



May 15, 2019

Mr. Adam Teitzman, Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, FL 32399

Dear Mr. Teitzman:

Attached is Gulf Power Company's response to Staff's data request concerning Gulf's 2019 Ten Year Site Plan, specifically numbers 2-80.

Sincerely,

A handwritten signature in blue ink that reads 'C. Shane Boyett'.

C. Shane Boyett  
Regulatory, Forecasting and Pricing Manager

md

Attachments

cc w/ att.: Florida Public Service Commission  
Doug Wright, Division of Engineering  
Phillip Ellis, Division of Engineering  
Gulf Power Company  
Russell Badders, Esq., VP & Associate General Counsel

**QUESTION:**

General Items

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 2019 TYSP, state so on the appropriate form.

**RESPONSE:**

Please see the Excel file named "Staff's Supp DR No. 1 - Question No. 2 - Appendix A – Redacted".

QUESTION:

Load & Demand Forecasting

**[Investor-Owned Utilities Only]** Please provide, on a system-wide basis, the hourly system load for the period January 1, 2018, through December 31, 2018, in Microsoft Excel format.

RESPONSE:

Please see Attachment No. 1 in the file named "Staff's Supp DR No. 1 (2019) - Excel Tables FINAL – redacted".

**QUESTION:**

**Load & Demand Forecasting**

Please provide the monthly peak demand experienced in the period 2016–2018, including the actual peak demand experienced, the amount of demand response activated during the peak, and the estimated total peak if demand response had not been activated. Please also provide the day, hour, and system-average temperature at the time of each monthly peak.

**Historic Peak Demand Timing & Temperature**

Year	Month	Actual Peak Demand	Demand Response Activated	Estimated Peak Demand	Day	Hour	System-Average Temperature
		(MW)	(MW)	(MW)			(Degrees F)
2018	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
2017	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
2016	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
<b>Notes</b>							
(Include Notes Here)							

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**RESPONSE:**

Historic Peak Demand Timing & Temperature							
Year	Month	Actual	Demand	Estimated	Date	Hour	System-Average
		Peak	Response	Peak			Temperature
		Demand	Activated	Demand			(Degrees F)
		(MW)	(MW)	(MW)			-
2018	1	2809	N/A	N/A	18	0800	24
	2	1661	N/A	N/A	3	0800	41
	3	1622	N/A	N/A	15	0800	44
	4	1615	N/A	N/A	3	1700	76
	5	2090	N/A	N/A	24	1600	83
	6	2491	N/A	N/A	28	1600	97
	7	2408	N/A	N/A	12	1700	88
	8	2396	N/A	N/A	6	1600	92
	9	2354	N/A	N/A	15	1700	95
	10	2133	N/A	N/A	2	1600	87
	11	1845	N/A	N/A	28	0700	37
	12	1971	N/A	N/A	12	0700	37
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
<b>Notes</b>							
(Include Notes Here)							

**QUESTION:**

**Load & Demand Forecasting**

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

**RESPONSE:**

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

QUESTION:

Load & Demand Forecasting

Please explain how the Company's load and demand forecasting used in its 2019 TYSP was developed. In your response please include the following information: methodology, assumptions, data sources, third-party consultant(s) involved, and 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 2019 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 projected real 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 IHS Markit.

Weather data was obtained from the National Oceanic and Atmospheric Administration's (NOAA) Pensacola weather station. Economic data was provided by IHS Markit, which relied on the Bureau of Economic Analysis (BEA) and the U.S. Census Bureau (Census) for the Gross Domestic Product (GDP) price deflator and households, respectively. The energy efficiency variable was calculated by Gulf's forecasting team using historical average Seasonal Energy Efficiency Rating (SEER) from the Energy Information Administration (EIA) and changes in minimum efficiencies for 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 refinements to the residential model specification include extending the historical period to 13 years from 12 years and changes to some of the monthly binary variables. Also, the economic projections were provided by IHS Markit, whereas economic projections used in previous Ten Year Site Plan forecasts were developed by Moody's Analytics.

**Residential Long-Term Energy Sales Forecast**

The long-term residential energy sales forecast used in Gulf's 2019 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 sales were projected

using a variety of demographic, housing, economic, energy, and weather data. These appliance-specific energy sales 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 obtained 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 IHS Markit. 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 IHS Markit. Appliance-specific data, such as appliance saturation rates, was from Gulf's residential saturation surveys.

The long-term residential energy sales forecast used in Gulf's 2019 Ten Year Site Plan incorporated routine updates to include more recent historical data. Also, economic projections were provided by IHS Markit, whereas economic projections used in previous Ten Year Site Plan forecasts were developed by Moody's Analytics.

### **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 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 obtained from NOAA's Pensacola weather station. Economic data was provided by IHS Markit, which relied on the BEA for the GDP price deflator. 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 refinements to the commercial models specifications include extending the historical periods to 13 years from 12 years and incorporating the same energy efficiency variable used in the residential model, which is based on changes in minimum efficiencies for HVAC equipment; prior commercial models used an efficiency variable



based on changes in lighting equipment efficiencies. Also, the economic projections were provided by IHS Markit, whereas Moody's Analytics provided the economic projections used in previous Ten Year Site Plan forecasts.

### **Commercial Long-Term Energy Sales Forecast**

The long-term commercial energy sales forecast used in Gulf's 2019 Ten Year Site Plan was developed using the LoadMAP-C end use model from third-party consultant AEG, where energy sales for specific commercial end uses were projected using a variety of commercial market, economic, energy, and weather data. These end use energy sales 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 IHS Markit. Commercial market data, including building square footage by market segment, were estimated by using data from various sources including Dodge McGraw Hill and IHS Markit.

The long-term commercial energy sales forecast used in Gulf's 2019 Ten Year Site Plan incorporated routine updates to include more recent historical data. Also, economic projections were provided by IHS Markit, whereas Moody's Analytics provided the economic projections used in previous Ten Year Site Plan forecasts.

### **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 employment. 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 obtained from NOAA's Pensacola weather station. Economic data was provided by IHS Markit. 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. Refinements to the wholesale regression model specifications include shortening the historical period to 10 years from 20 years, using total non-agricultural employment instead of population, adjusting certain binary variables, and using the same weather variables used in the residential regression model. The current weather variables are calculated using the 12-hour moving average temperature and segmented into temperature bins whereas the previous weather variables were calculated using the instantaneous hourly temperature and interacted with monthly binaries. Also, the economic projections were provided by IHS Markit, whereas Moody's Analytics provided the economic projections used in previous Ten Year Site Plan forecasts.

### **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 for Southern Company Services 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 2019 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.

**QUESTION:**

**Load & Demand Forecasting**

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 2019 TYSP.

**RESPONSE:**

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

- 20190001-EI
- 20190002-EG
- 20190007-EI
- 20190084-EQ
- 20190016-EG

There are no closed FPSC dockets that used the same load forecast and only one non-docketed FPSC matter, Gulf's 2019 Forecasted Earnings Surveillance Report, that used the same load forecast.

QUESTION:

Load & Demand Forecasting

**[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, five, or six 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 the TYSPs filed, or to be filed, to the Commission from 2001 to 2019 with supporting workpapers in Microsoft 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, fifth, and sixth 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 forecast is measured by comparing weather-normalized energy load against the forecasted energy load.

Attachment No. 1 contains the review of the accuracy of Gulf's customer and energy load forecasts presented in TYSPs filed with the Commission from 2001 to 2018. The year of 2018 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.

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Annual retail calendar MWh

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2001 TYSP	10,111,000	10,377,000	10,541,000	10,665,000	10,802,000	10,970,000												
2002 TYSP		10,265,886	10,337,091	10,455,933	10,586,566	10,748,950	10,874,000											
2003 TYSP			10,397,599	10,605,379	10,855,287	11,055,220	11,238,191	11,386,000										
2004 TYSP				10,641,238	10,851,023	10,958,172	11,022,660	11,170,143	11,300,000									
2005 TYSP					11,154,336	11,455,744	11,714,612	12,041,852	12,262,335	12,478,000								
2006 TYSP						11,259,513	11,532,472	11,849,899	12,100,539	12,303,570	12,455,000							
2007 TYSP							11,485,160	11,692,537	11,856,658	12,048,438	12,314,787	12,592,000						
2008 TYSP								11,666,463	11,936,559	12,206,326	12,416,009	12,630,754	12,907,000					
2009 TYSP									11,808,797	12,104,967	12,497,680	12,791,275	13,080,445	13,330,000				
2010 TYSP										10,892,233	11,188,303	11,646,580	12,051,113	12,264,707	12,504,000			
2011 TYSP											11,421,063	11,768,265	12,063,850	12,369,348	12,574,112	12,717,832		
2012 TYSP												11,594,841	11,793,542	12,053,881	12,286,903	12,492,167	12,668,239	
2013 TYSP													11,083,294	11,154,278	11,245,649	11,462,064	11,583,650	11,632,366
2014 TYSP														11,128,640	11,062,623	11,209,880	11,284,440	11,347,295
2015 TYSP															10,960,723	11,033,990	11,166,764	11,275,312
2016 TYSP																10,906,605	11,022,525	11,147,099
2017 TYSP																	10,830,403	10,907,192
2018 TYSP																		10,730,460
Act	10,173,053	10,771,865	10,884,789	11,046,409	11,238,896	11,428,880	11,520,888	11,543,399	10,902,824	11,359,195	11,040,287	10,662,634	10,619,889	11,075,062	11,085,872	11,081,505	10,808,617	11,132,383
Weather Adj	187,382	-83,834	73,546	-10,682	92,470	60,743	-37,644	-71,461	37,900	-555,812	-109,250	195,184	218,194	-9,086	-110,585	-143,692	108,363	-309,935
Weather Normal Actual	10,360,435	10,688,031	10,958,335	11,035,727	11,331,366	11,489,623	11,483,245	11,471,938	10,940,724	10,803,383	10,931,037	10,857,817	10,838,082	11,065,976	10,975,287	10,937,813	10,916,980	10,822,448

