Stephanie A. Cuello
SENIOR COUNSEL

May 6, 2022

VIA ELECTRONIC FILING

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

Re: *2022 Ten-Year Site Plan Data Request #1; Undocketed*

Dear Mr. Teitzman:

Please find enclosed for filing, Duke Energy Florida, LLC's Response to Staff's Data Request #1, questions 3 through 95, issued on March 7, 2022 regarding the 2022 TYSP.

Thank you for your assistance in this matter and if you have any questions, please feel free to contact me at (850) 521-1425.

Sincerely,

s/ Stephanie A. Cuello

Stephanie A. Cuello

SAC/mw
Attachments

cc: Donald Phillips, Division of Engineering, FPSC

DEF's Response to Staff's Data Request Regarding the 2022 Ten Year Site Plan; Questions 3-95

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

General Items

1. Please provide an electronic copy of the Company's Ten-Year Site Plan (TYSP) for the period 2022-2031 (current planning period) in PDF format.

   Response:

   Please see PDF file *DEF 2022 TYSP.PDF,* submitted on April 1, 2022.

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

   Response:

   Please see Excel files titled *DEF 2022 TYSP Schedules 1-10.xlsx and DEF 2022 TYS*P – *Tables.xlsx,* submitted on April 1, 2022.

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

   Response:

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

   Financial Assumptions

   Financial Escalation

Financial Assumptions Base Case			
AFUDC RATE		7.01	%
CAPITALIZATION RATIOS:			
	DEBT	47	%
	PREFERRED	0	%
	EQUITY	53	%
RATE OF RETURN			
	DEBT	3.80	%
	PREFERRED	0	%
	EQUITY	9.85	%
INCOME TAX RATE:			
	STATE	5.3	%
	FEDERAL	21.0	%
	EFFECTIVE	25.2	%
OTHER TAX RATE:		N/A	%
DISCOUNT RATE:		6.55	%
TAX			
DEPRECIATION RATE:			%
for CT: 15 Years (MACRS Table)			
for CC: 20 Years (MACRS Table)			

Financial Escalation Assumptions				
Year	General Inflation %	Plant Construction Cost[(1)] %	Fixed O&M Cost %	Variable O&M Cost %
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%
2031	2.50%		2.50%	2.50%
(1)	Combustion Turbine		0.96%	
	Combined Cycle		1.17%	
	Solar Long Term		0.55%	

Load & Demand Forecasting

4. **[Investor-Owned Utilities Only]** Please refer to the Excel Tables File (Hourly System Load). Complete the table by providing, on a system-wide basis, the hourly system load in megawatts (MW) for the period January 1 through December 31 of the year prior to the current planning period. For leap years, please include load values for February 29. Otherwise, leave that row blank.
   a. Please also describe how loads are calculated for those hours just prior to and following Daylight Savings Time (March 14, 2021, and November 7, 2021).

   Response:
   Please see tab *Hourly System Load* of the attached Excel File *Data Request #1 – Excel Tables:*

   a. On March 14th, 2021 there will be a zero in hour 3. For hour 2 on November 7th ,2021, DEF computes the average for hours 2 and hour 3 and places it in hour 2 as hour 3 is shifted back to hour 2.

5. Please refer to the Excel Tables File (Historic Peak Demand). Complete the table by providing information on the monthly peak demand experienced during the three-year period prior to the current planning period, including the actual peak demand experienced, the amount of demand response activated during the peak, and the estimated total peak if demand response had not been activated. Please also provide the day, hour, and system-average temperature at the time of each monthly peak.

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

Year	Month	Actual Peak Demand (MW)	Demand Response Activated (MW)	Estimated Peak Demand (MW)	Day	Hour	System-Average Temperature (Degrees F)
2021	1	7,052	0	7,052	19	8	45.2
	2	8,308	0	8,308	4	8	43.05
	3	7,565	0	7,565	31	17	86.25
	4	7,871	0	7,871	29	18	86.9
	5	8,735	0	8,735	5	18	87.5
	6	9,147	0	9,147	11	17	92.55
	7	9,452	0	9,452	22	17	89.7
	8	9,681	0	9,681	19	17	94.1
	9	8,770	0	8,770	13	17	87.55
	10	8,701	0	8,701	7	17	87.95
	11	6,198	0	6,198	3	17	81.4
	12	6,210	0	6,210	31	17	79
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
	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
	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
	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
	11	6,918	0	6,918	7	16	87.4
	12	5,895	0	5,895	19	8	46
Notes							
Temperatures are at hour ended peak hour. System weighted St Petr (45%), Orlando (45%), and Tallahassee (10%).							

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

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.

7. Please explain, to the extent not addressed in the Company’s current planning period TYSP, how the reported forecasts of the number of customers, demand, and total retail energy sales were developed. In your response, please include the following information:
   - Methodology.
   - Assumptions.
   - Data sources.
   - Third-party consultant(s) involved.
   - Anticipated forecast accuracy.
   - Any difference/improvement(s) made compared with those forecasts used in the Company’s most recent prior TYSP.

Response:

- Methodology.
  Please refer to the DEF 2022 TYSP.
- Assumptions.
  Please refer to the DEF 2022 TYSP.
- Data sources.
  Please refer to the DEF 2022 TYSP.
- Third-party consultant(s) involved.
  No third-party consultants involved.
- 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.
- Any difference/improvement(s) made compared with those forecasts used in the Company’s most recent prior TYSP.

Differences from the previous TYSP projection include an updated 30-Year normal weather assumption. The company applied a 30-Year average using 1991-2020.

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

Response:
- Fuel and purchased power cost recovery clause with generating performance incentive factor. Docket 20210001-EI (Mid-Course Update Filed 12/21/2022).
- Fuel and purchased power cost recovery clause with generating performance incentive factor. Docket 20220001-EI (Continuation of Mid-Course Update Filed 12/21/2022).
- Standard Offer Contract docket number: 20220065-EQ.

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

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

Response:
DEF maintains annual Forecast Evaluation Tables reflecting projection accuracy for all previous TYSP projections from 2002 to 2021 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_2022.xlsx*.

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

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

Response:
Please refer to response to Q9 and the corresponding excel file.

a. DEF prepared a forecast comparison of the past Ten-Year Site Plan forecasts from 2002 to 2021 as compared to the history. Variance calculation of (History / Forecast) are calculated across history and the TYSPs. This is the "TYSP Error Fan "in excel spread sheet form. The calculations compare the forecasts of Net Energy for Load, System Customers, Retail Peak Load and System Peak Load. Annual forecasts are compared for Net Energy for Load and System Customers and season forecasts are compared for Retail Peak Load and System Load.

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

    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 Sales (GWh) to Ultimate Customers, identify the major factors (historically, currently, and in the forecasted period) that contribute to the growth/decline of the trends. 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” (SFR) MWh. SFR 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.

12. 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 Q11. Most factors that impact levels of "energy" have similar effects for energy at time of peak.

d. Please see response to Q11. Most factors that impact levels of "energy" have similar effects for energy at time of peak.

13. Please explain any anomalies caused by non-weather events with regard to annual historical data points for the period 10 years prior to the current planning period that have contributed to the following, respectively:

    a. Summer Peak Demand.

    b. Winter Peak Demand.

    c. Annual Retail Energy Sales.

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.

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

    a. Please identify, with corresponding explanations, all the weather-related input variables that were used in the respective Retail Energy Sales, Winter Peak Demand, and Summer Peak Demand models.

    b. Please specify the source(s) of the weather data used in the aforementioned forecasting models.

    c. Please explain in detail the process/procedure/method, if any, the Company utilized to convert the raw weather data into the values of the model input variables.

    d. Please specify with corresponding explanations:

    e. How many years' historical weather data was used in developing each retail energy sales and peak demand model.

    f. How many years' historical weather data was used in the process of these models' calibration and/or validation.

    g. Please explain how the projected values of the input weather variables (that were used to forecast the future sales or demand outputs for each planning years 2022 – 2031) were derived/obtained for the respective retail sales and peak demand models.

Response:
Please refer to the DEF 2022 TYSP.

15. **[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 2022 TYSP.

16. Please provide responses to the following questions regarding the possible impacts of COVID-19 Pandemic (Pandemic) on the utility load forecast:

a. Please briefly summarize the impacts due to the Pandemic, if any, to the accuracy of the Company's respective forecast of annual retail energy sales and peak demands for 2020 and 2021.

b. Have any of your 2022 TYSP retail energy sales and peak demand forecasts incorporated the potential impacts of the Pandemic? Please explain your response.

Response:

a. The forecast of Net Energy for Load residual, measured as (actual - forecasted)/ forecasted, went from average value of -6.3%, 2015 to 2019, to-7.2% for 2020 to 2021, see the TYSP Error Fan 2021. System customers error declined and remained low going from average of -1.6%, 2015 to 2019, to average of -1.1%, 2020 to 2021. The fitting of system peak was impacted as the Mean Absolute Percentage Error, MAPE, score for system Peak regression equation went from 2.4% from 2018 to 2019 to 3.2% over the COVID-19 pandemic period from February 2020 to July 2022. Initial indication is that the pandemic impacted the load shape estimation accuracy the most followed by energy forecast accuracy. Residential, Commercial, and industrial building occupancy shifted over the time of the initial Covid 19 outbreak through the recovery. Customer growth model accuracy was not impacted by pandemic.

b. The COVID-19 pandemic impacts were assessed using the economic drivers from Moody's analytics which incorporated the pandemic impacts on the economies of the world, US, Florida, and the specific counties served by DEF. The impacts are mixed as the COVID-19 pandemic impact negatively some of the commercial building types and some industrial sector activity while other commercial and industrial activity increased during COVID-19 pandemic. COVID-19 pandemic impacted positively the growth in residential customers. Florida continued to attract people to the area as retirees entering Florida were impacted by the Baby Boom generation population cohort wave in the 65 to 70 age category, which greatly increased population in-migration to Florida. COVID-19 pandemic increased the level of early retirees and therefore enhanced the in-migration of retirees to Florida. Florida residence with vacation homes resided in Florida during the COVID-19 pandemic as workers worked from home. The change in policies during COVID-19 pandemic in the West and East coast of the US attracted many people and companies to Florida. This was captured in the Moody's Analytics forecast in the DEF sales forecast models.

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

a. Please explain in detail how the Utility's load forecast accounts for the impact of customer owned/leased renewable generation (solar and otherwise).

b. Please provide the annual impact, if any, of customer-owned/leased renewable generation (solar and otherwise) on the Utility's retail demand and energy forecasts, by class and in total, for 2022 through 2031.

c. If the Utility maintains a forecast for the planning horizon (2022-2031) of the number of customers with customer-owned/leased renewable generation (solar and otherwise), by customer class, please provide.

Response:

a. Existing customer owned renewable generation is captured in the historical dataset used for load forecast modeling. The projected impact of future customer owned renewable generation is added to the base load forecast as a reduction to load.

b. Annual impact, if any, of customer-owned/leased renewable generation (solar and otherwise) on the Utility's retail demand and energy forecasts, by class and in total, for 2022 through 2031. The "existing customer owned renewable generation is captured in the historical dataset used for load forecast modeling" – as such, the energy and demand data as presented represents "net new" as of 1/1/2022 and is a cumulative view from that point.

Please see tables below and tab *Customer Own-Leased Renew Gen* of the attached Excel File *Data Request #1 – Excel Tables_Q17*.

Year	Cumulative Customer Owned/Leased Renewable Generation							
	Residential Summer Demand (MW)	Residential Winter Demand (MW)	Commercial Summer Demand (MW)	Commercial Winter Demand (MW)	Industrial Summer Demand (MW)	Industrial Winter Demand (MW)	Total Summer Demand (MW)	Total Winter Demand (MW)
2022	(18.31)	(0.08)	(1.24)	(0.01)	(0.06)	0.00	(19.61)	(0.09)
2023	(46.51)	(1.09)	(3.16)	(0.09)	(0.18)	(0.01)	(49.84)	(1.19)
2024	(73.42)	(2.11)	(5.06)	(0.17)	(0.29)	(0.01)	(78.78)	(2.29)
2025	(87.80)	(2.96)	(6.28)	(0.25)	(0.41)	(0.02)	(94.49)	(3.23)
2026	(96.75)	(3.32)	(6.88)	(0.28)	(0.52)	(0.02)	(104.15)	(3.63)
2027	(107.60)	(3.67)	(7.62)	(0.31)	(0.64)	(0.03)	(115.86)	(4.01)
2028	(120.11)	(4.10)	(8.49)	(0.35)	(0.75)	(0.03)	(129.36)	(4.47)
2029	(134.39)	(4.57)	(9.46)	(0.39)	(0.87)	(0.04)	(144.71)	(5.00)
2030	(149.40)	(5.11)	(10.53)	(0.43)	(0.98)	(0.04)	(160.92)	(5.59)
2031	(164.87)	(5.66)	(11.60)	(0.48)	(1.09)	(0.05)	(177.56)	(6.19)
Notes								
The negative values indicate that customer owned PV is a reduction to projected load								

Year	Cumulative Customer Owned/Leased Renewable Generation			
	Residential Energy Impact (MWh)	Commercial Energy Impact (MWh)	Industrial Energy Impact (MWh)	Total Energy Impact (MWh)
2022	(85,071)	(5,688)	(363)	(91,122)
2023	(252,674)	(16,824)	(1,045)	(270,543)
2024	(414,294)	(27,927)	(1,726)	(443,948)
2025	(514,637)	(35,797)	(2,398)	(552,832)
2026	(568,361)	(39,564)	(3,069)	(610,994)
2027	(631,236)	(43,711)	(3,737)	(678,684)
2028	(706,194)	(48,737)	(4,412)	(759,343)
2029	(787,806)	(54,174)	(5,064)	(847,043)
2030	(877,136)	(60,383)	(5,722)	(943,241)
2031	(968,727)	(66,590)	(6,377)	(1,041,694)
Notes				
The negative values indicate that customer owned PV is a reduction to projected load				

c. Forecast for the planning horizon (2022-2031) of the number of customers with customer-owned/leased renewable generation (solar and otherwise), by customer class, please provide. The data represents a cumulative view of all customers, including those that added renewable generation prior to 1/1/2022.

Please see table below and tab *Customer Own-Leased Renew Cust* of the attached Excel File *Data Request #1 – Excel Tables_Q17*.

Year	Cumulative Customer Owned/Leased Renewable Generation Counts			
	Residential Customers	Commercial Customers	Industrial Customers	Total Customers
2022	68,439	728	3	69,170
2023	87,714	872	5	88,591
2024	104,680	1,010	7	105,697
2025	112,115	1,077	9	113,201
2026	118,986	1,127	11	120,124
2027	127,223	1,187	13	128,423
2028	136,559	1,259	15	137,833
2029	147,111	1,339	17	148,467
2030	157,935	1,423	19	159,377
2031	169,291	1,507	21	170,819
Notes				
Historical non-residential data not distinguished between commercial and industrial - assumed all commercial				

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

Response:
Yes, PEV loads were included in the Company's demand and energy forecasts for the 2022 TYSP. Load from existing PEVs were 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.

19. 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 tool developed by Guidehouse called Vehicle Analytics and Simulation Tool (VAST) to develop the forecast for the number of PEVs operating in its service territory and the potential loading impacts to system demand and energy. VAST has an EV Adoption Module which uses multiple variables (registration data, fuel costs, vehicle availability, vehicle miles traveled, etc.) to develop a conservative, base, and aggressive vehicle forecast.

This Adoption Module feeds the EV Charging Needs Module and Load Impacts Module which uses additional variables (vehicle per charger ratio, daily traffic data, vehicle charging profiles, etc.) to develop the impact on system demand and energy consumption.

20. Please refer to the Excel Tables File (Electric Vehicle Charging). Complete the table by providing estimates of the requested information within the Company's service territory for the current planning period. Direct current fast charger (DCFC) PEV charging stations are those that require a service drop greater than 240 volts and/or use three-phase power.

<u>Response</u>:
Please see table below and tab *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 (MW)	Winter Demand (MW)	Annual Energy (GWh)
2022	33,325	*	573	1.45	0.5	24
2023	42,404		926	3.6	1.3	54
2024	52,918		1,438	6.6	1.9	92
2025	65,134		2,128	10.5	2.7	139
2026	79,267		3,035	15.3	3.8	199
2027	95,455		4,170	21.2	5.3	275
2028	114,021		5,459	28.1	7.2	367
2029	135,439		6,867	71.0	9.5	470
2030	160,059		8,382	44.6	12.1	586
2031	188,139		10,018	54.0	14.8	712

Notes

1. Source: Fall 2021 EV Forecast.

Previous EV forecasts only included Light Duty. This version includes Light, Medium, and Heavy Duty forecasts. Light duty is considered passenger vehicles (Class 1 and 2). Medium duty is delivery vehicles (Class 3 - 6 vehicles). Heavy duty are transit, school, haul vehicles (Class 7 and 8).

2. "Number of PEVs" includes total cumulative PEV vehicles which includes Light, Medium, and Heavy duty

3. "Cumulative Impact of PEVs" includes only net-new vehicles beginning January 2022 as used in Load Forecast. Includes Light, Medium, and Heavy duty demand and energy impacts.

4. Summer Demand: August HE 18. Winter Demand: January HE 08

5. * Duke currently forecasts L2 private and public chargers together. Duke is developing a charger forecasting tool that will differentiate between the two in the future.

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

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.

<u>Response</u>:
In addition to an expansion of the pilot program public DC fast charging network, the company launched an EV charging installation rebates program for commercial & industrial customers that install EV charging solutions as well as a program that assists residential customers to avoid system on-peak charging and rewards that behavior with small monthly credits.

a. While all programs include budget for education & outreach that inherently increases customer knowledge of electricity as a transportation fuel, the off-peak credit program, in particular, provides prospective and actual participants with education and experience not only in using electricity as a fuel but also in managing that use for the benefit of the system as a whole. The Company also regularly updates its website to enhance web pages for consumer information of electric vehicles and electric vehicle infrastructure.

b. The Company consistently seeks to add programs and processes that ease the transition to electric transport for customers. These efforts include consideration of programs that would assist with or directly provide for privately controlled charging infrastructure. While the Company anticipates introducing such programs for consideration at a later date, it is too early at this time to share detailed descriptions.

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

<u>Response</u>:
The Company monitors PEV public charging stations through the U.S. Department of Energy Alternative Fuels Data Center (https://afdc.energy.gov). VAST also uses AFDC data as an input to monitor the installation of PEV charging stations.

23. 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.

<u>Response</u>:
The Company is not aware of any upgrades to the distribution system since 1/1/2021 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.

24. 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 has helped provide insights into PEV use and charging behavior. This program has helped provide insight on load charging shapes and energy and peak demand information. The Company also launched the Electric Vehicle Supply Equipment (EVSE) Pilot Program to gather additional information about charging characteristics at public charging infrastructure and its grid impact.

25. 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.

26. What are the major drivers of the Company's PEV growth?

Response:
The Company sees many influential drivers to PEV growth such as: lower costs associated with vehicles and/or batteries, additional models available for purchase, increased charging infrastructure, and increased consumer support. The impacts of these drivers cause PEV adoption and growth to vary greatly.

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

Response:
The Florida Statute Section 287 resulted in the FDOT EV Infrastructure Master Plan which delivers a comprehensive course of action to efficiently and effectively provide for PEV charging infrastructure to support the goals of F.S. 339.287. The company is evaluating the Master Plan utility recommendations and believes the potential impacts from improving a key adoption driver (PEV charging infrastructure) will result in a more positive trajectory of PEV adoption which then correlates with higher demand and energy growth.

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

<u>Response</u>:
The Company is still evaluating the impacts of PEV ownership on the peak demand. Using the ChargeFL pilot program data and VAST the Company has developed load charging profiles for PEVs. These have shown PEV charging impacts summer peak demand more than winter peak demand. As additional PEV adoption occurs and more datasets are developed using additional pilot programs a more complete dataset will be able to be analyzed to determine further impacts on peak demand.

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

<u>Response</u>:
The Company's ChargeFL pilot program provided insight on charging behaviors and energy amounts. The Company also has an EVSE Pilot program to gather information about DEF customer charging behavior and grid impacts of increasing EV adoption. Both pilot programs have provided opportunities to learn how to serve the emerging electric transportation market and the increased PEV demand.

30. **[FEECA Utilities Only]** Please refer to the Excel Tables File (DR Participation). Complete the table by providing for each source of demand response annual customer participation information for 10 years prior to the current planning period. Please also provide a summary of all sources of demand response using the table.

<u>Response:</u>
Please see table below and tab *DR Participation* of the attached Excel File *Data Request #1 – Excel Tables*.

