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

May 5, 2022

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 20220000-OT (Undocketed filings for 2022) Ten-Year Site Plan Review - Staff's Data Request #2" 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 Mr. Donald Phillips 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) 891-3130 or paul.clark@talgov.com. Thank you.

Sincerely,

Paul D. Clark, II
Principal Engineer

Attachments

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

General Items

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

   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 28, 2022.

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 28, 2022.

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

   TAL data requested by this question are provided on the "Financial Assumptions" and "Financial Escalation" tabs in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

Load & Demand Forecasting

4. **[Investor-Owned Utilities Only]** Please refer to the Excel Tables File (Hourly System Load). Complete the table by providing, on a system-wide basis, the hourly system load in megawatts (MW) for the period January 1 through December 31 of the year prior to the current planning period. For leap years, please include load values for February 29. Otherwise, leave that row blank.

   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 "2022 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 14, 2021, and November 7, 2021).

      The load for 3/14/21 0200 EDT is calculated as the average of the preceding (3/14/21 0100 EST) and following (3/14/21 0300 EDT) hours. The load observed on 11/7/21 0200 EDT is simply replaced with the load observed on 11/7/21 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 "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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 2022 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 2021 Annual Energy Outlook (AEO).

   Data published by Google regarding the prevalence of people's location and activity at home versus at commercial business and workplaces was utilized to explain deviations in consumption during the ongoing coronavirus pandemic from expected levels, based on economic, weather, and other conditions. This data has helped explain the higher level of residential consumption and lower level of commercial consumption that was evident throughout the pandemic.

   For TAL's 2022 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 #18 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 2022 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 2022 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 this analysis spreadsheet is provided in the file entitled "Data Request #1 - Excel Tables – TAL 2022.xls" in tabs "Table II-1" through "Table II-7".

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

      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 also provided in the file entitled "Data Request #1 - Excel Tables – TAL 2022.xls" in tabs "Table II-1" through "Table II-7".

    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 0.8%, respectively, over 2012-2021. 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 2022 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 0.8%, 1.1%, and 1.3%, respectively, over 2022-2031. These growth rates are similar to those from the 2021 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 0.9% 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 2022 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. Please include a detailed discussion of how the Company's demand management program(s) and conservation/energy-efficiency program(s) impact the growth/decline of the trends.

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.

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

    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 2029 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 ongoing IRP study and development of its 2050 Clean Energy Plan.

    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 2023-29 timeframe. TAL expects to have approximately 16 MW of DR capability on its system by summer 2029, 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 ongoing IRP study and development of its 2050 Clean Energy Plan.

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. 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.

The on-going coronavirus pandemic has had a significant impact on energy consumption and peak demand on TAL's system. As a result of the lock-down over late March 2020 through early May 2020, stay-at-home behavior, and shift toward work-from-home, residential average consumption has been higher and commercial class sales, lower than would otherwise have been experienced. These impacts have gradually abated in parallel with the pandemic itself, though some portion of these impacts may be long-term. TAL estimates that, at the peak of these impacts in April 2020, residential average consumption was higher by more than 10% and commercial sales, excluding sales to the universities, FSU and FAMU, and to the State of Florida, was lower by more than 10%. In late 2020, these statistics are estimated to have decreased to 5-6%. No analysis of the impacts of the pandemic on sales to the universities and to the capital center has been conducted, but TAL believes that impacts to the sales to the universities have been comparable to the larger commercial class. Sales to the State of Florida capital facilities do not appear to have been as significant.

b. Winter Peak Demand.

See response to 13a above.

c. Annual Retail Energy Sales.

See response to 13a above.

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

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

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 ºF. Peak day min and max refer to minimum and maximum daily temperature.

			Summer		***Winter***	
Equation	***HDD***	***CDD***	***Peak Day Max ºF***	***Peak Day Min ºF***	***Peak Day Max ºF***	***Peak Day Min ºF***
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:

See answers below.

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

- *Residential Sales – 29 years (1993-2021)*
- *GSND Sales – 26 years (1995-2021)*
- *GSD Sales – 26 years (1995-2021)*
- *Large Demand Sales – 26 years (1995-2021)*
- *Peak Demand – 31 years (1990-2021)*

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

See response to 14e above.

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

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

15. **[Investor-Owned Utilities Only]** If not included in the Company's current planning period TYSP, please provide load forecast sensitivities (high band, low band) to account for the uncertainty inherent in the base case forecasts in the following TYSP schedules, as well as the methodology used to prepare each forecast:

a. Schedule 2.1 – History and Forecast of Energy Consumption and Number of Customers by Customer Class.
b. Schedule 2.2 - History and Forecast of Energy Consumption and Number of Customers by Customer Class.
c. Schedule 2.3 - History and Forecast of Energy Consumption and Number of Customers by Customer Class.
d. Schedule 3.1 - History and Forecast of Summer Peak Demand.
e. Schedule 3.2 - History and Forecast of Winter Peak Demand.
f. Schedule 3.3 - History and Forecast of Annual Net Energy for Load.
g. Schedule 4 - Previous Year and 2-Year Forecast of Peak Demand and Net Energy for Load by Month.

Although TAL is not an investor-owned utility, all the schedules requested above were provided in TAL's 2022 TYSP report and the file entitled "2022 TAL TYSP Tables and Schedules Share File.xls" submitted to FPSC Staff via e-mail on March 28, 2022.

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

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

    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.

    Sales to the remaining commercial classes were similarly down several percent in 2020, again with only limited recovery during 2021. Sales to the State Capital Center and other large demand customers were particularly lower than expected during 2021, both directly due to the Pandemic and some migration to the general service non-demand rate class.

    Due to the stay-at-home behavior and accelerated work-from-home trend, residential average use has generally been higher over 2020-21. For conservatism, the 2021 TYSP reflected that this effect would trend back down over the next few years, but to-date, residential consumption has remained higher than expected by a few percent.

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

    As in its 2021 TYSP, TAL's 2022 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 data is reported by Google as percentage differences from starting values that preceded the Pandemic. Projected data is assumed by TAL to return to zero or near-zero, representing pre-Pandemic conditions, over the next few years.

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

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

       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.

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

       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 (2022-2031) of the number of customers with customer-owned/leased renewable generation (solar and otherwise), by customer class, please provide.

       Not applicable.

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

    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).

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

    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*

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

    TAL data requested by this question are provided on the "Electric Vehicle Charging" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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

    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 its IRP study and 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 its IRP study and development of its 2050 Clean Energy Plan currently underway.

22. Please describe how the Company monitors 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.

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

    Since January 1, 2021, TAL has made no upgrades to its distribution system for which PEVs were a contributing factor.

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

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

26. What are 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*

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

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

28. 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 0.6% by 2031.

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

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

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

    Not applicable. TAL is not a FEECA utility.

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

    Not applicable. TAL is not a FEECA utility.

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

    Not applicable. TAL is not a FEECA utility.

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

    TAL data requested by this question are provided on the "LOLP" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

Generation & Transmission

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

    TAL data requested by this question are provided on the "Unit Performance" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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

    TAL data requested by this question are provided on the "Utility Existing Traditional" tab in the Microsoft Excel file entitled "2022 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 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.

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

    TAL data requested by this question are provided on the "Utility Existing Renewable" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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

    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.

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

    The prospective rooftop PV facility reported in TAL's response to the previous question in the 2021 SDR #1 has been removed from this year's response. That project was speculated as part of a larger Tallahassee Police Department (TPD) relocation project before the new location and construction plans for that facility had been finalized. A replacement project may be developed as construction of TPD's new headquarters at the former Northwood Mall site progresses. TAL will provide an update on any such project in its 2023 data request response.

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

    TAL has no existing or planned firm purchases.

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

    TAL has no existing traditional PPAs.

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

    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.

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

    TAL data requested by this question are provided on the "PPA Existing Renewable" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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

    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.

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

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

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

    TAL has no existing PSAs.

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

    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.

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

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

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

    TAL data requested by this question are provided on the "Annual Renewable Generation" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

50. **[Investor-Owned Utilities Only]** Please refer to the Excel Tables File (Potential Solar Sites). Complete the table by providing information on all of the Company's plant sites that are potential candidates for utility-scale (>2 MW) solar installations.

    Not applicable. TAL is a municipal utility.

51. 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.

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

    Not applicable. TAL is a municipal utility.

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

    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.

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

    TAL participates in both Energy Storage Association and Smart Electric Power Association working groups for tracking energy storage (ES) technologies. Renewable resource balancing has grown into a motivation for piloting energy storage and the current price is acceptable for TAL to pilot energy storage.

55. Briefly discuss any progress in the development and commercialization of non-lithium 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).

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

    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.

57. Please explain whether ratepayers have expressed interest in energy storage technologies. If so, 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 its IRP study and development of its 2050 Clean Energy Plan currently underway.

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

    TAL has no existing energy storage resources.

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

    TAL has no planned energy storage resources.

60. Please identify and describe the objectives and methodologies of all energy storage pilot programs currently running or in development with an anticipated launch date within the current planning period. If the Company is not currently participating in or developing energy storage pilot programs, has it considered doing so? If not, please explain.

    TAL is not currently participating in or developing ES pilot programs. However, TAL does foresee the possibility for further discussions of such programs during its IRP study and 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.

61. If the Company utilizes non-firm generation sources in its system portfolio, please detail whether it currently utilizes or has considered utilizing energy storage technologies to provide firm capacity from such generation sources. If not, please explain.

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.

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

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.

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

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.

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

Not applicable. TAL is a municipal utility.

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

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

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

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

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

    TAL data requested by this question are provided on the "Capacity Factors" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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

    Not applicable. TAL is a municipal utility.

69. Please refer to the Excel Tables File (Steam Unit CC Conversion). Complete the table by providing information on all of the Company's steam units that are potential candidates for repowering to operation as Combined Cycle units.

    TAL data requested by this question are provided on the "Steam Unit CC Conversion" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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

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

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

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

Environmental

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

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

    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 2022 TYSP.

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

    Not applicable. TAL is a municipal utility.

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

    Not applicable. TAL is a municipal utility.

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

    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 2021 calendar year. TAL should have enough allowances for the foreseeable future. Much of the impact from environmental regulations that TAL has been subject to in the past has been mitigated by litigation, stays, and remands. TAL recently retired several units due to the units reaching the end of useful life and not environmental regulations.

    TAL has several units that are subject to various federal regulations. During the 2021 year, the City was able to successfully reduce costs associated with compliance testing for reciprocating internal combustion engine (RICE) generating units subject to 40 CFR 63 Subpart ZZZZ by getting an approval for a reduction in testing frequency for formaldehyde.

    Lake Talquin Total Maximum Daily Load (TMDL) Rule: *The Florida Department of Environmental Protection (FDEP) has proposed a Waste Load Allocation (WLA) for the Arvah B. Hopkins Power Plant of 986 kg/yr of total Nitrogen (TN) and 2,409 kg/yr of total Phosphorus (TP) in the most recent Lake Talquin TMDL Rule making effort. As proposed, the WLAs are within the operational range and additional treatment to the wastewater is not*

expected. Hopkins' National Pollutant Discharge Elimination System (NPDES) permit remains administratively continued until the rule becomes final and a renewal permit is issued.

