City of Tallahassee
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FPSC - COMMISSION CLERK

#1 Public Utility in America

Electric & Gas Utility | 2602 Jackson Bluff Road | Tallahassee | FL | 32304 | 850-891-4968

May 1, 2023

Clerk's Office
State of Florida Public Service Commission

Dear Sir/Madam:

The following pages are the City of Tallahassee Electric & Gas Utilities' (TAL) responses to the "DN 20230000-OT (Undocketed filings for 2023) Ten-Year Site Plan Review - Staff's Data Request #1" pursuant to the request received from Florida Public Service Commission (FPSC) staff member Ms. Patti Zellner. Please note that copies of all narrative and non-narrative responses have been separately provided to Greg Davis and Phillip Ellis in the FPSC's Division of Engineering via e-mail per Ms. Zellner's request.

If you should have any questions regarding this report, please feel free to contact me at (850) 891-3127 or Caleb.Crow@talgov.com.

Thank You,

Caleb Crow
Engineer II
City of Tallahassee 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.

   An electronic copy of the City of Tallahassee, Electric & Gas Utility's (TAL) TYSP was filed with the Commission Clerk and submitted to Florida Public Service Commission (FPSC) staff via e-mail on March 31, 2023.

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

   An electronic copy of all TAL's TYSP schedules and tables was submitted to FPSC staff via e-mail on March 31, 2023.

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.

   TAL data requested by this question are provided on the "Financial Assumptions" and "Financial Escalation" tabs in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

   Although TAL is not an investor-owned utility, TAL data requested by this question are provided on the "Hourly System Load" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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).

The load for 3/13/22 0200 EDT is calculated as the average of the preceding (3/13/22 0100 EST) and following (3/13/22 0300 EDT) hours. The load observed on 11/6/22 0200 EDT is simply replaced with the load observed on 11/6/22 0200 EST.

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.

TAL data requested by this question are provided on the "Historic Peak Demand" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

System-wide temperature for TAL's service territory is obtained from the National Climatic Data Center and reflects the Tallahassee Regional Airport (KTLH) weather station.

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.

TAL's 2023 Load Forecast was jointly prepared by TAL staff and nFront Consulting, LLC, ("nFront") using essentially the same methodology and data sources as the prior TYSP. The forecast relies upon an econometric forecast of monthly customer counts and sales by major customer classification, with the forecast for certain large loads reflecting a weather-normalized base adjusted in future years for expected changes due to new facilities or other factors. The total of these forecasts is adjusted for estimated losses to derive a forecast of system net energy for load (NEL). Similarly, monthly peak demand is derived from

forecasted NEL and forecasted load factors, based on an econometric analysis of historical load factors and long-term averages of peak day weather and other conditions. Annual NEL and seasonal peak demands are calculated from the resulting monthly values.

Historical and projected economic and demographic data is obtained from Woods and Poole Economics (W&P); historical and projected population data is obtained from the University of Florida's Bureau of Economic Research (BEBR); historical taxable sales data is obtained from the Florida Department of Revenue, and housing market indicators are obtained from the Bureau of the Census and other sources. A consensus forecast of economic and demographic data is developed based on an average of the growth rates from the W&P and BEBR datasets. Taxable sales data are forecasted based on its estimated relationship with retail sales data reported and forecasted by W&P. Weather data is obtained from the National Climatic Data Center; future weather conditions are assumed to be equal to the most recent 30-year average weather conditions. Finally, the price of electricity is derived from TAL's billing records and forecasted based on projections published by the Energy Information Administration (EIA) in the 2022 Annual Energy Outlook (AEO).

For TAL's 2023 Load Forecast, the resulting "baseline" projections developed were adjusted upward by an estimate of the impact on retail electricity sales, NEL, and peak demand of growth in the adoption of electric vehicles (EV) by the TAL's utility customers, including public transportation vehicles owned and operated by the City of Tallahassee. These adjustments are discussed further in TAL's response to Question #20 below.

TAL and nFront continually review past and prospective new inputs and forecast methodology enhancements in an effort to improve the accuracy of the resulting forecasts. TAL believes that the routine update of forecast model inputs, coefficients and other model refinements continue to improve the accuracy of its forecast so that they are more consistent with the historical trend of growth in seasonal peak demand and energy consumption. The changes made to the forecast models for load and energy requirements have resulted in 2023 base forecasts for annual total retail sales/net energy for load and seasonal peak demand forecasts that are essentially equal to those previously projected.

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 open or closed FPSC dockets or non-docketed FPSC matters which were/are based on the same load forecast used in TAL's 2023 TYSP.

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.

As part of its forecast process TAL and nFront first prepare an analysis of the accuracy of its prior year forecast models for customer growth and annual retail energy sales for the most recent fiscal year.

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.

The analysis compares the forecasts of customer growth and annual retail energy sales for the most recent fiscal year both before and after updating assumed values of all explanatory variables for their most recent estimates/known values. In this way, errors that result from incorrect assumptions about the future (e.g., optimistic economic conditions, warmer or colder weather, etc.) are separated from remaining errors due to model error. The most recent example of forecast accuracy is provided in the file entitled "Data Request #1 - Excel Tables – TAL 2023.xls" in tab "Table II-1".

b. If your response is negative, please explain.

Not applicable.

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.

The same type of analysis described in TAL's response to TYSP SDR question #9 above is performed for its forecasts of Summer/Winter Peak Energy Demand.

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.

The results of the analysis of the accuracy of TAL's forecasts of Summer/Winter Peak Energy Demand are provided in the file entitled "Data Request #1 - Excel Tables – TAL 2022.xls" in tab "Table II-4".

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

Not applicable.

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.

    TAL's customer count growth has been robust over the last decade. Residential and commercial customer compound average growth rates (CAGR) were 1.1% and 1.0%, respectively, over 2013-2022. TAL does not serve any industrial customers. This customer count growth correlates well to rates of change in Leon County population, household formation, and economic activity. For example, household counts, total employment and, average real income per household are estimated to have increased by 1.2%, 1.7% and 1.0% per year, respectively, over the past decade.

    The 2023 Forecast incorporates economic and demographic projections for Leon County based on a blend of W&P and BEBR, reflecting projected CAGRs for household counts, employment, and average real income of 0.7%, 1.0%, and 1.1%, respectively, over 2023-2032. These growth rates are similar to those from the 2022 Ten Year Site Plan.

    As a result of the expected continuation of favorable economic conditions, growth rates for residential and commercial counts are expected to continue growing at rates that are similar to the most recent historical period, with projected growth rates of 0.7% and 1.0% per year, respectively.

    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.

    Electricity use per customer for residential customers has been relatively stable over the last decade, while for the commercial classes, has continued to decline. Average consumption for the commercial class has been particularly impacted since early 2020 by the coronavirus pandemic, from which certain large loads are still recovering. The flattening of residential average use after several years of decline is believed to be driven primarily from end use efficiency standards, particularly for HVAC systems, that have been filtering into the stock of equipment through replacements and new builds and are believed to be nearly fully diffused into the current residential stock.

    TAL's load forecast reflects that the continued residual impacts of end use efficiency standards and Florida's Energy Efficiency Code will combine with TAL's demand-side management (DSM) and conservation/energy efficiency (EE) programs (discussed in Section 2.1.3 of TAL's 2023 TYSP report) to slightly more than offset upward pressure on residential consumption from increasing incomes, electric vehicle saturation, and other factors. The resulting continued decrease in use per customer for the residential class offsets, to some degree, robust growth in residential customer counts, resulting in essentially flat residential sales over the forecast horizon.

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.

The issues and trends discussed above have a direct contribution to similar historical and projected changes in TAL's NEL. The continued recovery from the coronavirus pandemic, increased in-migration, and the near-complete diffusion of historical energy efficiency standards are expected to contribute to more robust NEL growth.

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).

Historically, changes in the federal appliance/equipment efficiency standards, state building efficiency code and actions taken by customers on their own to reduce energy use have made greater contributions to the change in NEL than the customer participation in TAL's DSM/EE financial incentive programs. However, TAL remains committed to offering these DSM/EE programs to help improve the efficiency of customers' energy consumption when such improvements provide a measurable economic and/or environmental benefit to TAL's customers. TAL's forecast reflects that continued commitment. In addition, current and new DSM/EE program offerings will be considered during the conduct of TAL's development of its 2050 Clean Energy Plan.

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.

Estimates of the historical demand and energy savings from customer participation in TAL's DSM/EE programs are comparable to those projected in its last TYSP. Incremental DSM/EE activity and impacts are expected to increase over the next few years before dropping considerably in the 2030 timeframe. TAL plans to increase DSM/EE spending and activity to achieve this increase in impacts but expects that some measures will begin to reach saturation over time as a result of prior period measure activity, federal appliance/equipment efficiency standards, and the state building efficiency code, as well as many customers taking steps on their own to reduce their energy use and costs without taking advantage of the financial incentives provided through TAL's DSM/EE programs.

However, TAL remains committed to offering DSM/EE programs that provide measurable economic, reliability and/or environmental benefits to its customers. TAL's forecast reflects that continued commitment. Current and new DSM/EE program offerings will be considered during TAL's development of its 2050 Clean Energy Plan currently underway.

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.

Starting in 2018, TAL offered a pilot demand response (DR) program called "PeakSmart" geared toward medium-to-large commercial customers. The program was later suspended. However, based on its experience with PeakSmart, TAL launched the Smart Thermostat Rebate program in 2019, providing incentives for electric customers to purchase and install eligible WiFi-enabled thermostats. TAL envisions that the smart thermostats purchased through the rebate program will be used to expand TAL's DR capability over the 2028-2033 timeframe. TAL expects to have approximately 12 MW of DR capability on its system by summer 2033, with similar contributions from the residential and commercial classes.

TAL remains committed to developing a DR program to offer measurable economic, reliability and/or environmental benefit to its customers and TAL's utility services. TAL's forecast reflects that continued commitment. DR program offerings will be considered during TAL's development of its 2050 Clean Energy Plan currently underway.

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

System peak demand is impacted by a variety of economic, customer behavior, and pricing trends in similar ways that energy consumption is impacted, as discussed above. However, peak demand is volatile, being impacted by weather and other conditions to a greater extent on a year-to-year basis than economic conditions and other long-term factors that impact energy consumption.

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.

Net firm demand has grown considerably over the last several years as a result of the same factors discussed above. TAL intends to utilize DSM/EE resources, including DR, to offset a significant portion of the anticipated growth in peak demand over the forecast horizon, resulting in only very modest growth. TAL does not expect that the impact of self-service due to distributed solar generation on peak demand will be significant over the next 10 years.

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.

Not applicable. TAL 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.

       The conservation related provisions of the IRA are not reflected in the forecasts. They will be considered during TAL's development of its 2050 Clean Energy Plan currently underway.

    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.

       The electrification related provisions of the IRA are not reflected in the forecasts. They will be considered during TAL's development of its 2050 Clean Energy Plan currently underway.

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:
    a. Summer Peak Demand.
       Coming out of the Coronavirus pandemic, stay-at-home behavior is persisting, and returning to pre-pandemic levels is happening slower than expected. Residential average consumption remains higher and commercial class sales are lower than would otherwise have been experienced. These impacts are beginning to look like the new normal.

    b. Winter Peak Demand.

       See response to 15a above.

    c. Annual Retail Energy Sales.

       See response to 15a above.

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.

    See table below for weather-related input variables used in the respective models, an "X" indicating that the variable represented in that column was used for the forecast equation represented in that row. HDD and CDD refer to heating and cooling degree days, with a base of 65 °F. Peak day min and max refer to minimum and maximum daily temperature.

			Summer		***Winter***	
Equation	***HDD***	***CDD***	***Peak Day Max °F***	***Peak Day Min °F***	***Peak Day Max °F***	***Peak Day Min °F***
Res Sales	*X*	*X*				
GSND Sales	*X*	*X*				
GSD Sales		*X*				
Large Demand Sales		*X*				
Peak Demand	*X*	*X*	*X*	*X*	*X*	*X*

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

    Weather data for TAL's service territory is obtained from the National Climatic Data Center and reflects the Tallahassee Regional Airport (KTLH) weather station.

    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.

    Historical data is based on the raw weather data. For summer and winter peak demand equations, weather variables are derived as differences from base temperatures, determined from analyses of daily energy versus temperature profiles. Energy sales equations include weather variables with a one-month lag to capture billing cycle lags. Peak demand equations include weather variables for days preceding the peak demand to capture build-up of ambient temperature conditions. Forecasted weather data is based on an average of the weather conditions over the most recent thirty years.

    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.

- *Residential Sales – 30 years (1993-2022)*
- *GSND Sales – 27 years (1995-2022)*
- *GSD Sales – 27 years (1995-2022)*
- *Large Demand Sales – 27 years (1995-2022)*
- *Peak Demand – 32 years (1990-2022)*

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

See response to 16.d.i above.

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.

Projected weather variables are based on an average of the weather conditions over the most recent thirty years.

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.

    Although TAL is not an investor-owned utility, all the schedules requested above were provided in TAL's 2023 TYSP report and the file entitled "2023 TAL TYSP Tables and Schedules Share File.xls" submitted to FPSC Staff via e-mail on March 31, 2023.

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.

The Pandemic has had a far greater impact on TAL's system load than most other Florida utilities due to the outsized influence of shutdowns at the major universities, both on the loads of those large TAL customers and the commercial activity that supports the universities, while they are in live session. Sales to FAMU and FSU were both down several percent in 2020 versus expected levels, and the recovery in both from the initial period of the Pandemic into 2021 was much more limited than expected in the 2021 Load Forecast. The Pandemic lasted far longer than initial expectations, and both institutions had only very limited on-site activity through summer 2021. Even into 2022, consumption to FAMU and FSU had not returned to pre-pandemic levels.

