

April 30, 2023

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

Re: Docket No. 20230000-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 Donald Phillips.

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

Sincerely,

/s/ Eric Neihaus, P.E.  
Power Planning Engineer  
Gainesville Regional Utilities

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

### **General Items**

1. Please provide an electronic copy of the Company's Ten-Year Site Plan (TYSP) for the current planning period (2023-2032) 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 Excel format.

**Spreadsheet versions of the TYSP schedules were provided via email.**

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.

**This data was provided in the attached Microsoft Excel File.**

### **Load & Demand Forecasting**

#### **Historic Load & Demand**

4. **[Investor-Owned Utilities Only]** Please refer to the Excel Tables File (Hourly System Load). Complete the table by providing, on a system-wide basis, the hourly system load in megawatts (MW) for the period January 1 through December 31 of the year prior to the current planning period. For leap years, please include load values for February 29. Otherwise, leave that row blank.
  - a. Please also describe how loads are calculated for those hours just prior to and following Daylight Savings Time (March 13, 2022, and November 6, 2022).

**GRU is not an Investor-Owned Utility.**

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.

**This data was provided in the attached Microsoft Excel File.**

Forecasted Load & Demand

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

**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.**

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.

**The methodology, assumptions and data sources used in the development of GRU's customer, sales, and demand forecasts are described in detail on pages 10-11 of the TYSP. The forecast was done in-house without the use of any outside consultants. GRU assesses historical forecast accuracy but does not make prospective claims around its forecast accuracy. GRU has used the same forecast methodology for more than 20 years.**

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

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

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.

**GRU evaluates historical forecast accuracy over the past 20, 10, and 5 years. The average forecast error in number of customers from 2013-2022 was 0.2%. The average forecast error in retail net energy for the same period was -1.3%, meaning that GRU over-forecast energy by an average of 1.3% during this period.**

- 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.

**GRU constructed what can be described as an error fan (using a spreadsheet) for analyzing historical forecast error for a number of customers, retail energy, and retail summer peak demand. The error fan worksheet includes historical forecasts made for the above mentioned three components, dating from 2003 through 2022. These were the same forecasts included in GRU's Ten-Year-Site-Plans from those years. Projections made in those forecasts were compared against actual data, and assessments of average forecast error and standard deviation were calculated for historical periods of 20, 10, and 5 years.**

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

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.

**GRU evaluates historical forecast accuracy over the past 20, 10, and 5 years. The average forecast error in retail summer peak demand from 2013-2022 was -2.1%, meaning that GRU over-forecast summer demand by an average of 2.1% during this period. GRU has not evaluated historical forecast error for winter demand. GRU is a summer peaking system.**

- 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.

**GRU utilized the same error fan analysis described in 9.a. above for making assessments around summer peak demand historical forecast error.**

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

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.

**GRU forecasts number of customers separately for residential and three non-residential customer groups. In consideration of rate migration between non-**

residential customer groups, the three non-residential customer groups are discussed collectively here. The primary explanatory variable for determining projected number of customers is (estimates of) Alachua County population, and corresponding population projections published by the Bureau of Economic and Business Research at the University of Florida. From 2013-2022 residential customer growth averaged 0.92% per year. For the period 2023-2032, residential customer growth is projected to average 0.57% per year. From 2013-2022 non-residential customer growth averaged 0.82% per year. For the period 2023-2032, non-residential customer growth is projected to average 0.73%.

- 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 increased 0.29% per year over the past 10 years. Over the first 10 years of our forecast, residential consumption per customer is projected to be relatively constant at approximately 775 kWh/month/customer. Non-residential consumption per customer declined 0.63% per year over the past 10 years. From 2023-2032, non-residential consumption per customer is projected to decline at a rate of 0.20% per year. Some of the factors believed to effect consumption per customer include the 2008 Recession; (increasing) prices for electricity; improved building envelopes; energy efficiency standards (regulatory); and utility sponsored conservation measures. Each of these factors has contributed to generally decreasing usage per customer historically. In general, the Covid pandemic resulted in increased residential usage and reduced non-residential usage. In future years, loads associated with electric vehicle charging are anticipated to support increases in usage per customer for all customer classes (greatest increases in residential with at-home charging).

- 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.

Retail energy sales increased at a rate of 0.65% per year growth over the past 10 years. GRU forecasts retail energy sales to increase at a rate of 0.57% per year over the next 10 years. Both historical and future energy sales growth is positively influenced by increasing number of customers and offset negatively by flat or declining usage per customer. As mentioned above, loads associated with electric vehicle charging are anticipated to support energy sales more in this forecast than past forecasts.

- d. By customer type (residential, commercial, industrial) provide a detailed discussion of how the Company's demand-side management program(s) and conservation/energy-efficiency program(s) impact the observed trends in gigawatt hour sales (Schedule 3.3).

GRU currently offers two conservation programs for residential customers: natural gas rebates for qualifying appliance conversions, and for new construction; and a rebate program for Low

**Income Energy Efficiency home upgrades. The energy and demand savings associated with these measures is small but is estimated and included in GRU's forecast. GRU currently does not offer any formal conservation programs for non-residential customers.**

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

- a. Demand Reduction due to the Company's demand-side management program(s) and Self Service, by customer type (residential, commercial, industrial) as well as Total Customers, and identify the major factors (historically, currently, and in the forecasted period) that contribute to the growth/decline in the trends.

**Schedules 3.1 and 3.2 (and 3.3) reflect historical and forecasted reductions to load based on GRU's utility sponsored conservation measures. This data reflects how GRU was much more actively involved with conservation measures historically than at present. Section 2.4 of GRU's TYSP describes DSM involvement in more detail.**

**GRU is experiencing an increase in solar net metering participation, which serves to reduce customer energy requirements. GRU's load forecast assumes that electric vehicle charging will more than offset reductions in energy sales from behind the meter solar systems.**

- 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.

**Total Demand and Net Firm Demand are currently the same for GRU, so please see a collective response to 12.d. below.**

- 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.

**In addition to factors outlined in 12.a. above, GRU's net firm demand has been influenced by a series of reductions in wholesale loads. One long-standing wholesale load matured at the end of 2012. Another firm wholesale load spanned 2015-2018. A third and final wholesale customer elected not to renew its contract with GRU at the end of March 2022. Currently, GRU has no firm wholesale loads and is only serving retail customers. There are no new wholesale agreements included in GRU's 2023 TYSP. The phasing out of three wholesale customer loads over the past decade has offset most of the retail load growth over the past 10 years, keeping energy and demand requirements relatively constant.**

13. **[FEECA Utilities Only]** In the 2019 goal-setting proceeding, the Commission chose to continue the goals established by its 2014 goal-setting decision for the period 2020-2024. Beyond 2024 through the end of the forecasted period, how did the Company project what demand savings amounts are reflected on the DSM and Conservation-related portions of Schedules 3.1, 3.2, and 3.3? Please explain what assumptions are incorporated in those amounts, and why.

**GRU is not a FEECA utility.**

14. On August 16, 2022, the Inflation Reduction Act of 2022 (“IRA”) became law. Regarding the provisions of the IRA and related funding, please explain the following
- a. Whether the conservation related provisions are reflected on the DSM and Conservation-related portions of Schedules 3.1, 3.2, and 3.3 through the forecast (planning) period, and if so, how. If the provisions of the Act are not reflected in such forecasts, please explain why.

**No, conservation related provisions are not reflected in Schedules 3.1 – 3.3.**

- b. Whether the electrification related provisions are reflected on the demand and energy load-related portions of Schedules 3.1, 3.2, and 3.3 through the forecast (planning) period, and if so, how. If the provisions of the IRA are not reflected in such forecasts, please explain why.

**No, conservation related provisions are not reflected in Schedules 3.1 – 3.3. However, the anticipated electric vehicle (EV) impacts were incorporated into Schedules 3.1 – 3.3.**

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 following, respectively:

**Three primary non-weather events impacting peak demands and retail energy include:**

- 1) Recovery from the 2008 recession, in which strong economic conditions beginning 2013 supported customer and sales growth through 2019;**
- 2) The changes to wholesale loads described in 12.d. above; and**
- 3) Impacts from the Covid pandemic described in 18.a. below.**

- a. Summer Peak Demand.
- b. Winter Peak Demand.
- c. Annual Retail Energy Sales.

16. 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.



**GRU analyzes, and includes where appropriate, heating degree day data and cooling degree day data in its equations for determining usage per customer, for each customer segment.**

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

**The source for all climate data used in GRU's forecasting work is the Gainesville Regional Airport weather station described in question 6 above.**

- 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.

**Data from the GNV weather station was used as-is, with no processing applied. For example, GRU's forecast utilized degree day data calculated from a 65-degree base temperature.**

- d. Please specify with corresponding explanations:

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

**Each forecast equation utilized historical weather data from each year included in the modeling. These equations included at least 26 years in their historical series, so weather data from as far back as 1995 in model development.**

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

**The response for this question is the same as for 16.i. above. GRU maintains what it believes to be a clean data history for the GNV weather station dating back to 1984. Models developed for GRU's 2023 TYSP forecasts included historical data from 1995-2022.**

- e. Please explain how the projected values of the input weather variables (that were used to forecast the future sales or demand outputs for each planning years 2023 – 2032) were derived/obtained for the respective retail sales and peak demand models.

**GRU assumes average weather conditions in its projections. Degree days are calculated based on average daily temperature, defined as daily maximum temperature minus daily minimum temperature, divided by two. It appears that higher daily minimum temperatures are influencing a trend of increasing cooling degree days and decreasing heating degree days. The best calibration connecting historical usage levels with projected usage levels was obtained by assigning the median of the most recent 10 years' degree day values as the weather conditions upon which to base the forecast.**



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 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 2021 and 2022.

**Residential energy sales slightly exceeded levels originally forecasted prior to the pandemic, on the order of five percent during 2020, and to a lesser extent during 2021. Energy sales to non-residential customers were below levels originally forecasted, on the order of ten percent during 2020 and less in 2021. The net effect was total sales slightly below original projections. The magnitude of the departure did not materially affect GRU's operations.**

- b. Have any of your 2023 TYSP retail energy sales and peak demand forecasts incorporated the potential impacts of the Pandemic? Please explain your response.

**GRU believes that calendar year 2022 data reflects equilibrium following the pandemic. There is new economic uncertainty in the economy resulting from unprecedented government stimulus money, the resulting inflation and now increased interest rates. Fortunately, Florida's economy is among the strongest in the nation, and Gainesville's regional economy has a long history of being resilient to economic perturbations due to the make-up of its customer base (higher education, health care, government, services).**

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

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

**A forecast of solar net metering installations was made, based on historical installations through 2022 and future installations anticipated through the 20-year forecast horizon. This forecast included impacts within each billing class. The energy projected to be added back to GRU's grid was included in the load forecast within each customer segment and treated as a load reduction. The forecast does not assume significant adoption of behind the meter energy storage.**

- b. Please provide the annual impact, if any, of customer's renewables and/or storage on the Utility's retail demand and energy forecasts, by class and in total, for 2023 through 2032.

**GRU estimates that behind the meter solar installations will reduce residential energy sales by 18,600 MWh in 2032. GRU also estimates that behind the meter solar installations will reduce energy sales will reduce non-residential energy sales by approximately 18,200 MWh in 2032. The impact of solar net metering to GRU's seasonal demands was implicitly accounted for through reduced energy levels and the development of seasonal demands using load factors as described in Section 2.2.6 of the TYSP.**

- c. If the Utility maintains a forecast for the planning horizon (2023-2032) of the number of customers with renewables and/or storage, by customer class, please provide.

**GRU estimates that approximately 2,800 residential customers will have solar rooftop grid-connected systems by 2032, and that there will be an additional 300 non-residential customers participating in solar net metering by 2032. No explicit assumptions were made regarding the number of customers that may have on-site energy storage capability.**

#### Plug-in Electric Vehicles (PEVs)

20. 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?