[Demand Response Source or All Demand Response Sources]

Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
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
2021	435,109	1,102	1,356	1,612	9	10	2,712	DNA	DNA

Notes

(Include Notes Here)

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
2012	401,929	326	639	5,570	6	12	1,762	4	3
2013	405,737	341	652	4,321	5	9	831	1	4
2014	409,227	355	654	3,145	3	7	1,976	2	4
2015	410,396	357	656	6,345	7	13	1,372	2	3
2016	415,369	366	669	8,634	10	19	1,300	1	6
2017	423,900	382	694	9,561	11	20	2,553	3	4
2018	429,403	388	698	6,424	7	13	2,542	3	4
2019	431,862	396	711	6,847	7	14	2,046	2	4
2020	434,807	394	671	2,735	3	6	1,980	2	4
2021	434,663	392	667	1,604	2	3	2,704	4	5

Notes

(Include Notes Here)

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
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
2021	63	5	7	0	0	0	0	0	0

Notes

(Include Notes Here)

Standby Generation (4)									
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
2012	247	100	96	11	4	4	0	DNA	DNA
2013	253	98	98	12	5	5	4	DNA	DNA
2014	259	103	104	10	5	5	1	DNA	DNA
2015	260	108	109	25	20	20	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	3	3	1	DNA	DNA
2019	178	83	83	1	0	0	3	DNA	DNA
2020	175	80	80	5	2	0	1	DNA	DNA
2021	183	75	75	4	2	2	4	DNA	DNA
Notes									
See note below									

Interruptible Service (5)									
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
2012	134	262	179	1	1	1	6	DNA	DNA
2013	135	233	278	4	7	7	3	DNA	DNA
2014	134	256	249	1	15	15	0	DNA	DNA
2015	131	277	283	2	3	3	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
2021	196	602	580	4	6	6	4	DNA	DNA
Notes									
See note below									

Curtailable Service (6)									
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
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	9	0	0	0	0	DNA	DNA
2021	4	28	27	0	0	0	0	DNA	DNA
Notes									
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.
(5) Increase in capacity due to customers added in 2020 that did not add load until 2021 and new customers added in 2021
(6) Due to accounting differences Curtailable Rate Standby Supplemental 3 had not been recorded previously.
It has been added in 2021.

31. **[FEECA Utilities Only]** Please refer to the Excel Tables File (DR Annual Use). Complete the table by providing for each source of demand response annual usage information for 10 years prior to the current planning period. Please also provide a summary of all demand response using the table.

<u>Response:</u>
Please see table below and tab *DR Annual Use* of the attached Excel File *Data Request #1 – Excel Tables*.

[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
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
2021	0	0	0	0	0	0	0	0	0	0
Notes										
(Include Notes Here)										

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
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
2021	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
2012	*	*	*	*	*	*	*	*	*	*
2013	*	*	*	*	*	*	*	*	*	*
2014	*	*	*	*	*	*	*	*	*	*
2015	*	*	*	*	*	*	*	*	*	*
2016	*	*	*	*	*	*	*	*	*	*
2017	*	*	*	*	*	*	*	*	*	*
2018	*	*	*	*	*	*	*	*	*	*
2019	*	*	*	*	*	*	*	*	*	*
2020	*	*	*	*	*	*	*	*	*	*
2021	*	*	*	*	*	*	*	*	*	*
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
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
2021	0	0	0	0	0	0	0	0	0	0
Notes										
(Include Notes Here)										

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
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
2021	0	0	0	0	0	0	0	0	0	0
Notes										
(Include Notes Here)										

Curtailable 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
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
2021	0	0	0	0	0	0	0	0	0	0
Notes										
(Include Notes Here)										

32. **[FEECA Utilities Only]** Please refer to the Excel Tables File (DR Peak Activation). Complete the table by providing for each source of demand response annual seasonal peak activation information for 10 years prior to the current planning period. Please also provide a summary of all demand response using the table.

Response:

Please see table below and tab *DR Peak Activation* of the attached Excel File *Data Request #1 – Excel Tables*.

[Demand Response Source or All Demand Response Sources]							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)
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
2021	435,108	N	0	0	N	0	0
Notes							
(Include Notes Here)							

Residential Load Management							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)
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
2021	434,663	N	0	0	N	0	0
Notes							
(Include Notes Here)							

Commercial Load Management							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)
2012	65	*	*	*	*	*	*
2013	65	*	*	*	*	*	*
2014	65	*	*	*	*	*	*
2015	64	*	*	*	*	*	*
2016	64	*	*	*	*	*	*
2017	63	*	*	*	*	*	*
2018	63	*	*	*	*	*	*
2019	63	*	*	*	*	*	*
2020	63	*	*	*	*	*	*
2021	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? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)
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
2021	182	N	0	0	N	0	0
Notes							
(Include Notes Here)							

Interruptible Service							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)
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
2021	196	N	0	0	N	0	0
Notes							
(Include Notes Here)							

Curtailable Service							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)
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
2021	4	N	0	0	N	0	0
Notes							
(Include Notes Here)							

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

Loss of Load Probability, Reserve Margin, and Expected Unserved Energy Base Case Load Forecast						
Year	Loss of Load Probability (Days/Yr)	Annual Isolated Reserve Margin (%) (Including Firm Purchases)	Expected Unserved Energy (MWh)	Loss of Load Probability (Days/Yr)	Annual Assisted Reserve Margin (%) (Including Firm Purchases)	Expected Unserved Energy (MWh)
2022						
2023						
2024						
2025						
2026	DUKE Energy Florida is required to maintain a 20% Reserve Margin, therefore no LOLP study was conducted.					
2027						
2028						
2029						
2030						
2031						

Generation & Transmission

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

Response:
Please see table below and tab *Unit Performance* of the attached Excel File *Data Request #1 – Excel Tables*.

		Existing Generating Unit Operating Performance							
		Planned Outage Factor (POF)		Forced Outage Factor (FOF)		Equivalent Availability Factor (EAF)		Average Net Operating Heat Rate (ANOHR)	
Plant Name	Unit No.	Historical	Projected	Historical	Projected	Historical	Projected	Historical	Projected
ANCLOTE	1	6.27	6.27	1.67	1.67	86.22	86.22	11,556	11,556
	2	2.76	2.76	1.37	1.37	86.78	86.78	11,176	11,176
AVON PARK	P1	0.00	0.00	0.00	0.00	0.00	0.00	0	0
	P2	0.00	0.00	0.00	0.00	0.00	0.00	0	0
BARTOW	P1	3.00	3.00	1.13	1.13	79.93	79.93	15,122	15,122
	P2	1.70	1.70	0.42	0.42	78.19	78.19	16,384	16,384
	P3	2.82	2.82	12.73	12.73	70.32	70.32	12,665	12,665
	P4	2.82	2.82	13.53	13.53	68.79	68.79	15,056	15,056
BARTOW CC	4A	7.51	7.51	8.85	8.85	75.24	75.24	12,287	12,287
	4B	13.13	13.13	1.53	1.53	75.58	75.58	11,265	11,265
	4C	1.63	1.63	18.73	18.73	72.75	72.75	10,120	10,120
	4D	12.29	12.29	2.32	2.32	77.87	77.87	11,570	11,570
	4S	11.51	11.51	1.49	1.49	78.11	78.11	526	526
BAYBORO	P1	1.89	1.89	2.96	2.96	78.93	78.93	17,042	17,042
	P2	1.48	1.48	0.28	0.28	79.84	79.84	15,853	15,853
	P3	1.66	1.66	0.78	0.78	80.38	80.38	17,474	17,474
	P4	1.08	1.08	0.67	0.67	81.38	81.38	15,832	15,832
CITRUS CC	1A	10.95	10.95	2.76	2.76	76.04	76.04	10,496	10,496
	1B	11.35	11.35	1.53	1.53	76.79	76.79	10,483	10,483
	1S	10.34	10.34	1.12	1.12	76.10	76.10	654	654
	2A	10.63	10.63	1.87	1.87	75.30	75.30	10,412	10,412
	2B	10.76	10.76	2.20	2.20	84.08	84.08	10,389	10,389
	2S	9.85	9.85	0.95	0.95	84.11	84.11	645	645
	4	13.89	13.89	12.32	12.32	69.17	69.17	15,559	15,559
	5	16.98	16.98	5.04	5.04	74.21	74.21	10,522	10,522
DEBARY	P2	5.10	5.10	1.41	1.41	73.69	73.69	14,761	14,761
	P3	3.37	3.37	4.45	4.45	71.66	71.66	14,873	14,873
	P4	8.52	8.52	3.86	3.86	68.64	68.64	15,751	15,751
	P5	3.25	3.25	5.34	5.34	72.63	72.63	15,882	15,882
	P6	5.10	5.10	5.86	5.86	72.44	72.44	14,090	14,090
	P7	5.28	5.28	9.62	9.62	72.67	72.67	13,444	13,444
	P8	5.61	5.61	1.87	1.87	80.14	80.14	13,771	13,771
	P9	0.58	0.58	7.16	7.16	78.55	78.55	14,065	14,065
	P10	1.06	1.06	11.49	11.49	70.49	70.49	13,264	13,264
HINES	1A	10.38	10.38	2.70	2.70	81.38	81.38	11,216	11,216
	1B	10.42	10.42	4.53	4.53	78.52	78.52	11,278	11,278
	1S	10.16	10.16	1.57	1.57	87.58	87.58	0	0
	2A	7.01	7.01	0.69	0.69	87.80	87.80	11,739	11,739
	2B	7.20	7.20	0.43	0.43	81.22	81.22	11,799	11,799
	2S	7.05	7.05	0.02	0.02	81.82	81.82	0	0
	3A	13.16	13.16	1.76	1.76	85.12	85.12	11,337	11,337
	3B	13.03	13.03	1.94	1.94	85.24	85.24	11,296	11,296
	3S	12.98	12.98	0.68	0.68	80.51	80.51	0	0
	4A	9.66	9.66	2.98	2.98	88.02	88.02	11,164	11,164
	4B	8.99	8.99	3.11	3.11	82.23	82.23	11,240	11,240
	4S	8.89	8.89	2.66	2.66	84.21	84.21	0	0
INTERCESSION CITY	P1	6.60	6.60	0.00	0.00	75.86	75.86	13,969	13,969
	P2	8.76	8.76	11.61	11.61	62.03	62.03	14,611	14,611
	P3	3.59	3.59	0.76	0.76	78.46	78.46	14,799	14,799
	P4	3.55	3.55	0.55	0.55	76.89	76.89	13,660	13,660
	P5	3.24	3.24	1.84	1.84	78.75	78.75	13,503	13,503
	P6	4.22	4.22	1.24	1.24	77.99	77.99	15,609	15,609
	P7	11.36	11.36	0.26	0.26	70.51	70.51	12,822	12,822
	P8	0.00	0.00	0.27	0.27	84.88	84.88	13,127	13,127
	P9	0.23	0.23	11.52	11.52	73.62	73.62	12,681	12,681
	P10	0.00	0.00	0.36	0.36	85.36	85.36	13,065	13,065
	P11	0.00	0.00	1.00	1.00	88.65	88.65	12,071	12,071
	P12	16.78	16.78	0.21	0.21	69.04	69.04	13,366	13,366
	P13	4.87	4.87	0.67	0.67	80.44	80.44	14,819	14,819
	P14	7.43	7.43	0.66	0.66	77.16	77.16	13,810	13,810
OSPREY	1A	8.36	8.36	2.10	2.10	86.11	86.11	11,544	11,544
	1B	8.36	8.36	2.06	2.06	85.62	85.62	11,439	11,439
	1S	8.36	8.36	1.28	1.28	83.63	83.63	1,065	1,065
SUWANNEE	P1	0.69	0.69	0.33	0.33	69.21	69.21	13,923	13,923
	P2	0.69	0.69	0.08	0.08	76.59	76.59	17,538	17,538
	P3	0.98	0.98	0.74	0.74	79.43	79.43	13,795	13,795
TIGER BAY	1A	9.84	9.84	15.80	15.80	63.73	63.73	12,002	12,002
	1S	6.06	6.06	16.00	16.00	70.46	70.46	0	0
UNIV. OF FLA.	P1	13.80	13.80	1.38	1.38	80.73	80.73	8,241	8,241

NOTE: Historical - average of past three years (2019, 2020, and 2021)
Projected - average of past three years (2019, 2020, and 2021)

35. Please refer to the Excel Tables File (Utility Existing Traditional). Complete the table by providing information on each utility-owned traditional generation resource in service as of December 31 of the year prior to the current planning period. For multiple small (<250 kW

per installation) distributed resources of the same type and fuel source, please include a single combined entry. For capacity factor, use the net capacity as a basis.

<u>Response:</u>
Please see table below and tab *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	755	766	698	709	698	709	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	497	534	490	521	490	521	57.7
HINES ENERGY COMPLEX	2	POLK	CC	NG	December	2003	540	534	532	549	532	549	58.9
HINES ENERGY COMPLEX	3	POLK	CC	NG	November	2005	531	534	523	555	523	555	64.3
HINES ENERGY COMPLEX	4	POLK	CC	NG	December	2007	524	534	516	544	516	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	196	227	193	224	193	224	37.7
BARTOW	P1	PINELLAS	GT	DFO	May	1972	41	48	41	48	41	48	0.2
BARTOW	P2	PINELLAS	GT	NG	June	1972	41	50	41	50	41	50	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	58	45	58	45	58	1.7
BAYBORO	P1	PINELLAS	GT	DFO	April	1973	44	58	44	58	44	58	0.2
BAYBORO	P2	PINELLAS	GT	DFO	April	1973	41	55	41	55	41	55	0.2
BAYBORO	P3	PINELLAS	GT	DFO	April	1973	43	57	43	57	43	57	0.1
BAYBORO	P4	PINELLAS	GT	DFO	April	1973	43	56	43	56	43	56	0.1
DEBARY	P2	VOLUSIA	GT	DFO	December	1975	45	57	45	57	45	57	0.1
DEBARY	P3	VOLUSIA	GT	DFO	December	1975	45	59	45	59	45	59	0.1
DEBARY	P4	VOLUSIA	GT	DFO	December	1975	46	59	46	59	46	59	0.1
DEBARY	P5	VOLUSIA	GT	DFO	December	1975	45	58	45	58	45	58	0.1
DEBARY	P6	VOLUSIA	GT	DFO	December	1975	46	59	46	59	46	59	0.1
DEBARY	P7	VOLUSIA	GT	NG	October	1992	74	93	74	93	74	93	5.9
DEBARY	P8	VOLUSIA	GT	NG	October	1992	75	94	75	94	75	94	4.7
DEBARY	P9	VOLUSIA	GT	NG	October	1992	76	94	76	94	76	94	5.1
DEBARY	P10	VOLUSIA	GT	DFO	October	1992	72	88	72	88	72	88	0.3
INTERCESSION CITY	P1	OSCEOLA	GT	DFO	May	1974	45	61	45	61	45	61	0.2
INTERCESSION CITY	P2	OSCEOLA	GT	DFO	May	1974	46	60	46	60	46	60	0.1
INTERCESSION CITY	P3	OSCEOLA	GT	DFO	May	1974	46	61	46	61	46	61	0.2
INTERCESSION CITY	P4	OSCEOLA	GT	DFO	May	1974	46	62	46	62	46	62	0.2
INTERCESSION CITY	P5	OSCEOLA	GT	DFO	May	1974	45	59	45	59	45	59	0.2
INTERCESSION CITY	P6	OSCEOLA	GT	DFO	May	1974	47	60	47	60	47	60	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	77	95	77	95	77	95	5.3
INTERCESSION CITY	P9	OSCEOLA	GT	NG	October	1993	77	95	77	95	77	95	5.8
INTERCESSION CITY	P10	OSCEOLA	GT	NG	October	1993	74	94	74	94	74	94	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	69	89	69	89	69	89	3.5
INTERCESSION CITY	P13	OSCEOLA	GT	NG	December	2000	71	91	71	91	71	91	5.4
INTERCESSION CITY	P14	OSCEOLA	GT	NG	December	2000	70	90	70	90	70	90	6.0
SUWANNEE RIVER	P1	SUWANNE E	GT	NG	October	1980	48	65	48	65	48	65	4.9
SUWANNEE RIVER	P2	SUWANNE E	GT	DFO	October	1980	48	64	48	64	48	64	0.1
SUWANNEE RIVER	P3	SUWANNE E	GT	NG	November	1980	49	65	49	65	49	65	4.9
UNIVERSITY OF FLORIDA	P1	ALACHUA	GT	NG	January	1994	45	51	44	50	44	50	81.8
Notes													
(Include Notes Here)													

36. Please refer to the Excel Tables File (Utility Planned Traditional). Complete the table by providing information on each utility-owned traditional generation resource planned for in-

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

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

Response:
Please see table below and tab *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	2029	214	234	214	234	214	234	4.6
Notes													
(Include Notes Here)													

37. Please refer to the Excel Tables File (Utility Existing Renewable). Complete the table by providing information on each utility-owned renewable generation resource in service as of December 31 of the year prior to the current planning period. For multiple small (<250 kW per installation) distributed resources of the same type and fuel source, please include a single combined entry. For capacity factor, use the net capacity as a basis.

Response:
Please see table below and tab *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	(%)
Econolockhatchee Photovoltaic Array	1	Volusia	PV	SO	1	1989	0.007	0.007	0.007	0.007	0	0	15
Osceola	1	Osceola	PV	SO	5	2016	3.8	3.8	3.8	3.8	1.7	0	17
Perry	1	Taylor	PV	SO	7	2016	5.1	5.1	5.1	5.1	2.3	0	15
Suwannee	1	Suwannee	PV	SO	12	2017	8.8	8.8	8.8	8.8	4.0	0	21
Hamilton	1	Hamilton	PV	SO	12	2018	74.9	74.9	74.9	74.9	42.7	0	23
Lake Placid	1	Highlands	PV	SO	12	2019	45.0	45.0	45.0	45.0	25.7	0	15
Trenton	1	Gilchrist	PV	SO	12	2019	74.9	74.9	74.9	74.9	42.7	0	25
St. Petersburg Pier	1	Pinellas	PV	SO	12	2019	0.35	0.35	0.35	0.35	0.2	0	15
Columbia	1	Columbia	PV	SO	3	2020	74.9	74.9	74.9	74.9	42.7	0	25
DeBary	1	Volusia	PV	SO	5	2020	74.5	74.5	74.5	74.5	33.5	0	21
Sante Fe	1	Columbia	PV	SO	3	2021	74.9	74.9	74.9	74.9	42.7	0	25
Twin Rivers	1	Hamilton	PV	SO	3	2021	74.9	74.9	74.9	74.9	42.7	0	17
Duette	1	Manatee	PV	SO	10	2021	74.5	74.5	74.5	74.5	42.5	0	21
Notes													
**Solar CFs are from: Schedule A-4s or DEF's year-end Solar Plant Operation Status Report filed as requested under docket #20220007.													

38. Please refer to the Excel Tables File (Utility Planned Renewable). Complete the table by providing information on each utility-owned renewable generation resource planned for in-service within the current planning period. For multiple small (<250 kW per installation)

distributed resources of the same type and fuel source, please include a single combined entry. For projected capacity factor, use the net capacity as a basis.

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 *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	(%)
Bay Trail	1	Citrus	PV	SO	4	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Sandy Creek	1	Bay	PV	SO	4	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Fort Green	1	Hardee	PV	SO	5	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Charlie Creek	1	Hardee	PV	SO	8	2022	74.9	74.9	74.9	74.9	42.7	0	~29%
Bay Ranch	1	Bay	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Hildreth	1	Suwannee	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Hardeetown	1	Levy	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
High Springs	1	Alachua	PV	SO	2	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Renewable Energy Center #22	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Renewable Energy Center #23	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Renewable Energy Center #24	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Renewable Energy Center #25	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Renewable Energy Center #26	1	Unknown	PV	SO	7	2024	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #27	1	Unknown	PV	SO	7	2024	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #28	1	Unknown	PV	SO	7	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #29	1	Unknown	PV	SO	7	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #30	1	Unknown	PV	SO	7	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #31	1	Unknown	PV	SO	7	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #32	1	Unknown	PV	SO	7	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #33	1	Unknown	PV	SO	7	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #34	1	Unknown	PV	SO	7	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #35	1	Unknown	PV	SO	7	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #36	1	Unknown	PV	SO	7	2027	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #37	1	Unknown	PV	SO	7	2027	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #38	1	Unknown	PV	SO	7	2027	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #39	1	Unknown	PV	SO	7	2027	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #40	1	Unknown	PV	SO	7	2028	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #41	1	Unknown	PV	SO	7	2028	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #42	1	Unknown	PV	SO	7	2028	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #43	1	Unknown	PV	SO	7	2028	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #44	1	Unknown	PV	SO	7	2029	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #45	1	Unknown	PV	SO	7	2029	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #46	1	Unknown	SPS	SO	7	2029	74.9	74.9	74.9	74.9	9.4	9.4	~33%
Renewable Energy Center #47	1	Unknown	SPS	SO	7	2029	74.9	74.9	74.9	74.9	9.4	9.4	~33%
Renewable Energy Center #48	1	Unknown	PV	SO	7	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #49	1	Unknown	PV	SO	7	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #50	1	Unknown	SPS	SO	7	2030	74.9	74.9	74.9	74.9	9.4	9.4	~33%
Renewable Energy Center #51	1	Unknown	SPS	SO	7	2030	74.9	74.9	74.9	74.9	9.4	9.4	~33%
Renewable Energy Center #52	1	Unknown	PV	SO	7	2031	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #53	1	Unknown	PV	SO	7	2031	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #54	1	Unknown	SPS	SO	7	2031	74.9	74.9	74.9	74.9	9.4	9.4	~33%
Renewable Energy Center #55	1	Unknown	SPS	SO	7	2031	74.9	74.9	74.9	74.9	9.4	9.4	~33%
Notes													
Bay Trail, Sandy Creek and Fort Green are under constrcution and are expected to be in service Q2-2022. Charlie Creek is also under construction and expected to be in service Q3-2022. Bay Ranch, Hildreth, Hardeetown and High Springs are expected to be in service Q1-2023. The rest of the units are still in the development or planning stages. *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 2028 and 12.5% for 2029 and beyond.													

