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Gulf Power

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May 18, 2018

Ms. Carlotta Stauffer, Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399

Dear Ms. Stauffer:

Attached is Gulf Power Company's response to Staff's data request concerning Gulf's 2018 Ten Year Site Plan, specifically numbers 2–78.

Sincerely,

C. Shane Boyett for

Rhonda J. Alexander
Regulatory, Forecasting and Pricing Manager

md

Attachments

cc w/ att.: Florida Public Service Commission
Takira Thompson, Division of Engineering
Phillip Ellis, Division of Engineering
Gulf Power Company
Jeffrey A. Stone, Esq., General Counsel
Beggs & Lane
Russell Badders, Esq.

1. Please provide an electronic copy of the Company's 2018 Ten-Year Site Plan Schedules 1 through 10 (in Excel format).

RESPONSE:

Please see Excel file named "Gulf Power TYSP - Staff's 1st DR Item No. 1.xlsx".

2. Please provide all data requested in the attached forms labeled "Appendix A." If any of the requested data is already included in the Company's Ten-Year Site Plan, state so on the appropriate form.

RESPONSE:

Please refer to the enclosed DVD containing an electronic copy of Appendix A.

3. [Investor-owned Utilities Only] Please provide, on a system-wide basis, the hourly system load for the period January 1, 2017, through December 31, 2017, in Microsoft Excel format.

RESPONSE:

Please see Excel file named "2018_TYSP_DR1_3and8".

4. Please provide the actual monthly peak demand experienced in the period 2015 through 2017, including the actual peak demand experienced, the amount of demand response activated during peak, and the estimated total peak if demand response had not been activated. Please also provide the date, hour, and system-average temperature at the time of each monthly peak.

RESPONSE:

Historic Peak Demand Timing & Temperature

Year	Month	Actual Peak Demand	Demand Response Activated	Estimated Peak Demand	Date	Hour	System-Average Temperature
		(MW)	(MW)	(MW)		-	(Degrees F)
2017	1	2211	N/A	N/A	8	0800	28
	2	1435	N/A	N/A	4	0900	45
	3	1791	N/A	N/A	16	0800	42
	4	1836	N/A	N/A	28	1600	81
	5	2080	N/A	N/A	18	1700	82
	6	2234	N/A	N/A	30	1700	87
	7	2434	N/A	N/A	5	1700	91
	8	2374	N/A	N/A	17	1700	95
	9	2162	N/A	N/A	28	1600	92
	10	2180	N/A	N/A	11	1600	89
	11	1558	N/A	N/A	7	1500	82
	12	1895	N/A	N/A	11	0700	40
2016	1	2043	N/A	N/A	24	0800	32
	2	2008	N/A	N/A	10	0700	29
	3	1595	N/A	N/A	16	0800	70
	4	1829	N/A	N/A	29	1700	83
	5	2125	N/A	N/A	31	1400	86
	6	2341	N/A	N/A	28	1700	87
	7	2508	N/A	N/A	20	1400	94
	8	2408	N/A	N/A	3	1700	89
	9	2299	N/A	N/A	2	1600	90
	10	2075	N/A	N/A	4	1700	86
	11	1717	N/A	N/A	4	1600	88
	12	1739	N/A	N/A	19	1900	44
2015	1	2492	N/A	N/A	8	0800	20
	2	2230	N/A	N/A	20	0700	31
	3	1914	N/A	N/A	6	0800	32
	4	1729	N/A	N/A	26	1600	82
	5	2086	N/A	N/A	21	1600	80
	6	2408	N/A	N/A	22	1500	93
	7	2495	N/A	N/A	21	1600	92
	8	2420	N/A	N/A	3	1600	91
	9	2297	N/A	N/A	2	1600	91
	10	1876	N/A	N/A	9	1600	84
	11	1790	N/A	N/A	6	1500	80
	12	1483	N/A	N/A	3	1900	47

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

RESPONSE:

Gulf Power uses hourly temperatures from the National Oceanic and Atmospheric Administration's (NOAA) Pensacola weather station.

6. Please explain how the Company's load and demand forecasting used in its 2018 Ten Year Site Plan was developed. In your response please include the following information: methodology, assumptions, data sources, third-party consultant(s) involved, any difference/improvement made compared with the load and demand forecasting used in the company's 2018 Ten Year Site Plan.

RESPONSE:

Residential Short-Term Energy Sales Forecast

The short-term residential energy sales forecast used in Gulf's 2018 Ten Year Site Plan was developed using a multiple linear regression model. Monthly residential energy use per customer per billing day was projected based on historical data, normal weather, energy efficiency, and real projected price of electricity. The model output was multiplied by the projected number of residential customers and the projected billing days to arrive at the total residential class energy. The projected number of residential customers for the first two forecast years was provided by Gulf's marketing team and customer growth rates for subsequent years were estimated using household growth projections provided by Moody's Analytics.

Weather data was from the National Oceanic and Atmospheric Administration's (NOAA) Pensacola weather station. Economic data was provided by Moody's Analytics, which relied on the Bureau of Economic Analysis (BEA) and the U.S. Census Bureau for the Gross Domestic Product (GDP) price deflator and households, respectively. The energy efficiency variable was calculated by the Gulf Power forecasting team using historical average SEER from the Energy Information Administration (EIA) and changes in minimum efficiencies for residential Heating Ventilation and Air Conditioning (HVAC) units mandated by the Energy Policy Act of 1992, Energy Policy Act of 2005, and the implementation of regional standards in 2015. The short-term residential energy sales forecast used in Gulf's 2018 Ten Year Site Plan incorporated routine updates to include more recent historical data and updated economic projections. Additional refinements, as described below, were made to the residential regression model specifications and weather variables.

The refinements to the model specifications were shortening the historical period to 12 years from 20 years, removing the real disposable income per household variable, and adjusting certain binary variables. The refinements to the residential weather variables were to calculate degree hours using the 12-hour moving average temperature instead of the instantaneous hourly temperature and segmenting the degree hours by temperature ranges instead of by month. These refinements to the model specifications

and weather variables improved the residential regression model fit, as measured by adjusted R-squared and Mean Absolute Percent Error (MAPE).

Residential Long-Term Energy Sales Forecast

The long-term residential energy sales forecast used in Gulf's 2018 Ten Year Site Plan was developed using the LoadMAP-R end use model from third-party consultant Applied Energy Group (AEG), where appliance-specific energy demands were projected using a variety of demographic, housing, economic, energy, and weather data. These appliance-specific energy demand projections were then added together to estimate total residential energy sales. The resulting year over year growth rates were then used to extend the short-term residential sales forecast over the long-term horizon.

Weather data was from NOAA's Pensacola weather station. Economic data and demographic data, including real disposable income per household and number of persons per household, were provided by Moody's Analytics. Housing-related data, such as home size and housing type (single family, multi-family, or manufactured home) were estimated by using data from various sources including Gulf's residential saturation surveys and Moody's Analytics. Appliance-specific data, such as appliance saturation rates, were from Gulf's residential saturation surveys.

The long-term residential energy sales forecast used in Gulf's 2018 Ten Year Site Plan incorporated routine updates to include more recent historical data and economic projections. No other changes were made to the methodology or data sources.

Commercial Short-Term Energy Sales Forecast

The short-term commercial energy sales forecast was developed using two separate multiple linear regression models, one for small commercial customers (rate schedules GS and Flat-GS) and one for large commercial customers (all other commercial rate schedules). Small commercial energy use per customer per billing day was projected based on historical data, normal weather, energy efficiency, and real projected prices of electricity. Large commercial energy use per customer per billing day was also projected using historical data, normal weather, energy efficiency, and real projected prices of electricity. The outputs of these regression models were then multiplied by their respective customer projections and projected billing days by month and then summed to the total commercial class. The projected number of commercial customers for the first forecast year was provided by Gulf's marketing team, and customer growth rates for subsequent years were estimated using residential customer growth.

Weather data was from NOAA's Pensacola weather station. Economic data was provided by Moody's Analytics, which relied on the BEA for the GDP price deflator. The energy efficiency variable was calculated by the Gulf Power forecasting team using historical lighting shipments data from the National Electrical Manufacturers Association (NEMA). The short-term commercial energy sales forecasts used in Gulf's 2018 Ten Year Site Plan incorporated routine updates to include more recent historical data and updated economic projections. Additional refinements, as described below, were made to specifications of both commercial regression models and their respective weather variables.

The refinements to the small commercial regression model specifications were shortening the historical period to 12 years from 20 years, removing the real GDP per capita variable, adding an energy efficiency variable based on changes in lighting technologies, and adjusting certain binary variables. The refinements to the weather variables were to calculate the degree hours using the 12-hour moving average temperature instead of the instantaneous hourly temperature and to segment the degree hours by temperature ranges instead of by month. These refinements to the model specifications and weather variables improved the small commercial regression model fit, as measured by adjusted R-squared and MAPE.

The refinements to the large commercial regression model specifications were shortening the historical period to 12 years from 20 years, removing the real GDP per capita variable, adding an energy efficiency variable based on changes in lighting technologies, and adjusting certain binary variables. The refinements to the weather variables were to calculate degree hours using the 12-hour moving average temperature instead of the instantaneous hourly temperature, lowering the cooling degree hour threshold temperature to 60 degrees Fahrenheit from 63 degrees Fahrenheit, lowering the heating degree hour threshold temperature to 50 degrees Fahrenheit from 54 degrees Fahrenheit, and segmenting the degree hours by temperature ranges instead of by month. These refinements to the model specifications and weather variables improved the large commercial regression model fit, as measured by adjusted R-squared and MAPE.

Commercial Long-Term Energy Sales Forecast

The long-term commercial energy sales forecast used in Gulf's 2018 Ten Year Site Plan was developed using the LoadMAP-C end use model from third-party consultant AEG, where energy demands for specific commercial end uses were projected using a variety of commercial market, economic, energy, and weather data. These end use energy projections were then added together to estimate total commercial energy sales. The

resulting year over year growth rates were used to extend the short-term commercial sales forecast over the long-term horizon.

Weather data was from NOAA's Pensacola weather station. Economic and population data were provided by Moody's Analytics. Commercial market data, including building square footage by market segment, were estimated by using data from various sources including Dodge McGraw Hill and Moody's Analytics.

The long-term commercial energy sales forecast used in Gulf's 2018 Ten Year Site Plan incorporated routine updates to include more recent historical data and to incorporate updated economic projections. No other changes were made to the methodology or data sources.

Industrial Energy Sales Forecast

The short-term industrial energy sales forecast was developed using both on-site surveys of major industrial customers and historical average energy use per customer per billing day for smaller industrial customers. Gulf's industrial account representatives identified expected load changes for their respective customers, and these were combined with historical monthly usage patterns to arrive at the short-term forecasts of monthly sales to those major customers. The remaining smaller industrial customers were projected by using historical average energy use per customer per billing day multiplied by the projected number of small industrial customers and the projected number of billing days by month. The total industrial sales forecast was the sum of the sales to major industrial customers plus sales to smaller industrial customers. Long-term projections of industrial sales were developed using historical averages.

All Other Energy Sales Forecasts

The outdoor lighting energy sales forecasts were developed using historical growth rates and input from Gulf's lighting team.

The territorial wholesale energy sales forecast was developed using a multiple linear regression model. Monthly territorial wholesale energy sales per day were projected based on historical data, normal weather, energy efficiency, and population. The model output was then multiplied by the projected number of days by month to arrive at the territorial wholesale energy sales forecast. Weather data was from NOAA's Pensacola weather station. Economic data was provided by Moody's Analytics. The energy efficiency variable was calculated by the Gulf Power forecasting team using historical average SEER from the EIA and changes in minimum efficiencies for residential HVAC

units mandated by the Energy Policy Act of 1992, Energy Policy Act of 2005, and the implementation of regional standards in 2015.

The forecast of company energy use was based on recent historical averages by month.

The energy sales forecasts for outdoor lighting, territorial wholesale energy sales, and company energy use incorporated routine updates for more recent historical data and updated economic projections, where applicable. Additional refinements made to the wholesale energy sales regression model specifications included adding an energy efficiency variable, adding a heating degree hour variable for October, adding cooling degree hour variables for March and November, and adjusting certain binary variables. These refinements to the model specifications improved the wholesale regression model fit, as measured by adjusted R-squared and MAPE. No other changes were made to the methodology or data sources.

Peak Demand Forecast

The system peak demand forecast was developed using historical load shapes and the previously described energy sales forecasts. The Peak Demand Model (PDM), developed by third-party consultants Corios and SAS, takes the monthly forecasts of energy sales and spreads the energy projections using historical hourly load shapes and the results are projected hourly load shapes. These projected hourly load shapes are combined to arrive at the total system hourly load shape. The monthly system peak demands are the highest hour of demand in each month.