**Similar to solar net metering, GRU prepared a separate forecast of number of electric vehicles that would conduct charging within each billing rate category. Energy required for EV charging was added to GRU's load forecast (within each customer segment) and treated as an addition to energy sales.**

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

**GRU does not currently utilize any demand response measures or offer a time of use rate for residential customers, so these measures were not included in the analysis.**

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

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

**Electric vehicles steadily increasing market share, automobile manufacturers providing customers with more options. EVs with larger ranges.**

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

**GRU collaborated with The Energy Authority (TEA) to develop an estimation of the number of existing EV's in GRU's service territory and to develop a forecast of EV growth rates over the next 25 years.**

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

**GRU monitors PEV public charging station with a revenue meter. Additionally, the following website has been used:**

**[www.plugshare.com](http://www.plugshare.com)**

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

**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.**

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

**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. In all new revenue project GRU install additional UG primary to be able to loop feed the transformer.**

22. 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.

**The information is provided in the attached Microsoft Excel file.**

- a. Please describe all significant technological, market, regulatory, or other events or announcements since the filing of the Company's 2022 TYSP which have impacted the metrics reported

**GRU is unaware of any significant technological, market, regulatory, or other events/announcements which would have impacted the metrics reported.**

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

**GRU collaborated with The Energy Authority (TEA) to develop an estimation of the number of existing EV's in GRU's service territory and to develop a forecast of EV growth rates over the next 25 years. TEA used proprietary data in developing these forecasts. Currently, these forecasts have not impacted GRU's planning for PEV charging station adoptions and/or installations.**

23. 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.

**No specific tariffs are offered at this time. GRU is considering tariffs that would encourage charging of electric vehicles during off-peak (nighttime) hours.**

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

**The intent of a future tariff that encourages EV charging during off-peak hours would be to both save customers on their electric bills and reduce late afternoon peak loads on GRU's system. GRU will provide customer education if such a tariff is introduced.**

- 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.

**GRU currently does not have any formal programs of this nature.**

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 staff has performed market research to ascertain which customer segments would most likely adopt EV charging infrastructure on their own versus customers who would seek public**

or rental EV charging infrastructure. GRU's methodology included reaching out to EV manufacturers to find out what policies cities and utilities can adopt to boost adoption and obtain estimates of equipment costs should GRU decide to enter the EV charging business.

GRU researched municipal ordinances to determine how many parking spaces are mandated by development type to determine potential market size. Additionally, GRU staff surveyed owners of multifamily development owners and fleet operators to ascertain if any of these customers had plans to install EV charging infrastructure.

Lastly, 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. 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.

**GRU is evaluating the viability of company-owned EV fast chargers along designated state evacuation routes as lay out in 339.287 " Having adequate, reliable charging stations along the State Highway System will also help with evacuations during hurricanes or other disasters."**

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

**GRU believes that most residential home vehicle charging begins late in the afternoon and early evening when GRU is near the time of day of its peak loads. And GRU knows that one vehicle can add 7 kW or more to short term load.**

**There are three commercial fast charging stations in GRU's service area, and Tesla is constructing a fourth station. Currently, the larger station has 10 booths and its billing demand is approximately 650 kW. Load factor for these installations is 20% or less. From the perspective of billing demand, one charging station is an equivalent load to a large retail establishment or a medium/large school.**

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

**N/A**

Demand Response

28. **[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.

**GRU is not a FEECA utility.**

29. **[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.

**GRU is not a FEECA utility.**

30. **[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.

**GRU is not a FEECA utility.**

31. 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.

**This data is provided in the attached Microsoft Excel file.**

**Generation & Transmission**

Utility-Owned Generation

32. 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.

**This data is provided in the attached Microsoft Excel file.**

33. 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.

**This data is provided in the attached Microsoft Excel file.**

34. 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.
- For each planned utility-owned traditional generation resource in the table, provide a narrative response discussing the current status of the project.

**This data is provided in the attached Microsoft Excel file.**

35. 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.

**This data is provided in the attached Microsoft Excel file.**

36. 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.
- For each planned utility-owned renewable resource in the table, provide a narrative response discussing the current status of the project.

**This data is provided in the attached Microsoft Excel file.**

37. 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?

**GRU does not have any planned utility-owned renewable resources within the current planning horizon.**

38. **[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.

**GRU is not an Investor-Owned Utility.**



39. 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.

**This data is provided in the attached Microsoft Excel file.**

40. 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 utility-owned traditional and/or renewable resources within the current planning horizon. We anticipate completing our Integrated Resource Plan (IRP) by the spring of 2024. The IRP will be our roadmap for any future generation additions.**

41. 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.

**This data is provided in the attached Microsoft Excel file.**

42. **[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.**

43. 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.

**This data is provided in the attached Microsoft Excel file.**

44. 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.

**This data is provided in the attached Microsoft Excel file.**

45. 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.

**This data is provided in the attached Microsoft Excel file.**

Purchases and Sales

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

**This data is provided in the attached Microsoft Excel file.**

47. 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.

**This data is provided in the attached Microsoft Excel file.**

48. 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.

**This data is provided in the attached Microsoft Excel file.**

49. 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.

**This data is provided in the attached Microsoft Excel file.**

50. 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.

**This data is provided in the attached Microsoft Excel file. The contract with Origis Energy has been finalized, and the anticipated commissioning date for the project is January 2025.**

51. 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 was a delay to the Sand Bluff Solar PPA project of approximately one year. The delay was caused by local concerns regarding site location. The location has since been moved/relocated, and the project is now moving forward.**

52. 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.

**This data is provided in the attached Microsoft Excel file.**

53. 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.

**This data is provided in the attached Microsoft Excel file.**

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

**There was a long-term power sale agreement with the City of Alachua that expired in March 2022. The City of Alachua chose to not extend the contract.**

### Renewable Generation

55. 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.

**This information is provided in the attached Microsoft Excel file.**

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

**City of Gainesville Ordinances establishes Net Metering for solar photovoltaic systems. Under this provision, GRU agrees to credit the account of both residential and non-residential customers, who install distributed photovoltaic generation, for the excess energy produced and exported to the city's electric distribution system.**

**City of Gainesville ordinances establishes Gainesville's solar Feed-In Tariff. Under this program, GRU agrees to purchase 100% of the solar power produced from any private generator at a fixed rate for a contract term of 20 years. The 20-year fixed rate is based on the**

**year the project was approved and the type of installation. GRU is no longer accepting new projects or adding capacity.**

57. **[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.**

58. 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 the summer or winter peaks.**

59. 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.

**GRU does not currently have any programs to allow customers to contribute towards the funding of renewable energy projects.**

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

**GRU does not currently developing any programs that would allow customers to contribute towards the funding of renewable energy projects.**

### Energy Storage

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

**GRU has been in communication with several non-lithium battery storage manufacturers. These companies appear to be making progress in the development and commercialization of their respective product offerings (technologies), and public announcements have been made by several domestic utilities that are moving forward with some non-lithium-ion based battery systems.**

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

**N/A**

62. 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's substations have been evaluated for available real-estate to house an energy storage system. The majority of GRU's substations do not have adequate space, but there are a few substations that could be a candidate. Locating these storage systems in close proximity to the source of load would reduce line losses. However, any location for an energy storage site would require further analysis after GRU decided when and how much storage to add to the system.**

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

**GRU customers continue to express interest in energy storage. However, GRU does not incentivize energy storage installations. GRU has a true net metering program, so the primary benefit of energy storage to a GRU customer is emergency backup in case of a power outage. GRU continues to examine energy storage opportunities (including DERMS) in an effort to develop a more efficient and resilient distribution system. Lastly, GRU will likely wait to consider changing our incentive offerings and/or rate structures until all of our customers have been upgraded to a smart meter. Our AMI deployment project is another 1 – 2 years from completion.**

64. 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.

**This information is provided in the attached Microsoft Excel file.**

65. 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.

**This information is provided in the attached Microsoft Excel file.**

66. 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 is not currently participating in or developing energy storage pilot programs. Last year, the Energy Authority (TEA) issued a request for information (RFI) targeted at providers of long-duration energy storage systems, and the responses received were uniformly high in costs. GRU would not consider a pilot project until costs become more competitive.**

67. 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 will most likely require some amount of energy storage to be included in future, utility-scale power purchase agreements (PPA) for utility-scale solar. The ratio of solar to storage for each project will be determined ahead of bid solicitations. For example, the 74.9 MW "Sand Bluff Solar" facility that is planned to be commissioned in January 2025 includes 12 MW / 12 MW-h of battery storage.**

#### Other

68. Please identify and discuss the Company's role in the research and development of utility power technologies, including, but not limited to research programs that are funded through the Energy Conservation Cost Recovery Clause. As part of this response, please describe any plans to implement the results of research and development into the Company's system portfolio and discuss how any anticipated benefits will affect your customers.

**GRU does not engage in R&D activities that are related to power technologies.**

#### **Environmental**

69. Please explain if the Company assumes carbon dioxide (CO<sub>2</sub>) compliance costs in the resource planning process used to generate the resource plan presented in the Company's current planning period TYSP. If the response is affirmative, answer the following questions:
  - a. Please identify the year during the current planning period in which CO<sub>2</sub> compliance costs are first assumed to have a non-zero value.

**GRU does not have non-zero values for CO2 compliance costs within the planning horizon.**

- b. **[Investor-Owned Utilities Only]** Please explain if the exclusion of CO2 compliance costs would result in a different resource plan than that presented in the Company's current planning period TYSP.

**GRU is not an Investor-Owned Utility.**

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

**GRU is not an Investor-Owned Utility.**

70. 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.

**Deerhaven Unit #2 has an Air Quality Control System, consisting of a selective catalytic reduction system (currently not in service); low NOx burners to reduce NOx; a dry recirculating flue gas desulfurization unit to reduce acid gases, sulfur dioxide (SO2) and mercury; and a fabric filter baghouse to reduce particulates. The Deerhaven Renewable (biomass) unit uses a fabric filter baghouse to reduce particulates; an SCR to reduce NOx; and wood fly ash augmented with a dry sorbent injection system (used when necessary) to reduce SO2, acid gases, and mercury. Both the Deerhaven and Deerhaven Renewable Plant Sites operate with zero liquid discharge to surface waters.**

**Existing environmental regulations are not forecasted to impact unit dispatch, curtailments, or retirements during the current planning period.**

71. 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?

**GRU will not be materially affected by this rule.**

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

**GRU will not be materially affected by this rule.**

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

**GRU will not be materially affected by this rule.**



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

**GRU will not be materially affected by this rule.**

- 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.

**This information is provided in the attached Microsoft Excel file.**

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

72. 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.

**None Expected**

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

**N/A**

- c. Cooling Water Intake Structures (CWIS) Rule.

**N/A**

- d. Coal Combustion Residuals (CCR) Rule.

**None Expected**

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

**N/A**

- f. Affordable Clean Energy Rule or its replacement.

**Unknown, no replacement rule (yet)**

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

**N/A**

73. 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.

**This information is provided in the attached Microsoft Excel file.**

74. 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.

**This information is provided in the attached Microsoft Excel file.**

75. 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.

**This information is provided in the attached Microsoft Excel file.**

76. 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.

**GRU does not have any currently approved costs for environmental compliance investments to comply with recently finalized or proposed EPA regulations.**

### **Fuel Supply & Transportation**

77. 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.

**This data is provided in the attached Microsoft Excel file.**

78. 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 modeled using contract and tariff terms.

The short-term forecast is then converted to long term forecasts by using escalation factors that are available from recognized, independent sources such as PIRA, S&P and the Energy Information Administration. This approach with 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.

79. 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 requirement 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. Prior to 2021, decline in the price of natural gas and reduced coal demand due to coal plant closures have pushed Eastern coal prices to historical lows. Those low prices, resulted in producer bankruptcies, mine closures and liquidation of smaller miners. The result of this environment in Central and Northern Appalachia have led to reduced supply, reduction of certain qualities in the market and increased supply risk for utilities. With the recent decline in natural gas prices due to high storage numbers and decrease LNG exports as well as unrest in Europe, coal prices have declined from previous record levels and production remains flat. GRU expect coal supply to remain limited for the foreseeable future as available coal supply moves to the export market and no increase in production due to lack of investment in a dying industry. GRU does not project any significant use of coal for base load generation. A minimal volume will be maintained in inventory as emergency or backup fuel.

