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FPSC - COMMISSION CLERK

May 18, 2020

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

Re: Docket No. 20200000-OT
GRU's Response to TYSP Supplemental Data Request #1

Dear Sir/Madam,

Gainesville Regional Utilities hereby submits its electronic version of the Public Service Commission's Ten-Year Site Plan Supplemental Data Request #1. The Excel tables and other documents requested were emailed to Mr. Doug Wright, Engineering Specialist.

Please let me know if you have any questions regarding this document.

Sincerely,

/s/Jamie Verschage
Managing Analyst
Gainesville Regional Utilities

General Items

1. Please provide an electronic copy of the Company's Ten-Year Site Plan (TYSP) for the period 2020-2029 (current planning period) in PDF format.

   The TYSP was provided via email.

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

   Spreadsheet versions of the Ten-Year Site Plan Schedules were provided via email.

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

   This data was provided in the attached Microsoft Excel file.

Environmental Compliance Costs

4. Please explain if the Company assumes CO_2 compliance costs in the resource planning process used to generate the resource plan presented in the Company's current planning period TYSP. If the response is affirmative:

   No, GRU does not assume CO2 compliance costs in its resource planning process.

   a. Please identify the year during the current planning period in which CO_2 compliance costs are first assumed to have a non-zero value.
   b. **[Investor-Owned Utilities Only]** Please explain if the exclusion of CO_2 compliance costs would result in a different resource plan than that presented in the Company's current planning period TYSP.
   c. **[Investor-Owned Utilities Only]** Please provide a revised resource plan assuming no CO_2 compliance costs.

Flood Mitigation

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

   GRU has storm checklists and procedures for each generating plant. These procedures include items such as pumping down containments and ashponds as much as possible to prepare them to be able to accept additional water; inspecting sumps to ensure pumps

are properly working; and assuring sandbags are kept at the ready (in some sites). The Deerhaven generating station and the Deerhaven Renewable Generating Station have heavy equipment onsite that can be used to move dirt if a pond is in danger of cresting. Additionally, GRU has identified locations where water could be directed temporarily so that it could be pumped back to ponds for processing. Deerhaven also has a large diesel-driven pump that can be run to move water very quickly. The John R. Kelly generating station is elevated above the adjacent creek and sloped so that stormwater will route off plant site.

GRU's substations are sited in areas with well-draining soil. The substations are built with pervious ground covers such as limestone rocks and with a slope to facilitate water drainage. Transformers and switchgear are placed upon concrete pads to mitigate the risk of flood intrusion. Although GRU has not had an occurrence of flooding becoming an issue at substations, GRU has access to vacuum trucks and portable pumps through GRU's wastewater department. GRU requires a review of projects where transmission and/or substation facilities may be impacted. GRU may require flood mitigation or alternative designs to minimize potential impact in accordance with GRU's Right of Way Guidelines.

Load & Demand Forecasting

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

   GRU is not an investor-owned utility.

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

   This data was provided in the attached Microsoft Excel file.

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

GRU utilizes climatological data from the weather station located at the Flight Service Station at the Gainesville Regional Airport. The National Weather Service call ID is GNV, and the WBAN number is 12816. The values reported in the provided table represent the daily minimum temperature for peak loads deemed to be related to space heating, and the daily maximum temperature for peak loads deemed to be related to space cooling, respectively.

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

   GRU's forecast methodology is described in detail on pages 11-20 of its 2020 Ten Year Site Plan. The forecast is developed in-house, using least squares regression techniques against annual data for each customer billing class. This is sometimes referred to as a bottom-up approach. GRU has consistently used this methodology for more than 10 years.

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

    There are no matters before the FPSC that reference this forecast.

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

    GRU's responses to questions 11 and 12 are combined here. GRU evaluates historical forecast error for number of retail customers, retail net energy for load, and retail summer peak demand. GRU is a summer peaking system and we have not conducted this same evaluation for winter peak demand. A spreadsheet showing the data and analysis is attached separately. We have reviewed historical forecast error over the past 20, 10, and 5-year periods. Several events transpired since the mid-late 2000's that make the recent 10 years most relevant. Notable examples include GRU's adoption of aggressive conservation programs in 2007; the Great Recession of 2008; GRU's first and only addition of generation capacity since 2001 with the DHR biomass facility in 2013; and energy efficiency improvements associated with Federal government codes and standards. A summary of GRU's analysis of historical forecast error is shown here.

GRU Historical Forecast Error			
Total Retail Customers			
	20 Year	10 Year	5 Year
	2000-2019	2010-2019	2015-2019
Average Forecast Error	-3.9%	-1.3%	0.1%
Standard Deviation	3.7%	1.8%	0.6%
Retail Net Energy for Load			
	20 Year	10 Year	5 Year
	2000-2019	2010-2019	2015-2019
Average Forecast Error	-12.0%	-2.1%	0.7%
Standard Deviation	10.3%	3.2%	2.9%
Retail Summer Peak Demand			
	20 Year	10 Year	5 Year
	2000-2019	2010-2019	2015-2019
Average Forecast Error	-12.3%	-3.9%	-3.4%
Standard Deviation	10.8%	3.4%	3.1%

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

Please see discussion above.

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

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

Please see discussion above in question 11.

a. If your response is affirmative, please explain the method used in your evaluation, and provide the corresponding results, including work papers, in Microsoft Excel format for the analysis of each forecast presented in the TYSPs filed with the Commission

during the 20-year period prior to the current planning period. If your Company limits its analysis to a period shorter than 20 years prior to the current planning period, please provide what analysis you have and a narrative explaining why your Company limits its analysis period.

Please see discussion above in question 11.

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

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13. Please explain any historic and forecasted trends in:

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

GRU forecasts number of customers separately for residential and three non-residential customer groups. In consideration of rate migration between non-residential customer groups, they will be discussed collectively here. The primary explanatory variable for determining projected number of customers are estimates of Alachua county population. Over the past 10 years, residential customer growth has averaged 0.67% per year. Over the next 10 years, residential customer growth is projected to average 0.57% per year. Over the past 10 years, non-residential customer growth has averaged 0.94% per year. Over the next 10 years, non-residential customer growth is projected to average 0.96%.

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.

Residential consumption per customer declined 0.85% per year over the past 10 years. Over the first 10 years of our forecast, residential consumption per customer is projected to decline at a rate of 0.21% per year. Non-residential consumption per customer declined 0.70% per year over the past 10 years. From 2020-2029, non-residential consumption per customer is projected to decline at a rate of 0.19% per year. Some of the factors believed to effect consumption per customer include the 2008 Recession, increased price for electricity, and improved building envelopes and energy efficiency standards (regulatory) and measures (utility induced).

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

Company's demand management program(s) and conservation/energy-efficiency program(s) impact the growth/decline of the trends.

GRU is responding to this question in the context of retail energy sales because various wholesale loads included in our NEL were not consistent from 2010-2019, nor will these wholesale loads be consistent over the next 10 years. Retail energy sales were virtually flat at 0.04% per year growth over the past 10 years. GRU forecasts retail energy sales to increase at a rate of 0.58% per year over the next 10 years. This growth is positively influenced by customer growth and offset negatively by consumption per customer.

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

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

    Demand, on a per customer basis, was reduced over the past 10 years from factors such as appliance efficiency improvements and to a lesser extent solar net metering. These trends are expected to continue, but the adoption of electric vehicles will in some form likely increase demand per customer.