The peak demand forecast used in Gulf's 2018 Ten Year Site Plan incorporated routine updates to include more recent historical data and updated energy projections. No other changes were made to the methodology or data sources.

7. Please identify all closed and opened FPSC dockets and all non-docketed FPSC matters which were/are based on the same load forecast used in the Company's 2018-2027 Ten Year Site Plan (2018 TYSP).

RESPONSE:

The affected Florida Public Service Commission (FPSC) dockets, which are all currently open, are:

- 20180001-EI
- 20180002-EG
- 20180007-EI
- 20180081-EQ

8. [Investor-owned Utilities Only] Does your company review the accuracy of its customer, load and demand forecasts presented in its TYSP by comparing the actual data for a given year to the data forecasted one, two, three, four or five years prior?
   a. If the response is affirmative, please explain the method used in such review.
   b. If the response is affirmative, please provide the results of such review for each forecast presented in TYSPs filed, or to be filed, to the Commission from 2002 to 2018 with supporting workpapers in Excel format.
   c. If the response is negative, please explain why not.

RESPONSE:

Gulf Power routinely reviews the accuracy of its customer and energy load forecasts presented in its TYSP for the first forecast year. Although Gulf does not routinely review customer and energy load data for subsequent forecast years, the reviews of forecasts have been extended to include the second, third, fourth, and fifth forecast years for purposes of this response. The accuracy of Gulf's customer forecast is measured by comparing actual number of customers against the forecasted number of customers. The accuracy of Gulf's energy load forecasts is measured by comparing weather-normalized energy load against the forecasted energy load.

Please see Excel file named "2018_TYSP_DR1_3and8" which contains the review of the accuracy of Gulf's customer and energy load forecasts presented in TYSPs filed with the Commission from 2002 to 2017. The year of 2017 is the last full year for which Gulf has actual data.

Gulf does not routinely review the accuracy of its peak demand forecasts presented in its TYSP. The peak demand impacts of weather vary between the customer classes and weather-normalizing by customer class would require actual coincident peaks by class, which is not available on a regular basis.

9. Please explain any recent and forecasted trends in customer growth, by customer type (residential, commercial, industrial) and as a whole.

RESPONSE:

Residential customer growth in 2017 was 1.4% compared to the average annual growth rate of 1.2% experienced from 2013 to 2016. Growth in the number of residential customers is driven by growth in the number of households, where a slowdown in household growth generally results in a slowdown in residential customer growth. Residential customers are projected to maintain growth at an average annual rate of 1.3% from 2017 to 2020.

Commercial customer growth in 2017 was 1.0% compared to the average annual growth rate of 1.0% experienced from 2013 to 2016. Growth in the number of commercial customers is driven by growth in the number of residential customers because of the growth in commercial services to meet the needs of the new residents. Commercial customers are projected to maintain growth at an average annual rate of 1.1% from 2017 to 2020.

Industrial customer growth in 2017 was 3.2% compared to the average annual decline of -1.5% experienced from 2013 to 2016. The decline in the number of industrial customers during the 2013 through 2016 period was driven entirely by declines in the number of customers on rates with maximum demands of 499 kW or less. The number of customers on rates with maximum demands of 500 kW or greater has increased over the same period. Industrial customer growth is projected to remain flat from 2017 to 2020.

Total retail customer growth in 2017 was 1.3% compared to the average annual growth rate of 1.2% experienced from 2013 to 2016. Growth in the number of total retail customers is driven primarily by the residential class and to a lesser extent the commercial class. Industrial customers represent a small proportion of total retail customers so changes in industrial customers do not have a significant effect on total retail customer growth. Total retail customers are projected to maintain growth at an average annual rate of 1.3% from 2017 to 2020 primarily driven by the residential class.

10. Please explain any recent and forecasted trends in electricity use per customer, by customer type (residential, commercial, industrial) and as a whole.

RESPONSE:

Residential electricity use per customer growth in 2017 was -3.7% compared to the average annual growth rate of 0.5% from 2013 to 2016. Adjusted for weather, the residential use per customer growth for 2017 was 0.0% compared to -1.1% from 2013 to 2016. Residential use per customer is driven by price, energy efficiency, and weather. Continued improvements in energy efficiency are projected to decrease residential use per customer at an average annual rate of -0.7% from 2017 to 2020.

Commercial electricity use per customer growth in 2017 was -2.4% compared to the average annual growth rate of -0.5% from 2013 to 2016. Adjusted for weather, the commercial use per customer growth for 2017 was -1.0% compared to -1.3% from 2013 to 2016. Commercial use per customer is driven by price, energy efficiency, and weather. Continued improvements in energy efficiency are projected to decrease commercial use per customer at an average annual rate of -1.0% from 2017 to 2020.

Industrial electricity use per customer growth in 2017 was -7.9% compared to the average annual growth rate of 4.0% from 2013 to 2016. The industrial use per customer decrease in 2017 was due to an increase in the number of small industrial customers combined with reduced load from a few larger customers. The industrial use per customer increase from 2013 to 2016 was related to a reduction in the number of smaller industrial customers and increased load from a few larger customers. Reduced load from a few larger industrial customers is projected to decrease industrial use per customer at an average annual rate of -2.3% from 2017 to 2020.

Total retail electricity use per customer growth in 2017 was -3.7% compared to the average annual growth rate of 0.3% from 2013 to 2016. Adjusted for weather, total retail electricity use per customer growth for 2017 was -1.5% compared to -0.8% from 2013 to 2016. Total retail use per customer is primarily driven by residential use per customer trends and to a lesser extent commercial use per customer trends. Continued improvements in energy efficiency are projected to decrease total retail use per customer at an average annual rate of -1.3% from 2017 to 2020.

11. Please explain any recent and forecasted trends in peak demand by the sources of peak demand appearing in Schedule 3.1 of the Ten Year Site Plan.

RESPONSE:

Retail summer peak demand growth in 2017 was -2.3% compared to the average annual growth rate of 2.2% from 2013 to 2016. Retail summer peak demand is primarily driven by retail energy sales and weather, and is expected to remain flat from 2017 to 2020.

Residential and commercial conservation impacts to summer peak demand in 2017grew by 1.6% and 0.4% respectively, which is lower than the average annual growth rate from 2013 to 2016 of 4.6% for residential and 1.7% for commercial. The conservation impacts of the Company's approved DSM plan decreased because the new DSM plan approved in 2015 has fewer demand side management programs. Conservation impacts on summer peak demand are projected to grow at an average annual rate of 2.2% for residential conservation and 0.5% for commercial conservation from 2017 to 2020.

Wholesale summer peak demand growth in 2017 was -2.6% compared to the average annual growth rate of 1.1% from 2013 to 2016. Wholesale summer peak demand is projected to decline at an average annual growth rate of -4.9% from 2017 to 2020.

Net Total summer peak demand growth in 2017 was -3.0% compared to the average annual growth rate of 2.0% from 2013 to 2016. Retail summer peak demand is projected to grow at an average annual rate of -0.4% from 2017 to 2020, primarily driven by a flat retail energy sales forecast.

12. [Investor-owned utilities only] If not included in the Company's 2018 Ten Year Site Plan to be filed by April 1, 2018, please provide load forecast sensitivities (high band, low band) to account for the uncertainty inherent in the base case forecasts in the following Ten Year Site Plan schedules:
    a. Schedule 2.1 – History and Forecast of Energy Consumption and Number of Customers by Customer Class
    b. Schedule 2.2 – History and Forecast of Energy Consumption and Number of Customers by Customer Class
    c. Schedule 2.3 – History and Forecast of Energy Consumption and Number of Customers by Customer Class
    d. Schedule 3.1 – History and Forecast of Summer Peak Demand
    e. Schedule 3.2 – History and Forecast of Winter Peak Demand
    f. Schedule 3.3 – History and Forecast of Annual Net Energy for Load
    g. Schedule 4 – Previous Year and 2-Year Forecast of Peak Demand and Net Energy for Load by Month.

RESPONSE:

Gulf Power does not produce load forecast sensitivities.

13. [Investor-owned utilities only] If not included in the Company's 2018 Ten Year Site Plan to be filed by April 1, 2018, please provide the methodology used to prepare load forecast sensitivities (high band, low band) to account for the uncertainty inherent in the base case forecasts in the following Ten Year Site Plan schedules:
    a. Schedule 2.1 – History and Forecast of Energy Consumption and Number of Customers by Customer Class
    b. Schedule 2.2 – History and Forecast of Energy Consumption and Number of Customers by Customer Class
    c. Schedule 2.3 – History and Forecast of Energy Consumption and Number of Customers by Customer Class
    d. Schedule 3.1 – History and Forecast of Summer Peak Demand
    e. Schedule 3.2 – History and Forecast of Winter Peak Demand
    f. Schedule 3.3 – History and Forecast of Annual Net Energy for Load
    g. Schedule 4 – Previous Year and 2-Year Forecast of Peak Demand and Net Energy for Load by Month.

RESPONSE:

Gulf Power does not produce load forecast sensitivities.

14. Please discuss whether the Company included plug-in electric vehicle loads in its demand and energy forecasts for the 2018 Ten-Year Site Plan.

RESPONSE:

Gulf included plug-in electric vehicle loads in its residential energy forecast for the 2018 Ten Year Site Plan. All charging was assumed to occur off-peak; therefore, no adjustments were made to the peak demand forecast. However, the Company is taking steps to monitor potential on-peak impacts from PEV charging, including collecting meter data from the Company-owned electric vehicle fleet and reviewing information compiled from industry experts and technical advisors.

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

RESPONSE:

The source of the projected number of plug-in electric vehicles in Gulf's service area was a study produced by the Electric Power Research Institute (EPRI) in June 2017. The June 2017 EPRI study was also the source of the impact of plug-in electric vehicles on energy consumption. All charging was assumed to occur off-peak; therefore, no adjustments were made to the peak demand forecast. However, the Company is taking steps to monitor potential on-peak impacts from PEV charging, including collecting meter data from the Company-owned electric vehicle fleet and reviewing information compiled from industry experts and technical advisors.

16. Please include the following information within the utility's service territory: an estimate of the number of electric vehicles, an estimate of the number of public EV charging stations, and the estimated demand and energy impacts of the electric vehicles by year.

RESPONSE:

Electric Vehicle Charging Impacts

Year	Number of Electric Vehicles (1)	Number of Public EV Charging Stations (2)	Cumulative Impact of Electric Vehicles (3)		
			Summer Demand	Winter Demand	Annual Energy
	(-)	(-)	(MW)	(MW)	(GWh)
2017	449	14	0	0	1.6
2018	635	18	0	0	2.2
2019	809	22	0	0	2.7
2020	959	26	0	0	3.2
2021	1,094	30	0	0	3.6
2022	1,243	34	0	0	4.0
2023	1,412	38	0	0	4.4
2024	1,605	42	0	0	4.9
2025	1,861	46	0	0	5.7
2026	2,149	50	0	0	6.6
2027	2,498	54	0	0	7.7

Notes

The data shown in this table is consistent with the adjustments made to the energy forecasts to account for plug-in electric vehicle loads.

(1) Number of electric vehicles estimated by EPRI, June 2017, vehicles estimates in the 8 counties served by Gulf Power.

(2) Number of public charging stations obtained from 2015 PlugShare data and estimated growth of 4 additional public stations per year. (This data was not included as part of Gulf's calculation of the annual energy impact of electric vehicles).

(3) All charging is assumed to occur off-peak.
Annual energy is estimated by EPRI PEV adoption forecast considering varying plug-in vehicle types.

17. Please describe any company programs or tariffs currently offered to customers relating to plug-in electric vehicles, and describe whether any new or additional programs or tariffs relating to plug-in electric vehicles will be offered to customers within the ten-year period.

RESPONSE:

Gulf Power currently offers two rate schedules for residential customers that relate to plug-in electric vehicles:

1) A pilot rate schedule RSTOU "Residential Service – Time-of-Use" is offered as an alternative to Rate Schedule RS for service used for domestic purposes and electric vehicle charging at an individually metered dwelling unit suitable for year-round family occupancy containing full kitchen facilities.
2) Rate Schedule RSVP, "Residential Service Variable Pricing – Limited Availability Rate – Electric Vehicle Charging." Gulf Power implemented a pilot program through the DSM plan approved by the FPSC in Order No. PSC-11-0114-PAA-EG that encouraged residential customers to automatically charge electric vehicles overnight during the off-peak periods. This approach is consistent with the assumption that plug-in electric vehicles will not materially affect the peak demand forecast. Although this pilot program concluded in 2014, customers can still utilize the applicable Rate Schedule RSVP for off-peak electric vehicles charging.