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

b. Natural Gas

The primary factors that will impact the price of natural gas for generation during the 2023-2024 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.

c. Nuclear

N/A

d. Fuel Oil

**GRU does not project any significant use of heavy or light fuel oils for base load generation. Heavy and light fuel 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’s College of Forestry, have determined that there is adequate supply of fuel for consumption operations of the plant.**

80. Please provide a comparison of the Utility’s 2022 fuel price forecast and the actual 2022 delivered fuel prices.

Fuel Type	Forecasted Price from 2021	Actual Price from 2022
Biomass	\$2.76/MMBTU	\$3.46/MMBTU
Coal	\$3.64/MMBTU	\$5.45/MMBTU
Natural Gas	\$3.98/MMBTU	\$8.12/MMBTU

81. Please explain any notable changes in the Utility’s forecast of fuel prices used to prepare the Utility’s 2023 TYSP compared to the fuel process used to prepare the Utility’s 2022 TYSP.

**The process used to forecast fuel prices was very similar to the 2022 TYSP.**

82. 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 long-term existing contracts with Florida Gas Transmission from FTS-1 & FTS-2 and pipeline transport capacity and has recently secured additional capacity on FTS-3 to serve its retrofitted coal unit for dual fuel. Given projected system requirements for natural gas, GRU is confident that adequate firm pipeline capacity services is under contract in volumes sufficient to meet requirements during the 2023-2032 planning period.**

83. 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.

**Please refer to the response for question 82 (above).**

84. 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 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.**

85. 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.**

86. 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 expiration of the long-term transportation contract resulted in substantial escalation from the contract rates at current market rates. However, the availability of alternative generation to coal, including the retrofit of the coal unit to dual fuel, and purchase power will also be factors that limit the cost impact of rail transportation. GRU does not project any significant use of coal for base generation. A minimal volume will be maintained in inventory as emergency or backup fuel.**

87. 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.

**GRU has no planned changes or projects related to coal handling, blending, unloading, and/or storage at our Deerhaven Generation Station.**

88. 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.

**N/A**

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

**N/A**

90. **[FPL Only]** The following questions are with regard to hydrogen fuel creation and use at the Cavendish NextGen Hydrogen Hub:

- a. Please explain how FPL plans to account for the produced hydrogen fuel that is integrated into the natural gas system for use at FPL's Okeechobee Clean Energy Center.
- b. Please explain how FPL plans to price the produced hydrogen fuel that is integrated into FPL's natural gas system over the Ten-Year Site Plan time horizon

### **Extreme Weather**

91. 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.

**GRU has procedures that have checklists for preparation for out plants to ensure GRU has winterized items that are subject to adverse performance in cold weather, this includes items such as heat lamps on instrumentation, blanketing around air compressed systems, running water in stagnant pipes. GRU tests run peaking equipment to identify any issues for starting. GRU has several units with dual fuel capability, so GRU ensures the backup fuel systems are fully operational. Any events that cause a loss of generation or derate is considered an incident and those are fully investigated, and root causes addressed which could include updating the checklist procedures.**

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

**GRU does not have any changes to our winterization plans, GRU plans to execute the plans that currently have been working for us.**

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

Flood mitigation is minimized by the location of GRU's power plants. None of GRU's power plants are located by the coast or active rivers, so GRU does not have any large bodies of water that would flow onto the sites. GRU maintains sumps and plant drain systems on a routine basis to ensure they are clear and working properly to move water. The ponds on site are maintained at operating levels that would provide adequate storage for excessive water events. The ponds are remote to the main site so an overflow of a pond would not flow water towards a generating unit disrupting its operability.

As it pertains to transmission/distribution substations, during reviews of proposed developments around substation sites, GRU ensures that proposed drainage and water/wastewater facilities do not adversely impact GRU's transmission right of ways or GRU's substation properties. If necessary, GRU will request redesign of plans to force water away from GRU-owned facilities.

If any third Party seeks to utilize or cross GRU's Right of Ways in any way, the Party must submit a permit application to GRU's Real Estate Department, which triggers an internal Engineering review process to ensure the proposed use will not adversely impact drainage or cause flooding in GRU's transmission/distribution substation facilities and rights of way.

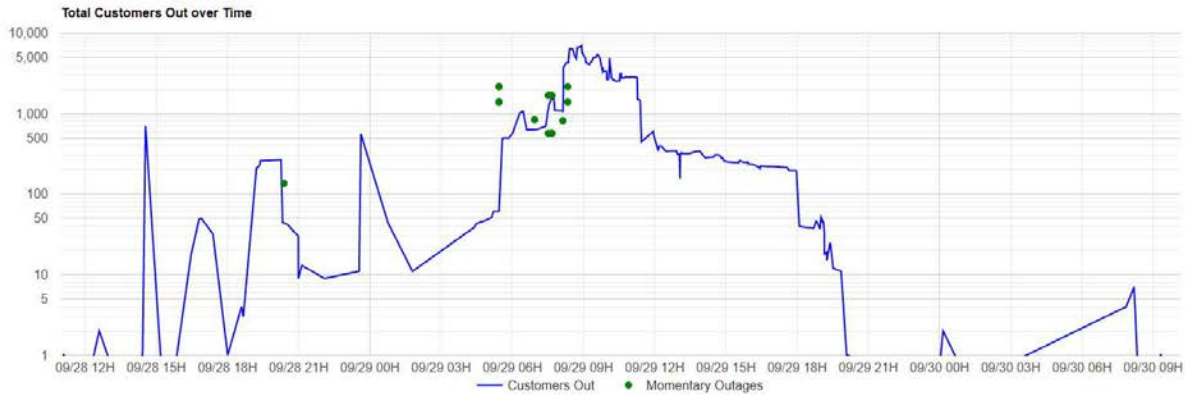
GRU's substations were sited in areas with well-draining soil, with substation equipment installed on concrete pads. Distribution transformers and switchgear are also installed on concrete pads, helping mitigate the risk of water intrusion. If necessary, GRU has access to vacuum trucks, portable pumps, and backup generators through the utility's wastewater department to assist in flood mitigation.

94. Please address the following questions regarding the impact of all major storm events, such as Hurricane Ian, with associated flooding, destruction of utility facilities and customer buildings, and forced customer permanent migration.
- a. Based on actual data, please briefly summarize the impact that major storms have had on your utility's customer number, retail sales and peak load.

Hurricane Ian resulted in some of GRU's customers experiencing a temporary loss of power. However, GRU did not permanently lose any of our customers. Here is a snapshot of the impact:



STORM SCORECARD					
Customer Remaining	Customers Restored	Job Remaining	Job Restored	Momentary Incidents	% Jobs Remain
0	16642	0	81	14	



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

**There might have been some impact to the day-ahead planning, but the impact shown in 94a (above) was very minimal. GRU is located of where the Hurricane had the most impact.**

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

**N/A**

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

**Yes, GRU revised our plant specific, Standard Operating Procedures (SOPs) to ensure compliance with NERC EOP-11-2 requirements. Operations drafted an Energy Supply policy (ES-NERC-Cold Weather). This document was validated alongside our plant specific checklists, and training was conducted and documented.**

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

AFUDC RATE	_____	4.0 %
CAPITALIZATION RATIOS:		
	DEBT _____	70 %
	PREFERRED _____	%
	EQUITY _____	30 %
RATE OF RETURN		
	DEBT _____	10 %
	PREFERRED _____	%
	EQUITY _____	10 %
INCOME TAX RATE:		
	STATE _____	%
	FEDERAL _____	%
	EFFECTIVE _____	%
OTHER TAX RATE:	_____	%
DISCOUNT RATE:	_____	%
TAX		
DEPRECIATION RATE:	_____	%

**Financial Escalation Assumptions**

Year	General	Plant Construction	Fixed O&M	Variable O&M
	Inflation	Cost	Cost	Cost
	%	%	%	%
2023	6.00%	6.00%	6.00%	6.00%
2024	4.50%	4.50%	4.50%	4.50%
2025	3.00%	3.00%	3.00%	3.00%
2026	2.50%	2.50%	2.50%	2.50%
2027	2.50%	2.50%	2.50%	2.50%
2028	2.50%	2.50%	2.50%	2.50%
2029	2.50%	2.50%	2.50%	2.50%
2030	2.50%	2.50%	2.50%	2.50%
2031	2.50%	2.50%	2.50%	2.50%
2032	2.50%	2.50%	2.50%	2.50%

TYSP Year 2023

Staff's Data Ref 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
1/1/2022	163	155	148	142	139	138	142	144	151	161	175	189	203	212	216	220	220	218	220	211	202	191	181	169
1/2/2022	158	149	144	141	139	140	145	148	158	170	183	198	208	215	222	226	227	229	235	230	222	212	199	186
1/3/2022	175	168	154	142	136	138	147	155	164	167	169	171	173	174	175	178	185	198	216	218	214	206	195	184
1/4/2022	176	171	168	168	174	188	212	227	228	217	206	196	190	189	187	187	192	206	218	215	208	197	184	171
1/5/2022	160	152	148	146	149	157	176	188	192	193	192	191	188	192	190	188	191	203	219	218	212	204	192	180
1/6/2022	171	164	161	161	166	179	201	216	219	210	201	192	188	185	184	188	192	200	214	213	206	195	181	168
1/7/2022	155	146	141	139	141	149	167	178	183	183	182	183	182	181	183	185	189	196	206	206	200	194	185	176
1/8/2022	169	163	160	159	161	167	176	186	195	194	190	184	183	182	183	185	189	196	206	203	195	185	174	163
1/9/2022	152	145	139	136	136	139	146	152	162	169	176	183	191	198	205	210	215	220	230	226	215	202	188	171
1/10/2022	156	144	138	134	136	144	162	176	182	184	188	195	199	199	197	195	195	203	216	214	205	193	179	166
1/11/2022	155	147	144	145	152	167	195	217	226	222	212	203	196	192	188	189	195	209	227	228	222	213	200	188
1/12/2022	178	171	167	167	172	184	206	221	224	215	209	199	189	185	185	186	191	202	215	213	207	196	183	168
1/13/2022	157	148	141	141	145	156	178	194	198	195	190	188	188	184	183	184	190	198	212	212	208	200	188	177
1/14/2022	167	160	157	157	163	174	195	213	220	215	206	198	191	187	185	185	190	198	212	213	209	203	196	188
1/15/2022	182	177	174	173	177	186	198	210	219	213	201	191	184	179	176	177	181	189	201	200	195	185	175	165
1/16/2022	155	146	141	137	137	140	145	151	160	170	174	176	182	185	189	185	192	202	214	211	208	200	193	187
1/17/2022	180	176	175	176	183	194	210	222	232	233	230	223	215	206	199	198	204	220	239	243	242	236	225	214
1/18/2022	205	201	203	209	222	244	276	299	299	280	260	241	224	210	201	200	204	219	242	249	248	242	232	222
1/19/2022	215	212	211	214	222	239	267	286	283	258	232	213	200	192	187	189	193	203	218	218	213	204	191	176
1/20/2022	166	161	159	160	167	182	207	223	224	212	200	192	188	187	188	190	194	202	215	214	207	196	181	166
1/21/2022	154	146	139	137	139	147	165	179	185	191	195	198	198	198	198	199	204	214	224	222	216	209	199	190
1/22/2022	181	176	173	174	178	187	199	211	226	241	249	253	255	257	254	250	254	266	279	278	274	266	255	244
1/23/2022	236	229	224	223	223	228	237	249	265	281	290	290	279	252	235	227	229	244	267	277	281	277	271	264
1/24/2022	261	261	264	270	283	303	335	351	322	285	257	239	227	216	214	219	234	256	260	256	245	230	216	
1/25/2022	205	196	191	189	193	205	228	241	243	234	224	221	218	216	218	221	228	239	253	253	245	234	218	202
1/26/2022	189	180	176	174	178	189	212	225	229	228	226	223	224	222	217	218	223	235	250	247	239	227	210	194
1/27/2022	181	172	167	166	171	183	204	218	222	216	216	215	213	203	191	189	196	208	226	229	227	219	208	196
1/28/2022	185	178	174	172	176	187	209	224	229	229	225	216	209	203	204	204	206	217	228	228	222	215	211	207
1/29/2022	204	202	203	207	214	225	242	258	271	274	271	265	256	244	234	230	236	254	277	290	294	297	295	293
1/30/2022	291	290	291	295	302	310	324	335	340	319	291	267	248	231	220	215	220	235	257	265	266	259	252	244
1/31/2022	236	229	228	231	231	239	256	284	300	292	263	235	215	203	194	188	188	193	204	222	227	223	215	205
2/1/2022	187	184	185	190	200	220	252	271	268	243	220	204	192	185	182	184	189	199	215	218	213	205	192	178
2/2/2022	167	161	159	160	167	182	207	221	219	204	194	186	183	183	186	186	194	200	213	214	207	196	181	166
2/3/2022	153	144	138	136	139	149	172	185	187	185	186	188	192	197	202	208	212	217	225	225	217	204	187	170
2/4/2022	156	146	140	136	137	145	163	175	182	188	197	201	208	213	218	221	221	223	230	228	218	204	189	173
2/5/2022	160	149	140	135	132	134	141	149	162	171	175	183	181	187	185	188	193	203	214	214	208	201	192	183
2/6/2022	174	167	162	160	159	163	171	180	192	203	213	222	226	229	230	230	233	241	249	249	243	232	218	203

