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Xcel Energy

Case No.: PU-15-96

Response To: ND Public Service Data Request No. 2-4
Advocacy Staff

Requestor: Richard A. Polich

Date Received: July 31, 2015

Question:

Table 3 on page 11 of Mr. Johnson's testimony provides a 10 year forecast of NSP's North Dakota allocated system capacity. The following discovery questions refer to this table:

- a. Please explain how the ND as a Percentage of NSP System shown in row 1 were calculated. Provide all data used in the calculations.
- b. Please explain why the ND percentage of NSP System increases over the 10 year period.
- c. Has NSP calculated the Percentage of NSP System for the period through 2030? If so, please provide the data.

Response:

- a. The data used for Table 3, page 11 of Mr. Johnson's testimony is taken from our response to NDPSC Data Request No. 11 in Case No. PU-14-810. That response is included here as Attachment A.

We note the Company plans for the NSP System on an integrated basis and does not separately analyze North Dakota load as part of its resource planning efforts. By its nature the calculation is an approximation.

- b. The overall rate of growth in North Dakota has outpaced growth rates in other NSP jurisdictions, as well as other areas of the country.

The Bismarck Tribune, February 25, 2015, *Census: North Dakota should expect continued growth.*

Iverson [Manager of the North Dakota Census Office] said he expects the state's population to reach 800,000 within the next five years. That's about 60,500 more people than live here now and about 164,000 more than what the office expected when "out-migration" was a buzzword in 2000.



The North Dakota census values indicate the state is working with a population growth rate forecast averaging 1.2% annually; the Company has applied a 1.1% growth rate for demand forecasted in the North Dakota jurisdiction. Overall, the Company is forecasting a system average demand growth rate of 0.6% across all *NSP System* jurisdictions.

- c. Data provided in Attachment A extends through the year 2030.
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Xcel Energy

Case No.: PU-14-810

Response To: NDPSC Data Request No. 11

Requestor: Michael Diller

Date Received: January 7, 2015

Question:

Reference NDPSC Data Request No. 5I, Attachment A

- a) Please redo NDPSC Data Response No. 5i, Attachment A to make it non-trade secret and more useful for the hearing. Redo the non-trade secret section to only include “existing resources” to determine a baseline Long / (Short) Position. Make sure that this new schedule includes NSP’s most recent capacity needs projections and reference the date of the projection. Below the baseline Position, include a separate line for each new resource’s expected capacity to meet system capacity requirements including the date each is expected to come on line. The new resources section should include 3 segments, one for new resources already approved by the MN commission; another for resources that are expected to be approved by the MN commission; and a third section for resources that are not included in the first two but are preferred by NSP. Given this approach, the trade secret portion can be dropped from the schedule and the hearing will not be impeded by dealing with non-disclosure requirements. Last, add 5 more years to the worksheet to include years out to 2024.
- b) Provide the same thing except on a North Dakota basis. In other words, instead of Non-Coincident Peak Demand for NSP’s system, the first line would include North Dakota’s projected NCPD and a calculated diversity factor on the second line to coincide with North Dakota’s projected Demand Coincident with Peak number on the third line. Include North Dakota’s share of Demand Resources then work through the applicable transmission adjustments and the MISO reserve planning margin to determine a Native Load Obligation for ND. This would then be followed with ND’s share of existing resources and its share of purchased generation and sales to determine ND’s share of resources and its Long / (Short) Position. Again, each future projected resource will be shown displaying only ND’s share of the projected capacity. I understand that this may not be readily available. However, this is important to my analysis of

ND's needs and this proceeding. Make a good effort in developing the information.

Response:

a) and b) Please see Attachments A and B for the requested analyses.

As shown in Attachments A and B, based on the 2014 forecast, the Company's current supply portfolio shows a modest amount of excess capacity (between 1 and 2.5%) from 2015 through 2018 and virtually no excess capacity on a system-wide basis in 2019 and 2020. In 2021, the system then regains a small amount of excess capacity by increasing our current Manitoba Hydro purchase from anticipated new capacity that is under development. In 2024, however, we again show a system deficit of 234 MW. This load balance profile suggests that we are at risk of capacity deficits beginning in 2019 and 2020 if our projected loads change by even a very small amount. Indeed, even the 0.5 to 2.5 percent excess capacity shown on our assumed supply portfolio is modest given the normal forecast variability which can result in demand swings of 200 MW (2 percent) or more.

This data suggest that we are at risk of capacity shortfalls (both on a system-wide and North Dakota allocated share basis) in 2019-2020 due to small changes in customer loads. The normal variability we have experienced between load projections and actual results in recent years suggests that it may be appropriate to include additional generation as a hedge. While we recognize that we could potentially purchase short-term capacity from the MISO voluntary capacity market at then-prevailing rates for any capacity shortfall, we must also consider that existing and proposed retirements of baseload units in the MISO footprint may result in a shortfall of capacity across the footprint and higher capacity prices in the MISO voluntary short-term capacity market. Prudent planning includes balancing the risk of exposure to the capacity market in the next five years against the cost of building additional capacity in the 2019/2020 time-frame, which will be necessary by 2024, in any event.