    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.

    GRU does not currently utilize any demand response measures.

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

    Overall total demand is projected to remain at its current level for at least 10 years due to the planned expiration of a wholesale contract in 2022.

    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.

    Retail summer peak demand is projected to increase at a rate of 0.58% per year over the next 10 years. This increase is largely the result of anticipated customer growth.

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

A long-standing wholesale customer load ended in 2012. In 2015 a new wholesale load was added through 2018. Delivered electricity price increases, partly associated with GRU's increased involvement in renewable energy have likely put downward pressure on load and sales growth over the past 15 years.

16. Please refer to the Company's respective Utility Perspective section in the Commission's "Review of the 2019 Ten-Year Site Plans of Florida's Electric Utilities." Please answer your Company's respective questions below regarding the growth of customers and retail energy sales, of which the associated figure in the Utility Perspective section is based on the values reported on Schedule 2 of your respective Company's 2019 TYSP:

FPL:

a. Please explain, in general, why the Company's growth rate of retail energy sales lags the growth rate of customers starting in 2011.

b. Please explain why the divergence in the growth rates of customers and retail energy sales increases during the forecast period.

c. Please identify the drivers which contribute to the sharp fall in the growth rate of retail energy sales in the period 2011-2012 and the decline in the growth rate in 2017, respectively.

DEF:

a. Please explain, in general, why the Company's growth rate of retail energy sales lags the growth rate of customers starting in 2011.

b. Please explain why the divergence in the growth rates of customers and retail energy sales increases during the forecast period.

c. Please identify the drivers which contribute to the sharp fall in the growth rate of retail energy sales in the period 2011-2013, the decline in the growth rate in 2017, and the projected decline in the growth rate in 2019, respectively.

TECO:

a. Please explain, in general, why the Company's growth rate of retail energy sales lags the growth rate of customers.

b. Please explain why the divergence in the growth rates of customers and retail energy sales increases during the forecast period.

c. Please identify the drivers which contribute to the sharp fall in the growth rate of retail energy in 2011.

GPC:

a. Please explain, in general, why the Company's growth rate of retail energy sales lags the growth rate of customers starting in 2012.

b. Please explain why the divergence in the growth rates of customers and retail energy sales increases during the forecast period.

c. Please identify the drivers which contribute to the sharp fall in the growth rate of retail energy sales in the period 2011-2013, the decline in the growth rate in 2017, and the increase in the growth rate in 2018, respectively.

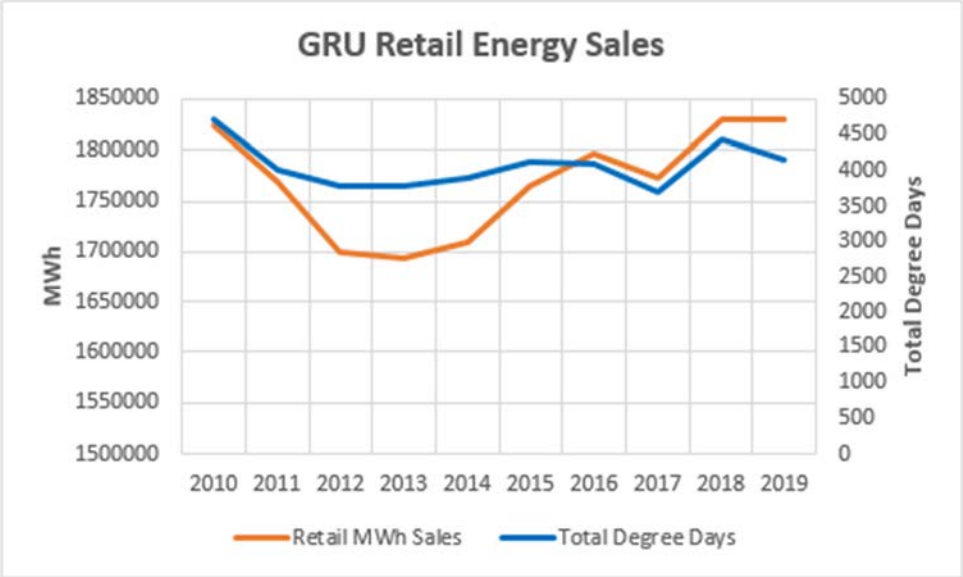
GRU:

a. Please explain, in general, why the Company's growth rate of retail energy sales lags the growth rate of customers starting in 2011.

Year-over-year variation in consumption per customer is positively correlated to climate conditions. 2010 was an extremely cold winter and total degree days were the highest of any year on record. In general, consumption per customer is declining slightly, under average weather conditions, while customer growth is not impacted by climate and is steadily increasing at a modest rate.

b. Please identify the drivers which contribute to the sharp fall in the growth of retail energy sales in the period 2011-2014 and the decline in the growth rate in 2017, respectively.

Changes in energy sales during this period are a function of total degree days.



JEA:

a. Please explain, in general, why the Company's growth rate of retail energy sales lags the growth rate of customers starting in 2011.

b. Please explain why the divergence in the growth rates of customers and retail energy sales increase during the forecast period.

c. Please identify the drivers which contribute to the sharp fall in the growth rate of retail energy sales in the period 2011-2013, and the decline in the growth rate in 2017, respectively.

LAK:

a. Please explain, in general, why the Company's growth rate of retail energy sales is projected to lag the growth rate of customers starting in 2020.

b. Please explain why the divergence in the growth rates of customers and the retail energy sales is projected to increase during the forecast period.

c. Please identify the drivers which contribute to the sharp fall in the growth rate of retail energy sales in the period 2011-2012, and the relatively high growth rates in 2015 and 2018, respectively.

OUC:

a. Please explain, in general, why the Company's growth rate of retail energy sales lags the growth rate of customers.

b. Please identify the drivers which contribute to the decline in the growth rate of retail energy sales in 2012 and 2017, respectively.

SEC:

a. Please explain, in general, why the Company's growth rate of retail energy sales lags the growth rate of customers starting in 2011.

b. Please identify the drivers which contribute to the sharp fall in the growth rate of retail energy sales in the period 2010-2014, and the decline in the growth rate in 2017, respectively.

TAL:

a. Please explain, in general, why the Company's growth rate of retail energy sales lags the growth rate of customers starting in 2012.

b. Please explain why the divergence in the growth rates of customers and retail energy sales is projected to increase during the forecast period.

c. Please identify the drivers which contribute to the sharp fall in the growth rate of retail energy sales in the period 2010-2013, and the decline in the growth rate in 2017, respectively.

17. **[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.

    GRU is not an investor-owned utility.

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?

Yes, plug-in electric vehicles were included in the demand and energy forecasts for the current planning period. GRU used a bottom-up approach to forecast the number of plug-in electric vehicles that would owned within its service territory over the next ten years, and then assigned energy and demand contributions on a per-vehicle basis. These figures were then manually added to GRU's energy and demand forecast.

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.

GRU estimates there are 350 EVs in GRU's service area based on an extrapolation of 2019 DMV data. GRU assumed 5 kW of demand and 300 kWh/month of consumption for each vehicle, and assumed a 50% coincidence of vehicle charging demand with peak load.

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

The number of public charging stations and the demand and energy impacts associated with PEV charging is shown in the Excel file portion of this data request.

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.

GRU does not currently have any programs or tariffs specifically marketed to PEVs. It is likely that during the current planning period a rate structure may be offered to incentivize PEV charging during off-peak periods.