Hydrologic Connectivity: *On April 23, 2020, the U.S. Supreme Court issued its opinion in County of Maui, Hawaii v. Hawaii Wildlife Fund, adopting a functional equivalent test for determining when a NPDES permit is required for discharges to groundwater that result in the addition of pollutants to jurisdictional surface waters. By applying the Supreme Court's opinion, a discharge of pollutants to a surface water that first pass-through groundwater would need an NPDES permit if the addition of pollutants from the point source is the "functional equivalent" of a direct discharge. The Court did not define the term "functional equivalent" and suggested that would be determined on a fact specific basis. Additional litigation relating to the application of the "functional equivalent" test is expected. This decision should not affect TAL. Purdom infrequently discharges directly to the regulated point of discharge and Hopkins utilizes three lined process water treatment ponds, which should not be an issue if the integrity of the pond liners remains sound.*

Tanks: *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. Periodic API-653 inspections of the tanks located at both Hopkins and Purdom Generating Stations will be conducted as required. TAL is considering demolition of Tank #11 at Hopkins Generating Station. The location of Tank #11 is subject to a Declaration of Restrictive Covenant which, in part requires the maintenance of engineering controls. Any proposed modification to the engineering controls will require FDEP approval to ensure compliance with the Site Rehabilitation Completion Order that was issued by FDEP in July 2018.*

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

    a. Will your Company be materially affected by the rule?

       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.

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

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

Not applicable.

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

Not applicable.

c. Cooling Water Intake Structures (CWIS) Rule.

Th 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.

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

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.

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

TAL data requested by this question are provided on the "EPA Operational Effects" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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

TAL data requested by this question are provided on the "EPA Cost Effects" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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

TAL data requested by this question are provided on the "EPA Unit Availability" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

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

40 CFR 63 Subpart YYYY – National Emissions Standards for Hazardous Air Pollutants for Stationary Combustion Turbines: This rule had been stayed but was recently reinstated. As this rule is applicable to combustion turbines that are operated at major sources of hazardous air pollutants (HAPS), each facility would be subject to formaldehyde emissions limits. In order to demonstrate compliance, each combustion turbine must stack test for formaldehyde. Sources that are able to demonstrate that its potential to emit is less than the threshold for being a major source, would no longer have units that are applicable to Subpart YYYY. TAL

has approved costs related to completing engineering studies that would develop a formaldehyde emissions factor that could potentially demonstrate that both Hopkins and Purdom are true area sources. TAL has submitted an application to FDEP to reclassify Purdom as an area source of HAPS and has approved costs associated with stack tests for Hopkins. If Hopkins is unable to demonstrate that it is an area source, it would be required to provide alternate monitoring of emissions for units that do not have carbon monoxide (CO) catalysts. Hopkins CT 2A ("HP 2A", the CT portion of the Hopkins 2 combined cycle unit) is the only unit subject to YYYY that does not have a CO catalyst. Costs to either reclassify or demonstrate compliance have been preapproved, however, if any of our subject units (HP2A, HCT 3, and HCT 4) are unable to meet the formaldehyde limit, these units' operations would need to be curtailed until the appropriate control equipment or limits are installed in order to ensure compliance.

Fuel Supply & Transportation

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

TAL data requested by this question are provided on the "Fuel Usage & Price" tab in the Microsoft Excel file entitled "2022 TYSP - Data Request #1.Excel Tables - TAL.xls" accompanying this document's submission to FPSC staff.

81. 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 2022 TYSP. At the time TAL prepared the TYSP forecast, the latest public fuel forecast available was from the Energy Information Administration's (EIA) 2022 Annual Energy Outlook released in March 2022. 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 10% higher than TAL's CME/NYMEX based natural gas forecast. EIA's Distillate fuel oil forecast was around 3% higher than the TAL's CME/NYMEX distillate 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.

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

    a. Coal

    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

    The expansion of shale gas production in the United States (US) has significantly contributed to lower and more stable natural gas prices in recent years. Improvements in fracking and directional drilling technology have decreased production costs and increased supply. There is some potential for upward pressure on prices as the US exports increasing volumes of liquified natural gas (LNG) and conventional gas supplies to Mexico. Recent increases in inflation will exert upward pressure on natural gas prices due increases in labor and the cost of steel used in production. Fracking is always exposed to regulatory risk, either from state legislation or citizen referendums which advocate for banning 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 continues to grow 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

    Since the re-powering of Hopkins Unit 2 in 2008 TAL no longer uses or stores residual fuel oil on site. 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.

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

    TAL's projected cost of delivered natural gas for the 2021 calendar year was $3.52/MMBtu (as reported in TAL's response to 2021 SDR #1). The actual cost of delivered gas for calendar year 2021 was $3.77/MMBtu.

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

Due to the significant increases in the cost of natural gas over the past year, TAL's 2022 gas forecast is ~37% higher than the 2021 forecast. Because TAL has ~70% of its natural gas needs hedged at fixed prices for 2022 the increase is not as high as it otherwise would be. Natural gas usage has increased faster than gas production so far this year. The rapid rebound in the post pandemic economy is largely responsible for this trend. A colder than normal February, March and April 2022 has also contributed to higher prices across the board. Drilling activity has increased so far this year but there is a lag effect between increased drilling and actual production volumes.

85. 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. 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.

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

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.

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

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 directly but benefits from additional feed gas supplies in the southeast region.

88. 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.

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

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.

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

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.

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

Not applicable.

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

Not applicable.

Extreme Weather

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

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.

94. 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 93 above. TAL will adopt additional measures in its winterization plan as needed.

95. 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.

TYSP Year	2022
Staff's Data Request #	1
Question No.	3

Financial Assumptions
Base Case

AFUDC RATE[1]:	NA	%
CAPITALIZATION RATIOS:		
DEBT[2]	52.09	%
PREFERRED	NA	%
EQUITY[2]	166.22	%
RATE OF RETURN:		
DEBT[3]	4.47	%
PREFERRED	NA	%
EQUITY[4]	5.93	%
INCOME TAX RATE:		
STATE	NA	%
FEDERAL	NA	%
EFFECTIVE	NA	%
OTHER TAX RATE:		
Sales Tax	7.50	%
Sales Tax (>$5,000)	6.00	%
DISCOUNT RATE[5]:	3.25	%
TAX DEPRECIATION RATE:	NA	%

[1]Equals 2021 Capitalized Interest divided by Amount subject to interest (per Accounting Services Cap Interest workpapers)
[2]Per 2021 CAFR for electric fund
[3]Equals FY2021 "Income before Contibutions and Transfers" divided total debt
[4]Equals FY 2021 "Income before Contibutions and Transfers" divided total net position
[5]Wall Street Journal prime rate as of 4/19/2022

TYSP Year	2022
Staff's Data Request #	1
Question No.	3

Financial Escalation Assumptions

Year	General Inflation %	Plant Construction Cost %	Fixed O&M Cost %	Variable O&M Cost %
2022	2.30	2.35	2.35	2.35
2023	2.30	2.35	2.35	2.35
2024	2.40	2.46	2.46	2.46
2025	2.40	2.46	2.46	2.46
2026	2.40	2.46	2.46	2.46
2027	2.40	2.46	2.46	2.46
2028	2.40	2.46	2.46	2.46
2029	2.40	2.46	2.46	2.46
2030	2.40	2.46	2.46	2.46
2031	2.40	2.46	2.46	2.46

Source: Congressional Budget Office (https://www.cbo.gov/)

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

Date	Hourly System Load (MW)																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1/1/2021	220	211	202	196	195	198	206	214	221	235	250	261	267	268	266	263	269	278	280	274	266	255	244	233
1/2/2021	219	208	200	196	194	197	204	213	225	239	252	259	268	264	262	262	265	277	280	276	267	256	241	231
1/3/2021	214	204	198	196	196	201	213	226	242	263	276	277	274	266	260	257	262	277	304	311	310	305	294	227
1/4/2021	274	268	269	273	282	305	340	368	379	365	344	325	308	294	283	277	279	291	323	331	328	321	308	283
1/5/2021	284	279	278	282	291	311	347	368	363	342	323	308	296	285	278	272	272	288	314	322	318	310	296	295
1/6/2021	273	270	272	279	294	322	364	395	400	377	351	329	311	297	286	280	282	299	328	333	328	319	303	283
1/7/2021	277	269	265	269	279	299	332	355	357	357	346	336	325	320	316	314	319	322	335	331	321	308	288	288
1/8/2021	257	249	245	244	249	267	297	321	328	331	332	332	328	329	326	322	332	352	371	370	363	351	336	270
1/9/2021	311	305	302	301	306	318	334	350	365	379	388	390	387	381	375	374	380	398	416	415	407	394	377	322
1/10/2021	349	341	337	335	338	349	362	377	393	408	414	404	383	362	349	345	354	372	396	397	390	376	356	362
1/11/2021	327	318	314	318	329	347	377	396	395	387	371	360	347	334	324	316	313	324	341	334	317	296	275	341
1/12/2021	240	233	231	235	245	265	301	329	338	342	346	350	350	348	343	340	339	350	371	370	359	341	318	253
1/13/2021	282	274	271	273	282	304	339	367	375	380	383	384	385	381	374	363	356	369	399	406	402	393	377	297
1/14/2021	358	359	364	374	393	426	471	504	502	462	406	369	340	319	302	292	292	305	337	346	342	332	318	364
1/15/2021	292	284	280	280	287	304	328	343	342	340	337	333	324	303	289	281	280	289	313	321	320	314	306	303
1/16/2021	291	291	296	305	321	346	376	402	413	397	373	355	337	318	304	295	297	314	348	362	368	370	367	297
1/17/2021	361	364	373	382	395	412	434	454	465	438	391	360	339	320	309	298	296	311	340	347	348	342	333	362
1/18/2021	313	309	309	313	321	339	370	398	415	398	367	343	325	308	295	288	290	305	338	350	349	344	334	322
1/19/2021	320	322	328	339	359	390	433	466	473	437	383	362	338	311	299	301	289	303	326	337	334	326	312	325
1/20/2021	290	287	289	295	308	333	373	398	399	383	348	320	320	309	303	287	294	297	303	307	297	282	262	299
1/21/2021	228	218	214	215	222	243	277	300	315	323	313	308	305	304	294	300	298	304	303	302	291	274	253	243
1/22/2021	217	206	199	197	199	211	235	258	280	298	306	310	312	310	308	304	291	302	299	294	282	270	254	233
1/23/2021	224	214	207	203	203	209	220	234	248	264	273	275	272	268	263	260	261	270	290	291	282	271	258	238
1/24/2021	231	222	217	214	214	218	228	239	252	267	275	276	276	271	269	267	267	276	295	296	287	272	254	244
1/25/2021	220	209	202	200	203	217	245	268	274	276	277	282	285	285	286	286	286	289	308	310	298	281	262	235
1/26/2021	223	211	202	199	200	211	238	260	272	289	296	298	301	306	308	304	310	319	322	316	304	286	265	241
1/27/2021	227	213	205	201	202	213	239	265	288	288	301	305	304	300	293	291	304	308	318	317	300	280	258	245
1/28/2021	218	207	202	203	211	234	275	314	345	349	349	346	329	317	308	302	301	317	332	346	345	337	322	236
1/29/2021	300	299	303	312	329	360	408	445	460	443	415	374	353	329	309	298	308	320	320	331	331	329	323	310
1/30/2021	312	312	315	322	331	345	363	380	389	368	337	312	294	281	269	262	261	269	290	299	294	288	279	317
1/31/2021	255	244	236	231	228	231	238	243	251	264	274	277	277	276	273	271	273	284	296	297	287	273	254	266
2/1/2021	219	207	200	201	208	229	270	307	327	342	348	355	367	373	378	384	391	406	428	430	418	398	375	234
2/2/2021	339	332	332	341	358	387	432	462	468	470	441	429	406	386	353	353	350	357	379	396	394	383	364	355
2/3/2021	336	332	333	339	353	385	430	462	475	460	432	405	375	356	338	332	330	335	355	375	380	376	364	349
2/4/2021	351	354	359	368	388	423	471	500	496	455	403	362	341	329	310	302	303	308	323	332	324	307	286	354
2/5/2021	247	234	225	221	222	234	260	278	289	302	300	301	300	295	287	274	272	277	293	294	287	278	267	264
2/6/2021	246	239	236	236	240	249	264	281	299	314	322	322	323	321	317	318	323	330	344	342	332	318	301	257
2/7/2021	269	259	253	250	250	256	266	277	288	304	314	322	328	326	319	315	316	324	338	342	343	341	336	284
2/8/2021	318	315	317	320	329	353	394	420	416	388	357	329	307	292	282	275	274	279	302	311	301	285	265	327
2/9/2021	230	221	215	212	214	229	258	280	289	291	303	313	307	304	295	293	295	302	311	312	300	282	261	246
2/10/2021	224	212	204	201	203	215	244	267	279	285	290	292	296	295	287	289	288	292	304	308	298	281	260	241
2/11/2021	222	209	200	197	198	210	237	259	274	279	282	287	287	290	298	310	311	310	312	316	304	285	264	239
2/12/2021	223	211	202	198	199	210	235	257	273	280	291	301	303	308	310	312	309	310	309	307	294	279	263	242
2/13/2021	228	215	205	198	195	198	206	213	227	245	258	267	270	270	270	270	274	280	292	291	282	272	260	246
2/14/2021	235	226	220	217	217	223	234	248	265	287	303	308	309	304	301	298	299	307	321	323	313	300	283	248
2/15/2021	250	239	232	231	235	249	273	293	303	309	312	311	309	302	297	297	298	309	309	306	294	278	259	266
2/16/2021	226	217	214	215	223	245	285	315	328	335	334	325	316	307	299	293	295	311	345	372	374	366	353	240
2/17/2021	332	326	328	335	349	380	425	455	449	425	388	357	329	310	295	284	282	286	306	316	307	291	270	341
2/18/2021	234	223	216	213	216	229	254	272	279	284	289	294	297	296	293	290	289	293	304	306	295	279	257	250
2/19/2021	219	210	206	209	217	239	275	305	318	325	330	334	335	336	332	328	326	329	347	361	359	354	341	235
2/20/2021	321	319	320	325	336	354	379	401	409	389	360	333	311	293	279	271	269	276	298	320	324	324	320	330
2/21/2021	313	315	320	325	335	350	370	386	384	359	331	307	290	276	268	263	263	269	284	301	294	282	265	316
2/22/2021	233	223	216	215	221	237	267	289	291	290	288	292	292	289	285	281	279	284	298	308	297	280	258	246
2/23/2021	222	211	205	206	214	237	278	308	315	307	297	289	283	277	273	273	274	277	290	303	295	281	264	238
2/24/2021	238	234	234	238	250	276	318	347	345	321	300	287	281	276	275	276	277	276	286	298	289	273	255	249
2/25/2021	224	216	212	213	218	235	265	285	286	284	282	283	285	289	294	300	304	305	311	318	305	286	262	237
2/26/2021	220	207	199	195	196	207	233	252	262	271	278	285	291	296	303	308	309	303	300	300	285	270	253	239
2/27/2021	220	209	202	197	197	200	209	218	234	251	268	285	295	304	312	315	316	315	312	315	300	283	265	235
2/28/2021	230	218	209	203	200	202	208	213	232	258	278	297	312	321	326	330	332	330	332	337	322	302	278	247
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3/1/2021	234	221	212	208	210	221	247	264	277	294	316	337	348	348	345	342	327	317	320	315	296	277	254	254
3/2/2021	214	202	194	191	193	205	234	256	264	273	279	285	286	286	286	285	290	299	313	314	303	287	268	232
3/3/2021	233	222	216	215	222	242	278	306	316	318	314	318	320	316	309	305	307	314	324	340	336	322	302	249
3/4/2021	271	262	258	259	268	290	326	349	341	323	304	291	283	276	273	273	274	275	283	296	289	275	256	284
3/5/2021	229	223	223	226	235	258	295	322	319	303	288	281	277	274	273	271	270	267	273	280	271	258	244	240