Gulf Power's current programs related to plug-in electric vehicles are as follows:

1) Gulf Power Residential customers are eligible for a $750 incentive after the purchase of a qualifying plug-in electric vehicle. The dealer who sells a qualifying plug-in electric vehicle to a Gulf Power customer is eligible for a $250 incentive. These incentives are limited to the first 1,000 participants and expires on December 31, 2018.
2) Gulf Power Commercial and Industrial customers are eligible for a $500 incentive after the purchase and installation of a Level 2 electric vehicle charger for the use of fleet or workplace charging purposes.
3) New home builders are eligible for a $100 incentive for providing a 240v electric vehicle ready plug-in outlet in the garage of a new home in Gulf Power's service area.
4) The Non-Road Custom Incentive program is designed to establish the capability and process to offer electric transportation end-use equipment to Commercial/Industrial customers. The services Gulf Power provides for this incentive include evaluation, incentive design, and implementation of electric transportation end-use projects.

5) In April 2017, Gulf received FPSC approval to pursue a 5-year pilot program to assist customers by providing electric vehicle supply equipment (EVSE) and installations on customer property on a revenue neutral basis.

Gulf continually evaluates rate needs and program offerings and currently does not have specific plans for new or additional rate offerings relating to electric vehicle charging.

18. Please describe how the Company monitors the installation of public charging stations in its service area? Please provide the number of "quick-charge" electric vehicle charging stations (i.e., charging stations requiring a service drop greater than 240 volts and/or using three-phase power) currently installed in the service area.

RESPONSE:

Gulf Power Company's field engineering and marketing personnel notify the electric vehicle (EV) program manager when they become aware of any new EV chargers in Gulf's service area. The EV program manager then records the location of each new device.

In addition to the 6 "quick-charge" stations used for charging Gulf Power fleet vehicles, Gulf Power currently has one "quick-charge" electric vehicle charging station in its service area at located in DeFuniak Springs, Florida. This station is owned and operated by Tesla Motors, Inc. Details of the charging station are as follows:

10th Street DeFuniak Springs Supercharger
Corner of Baldwin Ave. & 10th Street
DeFuniak Springs, FL 32435
5 Supercharger stalls

19. Please describe any instances since January 1, 2017, in which upgrades to the distribution system were made where electric vehicles were a contributing factor.

RESPONSE:

No distribution system upgrades have occurred since January 1, 2017, where electric vehicle charging was a contributing factor.

20. [FEECA Utilities Only] For each source of demand response, use the table below to provide the information listed on an annual basis for customer participation. Please also provide a summary of all sources of demand response using the chart below. As part of this response, please provide an electronic version of the table below in Excel format with your response.

RESPONSE:

[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
2008	8,831	15	19	598	1	1	713	1	2
2009	8,716	15	19	1,520	3	3	1,286	2	3
2010	8,950	15	20	1,321	2	3	1,684	3	4
2011	8,587	15	19	1,387	2	2	1,295	2	3
2012	8,679	14	18	2,284	2	3	485	1	1
2013	10,478	18	23	2,943	5	6	794	1	2
2014	12,627	22	28	2,468	4	5	714	1	2
2015	14,381	29	17	2,594	5	3	728	1	1
2016	16,247	29	17	2,166	4	2	693	1	1
2017	17,720	32	19	1,952	4	2	513	1	1

21. [FEECA Utilities Only] For each source of demand response, use the table below to provide the information listed on an annual basis for customer participation. Please also provide a summary of all sources of demand response using the chart below. As part of this response, please provide an electronic version of the table below in Excel format with your response.

RESPONSE:

[Demand Response Source or All Demand Response Sources]										
Year	Summer					Winter				
	# of Events	Average Event Size		Maximum Event Size		# of Events	Average Event Size		Maximum Event Size	
	(MW)	(MW)	# of Customers	(MW)	# of Customers	(MW)	(MW)	# of Customers	(MW)	# of Customers
2008	1	15	8,816	15	8,816	2	19	8,798	19	8,798
2009	3	15	8,665	15	8,665	2	19	8,656	19	8,680
2010	6	15	8,851	15	8,851	8	19	8,795	20	8,923
2011	6	14	8,343	14	8,372	3	19	8,494	19	8,519
2012	2	16	9,217	16	9,285	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0
2014	2	23	13,339	23	13,387	8	29	13,100	31	14,177
2015	3	27	15,613	27	15,775	3	32	14,593	32	14,699
2016	1	31	16,963	31	16,963	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0

22. [FEECA Utilities Only] For each source of demand response, use the table below to provide the information listed on an annual basis for seasonal peak activations. Please also provide a summary of all demand response using the chart below. As part of this response, please provide an electronic version of the table below in Excel format with your response.

RESPONSE:

[Demand Response Source or All Demand Response Sources]							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	# of Customers Activated	Capacity Activated	Activated During Peak?	# of Customers Activated	Capacity Activated
		(Y/N)	(MW)	(MW)	(Y/N)	(MW)	(MW)
2008	8,774	Y	8,816	15	Y	8,798	19
2009	8,833	N	8,665	15	Y	8,656	19
2010	8,769	N	8,851	15	N	8,795	19
2011	8,633	Y	8,343	14	Y	8,494	19
2012	9,579	Y	9,217	16	N	0	0
2013	11,553	N	0	0	N	0	0
2014	13,504	N	13,339	23	N	13,100	29
2015	15,314	N	15,613	27	N	14,593	32
2016	16,984	N	16,963	31	N	0	0
2017	18,439	N	0	0	N	0	0

Generation & Transmission

23. Please identify and describe each existing utility-owned renewable resource as of December 31, 2017, that delivered energy during the year. Please include the facility's name, unit type, fuel type, its installed capacity (AC-rating for PV systems), its net firm capacity or contribution during peak demand (if any), capacity factor for 2016 based off of the installed capacity, and its in-service date. For multiple small distributed renewable resources (< 250 kW per installation), such as rooftop solar panels, please include a combined entry for the resources that share the same unit & fuel type.

RESPONSE:

Existing Utility-Owned Renewable Resources

Facility Name	Unit Type	Fuel Type	Installed Capacity (MW)		Net Firm Capacity (MW)		Capacity Factor	In-Service Date
			Sum	Win	Sum	Win	(percent)	(MM/YYYY)
Perdido 1	IC	LFG	1.6	1.6	1.5	1.5	93.2	10/2010
Perdido 2	IC	LFG	1.6	1.6	1.5	1.5	93.2	10/2010
Notes								
Gulf does not own any small, distributed renewable resources such as rooftop solar panels or wind generators.								

24. Please identify and describe each planned utility-owned renewable resource for the period 2018 through 2027. Please include each proposed facility's name, unit type, fuel type, its installed capacity (AC-rating for PV systems), its net firm capacity or anticipated contribution during peak demand (if any), anticipated typical capacity factor, and projected in-service date. For multiple small distributed renewable resources (< 250 kW per installation), such as rooftop solar panels, please include a combined entry for the resources that share the same unit & fuel type.

RESPONSE:

Planned Utility-Owned Renewable Resources

Facility Name	Unit Type	Fuel Type	Installed Capacity (MW)		Net Firm Capacity (MW)		Capacity Factor	In-Service Date
			Sum	Win	Sum	Win	(percent)	(MM/YYYY)
Community Solar	PV	Solar	1	1	N/A	N/A	23	TBD (1)
Notes								
(1) The project's in-service date was delayed to seek resolution of tax issues, and having done so, Gulf is reevaluating plans for the program to develop the best solution for its customers.								

25. Please refer to the list of planned utility-owned renewable resources for the period 2018 through 2027 above. Discuss the current status of each project.

RESPONSE:

Please see Gulf's response to Item No. 24.

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

RESPONSE:

Please see Gulf's response to Item No. 24.

27. Please identify and describe each purchased power agreement with a renewable generator that delivered energy during 2017. Provide the name of the seller, the name of the generation facility associated with the contract, the unit type of the facility, the fuel type, the facility's installed capacity (AC-rating for PV systems), the amount of contracted firm capacity (if any), and the start and end dates of the purchased power agreement.

RESPONSE:

Existing Renewable Purchased Power Agreements

Seller Name	Facility Name	Unit Type	Fuel Type	Installed Capacity (MW)		Contracted Firm Capacity (MW)		In-Service Date	Contract Term (MM/YY)	
				Sum	Win	Sum	Win	(MM/YY)	Start	End
Bay County Florida	Bay County Solid Waste	ST	MSW	11	11	N/A	N/A	06/87 (3)	07/17	07/23
Morgan Stanley	Kingfisher I	WT	Wind	178 (1)	178 (1)	58 (2)	71 (2)	01/16	01/16	12/35
Morgan Stanley	Kingfisher II	WT	Wind	94 (1)	94 (1)	31 (2)	38 (2)	02/17	02/17	12/35
Gulf Coast Solar Center I	Eglin	PV	Solar	30	30	N/A	N/A	05/17 (3)	06/17 (4)	12/42
Gulf Coast Solar Center II	Holley	PV	Solar	40	40	N/A	N/A	06/17 (3)	11/17 (4)	12/42
Gulf Coast Solar Center III	Saufley	PV	Solar	50	50	N/A	N/A	07/17 (3)	11/17 (4)	12/42

Notes

(1) Gulf Power portion of the project resulting from the agreement.
(2) MWs scheduled during the system seasonal peak hour per contract obligation to deliver fixed amount per hour.
(3) Date when synchronized to the grid.
(4) Dates reflect projects' achieved CODs.

28. Please identify and describe each purchased power agreement with a renewable generator that is anticipated to begin delivering renewable energy to the Company during the period 2018 and 2027. Provide the name of the seller, the name of the generation facility associated with the contract, the unit type of the facility, the fuel type, the facility's installed capacity (AC-rating for PV systems), the amount of contracted firm capacity (if any), and the start and end dates of the purchased power agreement.

RESPONSE:

Renewable Purchased Power Agreements

Seller Name	Facility Name	Unit Type	Fuel Type	Installed Capacity (MW)		Contracted Firm Capacity (MW)		In-Service Date	Contract Term (MM/YY)	
	-	-	-	Sum	Win	Sum	Win	(MM/YY)	Start	End
N/A										
Notes										
There are no planned purchased power agreements with a renewable generator anticipated to begin delivering renewable energy to Gulf during the period 2018 through 2027.										

29. Please refer to the list of renewable purchased power agreements that are anticipated to begin delivering capacity and/or energy to the Company during the period 2018 through 2017. Discuss the current status of each project.

RESPONSE:

Please see Gulf's response to Item No. 28.

30. Please list and discuss any renewable purchased power agreements within the past year that were cancelled, expired, delayed, or modified. What was the primary reason for the changes? What, if any, were the secondary reasons?

RESPONSE:

There are no renewable purchased power agreements announced by Gulf in the past year that were cancelled or delayed. However, the Gulf-Bay County MSW Energy Purchase Agreement which was executed in 2014 expired in July 2017. As stated in Gulf's 2018 TYSP, Gulf successfully negotiated a new energy purchase agreement with Bay County in 2017, which was approved by Commission Order PSC-2017-0449-PAA-EI dated November 20, 2017. Additionally, the Kingfisher I Energy Purchase Agreement between Gulf and Morgan Stanley was modified per terms of a new scheduling agreement in October 2017 which was approved by Commission Order PSC-2017-0482-PAA-EI dated December 22, 2017.

31. Please provide the actual and projected annual output for all renewable resources on the Company's system, including utility-owned resources (firm, non-firm, and co-firing), purchases (firm, non-firm, and co-firing), and customer-owned generation, for the period 2018 through 2027.

RESPONSE:

Renewable Generation by Source

Renewable Source	Annual Renewable Generation (GWh)										
	Actual	Projected									
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Utility – Firm	25	25	25	25	25	25	25	25	25	25	25
Utility – Non-Firm	0	0	0	0	0	0	0	0	0	0	0
Utility – Co-Firing	0	0	0	0	0	0	0	0	0	0	0
Purchase – Firm	1,006	1,031	1,031	1,033	1,031	1,031	1,031	1,033	1,031	1,031	1,031
Purchase – Non-Firm	184	300	299	298	296	295	259	233	232	230	229
Purchase – Co-Firing	0	0	0	0	0	0	0	0	0	0	0
Customer-Owned (1) (2)	9	11	12	13	14	16	17	18	19	21	22
Total	1,224	1,367	1,367	1,369	1,366	1,367	1,332	1,309	1,307	1,307	1,307

Notes

(1) Customer-Owned renewable sources include customer-owned distributed resources such as rooftop solar panels, solar billboards, and wind generators.

