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To: Dykes, Melissa H. - President/COO
Subject: Forecast Review rev
Attachments: Forecast Review rev.docx

Edits from Sarah incorporated.

Energy Forecasting

The purpose of this memo is to describe the different forecasts currently in use at JEA: the JEA developed Ten Year Site Plan (TYSP) forecast; the JEA developed Florida Energy Efficiency and Conservation Act (FEECA) forecast; and the JEA and McKinsey developed Status Quo (SQ) Forecast. Both energy (MWh) and peaks (seasonal MW) are forecast – this memo concentrates on the energy forecasts.

Ten Year Site Plan Forecast - JEA begins this forecast process by weather normalizing energy for each customer class (residential, commercial, industrial and lighting) using NOAA historical weather data.

- The residential energy forecast was developed using multiple regression analysis of weather normalized historical residential energy, Total Population, Median Household Income, Total Housing Starts from Moody's Analytics, JEA's total residential accounts and JEA's residential electric rate.
- The commercial energy forecast was developed using multiple regression analysis of weather normalized historical commercial energy, commercial inventory square footage, total commercial employment, gross product and JEA's commercial electric rate.
- The industrial energy forecast was developed using multiple regression analysis of weather normalized historical industrial energy, total industrial employment, proprietors' profit and total retail sales product for existing industrial accounts. JEA then layers in the estimated energy for new industrial customers on the forecasted industrial energy.
- The lighting energy forecast was developed using the historical actual energy, number of luminaries and JEA's estimated High Pressure Sodium (HPS) to Light-Emitting Diode (LED) streetlight conversion schedule.

Energy efficiency and electrification forecasts are based on the impact of JEA-led programs, and the electric vehicle (EV) forecast is based on new vehicle sales projections. These are developed separately and combined with the base forecast described above. JEA's forecasted Annual Average Growth Rate (AAGR) for net energy for load (NEL) during the TYSP period is 0.57 percent.

Florida Energy Efficiency and Conservation Act Forecast – The FEECA forecast used the 2018 TYSP energy forecast. Methodology of forecast development was unchanged from 2018 to 2019, however the 2019 forecast utilizes actual 2018 results rather than forecast. The 2018 TYSP forecast an NEL of 12,586 GWh, whereas the 2019 TYSP reported a 2018 actual NEL of 12,813 GWh, a difference of approximately 2%.

Status Quo Forecast – The SQ forecast starts from the same point as the 2018 TYSP, by setting the kWh/customer the same as in 2018, and then forecasting growth based on population. From this SQ base forecast, McKinsey and JEA applied individual forecasts for energy efficiency, distributed generation (DG) growth, electrification, etc. based on projections of key drivers of each factor; for example energy-intensive appliance turnover rates and cost of distributed generation relative to cost of power in JEA's service territory. The SQ and TYSP forecasts, not including DG and electrification, differ by about 5% (SQ is 600 MWh lower than the TYSP forecast). In addition, the SQ forecast incorporates a much more aggressive DG adoption rate, calling for, for residential customers 0.1% of customers/yr until 2025, 1%/yr from 2025 until 2028 (2025 being the year that Solar PV achieves parity), and 1.5%/yr after 2028, as solar financing begins to realize attractive returns for developers. (Commercial customer adoption assumptions follow a similar logic).

Summary – The TYSP and SQ forecasts are intended for different purposes. The TYSP is submitted to the Public Service Commission to demonstrate that JEA has planned adequately and has the required generation reserves to meet peak demand, plus 15 percent. The SQ forecast, by contrast, is intended to examine the potential impact to JEA's financial performance given trends market trends that will impact sales. The forecasts differ due to the *weather normalization* in the TYSP forecast, higher levels of *energy efficiency and DG* in the SQ forecast, and the effect of the multiple regression analysis of historical data in the TYSP compared to individual forward-looking forecasts for each factor in the SQ forecast.

SGM, September 25, 2019