

RESOURCE PLANNING

I. Modeling Assumptions

1. Capital Structure and Discount Rate

The rates shown in Table 1 were calculated by taking a weighted average of NSPM's Minnesota jurisdictional (85 percent) and NSPW's Wisconsin jurisdictional (15 percent) information from the February 2016 Corporate Assumptions Memo. The after-tax weighted average cost of capital of 6.49 percent is used to calculate the capital revenue requirements of generic resources. It is also used as the discount rate to determine the present value of revenue requirements.

Table 1: Capital Structure

	Capital Structure	Allowed Return	Before Tax Elec. WACC	After Tax Elec. WACC
L-T Debt	45.32%	4.92%	2.23%	1.31%
Common Equity	52.92%	9.76%	5.17%	5.17%
S-T Debt	1.76%	0.70%	0.01%	0.01%
Total			7.41%	6.49%

2. Inflation Rates

The inflation rate used for construction (capital) costs, non-fuel variable O&M, fixed O&M, and any other escalation factor related to general inflationary trends is the long term forecast from Global Insight for the "Chained Price Index for Total Personal Consumption Expenditures" published in the third quarter of 2015. This rate is 2.0 percent and will be applied throughout the entire planning period as a base assumption.

3. Reserve Margin

The reserve margin at the time of MISO's peak is 7.8 percent. The coincidence factor between the NSP System and MISO system peak is 5 percent. Therefore, the effective reserve margin is:

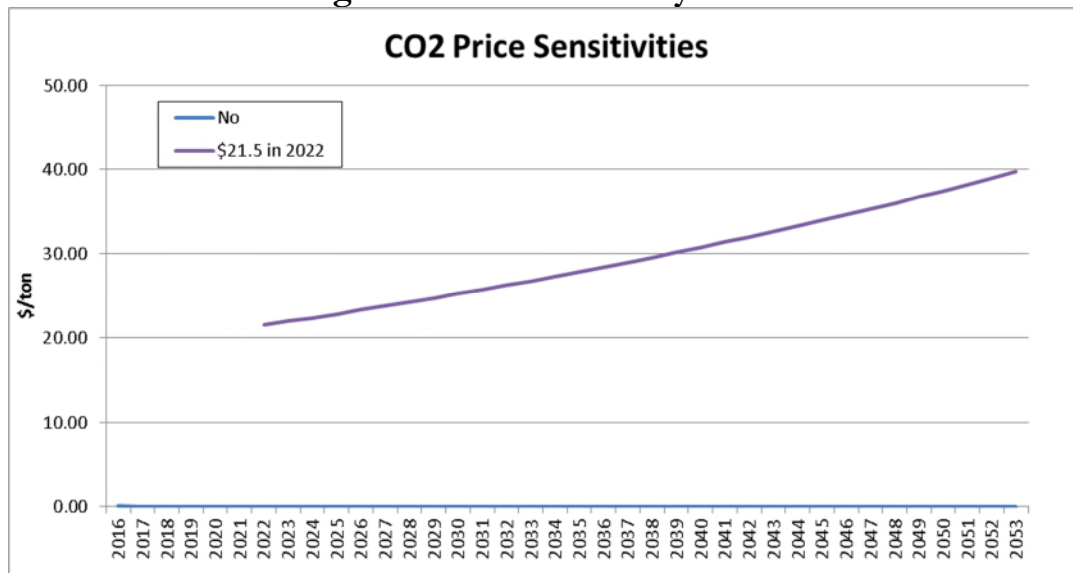
$$(1 - 5\%) * (1 + 7.8\%) - 1 = 2.41\%.$$

Table 2: Reserve Margin

Reserve Margin	
Coincidence Factor	5.00%
MISO Coincident Peak Reserve Margin %	7.80%
Effective RM Based on Non-coincident Peak	2.41%

4. CO₂ Price Forecasts (PVSC Only)

Figure 1 shows the annual CO₂ prices for the various CO₂ sensitivities that were used in the analysis. The base assumption is \$21.50/ton starting in 2022 which is the average of \$9/ton and \$34/ton. The range of CO₂ costs is drawn from the Minnesota Public Utilities Commission's Order Establishing 2016 and 2017 Estimate of Future Carbon Dioxide Regulation Costs in Docket No. E999/CI-07-1199 issued August 5, 2016. All prices escalate at inflation.