Sales to the remaining commercial classes were similarly down several percent in 2020 and 2021, with some recovery during 2022, but an overall lower average consumption.

Due to the persistent stay-at-home behavior, residential average use has generally been higher over 2021-22. The 2023 TYSP projects this effect as a new normal.

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.

As in its 2022 TYSP, TAL's 2023 energy sales forecast equations continue to incorporate an assumed return to normal from the Pandemic over the next few years, with most of that return to normal occurring over the next 18 months. The effects of the Pandemic are primarily represented through the inclusion in the forecast equations of data reported by Google regarding location prevalence, referred to as "mobility". Location prevalence at residential locations (i.e., residential mobility) is included in the forecast equations for residential average consumption, while location prevalence at businesses and workplaces is included in forecast equations for commercial sales. Historical mobility data is reported by Google as percentage differences from starting values that preceded the pandemic. In the 2022 TYSP, projected data for future years was assumed to return to zero or near-zero, however the 2023 TYSP assumes an ongoing reduction of 10% in commercial mobility as remote work continues to be the new normal.

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.

The historical impact of existing customer owned/leased renewable generation (solar and otherwise) is included in TAL's historical load and energy statistics upon which the forecast models are based. Therefore, TAL's 2022 Load Forecast essentially reflects the impact of customer owned/leased renewable generation to the same extent as has been historically experienced.

Customer owned energy storage devices were not considered in TAL's forecasts.

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.

TAL does not currently attempt to predict the future impacts of customer owned/leased renewable generation as part of its forecast process.

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.

Not applicable.

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?

TAL developed estimates of the historical adoption of PEVs in its service area, trended adoption levels based on publicly available national forecasts of adoption and translated the resulting stock of PEVs into load impacts using charging profiles obtained from the National Renewable Energy Laboratory (NREL).

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.

TAL does not currently have a demand response program for PEVs nor a focused time of use rate, although TAL does have a Nights and Weekends rate that provides incentive for PEV owners to charge off-peak. The resulting load shape was considered in the load impacts forecast.

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.

While TAL has performed no study to determine these drivers, it is believed that the following are the major factors:

- *Improving economics of PEV vs. internal combustion engine vehicles (ICEV)*
- *Increasing PEV range for typical models in service*
- *Greater public charging availability*
- *Improving public perception*

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.

Data sources are as follows:

- *Historical PEV adoption – Atlas EV Hub*
- *Projected PEV adoption – Energy Information Administration's 2021 Annual Energy Outlook*
- *PEV charging profiles – NREL's EVi Pro Lite tool*

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

TAL monitors public EV charging stations within the service territory via the electrical permitting process administered by the local jurisdiction building department.

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.

TAL would only be notified of in-home PEV charging if an electrical permit is issued for the installation.

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.

Since January 1, 2022, TAL has made one upgrade to its distribution system for which PEVs were a contributing factor.

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.

TAL data requested by this question are provided on the "Electric Vehicle Charging" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

TAL's metrics were not impacted by any significant technological, market, regulatory, or other events or announcements since the filing of the Company's 2022 TYSP.

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.

The TAL forecast for PEV adoption projects historical rates of adoption and did not increase based on IRA or other possible market forces not present in the historical adoption rate.

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.

TAL currently offers a "Nights and Weekends" time-of-use rate that would incentivize customers with PEVs receiving service under the associated tariff to defer charging to off-peak periods.

TAL's City Commission established a tariff for city-owned charging stations at $0.30/kWh. This tariff is currently in use at all City-owned charging stations.

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

TAL foresees the possibility for development of such customer education or engagement during development of its 2050 Clean Energy Plan currently underway.

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.

TAL does not currently offer such programs but does foresee the possibility for development of such customer education or engagement during development of its 2050 Clean Energy Plan currently underway.

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.

TAL has not conducted or contracted for any research as described above.

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.

TAL is not aware of any direct impacts, nor has it explicitly taken this initiative into account.

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

    PEV charging load is projected to increase summer peak demand by approximately 0.5% by 2032.

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.

    Not applicable. TAL does not currently have an EV pilot program.

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.

    Not applicable. TAL 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.

    Not applicable. TAL 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.

    Not applicable. TAL 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.

TAL data requested by this question are provided on the "LOLP" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

    TAL data requested by this question are provided on the "Unit Performance" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

    TAL data requested by this question are provided on the "Utility Existing Traditional" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

    TAL has no planned utility-owned traditional generation resource additions.

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

       Not applicable.

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.

TAL data requested by this question are provided on the "Utility Existing Renewable" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

    TAL has no planned utility-owned renewable generation resource additions.

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

        Not applicable.

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?

    A prospective rooftop PV project may be developed as part of construction of Tallahassee Police Department's (TPD's) new headquarters at the former Northwood Mall site progresses. TAL will provide an update on any such project in its 2024 data request response.

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.

    Not applicable. TAL is a municipal 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.

    TAL has no utility-owned traditional generation resources planned for in-service within the current planning period.

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.

    TAL has no traditional or renewable generation resources planned for in-service within the current planning period.

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.

    TAL data requested by this question are provided on the "Capacity Factors" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

    Not applicable. TAL is a municipal 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.

    TAL data requested by this question are provided on the "Steam Unit CC Conversion" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

    TAL has no existing steam units that are potential candidates for fuel-switching.

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.

TAL has no proposed transmission lines for the current planning period that require certification under the Transmission Line Siting Act.

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.

TAL has no existing or planned firm purchases.

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.

TAL has no existing traditional PPAs.

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.

TAL has no planned traditional PPAs.

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

Not applicable.

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.

TAL data requested by this question are provided on the "PPA Existing Renewable" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

TAL has no planned renewable PPAs.

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

Not applicable.

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?

TAL did not have any planned PPA renewable resources within the past year that were cancelled, delayed, or reduced in scope.

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.

TAL has no existing PSAs.

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.

TAL has no planned PSAs.

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

Not applicable.

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?

TAL did not have any long-term PSAs within the past year that were cancelled, expired, or modified.

<u>Renewable Generation</u>

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.

TAL data requested by this question are provided on the "Annual Renewable Generation" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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

TAL continues to promote solar PV through its Net Metering Program which offers customers kWh credits at the full retail rate for energy returned to the grid. Also, through its Energy Efficiency Loan program, TAL customers may borrow up to $20,000 for a 10-year term for the purchase and installation of a Solar PV system installed at the customer's service point.

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.

Not applicable. TAL is a municipal 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.

TAL has performed an effective load carrying capability (ELCC) analysis of the actual output of the Solar Farm 1 and Solar Farm 4 facilities that have revealed that neither contribute to meeting the winter peaks but do contribute towards meeting the summer peaks. Based on the actual operational data, an average of approximately 50% of the facilities' total installed capacity has been available during summer peak and near peak hours. However, given the limited operational experience with these resources, TAL has elected to utilize a more conservative initial estimate of 20% of the combined capacity of the facilities or 12 MW as firm capacity available for the summer peak. TAL intends to periodically review and, if appropriate, revise the assumed firm contribution from its solar power supply resources as additional operational experience is gained.

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.

TAL manages a community solar program called "Tallahassee Solar" in the form of a solar subscription program from both the 20 MW_{ac} and 42 MW_{ac} solar PV PPAs. The program offers the customer the choice to replace up to 100% of their Energy Cost Recovery Clause (ECRC) charge with a flat 5 cents/kwh charge for twenty years. This program is designed to pay for the PPA cost of both Solar Projects without subsidization by non-participating customers. Tallahassee Solar reached full enrollment in 2022 and is no longer accepting new enrollments.

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

TAL does not currently anticipate the development of new customer participation programs.

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.

As part of the IRP process for TAL's 2050 Clean Energy Plan development, portfolios of various energy storage technologies have been evaluated for efficacy and affordability. Hydrogen fuel cells with green hydrogen have emerged as a technically feasible non-lithium energy storage technology for TAL. However, TAL has not yet officially committed to the development and commercialization of a hydrogen fuel cell project(s).

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.

TAL does not currently have energy storage on its system.

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).

TAL continues to study the deployment of ES at transmission voltage levels, as this would normally be coupled with renewable energy resources such as solar PV. TAL also continues to study the deployment of ES at the distribution levels, as this would normally be decoupled from a renewable energy resource such as solar PV. This strategy places the generator closer to the load centers.

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.

To date, a small number of ratepayers have expressed a general interest in ES technologies for residential use. TAL has met with some groups to determine their level of interest and found that most ratepayers are not willing to invest in ES without subsidies. However, TAL does foresee the possibility for further discussions of such programs during development of its 2050 Clean Energy Plan currently underway.

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.

TAL has no existing energy storage resources.

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.

TAL has no planned energy storage resources.

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.

TAL is not currently participating in or developing ES pilot programs. However, TAL does foresee the possibility for further discussions of such programs during development of its 2050 Clean Energy Plan currently underway.

Under a US Department of Energy grant, TAL has partnered with Florida State University's Center for Advanced Power Systems to study the integration of solar PV and ES into the distribution system. This will be a multi-year grant running concurrent to the current planning cycle.

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.

TAL does not have any current plans for an ES pilot program of greater than 2 MW.

b. Please provide a brief assessment of how these benefits, risks, and operational limitations may change over the current planning period.

Not applicable.

c. Please identify and describe any plans to periodically update the Commission on the status of your energy storage pilot programs.

TAL currently has no plans to update the Commission on the status of pilot programs outside of the normal TYSP and Supplemental Data Request cycles.

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.

TAL currently utilizes 62 MW_{ac} of solar PPAs, 50 MW_{ac} of which is considered a non-firm resource. TAL acknowledges that ES could potentially "firm up" additional capacity available from these resources but, as of this time, the large-scale deployment of ES on the TAL electric system is considered cost prohibitive.

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.

TAL has not yet had any operational experience with ES technologies.

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.

TAL does not fund research but has participated in matching grant opportunities by partnering with other municipal utilities, as well as colleges and universities. One such grant opportunity, the Florida Alliance for Accelerating Solar and Storage Technology Readiness (FAASSTeR), was an initiative aimed at increasing Florida municipal utility deployment of solar and storage. The project's Florida-specific studies and analyses informed the participating utilities' understanding of the potential value that could be derived from growth in the deployment and integration of solar, ES, and other DER resources.

TAL is also a participant in another grant from the US Department of Energy. TAL has partnered with Florida State University's Center for Advanced Power Systems to study the integration of solar PV and ES into the distribution system. This is a multi-year grant running concurrent with TAL's planning efforts.

Environmental

69. Please explain if the Company assumes carbon dioxide (CO_2) compliance costs in the resource planning process used to generate the resource plan presented in the Company's current planning period TYSP. If the response is affirmative, answer the following questions:
    a. Please identify the year during the current planning period in which CO2 compliance costs are first assumed to have a non-zero value.

TAL did not include a non-zero assumption for CO_2 compliance costs in the resource planning process used to generate the resource plan presented in its 2023 TYSP

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.

Not applicable. TAL is a municipal utility.

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

Not applicable. TAL is a municipal 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.

TAL is subject to the requirements of the Acid Rain Program and had more than sufficient allowances of sulfur dioxide (SO_2) to meet the needs of the 2022 calendar year. TAL should have enough allowances for the foreseeable future.

TAL has several units that are subject to various regulations which are separated here by media type.

Air: In 2022, TAL successfully reclassified the Sam O. Purdom Generating Station (Purdom) and the Arvah B. Hopkins Generating Station (Hopkins) from a major to a minor source of hazardous air pollutants (HAP). As a minor source of HAP, the requirements of 40 CFR 63, Subpart DDDDD, National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters and 40 CFR 63, Subpart YYYY, National Emissions Standards for Hazardous Air Pollutants for Stationary Combustion Turbines, which only apply to major sources of HAP, were no longer applicable.

Waste: Field erected storage tank systems must be maintained and inspected according to the frequency established by American Petroleum Industry (API) Standard 653. Repairs must be made based on the recommendations in the inspection report, and in compliance with Rule 62-762.702, Florida Administrative Code (F.A.C.). Periodic API-653 inspections of the tanks located at both Hopkins and Purdom will be conducted as required. TAL is considering demolition of Tank #11 at Hopkins. The location of Tank #11 is subject to a Declaration of Restrictive Covenant which, in part requires the maintenance of engineering controls. TAL will ensure maintenance of an engineering control over the impacted area to maintain compliance with the Site Rehabilitation Completion Order that was issued by FDEP in July 2018. Regulated

tanks at the generation facilities maintain registration with the Florida Department of Environmental Protection (FDEP).

Water: Purdom was issued a renewed National Pollutant Discharge Elimination System (NPDES) permit in December 2022. The renewed permit slightly reduced sampling and reporting requirements to better account for facility operations. Hopkins' NPDES permit remains administratively continued until the renewal permit is issued. The renewal permit will incorporate waste load allocations (WLA) for Hopkins, which were finalized in the Lake Talquin Total Maximum Daily Load rule 62-304.305, F.A.C., which became final on May 16, 2022. The rule provides for a WLA for Hopkins of 986 kilograms per year (kg/year) of total nitrogen (TN) and 2,409 kg/yr of total phosphorus (TP). It is anticipated that the renewed permit will include additional sampling, reporting, and limitations associated with the WLA for nutrients. The WLAs are within the operational range and additional treatment to the wastewater is not expected.

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?

       TAL has no units that are subject to this rule.

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

       Not applicable.

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

       Not applicable.

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

       Not applicable.

    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.

       Not applicable.

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

       TAL has no units that are subject to the rule. This rule applies to apply to any steam generating unit, IGCC, or stationary combustion turbine that commenced construction after January 8, 2014, or commenced reconstruction after June 18, 2014.

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.

       Not applicable.

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

       The State of Florida is not subject to CSAPR.

    c. Cooling Water Intake Structures (CWIS) Rule.