(2) Annual Output (GWh) for customer-owned generation is an estimated output for customer-owned solar PV systems, which is based on an estimated average output of 3.5 kWh per day per kW of installed DC nameplate capacity.

32. Please complete the table below, providing a list of all of the Company's plant sites that are potential candidates for utility-scale (>2 MW) solar installations. As part of this response, please provide the plant site's name, approximate land area available for solar installations, potential installed capacity rating of a PV installation, and a description of any major obstacles that could affect utility-scale solar installations at any of these sites, such as land devoted to other uses or other requirements.

RESPONSE:

Candidate Sites - Solar

Plant Name	Land Available (Acres)	Installed Capacity (MW)	Potential Issues
North Escambia	1,300	290	Non-contiguous sites
Caryville	750	75	Terrain, non-contiguous sites
Crist	N/A	N/A	Limited Acreage
Smith	< 100 (1)	< 15	Limited Acreage, coastal terrain, existing facility conflicts, non-contiguous sites
Scholz	< 50 (1)	< 10	Limited Acreage, existing facility conflicts
Shoal River	< 100 (1)	< 15	Limited Acreage, non-contiguous sites
Notes			
(1) Detailed site evaluations are required to determine precise acreage available at each site. Studies would include evaluation of existing generation and transmission infrastructure, terrain, transportation access to sites, proximity to developed properties, and other issues.			

33. Please complete the table below, providing a list of all of the Company's plant sites that are potential candidates for utility-scale wind installations. As part of this response, please provide the plant site's name, approximate land area available for wind installations, potential installed capacity rating of a wind farm installation, and a description of any major obstacles that could affect utility-scale wind installations at any of these sites, such as land devoted to other uses or other requirements.

RESPONSE:

Candidate Sites - Wind

Plant Name	Land Available (Acres) (1)	Installed Capacity (MW)	Potential Issues (2) (3)
Crist	TBD	N/A	See Notes
Smith	TBD	N/A	See Notes
Scholz	TBD	N/A	See Notes
North Escambia	TBD	N/A	See Notes
Caryville	TBD	N/A	See Notes
Shoal River	TBD	N/A	See Notes

Notes

(1) Detailed site evaluations are required to determine suitable acreage available at each site.
(2) Studies would include evaluation of existing generation and transmission infrastructure, terrain, transportation access to sites, proximity to developed properties, and other issues.
(3) Actual meteorological data collected by Gulf indicates that utility scale wind is not currently economically feasible because of the low, inconsistent wind speeds in the geographic area served by Gulf.

34. Provide complete the table below, providing a list of all of the Company's steam units that are potential candidates for repowering to operation with biomass fuel. As part of this response, please provide the unit's current fuel type, summer capacity rating, in-service date, and what potential conversion (either co-firing biomass, biomass as a primary fuel, or other type). Also include a description of any major obstacles that could affect repowering efforts at any of these sites, such as unit age, land availability, or other requirements.

RESPONSE:

Repowering Candidate Units –Biomass

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date	Potential Conversion	Potential Issues
N/A					
Notes					
Repowering Gulf's existing steam units is currently not economically feasible.					

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

RESPONSE:

Gulf is continuously evaluating opportunities to determine if cost-effective renewable energy could be provided to increase its fuel diversity. As mentioned in Gulf's response to Item No. 24, Gulf's community solar program was delayed and Gulf is re-evaluating plans for the program to develop the best solution for its customers.

Gulf works hard to engage its large commercial and industrial customers to better understand their interests in renewables and how we can help them meet their renewable energy goals.

Gulf's Renewable Standard Offer Contract (RSOC) on file with the FPSC provides the Company with another mechanism for possible purchases of renewable energy. The RSOC is a standard offer for the purchase of renewable energy which is continually available to developers of renewable resources.

36. Please describe whether the Company has been approached by renewable energy generators during 2017 regarding constructing new renewable energy resources. If so, please provide a description of the number and type of renewable generation represented.

RESPONSE:

Gulf routinely fields inquiries from outside entities regarding the potential development of renewable projects in the area served by Gulf. Throughout 2017, Gulf has been in contact with 25+ renewable generators/developers, primarily focusing on PV solar.

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

RESPONSE:

Yes. In general, solar PV projects can contribute to summer reliability by up to 44-46 percent of nominal AC rating, depending upon project specifics; and they can contribute to winter reliability by up to 10-12 percent of nominal AC rating, also depending upon project specifics. The Company considers solar PV to contribute to both seasonal peaks for reliability purposes. The Company determines the extent to which solar PV contributes to seasonal peaks by evaluating the anticipated contribution of the solar project during hours in which there is a probabilistically-determined reliability concern. This reliability concern is determined by evaluating thousands of scenarios and identifying those scenarios in which either (a) firm load was not served, (b) load would not have been served but for a reliability purchase, or (c) operating reserve requirements were not met. Because this reliability risk is determined on a non-weather-normal basis, the risk can occur at times other than the weather normal seasonal peak. Likewise, because every solar project has a different assumed profile, every solar project has a different percentage contribution. Furthermore, because solar PV projects that have already been installed on the system change the risk profile for subsequent solar PV projects, the contribution to the seasonal reliability risk can change (decrease) as penetration of solar increases on the system

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

RESPONSE:

Gulf Power follows industry publications which show a declining trend in costs of energy storage technologies in recent years.

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

RESPONSE:

Customer interest in energy storage has been limited to general inquiries from residential customers desiring to utilize energy from a grid-connected solar photovoltaic system for back-up power if grid power is not available. It has been recommended to these customers to review battery storage options and costs with their installing contractors to ensure the proper inverter and sizing of the battery bank for their critical loads is selected to meet their needs. Gulf is not aware of any other specific customer interest in or inquiries regarding energy storage technologies for use in residential, commercial, or industrial settings. However, customers may be aware that a two-year Southern Company / Electric Power Research Institute energy storage battery research and development demonstration project is underway at Gulf's Training and Storm Center in Pensacola. This project, discussed in more detail in Gulf's response to Item No. 41, began in the Summer 2017 and is one avenue for customers' interest in this type of energy storage technology to develop.

40. Please identify and describe all energy storage technologies that are part of the Company's system portfolio and to what extent (firm or non-firm, capacity amounts, load factors) they are used.
    a. Please provide an assessment of the benefits, risks, and operational limitations of using these energy storage technologies to provide for firm capacity and energy.
    b. Please provide a brief assessment of how these benefits, risks, and operational limitations may change over the next ten years.

RESPONSE:

Gulf Power currently does not have storage technologies as part of its resource portfolio.

41. Please identify and describe all energy storage pilot programs currently running or in development with an anticipated launch date within the next ten years. If the Company is not currently participating in or developing energy storage pilot programs, has it considered doing so? If not, please explain.
    a. Please discuss any preliminary results of such pilot programs, addressing all anticipated benefits, risks, and challenges when such technology is applied on a utility scale (> 2 MW).
    b. Please identify and describe any plans to periodically update the Commission on the status of your energy storage pilot programs.

RESPONSE:

Gulf Power, as a subsidiary of Southern Company, is involved in a range of research activities to facilitate the development of new storage technologies with the potential to benefit Gulf Power's customer base. Specifically, Gulf Power is demonstrating the following projects:

McCrary Battery Energy Storage Demonstration – A 250-kW/1-MWh Tesla Powerpack lithium-ion system is interconnected at Gulf Power's McCrary Training and Storm Center in Pensacola, Florida. This system is the basic unit building block of the Tesla technology and can be used at both the commercial/industrial and utility scale. The project will enable a better understanding of the siting, installation and operational requirements of distribution-scale energy storage systems, as well as the value storage applications can offer customers and the energy provider through peak shaving, demand management, ancillary services, energy arbitrage and backup power.

Residential Energy Storage Demonstration – Gulf Power is demonstrating the Tesla Powerwall residential battery system in two different applications:

1. Photovoltaics with battery storage to evaluate pairing rooftop solar with energy storage.
2. Demand response with battery storage to identify impacts on peak reduction and time-of-use rates.

a. Considerations for future scaling of these projects to utility scale include but are not limited to:
    - Emerging market issues such as warranty, scaling up manufacturing capacity and financial stability of "startup" companies.
    - New technology uncertainty, including validated installation costs, performance, reliability and safety.
    - Implementation standards, including:
        - Guidelines for integration and interconnection

  - Safety protocols for battery systems
  - End-of-life and disposal plans
- Planning framework for systems that can act as both a load, a source, and can provide benefits across the system
- Understanding of the current state of energy storage and conditions under which its use may provide beneficial outcomes with acceptable cost and risk
- Methods and tools that assist stakeholders in making informed decisions when planning, procuring or operating energy storage projects
- Evaluating utility control of distributed battery systems.
- Identifying the value of distributed peak reduction capability.

b. For the McCrary Center Energy Storage Demonstration project, Gulf will update the Commission upon request. A report on the residential power wall energy storage demonstration will be submitted to the Commission in accordance with the Conservation Demonstration and Development (CDD) reporting requirements.

42. 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. If not, please explain.

RESPONSE:

Gulf Power does utilize non-firm generation resources in the form of Solar PV, but it does not currently utilize energy storage technologies to provide firm capacity. Gulf Power, through its coordinated planning process, has not identified energy storage technologies that provide economic value to its customers. As mentioned in Gulf's response to Item No. 41, Gulf Power is currently engaged in research of various energy storage technologies.

43. Please identify and describe any programs you offer that allow your customers to contribute towards the funding of specific renewable projects, such as community solar programs.
    a. Please describe any such programs in development with an anticipated launch date within the next ten years.

RESPONSE:

Gulf Power voluntarily filed and received approval from the FPSC to implement a community solar program. The program would allow customers to pay a subscription fee to participate in the program and receive monthly bill credits for each subscription based on the value of the energy produced by the community solar facility. Gulf has extended the timeline for the development of the community solar project while the team continues to analyze different options and make adjustments necessary to ensure the community solar program ultimately provides the most value possible to participating customers. Gulf continues to assess other opportunities for customers to support renewable energy projects. However, the Company has no definitive plans with respect to the development of one or more programs at this time.

44. Please identify and discuss the Company's role in the research and development of utility power technologies.
    a. Please describe any plans to implement the results of research and development into the Company's system portfolio and discuss how any anticipated benefits will affect your customers.

RESPONSE:

Gulf Power, as a subsidiary of Southern Company, is involved in a range of research activities to facilitate the development of new technologies with the potential to benefit Gulf Power's customer base. Southern Company is an industry leader in the research and development (R&D) of emerging energy technologies, and on behalf of its operating companies, Southern's R&D organization manages a diverse research portfolio. This ensures that Southern Company and its subsidiaries have the capabilities and knowledge to successfully deploy technologies to meet customers' energy needs today and in the future. Current R&D activities can be categorized into several strategic areas, including Generation Fleet; Advanced Energy Systems; Renewables, Storage and Distributed Generation; Transmission and Distribution; and Energy End-Use.

a. Gulf Power works with experts from across the Southern Company system to identify, evaluate and demonstrate future technology options, and quantify their value in anticipation of changing business needs. Results of the R&D program are routinely applied in decision making for the deployment of new technologies into the system's future portfolio.

45. [Investor-owned Utilities Only] Provide, on a system-wide basis, the historical annual average as-available energy rate in the Company's service territory for the period 2008 through 2017. If the Company uses multiple areas for as-available energy rates, please provide a system-average rate as well. Also, provide the forecasted annual average as-available energy rate in the Company's service territory for the period 2018 through 2027.

RESPONSE:

As-Available Energy Rates

Year		As-Available Energy ($/MWh)	On-Peak Average ($/MWh)	Off-Peak Average ($/MWh)
Actual	2008	59.51	71.45	55.53
	2009	36.49	41.42	34.85
	2010	38.96	47.01	36.28
	2011	37.96	45.22	35.53
	2012	27.64	33.56	25.66
	2013	31.37	38.04	29.14
	2014	35.78	44.36	32.91
	2015	25.24	31.67	23.09
	2016	24.39	30.40	22.39
	2017	26.69	31.52	25.08
Projected	2018	27.08	32.84	25.15
	2019	26.96	33.42	24.80
	2020	29.38	36.86	26.88
	2021	30.77	38.35	28.25
	2022	31.84	37.60	29.92
	2023	33.29	41.27	30.62
	2024	35.19	43.63	32.37
	2025	37.76	47.38	34.54
	2026	38.24	47.66	35.10
	2027	40.28	47.57	37.85

46. Please complete the following table detailing planned unit additions, including information on capacity and in-service dates. Please include only planned conventional units with an in-service date past January 1, 2018. For each planned unit, provide the date of the Commission's Determination of Need and Power Plant Siting Act certification (if applicable), and the anticipated in-service date.