Figure 1: CO₂ Sensitivity Prices

5. Externality Prices (PVSC Only)

Externality prices are based on the high values from the Minnesota Public Utilities Commission's Notice of Comment Period on Updated Environmental Externality Values issued June 16, 2016, in Docket Nos. E999/CI-93-583 and E999/CI-00-1636, and are shown in Table 3 below. Prices are shown in 2016 dollars and escalate at inflation. Sulfur oxides (SO_x) assumed zero regulatory cost due to large surplus of

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allowances and weak sales market and zero externality cost per Minnesota Public Utilities Commission policy.

Table 3: Externality Prices

MPUC Updated Externality Prices				
2016 \$/ton				
	Urban	Metro Fringe	Rural	<200mi
NOx	\$1,466	\$399	\$153	\$153
PM10	\$9,627	\$4,326	\$1,282	\$1,282
CO	\$3	\$2	\$1	\$1
Pb	\$5,808	\$2,990	\$671	\$671

6. Demand and Energy Forecast

The Fall 2016 Load Forecast, developed by the Xcel Energy Load Forecasting group, was used. Table 4, below, shows the annual energy and demand.

Table 4: Demand and Energy Forecast

Demand (MW)				Energy (GWh)			
Year	Model Output	W/ Hist DSM, Building Code Adj	Final w DSM/Eff Adjustments	Year	Model Output	W/ Hist DSM, Building Code	Final w DSM/Eff Adjustments
2016	10,333	9,214	9,137	2016	51,158	45,398	44,952
2017	10,409	9,350	9,206	2017	50,843	45,440	44,557
2018	10,453	9,453	9,243	2018	50,822	45,779	44,457
2019	10,529	9,588	9,309	2019	51,150	46,432	44,672
2020	10,605	9,695	9,318	2020	51,606	47,071	44,855
2021	10,719	9,848	9,369	2021	52,044	47,665	45,006
2022	10,797	9,996	9,423	2022	52,280	48,284	45,227
2023	10,871	10,106	9,432	2023	52,474	48,648	45,192
2024	10,933	10,205	9,430	2024	52,804	49,192	45,327
2025	11,042	10,340	9,464	2025	53,215	49,831	45,578
2026	11,114	10,462	9,485	2026	53,406	50,307	45,657
2027	11,183	10,593	9,515	2027	53,572	50,841	45,791
2028	11,264	10,730	9,551	2028	53,938	51,629	46,165
2029	11,388	10,849	9,569	2029	54,372	52,148	46,302
2030	11,488	10,982	9,677	2030	54,599	52,637	46,837

7. DSM Forecasts

The DSM forecast assumes impacts expected at a 75 percent rebate level which equals roughly 1.5 percent of sales through the planning period.

Table 5: Base DSM Forecast

Year	Energy (MWh)	Demand (MW)
2016	446	91
2017	884	173
2018	1,322	255
2019	1,761	337
2020	2,216	473
2021	2,659	613
2022	3,057	739
2023	3,455	876
2024	3,865	1,013
2025	4,252	1,150
2026	4,651	1,287
2027	5,049	1,425
2028	5,464	1,562
2029	5,846	1,699
2030	5,800	1,745

8. Demand Response Forecast

The 2016 Load Management Forecast developed by the Xcel Energy Load Research group was used in the Resource Plan. Table 6 below shows the July demand.