39. 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 Charlie Creek solar project was delayed from its original Q4 2021 forecasted in service date to an expected Q3 2022 date due to state permitting delays. The Bay Trail and Fort Green solar projects were originally forecasted to be placed in service in Q1 2022 and have slipped into Q2 2022 due to permitting, workforce, and supply chain delays. All of the projects mentioned continued to experience some delays during onsite mobilization due to workforce logistics related to the pandemic during 2021.

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

Response:
Please see table below and tab *Firm Purchases* of the attached Excel File *Data Request #1 – Excel Tables*.

Nominal, Firm Purchases		
	Firm Purchases	
Year	$/MWh	Escalation %
HISTORY:		
2019	127.45	
2020	138.66	8.8%
2021	156.92	13.2%
FORECAST:		
2022	171.72	
2023	174.26	1.5%
2024	158.12	-9.3%
2025	124.88	-21.0%
2026	82.97	-33.6%
2027	71.14	-14.3%
2028	60.85	-14.5%
2029	70.82	16.4%
2030	78.53	10.9%
2031	85.22	8.5%

41. Please refer to the Excel Tables File (PPA Existing Traditional). Complete the table by providing information on each purchased power agreement with a traditional generator still in effect by December 31 of the year prior to the current planning period pursuant to which energy was delivered to the Company during said year.

Response:
Please see table below and tab *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
Northern Star Generation	Mulberry	1	Polk	CC	NG	115	115	115	115	115	115	12/1/1994	8/9/2024
Northern Star Generation	Orange Cogen	1	Polk	CC	NG	104	104	104	104	104	104	12/16/1995	12/31/2025
Northern Star Generation	Orlando Cogen	1	Orange	CC	NG	115	115	115	115	115	115	1/7/1994	12/31/2023
General Electric Financial Services	Shady Hills	1-3	Pasco	GT	NG	481	523	481	523	481	523	4/1/2007	4/30/2024
Northern Star Generation	Vandolah Power	1-4	Hardee	GT	NG	654	698	654	698	654	698	6/1/2012	5/31/2027
Notes													
(Include Notes Here)													

42. Please refer to the Excel Tables File (PPA Planned Traditional). Complete the table by providing information on each purchased power agreement with a traditional generator pursuant to which energy will begin to be delivered to the Company during the current planning period.
    a. For each purchased power agreement in the table, provide a narrative response discussing the current status of the project.

<u>Response:</u>
Please see table below and tab *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
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes													
(Include Notes Here)													

43. Please refer to the Excel Tables File (PPA Existing Renewable). Complete the table by providing information on each purchased power agreement with a renewable generator still in effect by December 31 of the year prior to the current planning period pursuant to which energy was delivered to the Company during said year.

<u>Response:</u>
Please see table below and tab *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	ST	Pasco	ST	MSW	23	23	23	23	23	23	1/1/1995	12/31/2024
Pinellas County	Pinellas County Resource Recovery	ST	Pinellas	ST	MSW	54.75	54.75	54.75	54.75	54.75	54.75	1/1/1995	12/31/2024
As Available													
Lake County	Lake County Resource Recovery	ST	Lake	ST	MSW	12.75	12.75	12.75	12.75	N/A	N/A	7/1/2014	N/A
Dade County	Metro-Dade County Resource Recovery	ST	Dade	ST	MSW	43	43	43	43	N/A	N/A	1/1/2014	N/A
Lee County	Lee County Resource Recovery	ST	Lee	ST	MSW	40	40	40	40	N/A	N/A	1/1/2017	N/A
PCS Phosphate	Swift Creek	ST	WH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1/1/1980	N/A
Notes													
(Include Notes Here)													

44. Please refer to the Excel Tables File (PPA Planned Renewable). Complete the table by providing information on each purchased power agreement with a renewable generator pursuant to which energy will begin to be delivered to the Company during the current planning period.

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

Response:
Please see table below and tab *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
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Notes													
(Include Notes Here)													

45. 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. In March 2021 the arbitration panel ruled that DEF had rightfully terminated the agreement.

46. Please refer to the Excel Tables File (PSA Existing). Complete the table by providing information on each power sale agreement still in effect by December 31 of the year prior to the current planning period pursuant to which energy was delivered from the Company to a third-party during said year.

Response:
Please see table below and tab *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	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	0.014	0.014	6/1/1987	Evergreen	Partial Req'ts	Same
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	0	50-600	1/1/2021	3/31/2027	Partial Req'ts	Same
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	Same
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	Same
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	Modified
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	Same
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	Expired
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	10/31/2022	Partial Req'ts	Modified
Notes															
The Seminole agreements have optionality. The agreements with 50-400 MW listed have a combined maximum of 450 MW through 2030.															
A system average product was added for summer and winter of 2021															

47. Please refer to the Excel Tables File (PSA Planned). Complete the table by providing information on each power sale agreement pursuant to which energy will begin to be delivered from the Company to a third-party during the current planning period.
    a. For each power sale agreement in the table, provide a narrative response discussing the current status of the agreement.

Response:
Please see table below and tab *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)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
Notes													
(Include Notes Here)													

There are no new Power Sales Agreements that will start in the future.

48. 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 2021. A column has been added to response Q46 that indicates what agreements have expired, changed, or kept the same.

49. Please refer to the Excel Tables File (Annual Renewable Generation). Complete the table by providing the actual and projected annual energy output of all renewable resources on the Company's system, by source, for the 11-year period beginning one year prior to the current planning period.

Response:
Please see table below and tab *Annual Renewable Generation* of the Excel File *Data Request #1 – Excel Tables*.xlsx.

Renewable Source	Annual Renewable Generation (GWh)										
	Actual	Projected									
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Utility - Firm	706	1,913	2,882	3,801	4,328	5,060	5,789	6,528	7,260	8,033	8,794
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	545	581	635	0	0	0	0	0	0	0
Purchase - Non-Firm	20	337	337	406	731	819	887	978	1,043	1,131	1,190
Purchase - Co-Firing	0	0	0	0	0	0	0	0	0	0	0
Customer - Owned	522	690	870	1,043	1,152	1,210	1,278	1,359	1,446	1,542	1,641
Total	1,882	3,485	4,670	5,885	6,211	7,089	7,953	8,865	9,749	10,706	11,624
Notes											
(Include Notes Here)											

50. **[Investor-Owned Utilities Only]** Please refer to the Excel Tables File (Potential Solar Sites). Complete the table 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 *Potential Solar Sites* of the Excel File *Data Request #1 – Excel Tables*.xlsx.

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
Levy	1300	75	Wetlands, flood zones, geotechnical problems, species impacts
Notes			
(Include Notes Here)			

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

<u>Response:</u>
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 2021, using virtual mediums, DEF was able to engage stakeholders, customers, and potential companies interested in the production or use of renewable energy within the state.

52. **[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.

<u>Response</u>:
DEF managed and connected over 12,500 requests in 2021 from customer-owned renewable energy generators 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 customer segments trying to utilize, develop, install, and learn how to interconnect solar PV technology to the Florida power grid. DEF recorded about 8 inquiries in 2021 from potential large utility scale renewable energy

generators and DEF responded to many more informal emails and phone conversations. This large-scale interest can be seen in the continued solar PV generator interconnection requests that DEF receives from speculative parties. As of December 31, 2021, DEF had over 3,400 MW of potential third-party solar PV generation projects in its interconnection queue. DEF continues to educate potential renewable energy generators on the Qualifying Facility criteria, FERC Orders, and structure requirements. DEF also educates on pricing, and obligations under FPSC Rules for a negotiated renewable power purchase agreement and an agreement for purchase of as-available energy. All of the inquiries during 2021 were for potential renewable energy generators utilizing solar PV technology.

53. 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 through 2031. 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.

54. 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 continued declining trend in costs of energy storage. However, recent supply chain issues have lessened the trend observed previously.

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

Response:
Duke Energy continues to monitor the non-lithium battery solutions. This includes flow storage, zinc hybrid, gravity storage, adiabatic compressed air energy storage, and electro-thermal energy storage. 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.

56. 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.

57. 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. Currently, DEF is experiencing about a doubling of the percentage of customers utilizing the state's net metering policy that have also installed energy storage equipment at their premise compared to last year. DEF continues to carefully monitor this increased activity and the customer's battery project configuration. DEF's commercial and industrial customers have inquired about using energy storage in various forms, usually for business continuity whether post-hurricane or temporary interruptions. Some customers have developed their own backup power strategy. However, 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. Lastly, at the end of 2021, DEF finalized its "Bring Your Own Battery" pilot that launched in January 2022 to allow a small group of customers who have batteries installed in their homes to participate. This pilot will study potential grid enhancements and resiliency contributions when DEF, as the grid operator is able to thoughtfully dispatch these distributed resources.

58. Please refer to the Excel Tables File (Existing Energy Storage). Complete the table by providing information on all energy storage technologies that are currently either part of the Company's system portfolio or are part of a pilot program sponsored by the Company.

Response:
Please see table below and tab *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 (MHh)	Conversion Efficiency (%)
USF Microgrid Energy Storage Pilot	Y	7/8/2018	0.25	0.475	88.00%
Trenton	Y	12/21/2021	11	15.6	83.20%
Lake Placid BESS	Y	12/9/2021	17.275	50.6	83.50%
Notes					
(Include Notes Here)					

59. Please refer to the Excel Tables File (Planned Energy Storage). Complete the table by providing information on all energy storage technologies planned for in-service during the current planning period either as part of the Company's system portfolio or as part of a pilot program sponsored by the Company.

Response:
Please see table below and tab *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 (MHh)	Projected Conversion Efficiency (%)
Cape San Blas	Y	1Q 2022	5.5	20.5	83.5%
Jennings	Y	2Q 2022	5.5	8.5	84.0%
Micanopy	Y	2Q 2022	8.25	18.2	83.5%
Duke / UCF Long-Duration Energy Storage Project	Y	2Q 2022	0.01	0.04	75.0%
John Hopkins Microgrid	Y	3Q 2022	2.475	23.5	83.5%
Notes					
(Include Notes Here)					

60. 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 2017 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, three DEF pilot sites have been placed in service and five more are under 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 system balancing, 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.

61. 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. DEF recently placed a Lithium storage facility in service at 45 MW Lake Placid Solar Facility. Duke Energy plans to update the commission on operational experience from this facility during future Ten Year Site Plan filings after an adequate time period has elapsed to gather operational experience.

62. 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 shared 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, long term commitment, or up front installation cost 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 has worked with local governments and community organizations, before the program opens, to help drive awareness of the program benefits to low income customers.

DEF opened the approved Clean Energy Connection Program for enrollment for large business and industrial customers in 2021 and is fully subscribed for those customer types. Enrollment for residential customers opens in April 2022 with a planned program launch. Please see docket #20200176 and Order PSC-2021-0059-S-EI for additional details.

Further, DEF continues to offer another community type shared 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.

63. 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.

64. **[Investor-Owned Utilities Only]** Please refer to the Excel Tables File (As-Available Energy Rate). Complete the table by providing, on a system-wide basis, the historical annual average as-available energy rate in the Company's service territory for the 10-year period prior to the current planning period. Also, provide the projected annual average as-available energy rate in the Company's service territory for the current planning period. If the Company uses multiple areas for as-available energy rates, please provide a system-average rate as well.

Response:
Please see table below and tab *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	**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
	2021	34.45	40.53	29.30
Projected	**2022**	38.63	42.85	35.05
	2023	31.16	34.54	28.31
	2024	27.80	30.64	25.39
	2025	25.04	27.97	22.57
	2026	24.89	28.21	22.08
	2027	24.63	27.41	22.28
	2028	26.80	30.69	23.51
	2029	26.61	29.14	24.47
	2030	27.42	29.81	25.39
	2031	28.32	30.94	26.09
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 December 31, 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.				

65. Please refer to the Excel Tables File (Planned PPSA Units). Complete the table by providing information on all planned traditional units with an in-service date within the current planning period. For each planned unit, provide the date of the Commission's Determination of Need and Power Plant Siting Act certification, if applicable.

Response:
Please see table below and tab *Planned PPSA Units* 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	
Nuclear Unit Additions				
Combustion Turbine Unit Additions				
Undesignated CT	214	Not Required	Not Required	6/1/2029
Combined Cycle Unit Additions				
Steam Turbine Unit Additions				
Notes				
(Include Notes Here)				

66. 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 2022 Ten-Year Site Plan, the in-service date for a future simple cycle unit was projected for 6/1/2029. A "drop dead" decision date to proceed with the 6/1/2029 simple cycle units would typically occur just shy of 30 months prior to the in-service date. Therefore, the "drop dead" date will be year-end of 2026 for the future simple cycle unit. The major components of the "drop dead" date for the simple cycles' schedule is shown below:

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

A "drop dead" decision date to proceed with the solar units would typically occur 18 months prior to the in-service date. However, some sites may require longer permitting times and the "drop dead" may be extended.

67. Please refer to the Excel Tables File (Capacity Factors). Complete the table by providing the actual and projected capacity factors for each existing and planned unit on the Company's system for the 11-year period beginning one year prior to the current planning period.

Response:

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

Plant	Unit No.	Unit Type	Fuel Type	Capacity Factor (%)										
				Actual	Projected									
				2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Anclote	1	Steam	Gas	22.8	17.2	16.8	27.9	23.6	24.1	20.9	22.0	17.9	19.7	18.1
Anclote	2	Steam	Gas	23.7	12.1	10.7	14.4	14.9	17.2	12.6	13.3	14.3	12.6	12.0
Crystal River	4	Steam	Coal	34.5	39.3	20.5	20.9	15.4	11.5	11.5	15.4	10.5	15.8	12.9
Crystal River	5	Steam	Coal	45.3	40.9	25.7	15.7	12.9	15.0	11.6	14.4	14.1	12.3	12.0
Bartow CC	4	Combined Cycle	Gas	47.6	56.0	61.2	56.4	63.0	61.4	61.9	57.0	61.1	60.2	59.3
Citrus CC	1-2	Combined Cycle	Gas	67.3	81.1	82.3	83.4	79.3	79.7	88.6	84.0	87.3	85.7	81.4
Hines Energy Complex	1-4	Combined Cycle	Gas	60.7	64.0	67.6	66.5	67.9	65.1	63.0	64.3	62.5	60.2	55.6
Osprey CC	1	Combined Cycle	Gas	48.6	43.4	47.5	130.6	73.1	74.6	68.8	70.9	65.6	65.2	66.1
Tiger Bay	1	Combined Cycle	Gas	60.8	61.8	60.5	62.9	49.2	54.9	45.8	56.3	44.4	47.7	55.9
Bartow Peaker	1-4	Gas Turbine	Gas/Oil	1.7	0.8	0.7	0.8	0.3	0.5	0.7	0.7	1.1	1.3	1.3
Bayboro	1-4	Gas Turbine	Oil	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	`
DeBary	2-10	Gas Turbine	Gas/Oil	2.6	1.8	1.9	1.6	1.0	1.2	1.5	1.8	2.7	2.3	2.4
Generic CTs	1	Gas Turbine	Gas									1.1	1.4	0.8
Intercession City	1-14	Gas Turbine	Gas/Oil	3.5	2.9	2.6	2.6	1.5	1.9	2.2	2.7	3.3	2.9	3.1
Suwannee Peaker	1-3	Gas Turbine	Gas/Oil	3.4	2.1	2.1	2.3	1.8	1.9	2.0	2.2	2.5	2.6	2.7
University of Florida	1	Gas Turbine	Gas	80.1	82.5	82.7	82.5	82.4	82.3	91.9	0.0	0.0	0.0	0.0
Solar	1	PV		20.1	28.2	28.2	28.0	28.1	28.2	28.2	28.3	28.4	28.7	28.9
Notes														
(Include Notes Here)														

68. **[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.

DEPRECIABLE GROUP	Major Year in Service	Probable Retirement Year	Life Span
STEAM PRODUCTION			
ANCLOTE	1974	2029	55
CRYSTAL RIVER UNITS 4 and 5	1982	2034	52
OTHER PRODUCTION			
COMBINED-CYCLE			
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
SIMPLE CYCLE			
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
SOLAR			
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
SANTA FE	2021	2051	30
TWIN RIVERS	2021	2051	30
DUETTE	2021	2051	30

69. Please refer to the Excel Tables File (Steam Unit CC Conversion). Complete the table 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 table below and tab *Steam Unit CC Conversion* of the attached Excel File *Data Request #1 – Excel Tables*.

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	698	10/84	CC/IGCC	Project Development
Notes					
(Include Notes Here)					

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

Response:
Please see table below and tab *Steam Unit Fuel Switching* of the attached Excel File *Data Request #1 – Excel Tables*.

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	698	10/84	CC/IGCC	Project Development
Notes					
(Include Notes Here)					

71. Please refer to the Excel Tables File (Transmission Lines). Complete the table by providing a list of all proposed transmission lines for the current planning period that require certification under the Transmission Line Siting Act. Please also include in the table transmission lines that have already been approved, but are not yet in-service.

Please see table below and tab *Transmission Lines* of the attached Excel File *Data Request #1 – Excel Tables*.

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

72. Please explain if the Company assumes carbon dioxide (CO_2) compliance costs in the resource planning process used to generate the resource plan presented in the Company's current planning period TYSP. If the response is affirmative, answer the following questions:

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

   b. **[Investor-Owned Utilities Only]** Please explain if the exclusion of CO_2 compliance costs would result in a different resource plan than that presented in the Company's current planning period TYSP.

   c. **[Investor-Owned Utilities Only]** Please provide a revised resource plan assuming no CO_2 compliance costs.

   Response:
   DEF assumes CO2 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_2 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.

73. 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 2021 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.

74. 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? Refer to the Excel Tables File (Emissions Cost). Complete the table 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. Will there be any regulatory approvals needed for implementing this compliance strategy? How will this affect the timeline?

   There are no specific regulatory approvals identified as associated with compliance with this rule.

e. Please see the table below and tab Emissions Cost 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
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
2031	0	0	0	0
Notes				
(Include Notes Here)				

f. N/A

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

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

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

c. Cooling Water Intake Structures (CWIS) Rule.

d. Coal Combustion Residuals (CCR) Rule.

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

f. Affordable Clean Energy Rule or its replacement.

g. 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 20210007-EI. 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.

In 2021 DEF completed the installation of a liner system in the existing sedimentation basin and west ditch. The liner system was installed as a corrective measure to address groundwater quality impacts. Actions to address groundwater exceedances and comply with groundwater assessment mandates resulting from the CCR landfill are described in Docket No. 20190007-EI, approved by PSC-2019-0500-FOF-EI, and updated in Docket Nos. 20200007-EI, and 20210007-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. On October 29, 2021, the Supreme Court agreed to hear the appeal of ACE vacatur. The case was heard at the Supreme Court on February 28, 2022, and we are awaiting the ruling from the court. In the meantime, the EPA is working on a replacement rule, 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. The NPDES permit renewal has not been issued by FDEP. There are no reliability impacts from this rule.

76. Please refer to the Excel Tables File (EPA Operational Effects). Complete the table by identifying, for each unit affected by one or more of EPA's rules, what the impact is for each rule, including; unit retirement, curtailment, installation of additional emissions controls, fuel switching, or other impacts identified by the Company.

<u>Response</u>:
Please see table below and tab *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	1,112	NA	NA	NA	Dispatch Changes	Impacted	NA	NA
Citrus Combined Cycle	CC	NG	1,610	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	698							
Osprey	CC	NG	245	NA	NA	NA	NA	NA	NA	NA
Hines PB1-4	CC	NG	2,061	NA	NA	NA	Dispatch Changes	NA	NA	NA
Notes										
(Include Notes Here)										

77. Please refer to the Excel Tables File (EPA Cost Effects). Complete the table by identifying, for each unit impacted by one or more of the EPA's rules, what the estimated cost is for implementing each rule over the course of the planning period.