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	2001 TYSP	2002 TYSP	2003 TYSP	2004 TYSP	2005 TYSP	2006 TYSP	2007 TYSP	2008 TYSP	2009 TYSP	2010 TYSP	2011 TYSP	2012 TYSP	2013 TYSP	2014 TYSP	2015 TYSP	2016 TYSP	2017 TYSP	2018 TYSP
1 1st Forecast Yr	-2.4%	-3.9%	-5.1%	-3.6%	-1.6%	-2.0%	0.0%	1.7%	7.9%	0.8%	4.5%	6.8%	2.3%	0.6%	-0.1%	-0.3%	-0.8%	-0.8%
2 2nd Forecast Yr	-2.9%	-5.7%	-3.9%	-4.2%	-0.3%	0.4%	1.9%	9.1%	12.0%	2.4%	8.4%	8.8%	0.8%	0.8%	0.9%	1.0%	0.8%	
3 3rd Forecast Yr	-3.8%	-5.3%	-4.2%	-4.6%	2.0%	3.3%	8.4%	13.0%	14.3%	7.3%	11.3%	8.9%	2.5%	2.5%	2.3%	3.0%		
4 4th Forecast Yr	-3.4%	-6.6%	-3.8%	-4.0%	5.0%	10.6%	11.5%	13.6%	17.8%	11.2%	11.8%	12.0%	4.8%	3.4%	4.2%			
5 5th Forecast Yr	-4.7%	-6.4%	-2.1%	-2.6%	12.1%	13.9%	12.7%	16.3%	20.7%	10.8%	14.6%	14.2%	6.1%	4.8%				
6 6th Forecast Yr	-4.5%	-5.3%	-0.7%	3.3%	15.5%	13.9%	16.0%	19.1%	20.5%	13.9%	16.3%	16.0%	7.5%					

Note: Positive values indicate forecast was higher than actuals

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 Worksheet: calc\_customer

Annual average retail customers

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2001 TYSP	377,562	386,363	393,461	400,114	406,977	413,955												
2002 TYSP		382,221	389,962	397,237	404,023	410,930	417,915											
2003 TYSP			388,736	397,557	405,230	412,571	420,934	430,540										
2004 TYSP				397,671	405,802	412,857	420,309	428,738	438,390									
2005 TYSP					411,911	422,626	431,955	441,220	450,706	460,733								
2006 TYSP						417,879	428,429	437,181	446,127	455,602	465,478							
2007 TYSP							427,761	438,233	447,135	457,024	467,438	478,178						
2008 TYSP								438,259	448,294	457,731	467,967	478,892	490,503					
2009 TYSP									437,091	444,504	454,286	464,609	475,531	486,729				
2010 TYSP										429,165	431,591	435,209	441,574	450,506	459,909			
2011 TYSP											432,340	436,563	442,936	450,623	458,491	466,319		
2012 TYSP												435,611	440,243	447,009	454,702	462,249	469,519	
2013 TYSP													438,047	443,350	450,788	459,363	467,787	475,745
2014 TYSP														441,150	445,631	452,374	460,351	467,878
2015 TYSP															446,458	452,313	459,095	465,992
2016 TYSP																452,163	458,780	465,524
2017 TYSP																	458,127	463,975
2018 TYSP																		465,610
Actual	374,559	381,520	389,807	398,198	404,084	415,183	425,791	429,300	428,204	430,028	432,401	434,440	437,697	442,369	447,556	453,140	459,049	464,681

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	2001 TYSP	2002 TYSP	2003 TYSP	2004 TYSP	2005 TYSP	2006 TYSP	2007 TYSP	2008 TYSP	2009 TYSP	2010 TYSP	2011 TYSP	2012 TYSP	2013 TYSP	2014 TYSP	2015 TYSP	2016 TYSP	2017 TYSP	2018 TYSP
1 1st Forecast Yr	0.8%	0.2%	-0.3%	-0.1%	1.9%	0.6%	0.5%	2.1%	2.1%	-0.2%	0.0%	0.3%	0.1%	-0.3%	-0.2%	-0.2%	-0.2%	0.2%
2 2nd Forecast Yr	1.3%	0.0%	-0.2%	0.4%	1.8%	0.6%	2.1%	4.7%	3.4%	-0.2%	0.5%	0.6%	0.2%	-0.4%	-0.2%	-0.1%	-0.2%	
3 3rd Forecast Yr	0.9%	-0.2%	0.3%	-0.6%	1.4%	1.8%	4.4%	6.4%	5.1%	0.2%	1.2%	1.0%	0.7%	-0.2%	0.0%	0.2%		
4 4th Forecast Yr	0.5%	0.0%	-0.6%	-1.3%	2.8%	4.2%	6.3%	8.2%	6.9%	0.9%	1.9%	1.6%	1.4%	0.3%	0.3%			
5 5th Forecast Yr	0.7%	-1.0%	-1.1%	-0.1%	5.3%	5.9%	8.1%	10.2%	8.6%	1.8%	2.4%	2.0%	1.9%	0.7%				
6 6th Forecast Yr	-0.3%	-1.8%	0.3%	2.4%	7.1%	7.6%	10.1%	12.1%	10.0%	2.8%	2.9%	2.3%	2.4%					

Note: Positive values indicate forecast was higher than actuals

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Worksheet: summary**

**Retail energy forecast accuracy (positive values indicate forecast was higher than actuals)**

	2001 TYSP	2002 TYSP	2003 TYSP	2004 TYSP	2005 TYSP	2006 TYSP	2007 TYSP	2008 TYSP	2009 TYSP	2010 TYSP	2011 TYSP	2012 TYSP	2013 TYSP	2014 TYSP	2015 TYSP	2016 TYSP	2017 TYSP	2018 TYSP
1st Forecast Yr	-2.4%	-3.9%	-5.1%	-3.6%	-1.6%	-2.0%	0.0%	1.7%	7.9%	0.8%	4.5%	6.8%	2.3%	0.6%	-0.1%	-0.3%	-0.8%	-0.8%
2nd Forecast Yr	-2.9%	-5.7%	-3.9%	-4.2%	-0.3%	0.4%	1.9%	9.1%	12.0%	2.4%	8.4%	8.8%	0.8%	0.8%	0.9%	1.0%	0.8%	
3rd Forecast Yr	-3.8%	-5.3%	-4.2%	-4.6%	2.0%	3.3%	8.4%	13.0%	14.3%	7.3%	11.3%	8.9%	2.5%	2.5%	2.3%	3.0%		
4th Forecast Yr	-3.4%	-6.6%	-3.8%	-4.0%	5.0%	10.6%	11.5%	13.6%	17.8%	11.2%	11.8%	12.0%	4.8%	3.4%	4.2%			
5th Forecast Yr	-4.7%	-6.4%	-2.1%	-2.6%	12.1%	13.9%	12.7%	16.3%	20.7%	10.8%	14.6%	14.2%	6.1%	4.8%				
6th Forecast Yr	-4.5%	-5.3%	-0.7%	3.3%	15.5%	13.9%	16.0%	19.1%	20.5%	13.9%	16.3%	16.0%	7.5%					

**Customer forecast accuracy (positive values indicate forecast was higher than actuals)**

	2001 TYSP	2002 TYSP	2003 TYSP	2004 TYSP	2005 TYSP	2006 TYSP	2007 TYSP	2008 TYSP	2009 TYSP	2010 TYSP	2011 TYSP	2012 TYSP	2013 TYSP	2014 TYSP	2015 TYSP	2016 TYSP	2017 TYSP	2018 TYSP
1st Forecast Yr	0.8%	0.2%	-0.3%	-0.1%	1.9%	0.6%	0.5%	2.1%	2.1%	-0.2%	0.0%	0.3%	0.1%	-0.3%	-0.2%	-0.2%	-0.2%	0.2%
2nd Forecast Yr	1.3%	0.0%	-0.2%	0.4%	1.8%	0.6%	2.1%	4.7%	3.4%	-0.2%	0.5%	0.6%	0.2%	-0.4%	-0.2%	-0.1%	-0.2%	
3rd Forecast Yr	0.9%	-0.2%	0.3%	-0.6%	1.4%	1.8%	4.4%	6.4%	5.1%	0.2%	1.2%	1.0%	0.7%	-0.2%	0.0%	0.2%		
4th Forecast Yr	0.5%	0.0%	-0.6%	-1.3%	2.8%	4.2%	6.3%	8.2%	6.9%	0.9%	1.9%	1.6%	1.4%	0.3%	0.3%			
5th Forecast Yr	0.7%	-1.0%	-1.1%	-0.1%	5.3%	5.9%	8.1%	10.2%	8.6%	1.8%	2.4%	2.0%	1.9%	0.7%				
6th Forecast Yr	-0.3%	-1.8%	0.3%	2.4%	7.1%	7.6%	10.1%	12.1%	10.0%	2.8%	2.9%	2.3%	2.4%					

**QUESTION:**

**Load & Demand Forecasting**

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 2018 was 1.3% and was similar to the average annual growth rate experienced from 2014 to 2017. 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 1.5% from 2018 to 2021.

Commercial customer growth in 2018 was 0.8% compared to the average annual growth rate of 1.0% experienced from 2014 to 2017. 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 1.2% from 2018 to 2021.

Industrial customer growth in 2018 was -0.7% compared to the average annual decline of -0.4% experienced from 2014 to 2017. Industrial customer growth is projected to maintain growth at an average annual rate of 0.2% from 2018 to 2021.

Total retail customer growth in 2018 was 1.2% compared to the average annual growth rate of 1.2% experienced from 2014 to 2017. 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 1.5% from 2018 to 2021, primarily driven by the residential class.



QUESTION:

Load & Demand Forecasting

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 2018 was 4.2%, compared to the average annual growth rate of -2.1% from 2014 to 2017. Adjusted for weather, the residential use per customer growth for 2018 was -2.0%, compared to -1.2% from 2014 to 2017. 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 -1.3% from 2018 to 2021.