2/7/2022	192	184	181	181	187	200	224	240	244	245	245	242	237	231	224	224	232	247	262	260	252	238	220	206
2/8/2022	192	184	179	179	183	197	220	234	240	243	246	246	245	238	235	233	234	246	260	261	254	241	225	212
2/9/2022	200	195	195	199	210	231	263	278	275	258	235	218	205	195	190	189	194	206	225	235	236	233	223	215
2/10/2022	207	203	203	206	217	238	272	292	285	253	227	208	196	187	184	184	188	197	213	221	219	213	203	195
2/11/2022	188	183	181	181	189	203	229	244	237	225	204	192	184	181	182	184	188	193	200	203	197	189	181	171
2/12/2022	161	155	151	149	150	155	166	174	183	186	186	185	180	181	185	186	188	194	202	200	193	183	172	162
2/13/2022	152	145	139	135	134	137	144	151	164	176	185	194	182	182	183	187	191	199	206	203	196	192	188	180
2/14/2022	172	168	169	174	185	204	238	262	262	246	231	215	203	193	187	187	191	203	225	234	233	227	218	209
2/15/2022	203	200	201	205	216	234	264	280	269	242	222	204	196	193	189	189	189	200	216	223	217	209	195	183
2/16/2022	173	166	163	163	169	182	206	216	211	198	191	187	185	187	186	191	196	202	213	217	210	199	183	169
2/17/2022	155	144	139	136	137	147	166	178	183	185	191	198	203	207	215	222	230	234	240	241	230	216	200	184
2/18/2022	170	158	149	144	144	151	170	183	192	199	206	215	220	221	226	228	225	225	229	225	215	205	192	180
2/19/2022	164	150	141	135	133	134	140	146	156	168	168	170	171	172	172	176	179	185	192	195	190	184	176	169
2/20/2022	162	157	156	157	161	170	181	191	199	195	186	179	175	174	175	179	187	194	201	205	198	188	175	162
2/21/2022	150	140	136	135	138	147	164	177	181	181	182	185	189	195	202	209	217	221	227	229	219	204	188	171
2/22/2022	156	145	137	133	134	142	161	173	178	181	188	196	205	215	224	234	242	246	247	245	233	218	199	179
2/23/2022	163	151	143	138	138	143	164	176	185	191	200	212	225	233	241	248	252	255	255	253	242	225	205	184
2/24/2022	166	154	144	139	139	145	162	175	182	189	198	209	223	236	250	260	268	268	265	261	248	229	209	189
2/25/2022	171	158	148	142	141	146	161	173	183	192	205	219	233	244	255	261	266	263	254	245	230	213	198	182
2/26/2022	166	153	145	138	135	136	142	149	162	174	186	200	216	230	241	248	253	253	248	244	230	215	200	185
2/27/2022	169	157	148	143	141	142	146	151	164	178	193	209	225	236	244	252	256	254	249	247	233	216	196	177
2/28/2022	160	148	141	137	138	145	162	174	182	186	188	191	196	196	193	191	192	199	210	212	205	194	180	165
Leave Row Blank																								
3/1/2022	153	145	140	138	141	152	172	185	189	182	178	176	178	182	186	189	197	202	208	213	204	192	178	163
3/2/2022	151	144	140	139	144	157	182	197	195	186	180	178	178	182	188	196	204	210	212	214	205	192	177	162
3/3/2022	151	143	139	138	142	155	179	193	191	185	181	181	185	192	198	207	214	218	220	222	211	196	179	163
3/4/2022	149	140	135	132	134	143	164	177	179	178	180	185	192	200	209	219	225	226	220	217	204	189	177	164
3/5/2022	151	143	137	134	133	136	142	149	159	170	181	192	201	210	220	229	236	236	229	226	215	201	186	171
3/6/2022	158	147	140	135	133	134	138	144	157	169	181	191	205	219	234	246	254	256	248	244	231	215	197	179
3/7/2022	163	151	143	139	139	145	161	172	182	193	206	219	230	248	238	252	267	271	265	261	246	226	205	184
3/8/2022	168	156	150	148	149	157	175	185	193	201	210	222	236	249	264	260	254	255	254	255	242	227	208	189
3/9/2022	175	165	158	155	156	165	184	194	200	232	217	235	245	253	242	222	220	218	221	220	211	200	185	170
3/10/2022	157	148	142	138	138	145	161	171	179	188	195	198	198	192	189	190	193	200	206	211	203	191	178	162
3/11/2022	150	142	137	135	136	144	160	172	181	187	196	200	200	201	199	198	200	202	204	203	198	189	179	168
3/12/2022	155	149	145	143	145	148	156	163	171	176	175	171	170	164	162	164	168	175	185	197	196	193	187	183
3/13/2022	178	175	175	179	188	200	214	229	234	229	217	205	193	184	178	178	183	191	201	213	210	200	188	176
3/14/2022	169	165	164	169	180	203	219	222	211	198	187	184	181	183	182	189	192	199	205	210	200	186	169	155
3/15/2022	144	137	134	135	142	161	175	181	185	188	192	196	195	197	196	198	200	206	211	211	203	188	172	158
3/16/2022	148	142	138	139	147	165	178	184	192	195	197	199	203	209	212	220	227	228	224	226	215	197	177	161
3/17/2022	150	143	137	137	143	160	174	179	182	185	188	193	199	208	219	230	239	241	234	231	217	198	178	160
3/18/2022	147	138	134	134	140	157	171	176	180	184	191	201	218	236	250	260	265	261	254	239	217	200	184	169
3/19/2022	157	147	140	137	138	143	150	160	172	187	201	211	227	238	239	246	248	246	240	238	227	213	193	177
3/20/2022	165	154	143	138	137	139	143	150	158	163	166	171	175	180	187	196	204	207	204	204	193	180	164	150
3/21/2022	140	133	131	134	142	159	175	183	183	180	178	177	180	186	194	204	214	218	215	216	205	189	171	155

3/22/2022	142	135	131	130	137	152	164	172	176	178	182	186	194	204	215	229	240	244	238	238	230	214	194	175
3/23/2022	161	151	145	144	150	163	175	185	195	204	212	217	222	227	228	226	227	228	228	225	216	201	186	172
3/24/2022	160	151	147	145	149	161	172	180	186	194	198	201	199	197	195	194	196	198	200	202	194	180	165	153
3/25/2022	143	136	133	133	139	152	163	171	174	175	177	178	182	185	187	190	194	195	191	193	185	175	162	150
3/26/2022	142	135	132	132	135	144	152	162	166	167	167	167	168	170	175	183	189	191	190	192	184	173	162	150
3/27/2022	141	134	130	129	130	137	143	153	159	163	165	168	171	176	183	193	202	205	203	205	195	180	163	150
3/28/2022	139	132	129	131	138	153	167	175	178	181	186	193	202	213	224	236	244	246	241	240	225	204	182	163
3/29/2022	149	140	134	134	142	160	173	177	181	188	195	203	213	226	240	253	262	263	254	249	234	213	191	172
3/30/2022	157	147	141	140	146	163	174	181	188	195	201	212	222	237	252	267	276	278	268	265	250	228	206	185
3/31/2022	169	157	152	152	152	159	177	190	198	204	211	216	222	227	225	223	214	214	215	213	216	208	194	178
4/1/2022	164	152	146	144	145	151	167	177	183	187	190	196	203	213	225	239	251	256	254	242	232	218	200	182
4/2/2022	166	153	142	136	133	134	140	146	158	171	184	194	201	196	195	190	189	192	193	193	194	185	176	166
4/3/2022	154	145	138	133	132	133	138	142	153	163	169	172	177	183	190	199	210	222	226	221	220	208	191	171
4/4/2022	154	142	134	130	132	140	158	169	174	178	183	188	194	203	214	228	241	250	254	249	246	232	210	189
4/5/2022	170	156	146	141	140	147	165	176	185	197	210	225	241	258	272	281	290	291	291	281	278	265	243	218
4/6/2022	199	184	176	169	168	174	192	205	212	222	235	247	253	263	262	266	267	272	277	275	276	265	247	227
4/7/2022	209	195	187	181	180	187	204	215	222	217	216	216	231	254	262	273	278	279	273	256	247	230	207	184
4/8/2022	165	151	141	135	134	139	155	164	170	172	173	174	176	178	181	185	189	192	192	189	191	185	174	161
4/9/2022	150	141	134	130	129	131	139	147	159	165	166	166	165	164	164	164	168	174	179	181	184	179	170	161
4/10/2022	153	146	142	141	142	146	155	164	174	175	173	170	169	170	173	178	187	197	203	203	205	196	181	163
4/11/2022	148	138	132	130	133	143	163	178	182	180	179	179	183	189	196	206	219	232	237	233	230	217	198	178
4/12/2022	160	147	138	133	134	142	160	171	177	183	190	197	208	219	233	248	262	272	272	261	254	242	220	196
4/13/2022	176	161	149	142	142	147	161	171	180	189	199	212	223	235	248	261	273	278	273	266	264	250	229	206
4/14/2022	187	170	159	151	150	157	174	183	194	201	208	217	227	238	250	266	274	274	270	265	263	249	229	208
4/15/2022	188	172	162	156	155	160	175	184	193	202	217	235	246	265	270	266	265	264	257	246	242	230	214	196
4/16/2022	178	164	152	144	142	144	151	157	171	185	200	217	237	258	274	289	296	299	294	285	281	267	247	225
4/17/2022	204	186	173	165	160	160	162	165	181	200	218	239	265	285	285	263	236	225	226	224	228	222	209	191
4/18/2022	174	161	152	147	148	155	171	185	194	201	207	216	218	229	250	265	277	287	288	277	268	251	226	200
4/19/2022	179	163	152	144	141	144	158	166	170	172	173	176	181	187	194	203	214	222	223	217	214	202	183	165
4/20/2022	150	140	132	129	131	138	156	167	171	173	178	183	188	196	205	213	221	226	228	223	223	212	194	175
4/21/2022	159	147	139	134	134	139	156	167	176	181	190	198	208	215	222	228	234	238	238	232	230	219	198	179
4/22/2022	162	150	142	137	136	143	158	168	176	185	194	202	213	223	232	238	243	245	241	231	227	216	200	184
4/23/2022	168	155	145	139	136	137	141	147	159	172	185	196	208	220	231	239	247	251	249	239	234	222	206	188
4/24/2022	172	159	148	142	139	140	143	147	160	176	194	210	223	239	254	269	279	286	281	270	262	250	229	205
4/25/2022	184	169	156	149	148	153	167	177	188	200	213	229	244	261	277	291	303	312	311	298	286	266	239	213
4/26/2022	191	174	163	155	152	157	172	181	193	205	219	237	257	271	290	301	303	301	298	292	285	267	241	215
4/27/2022	193	177	166	158	157	162	175	184	192	201	213	231	250	273	290	301	310	312	305	291	278	260	235	212
4/28/2022	192	177	166	159	157	162	176	184	190	197	208	219	230	246	262	271	276	278	270	255	247	233	212	189
4/29/2022	170	156	147	141	140	145	159	169	179	188	199	212	226	240	253	266	277	274	263	250	243	232	216	197
4/30/2022	180	166	156	148	144	145	149	154	169	184	200	217	233	249	261	274	281	277	263	253	249	234	216	197
5/1/2022	180	165	154	146	143	143	145	150	165	182	199	216	234	254	272	289	297	296	273	261	249	236	218	195
5/2/2022	176	162	153	148	148	155	169	179	191	202	216	235	254	273	290	307	318	320	307	293	283	267	242	218
5/3/2022	196	180	169	163	162	168	183	192	200	209	225	241	261	279	298	313	323	330	315	301	295	279	254	228
5/4/2022	204	184	170	161	158	162	176	184	195	210	229	251	273	291	308	321	330	336	328	309	296	278	251	224