<u>Response</u>:
Please see table below and tab *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	4 (1)	TBD	0
Crystal River 5	Steam	Coal	710			0	0			
Notes										
(1) Modifications of the CWIS required to comply with requirements of 316b at Crystal River Units 4 and 5 has been completed. Projected costs for the planning period reflect costs of inspecting and maintaining intake screens.										

78. Please refer to the Excel Tables File (EPA Unit Availability). Complete the table by identifying, for each unit impacted by one or more of EPA's rules, when and for what duration units would be required to be offline due to retirements, curtailments, installation of additional controls, or additional maintenance related to emission controls. Include important dates relating to each rule.

Response:
Please see table below and tab *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	1,112	NA	NA	NA	NA	TBD	NA	NA
Citrus Combined Cycle	CC	NG	1,610	NA	NA	NA	NA	NA	NA	NA
Crystal River 4	Steam	Coal	712	TBD	TBD	NA	NA	NA	TBD	NA
Crystal River 5	Steam	Coal	698	TBD	TBD	NA	NA	NA	TBD	NA
Osprey	CC	NG	245	NA	NA	NA	NA	NA	NA	NA
Hines 1-4	CC	NG	2,061	NA	NA	NA	NA	NA	NA	NA
Notes										
(Include Notes Here)										

79. 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 CO2 regulations include plant conversions to natural gas, coal resource retirements, and utilizing advanced natural gas technologies as discussed in detail in question # 75. 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 SO2 and Ozone National Ambient Air Quality Standards (NAAQS). This retirement reduced DEF's CO2 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 CO2 emissions.

Until the EPA's CO2 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_2 regulations; and, finally, DEF continues to evaluate clean energy technologies and prudently prepare now for a CO_2 constrained future.

Fuel Supply & Transportation

80. Please refer to the Excel Tables File (Fuel Usage & Price). Complete the table by providing, on a system-wide basis, the actual annual fuel usage (in GWh) and average fuel price (in nominal $/MMBTU) for each fuel type utilized by the Company in the 10-year period prior to the current planning period. Also, provide the forecasted annual fuel usage (in GWh) and forecasted annual average fuel price (in nominal $/MMBTU) for each fuel type forecasted to be used by the Company in the current planning period.

Response:
Please see table below and tab *Fuel Usage & Price* of the attached Excel File *Data Request #1 – Excel Tables*.

Year		Uranium		Coal		Natural Gas		Residual Oil		Distillate Oil	
		GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU
Actual	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
	2021	0	0	5,042	3.03	34,517	5.28	0	0	61	20.27
Projected	2022	0	0	4,986	3.83	33,638	4.43	0	0	4	17.45
	2023	0	0	2,869	3.53	34,745	3.61	0	0	0	16.61
	2024	0	0	2,289	3.54	35,767	3.37	0	0	0	15.93
	2025	0	0	1,761	3.64	36,163	3.20	0	0	1	14.78
	2026	0	0	1,644	3.60	36,249	3.14	0	0	1	13.36
	2027	0	0	1,440	3.44	35,991	3.22	0	0	2	13.34
	2028	0	0	1,859	3.22	35,219	3.37	0	0	2	13.61
	2029	0	0	1,528	3.03	35,109	3.52	0	0	3	13.95
	2030	0	0	1,752	2.82	34,394	3.73	0	0	3	14.35
	2031	0	0	1,548	2.80	33,318	3.84	0	0	4	14.78
Notes											
(Include Notes Here)											

81. 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

82. 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

On average with respect to coal, in the first half of the period the high-sulfur Illinois basin coal prices generally are in the high \$30's per ton escalating to high-\$40's in the back half of the period; while Illinois basin low chlorine coal prices are generally in the high-\$40's to low-\$50's per ton across the period. Central Appalachia coal prices are in the low \$60'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 high \$40'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 mid \$30's per ton escalating to low \$40's in the back half of the curve. Since the fall of 2021, near term coal pricing for CAPP, NAPP and ILB regions has climbed over \$100 per ton as international coal prices hit record highs at ~ \$400/ton. 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, increasing availability of renewable generation, and export demand. 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 following the past several years of steep declines in coal generation demand, which has impacted the ability of producers to respond to changes in demand; (2) natural gas price volatility; (3) renewed uncertainty from the new administration regarding proposed and imposed U.S. Environmental Protection Agency ("EPA") regulations for power plants and mining operations; (4) increased demand in global markets for both steam and metallurgical coal; (5) tightening access to investor financing coupled with deteriorating credit quality is increasing the overall costs of financing for coal producers; (6) continued shifts in production from thermal to metallurgical coal as producers move away from supplying declining electric generation to take advantage of increasing demand from industry; and, (7) increasing labor and resource constraints due to structural changes in the coal industry further limiting suppliers' operational flexibility. International coal pricing assumptions are not currently accounted for in long-term fundamental price modeling. In the future if domestic coal supply becomes increasingly constrained, importing international supply may become necessary to ensure adequate supply.

b. Natural Gas

Over the planning horizon there are several 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 2022 outlook published March 3, 2022, in most scenarios, they forecast dry natural gas production continuing to grow. In their reference case, the EIA projects total U.S. dry natural gas production to grow from 94 Bcf/day in 2021 to approximately 103 Bcf/day on average for 2031. More than half of this growth will be from associated gas in the Permian region in Texas and New Mexico. Additional production growth from the Marcellus and Utica plays in the Appalachia region will be somewhat limited by the lack of new pipeline infrastructure projects. In 2031, the EIA reference case forecasts domestic natural gas consumption will be approximately 82 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 2031. U.S. LNG exports reached 10.5 Bcf/d in 2021 and are expected to grow to an average of 21.2 Bcf/d in 2031. Current US LNG exports are limited to approximately 13.7 Bcf/day until additional infrastructure is completed at end of 2024.

Demand growth for natural gas from electric generation, industrial, and exports could result in additional upward pressure on prices over the planning horizon from 2022 through 2031. According to the EIA long-term forecast, spot prices at the Henry Hub averaged $3.91 per MMBtu in 2021 and are expected to stay at or below $4.00/MMBtu through 2031 (in real terms).

c. Nuclear

DEF has retired the Crystal River 3 Nuclear plant and does not plan to add a new nuclear unit in the ten-year horizon. Therefore, it 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") 2022 Reference Case published in February 2022, domestic oil production levels are expected to rise throughout 2022 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 2022 Reference case projects that prices are high enough to maintain investment at steady crude oil production levels but not high enough to elicit increasing volumes from those levels of investment. However, given the Russian invasion of Ukraine and subsequent oil sanctions, prices have risen to $112 BBl through 2022 and should encourage additional drilling to lessen reliance on Russian Crude oil. EIA's Short-Term Energy Outlook, published March 2022, expect the average price to fall to $89/b in 2023. However, this price forecast is highly uncertain. Actual price outcomes will be dependent on the degree to which existing sanctions imposed on Russia, any potential future sanctions, and independent corporate actions affect Russia's oil production or the sale of Russia's oil in the global market. In addition, the degree to which other oil producers respond to current oil prices, as well as the effects macroeconomic developments might have on global oil demand, will be important for oil price formation in the coming months. EIA forecast that global consumption of petroleum and liquid fuels will average 100.6 million b/d for all of 2022, up 3.1 million b/d from 2021 and forecast that consumption will increase by 1.9 million b/d in 2023 to average 102.6 million b/d. Economic forecasts in the EIA Short -Term Energy Outlook were completed before Russia's invasion of Ukraine. The outlook for economic growth and oil consumption in Russia and surrounding countries is highly uncertain.

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)

N/A

83. Please provide a comparison of the Utility's 2021 fuel price forecast and the actual 2021 delivered fuel prices.

Response:

Please see table below and tab *2021 Fuel Prices-FCastvsActual* of the attached Excel File *Data Request #1 – Excel Tables_Q83*.

Year		Coal		Natural Gas		Distillate Oil	
		GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU
Projected	**2021**	10,268	1.79	27,521	3.10	16	9.26
Actual	**2021**	5,042	3.03	34,517	5.28	61	20.27
Notes							
(Include Notes Here)							

Projected values include commodity price and variable transportation cost.
Actual values include commodity price, variable and fixed transportation cost, surcharge deliver costs, and cost of existing inventory (coal sitting on the pile, oil in the tanks).

84. Please explain any notable changes in the Utility's forecast of fuel prices used to prepare the Utility's 2022 TYSP compared to the fuel prices used to prepare the Utility's 2021 TYSP.

Response:
DEF's 2022 TYSP is based on fuel forecasts developed in the Fall of 2021. Markets continue to change based on both near term and projected long-term factors. In the near term, markets are impacted by the supply and demand disruptions caused by the COVID pandemic and the economic recovery from that event. Longer term projections are impacted by changes in the forecast generation mix and by global energy use trends.

2021 saw Gulf Coast natural gas storage inventories depleted by extreme weather and unexpected demand conditions related to the rapid economic recovery. This resulted in market prices higher than the previous forecast. While this increase is expected to mitigate going forward, higher prices than those from the previous forecast are projected to persist for three to four years. In the longer term, gas prices are projected to moderate and drop below the previous forecast by 2030 as the impacts of increasing amounts of renewables, particularly solar PV generation, are seen. Nationwide, the Fall 2021 forecast incorporates over 460 additional GW of renewable capacity compared to the Fall 2020 forecast.

The higher natural gas prices in 2021 supported gas-to-coal switching, increasing coal's share of power generation throughout the summer, although this switch was moderated at DEF due to transportation disruptions related to damage caused by Hurricane Ida. The higher coal demand, paired with production levels that had yet to recover from COVID-19 induced lows and transportation issues, drew coal inventory down and pushed prices up for the fall forecast. These near-term factors are expected to impact the market for the next three to four years. Longer term, the expectation is for steep declines in coal use for electric generation. While this might be expected to lead to lower coal prices, the forecast is that the resulting shrinkage in the number of available suppliers and in the availability of transportation will keep prices moderately elevated above the previous forecast throughout the forecast period.

85. 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 2022 through 2027. The long-term forecast is performed two times per year and currently covers years 2028 through 2048.

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 competitively priced 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.

86. 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.

87. 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:
LNG exports are projected to remain at or near full export capabilities which is currently approximately 13.7 Bcf/day. This is due to the robust spread between United States natural gas prices and global LNG prices which is expected to continue through 2022. EIA projects LNG exports to average 11.3 Bcf/d in 2022, a 16% increase from 2021. According to the Federal Energy Regulatory Commission (FERC) there are currently 2 LNG export terminals that are approved by FERC and under construction and 13 more terminals that are approved but not yet under construction. Added U.S. export capacity over the next 5 years is estimated to be approximately 9 Bcf/day or a total of 22.7 Bcf/day.

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. DEF will continue to monitor LNG infrastructure projects and exports from these facilities.

88. 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

89. 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, several years of steep declines in coal generation demand combined with increased mining costs, along with increasing labor and resource constraints, continues to apply pressure for coal transported by rail to be cost competitive. Additionally, increased demand for coal in foreign countries could put pressure on the railroads infrastructure to transport coal to the ports for export shipments. Declining demand for coal in the utility sector has also driven rail transportation providers to modify their business models to be less dependent on coal related transportation revenues. Although rail transportation providers are required to provide rail service, the Company's rail transportation providers have limited resources to adapt to significant changes in scheduling demand resulting from the Company's burn volatility, specifically in higher than forecasted coal burn scenarios. DEF maintains communications with the rail transportation providers and actively monitors and explores opportunities to maintain rail transportation to its coal generating station. 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 remains the primary fuel source with the main mode of transportation from this region being via water. Here again, several years of steep declines in coal generation demand combined with increased mining costs, along with increasing labor and resource constraints continues to apply pressure for waterborne coal deliveries to be cost competitive. Declining demand for coal in the utility sector has also driven waterborne transportation providers to be less dependent on coal related transportation revenues as competition for limited resources has increased. DEF expects waterborne transportation to remain a key component of its transportation portfolio during the planning period and maintains communications with the river and gulf barge transportation providers as well as its coal suppliers in order to actively explore opportunities to maintain cost competitive waterborne transportation to its coal generating station. Over the planning period, the Company expects terminal services in the Gulf to continue to play a role in waterborne purchases.

Having the ability to transport coal via waterborne barge and rail transportation creates opportunities for competition between transportation modes while also allowing DEF to mitigate unfavorable weather conditions and continue reliable deliveries. 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

90. 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. Expected decreases in demand over the planning period are in turn expected to reduce coal handling, blending, and unloading activities at the Company's coal generating units. The Company expects to continue to require on-site resources to manage its contractional obligations. The Company also expects that terminal services in the Gulf, while continuing to facilitate coal blending, may play a decreasing role over the planning period as demand declines. Continuous communications with the station, terminal facilities, river and gulf barge companies, railroads, and suppliers are critical for DEF's coal transportation strategy in the future.

91. 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.

92. 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 does not plan to add a new nuclear unit in the ten-year horizon. Therefore, it will not be affected by uranium production industry trends

Extreme Weather

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

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)
- Stations 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)

94. Please identify any future winterization plans, if any, 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 Q93. 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.

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

<u>Response</u>:
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.

Financial Assumptions Base Case		
AFUDC RATE		7.01 %
CAPITALIZATION RATIOS:		
	DEBT	47 %
	PREFERRED	0 %
	EQUITY	53 %
RATE OF RETURN		
	DEBT	3.80 %
	PREFERRED	0 %
	EQUITY	9.85 %
INCOME TAX RATE:		
	STATE	5.3 %
	FEDERAL	21.0 %
	EFFECTIVE	25.2 %
OTHER TAX RATE:		N/A %
DISCOUNT RATE:		6.55 %
TAX		
DEPRECIATION RATE:		%

Financial Escalation Assumptions				
Year	General Inflation %	Plant Construction Cost(1) %	Fixed O&M Cost %	Variable O&M Cost %
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%
2031	2.50%		2.50%	2.50%

TYSP Year 2022
Staff's Data Request # 1
Question No. 4

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
1/1/2021	3291	3121	2929	2776	2737	2744	2849	2988	3266	3642	4038	4413	4677	4955	5051	5116	5136	5023	5055	4750	4483	4220	3927	3537
1/2/2021	3223	2983	2820	2714	2690	2752	2886	3128	3453	3831	4111	4327	4537	4693	4771	4819	4763	4791	4865	4631	4439	4180	3897	3551
1/3/2021	3303	3041	2864	2776	2746	2749	2844	3018	3296	3667	3864	3921	3987	3929	3883	3838	3864	4036	4312	4232	4067	3844	3525	3166
1/4/2021	2914	2803	2762	2797	2929	3262	3770	4281	4454	4374	4289	4139	4063	3988	3918	3910	4012	4294	4702	4730	4618	4404	4167	3889
1/5/2021	3721	3661	3645	3714	3874	4335	5093	5753	5554	5081	4536	4254	4054	3946	3842	3906	4006	4224	4578	4544	4419	4215	3930	3637
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2/16/2021	3643	3376	3144	3032	3020	3179	3600	3958	4036	4117	4173	4228	4324	4382	4412	4290	4297	4341	4578	4543	4315	4064	3714	3347
2/17/2021	3102	2960	2876	2825	2910	3174	3686	4027	4124	4176	4514	4517	4368	4326	4257	4225	4311	4479	4801	4789	4529	4230	3757	3343
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Leave Row Blank																								
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4/14/2021	3526	3193	3020	2894	2881	3046	3391	3622	3844	4092	4356	4801	5461	5959	6419	6765	7007	7025	6793	6363	6090	5436	4686	4070
4/15/2021	3604	3301	3115	2980	2997	3150	3470	3935	4189	4491	4822	5318	5770	6097	6375	6463	6418	6187	5936	5799	5739	5330	4723	4047
4/16/2021	3558	3324	3166	3089	3088	3239	3650	3946	4203	4509	4896	5355	5722	6002	6210	6360	6523	6448	6196	5887	5789	5412	4869	4296
4/17/2021	3777	3449	3270	3138	3100	3162	3298	3568	3922	4352	4793	5182	5547	5859	6133	6398	6588	6666	6526	6258	6094	5705	5092	4466
4/18/2021	3945	3644	3421	3273	3198	3189	3257	3422	3842	4342	4748	5108	5339	5489	5653	5833	6011	6098	5963	5685	5549	5170	4566	3917
4/19/2021	3551	3246	3107	3035	3045	3201	3535	3881	4113	4333	4508	4664	4686	4596	4662	4775	5130	5245	5266	5048	4926	4618	4184	3662
4/20/2021	3306	3092	2903	2839	2861	3078	3450	3778	3973	4143	4349	4488	4518	4496	4574	4593	4675	4840	4868	4812	4868	4634	4235	3677
4/21/2021	3353	3116	2967	2938	2976	3136	3471	3810	4069	4274	4566	4872	5243	5580	5871	6220	6494	6586	6441	6023	5766	5228	4562	3775
4/22/2021	3328	3027	2876	2814	2787	2928	3258	3675	3815	3923	4048	4184	4468	4717	5049	5462	5757	5913	5810	5527	5325	4889	4194	3474
4/23/2021	3116	2866	2750	2686	2697	2866	3221	3606	3822	4035	4242	4524	4886	5214	5618	5827	6008	6050	5907	5666	5542	5180	4621	3958
4/24/2021	3464	3170	2991	2902	2887	2940	3079	3330	3671	4148	4691	5283	5813	6167	6426	6653	6823	6813	6751	6482	6358	5986	5376	4845
4/25/2021	4330	3926	3652	3531	3456	3431	3519	3706	4115	4707	5211	5580	5872	6121	6383	6612	6724	6756	6565	6119	5832	5229	4452	3746
4/26/2021	3341	3046	2835	2754	2771	2966	3303	3620	3862	4095	4410	4857	5353	5708	6195	6535	6732	6803	6706	6263	6124	5541	4717	3996
4/27/2021	3548	3259	3061	2932	2900	3057	3373	3695	3931	4186	4500	4836	5286	5758	6253	6626	6812	6923	6816	6334	6024	5410	4646	4008
4/28/2021	3523	3233	3047	2921	2937	3096	3434	3737	4018	4267	4547	4904	5256	5623	6075	6551	6895	7020	6828	6308	5926	5496	4905	4214
4/29/2021	3723	3417	3218	3092	3077	3259	3554	3866	4186	4531	4950	5372	6047	6755	7219	7520	7772	7871	7730	7331	6963	6288	5426	4706
4/30/2021	4141	3732	3453	3293	3264	3379	3682	4000	4351	4747	5155	5592	6193	6740	7146	7346	7531	7575	7322	6784	6306	5751	5169	4567