3/6/2021	217	207	200	198	199	206	219	234	253	269	280	276	269	263	258	255	257	263	274	286	281	273	263	229
3/7/2021	244	240	240	242	247	260	276	291	300	295	286	275	268	260	255	253	256	264	276	294	290	280	269	252
3/8/2021	247	244	247	256	271	300	347	380	371	341	317	299	288	280	273	271	272	275	286	303	298	287	270	256
3/9/2021	245	242	243	251	266	295	339	365	353	323	300	288	280	276	276	276	279	281	287	299	288	271	250	256
3/10/2021	215	207	203	204	211	231	268	292	291	283	278	278	279	282	284	287	292	293	294	305	293	275	252	230
3/11/2021	213	202	196	195	200	217	250	273	277	275	276	279	286	291	296	301	304	303	302	309	295	277	252	230
3/12/2021	212	200	194	192	195	210	238	260	269	273	280	288	297	306	314	320	321	316	308	310	295	276	257	230
3/13/2021	221	207	197	192	190	194	203	212	230	246	260	275	287	298	310	319	321	317	309	311	295	277	257	238
3/14/2021	220	213	206	197	192	191	196	203	211	229	243	259	274	288	301	313	323	329	323	314	314	297	275	238
3/15/2021	229	211	199	194	193	200	218	236	245	255	268	279	291	302	313	319	321	323	320	315	317	302	279	251
3/16/2021	233	216	204	198	198	207	227	245	260	264	278	296	308	322	333	345	359	355	339	334	330	313	293	256
3/17/2021	249	234	223	216	216	223	242	262	278	290	300	310	336	349	361	365	364	360	346	331	328	310	288	270
3/18/2021	244	230	219	214	214	223	242	262	279	295	295	296	307	320	334	345	348	338	320	303	302	285	264	265
3/19/2021	220	204	192	187	188	197	217	240	260	269	274	275	270	265	260	262	266	269	264	258	267	260	248	241
3/20/2021	223	214	207	203	201	205	214	226	239	254	263	269	265	258	249	246	244	247	249	253	267	261	250	235
3/21/2021	226	216	209	206	205	208	217	228	239	253	263	271	275	272	262	256	255	257	260	265	278	270	254	238
3/22/2021	217	206	199	197	200	212	237	261	267	271	274	276	277	274	274	278	281	281	284	290	297	282	261	234
3/23/2021	217	203	195	191	194	206	233	258	270	271	275	282	286	297	302	311	319	314	307	308	311	295	270	237
3/24/2021	223	209	199	194	194	204	229	253	264	274	282	296	308	310	306	302	301	298	291	294	301	288	266	244
3/25/2021	222	208	199	194	195	205	231	254	269	274	289	301	316	321	321	318	320	325	321	321	328	316	294	243
3/26/2021	249	234	224	219	219	227	251	274	288	299	321	343	360	379	394	403	409	403	381	359	351	334	312	270
3/27/2021	267	251	237	229	223	224	232	242	252	266	280	301	329	350	366	382	390	390	380	360	350	330	304	289
3/28/2021	256	238	226	218	213	214	220	228	239	261	287	309	332	352	368	376	382	381	372	364	357	334	307	278
3/29/2021	245	222	208	200	199	207	230	250	255	262	268	276	280	284	287	290	296	300	302	300	305	289	266	276
3/30/2021	219	205	197	193	193	204	230	255	263	275	286	298	311	326	330	334	334	335	331	331	336	322	297	240
3/31/2021	242	224	212	206	206	214	240	260	275	287	299	323	348	370	385	395	400	398	387	377	369	329	297	266
4/1/2021	244	224	213	205	199	204	224	245	268	268	261	262	262	259	255	259	258	259	249	252	263	256	240	268
4/2/2021	210	202	198	199	205	190	241	268	296	311	302	303	299	289	279	271	268	260	260	264	276	274	265	224
4/3/2021	249	243	242	245	251	263	283	304	321	315	299	284	270	258	250	247	247	249	253	254	265	259	249	256
4/4/2021	225	216	212	211	214	223	238	253	270	272	264	257	254	251	249	250	254	259	261	260	267	260	244	237
4/5/2021	209	198	192	190	196	210	235	260	273	272	271	274	237	284	290	297	303	305	303	296	298	284	259	225
4/6/2021	213	199	190	187	191	205	235	264	274	276	276	280	283	290	296	306	323	331	334	321	316	302	274	234
4/7/2021	219	205	196	191	191	202	228	259	269	274	278	289	297	308	317	329	333	322	319	313	318	305	284	242
4/8/2021	221	206	196	191	192	201	227	254	267	271	287	291	300	297	297	302	307	306	301	305	312	299	277	250
4/9/2021	232	218	208	204	203	213	238	267	278	289	296	305	307	314	315	303	302	309	307	307	304	291	277	253
4/10/2021	227	213	204	198	196	199	208	215	231	249	264	276	273	271	269	267	265	264	264	264	272	267	250	252
4/11/2021	220	208	201	197	195	197	204	212	229	245	258	266	274	277	276	279	280	284	282	284	290	282	265	235
4/12/2021	225	211	203	199	199	207	231	249	259	270	280	292	302	313	326	340	353	360	359	344	337	317	287	244
4/13/2021	230	212	200	193	192	202	227	251	266	273	289	309	326	340	360	384	393	395	381	365	357	334	302	255
4/14/2021	241	222	208	200	198	207	231	248	259	276	294	317	339	364	375	379	372	361	352	344	336	318	292	269
4/15/2021	239	222	211	203	201	210	234	254	262	278	286	289	295	295	293	296	300	298	301	305	302	287	268	263
4/16/2021	226	206	202	196	195	205	228	251	256	263	271	281	288	285	281	279	280	280	280	279	287	282	271	245
4/17/2021	220	208	199	194	193	195	203	210	224	239	251	260	266	271	274	278	281	284	282	279	277	270	256	238
4/18/2021	225	212	203	197	194	194	200	207	218	236	250	262	271	275	274	272	273	277	276	276	284	277	258	240
4/19/2021	217	204	195	191	192	200	224	243	252	260	269	276	283	290	295	304	312	315	313	304	300	285	261	235
4/20/2021	213	199	190	186	187	198	222	245	256	270	284	278	287	299	307	314	323	332	335	329	323	304	278	235
4/21/2021	219	202	192	185	185	195	219	238	254	265	275	287	291	306	317	333	337	337	335	322	313	301	270	247
4/22/2021	211	195	186	181	183	195	223	251	263	271	273	279	275	267	269	271	278	285	282	282	290	273	261	238
4/23/2021	212	201	195	193	196	209	235	262	272	273	273	280	280	276	282	284	303	294	284	280	293	280	263	232
4/24/2021	219	207	199	193	192	195	204	215	230	247	266	281	289	295	292	290	302	311	315	314	321	317	300	241
4/25/2021	260	244	231	220	206	198	199	201	218	236	251	265	278	287	298	311	323	333	332	321	313	300	274	280
4/26/2021	221	204	193	187	187	196	218	236	248	260	275	290	306	322	339	355	368	374	368	352	344	324	294	246
4/27/2021	238	220	208	201	199	208	232	251	264	282	298	319	337	356	372	394	407	403	396	377	364	342	308	265
4/28/2021	245	225	213	205	205	215	238	259	268	281	297	319	337	359	377	392	402	404	398	381	365	345	316	273
4/29/2021	247	227	214	207	205	214	235	252	268	288	312	336	357	371	386	399	414	416	409	394	380	362	330	276
4/30/2021	262	241	227	220	220	231	257	276	292	311	322	336	360	379	398	416	416	405	381	372	364	347	323	293
5/1/2021	261	240	223	211	204	202	205	208	225	245	264	282	296	310	328	347	360	370	366	348	331	313	288	292
5/2/2021	238	221	209	202	198	198	203	205	224	248	267	292	318	343	365	378	386	383	366	353	347	331	306	263
5/3/2021	254	237	228	225	229	243	272	291	307	325	349	376	399	423	443	455	462	459	448	426	412	393	360	278
5/4/2021	298	277	264	258	258	268	293	310	321	338	372	398	414	436	459	465	470	473	455	432	422	404	369	327
5/5/2021	289	254	238	228	225	232	254	270	283	296	308	338	355	364	389	400	391	374	350	336	335	327	304	338
5/6/2021	244	228	217	211	212	222	248	267	277	291	311	333	346	368	385	405	404	395	391	367	351	335	303	272
5/7/2021	236	215	203	195	193	201	220	237	250	266	288	289	299	311	322	340	344	340	335	319	305	285	263	267
5/8/2021	218	203	192	186	184	186	191	198	215	229	240	249	258	269	281	295	311	322	323	310	298	287	265	240
5/9/2021	221	205	195	188	185	185	189	195	214	240	265	288	307	325	341	356	369	376	371	359	351	341	315	243
5/10/2021	259	241	230	225	226	237	258	276	289	304	319	328	337	351	350	354	355	349	343	335	332	326	301	285
5/11/2021	248	229	218	213	213	223	246	269	284	304	325	351	368	377	390	383	370	371	368	368	362	330	291	273
5/12/2021	240	223	213	208	207	216	239	261	276	289	303	314	325	318	320	338	344	354	356	346	343	332	304	264
5/13/2021	239	220	206	197	194	200	223	246	250	259	271	273	274	274	274	278	278	277	278	273	277	273	252	268
5/14/2021	211	198	191	187	188	197	219	242	252	264	273	279	286	293	301	314	327	330	322	307	295	286	267	230
5/15/2021	219	203	193	186	183	186	192	199	217	233	251	261	273	280	294	305	307	316	316	305	291	281	261	240
5/16/2021	218	203	193	185	182	184	187	192	208	226	242	260	273	285	298	315	330	343	345	334	323	310	283	239