5/5/2022	202	184	172	164	161	166	180	190	203	218	236	258	284	310	334	348	357	359	351	334	316	293	262	233
5/6/2022	209	191	177	168	164	168	179	188	200	216	232	250	272	295	311	319	315	308	295	283	279	269	252	234
5/7/2022	218	200	186	177	172	171	172	178	192	206	217	232	246	261	273	283	288	289	282	268	257	244	225	205
5/8/2022	185	170	158	150	146	145	146	150	162	175	189	205	227	248	266	279	293	302	298	283	271	256	232	207
5/9/2022	186	169	158	151	149	154	166	174	183	191	201	215	228	241	251	260	267	274	271	259	247	232	207	183
5/10/2022	163	149	140	135	134	140	154	163	171	179	185	193	203	215	230	246	259	268	267	257	245	231	206	182
5/11/2022	162	148	139	134	133	140	153	163	171	178	187	197	205	220	234	250	265	275	275	266	257	243	219	193
5/12/2022	172	156	146	140	139	144	158	167	178	187	196	206	221	237	251	260	261	266	262	253	249	237	215	192
5/13/2022	175	162	152	146	146	151	166	175	186	197	208	224	235	246	257	270	271	256	240	229	224	216	201	185
5/14/2022	170	157	148	141	139	140	143	149	164	180	196	211	230	247	263	277	290	295	279	261	255	244	227	206
5/15/2022	187	173	162	155	152	152	154	159	173	191	209	234	263	284	301	316	312	283	264	249	244	235	217	196
5/16/2022	177	162	151	147	148	155	169	180	189	205	220	239	261	281	287	272	281	291	296	289	281	268	243	217
5/17/2022	196	180	170	163	161	166	181	192	207	222	242	267	294	314	330	337	328	336	331	319	310	292	266	239
5/18/2022	216	198	186	179	177	185	201	210	221	237	261	289	311	330	347	361	372	373	357	333	319	300	272	242
5/19/2022	217	199	186	178	175	180	192	202	218	236	257	280	307	331	350	363	370	370	357	339	323	305	276	247
5/20/2022	221	202	189	180	177	180	191	201	219	239	262	287	309	325	332	341	354	354	336	311	295	278	257	236
5/21/2022	216	200	188	179	173	171	173	177	192	211	229	244	270	290	303	315	302	273	267	252	246	238	222	205
5/22/2022	189	174	164	158	156	156	159	164	181	198	215	238	267	287	302	316	330	335	328	316	298	266	246	223
5/23/2022	204	188	179	175	176	184	198	208	221	234	252	274	295	314	330	342	352	355	346	332	319	301	272	245
5/24/2022	223	205	193	184	181	187	202	212	223	237	260	287	310	327	343	358	369	373	367	348	333	316	288	258
5/25/2022	232	210	196	186	184	189	202	211	226	241	258	278	297	317	332	339	340	341	342	330	320	305	278	251
5/26/2022	229	213	201	194	193	199	211	220	231	242	254	271	285	302	313	331	335	335	325	315	308	285	255	231
5/27/2022	211	197	187	180	178	183	196	207	222	243	260	260	263	249	248	247	252	251	261	258	251	247	231	212
5/28/2022	194	179	168	160	156	155	156	163	179	197	217	236	257	277	291	303	311	315	311	295	277	260	237	214
5/29/2022	194	179	168	159	155	154	154	160	178	200	219	242	267	289	307	320	331	336	330	314	300	284	232	207
5/30/2022	194	179	168	161	160	162	164	169	186	208	232	259	286	310	330	344	348	344	331	314	301	266	242	220
5/31/2022	201	186	177	171	171	170	175	184	196	215	233	254	276	298	320	335	330	313	299	292	283	277	266	244
6/1/2022	199	182	171	164	163	168	178	190	206	224	242	258	280	299	316	333	338	340	331	319	302	286	259	231
6/2/2022	207	189	176	167	164	167	176	187	204	222	241	262	287	310	332	351	364	370	364	349	328	310	285	259
6/3/2022	234	214	199	188	182	183	189	200	217	238	263	293	319	343	361	374	379	372	362	343	324	306	282	257
6/4/2022	233	213	198	187	180	178	178	183	203	224	245	267	291	311	329	343	348	349	341	326	305	288	265	241
6/5/2022	219	202	188	178	172	171	171	176	195	216	235	259	285	310	330	341	352	351	332	320	308	295	272	248
6/6/2022	226	209	196	187	185	190	199	210	227	246	267	290	314	336	355	356	335	302	280	264	254	247	228	208
6/7/2022	188	175	166	161	160	167	182	194	205	218	232	254	282	309	331	351	365	372	369	356	340	321	291	263
6/8/2022	239	219	205	196	192	195	204	216	233	252	276	305	332	357	375	365	334	338	348	341	324	311	286	260
6/9/2022	236	217	204	195	193	197	206	217	236	258	282	302	327	346	362	378	387	379	353	307	294	277	255	234
6/10/2022	215	201	191	185	183	189	200	212	229	245	265	287	312	322	308	286	289	300	300	290	284	276	260	242
6/11/2022	226	212	201	193	188	187	186	192	209	234	259	282	304	318	315	292	281	283	292	289	283	274	256	236
6/12/2022	219	203	190	182	178	177	179	183	199	215	228	240	248	269	292	287	286	292	294	285	279	274	257	237
6/13/2022	218	204	193	188	188	194	202	215	233	254	275	293	309	332	349	363	374	374	369	352	338	323	297	270
6/14/2022	246	229	216	207	204	207	215	227	247	269	291	317	341	362	379	393	394	367	365	352	322	298	273	247
6/15/2022	222	206	195	186	183	186	196	208	225	244	267	295	324	350	375	391	400	402	399	386	372	357	330	302
6/16/2022	275	253	237	225	220	221	227	238	256	281	309	340	367	392	412	423	429	426	409	388	368	350	321	294
6/17/2022	268	247	231	218	209	207	211	218	234	253	274	299	324	351	374	390	399	403	398	381	359	339	313	288

6/18/2022	263	243	227	217	210	207	205	211	237	269	301	323	332	333	332	352	374	382	383	371	344	320	293	267
6/19/2022	244	228	218	211	204	201	198	204	219	242	271	302	325	349	371	346	320	307	303	297	290	285	270	250
6/20/2022	234	221	210	203	202	206	212	222	240	261	280	304	327	346	362	375	380	377	368	351	330	311	284	255
6/21/2022	228	208	193	183	178	179	188	199	215	233	255	278	300	323	344	356	364	366	358	340	323	306	279	250
6/22/2022	225	206	193	187	187	191	201	209	221	237	261	289	318	342	364	379	388	391	387	373	358	341	313	285
6/23/2022	259	239	224	214	209	210	217	226	243	270	303	338	373	402	412	411	393	386	385	372	356	342	313	283
6/24/2022	260	246	237	230	230	232	239	250	270	295	323	355	377	393	408	369	322	303	286	270	260	253	238	222
6/25/2022	206	194	185	179	176	176	178	184	198	216	242	265	291	303	310	321	331	334	330	321	306	292	270	246
6/26/2022	224	206	193	184	177	175	173	178	197	220	243	267	292	314	326	337	344	347	342	328	310	293	267	240
6/27/2022	213	195	182	174	171	176	185	198	216	238	257	270	288	305	322	329	347	359	356	344	328	313	286	259
6/28/2022	236	218	205	198	195	199	208	218	235	257	281	304	329	355	377	393	402	396	389	373	357	340	313	285
6/29/2022	260	242	227	215	210	212	220	228	246	265	287	313	340	365	385	398	405	402	351	326	315	297	270	246
6/30/2022	224	208	196	188	186	190	199	210	227	250	273	297	319	340	359	374	387	375	353	329	314	300	278	253
7/1/2022	230	212	200	192	190	192	201	210	226	246	269	294	322	325	300	312	335	336	333	319	303	290	263	239
7/2/2022	220	207	197	190	185	184	183	188	205	223	248	274	292	288	273	285	296	303	302	293	285	277	260	242
7/3/2022	224	211	199	191	186	185	183	187	206	233	262	286	277	259	248	253	275	292	300	297	284	274	258	242
7/4/2022	222	208	197	191	193	200	191	189	204	226	257	286	311	335	352	364	372	377	372	353	331	314	294	271
7/5/2022	249	231	218	207	204	206	212	222	238	259	283	312	335	344	334	326	307	298	292	286	283	279	263	244
7/6/2022	224	210	200	192	191	194	203	214	235	257	283	310	332	349	370	386	393	384	370	360	347	330	300	273
7/7/2022	249	231	218	210	206	209	216	225	242	265	295	327	348	350	344	368	390	389	368	347	330	315	291	265
7/8/2022	245	228	215	206	202	203	210	221	239	264	291	317	340	362	346	333	336	325	307	294	283	275	259	242
7/9/2022	224	212	204	198	193	193	194	200	221	249	276	303	321	340	349	365	377	358	333	313	300	291	276	257
7/10/2022	238	224	213	206	201	201	201	206	225	250	279	302	305	300	288	290	303	307	286	274	268	264	252	234
7/11/2022	217	205	196	191	190	195	206	219	235	254	276	302	322	337	355	361	329	316	306	296	289	273	258	239
7/12/2022	219	204	195	188	187	193	203	214	232	253	279	302	326	350	367	381	389	391	384	365	344	327	300	272
7/13/2022	248	228	217	207	204	206	214	223	239	267	296	320	346	356	355	372	389	395	388	372	349	331	304	276
7/14/2022	252	232	219	211	209	210	218	225	245	268	290	316	340	363	377	386	392	345	320	302	291	283	264	238
7/15/2022	216	200	187	179	176	179	188	196	212	232	254	280	305	329	351	368	376	378	369	349	329	316	292	266
7/16/2022	242	224	209	199	193	191	192	194	206	226	247	272	295	283	262	253	246	244	246	248	247	245	234	219
7/17/2022	205	191	181	175	171	171	173	178	192	209	232	261	289	312	329	345	350	337	326	322	311	297	274	249
7/18/2022	228	211	199	192	191	196	206	217	234	253	279	292	285	300	309	321	309	307	311	311	305	297	276	254
7/19/2022	233	217	206	198	197	200	211	220	236	256	274	289	307	303	310	319	349	336	303	285	272	267	250	231
7/20/2022	213	200	191	186	185	189	200	211	230	246	266	281	308	330	344	346	340	317	291	276	270	264	246	227
7/21/2022	209	195	186	179	177	182	192	201	219	238	263	292	316	339	359	374	383	387	382	368	349	330	301	274
7/22/2022	249	230	216	207	201	203	210	218	235	258	284	311	340	363	383	395	400	335	308	294	284	274	255	237
7/23/2022	220	206	195	187	182	181	183	187	206	230	257	285	314	340	358	367	338	313	296	282	274	265	250	233
7/24/2022	217	205	196	188	183	183	182	186	206	231	258	285	307	322	302	285	266	256	249	243	242	239	226	209
7/25/2022	194	182	174	170	171	178	189	199	218	239	260	284	309	332	353	370	382	370	367	353	334	316	287	260
7/26/2022	236	219	207	198	195	197	206	213	233	256	279	303	329	349	369	385	393	386	348	311	292	276	255	235
7/27/2022	216	200	188	181	179	183	193	202	219	240	261	285	308	329	348	365	375	383	371	350	329	313	287	259
7/28/2022	235	217	205	197	194	196	204	212	230	254	283	308	332	351	368	384	393	393	382	369	350	330	302	274
7/29/2022	250	231	218	207	203	207	214	222	238	262	288	315	339	364	384	397	406	408	398	381	362	341	314	286
7/30/2022	261	241	226	215	207	203	203	205	223	247	275	300	331	355	371	383	388	391	388	372	354	332	308	283
7/31/2022	259	239	224	213	213	205	201	200	201	220	245	271	299	328	353	371	382	390	396	392	378	358	344	319