RESPONSE:

Planned Unit Additions

Generating Unit Name	Summer Capacity (MW)	Certification Dates (if Applicable)		In-Service Date
		Need Approved (Commission)	PPSA Certified	
Nuclear Unit Additions				
N/A	N/A	N/A	N/A	N/A
Combustion Turbine Unit Additions				
N/A	N/A	N/A	N/A	N/A
Combined Cycle Unit Additions				
Combined Cycle 2	595	Expected in 2020	Expected in 2021	6/1/2024
Steam Turbine Unit Additions				
N/A	N/A	N/A	N/A	N/A

47. For each of the planned generating units contained in the Company's Ten-Year Site Plan, please discuss the "drop dead" date for a decision on whether or not to construct each unit. Provide a time line for the construction of each unit, including regulatory approval, and final decision point.

RESPONSE:

Gulf has evaluated its self-build generation options and is currently planning to construct a dual-fuel 1-on-1 combined cycle (CC) at its North Escambia site with a projected in-service date of June 2024. The installation of Gulf's proposed 1-on-1 CC will require certification under Florida's Power Plant Siting Act (PPSA). Prior to submitting this proposed unit for site certification and FPSC determination of need, Gulf will issue a Request for Proposals (RFP) to solicit potential cost-effective alternatives to the construction of Gulf's proposed CC, including a replacement Purchase Power Agreement. The date for a final decision to construct the 2024 CC facility shown on Schedule 9 of Gulf's 2018 TYSP would follow Gulf receiving final regulatory approvals for its construction. Gulf anticipates this occurring during the 2021 timeframe. At that point, project activities would have to begin to meet the June 2024 in-service date.

48. Please provide an estimate of the revenue requirements of the Company based upon the Ten-Year Site Plan's planned generating units.

RESPONSE:

Gulf's current estimate of the cumulative present value revenue requirements associated with the installed capital cost of the company's next planned generating unit addition, a dual fuel 1-on-1 combined cycle (CC) facility, is $910 million.

49. For each of the planned generating units contained in the Company's Ten-Year Site Plan, please identify the next best alternative that was rejected for each unit. Provide information similar to Schedule 9 regarding each of the next best alternative unit(s). As part of this response, please also provide the additional revenue requirement that would have been associated with the next best alternative compared to the planned unit.

RESPONSE:

Gulf's current estimate of the cumulative present value revenue requirements associated with the installed capital cost of the next best alternative generating unit addition, a combustion turbine (CT) facility, is $472 million.

There is no additional revenue requirement when comparing the revenue requirements associated with capital costs of the CT alternative to the revenue requirements associated with the capital costs of the CC alternative shown in Item 48.

1	PLANT TYPE:	2 - F5 Combustion Turbines, Dual Fuel
2	NET CAPACITY (MW)	458
3	BOOK LIFE (Years):	40
4	IN-SERVICE YEAR:	2024
5	TOTAL INSTALLED COST ('24 $/kW):	[redacted]
6	DIRECT CONSTRUCTION COST ('18 $/kW):	
7	AFUDC AMOUNT ($/kW):	
8	ESCALATION ($/kW):	

50. For each existing and planned unit on the Company's system, provide the following data based upon historic data from 2017 and forecasted capacity factor values for the period 2018 through 2027. Please complete the tables below and provide an electronic copy (in Excel).

RESPONSE:

Projected Unit Information – Capacity Factor (percent)

Plant	Unit #	Unit Type	Fuel Type	Actual	Projected									
				2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Crist	4	ST	BIT	15.5	7.0	3.6	9.2	7.3	16.9	9.9	8.7	0.0	0.0	0.0
Crist	5	ST	BIT	15.8	8.3	11.4	12.6	11.4	5.0	5.3	10.1	12.8	7.8	0.0
Crist	6	ST	BIT	39.2	37.2	37.2	32.8	42.7	35.3	29.9	36.2	29.4	34.7	29.9
Crist	7	ST	BIT	45.4	37.9	45.8	47.8	61.8	45.1	60.5	53.7	68.1	57.8	66.4
Smith	3	CC	NG	90.6	79.6	77.3	79.1	77.5	74.4	71.1	63.7	72.3	67.4	67.3
Smith	A	CT	DFO	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.4
Scherer	3	ST	BIT	42.4	63.6	44.9	64.3	58.8	70.0	62.3	69.7	68.4	74.0	69.0
Daniel	1	ST	BIT	30.1	12.6	17.4	23.4	30.7	26.3	32.9	28.0	35.1	32.0	28.2
Daniel	2	ST	BIT	22.5	15.7	9.9	22.9	23.2	30.6	31.3	33.8	31.8	31.4	34.0
Pea Ridge (1)	1-3	CT	NG	74.8	96.0	96.0	96.0	96.0	96.0	96.0	96.0	26.1	0.0	0.0
Perdido	1-2	IC	LFG	93.2.	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0
Combined Cycle 2	1	GT	NG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.7	78.7	78.2	78.5

Notes

(1) Pea Ridge units operated by industrial customer for steam requirements. Customer supplies natural gas to operate units.

51. For each existing unit on the Company's system, please provide the planned retirement date. If the Company has does not have a planned retirement date for a unit, please provide an estimated lifespan for units of that type and a non-binding estimate of the retirement date for the unit.

RESPONSE:

Gulf has not committed to retirement dates for its remaining units; however, Schedule 1 of Gulf's 2018 Ten Year Site Plan shows expected depreciation retirement dates.

52. Please complete the table below, providing a list of all of the Company's steam units that are potential candidates for repowering to operation as Combined Cycle units. As part of this response, please provide the unit's current fuel type, summer capacity rating, in-service date, and what potential conversion, fuel-switching, or repowering would be most applicable. Also include a description of any major obstacles that could affect repowering efforts at any of these sites, such as unit age, land availability, or other requirements.

RESPONSE:

Repowering Candidate Units - Steam

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date	Potential Conversion	Potential Issues
N/A					
Notes					
Repowering Gulf's existing steam units is currently not economically feasible.					

53. Please identify each of the Company's existing (as of December 31, 2017) and planned (between 2018 through 2027) power purchase contracts, including firm capacity imports reflected in Schedule 7 of the Company's Ten-Year Site Plan. Provide the seller, the term of the contract, amount of seasonal capacity purchased, the primary fuel (if applicable, such as with a unit purchase), whether it is included in the utility's firm peak capacity, and a description of the source of the purchase (such as the name of the unit in a unit purchase).

RESPONSE:

Existing Purchased Power Agreements

Seller	Contract Term		Contract Capacity (MW)		Capacity Factor (1)	Primary Fuel (if any)	Firm Capacity	Description
	Begins	Ends	Summer	Winter	(percent)			
Shell Energy NA	11/02/09	05/24/23	885	885	60.3	NG	885	CC
Morgan Stanley (King I)	01/01/16	12/31/35	178 (2)	178 (2)	43.8	Wind	58 (3)	WT
Morgan Stanley (King II)	02/01/17	12/31/35	94 (2)	94 (2)	44.6	Wind	31 (3)	WT
Gulf Coast Solar Center I	06/07/17	12/31/42	N/A	N/A	23.0	Solar	11 (4)	PV
Gulf Coast Solar Center II	11/18/17	12/31/42	N/A	N/A	22.3	Solar	15 (4)	PV
Gulf Coast Solar Center III	11/07/17	12/31/42	N/A	N/A	21.7	Solar	18 (4)	PV
Bay County Florida	07/23/17	07/22/23	N/A	N/A	64.2	MSW	N/A	ST

Notes

(1) Annual capacity factor based on 2017 actual data. Solar capacity factors based on total energy received since synchronization to grid in 2017.
(2) Gulf's MW portion of facility resulting from the agreement.
(3) MWs scheduled at the system seasonal peak hour per contract obligation to deliver fixed amount per hour as shown on Schedule 7.
(4) Incremental capacity equivalent MWs at the system seasonal peak hour.

Planned Purchased Power Agreements

Seller	Contract Term		Contract Capacity (MW)		Primary Fuel (if any)	Firm Capacity	Description
	Begins	Ends	Summer	Winter			
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

54. Please identify each of the Company's existing (as of December 31, 2017) and planned (between 2018 through 2027) power sales, including firm capacity exports reflected in Schedule 7 of the Company's Ten-Year Site Plan. Provide the purchaser, the term of the contract, amount of seasonal capacity sold, the primary fuel (if applicable, such as with a unit purchase), whether it is included in the utility's firm peak demand, and a description of the sale (such as the name of the unit in a unit purchase).

RESPONSE:

Existing Power Sales

Purchaser	Contract Term		Contract Capacity (MW)		Capacity Factor	Primary Fuel (if any)	Firm Demand	Description
	Begins	Ends	Summer	Winter	(percent)			
Flint Energy	6/01/10	12/31/19	50	50	43.3	BIT	50	Scherer 3
Seminole Electric	6/01/21	12/31/21	14 (1)	14 (1)	N/A (2)	N/A	14	System Sale
Seminole Electric	1/01/22	12/31/22	10 (1)	10 (1)	N/A (2)	N/A	10	System Sale

Notes

(1) Gulf's allocated share of Southern electric system sale to entity.
(2) Dependent upon Seminole's requested energy schedule.

Planned Power Sales

Purchaser	Contract Term		Contract Capacity (MW)		Capacity Factor	Primary Fuel (if any)	Firm Demand	Description
	Begins	Ends	(percent)	Winter	(percent)			
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

RESPONSE:

No long-term power sale or purchase agreements within the past year were cancelled, expired, or modified.

56. Please provide a list of all proposed transmission lines in the planning period that require certification under the Transmission Line Siting Act. Please also include those that have been approved, but are not yet in-service, when completing the table below.

RESPONSE:

Transmission Projects Requiring TLSA Approval

Transmission Line	Line Length (Miles)	Nominal Voltage (kV)	Date Need Approved	Date TLSA Certified	In-Service Date
None identified at this time	N/A	N/A	N/A	N/A	N/A
Notes					
No proposed transmission lines required to interconnect Gulf's planned CC have been determined to require certification under the Transmission Line Siting Act.					

Environmental

57. 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 2017 period. As part of your narrative, please discuss the potential for existing environmental regulations to impact unit dispatch, curtailments or retirements during the 2018 through 2027 period.

RESPONSE:

During 2017, Gulf incurred incremental O&M expenses to maintain emission control equipment, along with additional capital expenditures related to the Plant Crist Units 6 and 7 Selective Catalytic Reduction (SCRs), the Scherer Unit 3 SCR and scrubber, the scrubbers at Plant Crist and Plant Daniel, and low NOx burner systems. Gulf also continued the substation remediation project to further reduce soil and groundwater impacts.

During planned and maintenance outages, routine maintenance and/or inspection of environmental controls occur. In addition, there were planned outages at these facilities in 2017 specifically related to environmental controls. At Plant Crist, planned outages for the Crist scrubber duct occurred in September and November requiring all units offline. Also, Plant Crist Units 4 and 5 had a planned outage for cold precipitator work in the fall. Plant Daniel Unit 1 had a brief maintenance outage for scrubber duct work in the summer. During the 2018 through 2027 period, planned outages are expected for the Crist, Daniel and Scherer scrubbers.

Please refer to Gulf's 2018 Ten Year Site Plan Environmental Compliance section beginning at page 55 for a more detailed update on existing regulations that may impact Gulf's generating units.

58. Please provide the amount of regulated air pollutants and carbon dioxide emitted, on an annual and per megawatt-hour basis, by the Company's generation fleet during the period 2008 through 2027. Please complete the table below and provide an electronic copy (in Excel).