5/1/2021	4094	3744	3512	3399	3333	3349	3426	3605	4066	4447	4875	5355	6029	6617	7004	7209	7359	7359	7144	6648	6209	5613	5038	4470
5/2/2021	3977	3667	3429	3244	3169	3175	3292	3481	3994	4628	5194	5798	6441	6974	7274	7481	7648	7709	7572	7077	6621	5948	5344	4665
5/3/2021	4143	3815	3541	3394	3394	3575	3971	4283	4634	5109	5602	6265	7055	7660	8086	8368	8529	8483	8127	7519	6995	6400	5664	4952
5/4/2021	4481	4095	3842	3647	3606	3769	4152	4395	4787	5294	5861	6533	7249	7892	8292	8527	8685	8698	8503	8089	7668	6990	6181	5425
5/5/2021	4748	4336	3992	3801	3746	3863	4237	4521	4890	5305	5912	6623	7408	7978	8357	8567	8728	8735	8330	7805	7395	6834	5986	5238
5/6/2021	4632	4222	3959	3825	3816	3978	4344	4637	4920	5429	5883	6467	7034	7376	7450	7383	7620	7731	7495	6979	6621	6074	5414	4731
5/7/2021	4264	3946	3633	3485	3456	3608	3845	4087	4259	4520	4757	5028	5356	5658	5922	6163	6449	6408	6166	5612	5354	5007	4455	3955
5/8/2021	3495	3162	2935	2811	2758	2769	2865	3053	3364	3675	3963	4218	4532	5032	5616	6067	6393	6507	6370	5810	5372	4881	4379	3896
5/9/2021	3484	3171	2946	2832	2771	2809	2863	3059	3533	4044	4484	4977	5683	6291	6764	7109	7411	7497	7421	7099	6671	6119	5406	4674
5/10/2021	4230	3841	3619	3438	3419	3576	3897	4168	4580	5132	5793	6531	7200	7590	7923	8140	8222	8134	7958	7571	7256	6571	5674	4877
5/11/2021	4336	3958	3672	3519	3517	3653	3977	4256	4618	5111	5738	6481	7182	7596	7802	7693	7519	7455	7301	6991	6748	6231	5449	4609
5/12/2021	4139	3816	3553	3434	3461	3624	3910	4247	4661	5169	5803	6653	7352	7582	7575	7723	7762	7782	7533	7152	6869	6302	5480	4743
5/13/2021	4302	3969	3746	3594	3560	3700	4023	4268	4404	4610	4802	4939	5103	5227	5147	5122	5174	5261	5171	5037	5017	4787	4349	3833
5/14/2021	3457	3185	2993	2885	2848	3006	3287	3559	3760	3983	4311	4672	5041	5370	5758	6071	6354	6435	6171	5641	5307	5016	4556	4001
5/15/2021	3564	3233	3000	2860	2772	2770	2862	3066	3440	3838	4175	4474	4896	5340	5643	5866	6050	6079	5854	5332	5006	4750	4343	3848
5/16/2021	3439	3140	2933	2782	2724	2716	2787	2943	3333	3755	4138	4470	4814	5162	5537	5944	6220	6324	6195	5662	5278	4977	4473	3844
5/17/2021	3391	3106	2925	2835	2838	3021	3317	3573	3836	4179	4534	4901	5296	5752	6200	6540	6764	6859	6652	6152	5786	5341	4775	4188
5/18/2021	3734	3437	3246	3121	3088	3209	3522	3845	4191	4540	4868	5265	5617	6111	6475	6778	6989	7078	6831	6322	5946	5488	4928	4281
5/19/2021	3814	3454	3256	3117	3094	3255	3520	3812	4150	4540	4939	5363	5671	6137	6507	6770	7008	7019	6796	6300	5940	5562	4998	4352
5/20/2021	3922	3567	3356	3219	3179	3312	3577	3879	4183	4510	4782	5107	5460	5902	6253	6581	6761	6828	6573	6042	5618	5343	4925	4329
5/21/2021	3911	3543	3283	3095	3049	3173	3436	3732	4040	4459	4864	5259	5631	5970	6246	6554	6719	6698	6342	5771	5445	5172	4728	4208
5/22/2021	3793	3449	3185	3019	2915	2922	2986	3250	3671	4132	4537	4890	5348	5790	6240	6586	6783	6787	6490	5895	5477	5173	4728	4182
5/23/2021	3749	3365	3119	2958	2895	2875	2914	3078	3503	4014	4459	4905	5433	6046	6555	6871	7016	7127	6982	6538	5931	5416	4810	4136
5/24/2021	3663	3301	3042	2948	2919	3062	3353	3622	3960	4310	4682	5120	5619	6105	6679	7193	7573	7775	7531	7003	6411	5836	5207	4469
5/25/2021	3962	3565	3324	3171	3134	3280	3514	3843	4195	4578	5037	5514	6147	6803	7437	7872	8059	8006	7788	7239	6648	6027	5356	4673
5/26/2021	4207	3830	3575	3393	3333	3463	3681	4000	4439	4840	5323	5828	6418	7111	7638	7876	7989	7996	7818	7358	6766	6136	5484	4794
5/27/2021	4276	3866	3599	3454	3388	3491	3680	4054	4452	4952	5506	6084	6848	7395	7718	7999	8191	8213	8039	7535	7053	6458	5737	5003
5/28/2021	4498	4062	3791	3595	3513	3579	3769	4079	4533	5070	5650	6352	7083	7606	7913	8101	8252	8190	7910	7376	6778	6232	5803	5127
5/29/2021	4530	4117	3833	3652	3526	3467	3448	3730	4231	4816	5496	6230	6801	7140	7446	7650	7820	7706	7302	6825	6310	5852	5282	4744
5/30/2021	4361	3971	3684	3512	3419	3397	3418	3678	4167	4689	5165	5756	6399	6918	7175	7396	7391	7254	6846	6331	5866	5603	5076	4566
5/31/2021	4154	3792	3533	3362	3285	3364	3386	3656	4141	4746	5281	5914	6513	7031	7362	7613	7767	7741	7480	6963	6461	5944	5346	4650
6/1/2021	4185	3748	3503	3342	3340	3456	3645	3996	4438	4840	5402	6070	6589	7187	7674	7927	8056	8047	7846	7415	6997	6458	5577	4794
6/2/2021	4308	3949	3643	3577	3478	3612	3819	4142	4554	5017	5651	6282	6937	7415	7607	7734	7830	7756	7570	7166	6803	6275	5511	4811
6/3/2021	4303	3991	3743	3626	3610	3745	3968	4307	4724	5261	5798	6432	7025	7455	7636	7610	7715	7681	7413	7010	6579	6113	5424	4825
6/4/2021	4350	4007	3784	3623	3610	3754	4001	4291	4671	5158	5692	6107	6668	7199	7556	7529	7426	7188	6946	6510	6060	5678	5177	4737
6/5/2021	4321	4019	3785	3624	3563	3560	3605	3882	4412	4959	5545	6275	6927	7379	7661	7709	7720	7676	7478	6929	6563	6100	5483	4960
6/6/2021	4581	4232	3996	3857	3746	3722	3719	3953	4503	5191	5775	6529	7251	7821	8146	8396	8575	8565	8290	7857	7436	6854	6067	5384
6/7/2021	4882	4465	4226	4070	4044	4180	4424	4700	5052	5400	5917	6536	7120	7710	8070	8298	8419	8211	8003	7618	7226	6723	5893	5195
6/8/2021	4721	4335	4080	3930	3888	3964	4198	4512	4960	5428	6049	6807	7510	8059	8387	8661	8784	8743	8521	8121	7670	7120	6188	5327
6/9/2021	4798	4449	4159	3977	3889	3976	4178	4531	4950	5415	6032	6735	7412	8036	8408	8645	8805	8827	8673	8276	7802	7165	6281	5408
6/10/2021	4933	4503	4214	4028	3933	3987	4180	4517	5026	5493	6293	6977	7699	8245	8512	8793	8982	9009	8865	8480	7975	7445	6589	5653
6/11/2021	5126	4720	4442	4186	4085	4167	4344	4636	5111	5653	6406	7223	7932	8504	8780	9059	9147	9106	8799	8232	7876	7498	6893	6046
6/12/2021	5302	4663	4376	4166	4039	3965	3986	4250	4846	5748	6751	7328	7828	8152	8364	8429	8406	8314	8097	7779	7450	7097	6311	5552
6/13/2021	5098	4593	4361	4202	4098	4035	4064	4323	5089	5906	6609	7118	7504	7511	7453	7594	7778	7497	7039	6704	6386	6117	5553	4818
6/14/2021	4277	3934	3753	3665	3669	3832	4088	4407	4785	5241	5966	6719	7181	7482	7628	7670	7600	7469	7254	6952	6717	6272	5735	4971
6/15/2021	4415	4131	3948	3838	3818	3908	4177	4437	4630	4962	5464	6008	6653	6944	7047	7056	7156	7223	7101	6877	6559	6156	5484	4771
6/16/2021	4288	4043	3804	3635	3637	3781	4042	4287	4632	5090	5610	6261	6836	7207	7091	6734	6717	6772	6651	6466	6281	5925	5340	4662
6/17/2021	4195	3875	3666	3506	3473	3609	3799	4060	4391	4866	5485	6214	6978	7461	7811	7868	7805	7540	7229	6885	6619	6261	5554	4809
6/18/2021	4299	3965	3711	3578	3554	3676	3901	4238	4615	5026	5499	6072	6764	7226	7560	7733	7777	7680	7413	6999	6674	6334	5772	5161
6/19/2021	4735	4401	4169	4017	3941	3956	4038	4220	4647	5164	5807	6331	6859	7368	7818	8084	8161	8195	8013	7573	7109	6691	6136	5546
6/20/2021	5096	4743	4495	4303	4205	4157	4202	4376	4775	5362	5871	6473	7122	7477	7581	7700	7731	7804	7749	7303	6927	6564	5968	5346
6/21/2021	4881	4496	4244	4148	4121	4280	4551	4799	5094	5495	6128	6760	7438	7982	8347	8523	8555	8271	7655	6965	6637	6136	5457	4863
6/22/2021	4421	4101	3860	3745	3722	3850	4113	4401	4733	5085	5650	6449	7170	7730	8109	8192	7805	7481	7127	6465	6150	5739	5212	4687
6/23/2021	4304	3927	3746	3648	3624	3750	3994	4349	4714	5118	5731	6314	6771	7174	7401	7634	7813	7805	7488	6962	6552	6052	5343	4737
6/24/2021	4334	3999	3749	3619	3609	3718	4001	4300	4612	5005	5575	6137	6674	7258	7667	7683	7638	7505	7012	6341	6016	5600	5015	4470
6/25/2021	4071	3751	3540	3451	3439	3576	3822	4157	4514	4878	5245	5609	6082	6721	7059	7098	6980	6646	6048	5556	5246	5111	4807	4338
6/26/2021	3948	3714	3499	3402	3333	3367	3475	3814	4330	4958	5646	6322	6819	7056	6982	6933	6749	6353	6078	5827	5632	5478	5012	4617
6/27/2021	4260	3956	3767	3613	3562	3526	3550	3818	4359	5038	5725	6434	7115	7559	7794	7975	8084	8103	7921	7526	6984	6512	5807	5056
6/28/2021	4557	4194	3939	3779	3754	3865	4057	4433	4915	5439	6185	6921	7680	8051	8332	8539	8559	8456	7990	7499	7057	6625	5994	5181
6/29/2021	4714	4342	4115	3968	3930	4038	4287	4593	4995	5562	6369	6834	7237	7482	7489	7471	7263	6937	6561	6153	5738	5399	4949	4424
6/30/2021	4070	3824	3625	3498	3489	3654	3950	4312	4728	5220	5867	6373	6750	6939	6980	6780	6468	6318	6158	5728	5430	5223	4878	4355
7/1/2021	3989	3720	3525	3417	3379	3527	3823	4165	4562	4992	5595	6086	6660	7180	7403	7461	7552	7445	7137	6695	6276	5856	5213	4634
7/2/2021	4232	3906	3673	3577	3587	3698	3943	4227	4638	5070	5580	6087	6653	7034	7283	7266	7299	7209	7110	6689	6379	6099	5604	5044
7/3/2021	4640	4330	4130	3963	3908	3891	3984	4204	4537	4909	5204	5456	5624	5897	5915	5845	5764	5630	5342	5118	4954	4914	4691	4318

7/4/2021	4038	3771	3568	3444	3386	3388	3460	3693	4175	4710	5344	5757	6285	6791	7294	7466	7591	7552	7166	6657	6238	5742	5369	4989
7/5/2021	4538	4164	3880	3690	3648	3703	3817	3987	4400	4896	5621	6391	7190	7737	8195	8567	8732	8468	8090	7351	6790	6346	5696	4925
7/6/2021	4448	4070	3821	3670	3638	3752	3997	4288	4590	5024	5468	6207	6988	7115	7238	7210	7084	7098	7014	6778	6659	6389	5811	5059
7/7/2021	4492	4189	3991	3902	3872	3940	4106	4337	4607	5006	5466	6117	6687	7055	7211	7321	7380	7469	7340	7047	6748	6419	5858	5055
7/8/2021	4508	4196	3997	3867	3841	3967	4185	4552	5035	5645	6261	6829	7054	7022	7020	6986	7011	7199	7280	7180	6933	6696	6056	5128
7/9/2021	4668	4266	3936	3734	3648	3736	3917	4219	4645	5406	6320	7211	7741	8242	8483	8709	8805	8680	8187	7432	7068	6656	6049	5488
7/10/2021	4844	4354	4039	3863	3729	3692	3719	4000	4612	5298	6113	6893	7511	7918	8166	8290	8231	8179	7995	7679	7353	7066	6385	5588
7/11/2021	4911	4481	4100	3849	3748	3711	3723	3880	4260	4932	5689	6421	7042	7460	7642	7565	7358	7195	6935	6508	6140	5765	5364	4809
7/12/2021	4391	4040	3856	3730	3724	3842	4061	4404	4906	5563	6422	7173	7680	7897	7753	7371	6706	6470	6196	5864	5661	5362	4816	4307
7/13/2021	3891	3612	3414	3326	3339	3479	3762	4126	4565	5109	5829	6581	7399	7875	8240	8488	8597	8385	7992	7463	7053	6622	5946	5032
7/14/2021	4618	4273	4046	3858	3791	3916	4128	4507	4963	5473	6186	6848	7419	7655	7702	7473	7123	6939	6721	6374	6191	5932	5383	4607
7/15/2021	4296	4022	3820	3688	3658	3771	3977	4305	4675	5234	5884	6670	7195	7700	8064	8264	8401	8455	8314	7966	7531	6905	6104	5209
7/16/2021	4733	4362	4027	3843	3781	3848	4018	4386	4898	5451	6282	7036	7761	8267	8584	8907	8979	8999	8732	8305	7839	7331	6907	6014
7/17/2021	5215	4756	4424	4194	4102	4077	4070	4291	4833	5665	6557	7284	7834	8119	8345	8523	8621	8597	8514	8008	7593	7113	6541	5773
7/18/2021	5050	4628	4258	4036	3887	3783	3837	4081	4686	5463	6286	7047	7699	8113	8362	8512	8622	8472	7848	7345	7106	6633	6075	5311
7/19/2021	4723	4356	4142	3964	3950	4083	4302	4645	5127	5815	6637	7486	7884	8002	8066	8152	8035	7746	7561	7271	7065	6596	5931	5125
7/20/2021	4625	4308	4069	3891	3868	3951	4171	4486	4918	5571	6401	7165	7823	8388	8652	8835	8973	8925	8573	7945	7336	6747	5981	5200
7/21/2021	4756	4410	4152	4016	3975	4069	4293	4623	5028	5562	6359	7096	7882	8440	8804	9095	9132	9142	8983	8627	8208	7640	6802	5797
7/22/2021	5228	4791	4516	4336	4276	4346	4540	4846	5336	6172	7007	7613	8307	8765	9109	9357	9452	9339	8942	8450	7954	7554	6744	5778
7/23/2021	5198	4822	4526	4367	4297	4395	4561	4973	5395	6193	6832	7382	7943	8407	8475	8460	8465	8421	8005	7302	6888	6380	5805	5214
7/24/2021	4783	4431	4172	3961	3855	3810	3920	4151	4544	5244	6029	6848	7527	8027	8319	8507	8635	8683	8513	8112	7564	7077	6354	5598
7/25/2021	5141	4721	4409	4176	4038	3958	3974	4145	4605	5400	6178	6949	7578	8121	8388	8588	8643	8658	8540	8208	7831	7363	6545	5587
7/26/2021	5062	4616	4342	4186	4151	4228	4442	4734	5199	5959	6827	7667	8406	8878	9149	9171	9152	9037	8743	8276	8002	7575	6797	5704
7/27/2021	5183	4800	4554	4399	4354	4395	4599	4912	5487	6200	6908	7718	8276	8629	8683	8506	8262	8058	7826	7595	7338	6936	6210	5304
7/28/2021	4875	4528	4338	4205	4192	4279	4500	4836	5262	5829	6403	6936	7451	7674	7628	7646	7632	7536	7324	6964	6541	6217	5681	4931
7/29/2021	4529	4189	3957	3852	3852	3937	4188	4540	5081	5789	6604	7277	7769	7979	7951	7622	7228	7069	6851	6492	6376	6061	5442	4718
7/30/2021	4298	4038	3839	3721	3696	3785	4010	4343	4791	5532	6360	7159	7826	8309	8697	8925	8951	8962	8771	8401	7928	7416	6721	5910
7/31/2021	5323	4898	4592	4369	4223	4166	4211	4418	4952	5622	6550	7478	8243	8565	8800	8956	9091	9137	8971	8505	8054	7499	6738	5985
8/1/2021	5475	5046	4731	4517	4415	4331	4316	4442	4984	5785	6760	7517	8166	8428	8291	8258	8392	8604	8622	8229	7720	7139	6358	5503
8/2/2021	5075	4718	4460	4304	4297	4450	4682	4966	5362	5883	6692	7456	8246	8566	8478	8398	8299	8194	8059	7652	7289	6887	6156	5393
8/3/2021	4856	4495	4267	4117	4091	4184	4420	4628	4749	5190	5593	5889	6459	6826	7023	7140	7259	7223	7134	6847	6595	6209	5590	4827
8/4/2021	4407	4078	3877	3775	3801	3931	4207	4504	4727	5184	5642	6144	6566	6861	7008	6847	6670	6491	6294	5950	5862	5581	5115	4622
8/5/2021	4257	3983	3797	3717	3738	3859	4115	4453	4950	5548	6041	6551	6970	7289	7307	6979	6845	6683	6545	6222	6097	5800	5349	4781
8/6/2021	4375	4045	3810	3696	3672	3778	4021	4360	4826	5608	6386	7191	7952	8433	8809	9080	9263	9219	8895	8186	7543	6928	6134	5335
8/7/2021	4895	4524	4275	4052	3960	3916	3930	4167	4648	5497	6393	7105	7831	8297	8575	8701	8750	8386	7928	7520	7184	6648	6021	5185
8/8/2021	4816	4407	4132	3958	3860	3818	3844	4014	4563	5519	6379	7261	7961	8382	8623	8830	8997	8865	8429	8029	7631	7062	6322	5346
8/9/2021	4859	4498	4235	4071	4025	4115	4384	4685	5247	5995	6736	7563	8380	8920	9030	8891	8609	8459	8244	7828	7436	6883	6169	5212
8/10/2021	4748	4402	4176	4042	3995	4120	4411	4739	5173	6009	6753	7437	8262	8594	8698	8685	8816	8751	8411	7826	7436	6842	6068	5233
8/11/2021	4626	4284	4079	3922	3928	4101	4431	4718	5154	5934	6674	7493	8197	8578	8689	8653	8797	8878	8668	8153	7615	7003	6089	5357
8/12/2021	4640	4410	4145	3937	3922	4071	4368	4710	5219	6031	6741	7490	8173	8577	8918	8946	8665	8257	7610	7197	6838	6332	5725	5086
8/13/2021	4504	4220	4044	3904	3923	4091	4432	4724	5084	5769	6496	7265	7859	8252	8390	8295	7780	7384	6932	6439	6237	5811	5379	4729
8/14/2021	4399	4109	3884	3765	3695	3697	3781	4000	4467	5285	6099	6872	7516	7971	8076	7701	7328	6696	6255	5749	5605	5299	4985	4578
8/15/2021	4271	4043	3834	3677	3632	3665	3764	3961	4434	5134	5831	6460	6952	7292	7322	7377	7114	6908	6645	6334	6197	5858	5325	4790
8/16/2021	4425	4168	4020	3922	3958	4199	4551	4858	5160	5697	6247	6857	7346	7650	7701	7699	7639	7573	7338	6944	6633	6161	5566	5043
8/17/2021	4596	4304	4140	4026	4031	4179	4483	4769	5098	5706	6584	7341	7971	8574	8891	9164	9372	9426	9189	8707	8259	7513	6667	5739
8/18/2021	5131	4760	4455	4278	4236	4362	4685	4925	5306	6145	6915	7792	8506	9031	9390	9533	9595	9553	9382	8866	8309	7571	6762	5645
8/19/2021	5064	4659	4414	4234	4167	4311	4616	4940	5421	6158	6969	7709	8427	8865	9209	9481	9681	9641	9371	8864	8452	7838	6907	5856
8/20/2021	5249	4865	4549	4380	4295	4431	4686	4987	5434	6252	7094	7916	8665	9061	9306	9508	9337	8921	8530	8001	7632	7023	6352	5509
8/21/2021	5074	4688	4439	4289	4227	4176	4201	4393	4963	5887	6804	7661	8354	8737	9020	9222	9263	9175	8698	8055	7601	6947	6263	5402
8/22/2021	5004	4594	4314	4130	4073	4018	4043	4197	4616	5346	6227	7098	7997	8508	8837	9049	9117	9008	8646	8215	7938	7289	6561	5618
8/23/2021	5142	4759	4505	4364	4304	4455	4759	5090	5409	5912	6404	7054	7734	8213	8545	8785	8867	8751	8489	8161	7639	7044	6248	5294
8/24/2021	4820	4513	4291	4144	4143	4286	4597	4862	5113	5832	6630	7261	7779	8280	8634	8762	8883	8819	8504	7830	7271	6592	5775	4922
8/25/2021	4453	4138	3919	3829	3829	3988	4292	4553	4874	5423	6295	7120	7835	8408	8772	9017	9246	9150	8755	8196	7734	7017	6238	5285
8/26/2021	4843	4449	4137	3940	3879	3986	4284	4526	4703	5021	5626	6268	6841	7329	7725	8003	8135	8153	7838	7334	7028	6538	5903	5090
8/27/2021	4651	4373	4155	4022	3988	4144	4472	4771	5008	5517	6172	7087	7765	7993	7832	7520	7373	7159	7061	6730	6629	6300	5701	4933
8/28/2021	4577	4315	4133	3992	3983	4018	4088	4254	4677	5478	6347	7022	7517	7907	8118	8138	8159	8173	7890	7534	7184	6665	6046	5337
8/29/2021	4947	4609	4358	4219	4107	4088	4118	4269	4706	5613	6531	7327	8023	8456	8719	8865	8936	8889	8572	8157	7704	7103	6311	5433
8/30/2021	4780	4500	4298	4093	4065	4201	4517	4781	5156	5819	6620	7418	8119	8623	8936	9142	9246	9205	9083	8622	8262	7473	6653	5612
8/31/2021	5043	4669	4371	4212	4138	4314	4595	4893	5107	5745	6469	7325	8044	8535	8852	9076	9265	9147	8851	8440	8078	7312	6437	5536
9/1/2021	5028	4737	4535	4393	4401	4560	4775	4920	5113	5442	5868	6079	6073	5941	5743	5606	5620	5646	5636	5639	5668	5369	4924	4380
9/2/2021	4042	3814	3691	3626	3679	3867	4201	4471	4734	5085	5792	6449	7324	7706	7971	8321	8488	8478	8094	7578	7098	6398	5745	4959
9/3/2021	4531	4192	3977	3843	3803	3944	4241	4513	4843	5356	6083	6756	7527	8059	8389	8422	8358	8167	7751	7166	6776	6206	5624	4944
9/4/2021	4553	4213	3962	3813	3685	3663	3725	3902	4308	4932	5721	6391	7107	7617	7918	8129	8242	8167	7890	7430	7031	6475	5771	5019
9/5/2021	4606	4232	3982	3786	3658	3592	3674	3793	4217	4880	5692	6470	7111	7684	8018	8221	8382	8364	8085	7565	7097	6530	5917	5174