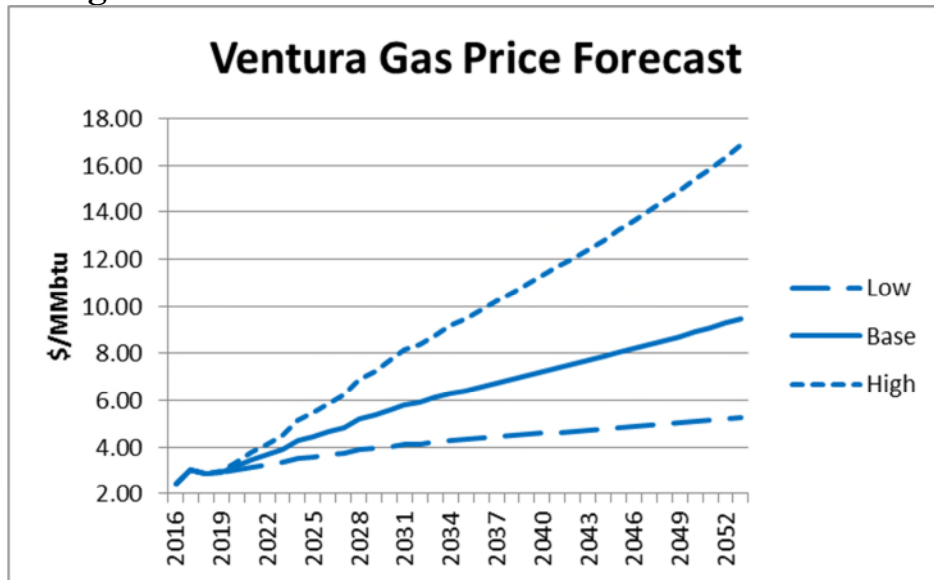
Table 6: Load Management Forecast

July Demand (MW)	2016	2017	2018	2019	2020	2021	2022	2023
LMF	915	921	930	940	948	957	966	974
July Demand (MW)	2024	2025	2026	2027	2028	2029	2030	
LMF	983	990	994	994	992	988	984	

9. Gas Price Forecasts

Henry Hub natural gas prices are developed using a blend of the latest market information (New York Mercantile Exchange futures prices) and long-term fundamentally-based forecasts from Wood Mackenzie, Cambridge Energy Research Associates (CERA), and Petroleum Industry Research Associates (PIRA).

Gas Prices from September 6, 2016, were used. High and low gas price sensitivities were performed by adjusting the growth rate up and down by 50 percent from the base natural gas cost forecast.

Figure 2: Ventura Gas Price Forecast and Sensitivities

10. Gas Transportation Costs

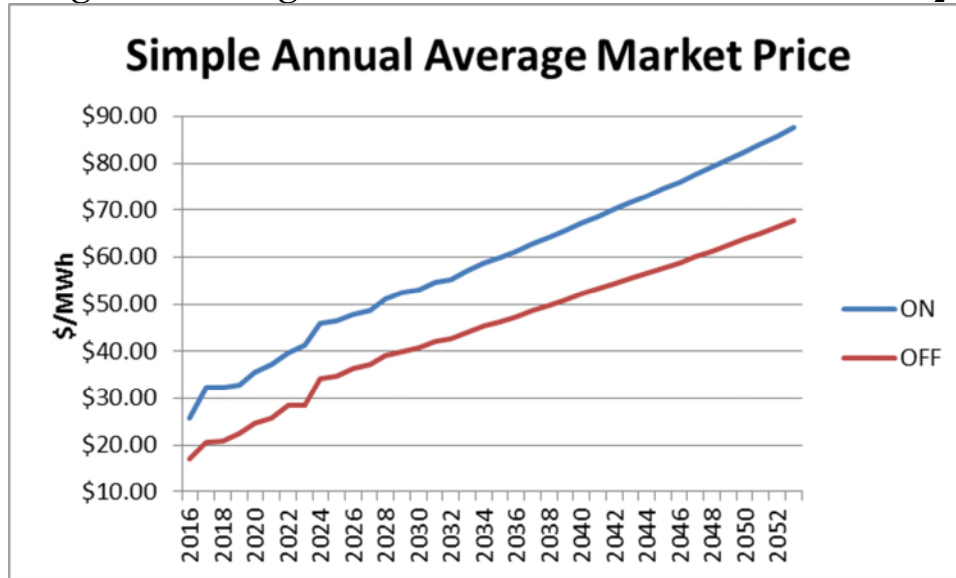
Gas transportation variable costs include the gas transportation charges and the Fuel Lost & Unaccounted (FL&U) for all of the pipelines the gas flows through from the Ventura Hub to the generators facility. The FL&U charge is stated as a percentage of the gas expected to be consumed by the plant, effectively increasing the gas used to operate the plant and is at the price of gas commodity being delivered to the plant.

11. Gas Demand Charges

Gas demand charges are fixed annual payments applied to resources to guarantee that natural gas will be available (normally called “firm gas”). Typically, firm gas is obtained to meet the needs of the winter peak as enough gas is normally available during the summer.