Commercial electricity use per customer growth in 2018 was -0.4%, compared to the average annual growth rate of -1.2% from 2014 to 2017. Adjusted for weather, the commercial use per customer growth for 2018 was -2.7%, compared to -1.4% from 2014 to 2017. 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 -1.7% from 2018 to 2021.

Industrial electricity use per customer growth in 2018 was 1.7%, compared to the average annual growth rate of -1.7% from 2014 to 2017. Reduced load from a few larger industrial customers is projected to decrease industrial use per customer at an average annual rate of -3.3% from 2018 to 2021.

Total retail electricity use per customer growth in 2018 was 1.7%, compared to the average annual growth rate of -2.0% from 2014 to 2017. Adjusted for weather, total retail electricity use per customer growth for 2018 was -2.1%, compared to -1.7% from 2014 to 2017. Total retail use per customer is primarily driven by residential use per customer trends and, to a lesser extent, by 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 -2.0% from 2018 to 2021.

QUESTION:

Load & Demand Forecasting

Please explain any recent and forecasted trends in peak demand by the sources of peak demand appearing in Schedule 3.1 of the 2019 TYSP.

RESPONSE:

Retail summer peak demand growth in 2018 was 2.2%, compared to the average annual growth rate of 0.3% from 2014 to 2017. Retail summer peak demand, which is primarily driven by retail energy sales and weather, is expected to decline at an average annual growth rate of -0.5% from 2018 to 2021.

Residential and commercial conservation impacts to summer peak demand in 2018 grew by 0.9% and 0.1% respectively, which is lower than the average annual growth rates from 2014 to 2017 of 3.0% for residential and 1.1% 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 2.5% for residential conservation and 0.5% for commercial conservation from 2018 to 2021.

Wholesale summer peak demand growth in 2018 was -3.9%, compared to the average annual growth rate of -0.1% from 2014 to 2017. Wholesale summer peak demand, which is primarily driven by wholesale energy sales and weather, is projected to decline at -8.1% for 2019. No wholesale peak demands are projected after 2019 due to the expiration of a wholesale contract.

Net Total summer peak demand growth in 2018 was 2.3%, compared to a flat average annual growth rate from 2014 to 2017. Retail summer peak demand is projected to grow at an average annual rate of -2.0% from 2018 to 2021, primarily driven by a decline in the retail energy sales forecast.

QUESTION:

Load & Demand Forecasting

**[Investor-Owned Utilities Only]** If not included in the Company's 2019 TYSP to be filed by April 1, 2019, please provide load forecast sensitivities (high band, low band) to account for the uncertainty inherent in the base case forecasts in the following TYSP schedules, as well as the methodology used to prepare each forecast:

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

RESPONSE:

Gulf Power does not produce load forecast sensitivities and is therefore not in possession of information responsive to this request.

**QUESTION:**

**Load & Demand Forecasting**

Please discuss whether the Company included plug-in electric vehicle (PEV) loads in its demand and energy forecasts for the 2019 TYSP. If so, how were these impacts accounted for in the modeling and forecasting process?

**RESPONSE:**

Gulf included the energy associated with plug-in electric vehicle charging in its residential energy forecast for the 2019 Ten Year Site Plan as an exogenous adjustment. All charging was assumed to occur off-peak; therefore, no adjustments were made to the peak demand forecast.

**QUESTION:**

**Load & Demand Forecasting**

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

**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 2018. The June 2018 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.

**QUESTION:**

Load & Demand Forecasting

Please include the following information within the Utility's service territory: an estimate of the number of PEVs, an estimate of the number of public PEV charging stations, an estimate of the number of public "quick-charge" PEV charging stations (i.e., charging stations requiring a service drop greater than 240 volts and/or using three-phase power), and the estimated demand and energy impacts of the PEVs by year. As part of this response, please provide an electronic version of the table below in Microsoft Excel format.

**Electric Vehicle Charging Impacts**

Year	Number of PEVs	Number of Public PEV Charging Stations	Number of Public "Quick-charge" PEV Charging Stations	Cumulative Impact of PEVs		
				Summer Demand	Winter Demand	Annual Energy
				(MW)	(MW)	(GWh)
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						
2026						
2027						
2028						
<b>Notes</b>						
(Include Notes Here)						

**RESPONSE:**

Please see the table below and Attachment No. 1 to this response.

**Electric Vehicle Charging Impacts**

Year	Number of PEVs	Number of Public PEV Charging Stations	Number of Public "Quick-charge" PEV Charging Stations	Cumulative Impact of PEVs		
				Summer Demand	Winter Demand	Annual Energy
				(MW)	(MW)	(GWh)
2018	559	18	9	0	0	1.9
2019	630	22	13	0	0	2.1
2020	698	26	13	0	0	2.3
2021	761	30	16	0	0	2.4
2022	833	34	16	0	0	2.6
2023	917	38	20	0	0	2.8
2024	1000	42	20	0	0	3.0
2025	1135	46	23	0	0	3.4
2026	1298	50	23	0	0	3.9
2027	1505	54	26	0	0	4.5
2028	1752	58	26	0	0	5.4
<b>Notes</b>						
(Include Notes Here)						

QUESTION:

Load & Demand Forecasting

Please describe any Company programs or tariffs currently offered to customers relating to PEVs, and describe whether any new or additional programs or tariffs relating to PEVs will be offered to customers within the 2019–2028 period.

- a. Of these programs or tariffs, are any designed for or do they include educating customers on electricity as a transportation fuel?
- b. Does the Company have any programs where customers can express their interest or expectations for electric vehicle infrastructure as provided for by the Utility, and if so, please describe in detail.

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 vehicle charging.

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

- 1) 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.



**QUESTION:**

Load & Demand Forecasting

Please describe how the Company monitors the installation of PEV public charging stations in its 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 the company's Energy Efficiency Reporting Tool (EERT).

**QUESTION:**

Load & Demand Forecasting

Please describe any instances since January 1, 2018, in which upgrades to the distribution system were made where PEVs were a contributing factor.

**RESPONSE:**

No distribution system upgrades have occurred since January 1, 2018, where electric vehicle charging was known to be a contributing factor.

**QUESTION:**

Load & Demand Forecasting

Has the Company conducted or contracted any research to determine demographic and regional factors that influence the adoption of electric vehicles applicable to its service territory? If so, please describe in detail the methodology and findings.

**RESPONSE:**

No.

**QUESTION:**

Load & Demand Forecasting

What processes or technologies, if any, are in place that allow the Utility to be notified when a customer has established an electrical vehicle charging station in the home?

**RESPONSE:**

There are presently no processes or technologies in place to notify Gulf Power when a new charging station has been installed by residential customers.

**QUESTION:**

Load & Demand Forecasting

**[FEECA Utilities Only]** For each source of demand response, use the table below to provide the customer participation information listed on an annual basis. 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 Microsoft Excel format.

[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
2009									
2010									
2011									
2012									
2013									
2014									
2015									
2016									
2017									
2018									
<b>Notes</b>									
(Include Notes Here)									

**RESPONSE:**

Please see the table below and Attachment No. 1 to this response.

**Gulf Power Company**  
**2019 Ten-Year Site Plan**  
**Staff's Supplemental Data Request # 1**  
**Question No. 21**  
**Page 2 of 2**

Energy Select									
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
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
2018	19,159	34	21	1,385	2	1	746	1	1
<b>Notes</b>									
(Include Notes Here)									

**QUESTION:**

Load & Demand Forecasting

**[FEECA Utilities Only]** For each source of demand response, use the table below to provide the usage information listed on an annual basis. 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 Microsoft Excel format.

<b>[Demand Response Source or All Demand Response Sources]</b>										
<b>Year</b>	<b>Summer</b>					<b>Winter</b>				
	<b>Number of Events</b>	<b>Average Event Size</b>		<b>Maximum Event Size</b>		<b>Number of Events</b>	<b>Average Event Size</b>		<b>Maximum Event Size</b>	
		(MW)	Number of Customers	(MW)	Number of Customers		(MW)	Number of Customers	(MW)	Number of Customers
<b>2009</b>										
<b>2010</b>										
<b>2011</b>										
<b>2012</b>										
<b>2013</b>										
<b>2014</b>										
<b>2015</b>										
<b>2016</b>										
<b>2017</b>										
<b>2018</b>										
<b>Notes</b>										
(Include Notes Here)										

**RESPONSE:**

Please see the table below and Attachment No. 1 to this response.

**Gulf Power Company**  
**2019 Ten-Year Site Plan**  
**Staff's Supplemental Data Request # 1**  
**Question No. 22**  
**Page 2 of 2**

Energy Select										
Year	Summer					Winter				
	Number of Events	Average Event Size		Maximum Event Size		Number of Events	Average Event Size		Maximum Event Size	
		(MW)	Number of Customers	(MW)	Number of Customers		(MW)	Number of Customers	(MW)	Number of Customers
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
2018	0	0	0	0	0	4	21	19,203	21	19,272
<b>Notes</b>										
(Include Notes Here)										



**QUESTION:**

Load & Demand Forecasting

**[FEECA Utilities Only]** For each source of demand response, use the table below to provide the seasonal peak activation information listed on an annual basis. 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 Microsoft Excel format.

[Demand Response Source or All Demand Response Sources]							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
2009							
2010							
2011							
2012							
2013							
2014							
2015							
2016							
2017							
2018							
<b>Notes</b>							
(Include Notes Here)							

**RESPONSE:**

Please see the table below and Attachment No. 1 to this response.