       The CWIS Rule does not apply to the Hopkins plant as water is supplied from wells and the plant has no CWIS. The CWIS Rule has no impact at the Purdom plant as the facility does not meet the established regulatory threshold under section 316(b) of the Clean Water Act for existing power generating facilities.

    d. Coal Combustion Residuals (CCR) Rule.

       Not applicable.

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

       Not applicable.

    f. Affordable Clean Energy Rule or its replacement.

       Not applicable. No coal fired units are operated by TAL.

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

       Neither Purdom nor Hopkins use coal as a fuel and therefore no impacts are expected from the ELG revisions.

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.

    TAL data requested by this question are provided on the "EPA Operational Effects" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

    TAL data requested by this question are provided on the "EPA Cost Effects" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

    TAL data requested by this question are provided on the "EPA Unit Availability" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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.

    No known investments at this time.

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.

    TAL data requested by this question are provided on the "Fuel Usage & Price" tab in the Microsoft Excel file entitled "2023 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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

    TAL based its fuel price forecasts for natural gas and distillate fuel oil on the Chicago Mercantile Exchange Group/New York Mercantile Exchange (CME/NYMEX) futures prices. Because TAL does not have a recent fuel forecast performed by a third party, the CME/NYMEX prices were relied on as the basis for the fuel forecasts submitted to the FPSC

in the 2023 TYSP. At the time TAL prepared the TYSP forecast, the latest public fuel forecast available was from the Energy Information Administration's (EIA) 2023 Annual Energy Outlook released in March2023. TAL reviewed the EIA data after the TYSP forecast was prepared and found the EIA natural gas prices, for the ten-year period, to track 13% lower than TAL's CME/NYMEX based natural gas forecast. EIA's Distillate fuel oil forecast was over 50% higher than the TAL's CME/NYMEX distillate forecast. The large difference is primarily due to market volatility and the timing of the forecast. Because market prices solicited from TAL suppliers mirror the CME/NYMEX, TAL used the CME/NYMEX as the basis for the TYSP fuel forecasts for natural gas and distillate fuel oil. Since suppliers specifically quote the CME/NYMEX as a basis for fixed-price term deals, TAL believes the CME/NYMEX provides a better basis for fuel forecasting than the EIA forecasts.

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

TAL does not have or plan to add coal generating resources within the ten-year time horizon. Therefore, TAL has limited insight into expected industry trends for coal.

b. Natural Gas

After years of low and stable prices in the natural gas market, 2022 was marked by a return of substantial volatility. Prices swung from a low of $4.02/MMBtu in January 2022 to a high of $9.35 in September 2022 and back down again by the end of the year. Higher prices were due to lagging production, higher weather-related demand, an expanding economy, record exports of LNG and uncertainty caused by the war in Ukraine. Recent increases in inflation will add upward pressure to natural gas prices due increases in labor expense and the cost of steel used in production. Shale related natural gas production also carries certain regulatory risks, either from state legislation or local referendums which advocate for curtailing the practice or increasing setbacks which limits available drilling sites. Since shale gas production comes from onshore sources, potential interruptions and price volatility related to hurricanes in the Gulf of Mexico are reduced. If shale gas production remains sustainable TAL should have reasonably priced and stable natural gas supplies for at least the ten-year planning horizon.

c. Nuclear

Not applicable.

d. Fuel Oil

Due to the higher price of distillate compared to natural gas and environmental permit limits, TAL uses distillate fuel oil primarily for reliability purposes and testing. Distillate and residual fuel oils are likely to remain volatile and subject to the forces of supply, demand, speculative interests, and geo-political influences.

e. Other (please specify each, if any)

Not applicable.

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

TAL's projected cost of delivered natural gas for the 2022 calendar year was $5.07/MMBtu (as reported in TAL's response to 2021 SDR #1). The actual cost of delivered gas for calendar year 2022 was $4.88/MMBtu. Due to the TAL's effective hedging program the City's cost of gas was over $76 million lower than the market cost of gas.

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.

Due to the significant drop in the cost of natural in early 2023, TAL's 2023 gas forecast is ~28% lower than the 2022 forecast. Because TAL has ~70% of its natural gas needs hedged at fixed prices for 2023 TAL will be less exposed to market volatility throughout the year. Above average temperatures this winter and increased production have contributed to lower prices across the board. Drilling activity remains strong but lower prices have led to some reductions in rig counts.

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

Over the past several years, TAL has added pipeline capacity and levelized natural gas consumption through the addition of more efficient generating resources and retirement of less efficient units. In 2011, Florida Gas Transmission (FGT) expanded its natural gas pipeline system with the addition of 820,000 MMBtu/day of additional firm transportation capacity. TAL contracted for 6,000 MMBtu/day (year-round) of additional pipeline capacity from this expansion to enhance reliability. TAL also negotiated with FGT to acquire additional FTS-1 turn-back capacity during the summer and winter months as part of the 2015 rate case settlement. The additional pipeline capacity volumes will enable TAL to meet customer needs based on load growth forecasts for the ten-year planning horizon. Although TAL adds new customers each year, they are using less energy per household due to appliance efficiencies and customer awareness of energy usage. In the last two years, TAL has added 62 MW of solar capacity which will displace some natural gas generation and ensure greater reliability with our existing FGT pipeline capacity.

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.

Sabal Trail Transmission, LLC (Sabal Trail), a joint venture of Duke, Spectra Energy and NextEra, constructed a nearly 515-mile interstate natural gas pipeline to provide transportation services for the power generation needs of Florida Power and Light (FPL), Duke Energy of Florida (DEF) and others beginning in July 2017. The Sabal Trail pipeline terminates at the new central Florida hub south of Orlando. The hub also provided a point of interconnect with Gulf Stream Natural Gas and FGT. Additional pipeline infrastructure will benefit the greater Southeastern region of the United States by making available additional supplies and to support the growing demand for clean-burning natural gas. Transco pipeline supplies gas from the Barnett, Haynesville, Fayetteville, Eagle Ford, and Marcellus supply areas to the Florida gas market through Sabal Trail. In April 2020 Sabal Trail received FERC approval to add two new compressor stations which increased capacity to 1.1 Bcf/day in 2021. Sabal Trail has helped to increase regional supply diversity, security, and reliability for the Southeastern markets. Although TAL is not connected to Sabal Trail, the additional pipeline capacity benefits the entire State of Florida.

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.

The US LNG industry has grown significantly over the last several years, mostly centered in the Gulf of Mexico and exporting to countries all over the world. Since TAL sources most of its gas from the FGT pipeline which runs onshore along the Gulf of Mexico there appears to be ample supply for now and at least the next 10 years to keep TAL fully supplied with natural gas. TAL does not take LNG deliveries but benefits from additional feed gas supplies in the southeast region. As the US exports more LNG globally, the price of natural gas will be increasingly subject to the global dynamics of supply and demand similar to the oil markets of today.

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

TAL has contracts for firm underground storage capacity in Mississippi and Louisiana for a total of 70,781 MMBtus, located along the Southern Natural Gas pipeline which serves TAL's Gas Utility. TAL does not have any firm plans for additional underground natural gas storage but will continue to evaluate the economic viability of all storage options.

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.

TAL does not have or plan to add coal generating resources within the ten-year time horizon. Therefore, TAL has limited insight into coal transportation trends.

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.

    TAL does not have or plan to add coal generating resources within the ten-year time horizon. Therefore, TAL has limited insight into coal handling or storage trends.

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.

    Not applicable.

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

    Not applicable.

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.

    TAL is not FPL.

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.

    Both TAL's Hopkins and Purdom Generating Stations have annual preventative maintenance (PM) programs that are performed to prepare for winter operations. The PM program measures are implemented based on the time of the year and the expected severity of the weather. Insulation and heat trace systems at both stations are inspected and maintained as needed. The combustion turbine and combined cycle units at both stations have dual fuel (natural gas and diesel) capability. The units are normally fired with natural gas but are periodically tested to ensure they are capable of firing with diesel fuel. The antifreeze coolant concentration in the simple cycle turbine and the reciprocating engines is examined to ensure that they meet the winter concentration level.

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

In the future, TAL will continue to implement its winterization plan as identified in response to Question 91 above. TAL will adopt additional measures in its winterization plan as needed.

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

TAL is required to follow the U.S. Environmental Protection Agency's (EPA) stormwater permit process as part of the NPDES program. This is also as a part of the Site Certification application process for proposed power plant sites. During the permitting process, TAL has an engineering firm design the site to address potential flooding conditions. After the permit is issued, TAL's flood mitigation plan is simply to build according to the engineering firm's final site design. Any subsequent change needed on the plant site that may require modification of the site's storm water system triggers a new design review.

The potential for flooding is also a consideration in the siting of new transmission and distribution substations. All TAL's new and most of its older transmission/distribution substations are constructed outside flood plains. TAL does have a few older stations within flood plains, but the equipment in the stations is constructed high enough that flood water cannot reach them.

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.

There was no impact with associated flooding on utility facilities for City of Tallahassee.

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

Not applicable.

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

Not applicable.

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.

TAL has made no upgrade or changes to operations.

Sheet #	DR No.	Tab Name
1	-	Table of Contents
2	3	Financial Assumptions
3	3	Financial Escalation
4	4	Hourly System Load
5	5	Historic Peak Demand
6	9	Table II-1
9	9	Table II-4
13	22	Electric Vehicle Charging
14	28	DR Participation
15	29	DR Annual Use
16	30	DR Peak Activation
17	31	LOLP
18	32	Unit Performance
19	33	Utility Exisiting Traditional
20	34	Utility Planned Traditional
21	35	Utility Existing Renewable
22	36	Utility Planned Renewable
23	38	As-available Energy Rate
24	39	Planned PPSA Units
25	41	Capacity Factors
26	43	Steam Unit CC Conversion
27	44	Steam Unit Fuel Switching
28	45	Transmission Lines
29	46	Firm Purchases
30	47	PPA Existing Traditional
31	48	PPA Planned Traditional
32	49	PPA Existing Renewable
33	50	PPA Planned Renewable
34	52	PSA Existing
35	53	PSA Planned
36	55	Annual Renewable Generation
37	64	Existing Energy Storage
38	65	Planned Energy Storage
39	71	Emissions Cost
40	73	EPA Operational Effects
41	74	EPA Cost Effects
42	75	EPA Unit Availability
43	77	Fuel Usage & Price

Financial Assumptions
Base Case

AFUDC RATE[1]:	N/A	%
CAPITALIZATION RATIOS:		
DEBT[2]	51.16	%
PREFERRED	N/A	%
EQUITY[2]	162.43	%
RATE OF RETURN		
DEBT[3]	1.18	%
PREFERRED	N/A	%
EQUITY[4]	1.50	%
INCOME TAX RATE:		
STATE	N/A	%
FEDERAL	N/A	%
EFFECTIVE	N/A	%
OTHER TAX RATE:		
Sales Tax	7.50	%
Sales Tax (>$5,000)	6.00	%
DISCOUNT RATE[5]:	8.00	%
TAX		
DEPRECIATION RATE:	N/A	%

Financial Escalation Assumptions

Year	General Inflation %	Plant Construction Cost %	Fixed O&M Cost %	Variable O&M Cost %
2023	4.80	5.03	5.03	5.03
2024	3.00	3.09	3.09	3.09
2025	2.20	2.25	2.25	2.25
2026	2.10	2.14	2.14	2.14
2027	2.10	2.14	2.14	2.14
2028	2.20	2.25	2.25	2.25
2029	2.30	2.35	2.35	2.35
2030	2.30	2.35	2.35	2.35
2031	2.30	2.35	2.35	2.35
2032	2.30	2.35	2.35	2.35