9/6/2021	4761	4405	4135	3926	3850	3886	3931	4075	4468	5176	6062	6940	7559	7985	8244	8455	8558	8458	8075	7689	7317	6658	6020	5187
9/7/2021	4601	4290	4122	3966	3913	4044	4399	4678	4954	5446	6023	6647	7231	7632	7786	8094	8360	8368	8099	7714	7438	6779	5964	5078
9/8/2021	4717	4339	4123	4011	3960	4128	4448	4688	4966	5516	6278	6857	7572	8225	8559	8576	8460	8225	7850	7384	6956	6292	5680	4892
9/9/2021	4490	4191	4038	3967	3961	4151	4502	4763	5024	5494	6095	6329	6514	6738	6670	6738	6959	6975	6947	6665	6396	5999	5310	4661
9/10/2021	4374	3998	3776	3711	3704	3885	4185	4417	4693	5135	5603	6130	6851	7525	7939	8081	8007	7640	7237	6779	6398	5913	5366	4817
9/11/2021	4395	4046	3830	3708	3643	3664	3751	3944	4229	4781	5469	6105	6545	6899	6997	6900	6822	6706	6466	6194	5969	5617	5163	4588
9/12/2021	4290	4057	3898	3785	3727	3755	3837	4004	4363	4970	5654	6348	6906	7400	7490	7587	7598	7508	7336	7043	6791	6211	5542	4931
9/13/2021	4569	4263	4016	3885	3855	4017	4340	4586	4856	5291	6052	6879	7622	8183	8583	8722	8770	8715	8297	7733	7199	6565	5763	4867
9/14/2021	4462	4154	3956	3819	3804	3967	4272	4586	4883	5463	6166	6774	7421	7577	7722	7853	7799	7547	7250	6793	6421	5838	5252	4639
9/15/2021	4210	3919	3717	3585	3609	3766	4108	4403	4681	5217	5944	6661	7230	7751	8008	8040	8091	8126	7874	7405	6969	6538	5734	4862
9/16/2021	4546	4199	3995	3878	3872	4026	4365	4629	4863	5289	5954	6421	6915	7383	7585	7552	7529	7347	7030	6655	6422	5926	5421	4691
9/17/2021	4396	4176	4005	3934	4004	4156	4449	4681	4921	5221	5756	6354	6902	7240	7550	7470	7280	7026	6661	6327	6054	5625	5268	4741
9/18/2021	4377	4109	3916	3788	3758	3788	3852	4084	4422	4911	5462	5993	6496	6960	7246	7444	7457	7152	6843	6486	6170	5681	5207	4728
9/19/2021	4330	4027	3838	3706	3629	3637	3699	3823	4240	4925	5675	6405	7007	7476	7650	7688	7668	7470	7141	6838	6579	6040	5454	4858
9/20/2021	4218	3951	3760	3643	3732	3945	4254	4523	4849	5399	5971	6505	6774	7048	7181	7332	7378	7379	7243	7050	6836	6256	5590	4980
9/21/2021	4299	3981	3785	3665	3656	3801	4136	4453	4696	5298	5866	6607	7348	7786	8185	8280	8117	7967	7643	7228	6778	6124	5446	4739
9/22/2021	4229	3967	3759	3650	3647	3811	4136	4432	4649	5226	5809	6438	7003	7481	7848	8219	8448	8425	8111	7779	7356	6765	6024	5131
9/23/2021	4518	4194	3979	3861	3843	4004	4308	4578	4665	4961	5339	5939	6562	7136	7518	7898	8052	7978	7615	7163	6705	6157	5422	4765
9/24/2021	4295	4019	3755	3684	3644	3799	4046	4351	4501	4824	5317	5947	6655	7232	7641	7861	8015	7974	7618	7038	6553	5996	5406	4739
9/25/2021	4346	4000	3768	3581	3468	3473	3572	3724	4133	4740	5381	6138	6869	7444	7783	8004	8046	7939	7529	6946	6456	5951	5287	4708
9/26/2021	4288	3968	3739	3568	3475	3446	3482	3628	4032	4631	5172	5888	6591	7181	7522	7751	7881	7896	7422	6971	6527	5881	5171	4420
9/27/2021	3995	3657	3419	3279	3308	3498	3791	4066	4319	4736	5135	5745	6360	6911	7445	7737	7958	7981	7628	7158	6640	5910	5214	4421
9/28/2021	3977	3661	3426	3307	3265	3417	3726	3938	4134	4451	5076	5724	6302	6793	7092	7310	7554	7558	7331	6979	6583	5858	5041	4321
9/29/2021	3893	3607	3392	3254	3233	3387	3700	4013	4178	4455	4914	5557	6260	6807	7290	7647	7750	7696	7428	7045	6643	5924	5296	4603
9/30/2021	4124	3782	3552	3384	3382	3537	3835	4125	4325	4705	5417	5976	6648	7151	7592	7847	8048	8021	7694	7103	6773	6189	5482	4766
10/1/2021	4217	3841	3653	3516	3449	3589	3977	4248	4574	5049	5699	6489	6987	7368	7690	7929	7907	7751	7343	6853	6381	5937	5399	4733
10/2/2021	4353	3989	3796	3664	3593	3560	3597	3802	4206	4829	5587	6212	6758	7227	7488	7657	7717	7606	7314	6842	6372	5839	5236	4563
10/3/2021	4190	3847	3611	3439	3380	3337	3395	3564	3962	4456	5129	5800	6403	6844	7171	7383	7439	7317	6982	6755	6352	5785	5164	4388
10/4/2021	3998	3643	3452	3365	3358	3522	3859	4129	4354	4747	5346	5964	6669	7233	7609	7842	7934	7841	7543	7232	6774	6109	5399	4579
10/5/2021	4179	3829	3607	3431	3436	3600	3947	4221	4408	4765	5399	6036	6721	7220	7534	7730	7757	7643	7369	7091	6710	6185	5540	4802
10/6/2021	4363	4081	3878	3746	3747	3917	4236	4539	4726	5080	5742	6356	6789	7326	7702	7887	7998	7928	7594	7373	6829	6290	5605	4898
10/7/2021	4485	4128	3930	3808	3786	3931	4246	4553	4813	5281	6078	6747	7461	7918	8377	8594	8701	8483	7992	7673	7184	6789	6266	5532
10/8/2021	4982	4426	4144	3944	3931	4106	4485	4851	5237	5805	6357	7051	7593	7945	7805	7383	7213	6989	6652	6430	6186	5705	5139	4489
10/9/2021	4279	3914	3624	3483	3415	3416	3512	3767	4260	4923	5520	6105	6556	6930	7176	7328	7354	7233	6974	6649	6301	5780	5340	4691
10/10/2021	4159	3721	3500	3370	3243	3238	3288	3525	3892	4664	5291	5799	6296	6667	7029	7184	7227	7120	6846	6578	6302	5752	5040	4503
10/11/2021	3958	3540	3330	3221	3242	3425	3749	4077	4503	4890	5499	6048	6609	7032	7289	7432	7438	7343	7118	6889	6515	6052	5375	4605
10/12/2021	4263	3781	3494	3395	3419	3623	3958	4478	4745	5226	5744	6311	6838	7278	7592	7820	7951	7811	7543	7329	6987	6439	5784	5038
10/13/2021	4461	4007	3731	3574	3562	3737	4193	4529	4789	5284	5813	6448	6940	7367	7686	7948	8058	8031	7726	7447	7016	6504	5862	5163
10/14/2021	4500	3948	3766	3647	3626	3778	4089	4492	4743	5293	5889	6474	7051	7418	7738	8020	8170	8089	7735	7462	7032	6438	5923	5227
10/15/2021	4554	4095	3779	3618	3570	3659	3996	4499	4811	5281	5942	6441	6973	7321	7613	7901	7992	7894	7508	7119	6685	6209	5579	4944
10/16/2021	4306	3840	3620	3474	3401	3383	3400	3645	4127	4897	5464	6065	6639	7040	7335	7587	7732	7678	7285	6946	6468	6096	5527	4908
10/17/2021	4374	4046	3837	3724	3609	3535	3470	3562	3731	4088	4468	4920	5338	5791	6221	6545	6678	6638	6243	5898	5482	4888	4409	3636
10/18/2021	3341	3054	2848	2740	2788	2933	3267	3694	3822	4042	4202	4502	4893	5216	5657	5992	6233	6222	6037	5884	5467	4908	4452	3688
10/19/2021	3375	3123	2958	2892	2879	3068	3432	3846	3956	4231	4579	4929	5249	5660	5999	6328	6523	6530	6328	6118	5734	5080	4567	3786
10/20/2021	3465	3207	3055	2880	3018	3121	3447	3855	3999	4221	4586	5010	5428	5896	6319	6568	6753	6691	6443	6303	5974	5427	4797	4109
10/21/2021	3570	3286	3103	3017	3044	3196	3561	3911	3940	4341	4777	5275	5866	6312	6630	6948	7118	7117	6842	6680	6306	5687	5031	4357
10/22/2021	3727	3433	3277	3202	3223	3375	3668	3966	4140	4481	5010	5563	6156	6686	7132	7404	7500	7339	6954	6618	6095	5630	5077	4472
10/23/2021	3964	3649	3441	3280	3204	3239	3365	3595	3891	4294	4791	5417	6052	6570	6894	7078	7183	6964	6642	6268	5833	5363	4785	4440
10/24/2021	4055	3744	3516	3380	3288	3288	3386	3597	3904	4469	5103	5626	6132	6416	6599	6593	6471	6326	6075	5947	5606	5265	4680	4221
10/25/2021	3882	3619	3489	3402	3457	3680	4063	4557	4775	5076	5434	5907	6469	6667	6796	6969	7047	7060	6920	6795	6401	5804	5245	4581
10/26/2021	4140	3891	3691	3604	3603	3790	4152	4449	4613	4902	5089	5818	6301	6745	6957	7207	7236	7157	6698	6428	5853	5221	4567	3953
10/27/2021	3533	3247	3036	2936	2947	3102	3395	3753	3839	3946	4105	4486	4721	5087	5341	5785	6105	6104	5794	5539	5177	4757	4284	3751
10/28/2021	3419	3219	3104	3030	3059	3344	3787	4153	4362	4656	5288	5568	5950	5849	5927	5778	5814	5872	5847	5922	5691	5357	4966	4362
10/29/2021	3876	3517	3363	3269	3243	3388	3683	4171	4396	4688	4860	5035	5258	5429	5465	5513	5414	5324	5167	5054	4824	4468	4082	3596
10/30/2021	3323	3112	2947	2845	2797	2844	2937	3178	3521	3770	3850	3892	4025	4107	4232	4310	4360	4482	4465	4457	4212	3895	3632	3277
10/31/2021	3052	2868	2755	2669	2676	2729	2834	3034	3298	3533	3755	3872	3980	4102	4282	4453	4588	4586	4352	4231	4241	4022	3607	3171
11/1/2021	2883	2697	2596	2561	2642	2879	3271	3753	3859	3811	3832	3887	3991	4132	4301	4544	4859	5004	5021	5022	4802	4338	3818	3361
11/2/2021	3077	2898	2787	2764	2788	2957	3344	3792	3840	4034	4273	4510	4833	5204	5537	5879	6032	6075	5934	5878	5577	5098	4517	3786
11/3/2021	3335	3077	2933	2793	2815	2998	3419	3823	3977	4157	4277	4595	4973	5357	5706	6016	6198	6191	6024	5916	5553	5052	4515	3839
11/4/2021	3355	3108	2958	2877	2916	3105	3498	3797	3945	4127	4257	4397	4572	4662	4732	4892	5098	5159	5222	5213	4919	4553	4090	3620
11/5/2021	3234	2985	2833	2764	2804	3028	3482	3861	4102	4311	4505	4578	4583	4568	4532	4528	4566	4582	4632	4689	4513	4262	3852	3467
11/6/2021	3083	2936	2814	2751	2730	2783	2946	3348	3736	4110	4313	4341	4356	4268	4133	4008	4107	4190	4313	4490	4405	4149	3823	3411
11/7/2021	3294	3145	2945	2936	2958	3103	3400	3959	4287	4454	4316	4055	3884	3799	3798	3890	4103	4219	4528	4454	4157	3869	3421	3078
11/8/2021	2867	2787	2728	2736	2899	3405	4061	4600	4593	4304	4178	3978	3897	3844	3891	3973	4158	4465	4830	4677	4355	3978	3643	3330

11/9/2021	3076	2983	2872	2900	3092	3488	4157	4588	4400	4165	3990	3934	4025	4140	4244	4361	4519	4760	5041	4818	4494	4101	3657	3220
11/10/2021	3058	2816	2772	2773	2862	3175	3725	4067	4087	4112	4293	4457	4627	4569	4600	4662	4753	5002	5207	4931	4635	4216	3779	3332
11/11/2021	3061	2897	2806	2751	2803	3003	3388	3737	4051	4237	4423	4822	5175	5408	5554	5564	5668	5710	5819	5558	5202	4773	4306	3694
11/12/2021	3304	3072	2918	2842	2850	3079	3511	3871	4131	4311	4479	4632	4796	4928	5030	5041	5074	5101	5262	4967	4646	4305	4030	3491
11/13/2021	3229	2985	2871	2817	2794	2832	2993	3394	3686	3997	4271	4484	4585	4826	4788	4613	4495	4498	4693	4524	4241	3884	3530	3156
11/14/2021	2969	2826	2727	2690	2725	2813	3003	3484	3909	4120	4036	3952	3962	3851	3917	3971	4067	4392	4755	4662	4444	4186	3784	3255
11/15/2021	3135	3016	2961	2994	3129	3592	4277	4781	4731	4497	4250	4100	3948	3947	4017	4110	4301	4571	4949	4760	4522	4216	3841	3408
11/16/2021	3096	2981	2978	2998	3166	3534	4262	4789	4714	4383	4060	3868	3932	4000	4100	4241	4451	4673	4966	4747	4455	4134	3797	3205
11/17/2021	2999	2860	2804	2818	2901	3190	3634	3905	3950	3952	4007	4134	4253	4414	4577	4722	4844	4902	5025	4783	4543	4205	3841	3393
11/18/2021	3101	2913	2859	2783	2842	3084	3480	3845	4080	4206	4320	4427	4525	4577	4641	4686	4759	5068	5202	4976	4715	4415	4030	3537
11/19/2021	3241	3019	2903	2870	2917	3140	3554	3911	4119	4250	4439	4723	4977	5191	5247	5298	5260	5249	5251	4883	4592	4305	3972	3576
11/20/2021	3268	3056	2931	2869	2860	2924	3094	3515	3971	4271	4457	4606	4683	4686	4689	4684	4672	4684	4783	4603	4336	4077	3771	3357
11/21/2021	3111	2916	2756	2707	2705	2757	2916	3247	3624	4071	4360	4637	4887	5021	5089	5074	5066	5243	5366	5152	4775	4441	4028	3608
11/22/2021	3257	3047	2891	2804	2841	3015	3305	3683	4032	4293	4523	4582	4678	4683	4689	4786	4864	5120	5316	5155	4876	4463	4044	3509
11/23/2021	3242	3002	2869	2811	2940	3100	3611	4111	4319	4356	4336	4213	4134	4091	4147	4175	4354	4642	5015	5068	5003	4818	4479	4009
11/24/2021	3779	3639	3642	3773	3972	4413	4880	5273	5297	5085	4822	4493	4347	4237	4181	4213	4348	4589	4851	4869	4661	4399	4015	3625
11/25/2021	3187	3007	3004	3002	3042	3245	3545	3852	4202	4472	4720	4840	4871	4851	4770	4619	4380	4144	4042	4021	3784	3560	3356	3070
11/26/2021	2885	2738	2679	2684	2754	2865	3101	3432	3701	3789	3811	3873	3946	4023	4130	4131	4190	4353	4496	4361	4170	3990	3618	3280
11/27/2021	3091	2912	2823	2849	3017	3306	3675	4257	4516	4605	4505	4121	3851	3708	3691	3789	3878	4135	4405	4442	4432	4327	4098	3843
11/28/2021	3628	3486	3427	3428	3558	3697	3863	4078	4383	4446	4207	4033	3997	4047	4040	4073	4244	4606	4877	4813	4585	4230	3840	3320
11/29/2021	3078	2970	2921	2930	3071	3517	4299	4655	4727	4517	4304	4177	4129	4072	4090	4141	4326	4776	5230	5219	5034	4791	4357	3914
11/30/2021	3628	3574	3753	3890	4190	4651	5353	5717	5557	5098	4649	4333	4115	4017	3964	4076	4326	4774	5261	5261	5107	4819	4471	4061
12/1/2021	3762	3637	3660	3724	3948	4468	5094	5375	5226	4724	4545	4432	4389	4425	4570	4676	4797	5077	5308	5222	5020	4734	4375	3863
12/2/2021	3503	3320	3245	3278	3484	3907	4483	4820	4793	4626	4548	4478	4486	4520	4587	4727	4838	5046	5310	5166	5005	4714	4346	3912
12/3/2021	3289	3299	3370	3458	3684	4017	4602	4965	5048	4893	4702	4584	4585	4619	4682	4796	4864	5017	5143	4962	4798	4547	4298	3917
12/4/2021	3584	3283	3168	3170	3194	3409	3862	4428	4675	4617	4504	4470	4513	4533	4499	4450	4534	4644	4810	4551	4415	4200	3870	3474
12/5/2021	3152	2993	2915	2898	2924	3028	3195	3520	3807	3938	3984	4026	4163	4266	4389	4502	4637	4855	5160	4982	4764	4348	3907	3353
12/6/2021	3033	2873	2750	2756	2862	3183	3749	4245	4288	4281	4391	4460	4705	4848	5067	5188	5306	5523	5751	5594	5226	4749	4173	3553
12/7/2021	3147	2920	2793	2768	2831	3057	3447	3897	4119	4371	4538	4709	4970	5138	5270	5379	5475	5603	5696	5526	5287	4874	4325	3675
12/8/2021	3178	2994	2898	2852	2881	3088	3644	4028	4237	4350	4550	4803	5077	5338	5510	5718	5730	5842	5915	5702	5481	5121	4543	3837
12/9/2021	3380	3130	2998	2959	2968	3185	3711	4158	4349	4560	4715	4857	5076	5256	5483	5584	5639	5718	5873	5631	5312	4900	4399	3733
12/10/2021	3252	2999	2887	2817	2843	3092	3590	3997	4181	4369	4634	4979	5308	5583	5830	6002	6066	5984	5958	5603	5234	4854	4442	3898
12/11/2021	3381	3131	3001	2898	2913	2968	3122	3453	3871	4330	4750	5131	5502	5751	5919	5993	5953	5837	5762	5538	5323	4983	4516	3951
12/12/2021	3585	3212	3046	2929	2855	2899	3031	3361	3872	4386	4870	5129	5473	5714	5849	5917	5853	5831	5891	5662	5430	4971	4452	3862
12/13/2021	3452	3065	2920	2955	3049	3401	3983	4328	4440	4556	4766	5070	5366	5596	5770	5866	5886	5951	6028	5786	5477	5018	4500	3877
12/14/2021	3382	3141	2992	2925	2979	3165	3722	4196	4437	4594	4772	4988	5099	5221	5307	5400	5450	5582	5793	5592	5402	5047	4465	3745
12/15/2021	3221	2997	2882	2838	2893	3235	3734	4196	4434	4599	4795	4890	5106	5215	5352	5402	5501	5627	5770	5638	5435	5022	4477	3897
12/16/2021	3361	3124	3036	2983	3033	3241	3769	4088	4281	4636	4983	5215	5463	5798	5931	5994	6055	6088	6160	5956	5667	5144	4616	4029
12/17/2021	3450	3200	3037	2941	2956	3131	3590	3927	4240	4464	4707	4915	5302	5662	5955	6042	6008	5967	5897	5600	5229	4757	4258	3753
12/18/2021	3412	3169	3054	2947	2924	2993	3158	3398	3776	4144	4563	4826	5121	5440	5660	5764	5751	5681	5714	5580	5272	4944	4491	4025
12/19/2021	3629	3341	3165	3074	3050	3090	3243	3505	3902	4319	4654	4998	5318	5657	5992	6055	5982	5990	5997	5704	5390	4950	4399	3919
12/20/2021	3541	3320	3164	3065	3094	3238	3511	3907	4153	4375	4587	4730	4838	4930	4891	4804	4866	5151	5374	5174	4950	4573	4100	3566
12/21/2021	3217	3008	2918	2861	2891	3041	3440	3868	4144	4412	4549	4579	4631	4645	4625	4653	4736	5056	5313	5205	4924	4576	4150	3624
12/22/2021	3260	3094	2983	2967	3054	3381	3812	4268	4611	4705	4615	4408	4151	4082	3915	3956	4185	4635	5065	5019	4927	4696	4340	3895
12/23/2021	3720	3569	3530	3671	3882	4133	4602	5151	5296	5008	4577	4204	4024	3932	3916	3963	4076	4293	4572	4546	4497	4374	4112	3800
12/24/2021	3530	3309	3219	3242	3316	3570	3977	4363	4628	4753	4581	4381	4367	4371	4458	4558	4580	4697	4872	4572	4296	4072	3886	3543
12/25/2021	3428	3198	3067	3067	3125	3244	3510	3706	4055	4102	4140	4161	4246	4276	4314	4392	4437	4386	4409	4165	3941	3807	3544	3258
12/26/2021	2986	2794	2740	2755	2787	2846	2995	3341	3709	3895	3978	4088	4183	4342	4449	4554	4665	4768	4952	4850	4559	4167	3794	3300
12/27/2021	3073	2919	2790	2765	2806	2992	3379	3705	3896	4027	4155	4264	4425	4545	4725	4873	5008	5091	5321	5125	4798	4448	4010	3449
12/28/2021	3119	2903	2814	2801	2848	3016	3343	3659	3877	4086	4163	4319	4568	4764	4944	5076	5160	5317	5469	5316	4965	4574	4078	3477
12/29/2021	3179	2962	2854	2801	2844	2996	3242	3515	3747	3996	4234	4553	4908	5240	5464	5650	5691	5703	5814	5560	5222	4791	4322	3687
12/30/2021	3319	3048	2926	2855	2859	2925	3172	3510	3836	4104	4368	4646	4881	5162	5477	5712	5827	5789	5827	5552	5214	4768	4336	3744
12/31/2021	3387	3131	2980	2924	2927	3008	3188	3561	3874	4300	4637	4934	5314	5696	6002	6198	6210	6141	6029	5573	5157	4729	4290	3779