Energy Select							
Year	Average Number of Customers	Summer Peak			Winter Peak		
		Activated During Peak?	Number of Customers Activated	Capacity Activated	Activated During Peak?	Number of Customers Activated	Capacity Activated
		(Y/N)		(MW)	(Y/N)		(MW)
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
2018	19,479	N	0	0	N	19,203	21
<b>Notes</b>							
(Include Notes Here)							

**QUESTION:**

Generation & Transmission

Please identify and describe each existing utility-owned renewable resource as of December 31, 2018, that delivered energy during the year. Please include the facility's name, unit type, fuel type, its installed capacity (AC-rating for photovoltaic (PV) systems), its net firm capacity or contribution during peak demand (if any), capacity factor for 2018 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 single combined entry for the resources that share the same unit & fuel type. As part of this response, please provide an electronic version of the table below in Microsoft Excel format.

**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	(%)	(MM/YYYY)
<b>Notes</b>								
(Include Notes Here)								

**RESPONSE:**

Please see the table below and Attachment No. 1 to this response.

Existing Utility-Owned Renewable Resources (1)								
Facility Name	Unit Type	Fuel Type	Installed Capacity (MW)		Net Firm Capacity (MW)		Capacity Factor	In-Service Date
			Sum	Win	Sum	Win	(%)	(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
<b>Notes</b>								
(1) Gulf does not own any small, distributed renewable resources such as rooftop solar panels or wind generators.								

**QUESTION:**

Generation & Transmission

Please identify and describe each planned utility-owned renewable resource for the period 2019–2028. 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 single combined entry for the resources that share the same unit & fuel type. As part of this response, please provide an electronic version of the table below in Microsoft Excel format.

**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	(%)	(MM/YYYY)
<b>Notes</b>								
(Include Notes Here)								

**RESPONSE:**

Please see the table below and Attachment No. 1 to this 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	(%)	(MM/YYYY Y)
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Notes</b>								
Gulf Power's 2019 Ten Year Site Plan does not include any specific planned utility owned renewable resources.								

**QUESTION:**

Generation & Transmission

Please refer to the list of planned utility-owned renewable resources for the period 2019–2028 above. Discuss the current status of each project.

**RESPONSE:**

Please see Gulf's response to Staff's Supplemental Data Request # 1, Question No. 25.

**QUESTION:**

**Generation & Transmission**

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:**

None.

**QUESTION:**

Generation & Transmission

Please identify and describe each purchased power agreement with a renewable generator that delivered energy during 2018. 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.

**Existing Renewable Purchased Power Agreements**

Seller Name	Facility Name	Unit Type	Fuel Type	Installed Capacity (MW)		Contracted Firm Capacity (MW)		In-Service Date (MM/YY)	Contract Term (MM/YY)	
				Sum	Win	Sum	Win		Start	End
<b>Notes</b>										
(Include Notes Here)										

**RESPONSE:**

Please see the table below.

**Gulf Power Company  
2019 Ten-Year Site Plan  
Staff's Supplemental Data Request # 1  
Question No. 28  
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Existing Renewable Purchased Power Agreements										
Seller Name	Facility Name	Unit Type	Fuel Type	Installed Capacity (MW)		Contracted Firm Capacity (MW)		In-Service Date (MM/YY)	Contract Term (MM/YY)	
				Sum	Win	Sum	Win		Start	End
Bay County Florida	Bay County Solid Waste	ST	MSW	11	11	N/A	N/A	06/87 <sup>(3)</sup>	07/17	07/23
Morgan Stanley	Kingfisher I	WT	Wind	178 <sup>(1)</sup>	178 <sup>(1)</sup>	58 <sup>(2)</sup>	71 <sup>(2)</sup>	01/16	01/16	12/35
Morgan Stanley	Kingfisher II	WT	Wind	94 <sup>(1)</sup>	94 <sup>(1)</sup>	31 <sup>(2)</sup>	38 <sup>(2)</sup>	02/17	02/17	12/35
Gulf Coast Solar Center I	Eglin	PV	Solar	30	30	N/A	N/A	05/17 <sup>(3)</sup>	06/17 <sup>(4)</sup>	12/42
Gulf Coast Solar Center II	Holley	PV	Solar	40	40	N/A	N/A	06/17 <sup>(3)</sup>	11/17 <sup>(4)</sup>	12/42
Gulf Coast Solar Center III	Saufley	PV	Solar	50	50	N/A	N/A	07/17 <sup>(3)</sup>	11/17 <sup>(4)</sup>	12/42
<b>Notes</b>										
(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.										



**QUESTION:**

Generation & Transmission

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 2019–2028. 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.

**Renewable Purchased Power Agreements**

Seller Name	Facility Name	Unit Type	Fuel Type	Installed Capacity (MW)		Contracted Firm Capacity (MW)		In-Service Date (MM/YY)	Contract Term (MM/YY)	
				Sum	Win	Sum	Win		Start	End
<b>Notes</b>										
(Include Notes Here)										

**RESPONSE:**

**Renewable Purchased Power Agreements**

Seller Name	Facility Name	Unit Type	Fuel Type	Installed Capacity (MW)		Contracted Firm Capacity (MW)		In-Service Date (MM/YY)	Contract Term (MM/YY)	
				Sum	Win	Sum	Win		Start	End
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Notes</b>										
There are no planned purchased power agreements with a renewable generator anticipated to begin delivering renewable energy to Gulf during the period 2019 through 2028										

**QUESTION:**

Generation & Transmission

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 2019–2028. Discuss the current status of each project.

**RESPONSE:**

As noted in Gulf's response to Staff's Supplemental Data Request # 1, Question No. 29, Gulf is not party to any renewable purchased power agreements that are anticipated to begin delivering energy or capacity to the Company during the period 2019-2028.

**QUESTION:**

Generation & Transmission

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:**

None.

**QUESTION:**

Generation & Transmission

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 2019–2028.

**Renewable Generation by Source**

Renewable Source	Annual Renewable Generation (GWh)											
	Actual	Projected										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	
Utility - Firm												
Utility - Non-Firm												
Utility - Co-Firing												
Purchase - Firm												
Purchase - Non-Firm												
Purchase - Co-Firing												
Customer - Owned												
<b>Total</b>												
<b>Notes</b>												
(Include Notes Here)												

**RESPONSE:**

Renewable Generation by Source												
Renewable Source	Annual Renewable Generation (GWh)											
	Actual	Projected										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	
Utility - Firm	24	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	0
Utility - Co-Firing	0	0	0	0	0	0	0	0	0	0	0	0
Purchase - Firm	1,031	1,031	1,033	1,031	1,031	1,031	1,033	1,031	1,031	1,031	1,031	1,033
Purchase - Non-Firm	273	285	284	283	282	245	220	218	217	216	216	215
Purchase - Co-Firing	0	0	0	0	0	0	0	0	0	0	0	0
Customer-Owned <sup>(1)(2)</sup>	12	14	15	16	17	19	20	21	23	24	24	25
<b>Total</b>	1,340	1,355	1,357	1,355	1,355	1,320	1,298	1,295	1,296	1,296	1,296	1,298
<b>Notes</b>												
(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.												

QUESTION:

Generation & Transmission

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.

**Candidate Sites - Solar**

Plant Name	Land Available (Acres)	Installed Capacity (MW)	Potential Issues

RESPONSE:

**Candidate Sites - Solar**

Plant Name	Land Available (Acres)	Installed Capacity (MW)	Potential Issues
North Escambia	1300	290	Non-contiguous sites
Caryville	750	75	Terrain, non-contiguous sites
Smith	<100	<15	Limited Acreage, coastal terrain, existing facility conflicts, non-contiguous sites
Scholz	<50	<10	Limited acreage, existing facility conflicts
Shoal River	<100	<15	Limited acreage, non-contiguous
<b>Notes</b>			

**QUESTION:**

Generation & Transmission

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, 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.

**Candidate Sites - Wind**

Plant Name	Land Available (Acres)	Installed Capacity (MW)	Potential Issues

**RESPONSE:**

**Candidate Sites - Wind**

Plant Name <sup>(1)</sup>	Land Available (Acres)	Installed Capacity (MW)	Potential Issues
N/A	N/A	N/A	N/A
<b>Notes</b>			
(1) Meteorological data previously collected by Gulf Power indicates that utility-scale wind is not currently practicable because of the low, inconsistent wind speeds in the geographic area served by the Company.			

**QUESTION:**

**Generation & Transmission**

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

**RESPONSE:**

Gulf Power will continue to engage its large commercial and industrial customers to better understand their interests in renewables and how the Company can help them meet their renewable energy goals.

Also, Gulf Power'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.

QUESTION:

Generation & Transmission

**[Investor-Owned Utilities Only]** Please discuss whether the Company has been approached by renewable energy generators during 2018 regarding constructing new renewable energy resources. If so, please provide the number and a description of the type of renewable generation represented.

RESPONSE:

Gulf Power routinely fields inquiries from outside entities regarding the potential development of renewable projects in the area served by Gulf. Throughout 2018, Gulf was in contact with several renewable generators/developers, primarily focusing on PV solar.



**QUESTION:**

Generation & Transmission

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 can contribute to summer peak for reliability purposes and is currently projected to contribute marginally to meeting winter peak. The percentage contribution is dependent upon specific parameters of each project. The firm capacity values currently assumed for solar are approximately 45% for summer and 10% for winter. The firm capacity values included in Gulf Power's 2019 Ten Year Site Plan were determined using a probability-based approach.

**QUESTION:**

Generation & Transmission

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.

**QUESTION:**

Generation & Transmission

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

**RESPONSE:**

At this time, Gulf has no observations to report.

**QUESTION:**

**Generation & Transmission**

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

**RESPONSE:**

At this time, Gulf Power has no considerations or observations which are responsive to this request.

**QUESTION:**

Generation & Transmission

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. Upon receiving such an inquiry, Gulf Power typically recommends that these customers review energy storage options with their installing contractors.



QUESTION:

Generation & Transmission

Please identify and describe the objectives and methodologies of all energy storage pilot programs currently running or in development with an anticipated launch date within the next 10 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 pilot program results, addressing all anticipated benefits, risks, and operational limitations when such energy storage technology is applied on a utility scale (> 2 MW) to provide for either firm or non-firm capacity and energy.
- b. Please provide a brief assessment of how these benefits, risks, and operational limitations may change over the next 10 years.
- c. Please identify and describe any plans to periodically update the Commission on the status of your energy storage pilot programs.