5/17/2021	231	215	203	197	198	207	227	245	259	277	296	316	336	354	373	387	397	399	392	375	363	345	313	257
5/18/2021	251	232	219	212	210	217	237	256	276	304	328	355	368	391	399	415	420	419	404	385	370	354	322	279
5/19/2021	260	240	225	219	217	226	248	265	289	315	330	355	369	393	404	423	427	419	410	392	378	364	331	288
5/20/2021	270	248	232	221	218	227	249	266	284	318	337	358	378	393	405	418	424	426	416	393	370	355	323	298
5/21/2021	262	241	227	217	213	219	237	266	290	305	333	360	378	394	417	430	443	434	414	388	365	351	326	291
5/22/2021	272	250	233	221	216	216	219	225	246	272	298	319	340	362	380	394	401	402	397	377	358	344	317	300
5/23/2021	265	244	228	216	209	207	209	213	235	264	291	319	347	372	393	411	426	434	429	412	391	375	342	291
5/24/2021	276	253	237	228	226	233	251	269	289	313	341	372	403	429	451	468	475	476	466	443	415	388	349	305
5/25/2021	279	255	238	228	225	232	251	272	292	316	347	381	415	448	473	488	497	491	474	445	416	393	354	311
5/26/2021	287	262	246	235	232	239	259	277	294	312	342	376	409	437	454	462	462	448	439	425	407	389	354	317
5/27/2021	285	261	244	234	231	239	258	276	299	324	351	380	411	436	457	472	479	478	464	440	417	396	361	318
5/28/2021	290	265	247	236	232	239	256	273	298	325	352	382	409	431	451	464	467	462	445	420	395	377	348	323
5/29/2021	291	268	252	241	236	235	241	247	258	286	319	339	361	384	408	424	436	441	427	402	383	367	338	319
5/30/2021	279	256	238	225	216	212	211	212	229	252	274	296	317	338	359	379	394	400	391	372	345	327	299	310
5/31/2021	245	226	213	206	204	208	212	219	240	267	296	324	353	381	402	419	433	440	431	414	395	372	339	270
6/1/2021	278	257	240	230	227	234	251	269	288	312	340	363	390	419	443	465	480	465	446	428	404	393	353	307
6/2/2021	274	253	238	229	225	233	252	271	292	334	365	395	417	448	462	488	484	479	461	438	417	397	378	306
6/3/2021	295	272	257	247	244	255	277	294	315	339	369	393	425	443	470	494	495	467	456	441	434	412	392	339
6/4/2021	303	280	262	252	250	257	274	293	311	331	351	382	426	464	490	497	502	512	499	471	431	424	391	337
6/5/2021	325	288	269	256	245	246	246	252	276	307	346	376	406	420	424	430	439	451	442	425	410	396	371	354
6/6/2021	314	291	273	260	253	252	254	259	278	303	329	368	401	418	438	458	467	468	455	437	422	407	377	342
6/7/2021	316	294	280	273	274	283	305	322	342	373	404	434	444	469	487	500	506	489	461	434	415	397	370	344
6/8/2021	307	287	275	268	268	277	296	332	344	362	403	443	464	497	515	497	519	526	496	471	447	424	390	337
6/9/2021	314	288	270	259	256	263	282	301	327	360	394	428	461	488	507	533	543	545	522	479	456	437	403	349
6/10/2021	332	305	286	273	269	275	292	338	348	370	403	449	489	502	530	534	551	542	520	484	463	441	404	367
6/11/2021	323	297	279	266	262	267	281	300	327	358	394	427	463	498	517	535	540	517	502	463	438	427	397	362
6/12/2021	335	313	296	285	279	278	278	286	313	348	384	410	443	447	416	383	370	357	343	332	326	323	307	363
6/13/2021	271	255	244	237	233	236	239	243	270	306	342	378	415	446	469	486	496	496	468	418	394	382	356	290
6/14/2021	298	277	262	255	254	263	279	297	320	348	380	417	445	469	487	501	511	514	508	489	464	445	410	327
6/15/2021	340	313	296	284	281	289	307	330	362	395	443	486	523	543	557	510	476	432	412	386	376	374	343	374
6/16/2021	280	260	249	243	244	253	270	293	318	352	393	438	437	439	457	463	490	493	472	456	437	422	393	307
6/17/2021	317	293	273	260	252	256	268	284	309	334	378	404	449	478	493	502	534	530	513	492	462	442	410	354
6/18/2021	333	309	291	278	273	278	291	308	336	365	403	437	464	487	490	474	464	446	449	432	416	399	385	376
6/19/2021	317	299	284	276	272	272	276	279	296	317	336	358	385	403	416	432	440	431	412	402	387	371	347	352
6/20/2021	305	286	277	272	266	262	265	269	277	287	300	313	336	367	393	414	427	430	425	409	396	389	364	327
6/21/2021	306	284	272	265	266	276	292	313	327	338	349	365	356	348	342	336	333	338	339	336	335	334	315	335
6/22/2021	271	256	246	241	243	256	279	306	309	315	327	347	347	350	356	372	384	389	394	383	373	376	338	292
6/23/2021	301	268	254	247	248	260	280	298	317	342	372	417	439	430	397	389	385	391	399	397	390	379	382	316
6/24/2021	299	280	268	261	260	268	286	311	328	353	373	401	414	402	379	386	400	390	387	373	360	353	328	343
6/25/2021	274	253	236	226	222	227	243	262	281	312	335	371	406	437	464	470	448	411	377	356	343	339	323	300
6/26/2021	275	257	245	237	233	234	239	246	264	286	309	343	376	403	426	450	463	462	454	426	399	385	358	309
6/27/2021	305	285	271	260	254	253	255	261	286	320	358	393	423	450	472	476	451	425	422	416	402	391	364	330
6/28/2021	309	285	269	259	257	265	282	298	317	336	352	374	394	420	448	475	475	458	425	391	373	364	339	338
6/29/2021	282	261	246	238	237	245	266	297	309	325	351	384	422	451	486	490	468	425	394	371	351	346	330	311
6/30/2021	273	257	246	241	243	255	277	307	323	341	363	394	430	453	454	415	413	403	395	375	368	353	338	303
7/1/2021	277	259	248	242	241	249	272	298	319	333	355	388	428	454	481	483	503	496	488	464	444	432	397	302
7/2/2021	325	301	281	268	264	268	283	308	338	364	398	424	445	445	423	441	455	453	434	416	378	359	338	358
7/3/2021	288	271	259	252	247	247	251	257	277	300	330	353	378	393	406	421	415	398	379	362	352	346	327	315
7/4/2021	293	278	267	259	255	255	259	261	278	302	329	361	392	408	407	377	362	354	349	344	334	328	319	310
7/5/2021	286	269	259	253	252	255	262	265	280	307	339	370	399	416	385	358	361	373	388	381	376	369	344	307
7/6/2021	290	270	258	251	250	258	279	305	318	338	363	394	407	426	439	467	458	449	433	414	389	371	347	317
7/7/2021	281	262	248	241	242	253	279	303	315	323	345	350	362	363	363	382	388	384	378	365	358	352	330	314
7/8/2021	280	261	249	242	243	253	274	296	312	337	366	395	419	437	447	474	489	494	471	434	400	383	358	304
7/9/2021	301	281	268	261	260	271	292	315	333	347	370	389	417	412	381	379	377	379	374	359	347	342	323	326
7/10/2021	274	258	247	239	233	233	234	241	256	273	291	310	336	376	415	441	453	447	413	389	371	361	339	296
7/11/2021	290	272	257	247	240	240	242	247	268	304	345	385	419	446	466	481	490	492	475	447	430	420	388	316
7/12/2021	323	300	283	272	271	278	294	309	326	342	348	349	362	392	434	466	475	445	425	407	391	377	349	354
7/13/2021	293	272	255	245	243	250	269	284	306	334	369	406	441	479	508	524	514	486	471	460	436	422	382	319
7/14/2021	313	290	273	260	256	262	280	296	326	355	387	428	469	490	516	529	551	545	518	477	448	424	391	345
7/15/2021	324	302	285	274	270	276	294	321	346	380	415	435	467	491	514	529	547	534	515	486	454	415	391	369
7/16/2021	313	292	276	264	260	263	280	309	324	353	404	436	469	490	503	475	482	454	441	425	415	392	366	358
7/17/2021	306	284	268	257	251	250	253	259	287	328	367	406	435	457	435	395	386	393	408	407	392	381	356	341
7/18/2021	306	286	272	261	253	251	251	254	278	313	354	389	422	453	476	489	484	432	394	376	367	367	347	331
7/19/2021	295	275	261	254	255	264	283	299	319	341	375	406	422	402	398	400	404	391	381	373	366	354	331	321
7/20/2021	282	266	255	249	248	260	281	304	328	352	379	408	441	414	401	396	396	399	400	397	386	382	358	306
7/21/2021	298	278	263	255	252	260	285	308	327	360	404	432	426	404	421	449	467	451	440	423	407	396	374	322
7/22/2021	308	289	276	267	266	275	296	322	343	379	417	451	474	510	526	556	559	573	548	520	492	466	422	336
7/23/2021	349	325	308	299	298	304	322	350	372	392	443	479	510	541	547	560	559	532	448	427	403	383	356	381
7/24/2021	305	285	271	262	256	257	260	264	279	302	329	362	396	428	455	473	485	489	479	460	436	417	386	329
7/25/2021	327	301	280	266	255	250	249	249	270	304	339	374	409	442	467	486	498	503	494	471	446	426	393	358
7/26/2021	330	306	288	278	276	282	299	313	328	360	395	434	469	497	516	529	536	536	525	504	481	461	429	361
7/27/2021	363	340	323	313	310	320	341	360	381	384	410	441	467	493	519	502	474	445	423	402	397	383	361	396