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

N/A

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

N/A

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

When a customer requests a new electric service for a charging station, GRU is made aware of the installation. If an existing customer adds a charging station behind an existing electric service, it is unlikely GRU will be made aware of the work.

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.

There have been no known instances where an upgrade to GRU's distribution system was required resulting from the use of electric vehicles, other than the installation of the transformer to provide the electric service.

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.

GRU is a member of Drive Electric Florida (DEF), a coalition of companies interested in supporting and accelerating the adoption of plug-in vehicles in Florida. DEF fosters collaboration and sharing demographics and developments in the electric vehicle adoption.

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?

GRU does not have any processes or technology in place to determine if a customer installs an electric vehicle charging station in their home. Currently GRU's Executive Team is considering an EV incentive that would allow tracking of residential charging stations.

26. **[FEECA Utilities Only]** For each source of demand response, please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing annual 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.

GRU is not a FEECA utility.

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

GRU is not a FEECA utility.

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

GRU is not a FEECA utility.

Generation & Transmission

29. Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each utility-owned traditional generation resource 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.

This information is provided in the attached Excel file.

30. Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each utility-owned 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.

GRU has no traditional generation planned to come online within the current planning period.

31. Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each utility-owned renewable generation resource 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.

This information is provided in the attached Excel file.

32. Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each utility-owned renewable generation resource planned for in-service within the current planning period. For multiple small (<250 kW per installation) distributed resources of the same type and fuel

source, please include a single combined entry. For projected capacity factor, use the net capacity as a basis.

GRU has no utility-owned renewable generation resource planned for in-service within the current planning period.

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

N/A

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

There were no planned renewable resources that were cancelled or delayed.

34. Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each purchased power agreement with a traditional generator 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.

GRU had no traditional PPAs as of December 31st.

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

GRU does not have any existing or planned power purchase agreements for traditional generation.

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

36. Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each purchased power agreement with a renewable generator 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.

This information is provided in the attached Excel file.

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

This information is provided in the attached Excel file.

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

The project will be 50 MW (AC) and will connect to GRU's Parker Road substation. The project will also include a 12 MW/24 MWh battery storage system to be used for ramp rate control of the facility's output. GRU will have a 20-year PPA with Origis.

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

There were no renewable energy purchased power agreements that were cancelled, expired, delayed, or modified during the past year.

39. Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on each power sale agreement 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.

This information is provided in the attached Excel file.

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

There are no power sale agreements that will begin within the planning period.

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

N/A.

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

There have been no long-term power sale agreements within the past year that were cancelled, expired, or modified.

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

This information is provided in the attached Excel file.

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

GRU is not an investor-owned utility.

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

GRU encourages the installation of customer-owned PV systems. Customers have the ability to offset their kWh consumption in GRU's net metering program. GRU customers accrue their excess kWh monthly and have an annual true up each year; the true up is a cash credit on their utility bill.

45. **[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.

GRU is not an investor-owned utility.

46. 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.

GRU does not consider solar PV to contribute to seasonal peaks; instead, GRU views these systems as lowering GRU's electric demand.

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

GRU has not tracked the cost of energy storage technologies.

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

GRU has not noted progress in the development of non-lithium battery storage.

49. 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).

GRU has not considered the optimal position of energy storage in the company's system.

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

Customers (ratepayers) have not expressed a specific in energy storage technologies.

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

GRU does not have energy storage projects.

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

GRU does not have energy storage projects.

53. 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.

GRU may consider energy storage as part of a utility-scale solar PV project within the next five years. The costs and benefits of this energy storage will be evaluated at the time the proposals for the PV project are evaluated.

54. 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.

GRU has found the current cost of utility-scale energy storage to outweigh the benefits to the System.

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.

GRU has found the current cost of utility-scale energy storage to outweigh the benefits to the System.

55. 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.

GRU does not have any programs that allow customers to contribute towards a specific renewable project.

56. 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.

GRU does not have any research and development of utility power technologies.

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

    GRU is not an investor-owned utility.

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

    GRU does not have any planned conventional generation units.

59. 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.

    GRU does not have any planned conventional generation units.

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

    This information is provided in the attached Excel file.

61. **[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.

    GRU is not an investor-owned utility.

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

    GRU has no potential candidates for repowering.

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

This information is provided in the attached Excel file.

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

There are no planned transmission projects.

Environmental

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

The actions detailed below were initiated several years ago and continue to be in place to assure compliance for future years.

Air: With respect to the MATS rule on Deerhaven Unit 2, GRU installed a PM CEMS to measure and verify compliance with the filterable particulate limit and a Mercury CEMS to facilitate the operation of the Air Quality Control System (AQCS) for removal of mercury from the flue gas to assure compliance.

Water: The ever more restrictive copper WQS prompted the evaluation of the discharges from the J. R. Kelly Generating Station and resulted in a change in operations and the chemicals used at the facility. Additionally, the NNC rule caused a review of the discharges to Sweetwater Branch and ultimately resulted in the hiring of a consultant to perform data collection, analysis, and modelling to demonstrate compliance for nutrient discharges and a site specific limit.

Waste: The CCR rule has necessitated a review of the ash and scrubber product handling at the Deerhaven Generating Station. This involves geologic and hydrogeologic testing of

the ash ponds and ash landfill structural integrity. Additionally, weekly, monthly and annual inspections have been performed as required.

The regulations discussed above are not expected to impact dispatch, curtailments, or retirements.

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

       No impact at this time.

    b. What compliance strategy does the Company anticipate employing for the rule?

       No impact at this time.

    c. If the strategy has not been completed, what is the Company's timeline for completing the compliance strategy?

       No impact at this time.

    d. Will there be any regulatory approvals needed for implementing this compliance strategy? How will this affect the timeline?

       No impact at this time.

    e. Does the Company anticipate asking for cost recovery for any expenses related to this rule? Please complete and return, in Microsoft Excel format, the table associated with this question found in the Excel Tables Spreadsheet by providing information on the costs for the current planning period.

       No, GRU is a municipal utility and is not entitled to cost recovery.

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

67. Explain any expected reliability impacts resulting from each of the EPA rules listed below. As part of your explanation, please discuss the impacts of transmission constraints and changes to units not modified by the rule that may be required to maintain reliability.
    a. Mercury and Air Toxics Standards (MATS) Rule.

       No impacts are anticipated.

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

       No impacts are anticipated, CSAPR does not apply in Florida

c. Cooling Water Intake Structures (CWIS) Rule.

No impacts are anticipated.

d. Coal Combustion Residuals (CCR) Rule.

No impacts are anticipated.

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

No impacts are anticipated.

f. Affordable Clean Energy Rule.

No impacts are anticipated.

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

No impacts are anticipated.

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

See Excel spreadsheet.

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

See Excel spreadsheet.

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

See Excel spreadsheet.

71. 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.

None at this time.

Fuel Supply & Transportation

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

This information is provided in the attached Excel file.

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

GRU fuel price forecasts are a hybrid of internal contract pricing terms and independent projections available from private and governmental agency sources. GRU constructs short term (1-5 years) pricing models with price/cost factors that are extracted from existing contracts. The historical price performance, escalation factors, and the historical delivered quality are used to project delivered cost for natural gas, coal, biomass and environmental commodities. Existing contracts for natural gas pipeline and rail transportation are also modelled using contract and tariff terms.

