



Florida Public Services Commission
Office of Commission Clerk
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

RE: Ten-Year Site Plan Supplemental Data Request #4 – Seminole Electric Cooperative Response

September 27, 2018

Dear Sir/Madam,

Pursuant to the Commission's 2018 Ten-Year Site Plan Supplemental Data Request #4, dated September 11, 2018, Seminole Electric Cooperative is hereby filing one electronic copy of its written response.

Additionally, via email to Ms. Takira Thompson, Seminole Electric Cooperative will submit a copy of this response as requested.

Please do not hesitate to call me if you have any questions or comments.

Thank you for your attention to this request,

A handwritten signature in blue ink, appearing to read "Joseph Clay", is written over a light blue horizontal line.

Joseph Clay, MSPA

Supervisor of Resource Planning
Seminole Electric Cooperative, Inc.
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- 1. With respect to the forecasting methodology, procedures, and models developed associated with Winter and Summer Peak Demand, please specify all the differences/ modifications/ improvements, if any, between what used in Seminole's 2017 and 2018 Ten-Year Site Plans (TYSP).**

RESPONSE: In the 2017 Load Forecast Study (LFS) reflected in the 2018 TYSP, Seminole employed monthly load factor as an explanatory variable in the winter-season and summer-season demand forecasts. This was a conservative modification to the 2016 LFS, which employed seasonal load factors. Specifically, this was a level-shift downward for all Member's Seasonal demand forecasts since: (1) the relationship between demand and load factor in the regression equation is negative; (2) the monthly load factor forecast is higher than the seasonal load factor forecast; (3) the load factor forecast is a constant value or is nearly constant for every Member.

Another modification to the 2017 LFS was the incorporation of incremental, additional behind-the-meter distributed solar generation forecasts for Members and their end-use consumers. Seminole developed this distributed solar generation forecast with the intent to reduce Seminole's expected summer peak demand requirements.

- 2. For its 2018 TYSP, please identify and explain the measures and/or criteria, if any, Seminole used to ensure the models of peak demand adequately explain historical variations and to enhance its forecasting accuracy.**

RESPONSE: Seminole develops ex post forecast error analyses to measure model adequacy. Seminole's "after-the-event" evaluation of model error with observed (actual) explanatory variable data removes the error associated with long-term forecasts of weather and economy, providing valuable insight into model performance. Seminole conducts these analyses with all available information a year after the forecast origin. In other words, models are re-forecasted with actual, observed data, rather than the forecast data. This provides an indication of whether load forecast error is due to Seminole's forecasting methodology or simply due to the fact that weather and economy forecasts are never perfect. Seminole conducts these analyses at a monthly resolution, which provides a higher temporal resolution than focusing on one individual observation such as the winter or summer peak, or annual energy.

- 3. Please identify and explain the new measures, if any, Seminole used to address the uncertainty inherent in the process of peak demand forecasting for its 2018 TYSP.**

RESPONSE: Seminole did not employ any new or addition measures besides what was described in the answer to question 1 above.

- 4. Please provide the Historical Forecast Accuracy associated with Seminole's Winter Peak Demand for the period 2012-13 through 2016-17 and Summer Peak Demand for the period 2013 through 2017.**

RESPONSE: For Table 1 and 2 below, please note that "Forecasting Period Prior" is not equal to "forecast years out". For example, the 2012 TYSP reflects a load forecast derived from actual load data through December 2010 (Winter 2010/2011). Therefore, the Winter of 2011/2012 is "1 year out" from the forecast origin and the Winter of

2012/2013 is “2 years out” from the forecast origin. The list below indicates the load forecasts study and forecast origin related to each TYSP:

2008 TYSP = 2007 LFS = Forecast Origin December 2006
 2009 TYSP = 2008 LFS = Forecast Origin December 2007
 2010 TYSP = 2009 LFS = Forecast Origin December 2008
 2011 TYSP = 2010 LFS = Forecast Origin December 2009
 2012 TYSP = 2011 LFS = Forecast Origin December 2010
 2013 TYSP = 2012 LFS = Forecast Origin December 2011
 2014 TYSP = 2013 LFS = Forecast Origin December 2012
 2015 TYSP = 2014 LFS = Forecast Origin December 2013
 2016 TYSP = 2015 LFS = Forecast Origin December 2014

Table 1. Accuracy of Seminole’s Winter Peak Demand Forecasts

Net Firm Demand (FCST - ACT) / ACT)

Forecast Actual	Winter Peak Demand Forecast Error Rate (%)					Average
	Forecasting Period Prior					
	5	4	3	2	1	
	2008 TYSP	2009 TYSP	2010 TYSP	2011 TYSP	2012 TYSP	–
2012-13	42.78%	29.57%	28.30%	28.24%	23.66%	30.51%
	2009 TYSP	2010 TYSP	2011 TYSP	2012 TYSP	2013TYSP	–
2013-14	32.99%	30.62%	29.35%	21.39%	18.36%	26.54%
	2010 TYSP	2011 TYSP	2012 TYSP	2013TYSP	2014 TYSP	–
2014-15	21.10%	19.43%	12.83%	9.91%	4.06%	13.47%
	2011 TYSP	2012 TYSP	2013 TYSP	2014 TYSP	2015 TYSP	–
2015-16	33.23%	26.76%	21.62%	16.90%	4.20%	20.54%
	2012 TYSP	2013 TYSP	2014 TYSP	2015 TYSP	2016 TYSP	–
2016-17	43.34%	37.38%	31.81%	16.50%	15.34%	28.87%

Table 2. Accuracy of Seminole’s Summer Peak Demand Forecasts

Net Firm Demand (FCST - ACT) / ACT)

Forecast Actual	Summer Peak Demand Forecast Error Rate (%)					Average
	Forecasting Period Prior					
	5	4	3	2	1	
	2008 TYSP	2009 TYSP	2010 TYSP	2011 TYSP	2012 TYSP	–
2013	22.41%	19.74%	16.32%	12.98%	4.88%	15.27%
	2009 TYSP	2010 TYSP	2011 TYSP	2012 TYSP	2013TYSP	–
2014	20.43%	17.78%	13.34%	5.31%	3.43%	12.06%
	2010 TYSP	2011 TYSP	2012 TYSP	2013TYSP	2014 TYSP	–
2015	23.60%	18.44%	10.89%	8.41%	2.65%	12.80%
	2011 TYSP	2012 TYSP	2013 TYSP	2014 TYSP	2015 TYSP	–
2016	13.54%	6.72%	2.13%	-1.33%	-8.63%	2.49%
	2012 TYSP	2013 TYSP	2014 TYSP	2015 TYSP	2016 TYSP	–
2017	14.52%	9.25%	5.68%	-2.95%	-1.03%	5.09%