TYSP Year 2023
Staff's Data Request # 1
Question No. 4

Date	Hourly System Load (MW)																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1/1/2022	248	236	224	216	211	211	211	215	221	239	262	282	298	302	303	303	299	297	303	298	288	279	267	265
1/2/2022	239	226	216	211	207	209	213	218	230	250	271	289	306	317	320	316	316	323	335	330	318	302	276	253
1/3/2022	222	197	185	180	184	198	228	259	284	303	319	329	322	308	300	298	306	327	359	365	362	356	341	254
1/4/2022	316	311	312	316	328	348	381	407	408	388	360	336	319	310	298	288	291	302	328	332	327	312	288	327
1/5/2022	250	239	231	228	230	245	275	297	300	297	288	283	277	272	269	267	268	276	301	303	298	285	268	267
1/6/2022	241	235	234	238	247	269	308	336	336	321	306	290	281	275	270	271	275	288	302	299	289	273	252	252
1/7/2022	216	205	199	198	207	228	269	304	317	322	319	311	302	291	283	279	281	292	315	320	319	314	305	234
1/8/2022	285	280	280	283	292	307	325	343	355	350	330	308	290	275	265	259	261	270	288	286	278	267	253	295
1/9/2022	228	219	213	209	208	211	222	232	245	255	260	263	269	271	271	274	276	285	305	303	292	276	257	240
1/10/2022	215	202	193	189	192	204	234	258	264	268	272	275	276	274	272	273	272	285	314	319	312	302	291	236
1/11/2022	268	262	262	267	280	307	353	388	398	396	370	350	329	313	298	293	296	313	346	355	353	342	325	277
1/12/2022	295	287	284	287	298	322	362	384	380	370	359	331	314	300	288	284	287	302	325	323	314	299	280	309
1/13/2022	247	240	238	241	252	275	314	343	345	332	316	301	294	283	275	272	275	284	311	319	315	302	284	262
1/14/2022	254	249	249	252	263	286	326	356	359	343	325	311	296	285	277	272	274	280	304	309	303	297	287	267
1/15/2022	272	268	267	270	275	287	306	328	340	332	309	288	274	263	256	252	255	270	286	283	275	265	252	279
1/16/2022	230	222	218	214	212	214	224	240	259	278	291	297	298	298	296	294	305	318	343	346	345	334	318	241
1/17/2022	293	286	285	289	297	313	341	365	380	377	363	347	329	311	299	293	295	312	343	356	360	356	344	306
1/18/2022	329	332	340	354	375	409	458	503	501	468	416	374	347	328	317	316	309	314	351	365	371	362	342	333
1/19/2022	328	325	324	331	350	382	430	462	457	418	372	337	314	296	285	278	281	296	329	335	337	327	316	332
1/20/2022	291	289	280	280	289	310	355	387	375	353	329	312	313	301	311	313	313	327	352	334	317	304	279	302
1/21/2022	244	237	235	235	245	267	314	351	358	366	368	370	360	362	375	380	376	377	384	381	368	353	338	255
1/22/2022	317	308	303	298	304	318	337	356	375	394	405	409	410	403	392	386	386	395	410	407	400	387	372	328
1/23/2022	348	354	370	390	410	433	461	486	499	475	432	395	368	345	327	316	316	332	368	390	398	396	392	359
1/24/2022	381	383	389	399	417	446	494	524	518	475	419	376	346	324	312	300	302	320	354	362	357	343	321	385
1/25/2022	290	280	275	274	281	299	336	359	358	355	353	347	345	339	332	332	340	354	371	370	358	340	314	303
1/26/2022	274	263	258	258	263	282	319	343	343	340	338	320	308	292	285	281	282	291	319	332	331	320	303	291
1/27/2022	275	270	270	273	282	306	348	374	373	360	339	319	303	290	280	276	277	287	315	326	323	314	300	287
1/28/2022	276	273	275	278	284	303	338	363	366	362	351	335	318	306	299	300	312	325	341	352	353	352	343	286
1/29/2022	328	327	331	338	351	371	398	424	448	456	446	425	403	380	361	350	354	373	406	427	437	440	436	334
1/30/2022	434	437	446	454	468	487	508	532	538	505	443	394	361	333	314	301	300	310	336	349	348	339	325	433
1/31/2022	303	300	302	310	326	354	400	428	421	384	348	321	303	288	281	275	277	283	314	322	319	310	293	311
2/1/2022	265	261	262	270	285	314	358	392	387	366	353	325	304	295	289	290	280	284	311	325	317	305	283	280
2/2/2022	250	241	238	239	246	266	307	337	340	321	310	292	289	289	284	286	273	280	303	307	298	283	256	263
2/3/2022	217	206	198	196	200	214	246	268	282	279	282	285	285	285	283	284	280	290	308	310	297	279	267	235
2/4/2022	231	209	200	196	197	209	239	269	276	286	301	308	307	298	293	284	281	284	294	289	280	283	259	259
2/5/2022	240	235	236	239	248	264	287	314	343	360	366	352	333	319	309	309	313	323	341	350	349	343	334	248
2/6/2022	314	310	310	312	318	328	343	350	356	353	338	324	316	304	300	298	299	314	339	348	344	332	314	323
2/7/2022	281	271	267	266	275	295	334	363	369	370	365	360	357	349	338	343	355	375	385	385	373	352	330	296
2/8/2022	283	271	266	266	273	296	343	394	384	375	366	394	369	356	354	351	334	369	390	395	402	395	382	303
2/9/2022	354	350	351	364	386	417	468	506	497	448	391	356	335	318	309	302	289	315	332	346	350	344	344	364
2/10/2022	311	313	307	314	331	360	414	456	443	402	375	332	321	306	293	284	284	304	317	322	317	311	309	330
2/11/2022	296	283	281	281	295	325	373	419	420	388	363	339	315	308	286	292	278	288	303	315	305	290	271	298
2/12/2022	251	245	234	232	236	244	257	271	284	292	291	282	277	271	266	264	265	270	286	289	282	272	259	261
2/13/2022	233	224	219	217	217	222	232	245	264	285	293	292	280	271	265	264	269	282	301	310	312	314	318	245
2/14/2022	308	309	312	321	340	372	422	454	445	412	378	350	327	309	295	289	296	305	343	351	347	340	327	314
2/15/2022	305	305	309	319	338	369	426	465	459	426	384	360	342	327	298	292	287	291	311	329	322	309	303	312
2/16/2022	255	249	243	241	250	271	317	345	352	329	305	305	301	300	303	296	281	287	299	307	298	287	258	271
2/17/2022	222	209	201	193	195	210	250	275	299	292	303	307	316	311	316	305	294	296	312	315	305	294	291	241
2/18/2022	235	222	213	204	205	217	253	284	295	304	311	313	307	312	304	291	284	290	291	290	279	291	250	254
2/19/2022	227	211	203	205	210	222	244	266	292	304	299	289	278	267	259	254	256	262	278	293	295	293	287	234
2/20/2022	277	275	277	279	285	294	310	326	334	322	302	283	270	261	255	254	257	263	273	285	278	266	252	282
2/21/2022	225	217	213	214	222	238	268	289	293	286	278	277	278	276	274	275	282	284	297	308	306	287	265	237
2/22/2022	215	201	193	190	193	207	243	273	269	284	280	287	294	302	312	325	318	325	331	329	322	298	281	238
2/23/2022	235	214	202	196	197	208	240	267	274	282	287	301	315	328	338	344	350	351	353	355	332	315	291	257
2/24/2022	243	229	213	197	196	205	237	276	269	280	292	306	322	330	342	345	341	344	349	344	334	314	286	265
2/25/2022	240	228	209	195	196	207	234	256	270	281	294	304	317	321	339	355	345	353	337	341	320	302	283	261
2/26/2022	236	226	208	196	192	193	200	207	223	238	251	262	275	289	304	316	323	324	319	315	295	275	254	265
2/27/2022	215	201	191	186	184	186	193	201	219	236	251	266	283	297	310	319	325	322	325	331	316	295	269	233
2/28/2022	223	207	195	189	190	200	229	250	256	264	272	276	279	278	277	276	279	294	325	311	306	290	272	245
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3/1/2022	227	217	212	213	219	239	278	304	305	290	287	281	279	276	275	277	284	292	292	304	297	282	261	248
3/2/2022	224	212	209	211	219	240	282	309	306	291	282	275	273	275	278	288	300	310	317	304	294	281	259	239
3/3/2022	224	214	207	202	210	231	275	316	316	290	286	278	278	283	299	297	300	302	308	308	320	302	256	237
3/4/2022	219	209	201	196	202	220	261	316	310	287	299	288	294	296	317	337	343	321	305	307	289	273	255	229
3/5/2022	215	202	194	189	189	193	204	214	230	243	256	269	279	288	295	302	307	306	300	301	286	269	252	233
3/6/2022	217	206	197	191	188	190	196	203	224	247	267	283	297	309	318	328	334	334	326	330	312	291	266	233

3/7/2022	219	204	194	190	192	204	234	254	267	281	297	309	321	334	343	347	345	345	344	351	338	324	305	241
3/8/2022	238	223	214	208	208	218	249	274	279	301	311	313	342	358	362	365	357	354	362	365	348	332	317	268
3/9/2022	267	247	219	213	214	226	259	294	307	313	309	300	300	297	305	308	323	325	323	329	316	305	276	287
3/10/2022	234	212	199	194	195	206	237	277	276	294	300	302	309	304	300	300	288	296	302	318	322	304	285	252
3/11/2022	229	224	216	196	198	209	235	278	287	286	305	311	310	309	308	309	298	309	308	299	299	295	269	257
3/12/2022	232	212	204	199	198	198	194	198	220	241	267	278	269	273	275	263	268	279	292	316	320	319	312	251
3/13/2022	302	0	301	305	312	324	343	363	382	387	372	348	324	300	281	266	259	257	260	271	290	292	285	307
3/14/2022	271	268	270	276	285	304	333	363	370	352	324	298	280	267	260	258	254	255	271	273	280	269	244	277
3/15/2022	211	200	194	193	195	206	227	249	253	256	269	264	272	281	280	276	266	267	284	284	287	265	259	226
3/16/2022	211	202	193	189	192	200	222	249	263	268	264	272	286	290	294	297	299	292	280	275	288	273	263	228
3/17/2022	209	196	187	184	186	196	219	246	261	257	264	271	275	274	280	291	291	295	295	292	294	279	261	229
3/18/2022	220	199	189	185	186	194	215	252	267	275	283	285	297	302	300	300	287	293	278	276	262	252	254	242
3/19/2022	224	213	193	189	187	190	198	208	219	231	241	249	255	258	259	263	265	264	265	264	260	252	238	237
3/20/2022	210	197	188	182	182	185	195	207	223	238	243	243	243	243	242	245	251	260	264	264	272	263	246	225
3/21/2022	210	199	194	194	200	215	248	279	292	288	280	274	270	273	273	278	290	308	310	297	306	296	265	227
3/22/2022	213	199	190	186	187	200	235	260	268	273	286	289	292	309	311	312	314	316	322	323	328	314	290	240
3/23/2022	249	235	217	207	207	216	251	275	281	300	307	303	313	318	318	319	314	313	306	308	314	301	276	264
3/24/2022	233	217	204	194	193	201	235	274	279	286	297	301	306	299	294	294	281	279	284	286	288	275	256	254
3/25/2022	217	208	199	195	199	213	252	293	295	293	286	278	280	275	288	288	286	280	271	266	272	267	252	236
3/26/2022	216	204	198	197	198	204	218	233	248	256	257	256	253	252	252	254	259	263	264	262	268	259	243	236
3/27/2022	212	201	196	194	194	198	210	223	239	249	251	252	254	256	260	267	276	287	291	288	294	282	259	227
3/28/2022	215	199	189	185	188	200	229	252	259	264	270	278	287	298	311	324	339	350	367	346	346	324	287	235
3/29/2022	228	210	198	192	193	204	240	269	297	289	307	309	316	336	358	355	359	368	363	350	343	319	288	253
3/30/2022	236	212	197	191	191	201	237	300	301	317	314	307	320	311	329	341	351	361	351	337	343	328	302	264
3/31/2022	253	236	221	214	216	227	259	282	288	296	301	308	335	370	367	386	381	375	356	339	337	321	295	277
4/1/2022	248	224	208	199	197	206	234	276	286	287	294	302	310	319	318	338	339	343	332	315	305	289	278	0
4/2/2022	226	208	196	189	186	189	198	207	221	238	253	260	264	262	261	261	260	260	260	260	269	263	250	249
4/3/2022	221	210	203	199	198	201	211	223	238	247	249	252	255	258	263	270	281	291	295	293	295	283	260	235
4/4/2022	214	200	191	188	191	204	234	258	264	268	271	277	283	291	302	316	337	347	341	342	334	315	293	235
4/5/2022	224	207	196	192	193	204	241	282	286	308	323	318	320	333	357	357	352	343	327	313	301	289	267	263
4/6/2022	238	222	207	199	201	215	253	303	312	313	338	344	342	350	355	348	345	346	343	358	361	350	321	250
4/7/2022	273	277	251	235	237	246	272	293	297	295	295	308	334	334	354	359	356	362	353	330	322	309	288	297
4/8/2022	235	213	206	186	186	198	235	267	277	298	303	296	288	294	298	295	280	278	283	278	293	280	264	256
4/9/2022	227	226	209	193	195	202	216	232	250	260	263	261	257	248	242	242	241	245	247	251	261	258	249	252
4/10/2022	223	215	212	211	212	218	232	246	262	264	259	257	256	256	259	266	275	283	285	282	286	276	254	236
4/11/2022	209	195	188	187	191	206	240	265	271	271	270	271	276	283	291	299	306	309	308	305	310	297	271	229
4/12/2022	220	205	195	189	190	200	229	266	276	286	305	313	336	345	360	355	357	369	369	355	355	327	286	242
4/13/2022	232	214	203	196	196	205	234	276	294	302	316	325	324	342	357	356	355	343	340	349	344	336	294	256
4/14/2022	242	226	206	200	201	213	246	260	267	287	299	310	321	327	333	329	320	325	339	328	329	308	287	262
4/15/2022	241	229	205	199	198	205	225	250	277	285	293	313	327	345	369	371	377	379	367	348	334	319	300	271
4/16/2022	253	229	215	206	200	202	208	216	232	253	269	286	298	308	315	318	321	332	333	329	332	319	299	277
4/17/2022	254	230	217	208	202	198	206	211	229	252	274	295	316	333	349	358	357	350	345	332	302	291	269	278
4/18/2022	228	213	204	201	205	211	234	255	264	278	297	314	332	346	356	369	373	378	373	359	354	335	303	249
4/19/2022	231	210	196	189	187	196	230	246	255	269	276	275	280	283	286	292	285	294	294	290	302	296	269	265
4/20/2022	218	206	194	188	191	205	237	273	282	281	273	270	285	288	297	304	313	333	326	333	323	317	290	249
4/21/2022	234	219	205	191	190	200	227	253	269	277	291	303	315	331	340	343	355	366	373	364	360	345	305	257
4/22/2022	233	214	203	195	195	203	236	289	297	317	330	348	343	361	360	388	385	376	370	346	332	317	291	270
4/23/2022	239	220	207	200	195	196	202	207	226	247	267	283	300	316	333	348	359	363	358	343	332	316	292	262
4/24/2022	244	225	213	204	198	197	200	204	223	248	274	299	321	339	353	365	377	383	374	362	352	335	305	267
4/25/2022	246	227	216	211	211	219	244	262	276	295	315	338	359	379	398	413	423	436	423	405	391	367	335	273
4/26/2022	258	236	221	212	211	221	246	269	277	297	332	351	369	390	407	419	426	426	418	393	382	369	336	294
4/27/2022	276	253	235	215	210	215	238	266	266	276	290	314	332	356	371	382	397	410	395	373	366	346	313	305
4/28/2022	253	236	225	204	203	212	240	264	275	294	302	324	339	357	375	392	402	403	393	382	368	349	316	276
4/29/2022	256	242	214	202	200	207	229	246	265	288	309	330	351	357	366	383	388	385	358	351	340	328	316	283
4/30/2022	263	243	225	211	205	206	212	219	239	263	289	313	333	349	364	381	388	386	366	348	338	327	305	286
5/1/2022	259	239	227	218	212	210	212	217	238	265	292	318	344	361	346	332	318	312	309	304	305	301	282	282
5/2/2022	234	218	207	202	204	213	239	256	272	291	312	334	361	387	408	423	430	437	415	396	380	366	333	257
5/3/2022	260	240	226	219	220	228	259	290	303	333	362	393	426	448	453	430	388	370	377	376	371	361	332	298
5/4/2022	268	253	230	218	218	228	263	295	311	328	351	379	400	424	450	465	461	462	464	439	420	398	364	300
5/5/2022	299	276	245	228	224	231	260	290	311	342	370	402	429	462	481	496	486	478	461	439	417	389	356	333
5/6/2022	293	267	249	229	228	236	267	298	315	329	352	376	386	373	352	344	337	308	319	315	318	312	294	322
5/7/2022	254	239	225	213	210	209	211	218	237	257	276	292	307	322	338	352	363	368	362	345	329	314	291	263
5/8/2022	243	224	211	200	194	193	196	201	221	241	258	276	295	317	339	358	370	376	373	356	341	327	297	267
5/9/2022	239	221	209	202	202	210	232	248	260	273	284	296	311	328	346	360	382	384	378	364	352	329	301	266
5/10/2022	230	210	197	190	189	197	229	258	271	272	279	293	319	334	339	360	365	374	375	356	345	332	292	261
5/11/2022	232	209	196	187	187	197	221	246	260	279	293	310	325	347	371	383	386	405	402	386	366	350	305	260
5/12/2022	244	222	207	196	194	202	224	251	271	287	306	318	329	364	390	403	413	416	404	388	373	360	318	272
5/13/2022	260	240	225	214	213	220	244	265	284	307	313	336	363	376	392	395	409	397	372	346	335	328	310	288
5/14/2022	263	247	226	215	209	207	209	216	239	267	294	317	339	361	380	381	375	389	385	360	345	331	306	288
5/15/2022	260	244	230	221	216	212	213	218	243	273	305	334	362	388	407	420	387	364	354	343	337	328	302	283
5/16/2022	246	226	214	207	208	219	242	262	282	306	329	354	379	404	428	449	463	466	458	440	419	396	360	272
5/17/2022	283	261	245	236	234	242	262	281	303	338	356	396	429	458	482	489	495	496	490	473	445	424	388	319
5/18/2022	321	291	265	249	243	248	269	301	320	336	380	412	441	473	498	503	508	503	484	463	437	411	379	349