7/28/2021	302	283	270	264	262	271	291	314	336	358	389	427	457	490	519	529	529	488	476	447	427	409	377	326
7/29/2021	316	297	282	275	273	280	301	325	349	378	417	450	495	525	547	553	555	552	532	493	468	451	420	349
7/30/2021	348	327	310	298	291	296	313	333	365	400	451	480	527	548	567	566	572	560	540	516	488	468	437	379
7/31/2021	371	348	331	317	309	306	307	309	332	363	400	440	476	506	528	542	546	541	507	467	441	418	387	400
8/1/2021	334	312	297	285	276	274	275	275	298	335	377	412	426	453	486	512	508	488	459	433	417	403	376	359
8/2/2021	321	303	289	283	285	293	314	328	353	388	428	465	499	527	532	504	491	479	462	442	427	410	372	348
8/3/2021	312	291	278	271	272	282	305	321	341	365	389	406	417	429	447	436	417	419	416	399	394	385	352	341
8/4/2021	287	268	256	249	247	256	278	300	324	341	351	355	379	395	425	442	460	457	441	428	414	398	367	319
8/5/2021	305	287	276	267	263	269	291	307	319	338	365	379	381	388	381	366	370	363	358	350	344	337	321	335
8/6/2021	270	254	243	237	238	247	270	300	317	332	349	365	409	437	459	480	486	468	445	425	409	392	363	294
8/7/2021	314	297	281	272	269	273	280	286	291	315	351	385	416	440	457	480	481	480	461	436	414	396	370	336
8/8/2021	317	295	278	267	260	259	262	263	287	328	369	409	444	470	490	506	515	508	484	458	441	425	394	343
8/9/2021	331	308	292	282	280	287	305	318	338	370	416	448	482	511	532	545	550	547	533	508	485	462	426	361
8/10/2021	356	333	314	301	296	300	319	331	351	386	425	461	495	527	557	540	507	490	479	459	449	427	398	389
8/11/2021	328	306	290	279	273	280	303	325	335	367	407	447	483	517	539	543	554	540	535	510	483	465	429	356
8/12/2021	339	319	303	290	285	294	323	338	354	383	419	453	490	516	536	505	467	436	420	407	395	392	363	376
8/13/2021	291	274	261	253	253	263	289	313	331	360	397	431	452	486	510	526	536	534	518	490	463	441	402	321
8/14/2021	334	309	290	276	268	265	266	270	290	326	371	413	450	483	487	446	428	430	428	420	406	383	355	365
8/15/2021	303	286	273	264	259	258	261	263	278	301	328	350	368	387	394	398	410	416	413	408	400	387	364	328
8/16/2021	314	296	285	277	279	286	307	322	336	348	359	364	365	363	345	340	351	366	354	357	364	358	337	337
8/17/2021	291	273	262	254	252	264	291	310	331	363	389	418	448	477	498	509	517	512	498	477	459	435	399	311
8/18/2021	331	306	285	276	273	282	306	320	339	374	411	443	473	491	488	458	472	485	487	473	452	430	395	363
8/19/2021	325	302	286	275	273	282	306	320	340	373	411	447	484	516	540	553	559	556	536	499	475	447	411	359
8/20/2021	346	322	306	294	290	297	318	331	351	382	411	452	488	516	534	546	558	552	534	501	471	440	406	377
8/21/2021	338	311	291	276	267	267	270	274	292	318	353	391	426	455	481	498	499	468	442	428	419	399	372	372
8/22/2021	321	301	287	277	269	268	273	272	293	326	359	378	406	443	461	456	443	451	457	448	439	421	394	345
8/23/2021	340	319	303	295	294	303	330	346	359	372	400	436	476	507	513	488	482	464	448	431	422	406	380	368
8/24/2021	326	307	293	285	285	295	324	339	354	386	422	454	479	492	493	470	457	454	459	453	445	422	387	352
8/25/2021	323	302	288	279	277	288	314	329	340	368	402	438	450	466	475	469	479	472	458	441	432	411	373	354
8/26/2021	309	287	271	261	259	269	296	313	329	358	396	428	459	486	506	508	499	486	460	446	431	405	371	337
8/27/2021	314	296	282	273	273	286	315	333	344	369	399	433	469	495	515	532	525	494	469	417	392	374	352	339
8/28/2021	304	289	275	267	265	267	275	280	300	328	368	399	423	447	455	453	425	406	378	368	366	350	332	327
8/29/2021	295	281	270	266	269	274	281	285	304	332	368	401	430	454	464	464	452	450	440	432	431	411	380	314
8/30/2021	323	301	285	277	279	290	319	337	353	377	406	436	460	465	473	477	479	473	463	451	447	425	391	349
8/31/2021	326	303	289	281	282	295	325	345	358	372	376	379	379	383	372	366	366	369	380	379	385	376	351	357
9/1/2021	299	278	266	259	259	273	303	322	333	359	393	424	445	464	478	492	491	480	460	446	439	417	387	324
9/2/2021	325	304	289	279	275	280	304	320	328	343	367	402	439	470	494	512	524	521	504	476	456	425	385	354
9/3/2021	322	298	282	270	267	275	301	316	331	355	379	409	438	457	475	495	499	495	473	446	428	402	370	352
9/4/2021	315	292	275	261	253	251	254	255	271	300	333	365	398	424	444	455	462	463	450	425	406	380	349	343
9/5/2021	293	271	254	242	234	231	234	235	256	292	327	367	406	436	458	465	457	452	442	423	408	387	360	322
9/6/2021	321	303	285	272	267	267	274	274	292	328	367	400	431	455	481	493	499	502	488	463	450	421	385	338
9/7/2021	320	296	279	269	267	278	305	320	337	367	398	434	468	494	502	484	465	442	430	421	421	400	371	351
9/8/2021	314	291	279	272	272	282	310	325	337	341	351	352	350	351	357	361	365	365	359	357	360	348	326	341
9/9/2021	278	253	242	241	245	258	283	299	309	330	357	383	404	431	447	461	459	453	437	424	419	395	366	301
9/10/2021	301	275	257	247	245	252	274	286	293	312	342	373	402	427	446	460	464	458	438	409	390	362	336	332
9/11/2021	292	275	261	250	244	246	251	256	272	299	333	368	398	418	429	446	457	457	439	412	396	371	347	314
9/12/2021	306	290	273	260	254	251	253	256	271	303	342	382	417	444	463	472	472	467	452	437	428	402	371	325
9/13/2021	308	284	267	258	255	262	286	303	312	333	358	379	406	429	448	465	482	481	464	445	435	405	371	338
9/14/2021	305	280	262	250	246	256	285	299	311	335	358	384	411	430	442	444	429	409	397	398	397	377	350	336
9/15/2021	297	279	266	258	258	269	297	315	321	343	365	390	417	434	423	388	378	377	376	378	378	363	339	321
9/16/2021	289	269	256	248	247	257	283	303	311	324	344	373	402	423	418	410	406	407	403	400	400	379	350	313
9/17/2021	296	277	264	257	255	264	294	311	319	337	361	384	399	414	428	428	426	425	416	408	399	378	353	322
9/18/2021	306	286	273	262	256	256	262	268	282	308	337	367	400	432	456	450	410	389	376	373	367	352	331	329
9/19/2021	290	273	262	254	251	252	257	262	276	299	324	348	373	395	417	428	413	397	384	377	376	361	338	310
9/20/2021	291	273	261	255	258	269	299	318	324	340	364	390	424	450	462	455	459	464	451	437	429	404	372	313
9/21/2021	311	289	275	265	262	271	299	318	327	351	381	409	440	462	476	463	423	410	407	406	404	381	353	340
9/22/2021	295	275	262	254	253	263	293	310	321	349	380	413	439	457	472	486	490	478	461	444	433	404	358	322
9/23/2021	282	256	237	224	219	225	249	261	265	276	290	304	319	335	351	365	373	371	358	344	335	311	282	314
9/24/2021	230	214	203	196	196	204	229	245	254	268	285	301	316	332	350	366	378	376	361	342	329	307	284	254
9/25/2021	244	228	217	208	204	205	211	217	230	255	281	308	335	358	370	382	391	393	382	367	361	340	312	264
9/26/2021	259	241	228	217	210	208	212	216	231	255	284	319	349	375	396	413	424	427	412	396	386	362	330	285
9/27/2021	271	249	234	224	224	232	259	275	286	307	336	365	388	412	428	443	452	445	434	419	405	375	341	299
9/28/2021	281	262	247	238	235	245	271	289	298	321	350	374	401	425	441	452	455	451	430	417	404	376	342	308
9/29/2021	282	261	246	236	234	243	269	287	295	320	350	378	403	422	444	463	468	458	438	420	403	375	342	311
9/30/2021	280	259	244	235	234	244	272	290	298	320	352	382	409	430	439	443	445	434	421	418	407	382	351	310
10/1/2021	290	268	253	244	242	251	278	294	301	322	353	381	403	421	439	451	459	455	431	412	394	367	345	319
10/2/2021	301	281	264	252	245	243	246	253	269	301	337	372	398	413	427	433	438	426	410	400	386	363	338	326
10/3/2021	290	271	256	246	238	237	240	244	261	291	325	366	378	369	369	360	350	351	347	353	351	332	308	315
10/4/2021	259	240	228	222	226	239	269	291	299	317	337	358	383	399	385	363	360	368	372	376	370	350	325	282
10/5/2021	274	255	243	235	234	246	278	300	303	313	319	325	332	335	331	330	333	335	338	348	346	329	307	298
10/6/2021	261	245	235	229	230	242	273	295	304	316	326	330	331	335	340	341	351	355	350	353	351	335	310	285
10/7/2021	263	247	236	231	232	245	277	301	310	319	328	336	347	364	389	401	411	412	404	406	400	379	353	286