RESPONSE:

Emissions of Registered Air Pollutants & CO2

Year		SOX		NOX		Mercury		Particulates		CO2	
		lb/ MWh	Tons	lb/MWh	Tons	lb/MWh	Tons	lb/ MWh	Tons	lb/ MWh	Tons
Actual	**2008**	10.30	75,757	2.57	18,944	0.000040	0.26	0.19	1,429	2,083	15,322,494
	2009	8.80	55,478	1.91	12,073	0.000040	0.26	0.27	1,733	1,893	11,938,495
	2010	4.67	31,228	2.31	15,453	0.000020	0.15	0.19	1,240	2,119	14,175,950
	2011	2.69	16,034	1.67	9,933	0.000010	0.08	0.18	1,082	1,945	11,596,508
	2012	2.09	9,954	1.49	7,119	0.000010	0.06	0.18	859	1,817	8,662,775
	2013	3.04	12,518	1.76	7,254	0.000010	0.05	0.19	768	2,092	8,602,245
	2014	3.34	18,363	1.61	8,855	0.000012	0.06	0.18	966	1,889	10,396,979
	2015	2.13	9,098	1.37	5,847	0.000009	0.04	0.08	323	1,800	7,685,281
	2016	0.36	1,475	1.18	4,806	0.000004	0.01	0.07	278	1,839	7,510,351
	2017	0.16	738	1.20	5,510	0.000004	0.02	0.08	361	1,732	7,974,767
Projected	**2018**	0.67	2,786	0.96	3,997	0.000005	0.02	0.08	328	1,661	6,948,179
	2019	0.76	3,228	0.93	3,940	0.000005	0.02	0.08	332	1,668	7,070,177
	2020	0.74	3,437	1.00	4,632	0.000004	0.02	0.08	364	1,640	7,600,309
	2021	0.86	4,301	0.99	4,985	0.000004	0.02	0.08	394	1,678	8,421,062
	2022	0.81	3,866	1.07	5,082	0.000004	0.02	0.08	373	1,681	7,985,041
	2023	0.86	4,130	1.06	5,108	0.000004	0.02	0.08	378	1,699	8,179,410
	2024	0.88	4,227	1.14	5,449	0.000004	0.02	0.08	375	1,749	8,363,191
	2025	0.87	4,517	1.07	5,576	0.000004	0.02	0.08	407	1,710	8,874,699
	2026	0.86	4,295	1.11	5,571	0.000004	0.02	0.08	393	1,725	8,633,418
	2027	0.88	4,370	0.76	3,768	0.000004	0.02	0.08	391	1,722	8,578,912

Notes

2008-2017 emissions data for Crist, Smith, Scholz, ownership portion of Scherer and Daniel.
All emissions reported as short tons for the generating units at each location

59. For the U.S. Environmental Protection Agency's (EPA's) Mercury and Air Toxics Standards (MATS) Rule:
    a. Will your company be materially affected by the rule?
    b. What compliance strategy does the company anticipate employing for the rule?
    c. If the strategy has not been completed, what is the company's timeline for completing the compliance strategy?
    d. Will there be any regulatory approvals needed for implementing this compliance strategy? How will this affect the timeline?
    e. Does the company anticipate asking for cost recovery for any expenses related to this rule? Please complete the following chart regarding MATS related costs:

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

RESPONSE:

Year	Estimated Cost of Mercury and Air Toxics Standards (MATS) Rule Impacts (2018 $ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2018	1.90	5.37	N/A	7.28
2019	2.32	6.43	N/A	8.75
2020	1.36	6.19	N/A	7.54
2021	1.60	6.65	N/A	8.25
2022	0.88	6.79	N/A	7.66
2023	1.58	6.93	N/A	8.51
2024	1.22	7.08	N/A	8.29
2025	1.81	7.22	N/A	9.03
2026	0.51	7.37	N/A	7.88
2027	0.98	7.53	N/A	8.51

a. Yes.

b. The Company has completed necessary projects to comply with the MATS rule.

c. The MATS strategy is complete.

d. No additional regulatory approvals will be needed.

e. The FPSC has approved cost recovery of Gulf's MATS compliance costs. Gulf will continue to seek Environmental Cost Recovery Clause (ECRC) recovery of MATS compliance costs as Gulf continues to comply with the rule. The projected 2018-2027 MATS related costs are included in the table provided.

60. For the U.S. EPA's Cross-State Air Pollution Rule (CSAPR) Rule:
    a. Will your company be materially affected by the rule?
    b. What compliance strategy does the company anticipate employing for the rule?
    c. If the strategy has not been completed, what is the company's timeline for completing the compliance strategy?
    d. Will there be any regulatory approvals needed for implementing this compliance strategy? How will this affect the timeline?
    e. Does the company anticipate asking for cost recovery for any expenses related to this rule? Please complete the following chart regarding CSAPR related costs:

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

RESPONSE:

Year	Estimated Cross-State Air Pollution Rule (CSAPR) Rule Impacts (2018 $ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2018	N/A	0.00	N/A	0.00
2019	N/A	0.00	N/A	0.00
2020	N/A	0.04	N/A	0.04
2021	N/A	0.08	N/A	0.08
2022	N/A	0.08	N/A	0.08
2023	N/A	0.10	N/A	0.10
2024	N/A	0.10	N/A	0.10
2025	N/A	0.11	N/A	0.11
2026	N/A	0.10	N/A	0.10
2027	N/A	0.10	N/A	0.10

a. Yes. In October 2016, the EPA published a final rule that updates the CSAPR ozone-season NOx program, establishing more stringent ozone-season emissions budgets in Mississippi and removing Florida from the program. The State of Georgia's emission budget was not affected by the revisions, but Georgia's CSAPR interstate emissions trading is restricted. Georgia is also in the CSAPR annual SO2 and NOx programs.

b. With Florida removed from the CSAPR program, no strategy is required for Gulf's units in Florida. Plant Scherer Unit 3 is expected to have sufficient allocated allowances needed for CSAPR compliance. For the new, updated CSAPR requirements, Plant Daniel Units 1 and 2 have reduced allocations and the current compliance strategy includes utilizing banked allowances and purchasing additional allowances as needed.

c. Gulf has completed compliance for the current CSAPR strategy.

d. No additional regulatory approvals are expected related to CSAPR at this time.

e. Yes. Gulf will continue recovery of ongoing CSAPR related costs through the ECRC. See the table provided above for CSAPR costs.

61. For the U.S. EPA's Cooling Water Intake Structures Rule (CWIS) Rule:
    a. Will your company be materially affected by the rule?
    b. What compliance strategy does the company anticipate employing for the rule?
    c. If the strategy has not been completed, what is the company's timeline for completing the compliance strategy?
    d. Will there be any regulatory approvals needed for implementing this compliance strategy? How will this affect the timeline?
    e. Does the company anticipate asking for cost recovery for any expenses related to this rule? Please complete the following chart regarding CWIS related costs:

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

RESPONSE:

Year	Estimated Cost of Cooling Water Intake Structures Rule (CWIS) Rule Impacts (2018 $ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2018	0.00	0.17	0.00	0.17
2019	0.00	0.19	0.00	0.19
2020	2.10	0.07	0.00	2.17
2021	0.00	0.03	0.00	0.03
2022	0.00	0.01	0.00	0.01
2023	0.00	0.00	0.00	0.00
2024	0.20	0.00	0.00	0.20
2025	5.26	0.00	0.00	5.26
2026	0.00	0.00	0.00	0.00
2027	0.00	0.00	0.00	0.00

a. Yes.

b. The compliance strategy for 316(b) or the (CWIS) Rule includes site specific biological and/or engineering design studies required to determine the Best Technology Available (BTA) for modifications that may be required for existing cooling water intake structures. Although the ultimate 316(b) compliance strategy and design will be approved by the State environmental permitting agencies, with possible input from the U.S. Fish and Wildlife Service and National Marine Fisheries Service (Services) and EPA. Gulf Power's current compliance strategy for Units 4 and 5 includes replacing the existing screens with traveling screens with a fish return system and is subject to change.

Scherer Unit 3, Crist Units 6 and 7, and Smith 3 are already 316(b) compliant with closed-cycle cooling towers. Closed-cycle cooling tower monitoring systems are currently installed for Scherer Unit 3 and are projected to be required for Crist Units 6 and 7 and Smith Unit 3. The required 316(b) studies and associated reports will provide the information required to identify the site specific Best Technology Available (BTA) determination and will ultimately have to be approved by the State environmental permitting agencies. Therefore, Gulf's planning assumptions are subject to change.

The Smith combined cycle unit (Unit 3) intake is located in the discharge canal of Units 1 and 2. The Plant Smith 316(b) strategy includes replacing the existing plant intake pumps with new lower capacity pumps. Plant Daniel has a closed cycle cooling system that is expected to meet 316(b) requirements; therefore, very little impact is anticipated for 316(b) compliance at this time. Source waterbody studies are being completed and will be submitted with the next industrial wastewater permit revision.

c. Due to the previously mentioned requirements for biological and engineering studies, state regulatory agency approval, and input from the Services, the compliance strategy is not yet final. Gulf Power intends to submit the required reports and information in 40 CFR 122.21(r)(2) through (12), consistent with provisions of the Company's National Pollution Discharge Elimination System (NPDES) permit supporting the BTA decisions made for the operating units with the permit renewal application scheduled for submittal 180 days prior to each facility's permit expiration. Gulf would then implement the determined BTA on a timeline that would be set by the State in the permit renewal. Gulf is currently in the process of renewing the Plant Crist industrial wastewater permit. The Scherer permit application was recently submitted, while the Plant Smith and Plant Daniel permits are scheduled to be renewed in the 2019-2020 timeframe.

d. Yes. Gulf plans to seek recovery of capital costs associated with 316(b) compliance once the final strategy and requirements are determined by State permitting agencies through the Environmental Cost Recovery Clause. As mentioned previously, the State environmental permitting agencies will incorporate the approved compliance option into the permits with input from the Services.

e. Yes. See the table provided.

62. For the U.S. EPA's Coal Combustion Residuals Rule (CCR), both for classification of coal ash as a "Non-Hazardous Waste" and as a "Special Waste".
    a. Will your company be materially affected by the rule?
    b. What compliance strategy does the company anticipate employing for the rule?
    c. If the strategy has not been completed, what is the company's timeline for completing the compliance strategy?
    d. Will there be any regulatory approvals needed for implementing this compliance strategy? How will this affect the timeline?
    e. Does the company anticipate asking for cost recovery for any expenses related to this rule? Please complete the following chart regarding CCR related costs:

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

RESPONSE:

Year	Estimated Coal Combustion Residuals Rule (CCR) Impacts (2018 $ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2018	37.04	11.95	N/A	48.99
2019	11.75	1.60	N/A	13.35
2020	8.31	2.17	N/A	10.47
2021	14.79	3.84	N/A	18.64
2022	3.75	3.92	N/A	7.67
2023	1.50	4.00	N/A	5.50
2024	0.00	4.08	N/A	4.08
2025	0.00	4.17	N/A	4.17
2026	0.00	4.26	N/A	4.26
2027	0.00	4.35	N/A	4.35

a. Yes.

b. The CCR Rule which became effective in October 2015, regulates the disposal of CCR, including coal ash and gypsum, as non-hazardous solid waste in CCR Units at active generating power plants. The CCR Rule requires CCR Units to be evaluated against a set of performance criteria and potentially closed if minimum criteria are not met. Closure of existing CCR units will require installation of equipment and infrastructure to manage CCR in accordance with the rule. The EPA has issued a proposal to reconsider certain portions of the CCR rule to be finalized no later than December 2019, which could result in changes to

deadlines and corrective action requirements. The EPA's reconsideration of the CCR rule is due, in part, to a legislative development that impacts the potential oversight role of state agencies. Under the Water Infrastructure Improvements for the Nation Act, which became law in 2016, states are allowed to establish permit programs for implementing the CCR rule.

The Company has posted documents to its public website as required by the CCR rule; however, the ultimate impact of the CCR Rule will depend on the results of initial and ongoing minimum criteria assessments and the implementation of state or federal permit programs.

As further analysis is performed, including evaluation of the expected method of compliance, refinement of assumptions underlying the cost estimates, such as the quantities of CCR at each site, and the determination of timing with respect to compliance, the Company expects to continue to periodically update cost estimates and schedules for the CCR compliance activities.

Gulf Power submitted the Plant Smith closure plan to FDEP on May 31, 2016, and received approval of a closure plan on August 19, 2016. Earlier this year, Gulf began construction of the Plant Smith industrial wastewater/reclaimed water pond. During 2018, Gulf plans to proceed with construction and associated activities to close a portion of the ash pond. The Smith pond closure includes construction of industrial wastewater ponds and a slurry wall as well as transferring CCR material upland to a dry stack area within the footprint of the pond and capping the dry stack area with closure turf material.

The Plant Scherer ash pond is scheduled to cease operations and stop receiving coal ash in 2019. To prepare for ash pond closure, work is currently being performed to prepare for construction of Cell 3 of the on-site landfill to accommodate ash storage. Cell 2 of the existing on-site landfill will be constructed in the future to provide for additional ash and/or gypsum storage capacity. Additionally, site characterization of a new landfill is scheduled to begin in 2018 or 2019 to provide additional storage capacity for CCR. Phase 1 of the new landfill includes siting, engineering, permitting, and construction of a landfill cell intended to provide at least five years of storage capacity. The construction timeline of the new landfill may be revised based on CCR storage capacity needs of the plant.