5/19/2022	314	295	271	253	250	257	283	316	336	361	392	421	457	485	504	507	518	502	478	458	436	412	382	343
5/20/2022	319	295	272	256	251	256	277	307	333	356	380	413	444	468	487	493	480	479	460	436	416	395	374	350
5/21/2022	319	297	276	262	256	255	256	262	288	312	333	351	356	333	320	324	334	348	356	349	338	330	313	345
5/22/2022	271	252	238	228	221	220	224	229	252	280	311	339	360	375	392	411	416	413	406	397	392	379	351	292
5/23/2022	300	281	265	256	254	260	280	296	309	332	368	400	424	449	461	448	399	386	385	374	371	361	337	323
5/24/2022	267	249	237	228	226	234	257	277	300	324	364	407	442	463	475	488	487	458	439	425	410	398	365	302
5/25/2022	304	278	258	244	243	251	306	332	359	385	418	442	460	461	457	463	447	433	420	411	398	384	358	330
5/26/2022	289	268	245	236	236	243	265	297	316	330	330	335	340	340	346	340	315	315	311	312	303	305	286	321
5/27/2022	248	235	227	216	217	225	242	259	287	328	351	384	405	425	435	446	444	448	431	405	378	351	320	272
5/28/2022	270	247	229	219	213	214	215	223	246	272	300	328	351	372	388	403	412	417	412	392	373	358	332	294
5/29/2022	278	257	241	229	220	216	214	220	245	276	306	340	370	390	367	350	350	368	374	364	348	335	311	305
5/30/2022	263	245	231	222	218	220	223	230	257	290	325	362	398	428	446	458	464	461	429	407	386	368	339	287
5/31/2022	279	257	241	232	229	236	254	283	316	343	374	407	438	464	485	498	497	496	487	449	416	390	354	307
6/1/2022	286	262	246	235	231	237	256	288	313	330	365	398	429	463	483	498	490	491	482	459	429	406	367	318
6/2/2022	300	278	262	251	247	252	268	299	321	349	393	428	458	481	502	520	516	508	476	452	430	408	373	331
6/3/2022	307	285	268	256	251	256	270	300	327	358	393	428	462	491	510	520	515	507	477	441	421	398	365	339
6/4/2022	308	278	262	249	241	238	240	247	274	309	345	382	415	440	458	467	475	478	475	454	429	407	374	333
6/5/2022	311	287	269	256	248	245	244	250	273	292	310	339	370	400	424	441	443	439	425	396	358	344	323	342
6/6/2022	274	257	246	238	239	248	264	283	304	332	366	397	421	440	438	430	440	424	417	407	395	381	358	297
6/7/2022	282	260	244	235	234	241	258	277	303	338	376	411	439	465	489	507	514	519	516	494	464	446	409	318
6/8/2022	337	309	289	273	269	275	294	317	339	372	405	440	469	490	501	501	523	521	513	495	470	452	414	370
6/9/2022	343	320	300	284	279	284	301	326	347	379	420	456	477	479	490	497	500	482	436	412	396	385	360	382
6/10/2022	307	292	276	263	260	265	282	300	326	358	396	435	464	491	510	517	508	507	484	456	414	384	351	335
6/11/2022	300	281	261	247	242	241	244	251	274	301	326	359	394	424	449	466	462	443	428	396	382	373	351	328
6/12/2022	299	280	266	256	251	250	253	259	288	323	355	390	422	451	473	491	502	505	499	480	456	438	404	325
6/13/2022	332	310	294	287	288	298	318	335	353	381	415	453	487	514	533	533	511	514	509	489	465	448	412	368
6/14/2022	346	323	305	295	292	299	317	334	359	390	427	460	488	516	538	555	565	537	444	423	398	377	351	378
6/15/2022	296	277	263	253	252	261	280	299	317	346	381	417	451	486	517	537	550	551	543	524	499	479	441	322
6/16/2022	370	345	326	314	308	311	324	342	368	407	450	491	529	554	571	584	585	577	562	534	494	453	409	403
6/17/2022	343	316	295	283	279	284	298	314	335	362	397	435	473	505	527	543	551	550	537	517	488	466	433	373
6/18/2022	377	353	332	318	309	307	308	312	335	370	399	431	469	502	526	540	550	551	542	522	491	467	432	405
6/19/2022	366	337	313	298	286	279	273	276	303	339	382	428	467	500	522	533	536	535	533	509	475	457	428	399
6/20/2022	366	343	324	310	305	307	317	331	356	387	420	447	477	503	523	536	540	539	527	504	472	447	408	396
6/21/2022	340	317	297	284	278	284	297	312	334	367	409	445	476	503	522	534	540	538	526	505	481	463	429	370
6/22/2022	360	337	321	313	310	317	329	341	362	391	430	470	507	535	559	574	584	585	570	542	506	488	450	393
6/23/2022	373	344	322	307	301	305	316	332	358	399	447	496	534	564	586	601	607	604	592	568	538	512	471	409
6/24/2022	404	376	353	335	326	326	331	343	370	411	455	502	542	569	586	601	604	583	520	466	431	408	376	437
6/25/2022	327	307	291	279	270	269	271	275	292	320	354	381	400	416	447	438	400	377	363	355	350	349	333	351
6/26/2022	293	276	264	255	248	246	245	249	272	305	339	373	405	434	455	472	482	489	484	468	441	422	391	313
6/27/2022	331	304	285	273	269	271	281	295	315	343	375	408	442	472	496	514	524	524	511	487	455	429	389	362
6/28/2022	322	305	293	286	285	292	306	321	346	377	418	458	492	511	521	499	465	456	457	449	436	425	397	351
6/29/2022	337	314	298	286	281	285	299	314	338	372	413	453	486	513	514	461	432	418	418	404	388	373	347	366
6/30/2022	291	271	258	250	248	258	275	292	310	330	352	386	423	456	479	493	490	459	432	415	400	390	364	317
7/1/2022	311	292	276	266	263	271	286	298	316	338	370	413	449	477	499	509	497	490	458	409	388	377	351	337
7/2/2022	300	281	267	256	250	249	251	255	274	313	354	391	426	448	452	462	468	446	421	392	374	368	348	325
7/3/2022	303	286	272	262	256	253	254	259	287	323	359	396	415	409	400	411	434	439	419	394	381	374	352	326
7/4/2022	307	287	272	263	258	258	261	265	286	316	347	383	420	454	476	491	500	501	474	446	427	410	387	330
7/5/2022	332	309	291	281	279	285	298	310	332	364	404	445	478	500	520	528	527	482	453	432	418	407	378	364
7/6/2022	322	300	285	275	273	282	299	315	342	377	411	446	480	508	531	547	558	559	528	496	469	450	416	350
7/7/2022	351	327	310	299	294	300	314	328	353	391	431	467	500	526	547	562	571	571	562	538	511	493	458	382
7/8/2022	385	359	340	327	321	324	333	344	372	411	448	484	517	545	564	555	509	494	466	425	409	401	377	418
7/9/2022	329	309	295	284	277	276	279	284	313	352	396	434	451	446	461	488	503	483	455	435	420	408	383	352
7/10/2022	334	316	301	292	287	287	289	293	318	362	397	386	373	364	360	362	369	384	400	401	394	390	368	359
7/11/2022	318	300	288	283	285	295	314	329	348	368	398	417	434	458	476	474	471	429	398	377	361	354	334	341
7/12/2022	287	272	263	259	260	272	291	306	319	337	356	383	417	446	456	456	449	423	418	412	402	393	365	309
7/13/2022	308	290	276	270	270	280	298	314	335	367	399	431	432	423	428	440	464	473	461	442	422	405	375	334
7/14/2022	317	297	281	273	272	279	295	307	331	363	401	432	421	414	429	415	410	401	387	371	362	355	334	345
7/15/2022	285	268	258	251	248	257	273	286	295	307	330	354	382	417	443	447	444	433	414	398	385	374	350	307
7/16/2022	300	279	262	252	245	246	249	252	264	289	320	358	388	411	435	452	438	414	398	388	374	366	341	324
7/17/2022	289	269	254	244	238	237	238	242	267	302	337	367	386	402	424	436	442	448	452	440	419	405	375	314
7/18/2022	312	289	273	266	266	275	292	307	324	346	382	416	435	426	446	446	439	459	464	439	412	399	370	342
7/19/2022	313	292	276	268	266	275	293	310	335	370	408	442	468	490	458	421	402	388	374	366	356	353	332	340
7/20/2022	284	269	258	251	252	263	282	300	326	360	397	379	359	361	382	387	372	368	365	358	352	347	324	308
7/21/2022	277	260	248	243	244	255	278	297	324	360	398	430	438	412	400	404	432	454	460	448	429	414	385	298
7/22/2022	324	301	286	276	272	279	293	307	327	357	393	430	463	490	504	474	418	388	385	372	362	357	337	353
7/23/2022	293	274	261	252	246	247	249	255	282	321	360	394	431	460	480	448	400	389	378	369	362	357	336	315
7/24/2022	291	274	260	251	244	242	245	248	274	312	351	392	424	428	423	429	411	420	430	413	393	381	357	314
7/25/2022	302	280	265	256	256	263	278	293	317	346	384	421	451	472	494	479	436	417	418	408	399	390	364	330
7/26/2022	306	284	270	260	259	267	284	298	319	347	385	425	458	479	446	426	456	477	480	466	441	424	389	334
7/27/2022	316	293	276	265	262	268	284	297	317	346	384	420	452	449	449	476	494	493	474	456	433	417	384	347
7/28/2022	323	301	285	276	276	286	304	317	334	362	395	427	457	488	459	424	415	424	427	399	386	376	351	352
7/29/2022	301	282	268	260	259	268	286	300	327	366	404	440	472	499	516	522	531	501	442	405	386	373	350	325
7/30/2022	301	281	269	261	255	255	259	263	287	329	371	408	440	464	485	501	515	517	507	484	456	434	399	326