8/1/2022	265	245	231	221	217	219	227	235	252	273	298	326	354	376	390	403	407	402	396	376	363	346	319	292
8/2/2022	268	250	233	220	214	215	223	230	246	272	299	327	353	377	396	410	417	417	407	376	355	337	312	286
8/3/2022	263	246	231	221	219	222	229	235	244	266	287	317	341	360	379	393	395	386	347	311	291	277	256	235
8/4/2022	217	203	193	186	185	189	200	210	228	249	272	301	327	349	367	382	390	395	384	363	346	327	299	272
8/5/2022	249	232	219	209	206	208	216	222	236	257	286	310	335	360	378	388	395	385	371	354	336	320	299	277
8/6/2022	256	239	226	217	211	210	211	214	232	256	277	302	326	346	343	333	319	324	327	314	305	291	273	255
8/7/2022	238	223	212	203	198	195	195	197	216	240	264	292	319	343	360	364	356	321	309	297	290	278	261	241
8/8/2022	222	207	196	189	188	192	203	212	229	252	275	299	323	343	363	367	318	300	284	272	268	260	242	223
8/9/2022	205	191	182	177	177	184	198	208	224	246	269	292	317	339	364	380	388	387	370	349	335	319	291	263
8/10/2022	241	225	213	205	203	209	226	233	245	264	284	307	330	355	375	381	380	378	361	346	334	318	292	266
8/11/2022	245	230	218	209	206	210	224	231	240	258	272	263	261	264	264	271	286	299	299	294	291	278	259	237
8/12/2022	220	206	195	187	185	190	206	215	222	233	248	268	292	321	343	358	371	373	359	336	319	300	276	254
8/13/2022	235	220	210	202	196	194	196	199	212	235	260	281	299	299	274	273	270	272	266	260	258	251	238	222
8/14/2022	206	195	188	180	176	176	179	182	198	217	239	259	283	305	326	339	349	355	346	332	322	304	277	250
8/15/2022	225	205	190	182	178	182	194	201	213	230	247	269	296	320	339	359	369	373	368	350	329	305	279	252
8/16/2022	228	210	197	189	186	189	203	210	223	243	271	299	326	341	352	350	356	357	318	303	297	285	265	243
8/17/2022	226	212	203	198	197	202	217	222	231	249	274	305	334	359	381	397	398	396	369	331	315	296	270	246
8/18/2022	225	208	197	188	186	190	205	212	225	243	268	300	324	342	310	289	287	290	285	278	275	265	246	226
8/19/2022	206	192	183	178	178	184	199	208	221	236	251	262	273	300	329	355	374	364	344	331	320	304	282	260
8/20/2022	238	221	209	199	193	191	194	197	214	237	266	299	327	348	359	372	373	352	340	330	316	292	267	245
8/21/2022	224	208	196	188	183	183	185	188	206	229	255	288	320	348	360	369	361	316	298	286	282	270	253	233
8/22/2022	214	200	190	185	185	193	210	220	233	248	271	299	327	347	345	319	303	294	290	281	279	269	252	232
8/23/2022	215	199	191	185	183	189	204	212	225	244	262	285	312	334	352	373	384	383	341	314	303	285	264	241
8/24/2022	220	204	194	187	184	189	205	214	223	240	260	287	309	334	354	375	386	388	379	350	319	299	275	251
8/25/2022	231	214	202	193	190	194	208	218	230	250	274	302	327	345	359	345	326	334	318	294	285	270	251	232
8/26/2022	212	197	187	179	177	181	194	203	215	233	252	277	299	316	334	348	356	355	328	304	288	272	252	230
8/27/2022	213	197	186	178	173	174	179	185	197	214	231	251	274	295	310	317	322	328	318	302	287	271	252	232
8/28/2022	215	201	189	180	174	173	175	176	192	215	238	264	289	313	331	347	350	340	305	287	279	265	247	226
8/29/2022	208	194	185	179	179	184	199	209	217	229	245	263	286	311	327	337	339	339	328	316	307	289	267	242
8/30/2022	222	205	195	188	188	193	208	217	227	245	262	285	305	330	350	357	345	329	318	311	306	292	271	247
8/31/2022	226	210	198	192	192	191	196	210	219	230	247	269	289	309	325	335	337	346	348	325	307	298	280	259
9/1/2022	219	203	192	183	182	186	202	211	220	229	251	277	301	318	319	308	312	308	298	287	282	268	247	224
9/2/2022	207	192	182	175	174	179	192	199	209	223	241	261	284	299	287	287	300	305	295	284	278	266	249	234
9/3/2022	219	204	193	184	180	180	184	189	203	225	252	279	304	322	335	344	325	309	290	276	266	252	235	225
9/4/2022	213	199	188	180	177	177	180	182	199	223	247	273	298	322	335	317	290	278	271	264	259	247	234	220
9/5/2022	206	193	182	176	175	177	181	184	199	223	249	279	310	336	351	364	375	378	365	346	334	314	288	264
9/6/2022	241	222	208	198	195	196	210	218	229	248	270	293	319	343	362	377	387	392	383	367	351	325	295	267
9/7/2022	243	224	210	202	197	200	213	220	232	251	273	296	315	336	354	367	369	372	368	351	338	316	283	253
9/8/2022	230	213	200	192	189	193	208	217	222	225	225	231	239	242	242	242	246	253	258	263	257	244	228	209
9/9/2022	192	179	171	166	166	172	187	198	206	217	225	238	261	285	271	269	268	271	267	265	250	238	226	211
9/10/2022	197	187	181	177	175	175	179	182	195	216	240	268	291	295	285	265	253	252	251	248	245	238	228	221
9/11/2022	207	192	181	172	167	167	170	172	187	211	234	261	292	319	336	330	329	319	310	302	294	275	253	231
9/12/2022	210	194	181	173	171	177	194	204	214	234	255	275	299	296	278	282	274	276	272	269	270	258	240	221
9/13/2022	203	187	177	171	171	177	193	202	211	220	231	237	238	242	252	263	275	284	289	288	283	268	248	226

9/14/2022	206	191	180	173	173	178	195	206	211	215	231	250	261	270	280	285	288	299	294	286	283	266	244	222
9/15/2022	202	185	173	167	165	170	185	193	202	217	232	254	275	290	307	314	317	312	300	295	291	274	251	227
9/16/2022	206	189	177	170	168	172	187	196	206	222	243	260	282	298	283	267	263	261	259	257	255	244	229	214
9/17/2022	198	184	173	166	164	164	168	173	183	200	220	243	268	271	257	258	257	253	254	249	244	233	217	205
9/18/2022	194	181	170	161	157	157	161	166	177	191	206	224	243	252	259	252	251	259	256	255	255	244	228	210
9/19/2022	194	181	172	166	168	174	190	201	209	215	225	242	257	272	286	300	315	321	308	299	292	273	251	228
9/20/2022	207	191	180	172	171	175	193	205	213	221	234	251	272	293	311	324	334	335	327	314	301	279	255	228
9/21/2022	206	188	175	167	165	169	185	194	204	218	236	255	274	294	311	325	334	336	327	311	298	275	250	225
9/22/2022	204	186	174	166	164	169	184	194	202	217	233	254	279	300	318	335	346	349	339	321	307	285	260	235
9/23/2022	215	198	188	182	181	186	201	209	217	230	246	265	280	283	285	292	290	290	280	267	257	241	222	204
9/24/2022	187	173	162	154	151	150	154	157	167	184	202	222	244	260	273	284	289	289	279	265	257	241	223	205
9/25/2022	187	171	160	152	148	147	149	152	165	183	205	227	245	266	284	295	305	312	304	290	278	260	238	215
9/26/2022	195	178	166	158	157	162	176	186	194	212	230	248	270	293	313	329	337	340	330	320	308	288	267	242
9/27/2022	218	201	188	179	177	181	197	205	204	208	220	232	244	256	267	276	278	273	265	262	256	241	222	202
9/28/2022	184	169	159	153	152	155	166	175	184	193	199	205	206	205	200	197	197	195	190	189	183	171	159	147
9/29/2022	137	130	125	122	121	123	129	134	135	143	151	158	162	161	162	163	166	173	175	180	180	171	161	150
9/30/2022	141	133	128	124	124	127	135	143	152	159	166	175	185	197	208	214	219	224	221	216	210	196	182	168
10/1/2022	154	143	135	130	127	128	132	135	144	154	164	176	189	204	220	234	245	251	246	237	228	214	197	181
10/2/2022	165	152	143	136	133	133	136	138	147	159	169	181	195	211	227	242	256	262	254	244	234	217	200	180
10/3/2022	163	149	140	135	134	138	153	162	168	171	176	183	191	201	212	221	223	223	221	219	212	196	179	162
10/4/2022	148	137	130	125	125	131	147	157	162	165	169	175	184	189	194	201	207	212	211	211	207	195	178	159
10/5/2022	146	135	128	124	124	131	148	157	162	165	168	172	178	186	196	208	219	227	226	223	216	202	184	166
10/6/2022	151	140	132	127	127	133	149	158	164	170	177	185	193	202	214	228	239	244	238	230	223	208	191	173
10/7/2022	158	146	138	133	131	134	144	152	162	172	182	192	204	218	232	247	258	260	250	239	226	212	196	181
10/8/2022	165	152	142	135	132	132	136	142	153	166	176	186	198	214	230	245	259	263	253	241	228	212	194	177
10/9/2022	163	151	141	134	131	131	135	138	149	164	180	197	214	231	247	259	268	270	263	257	246	230	212	191
10/10/2022	173	159	148	141	140	145	158	168	172	182	194	207	222	239	255	271	282	286	277	270	260	241	220	198
10/11/2022	179	164	154	147	145	150	166	176	182	190	199	207	220	238	257	275	288	293	286	281	274	259	238	217
10/12/2022	199	184	172	165	163	168	184	193	200	207	217	232	245	257	268	276	282	281	279	282	273	258	235	211
10/13/2022	194	180	171	165	164	168	181	189	194	205	218	228	229	239	259	278	288	287	284	283	271	252	231	209
10/14/2022	187	174	165	157	154	155	167	175	178	182	190	199	212	227	243	257	267	269	256	240	228	213	197	182
10/15/2022	168	155	145	138	135	134	139	143	153	168	184	198	213	228	241	250	257	256	244	234	222	207	193	182
10/16/2022	168	153	143	136	132	131	134	138	150	166	181	197	214	231	248	260	269	272	263	254	243	231	216	196
10/17/2022	177	162	152	146	146	151	164	175	183	194	209	228	249	261	251	253	260	270	266	266	255	238	217	197
10/18/2022	181	167	157	152	151	153	168	177	178	179	182	183	190	196	204	211	213	210	206	209	200	186	168	152
10/19/2022	138	128	123	120	123	129	148	163	168	168	166	164	163	160	160	163	169	176	184	194	192	182	168	156
10/20/2022	147	140	136	135	139	151	174	189	192	186	178	170	165	163	164	167	172	179	184	192	189	179	166	154
10/21/2022	143	137	133	133	136	146	168	182	184	180	174	169	165	164	165	169	173	177	179	183	178	171	162	152
10/22/2022	144	137	133	131	132	136	145	154	162	164	162	161	160	162	164	169	176	182	183	185	180	171	161	150
10/23/2022	140	132	127	123	123	125	131	137	147	153	158	164	170	176	184	192	202	210	210	212	207	195	180	163
10/24/2022	148	136	129	125	126	133	149	160	166	169	174	181	189	197	205	216	226	230	228	227	219	204	186	167
10/25/2022	152	140	132	127	127	133	149	161	166	171	177	185	194	206	218	227	236	240	239	242	231	216	197	176
10/26/2022	160	146	137	132	132	139	156	167	172	180	193	206	210	220	234	242	253	259	255	257	247	232	214	195
10/27/2022	175	158	147	140	137	142	156	165	169	173	181	192	206	222	238	250	258	259	254	255	245	228	209	191