The short term forecast are then converted to long term forecasts by using escalation factors that are available from recognized, independent sources such as PIRA and the Energy Information Administration. This approach which accounts for the specific contract factors that affect GRU in the short term coupled with recognition of broad

industry escalation factors over the long term yield what GRU believes to be a conservative, realistic platform for long term planning.

74. 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

GRU has historically supplied most of its requirements using high quality bituminous coal from Central Appalachia. The transport distances and rail rates for moving Eastern coal into Florida have previously made this producing region the most competitive source for GRU. Recent declines in the price of natural gas and reduced coal demand due to coal plant closures have pushed eastern coal prices to historical lows. At these low prices, GRU expects to continue to see producer bankruptcies, mine closures and liquidation of smaller miners. The result of this environment in Central and Northern Appalachia may eventually result in reduced supply, reduction of certain qualities in the market and increased supply risk for utilities.

GRU expects that in the near and long term, GRU will have to diversify its sourcing with less reliance on Central Appalachia. While GRU will maintain some presence in Central Appalachia, increasing supply will be purchased in Northern Appalachia, Illinois Basin and offshore. In addition, the risk will also be mitigated by increased use of gas, biomass and purchased power.

    b. Natural Gas

The primary factors that will impact the price of natural gas for generation during the 2020-2029 timeframe are (1) shale gas production and supply (2) market perception of the adequacy of supply and level of demand (3) regulatory impact from legislation regarding fracking (4)regulatory impact of environmental legislation on generation from coal plants and (5) the impact of LNG exports on US supply and demand. In the near term, natural gas prices are expected to be in the range of $2.00 - $3.25/MMBtu.

    c. Nuclear

Not applicable

    d. Fuel Oil

Due to current and projected prices during the 20209-2029 time period, GRU does not project any significant use of heavy or light fuel oils for base load generation. Heavy and light fuels oils are maintained in inventory as emergency or backup fuels.

e. Other (please specify each, if any)

Biomass --- In November 2017, GRU purchased the biomass plant from the company with which it held a 30-year PPA. GRU is currently contracted with the same subcontractor to procure fuel as under the PPA to assure a continuity of service and supply. The subcontractor historically contracts for short and long-term contracts of varying lengths to balance reliability of supply and to take advantage of favorable market prices. Academic studies from the University Of Florida, College Of Forestry, have determined that there is adequate supply of fuel for continuous operation of the plant. A recent closure of a nearby biomass plant has resulted in even more available fuel supply and lower prices.

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

GRU has an existing contract with Florida Gas Transmission for FTS-1 pipeline transport capacity. GRU has also extended its contract for FTS-2 pipeline transport capacity service. Given projected system requirements for natural gas, GRU is confident that adequate firm pipeline capacity service is under contract in volumes sufficient to meet requirements during the 2020-2029 planning period.

76. 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.

GRU has an existing contract with Florida Gas Transmission for FTS-1 pipeline transport capacity. GRU also recently extended its contract for FTS-2 pipeline transport capacity service. Given projected system requirements for natural gas, GRU is confident that adequate firm pipeline capacity service is under contract in volumes sufficient to meet requirements during the 2020-2029 planning period. In addition, GRU is evaluating the possibility of adding gas generation to the Deerhaven site and will determine if physical pipeline improvements will be required to support increase gas consumption.

77. 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.

Given the substantial increase in the resource base and production growth for the Lower 48 States as a result of shale gas fracking, GRU does not anticipate that the development and growth of LNG exports will significantly affect availability of natural gas. The primary potential effects that GRU expects to see in the market will be potential increases in the pricing of natural gas at the wellhead and the volatility of that price.

Various energy consulting firms and government agencies have modelled economic scenarios with assumptions on natural gas production, different levels of permitting and construction of LNG facilities in the US, production and retirement of coal capacity, growth of renewable fueled capacity, US economic activity and global demand for LNG in an effort to predict the impact on domestic natural gas prices. While there is a range of projected prices, the bulk of such studies agree that there will be modest increased prices for gas users. The remaining question is the magnitude of price increases and the volatility of pricing.

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

While GRU continually evaluates available storage facilities, pipeline interconnection logistics and storage costs, GRU does not currently project the use of firm natural gas storage during the period. GRU does not exclude the possibility that firm natural gas storage may become economically and logistically feasible for GRU in the future.

79. 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.

The primary factor that will impact the price of GRU coal transportation during the 2020-2029 time period will be the expiration of the existing long term rail transport contract with CSX in 2019. Prices for Deerhaven coal supplies have been stable and competitive under the terms of the contract. Expiration of the contract will result in substantial escalation from the current long-term rates to current market rates. However, the availability of alternative generation to coal and purchased power will also be factors that limit the cost impact of rail transportation.

80. 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.

Since the addition of the Air Quality Control System for Deerhaven Unit 2 in 2009, GRU has been able to blend coals of different types and still meet all environmental requirements.

81. 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.

Not applicable.

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

Not applicable.

Existing Generating Unit Operating Performance

Plant Name	Unit No.	Planned Outage Factor (POF, %)		Forced Outage Factor (FOF, %)		Equivalent Availability Factor (EAF, %)		Average Net Operating Heat Rate (ANOHR)	
		Historical	Projected	Historical	Projected	Historical	Projected	Historical	Projected
John R. Kelly	CC1	10	10	7	7	82	82	8,597	8,597
Deerhaven	CT1	2	2	1	1	97	97	31,609	31,609
Deerhaven	CT2	2	2	1	1	96	96	60,801	60,801
Deerhaven	CT3	17	17	3	3	80	80	14,243	14,243
Deerhaven	DH1	6	6	1	1	91	91	14,010	14,010
Deerhaven	DH2	11	11	3	3	81	81	13,093	13,093
Deerhaven Renewable	DHR	5	5	2	2	63	63	13,182	13,182

NOTE: Historical - average of past three years
Projected - average of next ten years

Nominal, Firm Purchases

Year	Firm Purchases $/MWh	Escalation %
HISTORY:		
2017		
2018		
2019		
FORECAST:		
2020	**GRU has no contracted purchases in its planning horizon, apart from renewable energy PPAs listed in other tabs.**	
2021		
2022		
2023		
2024		
2025		
2026		
2027		
2028		
2029		

Financial Assumptions
Base Case

AFUDC RATE	3.80%	%
CAPITALIZATION RATIOS:		
DEBT	43	%
PREFERRED		%
EQUITY	57	%
RATE OF RETURN		
DEBT	3.75%	%
PREFERRED		%
EQUITY		%
INCOME TAX RATE:		
STATE		%
FEDERAL		%
EFFECTIVE		%
OTHER TAX RATE:		%
DISCOUNT RATE:		%
TAX		
DEPRECIATION RATE:		%

Financial Escalation Assumptions

Year	General Inflation %	Plant Construction Cost %	Fixed O&M Cost %	Variable O&M Cost %
2020	2.25%	2.25%	2.25%	2.25%
2021	2.25%	2.25%	2.25%	2.25%
2022	2.25%	2.25%	2.25%	2.25%
2023	2.25%	2.25%	2.25%	2.25%
2024	2.25%	2.25%	2.25%	2.25%
2025	2.25%	2.25%	2.25%	2.25%
2026	2.25%	2.25%	2.25%	2.25%
2027	2.25%	2.25%	2.25%	2.25%
2028	2.25%	2.25%	2.25%	2.25%
2029	2.25%	2.25%	2.25%	2.25%