The Plant Scholz CCR requirements are addressed through the plant's NPDES permit issued by the FDEP. Gulf Power submitted the Plant Scholz closure plan to FDEP on May 26, 2016, and received approval of a closure plan on August 26,

2016. Gulf Power also received the final issuance of the NPDES permit substantial revision on May 18, 2017. Gulf Power has constructed a slurry wall and industrial wastewater treatment pond, and has moved forward with a wastewater treatment system and other remaining activities required for closure.

c. Gulf Power will be completing the compliance strategy in conformance with the new CCR rule as listed in 40 CFR Parts 257 and 261. Implementation of the compliance strategy will continue throughout the life of the plants. In addition, post closure care and monitoring are required by the new rule after closure of the CCR units subject to the rule. The timeline for proposed CCR pond closures is addressed in response to Item 62(b).

d. State regulatory approvals will be needed for several CCR projects.

e. Yes. Gulf has received FPSC approval of recovery of prudently incurred CCR costs through the Environmental Cost Recovery Clause. Gulf includes the Plant Crist Gypsum Storage Area and Landfills, Plant Daniel and Plant Scherer CCR pond closure costs in Gulf's dismantlement accrual that will be updated and addressed in future proceedings. See the table provided for cost information.

63. For the U.S. EPA's Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units Rule:
    a. Will your company be materially affected by the rule?
    b. What compliance strategy does the company anticipate employing for the rule?
    c. If the strategy has not been completed, what is the company's timeline for completing the compliance strategy?
    d. Will there be any regulatory approvals needed for implementing this compliance strategy? How will this affect the timeline?
    e. Does the company anticipate asking for cost recovery for any expenses related to this rule? Please complete the following chart regarding costs:

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

RESPONSE:

Year	Estimated Cost of Standards of Performance for Greenhouse Gas Emissions Rule for New Sources Impacts (2018 $ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2018	N/A	N/A	N/A	N/A
2019	N/A	N/A	N/A	N/A
2020	N/A	N/A	N/A	N/A
2021	N/A	N/A	N/A	N/A
2022	N/A	N/A	N/A	N/A
2023	N/A	N/A	N/A	N/A
2024	N/A	N/A	N/A	N/A
2025	N/A	N/A	N/A	N/A
2026	N/A	N/A	N/A	N/A
2027	N/A	N/A	N/A	N/A

a. The current 111(b) rule or New Source CO_2 Performance Standards does not materially affect new natural gas simple-cycle or new combined-cycle units. In response to the March 2017 Presidential Executive Order on Promoting Energy Independence and Economic Growth, EPA requested the D.C. Circuit Court to hold the 111(b) litigation in abeyance. In August 2017, the D.C. Circuit Court issued abeyance for the 111(b) litigation, pending further order of the court. EPA is required to file periodic status reports through which the Agency has indicated that it is reviewing the rule. The ultimate outcome of EPA's review and any related rulemaking action cannot be determined at this time.

b-e. Please see the response to question 63a.

64. Please identify, 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. As part of this response, please also indicate the unit's name, type, fuel type, and net summer generating capacity. Please complete the table below and provide an electronic copy (in Excel).

RESPONSE:

Estimated Impacts of EPA's Rules on Generating Units

Unit	Unit Type	Fuel Type	Net Sum Capacity (MW)	Type of EPA Rule Impacts					Anticipated Impacts
				MATS	CSAPR/ CAIR	CWIS	CCR		
							Non-Hazardous Waste	Special Waste	
Crist 4	FS	Coal	75	(A)	(B)	Potential intake screen modifications	Ongoing groundwater monitoring requirements	N/A	None
Crist 5	FS	Coal	75					N/A	None
Crist 6	FS	Coal	299			(C)		N/A	None
Crist 7	FS	Coal	475					N/A	None
Smith 1&2	Retired	Retired	Retired	Retired	Retired	Retired	Pond closure, CCR wastewater management, groundwater monitoring	N/A	None
Smith A	CT	Oil	32	N/A	N/A	N/A	N/A	N/A	None
Smith 3	CC	NG	556	N/A	N/A	(D)	N/A	N/A	None
Scholz 1&2	Retired	Retired	Retired	Retired	Retired	Retired	Pond Closure, wastewater management	N/A	None
Daniel 1	FS	Coal	255	Scrubber, ACI and Bromine Injection added for MATS	No additional controls required, allowances will be purchased as needed	Units have existing closed cycle cooling system	Pond Closure CCR ash and wastewater management	N/A	None
Daniel 2	FS	Coal	255					N/A	None
Scherer 3	FS	Coal	215	(E)	(F)	(G)	Pond closure, new CCR, landfill, CCR ash and wastewater management	N/A	None

Notes

(A) No additional controls required due to co-benefits of existing SCRs and existing Scrubber
(B) No additional controls required due to existing SCRs, SNCR, and existing scrubber
(C) Units have closed cycle cooling, projected need for closed cycle cooling monitors
Crist 6 and 7 normally operate on reclaimed water.
(D) Options currently projected includes pump replacements
(E) No additional controls required due to co-benefits of existing scrubber, SCR, baghouse and activated carbon
(F) No additional controls required due to existing SCRs and existing scrubber
(G) Units have closed cycle cooling and closed cycle cooling monitors

65. Please identify, 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. As part of this response, please indicate the unit's name, type, fuel type, and net summer generating capacity. Please complete the table below and provide an electronic copy (in Excel).

RESPONSE:

Estimated Unit Cost of EPA's Rules

Unit	Unit Type	Fuel Type	Net Sum Capacity (MW)	Estimated Cost of EPA Rules Impacts (2018 $ millions)					
				MATS	CSAPR/ CAIR	CWIS	CCR		Total Cost
							Non-Hazardous Waste	Special Waste	
Crist 4&5	Base	Coal	150	N/A	N/A	5.56	0.16	N/A	5.72
Crist 6&7	Base	Coal	774	N/A	N/A	0.20	0.89	N/A	1.09
Smith 1&2	Retired	Retired	Retired	N/A	N/A	N/A	73.77	N/A	73.77
Smith 3	Intermediate	Gas	556	N/A	N/A	2.13	N/A	N/A	2.13
Scholz	Retired	Retired	Retired	N/A	N/A	0.05	18.30	N/A	18.35
Daniel 1&2	Base	Coal	510	45.84	0.73	N/A	0.88	N/A	47.45
Scherer 3	Base	Coal	215	35.88	N/A	0.05	25.17	N/A	61.10
Common	N/A	N/A	N/A	N/A	N/A	N/A	2.31	N/A	2.31

Notes

1. The ash pond closure at Plant Smith will be bid in the near future. CCR estimates are based on preliminary engineering estimates, updated cost will be available after bidding.
2. Scherer 3 and Daniel 1&2 reflected above are based on Gulf's ownership portion.
3. CCR costs for Plant Crist are allocated by megawatt.

66. Please identify, 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. Please complete the table below and provide an electronic copy (in Excel).

RESPONSE:

Estimated Timing of Unit Impacts of EPA's Rules

Unit	Unit Type	Fuel Type	Net Sum Capacity (MW)	Estimated Timing of EPA Rule Impacts (Month/Year - Duration)				
				MATS	CSAPR/ CAIR	CWIS[1]	CCR	
							Non-Hazardous[2] Waste	Special Waste
Daniel 1-2	Base	Coal	510	No additional future work anticipated		Units have existing closed cycle cooling system	Pond closure timing to be determined	N/A
Crist 4-5	Base	Coal	150			Implementation 2025, outage times to be determined	Ongoing compliance activities	N/A
Crist 6-7	Base	Coal	774			Units have closed cycle cooling tower; projected need for closed cycle cooling monitors		N/A
Smith 1-2	Units retired March 2016						2017-2023 pond closure design and implementation	N/A
Smith 3	Intermediate	Gas	556	No additional future work anticipated		Unit 3 has a cooling tower and closed cycle cooling; New lower capacity intake pumps may be required for backup water source; Closed cycle cooling monitors will be required	N/A	N/A
Scholz 1-2	Units retired April 2015						2017-2019 pond closure with ongoing compliance monitoring	N/A
Scherer 3	Base	Coal	215	No additional future work anticipated		Units have closed cycle cooling tower and closed cycle cooling monitors	Projected pond closure by 2031	N/A

Notes

1. Dates dependent on NPDES permit issuance.
2. Estimated dates due to permit issuance.

67. Explain any expected reliability impacts resulting from each of the EPA Rules listed below. As part of your explanation, please discuss the impacts of transmission constraints and units not modified by the Rule, that may be required to maintain reliability if unit retirements, curtailments, additional emissions control upgrades, or longer outage times due to each of these EPA Rules.
    a. Mercury and Air Toxics Standards (MATS) Rule.
    b. Cross-State Air Pollution Rule (CSAPR).
    c. Cooling Water Intake Structures Rule (CWIS).
    d. Coal Combustion Residuals Rule (CCR).
    e. Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units.

RESPONSE:

a. Gulf completed transmission upgrades in 2015 that were needed to address forecasted reliability impacts at Plant Crist and Plant Smith due to the new MATS regulation. At this time, no future reliability impacts are anticipated for MATS.

b. No reliability impacts are currently expected from the CSAPR.

c. Based on the Company's review of the CWIS regulation, no reliability issues are currently anticipated.

d. There are no expected reliability impacts resulting from the CCR rule.

e. The current 111(b) rule or New Source CO2 Performance Standards does not materially affect new natural gas simple-cycle or new combined-cycle units. In response to the March 2017 Presidential Executive Order on Promoting Energy Independence and Economic Growth, EPA requested the D.C. Circuit Court to hold the 111(b) litigation in abeyance. In August 2017, the D.C. Circuit Court issued abeyance for the 111(b) litigation, pending further order of the court. EPA is required to file periodic status reports through which the Agency has indicated that it is reviewing the rule. The ultimate outcome of EPA's review and any related rulemaking action cannot be determined at this time.

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

RESPONSE:

The SCRs and SNCRs previously installed for NOx emission reduction as part of Gulf's Air Quality Compliance Program may assist with potential future NAAQS and CSAPR regulations.

The use of the approved Underground Injection Control (UIC) systems for the scrubber project at Plant Crist and reclaimed water project at Plant Smith will help reduce costs for future regulations such as CCR. The program also has the potential to mitigate costs for other proposed federal regulations.

69. What steps has your Company taken, is currently taking, or is planning to take to address curbing carbon dioxide emissions for existing sources? How has your Company addressed the ruling by the U.S. Supreme Court that carbon dioxide is a pollutant under the Clean Air Act? How does your Company plan on addressing carbon dioxide emissions from existing sources during the ten-year site planning period?

RESPONSE:

Gulf Power recognizes that future operating environments may include additional CO_2 regulatory constraints. When assessing the future viability of its existing generating resources, Gulf Power considers varying views of CO_2 pressure, typically represented as a per-metric ton price on CO_2 emissions. Gulf Power evaluates the impacts of varying potential stringencies of future CO_2 pressure on existing generating resource operations to determine how long into the future existing generation resources should continue to operate.

Litigation associated with EPA's final CO_2 emission guidelines for exiting sources is currently under a temporary abeyance by the D.C. Circuit Court while the Agency reviews the final guidelines. EPA has subsequently proposed, in October 2017, to repeal the final guidelines and has announced they are working on a new rule. Given the uncertainty associated with EPA's review and any related rulemaking action, Gulf Power cannot establish a compliance plan for CO_2 at this time.

Fuel Supply & Transportation

70. Please provide, 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 period 2008 through 2017. 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 period 2018 through 2027. As part of this response, please complete the table below.