10/8/2021	304	285	273	266	265	272	300	317	315	325	349	373	395	416	431	445	452	443	418	400	381	355	330	326
10/9/2021	281	258	243	232	226	225	230	238	250	277	310	340	366	384	399	408	410	403	384	371	355	333	309	306
10/10/2021	263	245	230	221	215	213	219	223	236	261	289	318	345	370	389	402	410	409	394	382	368	341	313	284
10/11/2021	255	237	225	217	217	226	253	269	277	296	320	342	365	387	402	411	417	414	402	393	378	350	319	282
10/12/2021	262	243	231	223	222	233	263	283	289	309	332	358	380	402	418	432	436	430	414	405	388	360	329	288
10/13/2021	269	248	232	222	219	228	256	274	280	298	320	342	365	389	410	426	435	428	407	397	380	352	320	298
10/14/2021	262	243	230	222	221	231	259	280	284	303	328	354	382	409	433	449	456	448	429	421	400	369	335	289
10/15/2021	274	253	238	228	224	232	259	276	283	305	335	364	391	418	440	453	459	449	421	402	381	359	333	304
10/16/2021	286	267	253	243	238	238	245	253	266	297	330	360	386	407	425	427	427	415	386	367	337	310	282	310
10/17/2021	232	213	200	191	186	185	191	197	208	226	239	250	260	268	275	285	294	299	293	295	286	268	248	255
10/18/2021	210	195	187	183	186	196	219	240	250	259	266	272	278	282	285	289	294	290	294	301	295	277	255	227
10/19/2021	213	199	191	186	188	200	236	256	258	267	283	293	320	322	321	334	349	342	336	348	323	306	281	231
10/20/2021	234	216	203	193	194	205	234	256	261	272	285	297	312	326	357	358	366	357	343	350	338	314	289	255
10/21/2021	240	225	213	204	204	214	248	289	276	307	318	331	359	366	389	400	390	393	374	370	357	335	308	264
10/22/2021	253	236	224	212	212	223	254	272	274	308	330	354	379	389	417	421	413	406	383	385	360	334	320	282
10/23/2021	271	255	234	209	202	202	209	217	229	248	265	281	294	307	322	336	344	338	323	319	303	284	264	299
10/24/2021	225	211	200	192	188	188	195	202	215	237	258	280	299	311	317	318	322	328	332	339	330	314	294	243
10/25/2021	248	233	223	219	220	231	261	284	289	301	321	344	370	390	397	405	422	425	410	401	380	354	327	271
10/26/2021	272	252	237	226	222	230	257	286	286	296	306	317	329	341	351	357	353	348	335	335	321	299	273	299
10/27/2021	227	207	197	189	189	199	231	261	271	276	275	284	308	306	304	317	325	328	332	329	317	300	274	241
10/28/2021	237	225	212	202	201	212	241	272	285	291	316	326	329	353	350	356	345	343	330	337	327	303	281	250
10/29/2021	233	220	210	193	192	201	230	264	271	278	273	286	296	284	293	299	283	284	287	292	279	271	248	256
10/30/2021	223	212	201	194	193	197	206	219	231	245	254	261	264	262	257	253	250	253	255	269	263	253	241	232
10/31/2021	214	206	201	198	195	196	201	212	222	237	247	255	261	263	262	266	271	272	266	272	270	263	246	226
11/1/2021	212	203	197	195	198	211	242	268	273	278	278	279	281	280	281	284	285	287	303	318	295	288	261	227
11/2/2021	215	203	196	193	196	209	242	268	271	274	277	281	283	286	290	298	303	309	319	323	310	289	269	238
11/3/2021	225	210	196	192	193	205	244	272	278	285	287	288	296	287	293	300	309	309	315	325	314	294	272	246
11/4/2021	227	210	200	190	191	203	235	272	266	280	282	285	290	294	306	309	309	303	298	306	299	283	261	248
11/5/2021	228	210	196	189	191	203	240	270	284	292	297	300	300	295	307	305	317	321	337	334	322	311	298	239
11/6/2021	267	256	245	238	238	245	258	273	288	301	302	295	284	272	262	256	255	259	266	284	285	279	269	282
11/7/2021	248	236	233	234	237	247	262	278	290	291	281	273	268	264	262	261	264	274	291	288	279	267	252	259
11/8/2021	225	219	218	222	234	253	301	336	333	322	307	300	286	282	285	291	286	290	313	307	293	277	256	237
11/9/2021	239	235	225	222	231	253	299	323	326	306	303	295	292	288	295	299	294	303	314	304	287	270	259	252
11/10/2021	228	217	222	211	216	233	274	300	301	293	288	319	294	296	301	312	306	302	312	305	284	267	253	260
11/11/2021	222	217	209	194	194	202	219	232	246	259	268	281	289	298	302	305	304	313	326	318	305	289	269	246
11/12/2021	228	213	204	199	199	208	240	262	275	286	294	302	310	320	335	334	337	324	322	301	276	265	263	247
11/13/2021	229	221	204	196	195	199	210	219	234	248	257	262	264	263	262	259	256	257	268	265	261	255	245	236
11/14/2021	226	221	218	219	223	232	249	269	288	291	286	281	274	269	265	263	268	282	303	303	298	289	274	234
11/15/2021	246	237	234	237	246	267	308	332	328	315	302	291	284	281	279	283	280	290	320	317	308	292	269	259
11/16/2021	239	231	229	231	239	260	304	329	328	310	305	293	291	286	296	292	293	303	324	311	300	282	263	252
11/17/2021	234	223	218	217	224	243	286	306	312	299	298	297	298	301	316	316	303	307	320	305	298	281	261	247
11/18/2021	222	206	198	195	197	211	244	262	269	274	282	291	305	319	322	327	320	330	341	326	304	290	264	240
11/19/2021	228	216	204	196	197	206	235	259	268	274	282	283	305	284	298	302	298	295	304	286	270	263	247	248
11/20/2021	219	205	200	197	200	208	223	239	255	260	260	256	254	253	253	254	256	261	273	268	259	249	235	232
11/21/2021	209	199	193	188	187	191	199	206	221	235	243	251	260	266	271	274	274	280	292	285	273	258	241	222
11/22/2021	208	197	190	188	192	202	227	245	255	262	268	269	270	268	269	268	266	273	289	285	274	260	245	223
11/23/2021	216	209	207	211	220	242	278	309	323	319	309	297	288	281	274	272	274	290	314	319	319	314	305	229
11/24/2021	286	283	285	292	304	326	364	386	384	356	330	307	289	276	269	263	264	273	288	288	284	277	266	294
11/25/2021	243	235	232	233	238	249	263	277	289	288	282	274	265	255	245	235	227	227	235	233	231	227	220	254
11/26/2021	205	200	198	198	201	207	218	224	232	241	245	244	240	237	235	235	236	247	262	263	263	261	256	213
11/27/2021	247	246	247	253	264	281	301	317	325	317	301	284	269	258	249	243	248	262	280	285	289	286	278	251
11/28/2021	258	247	243	240	240	244	253	261	270	276	275	274	276	274	276	278	287	303	313	311	303	289	270	268
11/29/2021	236	225	219	222	232	255	295	324	327	320	309	299	293	288	277	276	284	300	332	342	337	330	314	251
11/30/2021	285	281	284	292	306	333	382	421	401	382	358	337	324	317	316	299	300	309	336	344	328	320	317	299
12/1/2021	280	282	273	272	284	309	356	396	384	355	331	314	303	292	285	283	286	299	321	319	321	310	287	299
12/2/2021	262	254	243	245	253	274	319	347	346	330	320	309	302	299	298	298	293	292	311	310	306	289	266	265
12/3/2021	238	224	212	212	218	236	274	312	315	316	309	306	305	304	293	302	308	297	302	292	290	278	264	250
12/4/2021	235	226	212	208	207	212	224	234	247	257	262	264	267	269	268	266	265	275	286	279	273	265	251	250
12/5/2021	221	211	203	199	197	198	206	215	229	245	255	263	269	270	271	273	275	286	303	299	290	277	257	236
12/6/2021	222	211	206	205	211	226	261	283	286	285	285	287	293	298	299	301	298	308	330	325	315	295	275	238
12/7/2021	224	210	201	196	197	210	246	276	279	285	289	291	294	285	285	287	298	308	321	316	303	287	271	247
12/8/2021	234	214	209	201	203	216	248	279	294	306	315	326	335	324	306	303	308	312	326	320	305	290	266	248
12/9/2021	225	210	202	195	196	209	242	270	296	290	297	299	302	301	291	285	284	299	312	311	303	287	273	242
12/10/2021	236	224	209	198	200	211	242	267	288	294	295	306	305	300	305	309	302	310	315	307	317	289	272	247
12/11/2021	242	229	210	200	198	201	210	220	235	253	267	277	287	295	300	299	299	304	314	308	298	287	272	255
12/12/2021	230	214	202	195	192	192	198	206	218	235	246	253	256	261	263	262	261	272	290	285	277	265	248	254
12/13/2021	215	205	200	198	203	216	247	268	271	274	277	278	278	276	275	274	278	292	307	302	291	274	253	230
12/14/2021	215	204	197	194	197	209	239	259	261	265	267	269	272	275	277	278	278	282	298	294	285	269	249	232
12/15/2021	212	203	197	196	199	212	243	263	266	269	270	273	279	284	287	288	287	290	302	297	286	270	250	229
12/16/2021	212	201	194	191	193	205	234	255	259	265	272	276	281	283	284	285	286	295	307	301	291	275	255	230
12/17/2021	216	205	197	193	195	206	233	252	259	270	282	291	296	298	298	293	290	295	301	292	280	269	253	235
12/18/2021	219	207	198	193	191	194	203	213	226	245	262	273	280	284	289	291	289	296	303	297	288	278	266	237

12/19/2021	235	224	215	211	209	207	211	219	229	250	265	272	271	269	267	266	268	275	285	278	268	255	239	251
12/20/2021	207	197	192	192	197	209	233	254	262	270	274	277	279	279	279	281	285	303	317	317	310	298	281	222
12/21/2021	248	239	235	236	243	256	283	305	314	324	330	333	334	331	328	328	333	349	361	356	345	330	310	263
12/22/2021	273	262	256	256	265	285	315	337	341	333	319	302	288	277	269	266	268	281	304	308	309	305	293	290
12/23/2021	273	271	275	284	298	321	351	376	385	368	338	310	287	271	260	256	258	271	292	297	299	298	290	282
12/24/2021	272	268	267	269	278	294	314	331	339	328	302	279	263	255	251	249	248	254	267	264	261	257	250	281
12/25/2021	231	226	223	224	227	234	244	256	268	271	259	249	243	239	236	234	232	234	244	241	237	232	224	241
12/26/2021	205	198	194	194	196	200	210	217	227	235	239	244	247	250	252	253	254	259	273	268	259	247	233	214
12/27/2021	204	194	188	186	189	197	214	227	233	242	252	257	264	268	270	272	274	280	293	287	275	261	244	218
12/28/2021	212	201	193	191	192	200	218	233	241	252	263	270	275	279	281	280	279	282	296	290	278	263	244	227
12/29/2021	210	199	192	189	191	200	219	235	244	256	268	278	283	285	285	284	283	290	304	299	290	277	261	226
12/30/2021	230	219	212	208	208	213	227	241	250	264	278	287	294	303	310	311	310	315	322	314	303	291	275	246
12/31/2021	243	230	221	215	214	218	227	237	246	263	281	294	305	315	318	321	322	323	329	320	307	293	278	259

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

Year	Month	Actual Peak Demand (MW)	Demand Response Activated (MW)	Estimated Peak Demand (MW)	Day	Hour	System-Average Temperature (Degrees F)
2021	1	503.9	0.0	503.9	14	8	45
	2	500.4	0.0	500.4	4	8	45
	3	408.6	0.0	408.6	26	17	78
	4	416.2	0.0	416.2	30	16	77
	5	496.7	0.0	496.7	25	17	78
	6	556.9	0.0	556.9	15	15	84
	7	573.4	0.0	573.4	22	18	85
	8	559.3	0.0	559.3	19	17	85
	9	524.4	0.0	524.4	2	17	82
	10	459.4	0.0	459.4	1	17	80
	11	420.9	0.0	420.9	30	8	49
	12	395.9	0.0	395.9	1	8	52
2020	1	527.6	0.0	527.6	22	8	48
	2	470.7	0.0	470.7	28	8	46
	3	433.1	0.0	433.1	27	16	75
	4	453.2	0.0	453.2	9	18	84
	5	481.2	0.0	481.2	22	17	82
	6	559.0	0.0	559.0	30	17	86
	7	575.6	0.0	575.6	20	16	87
	8	567.0	0.0	567.0	27	17	85
	9	574.6	0.0	574.6	4	17	86
	10	484.4	0.0	484.4	13	17	79
	11	431.9	0.0	431.9	10	16	80
	12	488.8	0.0	488.8	26	9	37
2019	1	507.7	0.0	507.7	30	8	40
	2	407.3	0.0	407.3	14	9	50
	3	447.0	0.0	447.0	6	8	46
	4	449.3	0.0	449.3	30	18	75
	5	591.7	0.0	591.7	29	17	85
	6	580.2	0.0	580.2	4	16	85
	7	578.2	0.0	578.2	16	16	86
	8	615.8	0.0	615.8	14	16	86
	9	599.0	0.0	599.0	5	18	87
	10	565.5	0.0	565.5	4	16	83
	11	408.7	0.0	408.7	13	8	45
	12	454.6	0.0	454.6	19	8	43

Notes

(Include Notes Here)