RESPONSE:

Gulf Power submitted two reports to the Commission in December 2018 describing the work and results of two studies performed under the Conservation Demonstration and Development (CDD) program on residential applications of battery storage technology – one in conjunction with PV, the other in conjunction with demand response/TOU rates.

**QUESTION:**

Generation & Transmission

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:**

In the future, Gulf will be evaluating energy storage technologies for cost-effective inclusion in its generation portfolio.



**QUESTION:**

**Generation & Transmission**

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 10 years.

**RESPONSE:**

Gulf has extended the timeline for the implementation of the previously approved community solar project while the Company continues to analyze different options and consider adjustments to ensure the community solar program ultimately provides the most value possible to participating customers. Gulf also 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.

**QUESTION:**

Generation & Transmission

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

**RESPONSE:**

On January 1, 2019, Gulf Power became a subsidiary of NextEra Energy. As a result and going forward, Gulf Power will support and may possibly be involved, where appropriate, in a range of research activities to facilitate the development of new technologies with the potential to benefit Gulf Power's customer base. The extent of the Company's involvement has not been determined at this time.

QUESTION:

Generation & Transmission

**[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 2009–2018. If the Company uses multiple areas for as-available energy rates, please provide a system-average rate as well. Also, provide the projected annual average as-available energy rate in the Company's service territory for the period 2019–2028.

**As-Available Energy Rates**

Year		As-Available Energy (\$/MWh)	On-Peak Average (\$/MWh)	Off-Peak Average (\$/MWh)
Actual	2009			
	2010			
	2011			
	2012			
	2013			
	2014			
	2015			
	2016			
	2017			
	2018			
Projected	2019			
	2020			
	2021			
	2022			
	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
<b>Notes</b>				
(Include Notes Here)				

RESPONSE:

Please see the table below.

As-Available Energy Rates

Year		As-Available Energy (\$/MWh)	On-Peak Average (\$/MWh)	Off-Peak Average (\$/MWh)
Actual	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
	2018	32.93	40.04	30.55
Projected	2019	27.38	33.95	25.18
	2020	26.56	33.33	24.30
	2021	29.64	36.94	27.21
	2022	31.39	37.07	29.50
	2023	34.06	41.41	31.60
	2024	35.22	44.19	32.22
	2025	36.17	45.38	33.09
	2026	37.47	46.70	34.40
	2027	39.07	46.14	36.71
	2028	40.00	48.64	37.11
Notes				

QUESTION:

Generation & Transmission

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 inservice 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.

**Planned Unit Additions**

Generating Unit Name	Summer Capacity (MW)	Certification Dates (if Applicable)		In-Service Date
		Need Approved (Commission)	PPSA Certified	
<b>Nuclear Unit Additions</b>				
<b>Combustion Turbine Unit Additions</b>				
<b>Combined Cycle Unit Additions</b>				
<b>Steam Turbine Unit Additions</b>				
<b>Notes</b>				
(Include Notes Here)				

RESPONSE:

**Planned Unit Additions**

Generating Unit Name	Summer Capacity (MW)	Certification Dates (if Applicable) <sup>(1)</sup>		In-Service Date
		Need Approved (Commission)	PPSA Certified	
<b>Nuclear Unit Additions</b>				
N/A	N/A	N/A	N/A	N/A
<b>Combustion Turbine Unit Additions</b>				
N/A	N/A	N/A	N/A	N/A
<b>Combined Cycle Unit Additions</b>				
Combined Cycle 2	595	Expected in 2020	Expected in 2021	6/1/2024
<b>Steam Turbine Unit Additions</b>				
N/A	N/A	N/A	N/A	N/A
<b>Notes</b>				
(1) Certification dates are consistent with the resource planning work performed by Southern Company Services in 2018 that led to the resource plan presented in Gulf's 2019 Site Plan.				

**QUESTION:**

**Generation & Transmission**

For each of the planned generating units contained in the Company's 2019 TYSP, 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:**

Florida Public Service Commission need determination and Power Plant Siting Act Certification proceedings would have to be concluded by July 2021 for the combined cycle unit planned in Gulf's 2019 TYSP to be in-service in June 2024. In order to meet that in-service date, construction would need to begin by November 2021.

**QUESTION:**

Generation & Transmission

Please provide an estimate of the revenue requirements of the Company based upon the 2019 TYSP's planned generating units.

**RESPONSE:**

\$759 million is Gulf Power's current estimate of the cumulative present value revenue requirements associated with the installed capital cost of the generating unit addition referenced in the 2019 TYSP, a dual fuel 1-on-1 combined cycle (CC) facility using engineering, procurement, and construction cost data available to Gulf in the Fall of 2018.

QUESTION:

Generation & Transmission

For each of the planned generating units contained in the Company's 2019 TYSP, 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:

The next best alternative to the 2024 combined cycle unit presented in Gulf's 2019 Site Plan was projected to be a pair of combustion turbines in 2024. Information regarding the projected cost and capacity of this pair of combustion turbines is presented below.

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):	842
6	DIRECT CONSTRUCTION COST ('18 \$/kW):	544
7	AFUDC AMOUNT (\$/kW):	251
8	ESCALATION (\$/kW):	47

The cumulative present value revenue requirement associated with the installed capital cost of a combustion turbine (CT) facility is \$472 million.



**QUESTION:**

Generation & Transmission

For each existing and planned unit on the Company's system, provide the following data based upon historic data from 2018 and projected capacity factor values for the period 2019–2028. Please complete the tables below and provide an electronic copy in Microsoft Excel format.

**Projected Unit Information – Capacity Factor (%)**

Plant	Unit #	Unit Type	Fuel Type	Actual	Projected										
				2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	
<b>Notes</b>															
(Include Notes Here)															

**RESPONSE:**

Please see the table below and Attachment No. 1 to this response.

**Projected Unit Information – Capacity Factor (%)**

Plant	Unit #	Unit Type	Fuel Type	Actual	Projected										
				2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	
Crist	4	ST	BIT	10.9	11.2	10.1	13.0	4.8	8.8	4.7	0.0	0.0	0.0	0.0	
Crist	5	ST	BIT	11.2	15.5	19.2	18.3	12.7	5.1	12.8	8.6	0.9	0.0	0.0	
Crist	6	ST	BIT	44.8	42.1	32.0	34.1	27.7	45.0	33.1	16.9	16.4	20.8	16.6	
Crist	7	ST	BIT	46.4	53.9	43.3	57.5	53.8	72.9	64.3	75.9	68.6	78.1	72.3	
Smith	3	CC	NG	74.4	85.0	84.3	82.6	78.7	74.2	61.8	67.4	65.3	62.5	60.8	
Smith	A	CT	DFO	0.4	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	
Scherer	3	ST	BIT	60.6	50.6	61.0	58.2	69.8	63.6	71.3	65.3	72.8	65.2	71.4	
Daniel	1	ST	BIT	25.5	44.7	34.9	33.6	44.6	49.4	44.3	42.7	37.8	40.6	40.6	
Daniel	2	ST	BIT	28.0	42.9	34.2	42.0	42.8	48.2	51.2	40.3	48.5	44.7	42.7	
Pea Ridge <sup>(1)</sup>	1-3	CT	NG	87.4	96.0	96.0	96.0	96.0	96.0	96.0	63.9	0.0	0.0	0.0	
Perdido	1-2	IC	LFG	88.6	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	77.9	78.1	77.8	77.5	75.8	
<b>Notes</b>															
(1) Pea Ridge units operated by industrial customer for steam requirements. Customer supplies natural gas to operate units.															

**QUESTION:**

Generation & Transmission

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

**RESPONSE:**

Schedule 1 of Gulf's 2019 Ten Year Site Plan shows expected depreciation retirement dates.

QUESTION:

Generation & Transmission

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 potential issues that could affect repowering efforts at any of these sites, related to such things as unit age, land availability, or other requirements.

Repowering Candidate Units - Steam

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date	Potential Conversion	Potential Issues
<b>Notes</b>					
(Include Notes Here)					

RESPONSE:

Repowering Candidate Units - Steam

Plant Name	Fuel Type	Summer Capacity (MW)	In-Service Date	Potential Conversion	Potential Issues
N/A	N/A	N/A	N/A	N/A	N/A
<b>Notes</b>					
Gulf Power's 2019 Ten Year Site Plan does not reflect the repowering of existing steam units to operate as combined cycle units.					

**QUESTION:**

Generation & Transmission

Please identify each of the Company's existing (as of December 31, 2018) and planned (between 2019–2028) power purchase contracts, including firm capacity imports reflected in Schedule 7 of the Company's 2019 TYSP. 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).

**Existing Purchased Power Agreements**

Seller	Contract Term		Contract Capacity (MW)		Capacity Factor	Primary Fuel (if any)	Firm Capacity	Description
	Begins	Ends	Summer	Winter	%			
<b>Notes</b>								
(Include Notes Here)								

**Planned Purchased Power Agreements**

Seller	Contract Term		Contract Capacity (MW)		Capacity Factor	Primary Fuel (if any)	Firm Capacity	Description
	Begins	Ends	Summer	Winter	%			
<b>Notes</b>								
(Include Notes Here)								

**RESPONSE:**

Please see the tables below.

