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Xcel Energy
Docket No.: EL16-037
Response To: South Dakota Public Utilities Commission
Data Request No. 6-7
Requestor: Tina Douglas
Date Received: July 10, 2017

Question:
Refer to PJ Martin's testimony, Table 5, which is copied and pasted below (from filing in MN docket 14-162 in September 2014):

Table 5: Economic Analysis

PVRR Cost ($ millions)	Reference Case	Low Gas (1.4% growth rate)	Zero CO2 External ities	Markets Off	+5% capacity Factor	-5% capacity factor
RFP Portfolio compared to displaced energy (net benefit)/ net cost	($47)	($16)	$14	($56)	($44)	($49)

a. Please provide all the key input assumptions used in the reference case including but not limited to (natural gas prices, electricity price forecasts -- on peak, off peak and average around-the-clock), load growth vintage and supply/demand balance, carbon assumptions).
b. Please provide the natural gas price assumptions for the Low Gas Cost Future.
c. Please explain why the savings are higher in the 2.5% less capacity factor sensitivity.
d. Please explain and reconcile the differences in results shown in this table with Table 1 included in Xcel's North Dakota application filed in docket PU-14-810 on November 7, 2014, copied and pasted below:

Table 1: Differences in Total System Cost with and without 187 MW Solar Portfolio Addition

Change in PVRR Cost ($ millions)	Reference Case	Low Gas Cost (1.4% growth rate)	Markets Off	+2.5% Capacity Factor	-2.5% Capacity Factor
RFP Portfolio compared to displaced energy – net cost (savings)	$14	$43	($5)	$25	$6

i. Regarding Table 1, please provide all the key input assumptions used in the reference case including but not limited to (natural gas prices, electricity price forecasts -- on peak, off peak and average around-the-clock), load growth vintage and 15 year supply/demand balance, carbon assumptions).
ii. Regarding Table 1, please provide the natural gas price assumptions for the Low Gas Cost Future.
iii. Regarding Table 1, please explain why the net costs in the -2.5% Capacity Factor case are lower than the +2.5% Capacity Factor case.
iv. If the only difference between the results for Minnesota v. North Dakota is the assumption regarding carbon, please explain why the differences are so significant considering that solar predominantly displaces natural gas(for example, see Q&A before Figure 2 in PJ Martin testimony).

Response:

a. Please see the Company's response to Data Request SDPUC 2-009.
b. Please see Figure 6 on pg. 14 of 46 in Attachment A to the Company's response to Data Request SDPUC 2-009.
c. The solar PPA's are priced on a $/MWh basis. In the lower capacity factor sensitivity case, the solar PPA's produce less energy so the estimated payments to the developers are lower.
d. Table 5 as shown above includes carbon and externality costs in each of the numbers presented, except the third column ("Zero CO2 Externalities"). Table 1 does not include carbon and externality costs in any of the numbers presented. Note column 3 from Table 5 and column 1 from Table 1 are identical ($14M).

i. Please see the Company's response to Data Request SDPUC 2-009.
ii. Please see Figure 6 on pg. 14 of 46 in Attachment A to the Company's response to Data Request SDPUC 2-009.
iii. The solar PPA's are priced on a $/MWh basis. In the lower capacity factor sensitivity case, the solar PPA's produce less energy so the estimated payments to the developers are lower.

iv. The only difference in the analyses was the inclusion/exclusion of carbon and externality costs. Note that gas generation produces carbon at a rate of approximately ½ ton per MWh, so at a $20 per ton carbon rate, the cost of gas generation would be approximately $10/MWh higher in a case including carbon costs vs. one that does not.

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