RESPONSE:

(A) (B) (C) (D) (E) (F)

Average Fuel Price Comparison

	Year	Uranium		Coal		Natural Gas		Residual Oil		Distillate Oil	
		GWh	$/ MMBTU	GWh	$ /MMBTU	GWh	$/ MMBTU	GWh	$/ MMBTU	GWh	$/ MMBTU
Actual	2008	N/A	N/A	12,334	3.30	2,428	10.77	N/A	N/A	1	19.91
	2009	N/A	N/A	8,871	3.77	4,024	4.85	N/A	N/A	0	13.73
	2010	N/A	N/A	10,531	4.64	4,805	6.10	N/A	N/A	0	16.04
	2011	N/A	N/A	8,090	4.46	7,195	4.93	N/A	N/A	1	22.37
	2012	N/A	N/A	5,391	4.18	10,517	3.68	N/A	N/A	1	22.16
	2013	N/A	N/A	5,602	3.60	8,834	4.67	N/A	N/A	1	22.27
	2014	N/A	N/A	7,394	3.69	8,207	5.02	N/A	N/A	1	21.16
	2015	N/A	N/A	4,876	3.47	7,787	3.60	N/A	N/A	1	16.01
	2016	N/A	N/A	4,697	3.21	8,724	3.38	N/A	N/A	1	12.31
	2017	N/A	N/A	4,973	2.83	8,983	3.60	N/A	N/A	1	12.92
Projected	2018	N/A	N/A	4,193	[redacted]	9,310	[redacted]	N/A	N/A	1	[redacted]
	2019	N/A	N/A	4,228		9,406		N/A	N/A	1	
	2020	N/A	N/A	5,232		9,562		N/A	N/A	1	
	2021	N/A	N/A	6,103		9,276		N/A	N/A	1	
	2022	N/A	N/A	5,514		8,577		N/A	N/A	1	
	2023	N/A	N/A	5,987		5,372		N/A	N/A	1	
	2024	N/A	N/A	5,993		5,023		N/A	N/A	1	
	2025	N/A	N/A	6,427		7,809		N/A	N/A	1	
	2026	N/A	N/A	6,155		7,520		N/A	N/A	1	
	2027	N/A	N/A	6,205		7,527		N/A	N/A	1	

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

RESPONSE:

Commodity fuel price forecasts are received from recognized independent consulting firms for natural gas, oil, and coal. Forecasts from independent consulting firms recently reviewed include the following:

- Domestic and Import Coals - Energy Ventures Analysis (EVA), Inc., Wood McKenzie
- Natural Gas, Oil and LNG – Energy Ventures Analysis (EVA), Inc., BTU Analytics, LLC

Southern Company Services (SCS) develops short-term (current year +2) and long-term (year 4 and beyond) fuel price forecasts for coal, oil, and natural gas which extend through the Company's 10-year planning horizon. The short-term forecasts are used in the system's fuel budgeting process and marginal pricing dispatch procedures. Comparisons of the fuel price forecasts are made against each fuel price forecast of the consulting firms listed above to gain information about fuel markets.

72. Please identify and discuss expected industry trends and factors for each fuel type (coal, natural gas, nuclear fuel, oil, etc.) that will affect the Company during the period 2018 through 2027.
    a. Coal
    b. Natural Gas
    c. Nuclear (if applicable)
    d. Fuel Oil
    e. Other (please specify each, if any)

RESPONSE:

a. Coal - Fuel price forecasts are used for a variety of purposes within the Company, including long-term generation planning. The most pressing industry factors expected to affect the Company and the coal industry are low natural gas prices, environmental pressures and renewable legislation. Also, the impact of such factors on coal prices, electricity prices, and electricity demand will be of much importance. Other trends that may affect the Company are the global demand for coal and coal production costs, both of which affect coal market prices and financial viability of coal suppliers. The Company closely monitors potential future impacts and will adjust to meet regulatory requirements.

b. Natural Gas – The natural gas long-term outlook is dependent on five significant uncertainties: (1) the possibility for increased gas demand in the electric sector due to EPA regulations that results in more gas generation over other technologies; (2) the level of increased gas demand in the industrial/commercial/residential and transportation sectors; (3) higher demand due to the exportation of gas to other countries; (4) the potential for the reduction in supply due to the reduction in drilling of shale gas because of regulations on fracking and regulatory concerns on other issues from gas drilling and production (water and air); and (5) the build-out of gas pipeline infrastructure necessary to keep pace with gas supply from new and evolving basins.

c. Nuclear – Not applicable for Gulf during the 2018-2027 time-frame.

d. Fuel Oil – Oil is primarily used as a lighter fuel, but oil generation is possible for peaking units during the 2018-2027 timeframe for Gulf. Some of the major factors that could affect oil price and supply over the short-term and long-term are the OPEC oil production policy, economic growth in developing economies (China is the world's second largest consumer of oil; India is third), U.S. shale oil output, geopolitical moves in oil producing regions, more economically viable alternatives to fossil fuels, potential action on climate change, and future technological innovations in the industry.

e. Other – Not applicable for Gulf during the 2018-2027 time-frame.

73. Please identify and discuss steps that the Company has taken to ensure natural gas supply availability and transportation over the 2018 through 2027 planning period.

RESPONSE:

The Company purchases gas supply on a spot and contract basis from a variety of supply locations, including on-shore mid-continent production, Appalachian production, Gulf of Mexico production, and LNG, which ensures a diverse gas supply mix both currently and in the future. The Company has also contracted for firm transportation on several different gas pipelines under long term service agreements ensuring the ability to deliver gas supply to its electric generation facilities. Additionally, the Company uses firm natural gas storage primarily to ensure that the natural gas plants in its fleet will receive gas in the event of a supply disruption.

74. Please identify and discuss any existing or planned natural gas pipeline expansion project, including new pipelines and those outside of the State of Florida, that would affect the Company for the period 2018 through 2027.

RESPONSE:

Transco's Dalton Expansion came online in July 2017. This expansion increases Transco's pipeline capacity by 448,000 MMBtu/day and provides another outlet for the significant Marcellus shale gas supplies to Southeast markets. Another Transco expansion, Atlantic Sunrise Project, will increase Transco's pipeline capacity by 1,700,000 MMBtu/day to deliver Marcellus shale supplies to Mid-Atlantic and Southeast markets. The mainline facilities of this project were placed in service in September 2017 with the remaining facilities expected to be in service during mid-2018. Additionally, Transco has filed an application with Federal Energy Regulatory Commission (FERC) seeking authorization for its proposed Southeastern Trail Expansion Project. This project will expand their system from Zone 5 to Zone 3. Long-term binding precedent agreements with customers have been executed. The target in-service date is for the 2020-2021 winter heating season.

The Southern Natural Gas (SNG)/Elba Express (EEC) Expansion Project was placed in service December 1, 2016. This expansion provides additional access to Marcellus shale gas that can supply gas into FGT in the Jacksonville, Florida area.

Sabal Trail Transmission, a joint venture of Enbridge, NextEra Energy and Duke Energy, completed its Phase I facilities in July 2017 to serve power generation needs to Florida Power and Light (FPL) and Duke Energy of Florida. The pipeline originates in southwestern Alabama and transports natural gas to Georgia and Florida. It terminates at the Central Florida Hub, where it interconnects with the new Florida Southeast Connection. This project has the potential to add more capacity to serve the Company's facilities.

The Florida Gas Transmission (FGT) East-West Project received FERC authorization in April 2018 to modify facilities in East Texas and Louisiana that will create east to west flows in those areas to serve demand in the U.S. Gulf Coast where exports of LNG are growing. The Project provides for 275,000 MMBtu/day of new pipeline capacity with an anticipated in-service date in 2018. In 2017, FGT also completed a new interconnection with Florida Public Utilities (FPU) in Escambia County, Alabama to provide up to 68,500 MMBtu/day of new firm transportation. This project is within FGT's Western Division and near the Company's facilities.

75. 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, for the period 2018 through 2027.

RESPONSE:

There are currently over 20 proposed LNG export projects in the U.S. Of these projects, it is projected that few will be built. The first facility, Cheniere Energy's Sabine Pass terminal, began operations in December 2015. The Cove Point LNG terminal began commercial deliveries in April 2018. Since then, these two facilities set a single day record 4 Bcf/day of total US LNG exports. According to Platts, when four additional LNG terminals under construction are placed in-service by mid-2019, total US LNG export capacity will reach 8.9 Bcf/day. Strong global gas prices supported strong LNG exports during Winter 2017-2018. Future prices are anticipated to be lower thus impacting the construction of future LNG projects. However, the gas industry has shown an ability to increase production to support new demand. The gas price may be impacted by the additional demand from new LNG projects but the extent of any gas price increases is dependent on the gas industry increasing gas supply necessary to support the amount of LNG exports.

76. Please identify and discuss the Company's plans for the use of firm natural gas storage for the period 2018 through 2027.

RESPONSE:

The Company has contracted for natural gas storage with three different facilities during the 2018 through 2027 time period. The amount of contracted storage is 17 Bcf for the period. The Company uses firm natural gas storage primarily to ensure that the natural gas plants in its fleet will receive gas in the event of a supply disruption.

77. 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 period 2018 through 2027. Please include a discussion of actions taken by the Company to promote competition among coal transportation modes, as well as expected changes to terminals and port facilities that could affect coal transportation.

RESPONSE:

Competition within and among coal transportation modes can be achieved where infrastructure exists to allow such competition. This competition can exist through multiple transportation mode access either directly to the generating plant site where the coal is ultimately burned or an intermediate point such as a transloading facility. To achieve this competition, the Company attempts to identify a variety of coal sources acceptable for use at the generating plant. Through a request for proposal process, each coal supply is economically evaluated based on total delivered cost to the plant site. In the Company's case, most coals can ship via truck, rail, river barge, or ocean vessel to an intermediate point for transloading into barges, railcars, or truck for final delivery to the plants by barge. This transloading point could be on the Ohio River, Mississippi River, or points along the Intracoastal Waterway such as Mobile, AL. When a coal source has been identified, and that source can be accessed by multiple transportation modes, Gulf Power, through the negotiation process, communicates that transportation providers are competing with other modes to help ensure competitive bids from those providers.

At many locations, transportation mode competition is either not cost effective or physically not possible due to a lack of infrastructure. This infrastructure (rail tracks, navigable waterways, railcar or barge unloaders, acceptable roads for heavy truck traffic, etc.) may be more expensive to build than projected savings from competition would justify. Infrastructure upgrade projects can often require multi-year contract commitments depending on the transportation mode and can be challenged by the uncertainty of plant burn. In many cases, infrastructure cannot be built due to objections from the local community, such as building a rail line through a national forest, dredging a river system considered environmentally sensitive, or trucking coal through a residential neighborhood and past schools. However, there have been cases where building infrastructure was cost effective and physically possible. While few in number, in those cases Southern Company has built the transportation infrastructure needed to develop competition.

With regulatory pressure on the coal industry, the railroads are re-evaluating their operations and the regions they serve. To the extent that the railroads are losing market share to barge competition, import coal, natural gas or renewable energy sources and reduced production of coal in various regions they serve, they are trying to find ways to be more competitive and offer lower rates from other producing regions such as the Illinois

Basin and the Powder River Basin in Wyoming. This trend will most likely continue through the current decade with railroads also offering to participate more in infrastructure projects, such as transloading facilities, that will make coal sourcing more attractive to the Company.

U.S. waterway improvements have always been funded partially by Congressional appropriation bills for Army Corps of Engineers' projects and a waterways user tax that has been levied on fuel used by inland waterway transportation companies. These taxes are typically included in the rates that barge lines charge the Company. There are ongoing efforts to improve waterways infrastructure, and the Company follows those projects that could have a direct impact on plant fuel deliveries.

The Alabama State Docks' McDuffie Coal Terminal (ASD) has the capacity to receive approximately 16 million tons of import and/or domestic coal per year. In addition, the Alabama State Docks' Bulk Materials Handling Plant's (Bulk Plant) upgraded railcar handling facilities can receive an additional 3 million tons of coal per year by rail.

Historically, a large portion of the Company's coal supply has been imported through ASD and delivered by ocean vessel for blending with other coals delivered by rail or barge, primarily from the Illinois Basin and Central Appalachia, for final delivery by barge to the plants. If this trend continues, ASD has adequate capacity to handle this type sourcing.

Through a successful RFP process, the Company had entered into a five (5) year barge transportation contract through 2014 for the final delivery of coal to the plants from ASD and the Mobile area. This contract was extended two additional years through 2016 in consideration of further reducing costs in 2014/2015 and lowering future costs during the extended term. This contract was again extended an additional two years through 2018 for Plant Crist. The Company plans to issue an RFP mid-year 2018 for Plant Crist's waterborne transportation needs starting in 2019.

Additionally, in 2017, as a counter to previously competitive barge delivery of Illinois Basin coal to the ASD for blending, the Company successfully negotiated a more competitive rail contract that offered significant savings for the delivery of the same coal.

The Company also maintains relationships with other rail and barge served terminals on the Mississippi, Ohio, Tennessee, and Tombigbee rivers that could provide additional blending services for western, Illinois Basin and Appalachian coals, which could provide increased competition and flexibility for procuring and delivering coals should that be required.

78. Please identify and discuss any expected changes in coal handling, blending, unloading, and storage for any planned changes and construction projects at coal generating units for the period 2018 through 2027.

RESPONSE:

Currently, no coal handling projects are planned at any of the Company's plants for the 2018 - 2027 period.