12. Market Prices

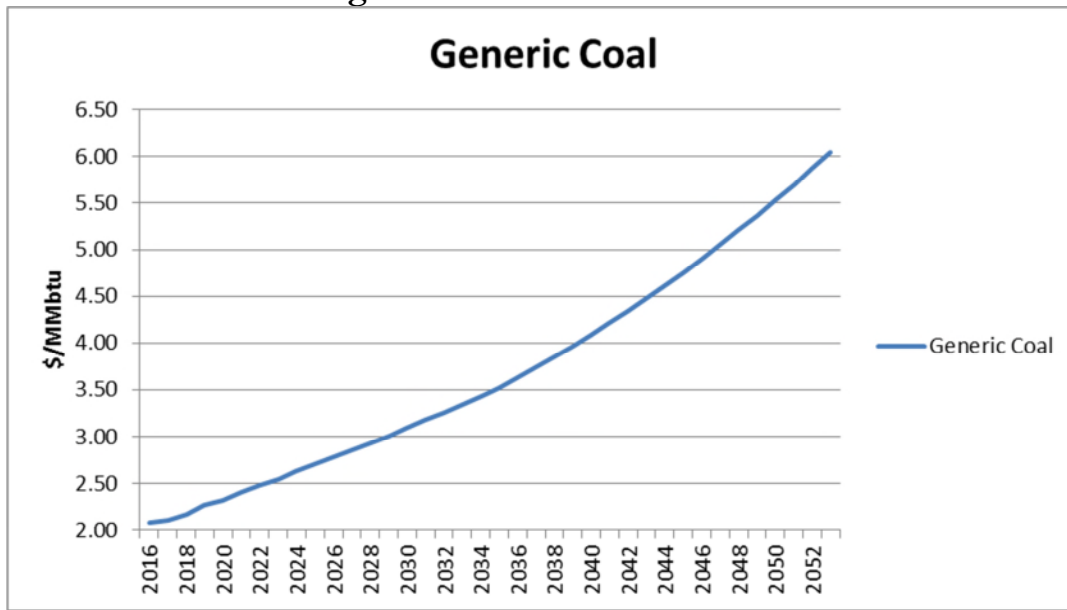
In addition to resources that exist within the NSP System, the Company has access to energy markets operated by MISO. Market power prices are developed using a blend of market information from the Intercontinental Exchange for near-term prices and long-term fundamentally-based forecasts from Wood Mackenzie, CERA, and PIRA. Figure 3 below shows the market prices under no CO₂ assumptions.

Figure 3: Average On and Off Peak Market Price-No CO₂

13. Coal Price Forecasts

Coal price forecasts are developed using two major inputs: the current contract volumes and prices combined with current estimates of required spot volumes and prices. Typically coal volumes and prices are under contract on a plant-by-plant basis for a one- to five-year term with annual spot volumes filling the estimated fuel requirements of the coal plant based on recent unit dispatch. The spot coal price forecasts are developed from price forecasts provided by Wood Mackenzie, JD Energy, and John T Boyd Company, as well as price points from recent Request for Proposal (RFP) responses for coal supply. Layered on top of the coal prices are transportation charges, SO₂ costs, freeze control, and dust suppressant, as required.

Figure 4: Coal Price Forecast



14. Surplus Capacity Credit (PVSC and PVRRCc Only)

The credit is applied for all twelve months of each year and is priced at the avoided capacity cost of a generic combustion turbine.

Table 7: Surplus Capacity Credit

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
\$/kw-mo	4.74	4.84	4.94	5.03	5.14	5.24	5.34	5.45	5.56	5.67
	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
\$/kw-mo	5.78	5.90	6.02	6.14	6.26	6.39	6.51	6.64	6.78	6.91
	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
\$/kw-mo	7.05	7.19	7.33	7.48	7.63	7.78	7.94	8.10	8.26	8.43
	2046	2047	2048	2049	2050	2051	2052	2053		
\$/kw-mo	8.59	8.77	8.94	9.12	9.30	9.49	9.68	9.87		

As discussed in the Application, we performed our resource planning analysis on a Present Value of Societal Cost (PVSC) basis, a Present Value of Revenue Requirements (PVRRC) basis, and a Present Value of Revenue Requirements with capacity credit (PVRRCc) basis. We undertook a PVSC analysis to comply with Minnesota’s externality requirements and we undertook the PVRRCc and PVRRC to provide a comparable analysis without externalities (PVRRCc) consistent with North

Dakota's requirements and a more focused rate impact look (PVRR) to better understand the rate impacts of the different modelling runs. Only the PVSC and PVRcc views contain a credit for surplus capacity.