10/28/2022	174	160	152	147	145	151	168	180	185	193	201	209	217	222	224	220	222	220	217	218	209	198	187	176
10/29/2022	164	154	147	142	138	139	144	152	160	171	181	188	194	196	199	200	198	199	200	205	199	190	180	169
10/30/2022	158	149	143	139	136	137	141	146	155	167	178	187	196	206	216	227	237	243	240	242	233	220	203	187
10/31/2022	170	156	147	142	142	142	148	163	175	179	188	201	216	232	248	261	270	272	275	264	257	245	231	210
11/1/2022	172	159	150	144	142	147	163	176	180	185	194	207	223	241	259	273	282	283	275	271	256	240	218	196
11/2/2022	178	162	151	145	144	149	165	178	183	187	198	210	227	247	259	271	276	277	275	263	253	239	219	198
11/3/2022	180	166	157	150	148	154	171	184	188	193	199	206	216	226	235	244	248	245	240	238	227	212	193	174
11/4/2022	158	146	137	132	132	137	153	165	170	175	184	195	206	220	229	237	240	236	232	231	222	210	195	180
11/5/2022	166	154	146	140	138	139	145	152	161	175	191	209	224	237	243	239	240	246	242	240	231	222	208	193
11/6/2022	179	166	155	148	144	143	145	150	159	179	200	220	240	255	267	270	276	269	268	268	258	244	228	209
11/7/2022	189	171	156	147	143	143	151	167	179	188	200	211	225	235	241	242	247	242	244	244	235	222	208	191
11/8/2022	172	158	146	138	134	134	141	158	169	176	185	196	211	221	231	237	234	230	225	229	220	211	199	184
11/9/2022	168	155	143	136	132	132	139	155	163	168	172	174	176	178	180	181	181	184	190	200	197	189	180	167
11/10/2022	155	144	135	130	127	127	132	143	153	164	176	190	194	201	199	193	191	197	204	209	204	196	186	176
11/11/2022	164	155	147	141	138	139	144	155	165	180	190	201	212	219	223	220	222	226	225	225	215	205	197	185
11/12/2022	172	160	150	143	137	135	137	141	148	162	174	189	202	212	220	224	224	220	215	214	206	200	191	180
11/13/2022	168	156	146	139	134	132	133	139	142	153	164	171	173	174	172	174	176	179	187	196	190	183	172	161
11/14/2022	149	138	130	126	124	128	137	159	171	173	169	166	168	173	177	179	182	186	194	204	201	193	183	169
11/15/2022	156	145	135	129	126	127	135	153	165	172	178	187	191	195	199	200	201	204	211	220	217	210	201	185
11/16/2022	169	156	145	139	137	139	148	165	175	181	183	180	181	183	183	182	185	187	194	203	199	190	178	165
11/17/2022	152	141	133	128	127	129	140	161	172	179	177	174	169	167	166	168	171	178	190	203	202	199	191	179
11/18/2022	166	155	148	143	142	146	157	179	193	194	191	185	178	173	170	169	172	179	188	200	199	196	192	185
11/19/2022	178	171	164	159	155	154	158	166	173	183	190	189	191	181	175	175	178	181	190	194	191	186	178	169
11/20/2022	160	151	145	141	138	139	143	151	160	175	185	192	194	196	195	196	196	202	213	216	213	208	200	190
11/21/2022	179	170	161	157	154	157	167	183	195	198	188	181	175	175	174	175	178	181	189	197	194	187	178	165
11/22/2022	154	142	133	127	125	126	133	148	159	167	173	176	177	179	179	179	179	182	192	196	192	185	176	163
11/23/2022	151	140	131	125	124	125	131	144	153	163	168	169	173	177	181	183	186	187	192	195	191	184	176	164
11/24/2022	152	141	132	126	123	123	127	134	140	153	165	174	181	191	192	188	183	181	178	177	174	171	166	158
11/25/2022	150	142	135	131	129	130	135	141	146	155	166	176	183	190	197	201	202	202	205	209	202	193	186	176
11/26/2022	165	156	147	140	135	134	134	139	142	151	160	167	171	180	187	190	192	193	199	202	196	190	182	171
11/27/2022	160	151	143	138	134	134	135	140	143	155	169	181	195	201	214	218	219	217	217	218	209	197	186	171
11/28/2022	155	140	129	123	121	123	131	149	162	165	167	170	173	179	184	190	196	197	202	210	205	197	186	170
11/29/2022	155	142	131	125	122	125	133	152	164	168	170	173	177	183	190	194	199	202	207	214	211	203	192	177
11/30/2022	161	148	137	130	126	127	134	151	162	168	175	183	195	207	199	191	193	196	203	212	208	200	190	174
12/1/2022	147	136	129	124	123	131	152	165	171	171	170	168	168	170	174	178	182	190	200	198	191	182	169	156
12/2/2022	146	138	132	131	133	142	162	174	176	174	171	173	175	179	181	185	188	193	198	192	184	177	167	155
12/3/2022	145	136	129	125	125	127	134	165	171	177	181	183	189	196	198	203	205	214	224	217	208	195	179	164
12/4/2022	148	138	131	128	129	137	154	165	171	177	181	183	189	196	198	203	205	214	224	217	208	195	179	164
12/5/2022	148	138	131	128	129	137	154	165	171	177	181	183	189	196	198	203	205	214	224	217	208	195	179	164
12/6/2022	150	156	134	131	131	138	155	164	171	178	187	196	202	210	217	220	221	224	230	223	214	202	185	167
12/7/2022	151	139	132	128	127	134	152	162	167	173	181	190	198	208	216	222	224	225	229	220	209	194	178	162
12/8/2022	148	138	131	127	127	133	151	160	166	174	183	193	202	210	216	221	223	225	229	223	213	199	181	164
12/9/2022	150	139	131	128	127	134	150	159	165	172	180	187	194	203	209	214	215	215	214	205	196	186	173	159
12/10/2022	146	137	130	123	120	122	129	135	145	155	167	177	187	193	196	194	193	198	202	197	190	182	171	159

12/11/2022	147	137	130	125	124	125	130	136	147	157	165	173	177	178	180	178	180	191	200	196	189	180	168	154
12/12/2022	141	132	126	124	126	135	153	164	166	168	169	172	178	179	182	186	190	199	209	204	196	184	169	154
12/13/2022	141	131	126	124	125	133	152	164	167	170	173	177	179	183	183	182	184	193	204	200	193	183	168	153
12/14/2022	141	133	128	125	127	135	153	164	167	172	176	180	188	194	199	201	207	211	217	213	205	193	178	161
12/15/2022	147	138	132	130	132	140	157	170	177	185	190	198	196	197	198	199	199	203	206	199	191	180	166	152
12/16/2022	140	133	128	127	131	141	164	180	185	182	177	171	168	167	167	170	175	184	193	191	188	183	176	167
12/17/2022	159	153	150	150	152	159	170	182	192	188	180	173	171	166	171	172	175	183	188	184	180	174	166	157
12/18/2022	149	143	139	137	139	145	153	162	175	179	176	171	167	165	164	166	173	188	202	204	204	202	195	185
12/19/2022	176	170	169	171	178	191	212	228	232	220	204	191	179	172	170	171	176	187	198	197	192	183	172	160
12/20/2022	150	144	141	140	144	153	168	178	182	183	170	155	153	153	136	174	181	190	198	197	191	183	170	158
12/21/2022	148	142	138	137	141	149	164	175	183	189	191	192	191	189	185	184	188	199	207	203	197	189	177	164
12/22/2022	153	146	142	140	142	150	164	175	183	188	188	188	183	178	175	176	179	188	197	194	190	182	171	158
12/23/2022	146	138	132	129	130	135	145	154	160	167	164	162	161	161	164	170	182	201	219	226	232	235	234	232
12/24/2022	231	231	233	237	245	256	271	285	297	295	285	269	252	238	229	229	236	252	266	271	276	278	275	271
12/25/2022	268	267	267	269	273	282	293	304	309	295	274	253	233	216	206	204	209	224	239	246	251	253	251	247
12/26/2022	245	242	242	244	254	266	279	291	299	294	276	255	236	226	217	215	219	237	256	263	266	264	256	251
12/27/2022	248	246	247	250	259	271	287	297	294	275	253	233	215	201	193	190	196	211	229	233	234	230	222	216
12/28/2022	213	214	217	222	231	243	261	272	269	247	222	201	185	176	170	170	176	187	200	200	196	189	179	169
12/29/2022	161	156	154	154	159	168	182	192	195	191	178	174	169	166	164	165	169	177	186	183	177	169	159	148
12/30/2022	139	133	131	130	133	141	154	164	171	168	164	162	162	163	165	165	168	174	182	178	173	165	155	145
12/31/2022	136	128	123	120	119	122	127	132	142	154	163	172	174	177	176	174	175	181	185	179	173	163	155	146

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Year	Month	Actual	Demand	Estimated	Day	Hour	System-Average
		Peak	Response	Peak			Temperature
		Demand	Activated	Demand			(Degrees F)
		(MW)	(MW)	(MW)			
2022	1	355			24	8	27
	2	292			10	8	32
	3	278			30	18	87
	4	297			25	18	86
	5	355			24	18	90
	6	408			16	17	98
	7	390			29	18	95
	8	398			2	18	95
	9	392			6	18	94
	10	293			11	18	88
	11	283			1	18	88
	12	309			25	9	23
2021	1	307			19	9	31
	2	348			4	8	26
	3	307			27	18	90
	4	328			30	17	88
	5	377			27	18	94
	6	390			15	17	93
	7	400			22	18	92
	8	422			18	18	94
	9	363			14	16	91
	10	339			14	18	90
	11	253			30	9	34
	12	248			16	19	81



2020	1	338			22	8	31
	2	284			28	8	31
	3	329			29	18	90
	4	329			9	18	90
	5	384			22	18	94
	6	415			24	18	94
	7	422			14	18	94
	8	425			26	18	95
	9	407			4	18	94
	10	353			8	17	89
	11	288			10	15	84
	12	312			26	9	24

**Notes**

**GRU utilizes temperature data from one weather station. Temperatures for warm weather peaks are daily maximums, and temperatures for cold weather peaks are daily minimums.**

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Year	Number of PEVs	Number of Public PEV Charging Stations	Number of Public DCFC PEV Charging Stations.	Cumulative Impact of PEVs		
				Summer Demand	Winter Demand	Annual Energy
				(MW)	(MW)	(GWh)
2023	1,370	94	25	2.05	1.95	4.416
2024	1,868	94	49	4.55	4.45	6.025
2025	2,549	95	50	4.56	4.46	8.237
2026	3,249	96	50	4.56	4.47	11.212
2027	4,141	97	50	4.57	4.47	14.292
2028	5,277	98	50	4.58	4.48	18.215
2029	6,725	99	50	4.58	4.49	23.264
2030	8,570	100	50	4.59	4.50	29.577
2031	10,359	101	50	4.60	4.50	37.693
2032	12,522	102	50	4.61	4.51	45.565
<b>Notes</b>						
<b>Number of PEVs and Annual Energy came from The Energy Authority.            Charging station counts and demand forecasts were developed internally.</b>						

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[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
2013									
2014									
2015									
2016									
2017									
2018									
2019									
2020									
2021									
2022									
<b>Notes</b>									
GRU is not a FEECA utility.									

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[Demand Response Source or All Demand Response Sources]										
Year	Summer					Winter				
	Number of Events	Average Event Size		Maximum Event Size		Number of Events	Average Event Size		Maximum Event Size	
		MW	Number of Customers	MW	Number of Customers		MW	Number of Customers	MW	Number of Customers
2013										
2014										
2015										
2016										
2017										
2018										
2019										
2020										
2021										
2022										
<b>Notes</b>										
GRU is not a FEECA utility.										

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[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)
2013							
2014							
2015							
2016							
2017							
2018							
2019							
2020							
2021							
2022							
<b>Notes</b>							
GRU is not a FEECA utility.							