City of Tallahassee, Florida
2022 Electric System Load Forecast

2021 Load Forecast Comparison
Projected vs. Actual Energy Sales (MWh, Unless Otherwise Stated)
Fiscal Year 2021

Line No.	Customer Class		Actual (MWh)	Excluding DSM Projected [1] (MWh)	Excluding DSM % Over (Under) Actual	Including Actual DSM Projected [1] (MWh)	Including Actual DSM % Over (Under) Actual	Including Projected DSM Projected [1] (MWh)	Including Projected DSM % Over (Under) Actual	DSM Actual	DSM Projected	DSM Actual Percent
	(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)			
	Residential											
1	Counts (#)		106,472	105,542	(0.9%)							
2	Average Consumption (kWh)		10,834	10,957	1.1%	10,926	0.9%	10,921	0.8%	30	36	
3	Energy Sales		1,153,518	1,156,408	0.3%	1,153,170	(0.0%)	1,152,637	(0.1%)	3,238	3,772	0.3%
4	General Service Non-Demand		175,766	177,612	1.1%	177,597	1.0%	177,602	1.0%	15	10	
5	General Service Demand		631,114	641,844	1.7%	641,792	1.7%	641,810	1.7%	52	34	
6	Florida State University	[2]	164,513	169,753	3.2%	169,753		169,753				
7	Florida A & M University	[2]	57,303	59,589	4.0%	59,589		59,589				
8	State Capitol Center	[2]	83,866	93,828	11.9%	93,828		93,828				
9	Other Large Demand		213,693	232,672	8.9%	232,672		232,672				
10	Total Large Demand		519,375	555,841	7.0%	555,794	7.0%	555,810	7.0%	48	31	
										115	76	
11	Interruptible		26,950	38,558	43.1%	38,558		38,558				
12	Traffic Control		876	902	3.0%	902		902				
13	Curtailable Tallahassee Memorial		48,575	50,755	4.5%	50,755		50,755				
14	**Total Commercial**		1,402,656	1,465,513	4.5%	1,465,398	4.5%	1,465,437	4.5%			
15	Lighting		32,112	31,797	(1.0%)	31,797	(1.0%)	31,797	(1.0%)			
16	**TOTAL ENERGY SALES**		2,588,286	2,653,718	2.5%	2,650,364	2.4%	2,649,871	2.4%	3,354	3,848	
17	Talquin Transfers (Net Sales)		25,279	26,950	6.6%	26,950	6.6%	26,950	6.6%			
18	**TOTAL ENERGY SALES w/ Talquin**		2,613,565	2,680,668	2.6%	2,677,314	2.4%	2,676,820	2.4%	3,354	3,848	0.1%

[1] Projected 2021 Electric System load forecast sales estimates.
[2] Includes main meter Large Demand only.

Checks	2,588,286	2,653,718
Diff to Check	0	0
Checks	2,613,565	2,680,668
Diff to Check	0	0

City of Tallahassee, Florida
2022 Electric System Load Forecast

2021 Load Forecast Comparison

Fiscal Year 2021 ***Prior Year Comparison***

Line No.	Variable Description	Explanatory Variables Actual 2021	Projected 2021	% Over (Under) Actual	Aspect of Forecast Impacted	Explanatory Variables Actual 2020	Projected 2020	% Diff
	(a)	(b)	(c)	(d)		(b)	(c)	(d)
	Economic Data1							
1	Florida Population (Ths)	**21,847**	**21,847**	(0.0%)	FSU Sales	**21,622**	**21,622**	(0.0%)
2	Leon County Population	**294,608**	**299,254**	1.6%	Res Cust, Res Use, GSD Cust, GSND Sales, GSD Sales	**293,623**	**295,508**	0.6%
3	Leon County Personal Income	**12,814**	**12,730**	(0.7%)	GSND Cust, LgD Sales	**12,509**	**12,420**	(0.7%)
4	Leon County Gross Product	**14,890**	**15,637**	5.0%	LgD Cust	**14,929**	**15,296**	2.5%
5	Leon County Non-Store Sales Mix	**6.1%**	**6.1%**	0.0%	GSND Sales, LgD Sales	**6.0%**	**6.0%**	0.0%
6	Real Tallahassee Taxable Sales	**498,945**	**474,447**	(4.9%)	GSND Sales	**454,301**	**457,064**	0.6%
7	Real Tallahassee Taxable Sales Per Capita	**1,693**	**1,585**	(6.4%)	Res Use	**1,547**	**1,547**	(0.0%)
	Electricity Prices							
8	Real Residential Price Electricity (mills/kwh)	**11.06**	**11.09**	0.3%				
9	2-Year Moving Average	**11.08**	**11.07**	(0.1%)	Res Use			
10	Real Commercial Price of Electricity (mills/kwh)	**8.34**	**8.30**	(0.4%)				
	Mobility Data							
11	Residential Mobility	**9.03**	**6.74**	(25.4%)	Res Use			
12	Commercial Mobility	**(18.08)**	**(14.63)**	(19.1%)	GSND Sal, GSD Sal, LgD Sal, LF			
	Weather Data							
13	Heating Degree Days	**1,359**	**1,437**	5.8%	Res Use, GSND Sales, Losses, LF			
14	Cooling Degree Days	**2,859**	**2,827**	(1.1%)	Res Use, GSND Sales, GSD Sales, LgD Sales Losses, LF			
15	Minimum Temperature Winter Peak Day	**27.0**	**22.2**	(17.8%)	LF/Winter Peak Demand			
16	Maximum Temperature Summer Peak Day	**96.0**	**98.7**	2.8%	LF/Summer Peak Demand			

1 To the extent the prior year of economic data is also revised, the forecast equations would have been impacted.
For example, if the prior year's values were revised to the same degree, the forecast would likely be unaffected.

City of Tallahassee, Florida

2022 Electric System Load Forecast

2021 Load Forecast Comparison

Ex Post Projection vs. Actual Energy Sales (MWh, Unless Otherwise Stated)

Fiscal Year 2021

Line No.	Customer Class		Actual (MWh)	Ex Post Projections of Energy Sales [1] Excluding DSM Projected [1] (MWh)	Excluding DSM % Over (Under) Actual	Including Actual DSM Projected [1] (MWh)	Including Actual DSM % Over (Under) Actual	Including DSM Projected [1] (MWh)	Including DSM % Over (Under) Actual	Actual DSM	Proj DSM	Lg Dem DSM Split	
	(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)				
	Residential												
1	Counts (#)		106,472	104,505	(1.8%)								
2	Average Consumption (kWh)		10,834	11,203	3.4%	11,172	3.1%	11,167	3.1%	30	36		
3	Energy Sales		1,153,518	1,170,721	1.5%	1,167,482	1.2%	1,166,949	1.2%	3,238	3,772		
4	General Service Non-Demand		175,766	175,944	0.1%	175,928	0.1%	175,933	0.1%	15	10		
5	General Service Demand		631,114	630,776	(0.1%)	630,724	(0.1%)	630,742	(0.1%)	52	34		
6	Florida State University	[2]	164,513	170,082	3.4%	170,067		170,072		15	10	31.7%	164,513
7	Florida A & M University	[2]	57,303	59,687	4.2%	59,681		59,683		5	3	11.0%	57,303
8	State Capitol Center	[2]	83,866	93,952	12.0%	93,944		93,947		8	5	16.1%	83,866
9	Other Large Demand		213,693	230,087	7.7%	230,067		230,074		20	13	41.1%	213,693
10	Total Large Demand		519,375	553,807	6.6%	553,759	6.6%	553,776	6.6%	48	31		519,375
11	Interruptible		26,950	38,558	43.1%	38,558		38,558					
10	Traffic Control		876	902	3.0%	902		902					
12	Curtailable Tallahassee Memorial		48,575	50,755	4.5%	50,755		50,755					
13	**Total Commercial**		1,402,656	1,450,742	3.4%	1,450,627	3.4%	1,450,666	3.4%				
14	Lighting		32,112	31,797	(1.0%)	31,797	(1.0%)	31,797	(1.0%)				
15	**TOTAL ENERGY SALES**		2,588,286	2,653,259	2.5%	2,649,906	2.4%	2,649,412	2.4%				
16	Talquin Transfers		25,279	26,950	6.6%	26,950	6.6%	26,950	6.6%				
17	**TOTAL ENERGY SALES w/ Talquin**		2,613,565	2,680,209	2.5%	2,676,855	2.4%	2,676,361	2.4%				

[1] Projections have been adjusted for actual weather, taxable sales, population, number of meters, other county economic data, and the price of electricity, except for FSU, FAMU and Capitol Center, which have been adjusted for actual weather only.

[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

Fiscal Year 2021

Line No.	Season of Peak	Actual Net Load (MW)	Excluding DSM		Including Actual DSM		Including Projected DSM	
			Projected (MW)	% Over (Under) Actual	Projected (MW)	% Over (Under) Actual	Projected (MW)	% Over (Under) Actual
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1	Winter Peak	**504**	**555**	10.1%	**554**	9.9%	**553**	9.8%
2	Summer Peak	**573**	**610**	6.5%	**610**	6.3%	**609**	6.3%

City of Tallahassee, Florida

2022 Electric System Load Forecast

2021 Load Forecast Comparison

Ex Post Projection vs. Actual Peak Demand

Fiscal Year 2021

Line No.	Season of Peak	Actual (MW)	Ex Post Projections of Peak Demand [1]					
			Excluding DSM		Including Actual DSM		Including Projected DSM	
			Projected (MW)	% Over (Under) Actual	Projected (MW)	% Over (Under) Actual	Projected (MW)	% Over (Under) Actual
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1	Winter Peak	**504**	**512**	1.5%	**511**	1.4%	**510**	1.3%
2	Summer Peak	**573**	**599**	4.5%	**598**	4.4%	**598**	4.4%

[1] Projections have been adjusted for actual weather, price of electricity, and projected net energy for load.

City of Tallahassee, Florida

2022 Electric System Load Forecast

2021 Load Forecast Comparison

Projected vs. Actual DSM

Fiscal Year 2021

Line No.	Description		DSM Energy and Demand Savings Actual 2021	Projected 2021	% Over (Under) Actual
	(a)		(b)	(c)	(d)
1	Residential Sales	(MWh) [1]	3,238	3,772	16.5%
2	Commercial Sales	(MWh) [1]	115	76	(34.2%)
3	Total Sales	(MWh) [1]	3,354	3,848	14.7%
4	Summer Peak Demand	(MW) [2]	0.93	1.05	12.4%
5	Winter Peak Demand	(MW) [2]	0.88	1.31	49.8%

[1] At the customer meter.

[2] At the generator busbar.

City of Tallahassee, Florida
2022 Electric System Load Forecast

2021 Load Forecast Comparison
Projected vs. Adjusted Actual Incremental Additions
Fiscal Year 2021

Ln. No.	Description		Incremental Additions 2021 Adj. Actual [1] (b)	Incremental Additions 2021 Projected (c)	% Over (Under) Adj. Actual (d)	Adjusted Actual Total Sales 2020 Actual (e)	2020 W-Norm Impact (f)	2020 Weather Norm. (g)	2021 Actual (h)	2021 W-Norm Impact (i)	2021 Weather Norm. (j)	Incremental Additions 2021 Adj. Actual	Incremental Additions 2021 Projected
	(a)												
1	Florida State University	(MWh)	**(973)**	**0**	(100.0%)	**167,589**	**(2,432)**	**165,157**	**164,513**	**(329)**	**164,184**	-0.6%	0.0%
2	Florida A&M University	(MWh)	**(876)**	**1,200**	(237.0%)	**58,924**	**(843)**	**58,081**	**57,303**	**(98)**	**57,205**	-1.5%	2.1%
3	State Capitol Center	(MWh)	**(7,103)**	**0**	(100.0%)	**91,711**	**(866)**	**90,845**	**83,866**	**(124)**	**83,742**	-7.8%	0.0%
4	Tallahassee Memorial Hospital	(MWh)	**(1,118)**	**0**	(100.0%)	**49,693**	**0**	**49,693**	**48,575**	**0**	**48,575**	-2.2%	0.0%
5	Capital Regional Medical Center	(MWh)	-	-	-	-	-	-	-	-	-		

[1] Weather-normalized sales for 2021 - 2020. The result reflects weather-normalized change in sales.