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)
2020		48%			48%	
2021		47%			47%	
2022		57%			57%	
2023		44%			44%	
2024		43%			43%	
2025		42%			42%	
2026		41%			41%	
2027		32%			32%	
2028		31%			31%	
2029		30%			30%	

TYSP Year	2020
Staff's Data Request #	1
Question No.	7

Year	Month	Actual Peak Demand (MW)	Demand Response Activated (MW)	Estimated Peak Demand (MW)	Day	Hour	System-Average Temperature (Degrees F)
2019	1	333	0	333	31	8	32
	2	276	0	276	21	19	89
	3	280	0	280	7	8	33
	4	328	0	328	30	18	91
	5	420	0	420	28	17	101
	6	422	0	422	25	17	95
	7	429	0	429	2	17	96
	8	418	0	418	22	18	91
	9	416	0	416	9	18	95
	10	364	0	364	1	17	92
	11	286	0	286	7	18	86
	12	283	0	283	19	8	34
2018	1	410	0	410	18	8	21
	2	280	0	280	21	20	86
	3	272	0	272	15	8	29
	4	275	0	275	23	19	87
	5	343	0	343	11	18	87
	6	402	0	402	25	18	95
	7	398	0	398	2	18	96
	8	407	0	407	7	18	96
	9	408	0	408	19	18	96
	10	380	0	380	16	17	92
	11	299	0	299	7	19	87
	12	319	0	319	12	8	29
2017	1	333	0	333	9	8	25
	2	268	0	268	28	20	85
	3	304	0	304	16	8	25
	4	374	0	374	28	18	95
	5	385	0	385	29	18	94
	6	391	0	391	26	17	93
	7	409	0	409	5	17	95
	8	418	0	418	24	18	93
	9	394	0	394	29	17	92
	10	391	0	391	10	17	91
	11	271	0	271	8	19	83
	12	323	0	323	11	8	28
Notes							
(Include Notes Here)							

GRU Historical Forecast Error

Total Retail Customers

	20 Year 2000-2019	10 Year 2010-2019	5 Year 2015-2019
Average Forecast Error	-3.9%	-1.3%	0.1%
Standard Deviation	3.7%	1.8%	0.6%