The inclusion of a surplus capacity credit accounts for the fact that any surplus capacity on a utility system has some inherent value. This value is derived from the potential ability to sell the surplus capacity to other utilities. For that reason, when a surplus capacity credit is included in the model, it assumes that surplus capacity is sold and that ratepayers derive value from that sale. Including a surplus capacity credit therefore has the effect of mitigating the impact of system length. Including a capacity credit in a model is consistent with general prudent resource planning principles.

With that said, the Company's history indicates that it does not sell all of its system length into the market. Therefore, to obtain a different view of the impact of system length on cost, we also undertook modelling efforts that did not include a surplus capacity credit in the PVRR view. By doing so, we can obtain modelling outputs that provide a range of costs regarding system length.

The actual impact on ratepayers is likely somewhere in between the PVRR and PVRcc view. However, consistent with NDPSC Staff's concerns raised in PU-12-59 and the MPUC's interest in a rate impact analysis, we provided the PVRR view without capacity credit to obtain a "rate impact" view of system length and also provided the PVRcc view to both have a comparison point to the PVSC assumptions.

15. Transmission Delivery Costs

Generic 2x1 combined cycle, generic CTs, generic wind, and generic solar have assumed transmission delivery costs. Table 8, below, shows the transmission delivery costs on a \$/kw basis. The CC and CT costs were developed based on the average of several potential sites in Minnesota. The general site locations were investigated by Transmission Access for impacts to the transmission grid and expected resulting upgrade costs.

Table 8: Transmission Delivery Costs

	\$/kw
CC	\$ 429
CT	\$ 158
Solar	\$ 70
Wind	\$ 96

16. Interconnection Costs

Estimates of interconnection costs of the generic resources were included in the capital cost estimates.

17. Effective Load Carrying Capability (ELCC) Capacity Credit for Wind Resources

Existing wind units are based on current MISO accreditation. New wind additions were given a capacity credit equal to 14.8 percent of their nameplate rating per the MISO 2012/2013 Wind Capacity Report.

18. ELCC Capacity Credit for Utility Scale Solar Photovoltaic (PV) Resources

Utility scale generic solar PV additions used in modeling the alternative plans were given a capacity credit equal to 50 percent of the AC nameplate capacity. This value is the MISO proposed solar capacity credit for the 2016/2017 planning year.

19. Spinning Reserve Requirement

Spinning Reserve is the on-line reserve capacity that is synchronized to the grid to maintain system frequency stability during contingency events and unforeseen load swings. The level of spinning reserve modeled is 94 MW and is based on a 12-month rolling average of spinning reserves carried by the NSP System within MISO.

20. Emergency Energy Costs

Emergency Energy Costs were assigned in the Strategist model if there were not enough resources available to meet energy requirements. The cost was set at \$500/MWh in 2014, escalating at inflation which is about \$150/MWh more than an

oil unit with an assumed heat rate of 15 MMBtu/MWh. Emergency energy occurs only in rare instances.

21. Dump Energy / Wind Curtailment

Estimates of wind curtailment were represented in the Strategist model by the “dump energy” variable. Dump energy occurs whenever generation cannot be reduced enough to balance with load, a situation that occurs primarily due to the non-dispatchable nature of wind generation resources combined with minimum turn-down capabilities of must-run units under low load hours. In the NSP System, it is assumed that the excess generation can be sold into the MISO market. To approximate the price the excess energy could be sold for, 50 percent of the all-hours average market price modeled in Strategist was used.

22. Wind Integration Costs

Wind integration costs were priced based upon the results of the 2015 NSP System Wind Integration Cost Study. Wind integration costs contain five components:

1. MISO Contingency Reserves
2. MISO Regulating Reserves
3. MISO Revenue Sufficiency Guarantee Charges
4. Coal Cycling Costs
5. Gas Storage Costs

The results of the study as used in Strategist are shown below.

Table 9: Wind Integration Costs

	Wind Integration \$/MWh		Coal Cycling \$/MWh	
	Existing Resources	New Resources	Existing Resources	New Resources
2016	0.41	0.42	0.75	1.26
2017	0.42	0.43	0.77	1.28
2018	0.43	0.44	0.78	1.31
2019	0.44	0.45	0.80	1.33
2020	0.44	0.46	0.82	1.36
2021	0.45	0.46	0.83	1.39
2022	0.46	0.47	0.85	1.41
2023	0.47	0.48	0.87	1.44
2024	0.48	0.49	0.88	1.47
2025	0.49	0.50	0.90	1.50
2026	0.50	0.51	0.92	1.53
2027	0.51	0.52	0.94	1.56
2028	0.52	0.53	0.96	1.59
2029	0.53	0.54	0.98	1.62
2030	0.54	0.55	1.00	1.66

23. Owned Unit Modeled Operating Characteristics and Costs

Company-owned units were modeled based upon their tested operating characteristics and historical or projected costs. Below is a list of typical operating and cost inputs for each company owned resource.