7/31/2022	341	317	297	283	272	267	267	268	293	330	369	411	450	480	501	515	523	514	507	484	454	428	391	369
8/1/2022	324	300	283	273	271	278	297	308	331	365	403	444	480	504	508	484	461	458	462	429	409	394	366	355
8/2/2022	310	288	274	266	265	272	288	300	323	354	389	426	460	488	511	527	537	497	461	432	415	397	367	337
8/3/2022	309	289	275	266	262	270	288	301	319	346	373	405	436	464	484	501	517	519	504	482	455	432	397	337
8/4/2022	331	306	290	279	277	283	299	311	333	365	403	439	473	483	471	470	467	487	487	471	451	431	391	362
8/5/2022	322	298	281	271	267	274	293	306	328	361	401	441	478	507	528	534	516	495	449	422	403	389	364	354
8/6/2022	315	294	280	271	266	267	273	278	304	341	383	422	450	465	448	406	394	394	406	385	366	354	332	339
8/7/2022	285	267	254	247	244	247	254	260	285	323	365	407	441	466	449	424	404	392	382	374	369	360	340	309
8/8/2022	290	273	260	252	252	261	282	297	320	348	383	420	451	477	492	458	422	401	387	377	371	355	325	314
8/9/2022	273	256	247	241	241	250	273	288	307	331	369	409	439	472	490	447	406	384	376	358	352	342	319	298
8/10/2022	268	250	239	233	234	246	273	288	304	327	359	385	394	411	448	470	437	403	387	372	366	354	329	292
8/11/2022	279	261	249	242	241	252	281	297	324	328	348	374	398	408	411	411	421	427	425	414	398	379	346	303
8/12/2022	289	266	253	249	251	262	286	300	314	334	365	399	430	454	455	420	380	374	377	367	359	350	331	315
8/13/2022	290	273	257	253	249	251	260	266	282	308	339	367	392	414	424	444	454	440	418	384	372	358	338	311
8/14/2022	294	276	265	256	251	249	254	256	277	308	337	366	393	421	442	458	471	477	468	447	422	401	367	316
8/15/2022	300	278	263	255	256	264	287	299	315	341	372	406	439	467	492	495	521	530	510	488	474	447	411	332
8/16/2022	329	307	292	285	284	294	318	344	349	374	427	468	502	473	436	454	476	493	481	456	443	414	377	365
8/17/2022	327	294	279	266	263	272	298	312	324	355	394	453	482	515	535	543	506	532	515	488	473	441	415	353
8/18/2022	344	320	293	283	281	289	313	324	336	352	395	414	404	397	391	402	415	406	403	401	406	392	366	375
8/19/2022	308	283	269	256	257	268	296	317	334	362	394	433	463	501	529	525	527	523	510	473	449	421	394	337
8/20/2022	328	311	288	269	260	258	262	266	290	333	382	421	451	470	442	427	428	413	399	391	387	375	354	365
8/21/2022	306	288	275	266	260	258	262	265	284	311	346	382	420	454	479	489	486	468	451	432	425	406	376	330
8/22/2022	315	293	276	266	267	278	305	321	333	346	368	396	429	461	492	511	519	517	501	479	464	444	410	344
8/23/2022	333	310	293	283	282	292	318	344	366	374	402	435	470	494	509	512	491	485	449	429	416	401	365	372
8/24/2022	312	291	272	262	263	275	307	337	351	368	383	409	436	466	489	494	485	491	480	466	460	435	403	333
8/25/2022	333	307	288	279	278	287	316	346	358	372	388	404	423	436	450	477	469	444	414	399	389	369	344	364
8/26/2022	293	282	261	254	254	264	292	322	339	359	381	419	455	484	490	506	488	454	418	397	401	383	361	318
8/27/2022	318	293	273	264	258	259	265	271	287	316	352	392	428	445	457	469	451	409	381	369	372	366	351	340
8/28/2022	304	280	264	256	249	247	251	254	276	312	348	382	415	447	474	499	513	503	485	450	432	411	374	328
8/29/2022	309	287	271	263	264	277	303	321	332	344	367	390	421	455	478	491	504	494	484	468	461	425	391	340
8/30/2022	321	298	284	274	272	282	309	335	354	380	411	449	487	513	535	541	549	540	525	472	469	435	406	355
8/31/2022	336	315	296	279	277	288	314	340	363	392	423	464	497	524	541	528	522	483	431	423	398	376	350	375
9/1/2022	294	274	259	252	252	264	290	311	324	348	385	428	472	501	488	481	477	488	458	452	441	414	382	320
9/2/2022	319	296	281	273	273	281	307	328	349	367	393	434	468	494	511	499	462	462	436	422	407	381	361	349
9/3/2022	306	291	272	255	249	249	255	260	277	305	337	372	399	419	442	463	475	468	435	407	393	373	348	334
9/4/2022	298	278	264	255	250	249	252	256	274	306	340	374	398	429	457	475	471	449	419	393	382	364	343	324
9/5/2022	307	286	276	268	264	264	269	269	285	309	343	378	417	444	466	477	488	471	445	433	430	409	376	326
9/6/2022	315	292	278	268	267	278	300	322	353	372	407	435	474	502	524	538	541	551	529	500	485	455	407	345
9/7/2022	351	333	298	281	281	291	317	338	360	374	414	447	457	471	481	490	489	484	478	463	461	435	400	379
9/8/2022	330	305	287	277	275	288	314	336	351	365	374	384	382	401	415	428	442	454	449	430	421	399	362	360
9/9/2022	304	284	264	253	252	263	285	314	323	334	344	357	383	409	437	451	442	427	405	388	383	371	359	337
9/10/2022	303	294	269	257	252	253	261	271	279	295	311	320	324	323	317	316	322	324	326	328	332	322	307	330
9/11/2022	270	254	242	234	230	233	241	249	266	299	337	371	410	420	379	380	381	385	385	383	388	371	346	290
9/12/2022	292	270	255	249	251	263	291	308	320	332	344	368	403	424	434	455	469	471	461	426	393	371	340	319
9/13/2022	280	260	247	241	241	253	286	315	322	343	369	396	421	443	467	478	483	477	458	432	418	390	361	311
9/14/2022	296	259	238	226	222	232	257	282	295	312	334	362	389	416	441	459	465	470	452	424	405	374	337	338
9/15/2022	281	246	230	220	219	230	264	287	300	325	351	379	414	439	468	493	471	461	443	419	404	375	339	303
9/16/2022	278	257	243	231	230	239	268	290	306	330	352	378	423	443	458	480	482	473	469	449	418	389	364	313
9/17/2022	320	295	276	258	248	245	248	251	269	301	336	370	404	432	448	461	469	469	455	430	412	384	352	341
9/18/2022	298	275	260	247	239	236	239	242	258	289	323	359	392	422	440	449	462	467	456	436	425	399	368	324
9/19/2022	307	282	264	255	253	262	286	301	311	335	362	389	421	450	472	489	494	491	474	451	436	402	373	337
9/20/2022	297	272	256	247	245	255	282	316	330	347	378	417	451	483	504	523	519	521	505	482	459	427	387	333
9/21/2022	320	293	265	252	249	259	285	319	338	364	408	446	473	504	518	535	519	518	502	477	454	419	384	348
9/22/2022	316	293	265	250	247	255	286	320	339	364	400	440	475	512	522	549	544	542	524	501	479	443	408	349
9/23/2022	343	322	298	284	282	291	311	329	340	358	384	409	437	477	490	499	488	482	460	427	410	385	358	376
9/24/2022	305	277	250	236	228	226	232	237	249	277	308	339	369	396	416	428	436	431	412	385	363	337	314	330
9/25/2022	277	257	240	228	220	218	222	226	243	272	307	342	369	396	423	445	456	459	444	424	410	381	351	295
9/26/2022	292	270	254	246	247	255	275	289	301	328	361	395	430	460	485	502	508	501	479	463	435	402	367	320
9/27/2022	292	267	249	235	232	238	266	288	300	331	351	357	376	399	409	399	389	384	370	358	346	324	289	332
9/28/2022	233	220	209	196	194	203	234	261	276	282	290	285	304	314	338	343	334	331	324	320	318	297	269	258
9/29/2022	223	209	198	192	191	198	220	236	241	251	266	281	294	307	318	329	329	322	312	312	306	286	262	243
9/30/2022	221	207	197	191	190	198	221	236	243	256	271	284	298	315	334	348	354	352	339	327	317	299	276	241
10/1/2022	234	217	205	198	193	194	200	207	221	246	269	291	309	328	345	359	368	371	355	337	324	302	276	255
10/2/2022	231	214	202	196	194	192	197	202	216	237	256	276	298	319	340	362	379	386	376	363	353	327	298	252
10/3/2022	243	222	209	202	201	211	236	254	261	271	283	296	311	326	342	357	366	368	360	356	348	319	288	268
10/4/2022	225	208	197	190	191	201	232	264	269	280	300	306	318	331	340	349	343	350	349	344	335	311	288	256
10/5/2022	236	215	199	187	187	198	230	253	265	290	301	311	323	344	360	373	368	379	369	365	356	330	301	260
10/6/2022	247	229	210	196	195	204	230	268	277	295	312	324	346	350	368	381	385	399	378	373	361	333	301	271
10/7/2022	247	227	209	196	195	205	232	271	280	297	314	326	348	366	382	395	394	397	378	357	343	319	292	273
10/8/2022	246	229	215	200	196	197	203	210	223	242	262	284	307	330	351	369	378	375	364	349	329	303	280	270
10/9/2022	242	223	209	200	193	192	196	201	211	229	245	265	284	301	318	337	351	355	345	336	323	300	273	259
10/10/2022	222	204	193	187	189	199	224	243	249	258	271	284	298	313	330	350	365	381	373	367	345	325	294	245
10/11/2022	230	213	201	196	196	207	245	274	295	297	316	333	350	374	396	404	407	415	398	386	371	345	313	266