As requested, Attachments A and B also includes a scenario where all of our currently contemplated resources have been included. This includes: (1) the 98 MW creditable capacity (187 MW nameplate) solar portfolio purchase which is the subject of this Case; (2) the Calpine Mankato combined-cycle expansion project (345 MW creditable capacity); (3) the up-to 71 MW creditable capacity (up to 100 MW nameplate) Geronimo solar project; (4) the capacity for the Black Dog 6 combustion turbine unit (207 MW creditable capacity), for which an ADP has already been issued by the Commission; (5) a new short-term (four year) 75 MW capacity exchange with Manitoba Hydro; and (6) additional resources contemplated by our recently filed

Upper Midwest Resource Plan.¹ If all of the contemplated new generation is actually deployed, it will result in a system surplus in the 2019-2020 timeframe of about 6 to 7 percent (550 MW in 2019 and 685 MW in 2020) and address our resource need in 2024.

Additionally, these resource additions will also position us well to address issues identified in our 2015 Resource Plan beyond 2024. This includes the impacts of pending environmental regulation such as NOx regulations that may impact the continued use of our Sherco Units 1 and 2 as well as EPA's proposed Clean Power Plan. Furthermore, these resources help position us to address known long-term changes to the NSP System beyond 2024. For example, from 2025 through 2034, the first phase of the Mankato Energy Center and the Cottage Grove power purchase agreements will expire, the Manitoba Hydro power purchase agreement will expire, and our nuclear plant licenses will reach their end dates. As a result, we must begin to address nearly 75 percent of the energy producing resources on the NSP System.

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¹ Please note, we intend to file ADP applications for the Calpine and Geronimo projects once the MPUC issues a written order approving their purchase. We expect to file for approval for the Manitoba Hydro contract from the Commission in the next several months. Because it is a short-term purchase, approval by the MPUC is not required.

NSP Load Balance	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
NSP System Peak Demand, July (Fall 2014 Forecast) @ generator	9,325	9,442	9,525	9,597	9,649	9,674	9,694	9,754	9,748	9,766	9,798	9,868	9,962	10,136	10,151	10,251
Coincident Factor with MISO	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
NSP System Peak Demand Coincident with MISO @ generator	8,858	8,970	9,048	9,117	9,167	9,190	9,209	9,266	9,261	9,278	9,308	9,375	9,464	9,629	9,644	9,739
Transmission Loss Correction to Transmission	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%
NSP System Peak Demand Coincident with MISO @ transmission	8,633	8,741	8,818	8,884	8,933	8,956	8,975	9,030	9,025	9,042	9,071	9,136	9,223	9,384	9,398	9,490
NSP System Load Management Forecast, July @ transmission	933	942	953	964	975	986	996	1,007	1,017	1,028	1,030	1,025	1,021	1,017	1,013	1,009
NSP System Peak Demand, Net of LM, Coincident with MISO @ transmission	7,700	7,800	7,864	7,920	7,958	7,970	7,978	8,023	8,008	8,014	8,041	8,111	8,202	8,367	8,385	8,482
Transmission Loss Correction to Generator	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%	2,622%
NSP System Peak Demand, Net of LM, Coincident with MISO @ generator	7,901	8,004	8,070	8,127	8,166	8,178	8,187	8,233	8,217	8,224	8,251	8,323	8,416	8,586	8,604	8,703
MISO System Planning Reserve Margin	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%
NSP System Native Load Obligation @ generator	8,462	8,572	8,643	8,704	8,746	8,759	8,768	8,817	8,800	8,808	8,837	8,914	9,014	9,195	9,215	9,321
Existing Resources	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Owned Generation	6,803	6,870	6,913	6,913	6,902	6,902	6,954	6,954	6,954	6,566	6,566	6,317	6,066	6,029	6,029	6,029
Purchased Generation	1,885	1,894	1,997	1,882	1,852	1,857	2,045	2,046	2,009	2,008	862	593	570	309	324	361
Sales	(50)	(50)	(25)													
Existing Resources @ generator	8,639	8,714	8,885	8,795	8,754	8,760	8,999	9,000	8,963	8,574	7,427	6,910	6,636	6,339	6,353	6,391
Long/(Short) Position @ generator	177	142	242	91	8	0	231	182	163	(234)	(1,410)	(2,004)	(2,378)	(2,856)	(2,862)	(2,931)
Additional Resources																
Resources Approved by the MPUC (Docket 12-1240)																
Calpine Mankato - 2 (June 2019) (NG-CC-PPA)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Geronimo/Aurora (COD 12/2016, summer accreditation 6/2018) (Solar-PPA)	-	-	-	72	72	72	72	72	72	72	72	72	72	72	72	72
Black Dog 6 - (June 2020) (NG-CT)	-	-	-	-	-	207	207	207	207	207	207	207	207	207	207	207
Total Resources Currently Approved	-	-	-	72	380	587	587	587	587	587	587	587	587	587	587	587
Resources Anticipating Approval by the MPUC																
Manitoba Hydro - 75 MW Diversity Agreement (Period 6/1/2016-5/31/2020)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Solar Resource Acquisition (187 MW) docket 14-168 (COD 12/2016, summer accreditation 6/2018)	-	73	73	73	73	-	-	-	-	-	-	-	-	-	-	-
Total Resources Anticipating Approval	-	73	73	73	171	171	98	98	98	98	98	98	98	98	98	98
Resources in the 2016 IRP Preferred Plan																
Preferred Plan - Wind Additions	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Preferred Plan - Solar Additions	-	-	-	-	-	-	89	89	118	118	207	207	266	266	266	266
Preferred Plan - CT Additions	-	-	-	-	-	-	-	-	-	52	261	418	523	784	889	889
Resources in the 2016 IRP Preferred Plan	-	-	-	-	-	-	89	89	118	171	1,346	1,535	1,755	1,755	1,755	1,755
Subsequent Impact of Additional Resources																
Resources Approved by the MPUC (Docket 12-1240)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Resources Anticipating Approval by the MPUC	-	-	-	72	380	587	587	587	587	587	587	587	587	587	587	587
Resources in the 2016 IRP Preferred Plan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional Resources @ generator	-	73	73	243	551	684	773	773	803	855	2,030	2,626	3,009	3,490	3,490	3,594
Long/(Short) Position @ generator	177	216	315	334	559	685	1,004	956	965	621	621	622	631	633	628	664