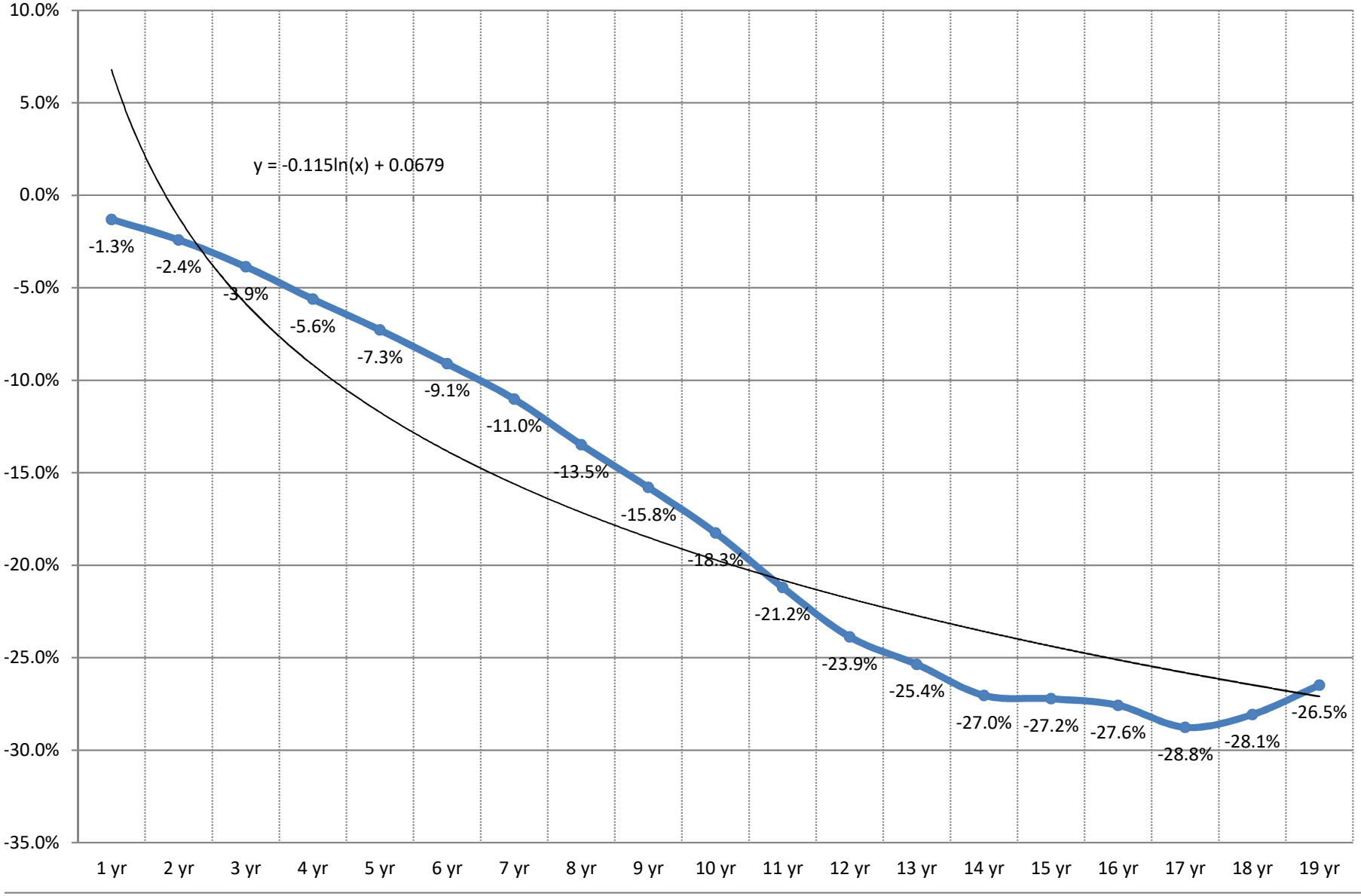
Retail Net Energy for Load

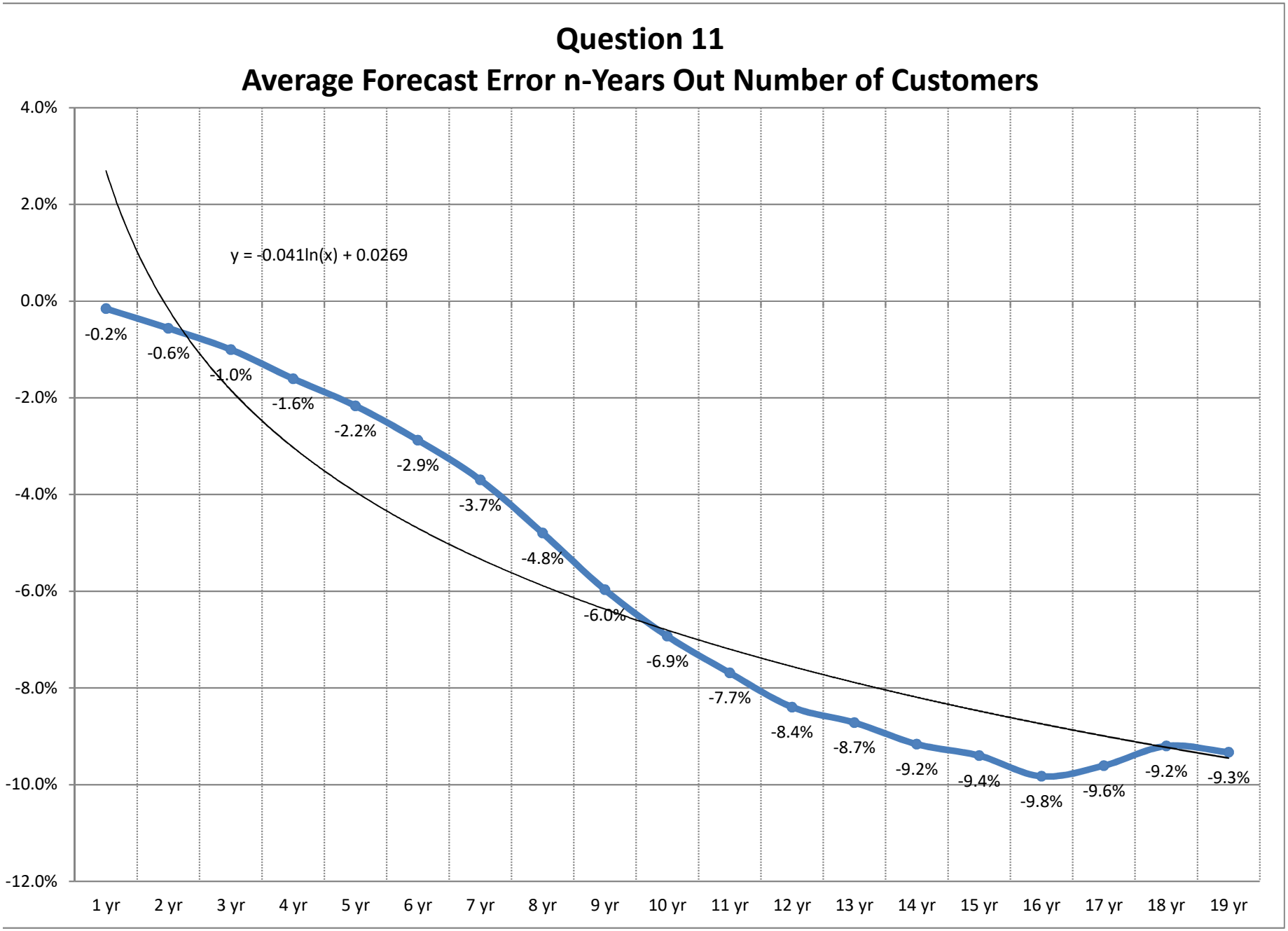
	20 Year 2000-2019	10 Year 2010-2019	5 Year 2015-2019
Average Forecast Error	-12.0%	-2.1%	0.7%
Standard Deviation	10.3%	3.2%	2.9%

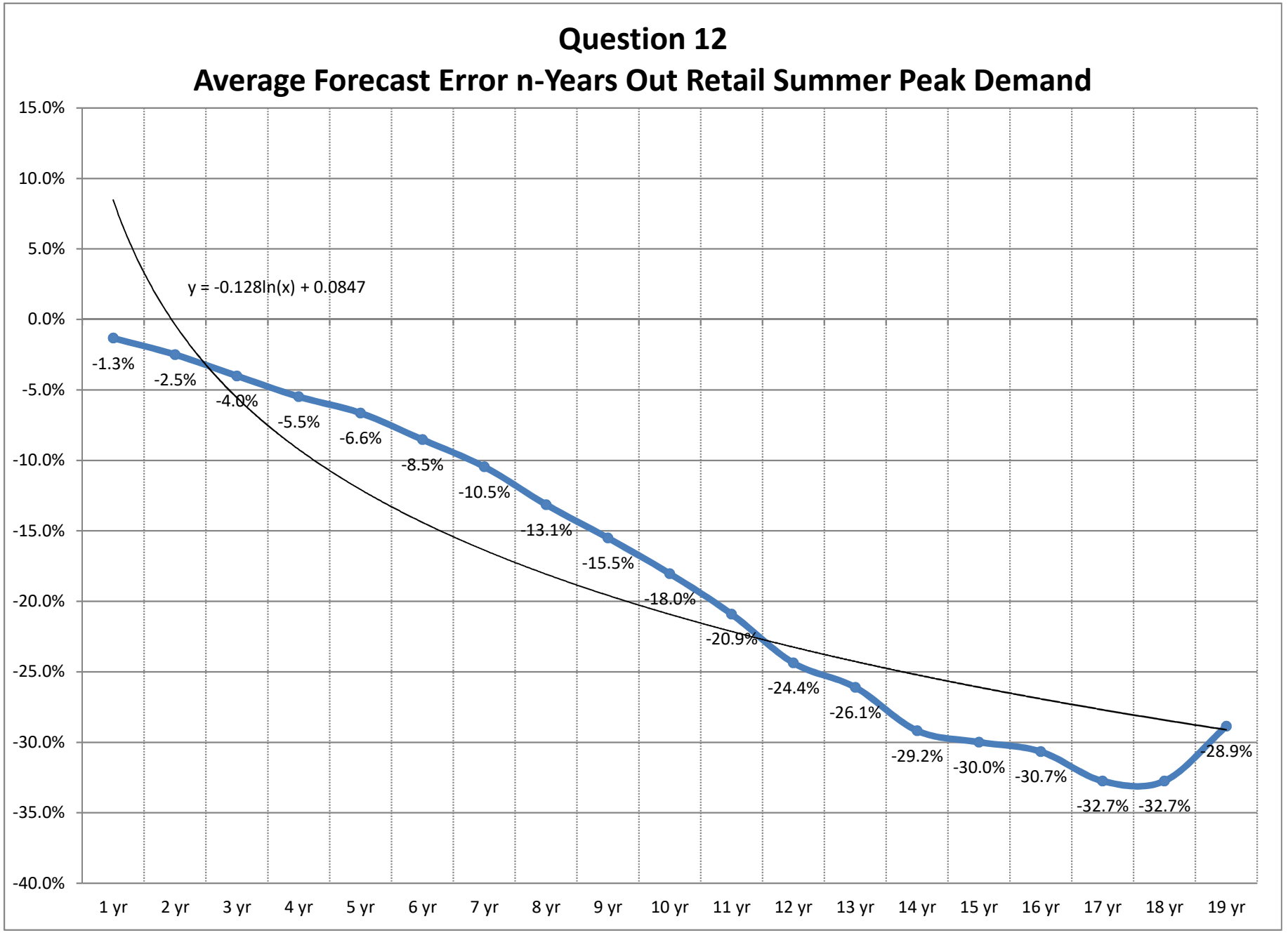
Retail Summer Peak Demand

	20 Year 2000-2019	10 Year 2010-2019	5 Year 2015-2019
Average Forecast Error	-12.3%	-3.9%	-3.4%
Standard Deviation	10.8%	3.4%	3.1%

