**DATA REQUEST RESPONSE**

* 1. 1. At pp. BM-11 to BM-12 of its testimony, San Diego Gas and Electric Company (SDG&E) describes using the ABB Planning and Risk model to calculate the hourly distribution of loss of load expectation (LOLE) in the San Diego sub-area and the greater San Diego reliability area.
  2. a. Does the ABB Planning and Risk model use any csv, excel or other input files? If so, please provide the files with cell formulae and references intact.

1. **SDG&E Response:**

The ABB Planning and Risk model is a proprietary model which does not interface with any input files. The inputs and settings for this scenario were manually entered into the model. The inputs provided for this analysis are:

2017 historical load, solar generation and wind generation

Generation plant characteristics which are already part of the model

2020 forecasted expected load, solar generation and wind generation

* 1. b. Please provide a list of the generators used in the ABB model, their capacities, and pmin and pmax values.

1. **SDG&E Response:** 
   1. See the attached spreadsheet, “CalPA Data Request\_006\_b.xlsx” **This response includes confidential information, which is highlighted in yellow.**

c. Please provide the hourly generation profiles of the renewable resources used in the ABB modeling. If their generation profiles vary according to weather conditions, probability distributions, or by other means in different simulations, please describe how the variability was created in the model. If the variation was modeled using a probability distribution, please provide the mean and standard deviation of the distribution as well as the resulting mean and standard deviation for each hour of the year.

1. **SDG&E Response:** 
   1. Please see the attached spreadsheet “CalPA Data Request\_006\_c.xlsx” for the solar and wind generation profiles and expected hourly generation used in the model for both the Local San Diego area (SD tab) and the Greater San Diego- Imperial Valley region (SDIV tab). These were developed to represent the expected 2020 profiles based on an average of three years of historical data for all solar and wind generation resources in the San Diego local and Greater San Diego-Imperial Valley region. The model varies these profiles for each of 100 iterations. The variability is based on regression analysis using 2017 load, solar and wind data which produced correlation, volatility and mean reversion stochastic coefficients. These coefficients adjust the daily load, solar and wind generation while maintaining the hourly expected profile for each day.

* 1. 
  2. d. Where did SDG&E get the load shape to use in the ABB modeling? Did SDG&E make any modifications to the load shape? If so, why? Please provide the hourly load shape in its original form (with no modifications).

**SDG&E Response:**

* 1. Please see the attached spreadsheet “CalPA Data Request\_006\_d.xlsx”. This is the 2018 CEC IEPR hourly system load for the San Diego area. No modifications were made to this load profile other than very minor adjustments to ensure that the peak and energy matched the CEC’s annual forms. It already includes the effects of expected behind the meter solar, electric vehicle load and other load modifiers. **This response includes confidential information, which is highlighted in yellow.**
  2. e. Please provide the hourly load profile used in the ABB modeling. Please indicate whether the model uses gross load or net load (and whether net load means net of distributed generation or net of centralized and distributed renewable generation). If the model uses net load, please provide the hourly gross and net load curves. Please describe how SDG&E introduced variability into the load curve and provide the hourly mean and standard deviation. If SDG&E introduced the variability using a probability distribution, please state which probability distribution it used and provide its mean and standard deviation.

1. **SDG&E Response:** 
   1. The hourly load profile used in the ABB modeling is the same as provided in d. above. This load profile is “net load” meaning it already includes the effects of expected behind the meter solar, electric vehicle load and other load modifiers. Please see the attached spreadsheet “CalPA Data Request\_006\_e.xlsx”. for both hourly gross and net loads. The gross load is the CEC hourly system load without modifications and the effects of both behind the meter solar and electric vehicle load removed. Variability of the load was developed using the same process described for solar and wind generation variability. **This response includes confidential information, which is highlighted in yellow.**
   2. f. Does the model take into account transmission constraints? If so, please describe what constraints the model takes into account and the method by which it accounts for them.
2. **SDG&E Response:** 
   1. The Loss of Load Expectation (LOLE) analysis is used to develop a profile of relative hourly need for capacity. The transmission capability into the San Diego region is constrained equally in every hour in the model so that there is a resulting unserved energy in every hour. Therefore, the magnitude of the modeled transmission capability is not a factor in the calculation so long as there is measurable unserved energy generated in every hour. This results in a relative hourly comparison of hourly capacity need.
   2. g. In the chapter 6 workpaper on marginal generation commodity costs, SG&E combines the LOLE results of the San Diego-sub area and San Diego Greater Reliability area using a 50/50 weighting. How did SDG&E come up with this weighting?
3. **SDG&E Response:** 
   1. Since there are two different regions by which SDG&E is evaluated by the CAISO for local capacity requirements, SDG&E performed the analysis separately for each region and did a simple average of the two results to arrive at a single result. There was no basis to provide a greater weighting to one vs. the other.

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