TYSP Year 2022
Staff's Data Request # 1
Question No. 19

Year	Number of PEVs	Number of Public PEV Charging Stations[1]	Number of Public DCFC PEV Charging Stations[2]	Cumulative Impact of PEVs		
				Summer Demand	Winter Demand	Annual Energy
				(MW)	(MW)	(GWh)
2022	1,158	88	4	0.75	0.44	3.50
2023	1,469	90	6	0.95	0.55	4.46
2024	1,832	92	8	1.19	0.69	5.58
2025	2,253	94	8	1.46	0.85	6.89
2026	2,736	96	12	1.77	1.03	8.40
2027	3,288	98	12	2.13	1.24	10.13
2028	3,921	100	15	2.54	1.48	12.11
2029	4,640	103	15	3.00	1.75	14.38
2030	5,459	106	18	3.53	2.05	16.97
2031	6,378	109	18	4.13	2.40	19.88

Notes

[1] Public PEV Charging Station count includes hotels that provide charging for registered guests, automobile dealers that offer charging for specific makes/models and public spaces such as Leon County Library and the Tallahassee International Airport, etc. Reporting number of stations, not charging ports, which would be higher.

[2] Reported number of charging stations is not the number of charging ports, which would be higher.

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

[Demand Response Source or All Demand Response Sources]								
Year	**Beginning Year: Number of Customers**	**Available Capacity (MW)**		**New Customers Added**	**Added Capacity (MW)**		**Customers Lost**	**Lost Capacity (MW)**	
		Sum	Win		Sum	Win		Sum	Win
2012	NA. TAL is not a FEECA utility.								
2013									
2014									
2015									
2016									
2017									
2018									
2019									
2020									
2021									
Notes									
(Include Notes Here)									

TYSP Year	2022
Staff's Data Request #	1
Question No.	31

[Demand Response Source or All Demand Response Sources]										
Year	Summer					Winter				
	Number of Events	Average Event Size		Maximum Event Size		Number of Events	Average Event Size		Maximum Event Size	
		MW	Number of Customers	MW	Number of Customers		MW	Number of Customers	MW	Number of Customers
2012	NA. TAL is not a FEECA utility.									
2013										
2014										
2015										
2016										
2017										
2018										
2019										
2020										
2021										
Notes										
(Include Notes Here)										

TYSP Year	2022
Staff's Data Request #	1
Question No.	32

[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)
2012	NA. TAL is not a FEECA utility.						
2013							
2014							
2015							
2016							
2017							
2018							
2019							
2020							
2021							
Notes							
(Include Notes Here)							

TYSP Year	2022
Staff's Data Request #	1
Question No.	33

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

Year	Annual Isolated Loss of Load Probability (Days/Yr)	Annual Isolated Reserve Margin (%) (Including Firm Purchases)	Annual Isolated Expected Unserved Energy (MWh)	Annual Assisted Loss of Load Probability (Days/Yr)	Annual Assisted Reserve Margin (%) (Including Firm Purchases)	Annual Assisted Expected Unserved Energy (MWh)
2022	6.2216	21.0	3,469.6	0.1987	21.0	103.5
2023	6.3422	18.7	3,800.7	0.2011	18.7	118.1
2024	8.7748	17.5	5,941.9	0.3504	17.5	211.1
2025	6.9882	17.5	4,218.4	0.2271	17.5	129.1
2026	6.8116	17.7	4,101.2	0.1947	17.7	114.9
2027	15.2023	18.1	7,592.8	0.6513	18.1	290.7
2028	7.5909	18.3	5,476.0	0.3166	18.3	206.3
2029	7.2399	18.5	4,506.6	0.2425	18.5	126.9
2030	7.3583	18.1	4,680.3	0.2607	18.1	130.1
2031	7.6616	17.9	4,935.8	0.3886	17.9	140.9

TYSP Year 2022
Staff's Data Request # 1
Question No. 34

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	8.25%	7.88%	1.08%	2.36%	90.67%	84.92%	7,938	7,910
A. B. Hopkins	GT 3	5.12%	3.97%	0.13%	3.10%	94.76%	87.08%	9,663	10,100
A. B. Hopkins	GT 4	1.73%	3.97%	0.03%	3.10%	98.24%	87.08%	9,771	10,100
A. B. Hopkins	IC 1	2.36%	2.47%	0.38%	2.61%	97.26%	92.60%	8,434	8,532
A. B. Hopkins	IC 2	3.16%	2.47%	0.38%	2.61%	96.46%	92.60%	8,488	8,532
A. B. Hopkins	IC 3	3.15%	2.47%	0.23%	2.61%	96.62%	92.60%	8,457	8,532
A. B. Hopkins	IC 4	2.21%	2.47%	0.26%	2.61%	97.53%	92.60%	8,462	8,532
A. B. Hopkins	IC 5	2.58%	2.47%	0.71%	2.61%	96.71%	92.60%	8,313	8,532
S. O. Purdom	CC 8	11.48%	7.88%	0.55%	2.36%	87.97%	84.92%	7,793	7,747
Substation 12	IC 1	3.08%	2.47%	0.40%	2.61%	96.51%	92.60%	8,529	8,877
Substation 12	IC 2	1.85%	2.47%	0.21%	2.61%	97.94%	92.60%	8,462	8,877

NOTE: Historical - average of past three years (taken from Electric Utility's "Operational Recap" report for 2019-21)
Projected - average of next ten years (POF/FOF/EAF taken from NERC GADS "Generating Unit Statistical Brochure 4 2016-2020 - All Units Reporting").

[1] Historical values reflect sum of actual scheduled and maintenance outage factors. Projected values are based on NERC GADS 2016-20 actual planned outage factors (POF) for peer units.

[2] Historical data for GTs and ICs reflect average gross operating heat rate (Btu/kWh). For forecast, CTs and ICs are modeled as committed/dispatched to full load point/net heat rate.

TYSP Year 2022
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[1]
					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	2022
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 traditional generation additions.													
Notes													
(Include Notes Here)													

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

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
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	2022
Staff's Data Request #	1
Question No.	38

Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Commercial In-Service		Gross Capacity (MW)		Net Capacity (MW)		Firm Capacity (MW)		Projected Capacity Factor
					Mo	Yr	Sum	Win	Sum	Win	Sum	Win	(%)
TAL has no planned renewable generation additions.													
Notes													

TYSP Year	2022
Staff's Data Request #	1
Question No.	40

Nominal, Firm Purchases

	Firm Purchases	
Year	$/MWh	Escalation %
HISTORY:		
2019	NA	NA
2020	NA	NA
2021	NA	NA
FORECAST:		
2022	NA	NA
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

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

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

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

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

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

Seller Name	Facility Name	Unit No.	County Location	Unit Type	Primary Fuel	Gross Capacity (MW)		Net Capacity (MW)		Contracted Firm Capacity (MW)		Contract Term Dates (MM/YY)	
						Sum	Win	Sum	Win	Sum	Win	Start	End
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	2022
Staff's Data Request #	1
Question No.	44

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

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

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

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

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

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

Renewable Source	Annual Renewable Generation (GWh)										
	Actual	Projected									
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Utility - Firm	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	99.3	121.2	120.6	120.3	119.4	118.8	118.2	118.0	117.1	116.5	115.9
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	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
Total	107.6	129.5	128.9	128.6	127.7	127.1	126.5	126.2	125.3	124.7	124.1
Notes											
(Include Notes Here)											

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

Plant Name	Land Available (Acres)	Potential Installed Net Capacity (MW)	Potential Obstacles to Installation
NA. TAL is a municipal utility.			

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

Project Name	Pilot Program (Y/N)	In-Service/ Pilot Start Date (MM/YY)	Max Capacity Output (MW)	Max Energy Stored (MHh)	Conversion Efficiency (%)
TAL has no existing energy storage.					

Notes

(Include Notes Here)

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

Project Name	Pilot Program (Y/N)	In-Service/ Pilot Start Date (MM/YY)	Projected Max Capacity Output (MW)	Projected Max Energy Stored (MHh)	Projected Conversion Efficiency (%)
TAL has no planned energy storage.					

Notes

(Include Notes Here)

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

Year		As-Available Energy ($/MWh)	On-Peak Average ($/MWh)	Off-Peak Average ($/MWh)
Actual	2012	NA. TAL is a municipal utility.		
	2013			
	2014			
	2015			
	2016			
	2017			
	2018			
	2019			
	2020			
	2021			
Projected	2022			
	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
	2030			
	2031			
Notes				
(Include Notes Here)				

TYSP Year	2022
Staff's Data Request #	1
Question No.	65

Generating Unit Name	Summer Capacity (MW)	Certification Dates (if Applicable)		In-Service Date (MM/YY)
		Need Approved (Commission)	PPSA Certified	
Nuclear Unit Additions				
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				
(Include Notes Here)				

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

Plant	Unit No.	Unit Type	Fuel Type	Capacity Factor (%)										
				Actual	Projected									
				2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
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														
(Include Notes Here)														

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

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date (MM/YYY)	Potential Conversion	Potential Issues
Hopkins 2	NG	300	39600	2x1 Combined Cycle	See notes

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

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

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

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

Notes
(Include Notes Here)

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

Year	Estimated Cost of Standards of Performance for Greenhouse Gas Emissions Rule for New Sources Impacts (Present-Year $ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2021	NA. TAL has no units that are subject to this rule.			
2022				
2023				
2024				
2025				
2026				
2027				
2028				
2029				
2030				
Notes				
(Include Notes Here)				

TYSP Year 2022
Staff's Data Request # 1
Question No. 76

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA Rule Impacts: Operational Effects						
				ELGS	ACE or replacement	MATS	CSAPR/ CAIR	CWIS	CCR	
									Non-Hazardous Waste	Special Waste
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 2022
Staff's Data Request # 1
Question No. 77

Unit	Unit Type	Fuel Type	Net Summer Capacity (MW)	Estimated EPA Rule Impacts: Cost Effects (CPVRR $ millions)						
				ELGS	ACE or replacement	MATS	CSAPR/ CAIR	CWIS	CCR	
									Non-Hazardous Waste	Special Waste
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 2022
Staff's Data Request # 1
Question No. 78

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

Year		Uranium		Coal		Natural Gas		Residual Oil		Distillate Oil	
		GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU	GWh	$/MMBTU
Actual	2012	NA	NA	NA	NA	2,509	5.54	NA	NA	0.0	18.86
	2013	NA	NA	NA	NA	2,662	4.51	NA	NA	2.0	23.58
	2014	NA	NA	NA	NA	2,788	4.82	NA	NA	10.0	23.57
	2015	NA	NA	NA	NA	2,704	4.44	NA	NA	0.0	NA
	2016	NA	NA	NA	NA	2,562	3.92	NA	NA	76.4	22.54
	2017	NA	NA	NA	NA	2,635	3.79	NA	NA	0.0	NA
	2018	NA	NA	NA	NA	2,808	3.79	NA	NA	1.0	23.09
	2019	NA	NA	NA	NA	2,900	3.53	NA	NA	0.0	NA
	2020	NA	NA	NA	NA	2,666	3.06	NA	NA	0.1	22.46
	2021	NA	NA	NA	NA	2,764	3.74	NA	NA	1.4	22.62
Projected	2022	NA	NA	NA	NA	2,931	3.91	NA	NA	NA	15.68
	2023	NA	NA	NA	NA	2,959	3.69	NA	NA	NA	15.14
	2024	NA	NA	NA	NA	2,938	3.65	NA	NA	NA	14.86
	2025	NA	NA	NA	NA	2,987	3.98	NA	NA	NA	15.18
	2026	NA	NA	NA	NA	2,994	3.91	NA	NA	NA	15.56
	2027	NA	NA	NA	NA	2,926	3.93	NA	NA	NA	15.95
	2028	NA	NA	NA	NA	2,980	4.01	NA	NA	NA	16.35
	2029	NA	NA	NA	NA	3,010	4.08	NA	NA	NA	16.76
	2030	NA	NA	NA	NA	3,003	4.15	NA	NA	NA	17.18
	2031	NA	NA	NA	NA	3,024	4.26	NA	NA	NA	17.61

Notes

"Projected" values reflect generation (GWh) and fuel cost ($/MMBtu) associated with serving both TAL native load and off-system sales.