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

Year	Annual Isolated			Annual Assisted		
	Loss of Load Probability	Reserve Margin (%)	Expected Unserved Energy (MWh)	Loss of Load Probability	Reserve Margin (%)	Expected Unserved Energy (MWh)
	(Days/Yr)	(Including Firm Purchases)		(Days/Yr)	(Including Firm Purchases)	
2023		63.0%			63.0%	
2024		61.7%			61.7%	
2025		71.2%			71.2%	
2026		70.3%			70.3%	
2027		60.8%			60.8%	
2028		41.2%			41.2%	
2029		40.1%			40.1%	
2030		39.1%			39.1%	
2031		38.4%			38.4%	
2032		-18.5%			-18.5%	

**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
Deerhaven	2	8.53		1.24		77.89		12,872	
Deerhaven	1	6.31		0.27		78.60		14,358	
Deerhaven	GT1	1.31		2.83		82.32		274,791	
Deerhaven	GT2	0.70		5.19		82.09		41,328	
Deerhaven	GT3	2.91		0.12		84.74		15,535	
Deerhaven	Renewable	7.97		0.20		73.98		12,027	
John R. Kelly	CC1	21.35		1.23		62.75		8,499	

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



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Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
DEERHAVEN	FS01	ALACHUA	ST	NG	8	1972	81	81	76	76	76	76	21.0%
DEERHAVEN	FS02	ALACHUA	ST	BIT	10	1981	251	251	232	232	232	232	25.1%
DEERHAVEN	GT01	ALACHUA	GT	NG	7	1976	18	23	17.5	22	17.5	22	0.0%
DEERHAVEN	GT02	ALACHUA	GT	NG	8	1976	18	23	17.5	22	17.5	22	0.1%
DEERHAVEN	GT03	ALACHUA	GT	NG	1	1996	71.5	82	71	81	71	81	0.4%
J. R. KELLY	FS08	ALACHUA	CA	WH	5	2001	41.5	40.5	41	40	39	40	64.0%
J. R. KELLY	GT04	ALACHUA	CT	NG	5	2001	72.5	83.5	71	82	71	82	
SOUTH ENERGY CENTER	1	ALACHUA	GT	NG	5	2009	4.5	4.5	3.8	4.1	3.8	4.1	5.0%
SOUTH ENERGY CENTER	2	ALACHUA	IC	NG	12	2017	7.4	7.4	7.4	7.4	7.4	7.4	46.7%
<b>Notes</b>													
FS08 and GT04 are ran together as a combined-cycle unit, so the capacity factor of 64% is for the combined-cycle unit (J. R. Kelly CC1)													

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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	
<b>Notes</b>													
<b>GRU has no traditional generation planned to come online within the current planning period.</b>													

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Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor (%)
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	
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	68%
<b>Notes</b>													

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Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Projected Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
<b>Notes</b>													
<b>GRU has no utility-owned renewable generation resource planned for in-service within the current planning period</b>													

**Nominal, Firm Purchases**

	Year	Firm Purchases \$/MWh Escalation %
<b>HISTORY:</b>		
	2020	
	2021	
	2022	
<b>FORECAST:</b>		
	2023	<b>GRU has no contracted purchases in its planning horizon, apart from renewable energy PPAs listed in other tabs.</b>
	2024	
	2025	
	2026	
	2027	
	2028	
	2029	
	2030	
	2031	
	2032	

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

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



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 Staff's Data Request #        1  
 Question No.                    49

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity		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 installation	N/A	Alachua	PV	SUN	18.6	18.6	6.5	6.5	0	0	03/01/09	12/31/32
<b>Notes</b>													

TYSP Year                    2023  
 Staff's Data Request #        1  
 Question No.                    50

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
Origis	Sand Bluff	TBD	Alachua	PV	SUN	97	97	74.9	74.9	0	0	1/1/2025	12/31/2044
<b>Notes</b>													
<b>97 MW is the DC capacity. 74.9 MW is the AC capacity.</b>													

TYSP Year                    2023  
 Staff's Data Request #        1  
 Question No.                    52

Buyer Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity		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
<b>Notes</b>													
<b>All requirements contract with the City of Alachua, which peaks around 30 MW.</b>													

TYSP Year                    2023  
 Staff's Data Request #        1  
 Question No.                    53

Buyer Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity		Contract Term Dates	
						Sum	Win	Sum	Win	Sum	Win	Start	End
<b>Notes</b>													
There are no power sale agreements that will begin within the planning period.													

TYSP Year            2023  
 Staff's Data Request #    1  
 Question No.            55

Renewable Source	Annual Renewable Generation (GWh)										
	Actual	Projected									
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Utility - Firm	610	712	621	736	695	721	698	686	727	704	702
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	0	0	0	0	0	0	0	0	0	0	0
Purchase - Non-Firm	12	10	0	178	178	178	179	178	178	178	179
Purchase - Co-Firing	0	0	0	0	0	0	0	0	0	0	0
Customer - Owned	2.5	2.7	2.9	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5
<b>Total</b>	<b>624.5</b>	<b>725</b>	<b>624</b>	<b>917</b>	<b>876</b>	<b>903</b>	<b>881</b>	<b>868</b>	<b>909</b>	<b>886</b>	<b>886</b>
<b>Notes</b>											
<b>The contract for Landfill Gas (Purchase Non-Firm) expires in 2023, so there are no GW-h reported in 2024.</b>											

TYSP Year 2023  
Staff's Data Request # 1  
Question No. 64

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

Notes  
**GRU does not have energy storage projects.**

TYSP Year            2023  
 Staff's Data Request #    1  
 Question No.            65

Project Name	Pilot Program (Y/N)	In-Service/ Pilot Start Date (MM/YY)	Projected Max Capacity Output (MW)	Projected Max Energy Stored (MWh)	Projected Conversion Efficiency (%)
Sand Bluff Solar	N	1/1/2025	12	12	85

Notes

TYSP Year                    2023  
 Staff's Data Request #        1  
 Question No.                    38

Year		As-Available Energy (\$/MWh)	On-Peak Average (\$/MWh)	Off-Peak Average (\$/MWh)
Actual	2013			
	2014			
	2015			
	2016			
	2017			
	2018			
	2019			
	2020			
	2021			
	2022			
Projected	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
	2030			
	2031			
	2032			
Notes				
GRU is not an IOU.				



TYSP Year                    2023  
 Staff's Data Request #       1  
 Question No.                 39

Generating Unit Name	Summer Capacity (MW)	Certification Dates (if Applicable)		In-Service Date (MM/YY)
		Need Approved (Commission)	PPSA Certified	
<b>Nuclear Unit Additions</b>				
<b>Combustion Turbine Unit Additions</b>				
<b>Combined Cycle Unit Additions</b>				
<b>Steam Turbine Unit Additions</b>				
<b>Notes</b>				
<b>GRU does not have any planned conventional generation units.</b>				

TYSP Year 2023  
 Staff's Data Request # 1  
 Question No. 41

Plant	Unit No.	Unit Type	Fuel Type	Capacity Factor (%)										
				Actual	Projected									
					2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
DEERHAVEN	FS01	ST	NG	21%	12%	11%	10%	9%	7%	0%	0%	0%	0%	0%
DEERHAVEN	FS02	ST	BIT	25%	14%	18%	19%	19%	26%	24%	20%	28%	24%	0%
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	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
J. R. KELLY	FS08	CA	WH	72%	92%	83%	75%	85%	72%	83%	93%	74%	91%	72%
J. R. KELLY	GT04	CT	NG	72%	92%	83%	75%	85%	72%	83%	93%	74%	91%	72%
SOUTH ENERGY CENTER	1	GT	NG	5%	15%	5%	15%	5%	15%	5%	15%	5%	15%	5%
SOUTH ENERGY CENTER	2	IC	NG	66%	62%	67%	65%	70%	65%	70%	65%	70%	68%	70%
DEERHAVEN RENEWABLE	1	ST	WDS	75%	57%	53%	59%	52%	56%	55%	53%	59%	51%	51%
SOLAR FIT	Varies	PV	SUN	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
ORIGIS SOLAR	TBD	PV	SUN	0%	0%	0%	27%	27%	27%	27%	27%	27%	27%	27%
G2 MARION	N/A	IC	LFG	37%	31%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>Notes</b>														
<b>FS08 and GT04 may be run together as a combined-cycle unit referred to as JRK CC1.          The combined capacity factor is 71.04% for the combined-cycle unit (J. R. Kelly CC1)</b>														

TYSP Year 2023  
Staff's Data Request # 1  
Question No. 43

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

TYSP Year 2023  
Staff's Data Request # 1  
Question No. 44

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date (MM/YYYY)	Potential Conversion	Potential Issues
<b>Notes</b>					
<b>Deerhaven Unit #2 is now dual-fuel (natural gas and coal).</b>					

TYSP Year                    2023  
 Staff's Data Request #       1  
 Question No.                 45

Transmission Line	Line Length	Nominal Voltage	Date Need	Date TLSA	In-Service Date
	(Miles)	(kV)	Approved	Certified	
	0		0	0	
<b>Notes</b>					
<b>There are no planned transmission projects.</b>					

TYSP Year                      2023  
 Staff's Data Request #        1  
 Question No.                    71

Year	Estimated Cost of Standards of Performance for Greenhouse Gas Emissions Rule for New Sources Impacts (Present Year \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2021	0	0	0	0
2022	0	0	0	0
2023	0	0	0	0
2024	0	0	0	0
2025	0	0	0	0
2026	0	0	0	0
2027	0	0	0	0
2028	0	0	0	0
2029	0	0	0	0
2030	0	0	0	0
<b>Notes</b>				
No costs are anticipated at this time.				

TYSP Year            2023  
 Staff's Data Request #    1  
 Question No.            73

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
<b>Notes</b>										
<b>No operational impacts are anticipated at this time for any of GRU's generating units.</b>										

TYSP Year            2023  
 Staff's Data Request #    1  
 Question No.            74

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
DH2	Steam	Natural Gas and/or Coal	232	N/A	N/A	1.5	N/A	N/A	2	0
<b>Notes</b>										



TYSP Year            2023  
 Staff's Data Request #    1  
 Question No.            75

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
<b>Notes</b>										
No impacts to unit availability are anticipated for any of GRU's generating units.										

TYSP Year 2023  
 Staff's Data Request # 1  
 Question No. 77

Year		Uranium		Coal		Biomass		Natural Gas		Residual Oil		Distillate Oil		Hydrogen	
		GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU
Actual	2013	0	0	626	3.97			696	4.15	0	0	0	21.25	0	0
	2014	0	0	797	3.41			352	5.05	1	6.32	0	8.35	0	0
	2015	0	0	663	3.3			770	3.39	1	5.57	0	7.28	0	0
	2016	0	0	412.89	3.2			1143.6	3.21	0	4.85	0	8.97	0	0
	2017	0	0	401.4	3.053			900.91	3.68	1	4.32	1	9.86	0	0
	2018	0	0	460.06	3.419	569.6	2.92	1002.2	3.671	0	6.178	1	10.79	0	0
	2019	0	0	448.55	3.47	593.7	2.72	854.33	2.997	1	6.18	0	10.7	0	0
	2020	0	0	215.45	3.47	375.1	2.85	1276.3	2.24	0	6.18	0	0	0	0
	2021	0	0	319.91	3.7	597.3	2.9	991.86	4.58	6	6.18	0	10.67	0	0
	2022	0	0	32.26	5.48	609.9	3.47	1333	8.12	1.6	6.21	0	10.81	0	0
Projected	2023	0	0	0	0	711.55	2.88	878.29	4.75	0	0	0	0	0	0
	2024	0	0	0	0	621.05	2.77	950.81	4.79	0	0	0	0	0	0
	2025	0	0	0	0	736.17	2.74	725.76	4.90	0	0	0	0	0	0
	2026	0	0	0	0	695.29	2.74	794.61	5.40	0	0	0	0	0	0
	2027	0	0	0	0	720.71	2.76	795.54	5.46	0	0	0	0	0	0
	2028	0	0	0	0	698.32	2.83	850.78	5.49	0	0	0	0	0	0
	2029	0	0	0	0	685.93	2.90	884.24	5.57	0	0	0	0	0	0
	2030	0	0	0	0	727.31	2.96	832.20	5.63	0	0	0	0	0	0
	2031	0	0	0	0	703.91	3.04	880.23	5.68	0	0	0	0	0	0
	2032	0	0	0	0	702.12	3.11	876.16	5.79	0	0	0	0	0	0
Notes															