**Existing Purchased Power Agreements**

Seller	Contract Term		Contract Capacity (MW)		Capacity Factor <sup>(1)</sup>	Primary Fuel (if any)	Firm Capacity	Description
	Begins	Ends	Summer	Winter	(%)			
Shell Energy NA	11/02/09	05/24/23	885	885	53.1	NG	885	CC
Morgan Stanley (King I)	01/01/16	12/31/35	178 <sup>(2)</sup>	178 <sup>(2)</sup>	43.8	Wind	58 <sup>(3)</sup>	WT
Morgan Stanley (King II)	02/01/17	12/31/35	94 <sup>(2)</sup>	94 <sup>(2)</sup>	44	Wind	31 <sup>(3)</sup>	WT
Gulf Coast Solar Center I	06/07/17	12/31/42	N/A	N/A	21.8	Solar	9 <sup>(4)</sup>	PV
Gulf Coast Solar Center II	11/18/17	12/31/42	N/A	N/A	22.3	Solar	11 <sup>(4)</sup>	PV
Gulf Coast Solar Center III	11/07/17	12/31/42	N/A	N/A	21.6	Solar	14 <sup>(4)</sup>	PV
Bay County Florida	07/23/17	07/22/23	N/A	N/A	47.9	MSW	N/A	ST

**Notes**

(1) Annual capacity factor based on 2018 actual data.  
(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)		Capacity Factor	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	N/A

**Notes**

**QUESTION:**

Generation & Transmission

Please identify each of the Company's existing (as of December 31, 2018) and planned (between 2019–2028) power sales, including firm capacity exports reflected in Schedule 7 of the Company's 2019 TYSP. 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).

**Existing Power Sales**

Purchaser	Contract Term		Contract Capacity (MW)		Capacity Factor	Primary Fuel (if any)	Firm Demand	Description
	Begins	Ends	Summer	Winter	%			
<b>Notes</b>								
(Include Notes Here)								

**Planned Power Sales**

Purchaser	Contract Term		Contract Capacity (MW)		Capacity Factor	Primary Fuel (if any)	Firm Demand	Description
	Begins	Ends	Summer	Winter	%			
<b>Notes</b>								
(Include Notes Here)								

**RESPONSE:**

**Existing Power Sales**

Purchaser	Contract Term		Contract Capacity (MW)		Capacity Factor	Primary Fuel (if any)	Firm Demand	Description
	Begins	Ends	Summer	Winter	(%)			
Flint Energy	06/01/10	12/31/19	50	50	43.3	BIT	50	Scherer 3
<b>Notes</b>								

**Planned Power Sales**

Purchaser	Contract Term		Contract Capacity (MW)		Capacity Factor	Primary Fuel (if any)	Firm Demand	Description
	Begins	Ends	Summer	Winter	(%)			
Seminole Electric	06/01/21	12/31/21	40 <sup>(1)</sup>	40 <sup>(1)</sup>	N/A <sup>(2)</sup>	N/A	40	System Sale
Seminole Electric	01/01/22	12/31/22	30 <sup>(1)</sup>	30 <sup>(1)</sup>	N/A <sup>(2)</sup>	N/A	30	System Sale
<b>Notes</b>								
(1) Gulf's allocated share of Southern electric system sale to entity as shown in Gulf's 2019 Ten Year Site Plan.								
(2) Dependent upon Seminole's requested energy schedule.								

**QUESTION:**

Generation & Transmission

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

**RESPONSE:**

None.



**QUESTION:**

Generation & Transmission

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.

**Transmission Projects Requiring TLSA Approval**

Transmission Line	Line Length	Nominal Voltage	Date Need	Date TLSA	In-Service Date
	(Miles)	(kV)	Approved	Certified	
<b>Notes</b>					
(Include Notes Here)					

**RESPONSE:**

**Transmission Projects Requiring TLSA Approval**

Transmission Line	Line Length	Nominal Voltage	Date Need	Date TLSA	In-Service Date
	(Miles)	(kV)	Approved	Certified	
None identified at this time	N/A	N/A	N/A	N/A	N/A
<b>Notes</b>					

QUESTION:

Generation & Transmission

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 2018 period. As part of your narrative, please discuss the potential for existing environmental regulations to impact unit dispatch, curtailments, or retirements during the 2019–2028 period.

RESPONSE:

During 2018, Gulf incurred incremental O&M expenses to maintain emission control equipment, along with additional capital expenditures related to the: i) Plant Crist scrubber, Units 6 and 7 Selective Catalytic Reduction (SCRs), and the Unit 7 low NOx burners; ii) the Scherer Unit 3 scrubber, SCR, baghouse, and Coal Combustion Residual management; iii) the Plant Daniel scrubber and Continuous Emission Monitoring system; iv) the Plant Smith reclaimed water project and ash pond closure; and v) the Plant Scholz ash pond closure project. 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 occurs. In addition, there were outages at Gulf's generating facilities in 2018 specifically related to environmental controls. At Plant Crist, planned outages for the Crist scrubber duct occurred in the Spring requiring all units to be taken offline. Plant Scherer Unit 3 had a brief maintenance outage for baghouse expansion joint work. During the 2018 through 2027 period, planned outages are expected for the Crist, Daniel and Scherer scrubbers.

Please refer to Gulf's 2019 Ten Year Site Plan Environmental Compliance section beginning at page 48 for a more detailed update on existing regulations that may impact Gulf's generating units.

**QUESTION:**

Generation & Transmission

Please complete the table below, providing actual and projected amounts of regulated air pollutants and carbon dioxide emitted, on an annual and per megawatt-hour basis, by the Company's generation fleet. Please also provide an electronic copy of the completed table in Microsoft Excel format.

**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
<b>Actual</b>	2009									
	2010									
	2011									
	2012									
	2013									
	2014									
	2015									
	2016									
	2017									
	2018									
<b>Projected</b>	2019									
	2020									
	2021									
	2022									
	2023									
	2024									
	2025									
	2026									
	2027									
	2028									
<b>Notes</b>										
(Include Notes Here)										

**RESPONSE:**

Please see the table below and Attachment No. 1 to this response.

**Gulf Power Company  
2019 Ten-Year Site Plan  
Staff's Supplemental Data Request # 1  
Question No. 60  
Page 2 of 2**

<b>Emissions of Registered Air Pollutants &amp; CO2</b>											
Year	SOX		NOX		Mercury		Particulates		CO2		
	lb/MWh	Tons	lb/MWh	Tons	lb/MWh	Tons	lb/MWh	Tons	lb/MWh	Tons	
<b>Actual</b>	2009	8.80	55,478	1.91	12,073	0.000041	0.26	0.27	1,733	1,893	11,938,495
	2010	4.67	31,228	2.31	15,453	0.000022	0.15	0.19	1,240	2,119	14,175,950
	2011	2.69	16,034	1.67	9,933	0.000014	0.08	0.18	1,082	1,945	11,596,508
	2012	2.09	9,954	1.49	7,119	0.000012	0.06	0.18	859	1,817	8,662,775
	2013	3.04	12,518	1.76	7,254	0.000011	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	1.2	5,510	0.000004	0.02	0.08	351	1,732	7,974,767
2018	0.20	937	1.05	5,000	0.000005	0.02	0.06	295	1,679	7,969,158	
<b>Projected</b>	2019	0.58	3,115	1.16	6,176	0.000003	0.02	0.05	267	1,665	8,879,116
	2020	0.52	2,598	1.11	5,550	0.000003	0.01	0.05	250	1,595	7,970,219
	2021	0.69	3,659	1.13	6,017	0.000003	0.02	0.05	266	1,635	8,683,784
	2022	0.67	3,506	1.16	6,082	0.000003	0.01	0.05	263	1,641	8,600,949
	2023	0.78	4,521	1.18	6,811	0.000003	0.02	0.05	290	1,704	9,860,873
	2024	0.77	3,979	1.25	6,419	0.000003	0.01	0.05	257	1,737	8,925,983
	2025	0.75	3,872	1.16	5,984	0.000003	0.01	0.05	258	1,692	8,724,566
	2026	0.72	3,631	1.19	6,030	0.000003	0.01	0.05	253	1,695	8,576,420
	2027	0.78	3,947	1.15	5,829	0.000003	0.01	0.05	254	1,712	8,681,479
2028	0.75	3,691	1.17	5,783	0.000003	0.01	0.05	247	1,710	8,431,277	
<b>Notes</b>											
2009-2028 emissions data for Crist, Smith, Scholz, ownership portions of Scherer and Daniel.											
All emissions reported as short tons for the generating units at each location.											

**QUESTION:**

Generation & Transmission

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:

Year	Estimated Cost of Mercury and Air Toxics Standards (MATS) Rule Impacts (2019 \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2019				
2020				
2021				
2022				
2023				
2024				
2025				
2026				
2027				
2028				
<b>Notes</b>				
(Include Notes Here)				

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

**RESPONSE:**

- 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 2019-2028 MATS related costs based on the 2019 TYSP are included in the table provided.

Year	Estimated Cost of Mercury and Air Toxics Standards (MATS) Rule Impacts (2019 \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
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
2028	0.81	7.69	N/A	8.50

**QUESTION:**

Generation & Transmission

For the U.S. EPA's Cross-State Air Pollution Rule (CSAPR):

- 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:

Year	Estimated Cross-State Air Pollution Rule (CSAPR) Rule Impacts (2019 \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2019				
2020				
2021				
2022				
2023				
2024				
2025				
2026				
2027				
2028				
<b>Notes</b>				
(Include Notes Here)				

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

**RESPONSE:**

- a. Yes. In October 2016, the EPA published a final rule that updates the CSAPR ozone-season NOx program, which established more stringent ozone-season emissions budgets in Mississippi and removed 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. Gulf has implemented prior projects to comply with the current and previous Transport Rules. With Florida removed from the CSAPR program, no future compliance strategy is required for Gulf's units in Florida. For Florida units, existing projects will remain in service. In Georgia, Plant Scherer Unit 3 is expected to

continue to operate its multi-pollutant rule equipment and will have sufficient allocated allowances needed for CSAPR compliance. In Mississippi, Plant Daniel Units 1 and 2 have reduced ozone allocations from EPA and the current compliance strategy includes utilizing banked allowances and purchasing additional allowances as needed. For Georgia and Mississippi units, cost for these projects will continue to meet the rule's requirements.

- c. Gulf has completed the needed compliance projects for the current CSAPR programs.
- 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.