TYSP Year 2022
Staff's Data Request # 1
Question No. 5

Year	Month	Actual Peak Demand (MW)	Demand Response Activated (MW)	Estimated Peak Demand (MW)	Day	Hour	System-Average Temperature (Degrees F)
2021	1	7,052	0	7,052	19	8	45.2
	2	8,308	0	8,308	4	8	43.05
	3	7,565	0	7,565	31	17	86.25
	4	7,871	0	7,871	29	18	86.9
	5	8,735	0	8,735	5	18	87.5
	6	9,147	0	9,147	11	17	92.55
	7	9,452	0	9,452	22	17	89.7
	8	9,681	0	9,681	19	17	94.1
	9	8,770	0	8,770	13	17	87.55
	10	8,701	0	8,701	7	17	87.95
	11	6,198	0	6,198	3	17	81.4
	12	6,210	0	6,210	31	17	79
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
	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
	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
	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
	11	6,918	0	6,918	7	16	87.4
	12	5,895	0	5,895	19	8	46

Notes

Temperatures are at hour ended peak hour. System weighted St Petr (45%), Orlando (45%), and Tallahassee (10%).

TYSP Year 2022
Staff's Data Request # 1
Question No. 20

Year	Number of PEVs	Number of Public PEV Charging Stations	Number of Public DCFC PEV Charging Stations.	Cumulative Impact of PEVs		
				Summer Demand	Winter Demand	Annual Energy
				(MW)	(MW)	(GWh)
2022	33,325	*	573	1.45	0.5	24
2023	42,404		926	3.6	1.3	54
2024	52,918		1,438	6.6	1.9	92
2025	65,134		2,128	10.5	2.7	139
2026	79,267		3,035	15.3	3.8	199
2027	95,455		4,170	21.2	5.3	275
2028	114,021		5,459	28.1	7.2	367
2029	135,439		6,867	71.0	9.5	470
2030	160,059		8,382	44.6	12.1	586
2031	188,139		10,018	54.0	14.8	712

Notes

1. Source: Fall 2021 EV Forecast.

Previous EV forecasts only included Light Duty. This version includes Light, Medium, and Heavy Duty forecasts. Light duty is considered passenger vehicles (Class 1 and 2). Medium duty is delivery vehicles (Class 3 - 6 vehicles). Heavy duty are transit, school, haul vehicles (Class 7 and 8).

2. "Number of PEVs" includes total cumulative PEV vehicles which includes Light, Medium, and Heavy duty

3. "Cumulative Impact of PEVs" includes only net-new vehicles beginning January 2022 as used in Load Forecast. Includes Light, Medium, and Heavy duty demand and energy impacts.

4. Summer Demand: August HE 18. Winter Demand: January HE 08

5. * Duke currently forecasts L2 private and public chargers together. Duke is developing a charger forecasting tool that will differentiate between the two in the future.

TYSP Year	2022
Staff's Data Request #	1
Question No.	30

[Demand Response Source or All Demand Response Sources]									
Year	Beginning Year: Number of Customers	Available Capacity (MW)		New Customers Added	Added Capacity (MW)		Customers Lost	Lost Capacity (MW)	
		Sum	Win		Sum	Win		Sum	Win
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
2021	435,109	1,102	1,356	1,612	9	10	2,712	DNA	DNA
Notes									
(Include Notes Here)									

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
2012	401,929	326	639	5,570	6	12	1,762	4	3
2013	405,737	341	652	4,321	5	9	831	1	4
2014	409,227	355	654	3,145	3	7	1,976	2	4
2015	410,396	357	656	6,345	7	13	1,372	2	3
2016	415,369	366	669	8,634	10	19	1,300	1	6
2017	423,900	382	694	9,561	11	20	2,553	3	4
2018	429,403	388	698	6,424	7	13	2,542	3	4
2019	431,862	396	711	6,847	7	14	2,046	2	4
2020	434,807	394	671	2,735	3	6	1,980	2	4
2021	434,663	392	667	1,604	2	3	2,704	4	5
Notes									
(Include Notes Here)									

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
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
2021	63	5	7	0	0	0	0	0	0
Notes									
(Include Notes Here)									

Standby Generation (4)									
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
2012	247	100	96	11	4	4	0	DNA	DNA
2013	253	98	98	12	5	5	4	DNA	DNA
2014	259	103	104	10	5	5	1	DNA	DNA
2015	260	108	109	25	20	20	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	3	3	1	DNA	DNA
2019	178	83	83	1	0	0	3	DNA	DNA
2020	175	80	80	5	2	0	1	DNA	DNA
2021	183	75	75	4	2	2	4	DNA	DNA
Notes									
See note below									

Interruptible Service (5)

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
2012	134	262	179	1	1	1	6	DNA	DNA
2013	135	233	278	4	7	7	3	DNA	DNA
2014	134	256	249	1	15	15	0	DNA	DNA
2015	131	277	283	2	3	3	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
2021	196	602	580	4	6	6	4	DNA	DNA
Notes									
See note below									

Curtailable Service (6)									
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
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	9	0	0	0	0	DNA	DNA
2021	4	28	27	0	0	0	0	DNA	DNA
Notes									
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.

(5) Increase in capacity due to customers added in 2020 that did not add load until 2021 and new customers added in 2021

(6) Due to accounting differences Curtailable Rate Standby Supplemental 3 had not been recorded previously. It has been added in 2021.

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Question No. 31

[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
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
2021	0	0	0	0	0	0	0	0	0	0
Notes										
(Include Notes Here)										

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
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
2021	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
2012	*	*	*	*	*	*	*	*	*	*
2013	*	*	*	*	*	*	*	*	*	*
2014	*	*	*	*	*	*	*	*	*	*
2015	*	*	*	*	*	*	*	*	*	*
2016	*	*	*	*	*	*	*	*	*	*
2017	*	*	*	*	*	*	*	*	*	*
2018	*	*	*	*	*	*	*	*	*	*
2019	*	*	*	*	*	*	*	*	*	*
2020	*	*	*	*	*	*	*	*	*	*
2021	*	*	*	*	*	*	*	*	*	*
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
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
2021	0	0	0	0	0	0	0	0	0	0
Notes										
(Include Notes Here)										

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
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
2021	0	0	0	0	0	0	0	0	0	0
Notes										
(Include Notes Here)										

Curtailable 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
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
2021	0	0	0	0	0	0	0	0	0	0
Notes										
(Include Notes Here)										

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[Demand Response Source or All Demand Response Sources]							
		Summer Peak			Winter Peak		
Year	Average Number of Customers	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)
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
2021	435,108	N	0	0	N	0	0
Notes							
(Include Notes Here)							

Residential Load Management							
		Summer Peak			Winter Peak		
Year	Average Number of Customers	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)
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
2021	434,663	N	0	0	N	0	0
Notes							
(Include Notes Here)							

Commercial Load Management							
		Summer Peak			Winter Peak		
Year	Average Number of Customers	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)
2012	65	*	*	*	*	*	*
2013	65	*	*	*	*	*	*
2014	65	*	*	*	*	*	*
2015	64	*	*	*	*	*	*
2016	64	*	*	*	*	*	*
2017	63	*	*	*	*	*	*
2018	63	*	*	*	*	*	*
2019	63	*	*	*	*	*	*
2020	63	*	*	*	*	*	*
2021	63	*	*	*	*	*	*
Notes							
* Commercial Demand Response is included in Residential Table above							

Standby Generation							
		Summer Peak			Winter Peak		
Year	Average Number of Customers	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)
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
2021	182	N	0	0	N	0	0
Notes							
(Include Notes Here)							

Interruptible Service							
		Summer Peak			Winter Peak		
Year	Average Number of Customers	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)
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
2021	196	N	0	0	N	0	0
Notes							
(Include Notes Here)							

Curtailable Service							
		Summer Peak			Winter Peak		
Year	Average Number of Customers	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)	Activated During Peak? (Y/N)	Number of Customers Activated	Capacity Activated (MW)

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
2021	4	N	0	0	N	0	0
Notes							
(Include Notes Here)							

Loss of Load Probability, Reserve Margin, and Expected Unserved Energy Base Case Load Forecast						
Year	Loss of Load Probability (Days/Yr)	Annual Isolated Reserve Margin (%) (Including Firm Purchases)	Expected Unserved Energy (MWh)	Loss of Load Probability (Days/Yr)	Annual Assisted Reserve Margin (%) (Including Firm Purchases)	Expected Unserved Energy (MWh)
2022	DUKE Energy Florida is required to maintain a 20% Reserve Margin, therefore no LOLP study was conducted.					
2023						
2024						
2025						
2026						
2027						
2028						
2029						
2030						
2031						

Existing Generating Unit Operating Performance

Plant Name	Unit No.	Planned Outage Factor (POF) Historical	Planned Outage Factor (POF) Projected	Forced Outage Factor (FOF) Historical	Forced Outage Factor (FOF) Projected	Equivalent Availability Factor (EAF) Historical	Equivalent Availability Factor (EAF) Projected	Average Net Operating Heat Rate (ANOHR) Historical	Average Net Operating Heat Rate (ANOHR) Projected
ANCLOTE	1	6.27	6.27	1.67	1.67	86.22	86.22	11,556	11,556
	2	2.76	2.76	1.37	1.37	86.78	86.78	11,176	11,176
AVON PARK	P1	0.00	0.00	0.00	0.00	0.00	0.00	0	0
	P2	0.00	0.00	0.00	0.00	0.00	0.00	0	0
BARTOW	P1	3.00	3.00	1.13	1.13	79.93	79.93	15,122	15,122
	P2	1.70	1.70	0.42	0.42	78.19	78.19	16,384	16,384
	P3	2.82	2.82	12.73	12.73	70.32	70.32	12,665	12,665
	P4	2.82	2.82	13.53	13.53	68.79	68.79	15,056	15,056
BARTOW CC	4A	7.51	7.51	8.85	8.85	75.24	75.24	12,287	12,287
	4B	13.13	13.13	1.53	1.53	75.58	75.58	11,265	11,265
	4C	1.63	1.63	18.73	18.73	72.75	72.75	10,120	10,120
	4D	12.29	12.29	2.32	2.32	77.87	77.87	11,570	11,570
	4S	11.51	11.51	1.49	1.49	78.11	78.11	526	526
BAYBORO	P1	1.89	1.89	2.96	2.96	78.93	78.93	17,042	17,042

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Question No. 35

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	755	766	698	709	698	709	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	497	534	490	521	490	521	57.7
HINES ENERGY COMPLEX	2	POLK	CC	NG	December	2003	540	534	532	549	532	549	58.9
HINES ENERGY COMPLEX	3	POLK	CC	NG	November	2005	531	534	523	555	523	555	64.3
HINES ENERGY COMPLEX	4	POLK	CC	NG	December	2007	524	534	516	544	516	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	196	227	193	224	193	224	37.7
BARTOW	P1	PINELLAS	GT	DFO	May	1972	41	48	41	48	41	48	0.2
BARTOW	P2	PINELLAS	GT	NG	June	1972	41	50	41	50	41	50	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	58	45	58	45	58	1.7
BAYBORO	P1	PINELLAS	GT	DFO	April	1973	44	58	44	58	44	58	0.2
BAYBORO	P2	PINELLAS	GT	DFO	April	1973	41	55	41	55	41	55	0.2
BAYBORO	P3	PINELLAS	GT	DFO	April	1973	43	57	43	57	43	57	0.1
BAYBORO	P4	PINELLAS	GT	DFO	April	1973	43	56	43	56	43	56	0.1
DEBARY	P2	VOLUSIA	GT	DFO	December	1975	45	57	45	57	45	57	0.1
DEBARY	P3	VOLUSIA	GT	DFO	December	1975	45	59	45	59	45	59	0.1
DEBARY	P4	VOLUSIA	GT	DFO	December	1975	46	59	46	59	46	59	0.1
DEBARY	P5	VOLUSIA	GT	DFO	December	1975	45	58	45	58	45	58	0.1
DEBARY	P6	VOLUSIA	GT	DFO	December	1975	46	59	46	59	46	59	0.1
DEBARY	P7	VOLUSIA	GT	NG	October	1992	74	93	74	93	74	93	5.9
DEBARY	P8	VOLUSIA	GT	NG	October	1992	75	94	75	94	75	94	4.7
DEBARY	P9	VOLUSIA	GT	NG	October	1992	76	94	76	94	76	94	5.1
DEBARY	P10	VOLUSIA	GT	DFO	October	1992	72	88	72	88	72	88	0.3
INTERCESSION CITY	P1	OSCEOLA	GT	DFO	May	1974	45	61	45	61	45	61	0.2
INTERCESSION CITY	P2	OSCEOLA	GT	DFO	May	1974	46	60	46	60	46	60	0.1

INTERCESSION CITY	P3	OSCEOLA	GT	DFO	May	1974	46	61	46	61	46	61	0.2
INTERCESSION CITY	P4	OSCEOLA	GT	DFO	May	1974	46	62	46	62	46	62	0.2
INTERCESSION CITY	P5	OSCEOLA	GT	DFO	May	1974	45	59	45	59	45	59	0.2
INTERCESSION CITY	P6	OSCEOLA	GT	DFO	May	1974	47	60	47	60	47	60	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	77	95	77	95	77	95	5.3
INTERCESSION CITY	P9	OSCEOLA	GT	NG	October	1993	77	95	77	95	77	95	5.8
INTERCESSION CITY	P10	OSCEOLA	GT	NG	October	1993	74	94	74	94	74	94	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	69	89	69	89	69	89	3.5
INTERCESSION CITY	P13	OSCEOLA	GT	NG	December	2000	71	91	71	91	71	91	5.4
INTERCESSION CITY	P14	OSCEOLA	GT	NG	December	2000	70	90	70	90	70	90	6.0
SUWANNEE RIVER	P1	SUWANNEE	GT	NG	October	1980	48	65	48	65	48	65	4.9
SUWANNEE RIVER	P2	SUWANNEE	GT	DFO	October	1980	48	64	48	64	48	64	0.1
SUWANNEE RIVER	P3	SUWANNEE	GT	NG	November	1980	49	65	49	65	49	65	4.9
UNIVERSITY OF FLORIDA	P1	ALACHUA	GT	NG	January	1994	45	51	44	50	44	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	2029	214	234	214	234	214	234	4.6
Notes													
(Include Notes Here)													

TYSP Year 2022
Staff's Data Request # 1
Question No. 37

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	15
Osceola	1	Osceola	PV	SO	5	2016	3.8	3.8	3.8	3.8	1.7	0	17
Perry	1	Taylor	PV	SO	7	2016	5.1	5.1	5.1	5.1	2.3	0	15
Suwannee	1	Suwannee	PV	SO	12	2017	8.8	8.8	8.8	8.8	4.0	0	21
Hamilton	1	Hamilton	PV	SO	12	2018	74.9	74.9	74.9	74.9	42.7	0	23
Lake Placid	1	Highlands	PV	SO	12	2019	45.0	45.0	45.0	45.0	25.7	0	15
Trenton	1	Gilchrist	PV	SO	12	2019	74.9	74.9	74.9	74.9	42.7	0	25
St. Petersburg Pier	1	Pinellas	PV	SO	12	2019	0.35	0.35	0.35	0.35	0.2	0	15
Columbia	1	Columbia	PV	SO	3	2020	74.9	74.9	74.9	74.9	42.7	0	25
DeBary	1	Volusia	PV	SO	5	2020	74.5	74.5	74.5	74.5	33.5	0	21
Sante Fe	1	Columbia	PV	SO	3	2021	74.9	74.9	74.9	74.9	42.7	0	25
Twin Rivers	1	Hamilton	PV	SO	3	2021	74.9	74.9	74.9	74.9	42.7	0	17
Duette	1	Manatee	PV	SO	10	2021	74.5	74.5	74.5	74.5	42.5	0	21

Notes

**Solar CFs are from: Schedule A-4s or DEF's year-end Solar Plant Operation Status Report filed as requested under docket #20220007.

TYSP Year 2022
Staff's Data Request # 1
Question No. 38

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	(%)
Bay **Trail**	1	Citrus	PV	SO	4	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Sandy Creek	1	Bay	PV	SO	4	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Fort Green	1	Hardee	PV	SO	5	2022	74.9	74.9	74.9	74.9	42.7	0	~28%
Charlie Creek	1	Hardee	PV	SO	8	2022	74.9	74.9	74.9	74.9	42.7	0	~29%
Bay Ranch	1	Bay	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Hildreth	1	Suwannee	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Hardeetown	1	Levy	PV	SO	1	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
High Springs	1	Alachua	PV	SO	2	2023	74.9	74.9	74.9	74.9	42.7	0	~28%
Renewable Energy Center #22	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Renewable Energy Center #23	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Renewable Energy Center #24	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Renewable Energy Center #25	1	Unknown	PV	SO	1	2024	74.9	74.9	74.9	74.9	42.7	0	~28%
Renewable Energy Center #26	1	Unknown	PV	SO	7	2024	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #27	1	Unknown	PV	SO	7	2024	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #28	1	Unknown	PV	SO	7	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #29	1	Unknown	PV	SO	7	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #30	1	Unknown	PV	SO	7	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #31	1	Unknown	PV	SO	7	2025	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #32	1	Unknown	PV	SO	7	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #33	1	Unknown	PV	SO	7	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #34	1	Unknown	PV	SO	7	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #35	1	Unknown	PV	SO	7	2026	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #36	1	Unknown	PV	SO	7	2027	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #37	1	Unknown	PV	SO	7	2027	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #38	1	Unknown	PV	SO	7	2027	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #39	1	Unknown	PV	SO	7	2027	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #40	1	Unknown	PV	SO	7	2028	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #41	1	Unknown	PV	SO	7	2028	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #42	1	Unknown	PV	SO	7	2028	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #43	1	Unknown	PV	SO	7	2028	74.9	74.9	74.9	74.9	18.7	0	~29%
Renewable Energy Center #44	1	Unknown	PV	SO	7	2029	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #45	1	Unknown	PV	SO	7	2029	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #46	1	Unknown	SPS	SO	7	2029	74.9	74.9	74.9	74.9	9.4	9.4	~33%
Renewable Energy Center #47	1	Unknown	SPS	SO	7	2029	74.9	74.9	74.9	74.9	9.4	9.4	~33%
Renewable Energy Center #48	1	Unknown	PV	SO	7	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #49	1	Unknown	PV	SO	7	2030	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #50	1	Unknown	SPS	SO	7	2030	74.9	74.9	74.9	74.9	9.4	9.4	~33%
Renewable Energy Center #51	1	Unknown	SPS	SO	7	2030	74.9	74.9	74.9	74.9	9.4	9.4	~33%
Renewable Energy Center #52	1	Unknown	PV	SO	7	2031	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #53	1	Unknown	PV	SO	7	2031	74.9	74.9	74.9	74.9	9.4	0	~29%
Renewable Energy Center #54	1	Unknown	SPS	SO	7	2031	74.9	74.9	74.9	74.9	9.4	9.4	~33%
Renewable Energy Center #55	1	Unknown	SPS	SO	7	2031	74.9	74.9	74.9	74.9	9.4	9.4	~33%

Notes

Bay Trail, Sandy Creek and Fort Green are under constrcution and are expected to be in service Q2-2022. Charlie Creek is also under construction and expected to be in service Q3-2022. Bay Ranch, Hildreth, Hardeetown and High Springs are expected to be in service Q1-2023. The rest of the units are still in the development or planning stages. *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 2028 and 12.5% for 2029 and beyond.