10/12/2022	264	241	231	227	227	240	268	313	322	332	347	368	408	421	429	440	433	438	426	423	406	372	344	288
10/13/2022	288	263	242	233	232	243	268	313	314	337	351	365	391	412	429	445	438	439	421	413	393	362	329	317
10/14/2022	265	236	221	212	210	219	240	267	275	290	305	317	331	352	365	370	370	377	359	343	323	302	278	296
10/15/2022	236	216	200	193	190	191	198	207	219	238	256	272	289	307	326	344	357	358	343	328	309	289	268	257
10/16/2022	236	219	206	199	194	194	200	206	218	239	263	289	314	337	356	370	381	385	374	365	347	323	295	253
10/17/2022	243	224	212	206	205	214	235	254	262	278	299	321	342	367	386	390	390	387	384	398	376	356	323	268
10/18/2022	259	238	220	207	203	209	235	259	267	280	289	298	292	297	300	297	289	283	280	298	285	279	247	295
10/19/2022	214	201	198	192	198	214	256	295	310	311	301	291	281	287	283	275	272	277	288	293	297	281	265	230
10/20/2022	237	228	221	221	230	250	294	328	340	312	302	289	291	282	281	281	278	271	277	293	292	274	259	244
10/21/2022	231	220	215	217	226	243	283	322	327	307	295	284	276	284	280	272	284	280	268	276	266	255	242	245
10/22/2022	218	209	205	204	207	216	232	249	264	271	265	258	254	253	255	259	265	269	267	272	264	252	238	230
10/23/2022	210	202	197	195	196	202	214	228	246	255	255	254	257	261	267	276	285	293	291	298	290	271	249	224
10/24/2022	210	197	191	189	193	206	234	258	261	269	275	283	292	304	319	325	333	344	338	341	326	301	275	227
10/25/2022	220	205	195	191	192	203	238	261	265	277	287	301	321	319	333	340	346	343	345	351	342	322	295	242
10/26/2022	253	239	226	222	224	238	273	299	292	298	305	318	315	336	351	361	364	374	357	353	330	308	287	270
10/27/2022	241	229	206	191	192	202	239	263	273	280	287	295	301	310	320	336	340	353	344	344	327	310	307	268
10/28/2022	246	230	212	206	205	215	243	277	281	293	299	314	317	333	344	355	356	359	358	347	330	320	304	263
10/29/2022	267	252	222	214	209	210	217	228	236	251	263	271	275	277	275	274	275	277	281	289	283	274	259	281
10/30/2022	230	219	213	207	203	203	208	216	228	244	257	268	279	289	298	316	331	334	330	336	325	308	284	244
10/31/2022	239	225	218	213	214	225	252	274	278	287	298	308	321	341	355	365	370	366	361	352	343	326	300	259
11/1/2022	240	222	210	201	199	207	235	265	270	276	289	300	309	324	334	349	354	364	345	348	345	313	278	275
11/2/2022	228	210	200	194	194	203	239	266	263	275	293	296	323	340	360	374	382	385	377	378	360	345	320	264
11/3/2022	254	240	215	206	206	215	242	283	292	307	319	337	355	367	376	394	386	388	367	372	341	327	298	290
11/4/2022	247	219	208	195	196	205	234	266	269	282	296	301	307	333	346	360	368	363	358	343	336	306	289	262
11/5/2022	247	235	218	203	200	201	209	220	230	249	273	298	316	336	347	358	367	360	349	343	325	310	294	274
11/6/2022	265	234	224	219	219	221	227	236	257	284	306	337	362	384	398	403	401	393	394	380	365	342	314	282
11/7/2022	265	248	236	230	230	241	268	286	300	321	343	364	383	400	418	424	416	400	397	378	356	329	301	287
11/8/2022	242	225	213	207	208	221	248	264	280	301	327	347	364	380	393	396	386	382	379	364	333	309	282	272
11/9/2022	245	218	200	192	193	203	229	252	259	263	268	272	286	279	283	287	289	296	306	300	289	272	256	264
11/10/2022	223	208	194	190	192	200	217	233	246	257	268	276	277	276	271	270	272	284	294	289	280	269	254	238
11/11/2022	221	210	201	197	197	204	219	236	252	266	280	290	296	298	298	298	298	306	311	303	289	274	257	237
11/12/2022	217	202	202	196	194	198	206	212	230	252	272	289	304	316	324	325	314	310	315	305	292	277	262	240
11/13/2022	226	209	196	187	184	184	191	201	220	235	245	249	252	254	254	256	260	270	288	287	281	272	259	245
11/14/2022	233	226	224	225	234	254	295	322	323	310	297	285	278	273	271	271	273	283	301	297	285	269	251	245
11/15/2022	215	204	196	193	195	208	237	257	262	268	275	277	281	284	287	289	294	305	320	315	304	288	263	232
11/16/2022	219	204	195	191	192	203	233	254	260	276	270	274	275	271	267	266	270	283	304	303	296	284	267	238
11/17/2022	235	226	222	222	228	247	285	309	313	311	307	301	296	288	285	286	296	316	333	330	322	308	289	250
11/18/2022	262	258	258	265	279	308	351	377	375	360	340	321	306	294	287	285	288	303	324	327	327	325	318	272
11/19/2022	301	290	279	273	273	277	289	299	309	308	297	285	277	271	269	270	278	294	303	299	292	282	268	309
11/20/2022	244	236	233	232	235	242	255	268	285	302	312	315	317	317	315	319	325	341	354	354	348	336	322	255
11/21/2022	298	292	291	294	304	322	351	371	370	353	330	307	290	279	272	269	270	280	296	294	285	273	257	309
11/22/2022	226	217	213	212	217	231	257	277	281	278	275	271	269	268	267	265	264	274	284	278	269	256	239	239
11/23/2022	209	199	193	190	193	203	221	238	250	257	261	264	268	272	273	273	275	279	288	280	270	257	242	223
11/24/2022	210	200	192	189	188	193	204	214	231	249	265	275	278	279	275	269	263	263	264	259	252	246	235	226
11/25/2022	211	203	197	194	195	200	210	218	229	246	260	271	279	284	285	285	285	291	291	278	265	254	241	223
11/26/2022	222	212	200	192	187	187	197	202	215	231	245	253	258	258	256	256	260	271	280	276	269	261	249	228
11/27/2022	222	213	206	202	201	203	211	218	233	248	253	258	270	278	281	282	281	283	293	287	275	261	244	236
11/28/2022	210	199	194	193	199	216	248	271	275	275	277	280	285	288	291	293	294	299	313	308	295	278	255	225
11/29/2022	214	202	194	191	194	208	238	259	263	267	273	279	287	292	294	294	292	301	314	310	297	280	258	232
11/30/2022	218	205	197	194	196	209	238	258	270	282	290	287	289	288	287	286	288	298	311	304	293	277	256	236
12/1/2022	216	206	201	201	209	231	275	306	313	310	303	292	285	278	275	273	277	292	314	316	311	299	280	234
12/2/2022	246	236	231	231	238	256	291	310	311	301	290	280	276	277	277	277	278	281	289	283	274	264	250	262
12/3/2022	222	212	205	203	202	209	222	233	245	254	259	265	271	277	283	288	289	295	300	291	280	271	256	236
12/4/2022	221	209	200	196	193	194	202	209	224	242	257	268	282	293	297	299	300	309	322	316	303	286	265	237
12/5/2022	221	206	196	192	195	207	235	253	259	267	275	285	295	303	307	307	307	314	326	320	307	288	266	241
12/6/2022	225	211	203	199	201	213	243	264	269	279	290	300	312	326	335	336	334	334	341	333	317	296	271	245
12/7/2022	225	210	200	195	196	208	237	255	262	271	287	303	317	331	340	338	336	336	346	338	322	301	275	247
12/8/2022	230	214	203	198	199	209	236	255	262	274	290	305	320	330	336	340	338	334	336	324	307	288	265	252
12/9/2022	221	207	198	194	195	206	233	253	261	268	276	283	288	298	306	309	309	308	309	299	288	274	259	241
12/10/2022	224	211	201	196	194	198	206	215	230	246	256	261	264	264	264	264	267	278	284	280	272	263	249	240
12/11/2022	218	206	198	193	191	193	200	210	222	237	248	255	261	267	268	267	270	282	294	289	281	267	248	233
12/12/2022	210	198	191	189	192	205	233	254	258	262	269	272	275	281	279	276	276	285	301	298	288	269	248	227
12/13/2022	209	198	191	189	192	204	234	254	257	261	264	267	270	271	271	270	272	282	296	292	281	265	244	227
12/14/2022	208	198	191	190	194	207	236	257	260	264	269	270	274	278	279	280	281	291	304	302	295	280	261	225
12/15/2022	228	217	210	207	209	221	246	269	265	264	267	271	273	272	272	271	269	272	285	283	277	267	252	242
12/16/2022	224	217	215	217	226	248	288	318	323	313	300	286	276	269	264	263	265	276	293	296	294	290	281	236
12/17/2022	262	257	255	258	264	277	291	305	317	311	296	282	271	261	256	253	258	273	282	279	275	268	257	271
12/18/2022	235	229	228	234	245	262	284	305	324	328	317	302	289	279	271	268	274	296	322	331	334	331	321	245
12/19/2022	302	303	307	317	333	356	391	417	421	399	368	338	313	293	282	277	279	296	320	321	318	305	285	309
12/20/2022	246	235	228	228	234	249	272	291	294	296	302	306	308	308	308	308	314	332	343	337	330	315	299	265
12/21/2022	264	255	251	251	257	274	298	317	322	325	323	319	311	304	300	299	301	317	330	326	319	306	287	279
12/22/2022	254	243	238	238	243	258	281	301	307	308	307	303	298	291	282	279	283	300	312	307	299	287	271	269
12/23/2022	239	229	222	219	222	233	256	285	318	344	350	352	346	336	332	336	353	387	424	440	447	456	462	255

12/24/2022	458	465	466	482	497	517	539	562	574	566	541	509	476	451	433	423	428	452	480	489	495	496	490	459
12/25/2022	478	478	480	487	495	504	510	526	531	509	477	440	406	377	353	341	344	364	393	409	420	428	429	482
12/26/2022	431	435	444	455	473	494	518	537	539	505	455	414	381	356	337	328	332	355	388	403	412	414	408	429
12/27/2022	401	404	411	418	430	450	464	476	477	447	405	370	343	321	306	298	301	320	352	363	366	365	360	402
12/28/2022	353	357	366	376	392	417	448	470	465	428	379	341	312	292	278	271	272	283	304	306	303	295	285	355
12/29/2022	262	253	251	256	266	283	305	318	318	305	287	271	261	255	252	253	255	260	271	270	262	257	247	273
12/30/2022	225	219	216	216	221	232	249	264	271	268	261	255	252	248	246	243	244	255	268	264	256	247	236	236
12/31/2022	208	198	192	189	189	193	200	209	219	232	244	251	254	257	258	259	262	268	280	272	262	251	238	222

TYSP Year 2023
Staff's Data Request # 1
Question No. 5

Year	Month	Actual Peak Demand (MW)	Demand Response Activated (MW)	Estimated Peak Demand (MW)	Day	Hour	System-Average Temperature (Degrees F)
2022	1	538.34	0	538.34	30	9	40.5
	2	486.96	0	486.96	9	8	45.96
	3	387.51	0	387.51	13	10	45.8
	4	423.33	0	423.33	25	17	73.2
	5	517.57	0	517.57	19	17	78.89
	6	588.51	0	588.51	23	17	87.52
	7	590.24	0	590.24	7	17	86
	8	556.82	0	556.82	30	17	84.5
	9	569.94	0	569.94	6	18	83.5
	10	444.97	0	444.97	13	16	60
	11	441.78	0	441.78	7	16	61
	12	592.05	0	592.05	24	9	51
2021	1	503.85	0	503.85	14	8	45
	2	500.35	0	500.35	4	8	45
	3	408.56	0	408.56	26	17	78
	4	416.15	0	416.15	30	16	76.5
	5	496.73	0	496.73	25	17	77.5
	6	556.93	0	556.93	15	15	84
	7	573.36	0	573.36	22	18	85
	8	559.32	0	559.32	19	17	85
	9	524.37	0	524.37	2	17	82
	10	459.44	0	459.44	1	17	79.5
	11	420.89	0	420.89	30	8	49
	12	395.88	0	395.88	1	8	51.5
2020	1	527.55	0	527.55	22	8	48
	2	470.66	0	470.66	28	8	46
	3	433.11	0	433.11	27	16	75
	4	453.18	0	453.18	9	18	84
	5	481.23	0	481.23	22	17	82
	6	559.02	0	559.02	30	17	86
	7	575.56	0	575.56	20	16	87
	8	566.95	0	566.95	27	17	85
	9	574.56	0	574.56	4	17	86
	10	484.43	0	484.43	13	17	79
	11	431.85	0	431.85	10	16	80
	12	488.81	0	488.81	26	9	37
Notes							
(Include Notes Here)							

City of Tallahassee, Florida

2023 Electric System Load Forecast

2022 Load Forecast Comparison

Projected vs. Actual Energy Sales (MWh, Unless Otherwise Stated)

Fiscal Year 2022

Line No.	Customer Class	Actual	Projected [1]	% Over (Under) Actual
	Residential			
1	Counts (#)	**107,327**	**107,115**	(0.2%)
2	Average Annual Consumption (MWh)	**10.7761**	**10.9361**	1.5%
3	Energy Sales (MWh)	**1,156,562**	**1,171,419**	1.3%
4	General Service Non-Demand (MWh)	**179,067**	**185,200**	3.4%
5	General Service Demand (MWh)	**635,824**	**650,461**	2.3%
10	Total Large Demand (MWh)	**525,500**	**547,378**	4.2%
11	Interruptible (MWh)	**46,783**	**35,448**	(24.2%)
12	Traffic Control (MWh)	**850**	**876**	3.1%
13	Curtailable (MWh)	**48,015**	**49,210**	2.5%
14	**Total Commercial**	**1,436,038**	**1,468,573**	2.3%
15	Lighting (MWh)	**32,060**	**32,223**	0.5%
16	**TOTAL ENERGY SALES**	**2,592,601**	**2,639,992**	1.8%
17	Talquin Transfers (Net Sales) (MWh)	**27,247**	**27,962**	2.6%
18	**TOTAL ENERGY SALES w/ Talquin**	**2,649,263**	**2,697,570**	1.8%

[1] Projected 2022 Electric System load forecast sales estimates.

[2] Includes main meter Large Demand only.

City of Tallahassee, Florida

2022 Electric System Load Forecast

2021 Load Forecast Comparison

Projected vs. Actual Peak Demand

Season of Peak	Actual Net Load (MW)	Projected Net Load (MW)	% Difference (Under) Actual
Summer Peak 2022	**590**	**610**	3.4%
Winter Peak 2021-2022	**538**	**560**	3.9%
Summer Peak 2021	**573**	**610**	6.5%
Winter Peak 2020-2021	**504**	**555**	10.1%
Summer Peak 2020	**576**	**612**	6.3%
Winter Peak 2019-2020	**528**	**554**	5.1%

TYSP Year 2023
Staff's Data Request # 1
Question No. 22

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	1500	114	5	0.15	0.09	0.657
2024	1879	115	7	0.25	0.15	1.186
2025	2315	116	9	0.38	0.22	1.824
2026	2815	117	12	0.54	0.32	2.652
2027	3381	119	15	0.76	0.45	3.730
2028	4020	120	15	1.08	0.64	5.250
2029	4745	121	18	1.51	0.89	7.231
2030	5506	122	21	2.02	1.19	9.665
2031	6357	123	22	2.57	1.51	12.366
2032	7295	125	23	3.20	1.88	15.422
Notes						
Reported number of charging stations is not the number of charging ports, which would be higher.						

TYSP Year	2023
Staff's Data Request #	1
Question No.	28

[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	NA. TAL is not a FEECA utility.								
2014									
2015									
2016									
2017									
2018									
2019									
2020									
2021									
2022									
Notes									

TYSP Year	2023
Staff's Data Request #	1
Question No.	29

[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	NA. TAL is not a FEECA utility.									
2014										
2015										
2016										
2017										
2018										
2019										
2020										
2021										
2022										
Notes										

TYSP Year	2023
Staff's Data Request #	1
Question No.	30

[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	NA. TAL is not a FEECA utility.						
2014							
2015							
2016							
2017							
2018							
2019							
2020							
2021							
2022							
Notes							

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

Year	Loss of Load Probability (Days/Yr)	Annual Isolated Reserve Margin (%) (Including Firm Purchases)	Expected Unserved Energy (MWh)	Loss of Load Probability (Days/Yr)	Annual Assisted Reserve Margin (%) (Including Firm Purchases)	Expected Unserved Energy (MWh)
2023	7.11	21.1%	4238	0.20	21.1%	117.9
2024	9.48	20.3%	6396	0.35	20.3%	210.8
2025	7.38	19.6%	4464	0.23	19.6%	129.0
2026	7.20	19.2%	4313	0.19	19.2%	114.8
2027	17.19	18.9%	8042	0.65	18.9%	290.6
2028	7.63	19.0%	5838	0.32	19.0%	206.2
2029	7.22	18.9%	4741	0.24	18.9%	126.8
2030	7.38	18.6%	4984	0.26	18.6%	130.0
2031	7.66	18.4%	4934	0.39	18.4%	140.9
2032	9.49	18.1%	6404	0.35	18.1%	211.1

Existing Generating Unit Operating Performance

Plant Name	Unit No.	Planned Outage Factor (POF)[1] Historical	Planned Outage Factor (POF)[1] Projected	Forced Outage Factor (FOF) Historical	Forced Outage Factor (FOF) Projected	Equivalent Availability Factor (EAF) Historical	Equivalent Availability Factor (EAF) Projected	Average Net Operating Heat Rate (ANOHR)[2] Historical	Average Net Operating Heat Rate (ANOHR)[2] Projected
A. B. Hopkins	CC 2	8.33%	7.88%	0.57%	2.36%	90.26%	84.92%	7843	7910
A. B. Hopkins	GT 3	1.36%	3.97%	1.09%	3.10%	97.22%	87.08%	10127	10100
A. B. Hopkins	GT 4	1.25%	3.97%	0.06%	3.10%	98.61%	87.08%	10181	10100
A. B. Hopkins	IC 1	1.37%	2.47%	0.54%	2.61%	97.08%	92.60%	9289	8532
A. B. Hopkins	IC 2	1.06%	2.47%	0.37%	2.61%	97.45%	92.60%	9409	8532
A. B. Hopkins	IC 3	0.96%	2.47%	0.23%	2.61%	97.94%	92.60%	9307	8532
A. B. Hopkins	IC 4	0.99%	2.47%	0.26%	2.61%	98.32%	92.60%	8685	8532
A. B. Hopkins	IC 5	1.17%	2.47%	0.45%	2.61%	97.90%	92.60%	8489	8532
S. O. Purdom	CC 8	10.44%	7.88%	0.53%	2.36%	88.39%	84.92%	7780	7747
Substation 12	IC 1	0.38%	2.47%	0.56%	2.61%	97.77%	92.60%	9158	8877
Substation 12	IC 2	0.44%	2.47%	0.26%	2.61%	97.86%	92.60%	10398	8877