Year	Estimated Cross-State Air Pollution Rule (CSAPR) Rule Impacts (2019 \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2019	N/A	0.02	N/A	0.02
2020	N/A	0.07	N/A	0.07
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	0.00	N/A	0.00
2028	N/A	0.00	N/A	0.00



**QUESTION:**

Generation & Transmission

For the U.S. EPA's Cooling Water Intake Structures (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:

Year	Estimated Cost of Cooling Water Intake Structures Rule (CWIS) Rule Impacts (2019 \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2019				
2020				
2021				
2022				
2023				
2024				
2025				
2026				
2027				
2028				
<b>Notes</b>				
(Include Notes Here)				

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

**RESPONSE:**

- 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) and facility modifications that may be required to minimize impingement and entrainment 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, 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 and Crist Units 6 and 7 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. With the retirement of Units 1 and 2 in 2016 and the reduced withdrawal of surface water by approximately 75 percent, only the impingement mortality standard is applicable at Plant Smith. The cooling water intake pumps will be configured and operated to achieve an intake velocity of less than or equal to 0.5 feet per second to comply with the 316(b) impingement standard. Plant Smith Unit 3 has a closed cycle cooling tower and FDEP has agreed that Unit 3 meets BTA criteria. The 316(b) report has been submitted to the agency to demonstrate compliance with the BTA standard for impingement mortality reduction and support the determination that Plant Smith meets BTA for entrainment mortality.

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. The National Pollution Discharge Elimination System (NPDES) permit cycle dictates the timeline for submittal of the required 316(b) reports and, hence, the final compliance strategy. Gulf Power has submitted the required 316(b) 122.21(r) Report for Plant Smith with the recent NPDES permit renewal application and will submit the information for Plant Scholz in 2020. Gulf Power is conducting engineering studies to finalize the strategy and develop the information for the Plant Crist 122.21(r) Report which is scheduled for submittal in 2023. Gulf would then implement the determined BTA on a timeline that would be set by the State in the permit renewal, which is anticipated to be within the subsequent permit renewal timeframe Gulf Power's impingement and entrainment study plans and preliminary strategies were discussed with the agencies prior to implementation.
- d. Yes. Gulf plans to seek recovery of 2020-2028 capital costs associated with 316(b) compliance through the Environmental Cost Recovery Clause once the final strategy and requirements are determined by State permitting agencies. 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.

Year	Estimated Cost of Cooling Water Intake Structures Rule (CWIS) Rule Impacts (2019 \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2019	2.00	0.04	0.00	2.04
2020	0.10	0.08	0.00	0.18
2021	0.00	0.05	0.00	0.05
2022	0.00	0.08	0.00	0.08
2023	0.00	0.05	0.00	0.05
2024	0 to 0.15	0.03	0.00	0.03 to 0.18
2025	0.15 to 20.5	0.00	0.00	0.15 to 20.50
2026	6.87 to 20.7	0.00	0.00	6.87 to 20.7
2027	0.00	0.00	0.00	0.00
2028	0.00	0.00	0.00	0.00

QUESTION:

Generation & Transmission

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:

Year	Estimated Coal Combustion Residuals Rule (CCR) Impacts (2019 \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2019				
2020				
2021				
2022				
2023				
2024				
2025				
2026				
2027				
2028				
<b>Notes</b>				
(Include Notes Here)				

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

RESPONSE:

- 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 issued a proposal to reconsider certain portions of the CCR rule in 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. In July 2018, Gulf received the NPDES industrial wastewater permit revision required for the pond. During 2018, Gulf began construction of the Plant Smith industrial wastewater/reclaimed water pond, as well as commencing activities required to close a portion of the ash pond. The Smith pond closure includes construction of industrial wastewater ponds and a slurry wall, along with 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 stop receiving coal ash in 2019 after construction of the new dry ash handling is completed. Design and construction of the Scherer CCR wastewater management system will continue in 2019. In addition, detailed engineering and construction will continue at Cell 3 of the onsite landfill for CCR storage. Plant Scherer will also proceed with siting studies and preliminary design for a new landfill.

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 received the final issuance of the NPDES permit substantial revision on May 18, 2017, that outlined the operational and reporting requirements for dewatering and closure activities. Gulf has completed construction of a slurry wall and new industrial wastewater treatment pond required for wastewater treatment during and post ash pond closure. During February 2018, ash pond closure activities began, and closure is expected to be completed during the Fall of 2020.

- 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 Gulf's response to Staff's Supplemental Data Request # 1, Question No. 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.

Year	Estimated Coal Combustion Residuals Rule (CCR) Impacts (2019 \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2019	64.15	4.74	N/A	68.89
2020	20.41	12.87	N/A	33.28
2021	17.65	8.89	N/A	26.54
2022	8.97	0.66	N/A	9.63
2023	0.00	0.65	N/A	0.65
2024	0.00	0.65	N/A	0.65
2025	0.00	0.65	N/A	0.65
2026	0.00	0.65	N/A	0.65
2027	0.00	0.65	N/A	0.65
2028	0.00	0.65	N/A	0.65

QUESTION:

Generation & Transmission

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:

Year	Estimated Cost of Standards of Performance for Greenhouse Gas Emissions Rule for New Sources Impacts (2019 \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
2019				
2020				
2021				
2022				
2023				
2024				
2025				
2026				
2027				
2028				
<b>Notes</b>				
(Include Notes Here)				

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

RESPONSE:

- a. The current 111(b) rule or New Source CO<sub>2</sub> Performance Standards should not impact future, new natural gas simple-cycle or new combined-cycle units since it is anticipated these units will be below the current limits. 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. On December 20, 2018, EPA published in the Federal Register a Review of Standards of Performance for Greenhouse Gas Emissions for New, Modified, and Reconstructed Stationary Sources. 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 subpart (a) above.

Year	Estimated Cost of Standards of Performance for Greenhouse Gas Emissions Rule for New Sources Impacts (2019 \$ millions)			
	Capital Costs	O&M Costs	Fuel Costs	Total Costs
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
2028	N/A	N/A	N/A	N/A



**QUESTION:**

Generation & Transmission

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 Microsoft Excel format.

**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	
<b>Notes</b>									
(Include Notes Here)									

**RESPONSE:**

Please see the table below and Attachment No. 1 to this response.

**Gulf Power Company  
2019 Ten-Year Site Plan  
Staff's Supplemental Data Request # 1  
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Estimated Impacts of EPA's Rules on Generating Units									
Unit	Unit Type	Fuel Type	Net Sum Capacity (MW)	Type of New and Proposed EPA Rule Impacts					Anticipated Impacts
				MATS	CSAPR/CAIR	CWIS	CCR		
							Non-Hazardous Waste	Special Waste	
Crist 4	FS	Coal	75	(A)	(B)	Range of options from potential intake screen modifications to closed cycle cooling tower installation	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	577	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	251	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	251					N/A	None
Scherer 3	FS	Coal	215	(E)	(F)	(G)	Pond closure, new CCR landfill, CCR ash and wastewater management	N/A	None

(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) Option currently projected includes lower capacity 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

**QUESTION:**

Generation & Transmission

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 Microsoft Excel format.

Estimated Unit Cost of EPA's Rules

Unit	Unit Type	Fuel Type	Net Sum Capacity (MW)	Estimated Cost of EPA Rules Impacts (2019 \$ millions)						
				MATS	CSAPR/CAIR	CWIS	CCR		Anticipated Impacts	Total Cost
							Non-Hazardous Waste	Special Waste		
<b>Notes</b>										
(Include Notes Here)										

**RESPONSE:**

Please see the table below and Attachment No. 1 to this response.

Estimated Unit Cost of EPA's Rules										
Unit	Unit Type	Fuel Type	Net Sum Capacity (MW)	Estimated Cost of EPA Rules Impacts (2019 \$ millions)						
				MATS	CSAPR/CAIR	CWIS	CCR		Anticipated Impacts	Total Cost
							Non-Hazardous Waste	Special Waste		
Crist 4&5	Base	Coal	150	N/A	N/A	7.02 to 41.04	0.56	N/A	N/A	7.54 to 41.56
Crist 6&7	Base	Coal	774	N/A	N/A	0.42	2.94	N/A	N/A	3.36
Smith 1&2	Retired	Retired	Retired	N/A	N/A	N/A	79.28	N/A	N/A	79.28
Smith 3	Intermediate	Gas	577	N/A	N/A	2.12	N/A	N/A	N/A	2.12
Scholz	Retired	Retired	Retired	N/A	N/A	0.03	13.32	N/A	N/A	13.35
Daniel 1&2	Base	Coal	502	46.25	0.67	0.00	0.77	N/A	N/A	47.69
Scherer 3	Base	Coal	215	36.69	N/A	0.00	43.34	N/A	N/A	80.03
Common	N/A	N/A	N/A	N/A	N/A	N/A	2.00	N/A	N/A	2.00
<b>Notes</b>										
1. Scherer 3 and Daniel 1&2 reflected above are based on Gulf's ownership portion. 2. CCR costs for Plant Crist are allocated by megawatt.										

**QUESTION:**

Generation & Transmission

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 Microsoft Excel format.

**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	CCR	
							Non-Hazardous Waste	Special Waste
<b>Notes</b>								
(Include Notes Here)								

**RESPONSE:**

Please see the table below and Attachment No. 1 to this response.

**Gulf Power Company  
2019 Ten-Year Site Plan  
Staff's Supplemental Data Request # 1  
Question No. 68  
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**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	CCR	
							Non-Hazardous Waste	Special Waste
Daniel 1-2	Base	Coal	502	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 estimated in 2024-2028 timeframe, schedule will be addressed in permit renewal.	Ongoing compliance activities	N/A
Crist 6-7	Base	Coal	774			Units have closed cycle cooling tower; projected need for closed cycle cooling monitors	Ongoing compliance activities	N/A
Smith 1-2	Units retired March 2016						2017 - 2023 pond closure design and implementation	N/A
Smith 3	Intermediate	Gas	577	No additional future work anticipated	Unit 3 has a cooling tower and closed cycle cooling; New lower capacity intake pumps to be installed in 2019; Closed cycle cooling monitors will be required	N/A	N/A	
Scholz 1-2	Units retired April 2015						2017-2020 pond closure with ongoing compliance monitoring	N/A
Scherer 3	Base	Coal	215	No additional future work anticipated	Units have closed cycle cooling tower; projected need for closed cycle cooling monitors		Projected pond closure by 2031	N/A
<b>Notes</b>								
1. Dates dependent on NPDES permit issuance. 2. Estimated dates due to permit issuance.								