Question 11
Average Forecast Error n-Years Out Retail Net Energy for Load




Question 11
Average Forecast Error n-Years Out Number of Customers
y = -0.041ln(x) + 0.0269
4.0%
2.0%
0.0%
-2.0%
-4.0%
-6.0%
-8.0%
-10.0%
-12.0%
-0.2%
-0.6%
-1.0%
-1.6%
-2.2%
-2.9%
-3.7%
-4.8%
-6.0%
-6.9%
-7.7%
-8.4%
-8.7%
-9.2%
-9.4%
-9.8%
-9.6%
-9.2%
-9.3%
1 yr
2 yr
3 yr
4 yr
5 yr
6 yr
7 yr
8 yr
9 yr
10 yr
11 yr
12 yr
13 yr
14 yr
15 yr
16 yr
17 yr
18 yr
19 yr


Question 12
Average Forecast Error n-Years Out Retail Summer Peak Demand
y = -0.128ln(x) + 0.0847
-1.3%
-2.5%
-4.0%
-5.5%
-6.6%
-8.5%
-10.5%
-13.1%
-15.5%
-18.0%
-20.9%
-24.4%
-26.1%
-29.2%
-30.0%
-30.7%
-32.7%
-32.7%
-28.9%
15.0%
10.0%
5.0%
0.0%
-5.0%
-10.0%
-15.0%
-20.0%
-25.0%
-30.0%
-35.0%
-40.0%
1 yr
2 yr
3 yr
4 yr
5 yr
6 yr
7 yr
8 yr
9 yr
10 yr
11 yr
12 yr
13 yr
14 yr
15 yr
16 yr
17 yr
18 yr
19 yr

TYSP Year	2020
Staff's Data Request #	1
Question No.	20

Year	Number of PEVs	Number of Public PEV Charging Stations	Number of Public "Quick-charge" PEV Charging Stations	Cumulative Impact of PEVs		
				Summer Demand	Winter Demand	Annual Energy
				(MW)	(MW)	(GWh)
2020	350	22	3	0.9	0.9	1.260
2021	409	24	4	1.0	1.0	1.472
2022	478	26	5	1.2	1.2	1.721
2023	558	28	6	1.4	1.4	2.009
2024	653	30	7	1.6	1.6	2.351
2025	755	33	8	1.9	1.9	2.718
2026	872	36	9	2.2	2.2	3.139
2027	1009	39	10	2.5	2.5	3.632
2028	1166	42	11	2.9	2.9	4.198
2029	1349	45	12	3.4	3.4	4.856
Notes						
Demand Impact = # of vehicles * 5 kW/charger * 50% coincidence with peak hour						

Energy Impact = # of vehicles * 300 kWh/month

TYSP Year	2020
Staff's Data Request #	1
Question No.	26

[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
2010									
2011									
2012									
2013									
2014									
2015									
2016									
2017									
2018									
2019									
Notes									
(Include Notes Here) GRU is not a FEECA utility.									

TYSP Year	2020
Staff's Data Request #	1
Question No.	27

[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
2010										
2011										
2012										
2013										
2014										
2015										
2016										
2017										
2018										
2019										
Notes										
(Include Notes Here) GRU is not a FEECA utility.										

TYSP Year	2020
Staff's Data Request #	1
Question No.	28

[Demand Response Source or All Demand Response Sources]							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2010							
2011							
2012							
2013							
2014							
2015							
2016							
2017							
2018							
2019							
Notes							
(Include Notes Here) GRU is not a FEECA utility.							

TYSP Year 2020
Staff's Data Request # 1
Question No. 29

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	(%)
DEERHAVEN	FS01	ALACHUA	ST	NG	8	1972	80	80	75	75	75	75	20
DEERHAVEN	FS02	ALACHUA	ST	BIT	10	1981	251	251	228	228	228	228	32
DEERHAVEN	GT01	ALACHUA	GT	NG	7	1976	18	23	17.5	22	17.5	22	0
DEERHAVEN	GT02	ALACHUA	GT	NG	8	1976	18	23	17.5	22	17.5	22	0
DEERHAVEN	GT03	ALACHUA	GT	NG	1	1996	71.5	82	71	81	71	81	1
J. R. KELLY	FS08	ALACHUA	CA	WH	5	2001	37.5	38	36	37	36	37	52
J. R. KELLY	GT04	ALACHUA	CT	NG	5	2001	72.5	82	72	81	72	81	48
SOUTH ENERGY CENTER	1	ALACHUA	GT	NG	5	2009	4.5	4.5	3.8	4.1	3.8	4.1	13
SOUTH ENERGY CENTER	2	ALACHUA	IC	NG	12	2017	7.4	7.4	7.4	7.4	7.4	7.4	66

Notes

(Include Notes Here)

TYSP Year	2020
Staff's Data Request #	1
Question No.	30

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Projected Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
Notes													
(Include Notes Here) GRU has no traditional generation planned to come online within the current planning period.													

TYSP Year 2020
Staff's Data Request # 1
Question No. 31

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
ACPS Solar	N/A	ALACHUA	PV	SUN	varies	varies	0.008	0.008	0.003	0.003	0.003	0.003	14%
DEERHAVEN RENEWABLE	1	ALACHUA	ST	WDS	12	2013	116	116	103	103	103	103	79%
Notes													
(Include Notes Here)													

TYSP Year	2020
Staff's Data Request #	1
Question No.	32

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	(%)
Notes													
(Include Notes Here) GRU has no utility-owned renewable generation resource planned for in-service within the current planning period													

TYSP Year	2020
Staff's Data Request #	1
Question No.	34

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
Notes													
(Include Notes Here) GRU had no traditional PPAs as of December 31st.													

TYSP Year	2020
Staff's Data Request #	1
Question No.	35

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
Notes													
(Include Notes Here) GRU does not have any existing or planned power purchase agreements for traditional generation.													

TYSP Year 2020
Staff's Data Request # 1
Question No. 36

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
G2 Energy	Baseline Landfill	N/A	Marion	IC	LFG	3.8	3.8	3.8	3.8	0	0	01/01/09	12/31/23
Solar FIT	various installations	N/A	Alachua	PV	SUN	18.6	18.6	6.5	6.5	0	0	3/1/2009	12/31/2032
Notes													
(Include Notes Here)													

TYSP Year 2020
Staff's Data Request # 1
Question No. 37

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
Origis	TBD	TBD	Alachua	PV	SUN	50	50	25	4.5	0	0	1/1/2023	12/31/2042
Notes													
(Include Notes Here)													

TYSP Year	2020
Staff's Data Request #	1
Question No.	39

Buyer Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
City of Alachua	N/A	N/A	Alachua	N/A	Varies	N/A	N/A	N/A	N/A	N/A	N/A	4/1/2016	3/31/2022
Notes													
(Include Notes Here) All requirements contract with the City of Alachua, which peaks around 30 MW.													

TYSP Year	2020
Staff's Data Request #	1
Question No.	40

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 power sale agreements that will begin within the planning period.													

TYSP Year	2020
Staff's Data Request #	1
Question No.	42

Renewable Source	Annual Renewable Generation (GWh)										
	Actual	Projected									
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Utility - Firm	594	159	208	159	172	183	192	197	203	201	211
Utility - Non-Firm											
Utility - Co-Firing											
Purchase - Firm											
Purchase - Non-Firm	44	56	56	56	56	21	21	21	21	21	21
Purchase - Co-Firing											
Customer - Owned	3	3	3	3	4	4	4	5	5	6	6
Total	641	218	267	218	232	208	217	223	229	228	238
Notes											
(Include Notes Here)											

TYSP Year	2020
Staff's Data Request #	1
Question No.	43

Plant Name	Land Available (Acres)	Potential Installed Net Capacity (MW)	Potential Obstacles to Installation

GRU is not an investor-owned utility.

