844	10,796	10,780	10,450	10,209	9,872	9,797	9,731

Year	Act System	DEF System Summer Peak Forecast Variances - %																		
	Summer Pk (MW)	TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	9,034	6.0%																		
2003	8,476	2.1%	1.2%																	
2004	9,125	8.6%	6.9%	4.7%																
2005	9,681	12.8%	11.7%	9.9%	6.4%															
2006	9,689	10.6%	7.5%	5.4%	3.6%	2.4%														
2007	10,449	17.2%	13.0%	11.0%	8.7%	7.1%	3.1%													
2008	10,036	9.6%	6.6%	4.8%	2.2%	0.3%	-3.3%	-0.5%												
2009	10,261	9.2%	7.1%	5.7%	3.0%	0.7%	-1.7%	1.2%	0.2%											
2010	9,600	-0.2%	-1.5%	-3.0%	-6.8%	-8.9%	-10.5%	-7.7%	-6.1%	-1.2%										
2011	9,277	-6.0%	-6.7%	-7.7%	-11.6%	-13.7%	-15.3%	-12.7%	-10.4%	-3.1%	-1.7%									
2012	9,026		-10.9%	-11.4%	-15.6%	-17.7%	-19.1%	-17.8%	-15.7%	-8.3%	-6.1%	-6.3%								
2013	8,776			-15.3%	-19.5%	-21.4%	-22.9%	-21.7%	-20.1%	-12.5%	-10.1%	-6.8%	-9.2%							
2014	9,218				-17.0%	-19.0%	-21.5%	-19.2%	-16.2%	-7.0%	-5.6%	-2.6%	-5.4%	-3.1%						
2015	9,218					-20.5%	-22.9%	-20.7%	-17.9%	-7.9%	-6.4%	-4.7%	-7.0%	-5.5%	-4.5%					
2016	9,646						-20.9%	-18.4%	-15.4%	-5.1%	-1.2%	-0.6%	-5.2%	-2.2%	-0.8%	1.2%				
2017	9,293							-22.7%	-19.9%	-9.8%	-5.7%	-6.9%	-9.6%	-7.7%	-6.9%	-4.9%	-3.4%			
2018	9,271								-21.4%	-11.3%	-6.9%	-8.7%	-11.3%	-9.2%	-8.6%	-6.3%	-4.9%	-2.4%		
2019	9,970									-8.2%	-3.2%	-5.9%	-6.4%	-6.3%	-5.8%	-3.4%	-1.4%	1.6%	2.0%	
2020	9,647										-7.3%	-10.5%	-11.0%	-10.6%	-10.5%	-7.7%	-5.5%	-2.3%	-1.5%	-0.9%

Year	Act System	DEF System Winter Peak Forecast, No DR Activated																		
	Winter Pk (MW)	TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	10,202	9,749																		
2003	10,507	9,773	9,796																	
2004	8,748	9,774	9,890	10,084																
2005	10,226	9,961	10,060	10,350	10,636															
2006	10,146	10,139	10,277	10,446	10,537	10,479														
2007	9,182	10,358	10,746	10,885	11,021	10,992	11,137													
2008	10,282	10,549	10,871	11,007	11,211	11,190	11,490	11,482												
2009	11,313	10,808	11,050	11,155	11,412	11,526	11,608	11,293	11,388											
2010	12,860	11,035	11,239	11,373	11,772	11,898	12,071	11,753	11,445	11,009										
2011	10,534	11,318	11,455	11,531	11,996	12,096	12,326	12,004	11,604	10,895	10,798									
2012	8,722		11,675	11,689	12,214	12,340	12,663	12,484	11,989	11,222	10,919	10,437								
2013	8,032			11,876	12,438	12,565	12,978	12,800	12,325	11,496	11,080	10,249	10,133							
2014	8,329				12,662	12,791	13,237	12,898	12,240	11,093	11,113	9,946	10,251	9,965						
2015	9,473					12,999	13,499	13,154	12,486	11,182	11,243	10,621	10,888	10,257	10,603					
2016	8,513						13,813	13,411	12,704	11,235	11,359	10,794	11,032	10,511	10,743	10,571				
2017	7,538							13,655	12,951	11,410	11,352	10,806	11,133	10,473	10,714	10,550	10,138			
2018	10,320								13,189	11,561	11,495	10,971	11,298	10,742	10,828	10,658	10,261	10,236		
2019	7,248									11,716	11,889	11,390	11,480	10,895	10,980	10,806	10,372	10,316	10,174	
2020	8,407										12,037	11,554	11,655	11,264	11,390	11,172	10,721	10,619	10,435	10,577

Year	Act System	DEF System Winter Peak Forecast Variances - %																		
	Winter Pk (MW)	TYSP 2002	TYSP 2003	TYSP 2004	TYSP 2005	TYSP 2006	TYSP 2007	TYSP 2008	TYSP 2009	TYSP 2010	TYSP 2011	TYSP 2012	TYSP 2013	TYSP 2014	TYSP 2015	TYSP 2016	TYSP 2017	TYSP 2018	TYSP 2019	TYSP 2020
2002	10,202	4.6%																		
2003	10,507	7.5%	7.3%																	
2004	8,748	-10.5%	-11.5%	-13.2%																
2005	10,226	2.7%	1.6%	-1.2%	-3.9%															
2006	10,146	0.1%	-1.3%	-2.9%	-3.7%	-3.2%														
2007	9,182	-11.4%	-14.6%	-15.6%	-16.7%	-16.5%	-17.6%													
2008	10,282	-2.5%	-5.4%	-6.6%	-8.3%	-8.1%	-10.5%	-10.5%												
2009	11,313	4.7%	2.4%	1.4%	-0.9%	-1.8%	-2.5%	0.2%	-0.7%											
2010	12,860	16.5%	14.4%	13.1%	9.2%	8.1%	6.5%	9.4%	12.4%	16.8%										
2011	10,534	-6.9%	-8.0%	-8.6%	-12.2%	-12.9%	-14.5%	-12.2%	-9.2%	-3.3%	-2.4%									
2012	8,722		-25.3%	-25.4%	-28.6%	-29.3%	-31.1%	-30.1%	-27.2%	-22.3%	-20.1%	-16.4%								
2013	8,032			-32.4%	-35.4%	-36.1%	-38.1%	-37.3%	-34.8%	-30.1%	-27.5%	-21.6%	-20.7%							
2014	8,329				-34.2%	-34.9%	-37.1%	-35.4%	-32.0%	-24.9%	-25.1%	-16.3%	-18.7%	-16.4%						
2015	9,473					-27.1%	-29.8%	-28.0%	-24.1%	-15.3%	-15.7%	-10.8%	-13.0%	-7.6%	-10.7%					
2016	8,513						-38.4%	-36.5%	-33.0%	-24.2%	-25.1%	-21.1%	-22.8%	-19.0%	-20.8%	-19.5%				
2017	7,538							-44.8%	-41.8%	-33.9%	-33.6%	-30.2%	-32.3%	-28.0%	-29.6%	-28.5%	-25.6%			
2018	10,320								-21.8%	-10.7%	-10.2%	-5.9%	-8.7%	-3.9%	-4.7%	-3.2%	0.6%	0.8%		
2019	7,248									-38.1%	-39.0%	-36.4%	-36.9%	-33.5%	-34.0%	-32.9%	-30.1%	-29.7%	-28.8%	
2020	8,407										-30.2%	-27.2%	-27.9%	-25.4%	-26.2%	-24.7%	-21.6%	-20.8%	-19.4%	-20.5%