Nominal, Firm Purchases		
	Firm Purchases	
Year	$/MWh	Escalation %
HISTORY:		
2019	127.45	
2020	138.66	8.8%
2021	156.92	13.2%
FORECAST:		
2022	171.72	
2023	174.26	1.5%
2024	158.12	-9.3%
2025	124.88	-21.0%
2026	82.97	-33.6%
2027	71.14	-14.3%
2028	60.85	-14.5%
2029	70.82	16.4%
2030	78.53	10.9%
2031	85.22	8.5%

TYSP Year 2022
Staff's Data Request # 1
Question No. 41

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
Northern Star Generation	Mulberry	1	Polk	CC	NG	115	115	115	115	115	115	12/1/1994	8/9/2024
Northern Star Generation	Orange Cogen	1	Polk	CC	NG	104	104	104	104	104	104	12/16/1995	12/31/2025
Northern Star Generation	Orlando Cogen	1	Orange	CC	NG	115	115	115	115	115	115	1/7/1994	12/31/2023
General Electric Financial Services	Shady Hills	1-3	Pasco	GT	NG	481	523	481	523	481	523	4/1/2007	4/30/2024
Northern Star Generation	Vandolah Power	1-4	Hardee	GT	NG	654	698	654	698	654	698	6/1/2012	5/31/2027

Notes

(Include Notes Here)

TYSP Year 2022
Staff's Data Request # 1
Question No. 42

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

TYSP Year 2022
Staff's Data Request # 1
Question No. 43

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	ST	Pasco	ST	MSW	23	23	23	23	23	23	1/1/1995	12/31/2024
Pinellas County	Pinellas County Resource Recovery	ST	Pinellas	ST	MSW	54.75	54.75	54.75	54.75	54.75	54.75	1/1/1995	12/31/2024
As Available													
Lake County	Lake County Resource Recovery	ST	Lake	ST	MSW	12.75	12.75	12.75	12.75	N/A	N/A	7/1/2014	N/A
Dade County	Metro-Dade County Resource Recovery	ST	Dade	ST	MSW	43	43	43	43	N/A	N/A	1/1/2014	N/A
Lee County	Lee County Resource Recovery	ST	Lee	ST	MSW	40	40	40	40	N/A	N/A	1/1/2017	N/A
PCS Phosphate	Swift Creek	ST	WH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1/1/1980	N/A
Notes													
(Include Notes Here)													

TYSP Year 2022
Staff's Data Request ‡ 1
Question No. 44

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

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TYSP Year 2022
Staff's Data Request # 1
Question No. 46

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	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	0.014	0.014	6/1/1987	Evergreen	Partial Req'ts	Same
Seminole	N/A	N/A	N/A	N/A	System	N/A	N/A	N/A	N/A	0	50-600	1/1/2021	3/31/2027	Partial Req'ts	Same
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	Same
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	Same
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	Modified
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	Same
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	Expired
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	10/31/2022	Partial Req'ts	Modified

Notes

The Seminole agreements have optionality. The agreements with 50-400 MW listed have a combined maximum of 450 MW through 2030.

A system average product was added for summer and winter of 2021

TYSP Year 2022
Staff's Data Request # 1
Question No. 47

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

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TYSP Year 2022
Staff's Data Request # 1
Question No. 49

Renewable Source	Annual Renewable Generation (GWh)										
	Actual	Projected									
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Utility - Firm	706	1,913	2,882	3,801	4,328	5,060	5,789	6,528	7,260	8,033	8,794
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	545	581	635	0	0	0	0	0	0	0
Purchase - Non-Firm	20	337	337	406	731	819	887	978	1,043	1,131	1,190
Purchase - Co-Firing	0	0	0	0	0	0	0	0	0	0	0
Customer - Owned	522	690	870	1,043	1,152	1,210	1,278	1,359	1,446	1,542	1,641
Total	1,882	3,485	4,670	5,885	6,211	7,089	7,953	8,865	9,749	10,706	11,624
Notes											
(Include Notes Here)											

TYSP Year	2022
Staff's Data Request #	1
Question No.	50

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
Levy	1300	75	Wetlands, flood zones, geotechnical problems, species impacts
Notes			
(Include Notes Here)			

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TYSP Year 2022
Staff's Data Request # 1
Question No. 58

Project Name	Pilot Program (Y/N)	In-Service/ Pilot Start Date (MM/YY)	Max Capacity Output (MW)	Max Energy Stored (MHh)	Conversion Efficiency (%)
USF Microgrid Energy Storage Pilot	Y	7/8/2018	0.25	0.475	88.00%
Trenton	Y	12/21/2021	11	15.6	83.20%
Lake Placid BESS	Y	12/9/2021	17.275	50.6	83.50%
Notes					
(Include Notes Here)					

TYSP Year 2022
Staff's Data Request # 1
Question No. 59

Project Name	Pilot Program (Y/N)	In-Service/ Pilot Start Date (MM/YY)	Projected Max Capacity Output (MW)	Projected Max Energy Stored (MHh)	Projected Conversion Efficiency (%)
Cape San Blas	Y	1Q 2022	5.5	20.5	83.5%
Jennings	Y	2Q 2022	5.5	8.5	84.0%
Micanopy	Y	2Q 2022	8.25	18.2	83.5%
Duke / UCF Long-Duration Energy Storage Project	Y	2Q 2022	0.01	0.04	75.0%
John Hopkins Microgrid	Y	3Q 2022	2.475	23.5	83.5%
Notes					
(Include Notes Here)					

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TYSP Year	2022
Staff's Data Request #	1
Question No.	64

Year		As-Available Energy ($/MWh)	On-Peak Average ($/MWh)	Off-Peak Average ($/MWh)
Actual	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
	2021	34.45	40.53	29.30
Projected	2022	38.63	42.85	35.05
	2023	31.16	34.54	28.31
	2024	27.80	30.64	25.39
	2025	25.04	27.97	22.57
	2026	24.89	28.21	22.08
	2027	24.63	27.41	22.28
	2028	26.80	30.69	23.51
	2029	26.61	29.14	24.47
	2030	27.42	29.81	25.39
	2031	28.32	30.94	26.09

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 December 31, 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 2022
Staff's Data Request # 1
Question No. 65

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

TYSP Year 2022
Staff's Data Request # 1
Question No. 67

Plant	Unit No.	Unit Type	Fuel Type	Capacity Factor (%)										
				Actual	Projected									
				2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Anclote	1	Steam	Gas	22.8	17.2	16.8	27.9	23.6	24.1	20.9	22.0	17.9	19.7	18.1
Anclote	2	Steam	Gas	23.7	12.1	10.7	14.4	14.9	17.2	12.6	13.3	14.3	12.6	12.0
Crystal River	4	Steam	Coal	34.5	39.3	20.5	20.9	15.4	11.5	11.5	15.4	10.5	15.8	12.9
Crystal River	5	Steam	Coal	45.3	40.9	25.7	15.7	12.9	15.0	11.6	14.4	14.1	12.3	12.0
Bartow CC	4	Combined Cycle	Gas	47.6	56.0	61.2	56.4	63.0	61.4	61.9	57.0	61.1	60.2	59.3
Citrus CC	1-2	Combined Cycle	Gas	67.3	81.1	82.3	83.4	79.3	79.7	88.6	84.0	87.3	85.7	81.4
Hines Energy Complex	1-4	Combined Cycle	Gas	60.7	64.0	67.6	66.5	67.9	65.1	63.0	64.3	62.5	60.2	55.6
Osprey CC	1	Combined Cycle	Gas	48.6	43.4	47.5	130.6	73.1	74.6	68.8	70.9	65.6	65.2	66.1
Tiger Bay	1	Combined Cycle	Gas	60.8	61.8	60.5	62.9	49.2	54.9	45.8	56.3	44.4	47.7	55.9
Bartow Peaker	1-4	Gas Turbine	Gas/Oil	1.7	0.8	0.7	0.8	0.3	0.5	0.7	0.7	1.1	1.3	1.3
Bayboro	1-4	Gas Turbine	Oil	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	`
DeBary	2-10	Gas Turbine	Gas/Oil	2.6	1.8	1.9	1.6	1.0	1.2	1.5	1.8	2.7	2.3	2.4
Generic CTs	1	Gas Turbine	Gas									1.1	1.4	0.8
Intercession City	1-14	Gas Turbine	Gas/Oil	3.5	2.9	2.6	2.6	1.5	1.9	2.2	2.7	3.3	2.9	3.1
Suwannee Peaker	1-3	Gas Turbine	Gas/Oil	3.4	2.1	2.1	2.3	1.8	1.9	2.0	2.2	2.5	2.6	2.7
University of Florida	1	Gas Turbine	Gas	80.1	82.5	82.7	82.5	82.4	82.3	91.9	0.0	0.0	0.0	0.0
Solar	1	PV		20.1	28.2	28.2	28.0	28.1	28.2	28.2	28.3	28.4	28.7	28.9
Notes														
(Include Notes Here)														

TYSP Year 2022
Staff's Data Request # 1
Question No. 69

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	698	10/84	CC/IGCC	Project Development
Notes					
(Include Notes Here)					

TYSP Year	2022
Staff's Data Request #	1
Question No.	70

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	698	10/84	CC/IGCC	Project Development
Notes					
(Include Notes Here)					

TYSP Year 2022
Staff's Data Request # 1
Question No. 74

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
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
2031	0	0	0	0
Notes				
(Include Notes Here)				

TYSP Year 2022
Staff's Data Request # 1
Question No. 71

Transmission Line	Line Length (Miles)	Nominal Voltage (kV)	Date Need Approved	Date TLSA Certified	In-Service Date
N/A	N/A	N/A	N/A	N/A	N/A
Notes					
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 2022
Staff's Data Request # 1
Question No. 76

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	1,112	NA	NA	NA	Dispatch Changes	Impacted	NA	NA
Citrus Combined Cycle	CC	NG	1,610	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	698							
Osprey	CC	NG	245	NA	NA	NA	NA	NA	NA	NA
Hines PB1-4	CC	NG	2,061	NA	NA	NA	Dispatch Changes	NA	NA	NA
Notes										
(Include Notes Here)										

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TYSP Year 2022
Staff's Data Request # 1
Question No. 77

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	**4** (1)	TBD	0
Crystal River 5	Steam	Coal	710			0	0			

Notes

(1) Modifications of the CWIS required to comply with requirements of 316b at Crystal River Units 4 and 5 has been completed. Projected costs for the planning period reflect costs of inspecting and maintaining intake screens.

TYSP Year	2022
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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	1,112	NA	NA	NA	NA	TBD	NA	NA
Citrus Combined Cycle	CC	NG	1,610	NA	NA	NA	NA	NA	NA	NA
Crystal River 4	Steam	Coal	712	TBD	TBD	NA	NA	NA	TBD	NA
Crystal River 5	Steam	Coal	698	TBD	TBD	NA	NA	NA	TBD	NA
Osprey	CC	NG	245	NA	NA	NA	NA	NA	NA	NA
Hines 1-4	CC	NG	2,061	NA	NA	NA	NA	NA	NA	NA
Notes										
(Include Notes Here)										

TYSP Year 2022
Staff's Data Request # 1
Question No. 80

Year		Uranium		Coal		Natural Gas		Residual Oil		Distillate Oil	
		GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU
Actual	**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
	2021	0	0	5,042	3.03	34,517	5.28	0	0	61	20.27
Projected	**2022**	0	0	4,986	3.83	33,638	4.43	0	0	4	17.45
	2023	0	0	2,869	3.53	34,745	3.61	0	0	0	16.61
	2024	0	0	2,289	3.54	35,767	3.37	0	0	0	15.93
	2025	0	0	1,761	3.64	36,163	3.20	0	0	1	14.78
	2026	0	0	1,644	3.60	36,249	3.14	0	0	1	13.36
	2027	0	0	1,440	3.44	35,991	3.22	0	0	2	13.34
	2028	0	0	1,859	3.22	35,219	3.37	0	0	2	13.61
	2029	0	0	1,528	3.03	35,109	3.52	0	0	3	13.95
	2030	0	0	1,752	2.82	34,394	3.73	0	0	3	14.35
	2031	0	0	1,548	2.80	33,318	3.84	0	0	4	14.78

Notes

(Include Notes Here)

TYSP Year	2022
Staff's Data Request #	1
Question No.	17
Part	b

Year	Cumulative Customer Owned/Leased Renewable Generation							
	Residential Summer Demand (MW)	Residential Winter Demand (MW)	Commercial Summer Demand (MW)	Commercial Winter Demand (MW)	Industrial Summer Demand (MW)	Industrial Winter Demand (MW)	Total Summer Demand (MW)	Total Winter Demand (MW)
2022	(18.31)	(0.08)	(1.24)	(0.01)	(0.06)	0.00	(19.61)	(0.09)
2023	(46.51)	(1.09)	(3.16)	(0.09)	(0.18)	(0.01)	(49.84)	(1.19)
2024	(73.42)	(2.11)	(5.06)	(0.17)	(0.29)	(0.01)	(78.78)	(2.29)
2025	(87.80)	(2.96)	(6.28)	(0.25)	(0.41)	(0.02)	(94.49)	(3.23)
2026	(96.75)	(3.32)	(6.88)	(0.28)	(0.52)	(0.02)	(104.15)	(3.63)
2027	(107.60)	(3.67)	(7.62)	(0.31)	(0.64)	(0.03)	(115.86)	(4.01)
2028	(120.11)	(4.10)	(8.49)	(0.35)	(0.75)	(0.03)	(129.36)	(4.47)
2029	(134.39)	(4.57)	(9.46)	(0.39)	(0.87)	(0.04)	(144.71)	(5.00)
2030	(149.40)	(5.11)	(10.53)	(0.43)	(0.98)	(0.04)	(160.92)	(5.59)
2031	(164.87)	(5.66)	(11.60)	(0.48)	(1.09)	(0.05)	(177.56)	(6.19)
Notes								
The negative values indicate that customer owned PV is a reduction to projected load								

Year	Cumulative Customer Owned/Leased Renewable Generation			
	Residential Energy Impact (MWh)	Commercial Energy Impact (MWh)	Industrial Energy Impact (MWh)	Total Energy Impact (MWh)
2022	(85,071)	(5,688)	(363)	(91,122)
2023	(252,674)	(16,824)	(1,045)	(270,543)
2024	(414,294)	(27,927)	(1,726)	(443,948)
2025	(514,637)	(35,797)	(2,398)	(552,832)
2026	(568,361)	(39,564)	(3,069)	(610,994)
2027	(631,236)	(43,711)	(3,737)	(678,684)
2028	(706,194)	(48,737)	(4,412)	(759,343)
2029	(787,806)	(54,174)	(5,064)	(847,043)
2030	(877,136)	(60,383)	(5,722)	(943,241)
2031	(968,727)	(66,590)	(6,377)	(1,041,694)
Notes				
The negative values indicate that customer owned PV is a reduction to projected load				

TYSP Year	2022
Staff's Data Request #	1
Question No.	17
Part	c

Year	Cumulative Customer Owned/Leased Renewable Generation Counts			
	Residential Customers	Commercial Customers	Industrial Customers	Total Customers
2022	68,439	728	3	69,170
2023	87,714	872	5	88,591
2024	104,680	1,010	7	105,697
2025	112,115	1,077	9	113,201
2026	118,986	1,127	11	120,124
2027	127,223	1,187	13	128,423
2028	136,559	1,259	15	137,833
2029	147,111	1,339	17	148,467
2030	157,935	1,423	19	159,377
2031	169,291	1,507	21	170,819
Notes				
Historical non-residential data not distinguished between commercial and industrial - assumed all commercial				

TYSP Year 2022
Staff's Data Request # 1
Question No. 83

Year		Coal		Natural Gas		Distillate Oil	
		GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU
Projected	**2021**	10,268	1.79	27,521	3.10	16	9.26
Actual	**2021**	5,042	3.03	34,517	5.28	61	20.27
Notes							
(Include Notes Here)							

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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	2021
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	
2021	45,064											47,180	46,179	44,419	44,322	43,895	43,463	44,555	43,949	43,939	43,103

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%	
2021	45,064											-4.5%	-2.4%	1.5%	1.7%	2.7%	3.7%	1.1%	2.5%	2.6%	4.6%

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	Actual	DEF System Customer Forecast																			
Year	System Customers	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	TYSP 2021
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	1,695,713		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	
2021	1,878,278											1,894,632	1,888,704	1,867,398	1,882,508	1,889,404	1,898,760	1,894,148	1,886,392	1,883,227	1,893,024

	Actual	DEF System Customer Forecast Variances - %																			
Year	System Customers	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	TYSP 2021
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	1,695,713		-2.2%	-3.8%	-4.6%	-5.1%	-6.3%	-5.4%	0.0%	2.0%	2.0%	2.7%									
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%	
2021	1,878,278											-0.9%	-0.6%	0.6%	-0.2%	-0.6%	-1.1%	-0.8%	-0.4%	-0.3%	-0.8%

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TYSP Forecast Error Evaluation Form
Data is NOT weather adjusted

DEF Retail Summer Peak Forecast, No DR Activated

Year	Actual Retail Summer Peak (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	TYSP 2021
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	
2021	8,671											10,050	10,136	9,952	9,934	9,746	9,336	9,000	8,917	8,820	8,693

DEF Retail Summer Peak Forecast Variances - %

Year	Actual Retail Summer Peak (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	TYSP 2021
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%	
2021	8,671											-13.7%	-14.5%	-12.9%	-12.7%	-11.0%	-7.1%	-3.7%	-2.8%	-1.7%	-0.3%

	Actual Retail	**DEF Retail Winter Peak Forecast, No DR Activated**																			
Year	**Winter Peak (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**	**TYSP 2021**
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	
2021	7,629											10,312	10,434	10,029	10,064	9,886	9,411	9,435	9,157	9,322	8,720

	Actual	**DEF Retail Winter Peak Forecast Variances - %**																			
Year	**Retail Winter Peak (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**	**TYSP 2021**
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%	
2021	7,629											-26.0%	-26.9%	-23.9%	-24.2%	-22.8%	-18.9%	-19.1%	-16.7%	-18.2%	-12.5%

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

Year	Act System Summer Pk (MW)	DEF System 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	TYSP 2021
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	
2021	9,681											10,856	11,828	10,823	10,780	10,098	10,051	9,816	9,880	9,783	9,434

Year	Actual Summer Peak (MW)	DEF System 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	TYSP 2021
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%	
2021	9,681											-10.8%	-18.2%	-10.6%	-10.2%	-4.1%	-3.7%	-1.4%	-2.0%	-1.0%	2.6%

	Act System Winter Peak	**DEF System Winter Peak Forecast, No DR Activated**																			
Year	**(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**	**TYSP 2021**
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	
2021	8,308											10,856	11,828	11,367	11,363	10,894	10,070	10,154	9,870	10,035	9,376

	Actual Winter	**DEF System Winter Peak Forecast Variances - %**																			
Year	**Peak (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**	**TYSP 2021**
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%			
2020	8,407										-30.2%	-27.2%	-27.9%	-25.4%	-26.2%	-24.7%	-21.6%	-20.8%	-19.4%	-20.5%	
2021	8,308											-23.5%	-29.8%	-26.9%	-26.9%	-23.7%	-17.5%	-18.2%	-15.8%	-17.2%	-11.4%