ORA DATA REQUEST
ORA-SDG&E-DR-008
SDG&E GRC Phase 2 APPLICATION – A.15-04-012
SDG&E RESPONSE
DATE RECEIVED: JANUARY 25, 2016
DATE RESPONDED: FEBRUARY 8, 2016

1.   Refer to testimony or workpaper of Robert B. Anderson provided on December 1, 2015:
   a. Are the LOLE outputs provided in "RBA workpaper 4 – 2016 LOLE Summary.xls" a direct output of the Planning and Risk model? If any intermediate processing was required, please provide those workpapers.
   b. In Mr. Anderson's modeling using the Planning and Risk model, what stochastic variables were considered? Please describe how the variation in each of these variables was characterized and the associated profile.
   c. What correlations, if any, were assumed by the stochastic variables provided in (a)? How were these correlations developed?

SDG&E Response:

   a. "RBA workpaper 4 – 2016 LOLE Summary.xls" provides the aggregated results of all 250 iterations of the direct LOLE output of the Planning and Risk model. The attached spreadsheets titled "2016 LOLP Results_250iterations_Oct2015refresh_SDlocal" and "2016 LOLP Results_250iterations_Oct2015refresh_SD_IV" includes all 250 iterations of the direct LOLE output from the model.

   b. and c. The stochastic variables considered were Short Term Mean Reversion Rate, Volatility Rate, and Correlation. Historical system load, wind and solar generation data were input into the Planning and Risk Regression tool which performs regression analysis and produces the stochastic variables. The variables were produced as monthly scalars with an expected value of 1. The mean reversion and volatility rates ranged from zero to 1 with a very few values greater than 1. The correlations ranged from -1 to 1.

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2.   Referring to the Planning and Risk model used by Mr. Anderson in his December 1, 2015 testimony:

   a.   Please provide the model topology used. Specifically, what service areas were modeled?
   b.   Please provide a summary of the supply resources assumed to be available in the service areas in (a) and their associated nameplate capacity.
   c.   Did the loads modeled by SDG&E in Planning and Risk include an embedded level of distributed energy resources?
   d.   How was transmission between service areas characterized in the Planning and Risk model? Please provide the level of transmission capacity available, in MW.
   e.   Please provide fuel prices, as input into the Planning and Risk model, for all fuels consumed by the resources listed in (b).
   f.   How were forced and maintenance outages characterized in the Planning and Risk model? Please provide the level of outages assumed, by month.

SDG&E Response:

   a.   Two different scenarios were modeled to get the relative need for resources. In each scenario all modeled generation resources were within a single area and a single value of imported transmission capacity was used. The two scenarios modeled were SDG&E's local sub-area and SDG&E's extended service area. All generation resources within SDG&E's local sub-area are also within the extended service area.

   b.   Please see the attached spreadsheet called "2016 LOLP Resource Table.

   c.   Yes, the loads modeled by SDG&E in Planning and Risk includes an embedded level of distributed energy resources per the testimony of Ken Schiermeyer.

   d.   To identify the hours with the highest probability of needing capacity a single value of 500 MW of import capacity was assumed for each of the two modeled scenarios.

   e.   Fuel prices for each natural gas resource are represented by the SoCal Border gas price plus a gas transportation rate specific to each resource. The SoCal Border price averaged $4.93/mmbtu.

   f.   For purposes of this analysis, there were no planned outages assumed for any resource. The combined cycle power plants all maintenance and outage rates were assumed to be zero. All other smaller gas resources have outage or maintenance rates of about 5%. The large stream units had outage or maintenance rates of 1%. None of these rates vary by month.