TYSP Year 2020
Staff's Data Request # 1
Question No. 51

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

Notes

(Include Notes Here) GRU does not have energy storage projects.

TYSP Year	2020
Staff's Data Request #	1
Question No.	52

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 (%)

Notes

(Include Notes Here) GRU does not have energy storage projects.

TYSP Year	2020
Staff's Data Request #	1
Question No.	57

Year		As-Available Energy ($/MWh)	On-Peak Average ($/MWh)	Off-Peak Average ($/MWh)
Actual	2010			
	2011			
	2012			
	2013			
	2014			
	2015			
	2016			
	2017			
	2018			
	2019			
Projected	2020			
	2021			
	2022			
	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
Notes				
(Include Notes Here) GRU is not an investor-owned utility.				

TYSP Year 2020
Staff's Data Request # 1
Question No. 60

Plant	Unit No.	Unit Type	Fuel Type	Capacity Factor (%)										
				Actual	Projected									
				2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
DEERHAVEN	FS01	ST	NG	20	22	32	15	0	0	0	0	0	0	0
DEERHAVEN	FS02	ST	BIT	32	23	27	27	23	26	29	27	30	32	31
DEERHAVEN	GT01	GT	NG	0	0	0	0	0	0	0	0	0	0	0
DEERHAVEN	GT02	GT	NG	0	0	0	0	0	0	0	0	0	0	0
DEERHAVEN	GT03	GT	NG	1	0	0	0	0	0	0	0	1	0	0
J. R. KELLY	FS08	CA	WH	52	99	73	88	94	90	84	94	90	89	95
J. R. KELLY	GT04	CT	NG	48	99	73	88	94	90	84	94	90	89	95
SOUTH ENERGY CENTER	1	GT	NG	13	0	0	0	0	0	0	0	0	0	0
SOUTH ENERGY CENTER	2	IC	NG	66	81	81	81	81	81	81	81	81	81	81
DEERHAVEN RENEWABLE	1	ST	WDS	79	18	23	18	19	20	21	22	22	22	23
SOLAR FIT	Varies	PV	SUN	14	14	14	14	14	14	14	14	14	14	14
ORIGIS SOLAR	TBD	PV	SUN	0	0	0	0	28	28	28	28	28	28	27
G2 MARION	N/A	IC	LFG	76	75	75	75	75	0	0	0	0	0	0

Notes

(Include Notes Here)

TYSP Year	2020
Staff's Data Request #	1
Question No.	62

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date (MM/YYY)	Potential Conversion	Potential Issues
Notes					
(Include Notes Here) GRU has no potential candidates for repowering.					

TYSP Year	2020
Staff's Data Request #	1
Question No.	63

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date (MM/YYY)	Potential Conversion	Potential Issues
Deerhaven	coal	228	Jun-21	gas	gas supply
Notes					
(Include Notes Here)					

TYSP Year	2020
Staff's Data Request #	1
Question No.	58

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				
Combined Cycle Unit Additions				
Steam Turbine Unit Additions				
Notes				
(Include Notes Here) GRU does not have any planned conventional generation units.				

TYSP Year	2020
Staff's Data Request #	1
Question No.	64

Transmission Line	Line Length (Miles)	Nominal Voltage (kV)	Date Need Approved	Date TLSA Certified	In-Service Date
Notes					
(Include Notes Here) There are no planned transmission projects.					

TYSP Year 2020
Staff's Data Request # 1
Question No. 66 e

Year	Estimated Cost of Standards of Performance for Greenhouse Gas Emissions Rule for New Sources Impacts (Present-Year $ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2019	0	0	0	0
2020	0	0	0	0
2021	0	0	0	0
2022	0	0	0	0
2023	0	0	0	0
2024	0	0	0	0
2025	0	0	0	0
2026	0	0	0	0
2027	0	0	0	0
2028	0	0	0	0
Notes				
No costs are anticipated at this time.				

TYSP Year	2020
Staff's Data Request #	1
Question No.	68

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA Rule Impacts: Operational Effects						
				ELGS	ACE	MATS	CSAPR/ CAIR	CWIS	CCR	
									Non-Hazardous Waste	Special Waste
Notes										
No operational impacts are anticipated at this time for any of GRU's generating units.										

TYSP Year	2020
Staff's Data Request #	1
Question No.	69

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA Rule Impacts: Cost Effects (CPVRR $ millions)						
				ELGS	ACE	MATS	CSAPR/ CAIR	CWIS	CCR	
									Non-Hazardous Waste	Special Waste
DH2	Steam	Coal	228	N/A	Unknown	1.5	N/A	N/A	2	0

Notes

(Include Notes Here)

TYSP Year 2020
Staff's Data Request # 1
Question No. 70

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA Rule Impacts: Unit Availability (Month/Year - Duration)						
				ELGS	ACE	MATS	CSAPR/ CAIR	CWIS	CCR	
									Non-Hazardous Waste	Special Waste

Notes

No impacts to unit availabilty are anticipated for any of GRU's generating units.

TYSP Year 2020
Staff's Data Request # 1
Question No. 72

Year		Uranium		Coal		Natural Gas		Biomass		Residual Oil		Distillate Oil	
		GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU
Actual	2010	0	0	1,293	$3.45	420	$6.39	0	0	2.32	$10.94	3.63	$17.07
	2011	0	0	1,085	$3.74	414	$5.39	0	0	2.81	$10.93	0.98	$17.58
	2012	0	0	696	$4.02	849	$4.13	0	0	0.12	$10.94	0.46	$22.97
	2013	0	0	626	$3.99	696	$4.15	0	0	0	0	0.38	$21.24
	2014	0	0	797	$3.41	352	$5.05	0	0	0.92	$6.32	0.31	$8.35
		0	0	663	$3.30	770	$3.39	0	0	0.98	$5.57	0.01	$7.28
	1	0	0	413	$3.21	1144	$3.22	0	0	0.08	$4.86	0.1	$8.97
	2	0	0	401	$3.25	901	$3.70	101.891	$2.78	0.86	$4.32	1.09	$9.86
	3	0	0	460	$3.41	1002	$3.67	569.592	$2.92	0.5	$6.18	0.79	$10.70
	4	0	0	449	$3.47	854	$3.00	593.692	$2.72	0.49	$6.18	0.07	$10.70
Projected	5	0	0	466	$3.24	1135	$2.44	159.058	$2.76	0	0	0	0
	6	0	0	535	$3.76	950	$2.76	207.886	$2.83	0	0	0	0
	7	0	0	531	$3.82	981	$2.82	158.547	$2.89	0	0	0	0
	8	0	0	468	$3.61	946	$2.90	171.863	$2.94	0	0	0	0
	9	0	0	516	$3.66	904	$2.95	182.884	$2.99	0	0	0	0
	10	0	0	580	$3.71	849	$3.05	191.99	$3.05	0	0	0	0
	11	0	0	540	$3.74	946	$3.34	197.221	$3.10	0	0	0	0
	12	0	0	593	$3.77	915	$3.51	202.654	$3.16	0	0	0	0
	13	0	0	645	$3.78	898	$3.69	201.091	$3.21	0	0	0	0
	14	0	0	616	$3.81	951	$3.89	211.281	$3.27	0	0	0	0

Notes

(Include Notes Here)