Notes:
 All resource capacity ratings represent MISO UCAP values.
 Pending receipt of the written order in Docket 12-1240, the Commercial Operation Dates have been estimated.

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
NSP Load Balance - North Dakota - Summer																
North Dakota Peak Demand, July (Fall 2014 Forecast) @generator	480	490	496	502	508	513	519	525	535	539	543	547	551	555	559	563
Coincident Factor with MISO	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
North Dakota Peak Demand Coincident with MISO @generator	456	466	471	477	482	487	493	499	508	512	516	520	523	527	531	535
Transmission Loss Correction to Transmission	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%
North Dakota Peak Demand Coincident with MISO @transmission	444	454	459	465	470	475	481	486	495	499	503	506	510	514	517	521
ND Load Management Forecast, July @transmission	64	64	64	64	65	65	65	65	65	66	66	65	65	65	65	65
North Dakota Peak Demand, Net of LM, Coincident with MISO @transmission	380	390	395	401	405	410	416	421	430	433	437	441	444	448	452	456
Transmission Loss Correction to Generator	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%	2.62%
North Dakota Peak Demand, Net of LM, Coincident with MISO @generator	390	400	405	411	416	421	426	432	441	445	448	452	456	460	464	468
MISO System Planning Reserve Margin	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%
North Dakota Native Load Obligation @generator	418	428	434	440	446	451	457	462	472	476	480	485	489	493	497	501
NSP System Obligation	8,462	8,572	8,643	8,704	8,746	8,759	8,768	8,817	8,800	8,808	8,837	8,914	9,014	9,195	9,215	9,321
ND Obligation	418	428	434	440	446	451	457	462	472	476	480	485	489	493	497	501
ND Obligation as a Percentage of NSP System Obligation	4.94%	5.00%	5.02%	5.06%	5.09%	5.15%	5.21%	5.24%	5.37%	5.41%	5.43%	5.44%	5.42%	5.36%	5.39%	5.38%
NSP Share of Existing Resources, Summer																
Owned Generation	336	343	347	350	352	355	362	365	373	355	357	343	329	323	325	324
Purchased Generation	93	95	100	95	94	96	107	107	108	109	47	32	31	17	17	19
Sales	(2)	(2)	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-
Existing Resources, Summer	427	436	446	445	446	451	469	472	481	464	404	376	360	340	343	344
Position - Long (Short), Summer																
	9	7	12	5	0	0	12	10	9	(13)	(77)	(109)	(129)	(153)	(154)	(158)
Subsequent Impact of Additional Resources - ND Share																
Resources Approved by the MPUC (Docket 12-1240)	-	-	-	4	19	30	31	31	31	32	32	32	32	31	32	32
Resources Anticipating Approval by the MPUC	-	4	4	9	9	5	5	5	5	5	5	5	5	5	5	5
Resources in the 2016 IRP Preferred Plan	-	-	-	-	-	-	5	5	6	9	73	106	126	150	151	157
Additional Resources	-	4	4	12	28	35	40	41	43	46	110	143	163	187	188	193
Position - Long (Short), Summer with Additional Resources	9	11	16	17	28	35	52	50	52	34	34	34	34	34	34	36

Notes:
 All resource capacity ratings represent MISO UCAP values.
 Pending receipt of the written order in Docket 12-1240, the Commercial Operation Dates have been estimated.