NOTE: Historical - average of past three years

Projected - average of next ten years

TYSP Year 2023
Staff's Data Request # 1
Question No. 33

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	(%)
A. B. Hopkins	2	Leon	CC	NG	6	2008	306	336	300	330	300	330	53.3%
A. B. Hopkins	GT-3	Leon	IC	NG	9	2005	49	49	46	48	46	48	1.8%
A. B. Hopkins	GT-4	Leon	IC	NG	11	2005	49	49	46	48	46	48	1.6%
A. B. Hopkins	IC-1	Leon	IC	NG	3	2019	18.8	18.8	18.5	18.5	18.5	18.5	15.9%
A. B. Hopkins	IC-2	Leon	IC	NG	2	2019	18.8	18.8	18.5	18.5	18.5	18.5	15.8%
A. B. Hopkins	IC-3	Leon	IC	NG	2	2019	18.8	18.8	18.5	18.5	18.5	18.5	15.8%
A. B. Hopkins	IC-4	Leon	IC	NG	2	2019	18.8	18.8	18.5	18.5	18.5	18.5	15.8%
A. B. Hopkins	IC-5	Leon	IC	NG	4	2020	18.8	18.8	18.5	18.5	18.5	18.5	16.1%
S. O. Purdom	8	Wakulla	CC	NG	7	2000	237	266	222	258	222	258	72.8%
Substation 12	IC-1	Leon	IC	NG	10	2018	9.3	9.3	9.2	9.2	9.2	9.2	9.5%
Substation 12	IC-2	Leon	IC	NG	10	2018	9.3	9.3	9.2	9.2	9.2	9.2	9.5%

Notes

[1]Capacity factor is projected average for 2022-2031 based on summer net capacity.

TYSP Year 2023
Staff's Data Request # 1
Question No. 34

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	(%)
TAL has no planned traditional generation additions.													
Notes													
(Include Notes Here)													

TYSP Year 2023
Staff's Data Request # 1
Question No. 35

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
TAL	NA	Leon	PV	SUN	1	1993	0.262	0.262	0.223	0.223	0	0	16.2
Notes													
Gross capacity is expressed in MW_{dc}. Net capacity is expressed in MW_{ac}. These PV resources assumed to provide energy only, no firm capacity. No new utility-owned renewable resources were added in 2021.													

TYSP Year 2023
Staff's Data Request # 1
Question No. 36

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	(%)
TAL has no planned renewable generation additions.													
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	NA. TAL is a municipal utility.		
	2014			
	2015			
	2016			
	2017			
	2018			
	2019			
	2020			
	2021			
	2022			
Projected	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
	2030			
	2031			
	2032			
Notes				

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	
Nuclear Unit Additions				
NA	NA	NA	NA	NA
Combustion Turbine Unit Additions				
NA	NA	NA	NA	NA
Combined Cycle Unit Additions				
NA	NA	NA	NA	NA
Steam Turbine Unit Additions				
NA	NA	NA	NA	NA
Notes				

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	2032
A. B. Hopkins	2	CC	NG/DFO	44.9%	54.2%	54.2%	52.0%	54.4%	54.6%	46.7%	55.4%	54.6%	51.7%	54.9%
A. B. Hopkins	GT-3	GT	NG/DFO	3.4%	0.9%	1.4%	2.3%	1.1%	1.3%	2.6%	2.2%	1.7%	2.4%	1.8%
A. B. Hopkins	GT-4	GT	NG/DFO	3.2%	0.6%	1.1%	2.2%	1.2%	1.3%	2.7%	2.1%	1.6%	2.0%	1.6%
A. B. Hopkins	IC-1	IC	NG	35.4%	11.1%	12.6%	19.7%	13.9%	14.0%	21.5%	17.3%	14.6%	18.8%	15.1%
A. B. Hopkins	IC-2	IC	NG	29.6%	11.3%	12.9%	19.8%	13.5%	13.9%	21.6%	17.1%	13.9%	18.8%	15.4%
A. B. Hopkins	IC-3	IC	NG	21.9%	11.5%	12.8%	19.7%	14.0%	14.2%	21.3%	16.5%	14.2%	18.2%	15.1%
A. B. Hopkins	IC-4	IC	NG	17.7%	11.0%	12.3%	20.3%	13.4%	14.0%	21.5%	17.2%	14.7%	18.2%	15.5%
A. B. Hopkins	IC-5	IC	NG	23.9%	10.8%	13.0%	19.6%	14.4%	14.2%	22.1%	17.4%	14.4%	19.1%	15.5%
S. O. Purdom	8	CC	NG/DFO	68.8%	72.1%	72.5%	70.6%	72.8%	73.0%	76.3%	69.4%	73.1%	75.0%	73.4%
Substation 12	IC-1	IC	NG	6.4%	6.3%	7.3%	12.0%	7.9%	9.2%	11.6%	11.0%	8.8%	10.8%	9.9%
Substation 12	IC-2	IC	NG	6.2%	5.7%	7.1%	11.3%	9.0%	8.5%	11.9%	11.3%	9.2%	11.0%	9.8%
Notes														

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
Hopkins 2	NG	300	39600	2x1 Combined Cycle	See notes

Hopkins 2 is an existing 1x1 combined cycle unit that could be converted to a 2x1 unit. Potential issues include balancing the repowered unit's output with load requirements (minimum unit loading would exceed TAL's minimum load requirements), adding a catalyst layer to existing selective catalytic reduction (SCR) system to accommodate the higher NO_x emissions associated with the addition of a second combustion turbine (CT) , and expansion of the Hopkins switchyard to interconnect the second CT.

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

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date (MM/YYY)	Potential Conversion	Potential Issues
TAL has no existing steam units that are potential candidates for fuel-switching.					
Notes					

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

Transmission Line	Line Length (Miles)	Nominal Voltage (kV)	Date Need Approved	Date TLSA Certified	In-Service Date
TAL has no proposed transmission lines for the current planning period that require certification under the Transmission Line Siting Act.					

Notes

Nominal, Firm Purchases

Year		Firm Purchases $/MWh	Escalation %
HISTORY:			
	2020	NA	NA
	2021	NA	NA
	2022	NA	NA
FORECAST:			
	2023	NA	NA
	2024	NA	NA
	2025	NA	NA
	2026	NA	NA
	2027	NA	NA
	2028	NA	NA
	2029	NA	NA
	2030	NA	NA
	2031	NA	NA
	2032	NA	NA

TYSP Year 2023
Staff's Data Request # 1
Question No. 47

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
TAL has no existing PPAs from traditional sources.													
Notes													

TYSP Year 2023
Staff's Data Request # 1
Question No. 48

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
TAL has no planned PPAs from traditional sources.													
Notes													

TYSP Year 2023
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 (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
FL Solar 1, LLC	SF1	1	Leon	PV	SUN	21.2	21.2	20.0	20.0	0.0	0.0	12/17	12/37
FL Solar 4, LLC	SF4	4	Leon	PV	SUN	45.0	45.0	42.0	42.0	0.0	0.0	12/19	12/39
Notes													
Gross and net capacity are expressed in MW_{ac}. Though not "contracted" as such, TAL assumes ~20% of FL Solar 1 and 4 (or 12 MW) as firm capacity at the time of summer peak for planning purposes.													

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 (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
TAL has no planned PPAs from renewable sources.													
Notes													

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 (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
TAL has no existing PSAs.													
Notes													

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 (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
TAL has no planned PSAs.													
Notes													

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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Utility - Non-Firm	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Utility - Co-Firing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purchase - Firm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purchase - Non-Firm	114.0	120.6	120.3	119.4	118.8	118.2	118.0	117.1	116.5	115.9	115.3
Purchase - Co-Firing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Customer - Owned	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Total	118.3	125.0	124.7	123.7	123.2	122.6	122.3	121.4	120.8	120.2	119.6
Notes											

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 (%)
TAL has no existing energy storage.					

Notes

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 (MHh)	Projected Conversion Efficiency (%)
TAL has no planned energy storage.					

Notes

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	NA. TAL has no units that are subject to this rule.			
2022				
2023				
2024				
2025				
2026				
2027				
2028				
2029				
2030				
Notes				

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
Hopkins 2A	CC GT	NG	300	Note 1	Note 1	Note 1	Note 2	Note 1	Note 1	Note 1
Hopkins HC3	SC GT	NG	46	Note 1	Note 1	Note 1	Note 2	Note 1	Note 1	Note 1
Hopkins HC4	SC GT	NG	46	Note 1	Note 1	Note 1	Note 2	Note 1	Note 1	Note 1
Hopkins IC1	IC	NG	18.5	Note 1	Note 1	Note 1	Note 2	Note 1	Note 1	Note 1
Hopkins IC2	IC	NG	18.5	Note 1	Note 1	Note 1	Note 2	Note 1	Note 1	Note 1
Hopkins IC3	IC	NG	18.5	Note 1	Note 1	Note 1	Note 2	Note 1	Note 1	Note 1
Hopkins IC4	IC	NG	18.5	Note 1	Note 1	Note 1	Note 2	Note 1	Note 1	Note 1
Hopkins IC5	IC	NG	18.5	Note 1	Note 1	Note 1	Note 2	Note 1	Note 1	Note 1
Purdom 8	CC GT	NG	222	Note 1	Note 1	Note 1	Note 2	Note 1	Note 1	Note 1
Substation 12 IC1	IC	NG	9.2	Note 1	Note 1	Note 1	Note 2	Note 1	Note 1	Note 1
Substation 12 IC2	IC	NG	9.2	Note 1	Note 1	Note 1	Note 2	Note 1	Note 1	Note 1
Notes										
Note 1 - No impact. Unit is not subject to this rule. Note 2 - Florida was exempted from this rule. No impact. Unit is not subject to this rule.										

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
Hopkins 2A	CC GT	NG	300	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins HC3	SC GT	NG	46	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins HC4	SC GT	NG	46	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins IC1	IC	NG	18.5	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins IC2	IC	NG	18.5	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins IC3	IC	NG	18.5	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins IC4	IC	NG	18.5	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins IC5	IC	NG	18.5	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Purdom 8	CC GT	NG	222	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Substation 12 IC1	IC	NG	9.2	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Substation 12 IC2	IC	NG	9.2	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Notes										
Note 1 - No impact. Unit is not subject to this rule.										

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
Hopkins 2A	CC GT	NG	300	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins HC3	SC GT	NG	46	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins HC4	SC GT	NG	46	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins IC1	IC	NG	18.5	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins IC2	IC	NG	18.5	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins IC3	IC	NG	18.5	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins IC4	IC	NG	18.5	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Hopkins IC5	IC	NG	18.5	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Purdom 8	CC GT	NG	222	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Substation 12 IC1	IC	NG	9.2	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Substation 12 IC2	IC	NG	9.2	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Notes										
Note 1 - No impact. Unit is not subject to this rule.										

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

Year		Uranium		Coal		Natural Gas		Residual Oil		Distillate Oil		Hydrogen	
		GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU
Actual	2013	NA	NA	NA	NA	2,662	4.51	NA	NA	2.0	23.58	NA	NA
	2014	NA	NA	NA	NA	2,788	4.82	NA	NA	10.0	23.57	NA	NA
	2015	NA	NA	NA	NA	2,704	4.44	NA	NA	0.0	NA	NA	NA
	2016	NA	NA	NA	NA	2,562	3.92	NA	NA	76.4	22.54	NA	NA
	2017	NA	NA	NA	NA	2,635	3.79	NA	NA	0.0	NA	NA	NA
	2018	NA	NA	NA	NA	2,808	3.79	NA	NA	1.0	23.09	NA	NA
	2019	NA	NA	NA	NA	2,900	3.53	NA	NA	0.0	NA	NA	NA
	2020	NA	NA	NA	NA	2,666	3.06	NA	NA	0.1	22.46	NA	NA
	2021	NA	NA	NA	NA	2,764	3.74	NA	NA	1.4	22.62	NA	NA
	2022	NA	NA	NA	NA	2,919	4.88	NA	NA	1.553	22.46	NA	NA
Projected	2023	NA	NA	NA	NA	2,826	3.67	NA	NA	NA	16.23	NA	NA
	2024	NA	NA	NA	NA	2,845	3.79	NA	NA	NA	15.74	NA	NA
	2025	NA	NA	NA	NA	2,859	4.65	NA	NA	NA	15.29	NA	NA
	2026	NA	NA	NA	NA	2,872	4.70	NA	NA	NA	15.60	NA	NA
	2027	NA	NA	NA	NA	2,878	4.71	NA	NA	NA	16.00	NA	NA
	2028	NA	NA	NA	NA	2,890	4.76	NA	NA	NA	16.39	NA	NA
	2029	NA	NA	NA	NA	2,889	4.84	NA	NA	NA	16.80	NA	NA
	2030	NA	NA	NA	NA	2,893	4.94	NA	NA	NA	17.22	NA	NA
	2031	NA	NA	NA	NA	2,898	4.99	NA	NA	NA	17.66	NA	NA
	2032	NA	NA	NA	NA	2,910	5.06	NA	NA	NA	18.10	NA	NA
Notes													