QUESTION:

Generation & Transmission

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 (CWIS) Rule.
- d. Coal Combustion Residuals (CCR) Rule.
- 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 CO<sub>2</sub> Performance Standards should not impact 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. On December 20, 2018, EPA published in the Federal Register a Review of Standards of Performance for Greenhouse Gas Emissions for New, Modified, and Reconstructed Stationary Sources. The ultimate outcome of EPA's review and any related rulemaking action cannot be determined at this time.

QUESTION:

Generation & Transmission

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:

Some examples of currently approved environmental compliance investments which helped mitigate future investments include, but are not limited to:

- Emissions reduction through Clean Energy--Gulf's currently approved and installed PV solar projects have helped lower Gulf's fleet-wide GHG emissions reducing exposure to future GHG rules and compliance requirements related to emissions from other pollutants.
- 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 Coal Combustion Residual Rule (CCR). The program also has the potential to mitigate costs for other proposed federal regulations.
- EPA's Coal Combustion Residual Rule--The closure in-place of coal combustion residual related ash ponds will mitigate the potential for the future construction of costly ash landfill handling and disposal systems.
- 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.
- Compliance plans implemented for the Clean Air Interstate Rule (CAIR) are sufficient to meet the Cross State Air Pollution Rule (CSAPR) rule requirements. Gulf believes its previous CAIR and CAMR/MATS projects, and present CSAPR compliance plan, will meet the current SO<sub>2</sub>, NO<sub>2</sub>, fine particle and ozone National Ambient Air Quality Standards ("NAAQS") requirements without additional costs.

Gulf Power's approved ECRC costs for environmental compliance investments can be found in Gulf's filings in the FPSC's annual Environmental Cost Recovery Clause docket.

QUESTION:

Generation & Transmission

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 10-year site planning period?

RESPONSE:

Following the Supreme Court's 2007 decision that CO<sub>2</sub> is a pollutant and EPA's subsequent Endangerment Finding, it has been apparent that the agency would eventually regulate CO<sub>2</sub> emissions. CO<sub>2</sub> emissions reductions were a component in the decision making process for the previous retirements of several of the Company's older coal-fired generating units.

In the future, the Company plans to continue pursuing projects that will reduce electricity costs to customers through clean and efficient generation facilities that will also reduce Gulf Power's CO<sub>2</sub> emissions rate. As noted in the 2019 TYSP, Gulf, in conjunction with the resource planning group at FPL, is evaluating a number of potential supply options to determine the most cost-effective means of meeting its future capacity obligations. This evaluation is expected to continue through 2019. The supply options may include, but are not limited to, generating technologies such as natural gas-fired combustion turbine, natural gas-fired combined cycle, utility-scale solar PV, and battery storage. In addition, coal-to-natural gas conversions of Gulf's coal-fired units and plant upgrades are being evaluated in order to determine if these options will provide cost savings for Gulf's customers. Each of these future generation options are expected to result in lower CO<sub>2</sub> emissions rates for Gulf Power. Lower CO<sub>2</sub> emissions will better position Gulf Power to meet potential compliance obligations that would occur as a result of future CO<sub>2</sub> regulations.

Gulf Power has seen a significant rollback of CO<sub>2</sub> regulations risk resulting from the Supreme Court's stay and EPA's proposed repeal of the Clean Power Plan Rule. However, the Administration did not attempt to reverse the EPA Endangerment Finding that requires the agency to regulate CO<sub>2</sub> emissions. As a result, on August 21, 2018, the Affordable Clean Energy (ACE) rule was proposed to replace the 2015 Clean Power Plan. As proposed, the ACE rule applies only to coal-fired electric generating units and does not include gas-fired combustion units. The proposed rule requires states to establish their own standards to address greenhouse gas emissions based on on-site, heat rate efficiency improvements. This rule is expected to be finalized in the second quarter of 2019 and states will have three years to develop their State Implementation Plans that would then need to be approved by EPA. Gulf anticipates numerous challenges to this rule that will delay its implementation.



**QUESTION:**

Fuel Supply & Transportation

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 2009–2018. 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 2019–2028. As part of this response, please complete the table below and provide the completed table in Microsoft Excel format.

**Average Fuel Price Comparison**

Year	Uranium		Coal		Natural Gas		Residual Oil		Distillate Oil	
	GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU	GWh	\$/MMBTU
<b>Actual</b>	2009									
	2010									
	2011									
	2012									
	2013									
	2014									
	2015									
	2016									
	2017									
	2018									
<b>Projected</b>	2019									
	2020									
	2021									
	2022									
	2023									
	2024									
	2025									
	2026									
	2027									
	2028									
<b>Notes</b>										
(Include Notes Here)										

**RESPONSE:**

Please see Attachment No. 1 in the file named "Staff's Supp DR No. 1 (2019) - Excel Tables FINAL – redacted".

QUESTION:

Fuel Supply & Transportation

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 in 2018 include the following:

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

During 2018 short-term (current year +2) and long-term (year 4 and beyond) fuel price forecasts for coal, oil, and natural gas were developed, and these extend through the Company's 10-year planning horizon. The short-term forecasts were developed for use in the system's fuel budgeting process and marginal pricing dispatch procedures. Long-term forecasts were developed by Charles River & Associates in the spring of 2018 for use in system planning activities. Comparisons of the fuel price forecasts are made against each fuel price forecast of the consulting firms listed above to assess reasonableness and gain information about fuel markets.

QUESTION:

Fuel Supply & Transportation

Please identify and discuss expected industry trends and factors for each fuel type (coal, natural gas, nuclear fuel, oil, etc.) that may affect the Company during the period 2019–2028.

- 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 by Gulf for a variety of purposes, including long-term generation planning. The most pressing industry factors expected to affect the coal industry are low natural gas prices and environmental pressures, including potential action on climate change. 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.
- b. Natural Gas – The natural gas long-term outlook could be dependent on five significant uncertainties: (1) the possibility for increased gas demand in the electric sector due to new regulations on other technologies; (2) the level of increased gas demand in the industrial/commercial/residential and transportation sectors; (3) higher demand due to natural gas exports to other countries; (4) the potential for the reduction in drilling for shale gas due to new regulations on fracking; 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 this planning cycle.
- d. Fuel Oil – Oil is primarily used as a lighter fuel. 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 such as China and India, 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 this planning cycle.

**QUESTION:**

**Fuel Supply & Transportation**

Please identify and discuss steps that the Company has taken to ensure natural gas supply availability and transportation over the 2019–2028 planning period.

**RESPONSE:**

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

**QUESTION:**

**Fuel Supply & Transportation**

Please identify and discuss any existing or planned natural gas pipeline expansion project(s), including new pipelines and those occurring or planned to occur outside of Florida that would affect the Company for the period 2019–2028.

**RESPONSE:**

The Transco expansion, Atlantic Sunrise Project, increased 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 in service during late 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.

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 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.

The Florida Gas Transmission (FGT) East-West Project was completed during Winter 2018-2019. Facilities in East Texas and Louisiana were modified to 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. 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.

**QUESTION:**

**Fuel Supply & Transportation**

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 2019–2028.

**RESPONSE:**

There are currently several LNG terminals in operation and over 20 proposed LNG export projects in the U.S. The first facility, Cheniere Energy's Sabine Pass terminal, began operations in December 2015. Since then, the Cove Point and Corpus Christi terminals have begun operations. As additional terminals become operational, total US LNG export capacity is expected to reach 8.5 Bcf/day by end of 2019 and 10 Bcf/day in 2020. Potentially weaker demand will keep the export market under pressure, which could impact the construction of future LNG projects. Natural gas prices 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.

**QUESTION:**

**Fuel Supply & Transportation**

Please identify and discuss the Company's plans for the use of firm natural gas storage for the period 2019–2028.

**RESPONSE:**

Gulf Power has currently contracted for natural gas storage with three different facilities during the 2019-2028 time-period. The Company uses firm natural gas storage primarily to ensure that its plants will receive natural gas in the event of a supply disruption.

**QUESTION:**

**Fuel Supply & Transportation**

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 2019–2028. 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 among coal transportation modes can be achieved where infrastructure exists to allow such competition. To achieve this competition, Gulf Power 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 Gulf's case, most coals can ship via rail, river barge, or ocean vessel to an intermediate point for transloading into barges for final delivery to the plant. 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.

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 Gulf's coal supply has been imported through ASD 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 two successful RFP processes, Gulf recently awarded both barge and rail transportation needs to new lower cost carriers. The Company will continue to maintain relationships with other carriers and service providers in order to promote competition and ensure low cost options going forward.



**QUESTION:**

**Fuel Supply & Transportation**

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 2019–2028.

**RESPONSE:**

Currently, no coal handling projects are planned for any of Gulf's coal generating units for the 2019 - 2028 period.

QUESTION:

Fuel Supply & Transportation

**[DEF & FPL Only]** Please identify and discuss the Company's plans for the storage and disposal of spent nuclear fuel for the period 2019–2028. As part of this discussion, please include the Company's expectation regarding short-term and long-term storage, dry cask storage, litigation involving spent nuclear fuel, and any relevant legislation.

RESPONSE:

Not applicable.

QUESTION:

Fuel Supply & Transportation

**[FPL Only]** Please identify and discuss expected uranium production industry trends and factors that will affect the Company during the period 2019–2028.

RESPONSE:

Not applicable.