- a. Retirement Date
- b. Maximum Capacity
- c. Current Unforced Capacity (UCAP) Ratings
- d. Minimum Capacity Rating
- e. Seasonal Deration
- f. Heat Rate Profiles
- g. Variable O&M
- h. Fixed O&M
- i. Maintenance Schedule
- j. Forced Outage Rate
- k. Emission rates for SO₂, NO_x, CO₂, Mercury, and particulate matter (PM)
- l. Contribution to spinning reserve
- m. Fuel prices
- n. Fuel delivery charges

24. Thermal Power Purchase Agreement (PPA) Operating Characteristics and Costs

PPAs are modeled based upon their tested operating characteristics and contracted costs. Below is a list of typical operating and cost inputs for each thermal PPA:

- a. Contract term
- b. Maximum Capacity
- c. Minimum Capacity Rating
- d. Seasonal Deration
- e. Heat Rate Profiles
- f. Energy Schedule
- g. Capacity Payments
- h. Energy Payments
- i. Maintenance Schedule
- j. Forced Outage Rate
- k. Emission rates for SO₂, NO_x, CO₂, Mercury, and PM
- l. Contribution to spinning reserve
- m. Fuel prices
- n. Fuel delivery charges

25. Renewable Energy PPAs and Owned Operating Characteristics and Costs

PPAs are modeled based upon their tested operating characteristics and contracted costs. Company owned units were modeled based upon their tested operating characteristics and historical or projected costs. Below is a list of typical operating and cost inputs for each renewable energy PPA and owned unit.

- a. Contract term
- b. Name Plate Capacity
- c. Accredited Capacity
- d. Annual Energy
- e. Hourly Patterns
- f. Capacity and Energy Payments
- g. Integration Costs

Wind hourly patterns were developed through a “Typical Wind Year” process where individual months were selected from the years 2009 to 2014 to develop a typical year. Actual generation data from the selected months were used to develop the profiles for each wind farm. For farms where generation data was not complete or not available, data from nearby similar farms were used.

Solar hourly patterns were taken from Fall 2013 and updated to reflect the ELCC as stated above. The fixed panel pattern is an average of the four orientations and three years (2008-2010) of data and the single-axis tracking pattern is an average of three years of data.

26. Generic Assumptions

Generic resources were modeled based upon their expected operating characteristics and projected costs. Below is a list of typical operating and cost inputs for each generic resource.

Thermal

- a. Retirement Date
- b. Maximum Capacity
- c. UCAP Ratings
- d. Minimum Capacity Rating
- e. Seasonal Deration
- f. Heat Rate Profiles
- g. Variable O&M
- h. Fixed O&M
- i. Maintenance Schedule
- j. Forced Outage Rate
- k. Emission rates for SO₂, NO_x, CO₂, Mercury, and PM
- l. Contribution to spinning reserve
- m. Fuel prices
- n. Fuel delivery charges

Renewable

- a. Contract term
- b. Name Plate Capacity
- c. Accredited Capacity
- d. Annual Energy
- e. Hourly Patterns

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- f. Capacity and Energy Payments
- g. Integration Costs

Tables 10 through 12, below, show the assumptions for the generic thermal and renewable resources.

Table 10: Thermal Generic Information (Costs in 2016 Dollars)

Resource	Coal	Coal w/ Seq	2x1 CC	1x1 CC	CT	Small CT	Biomass
Nameplate Capacity (MW)	511	511	778.3	291.1	229.9	103.4	50
Summer Peak Capacity with Ducts (MW)	NA	NA	766.3	NA	NA	NA	NA
Summer Peak Capacity without Ducts (MW)	485	485	649.8	290.2	226.1	100.8	50
Cooling Type	Dry	Dry	Dry	Dry	NA	Wet	Wet
Capital Cost (\$/kw)	3,758	5,487	963	1,212	626	1,572	4,731
Electric Transmission Delivery (\$/kw)	NA	NA	429	NA	158	NA	NA
Gas Demand (\$/kw-yr)	0	0	8.96	11.98	0	0	0
Book life	30	30	40	40	30	30	30
Fixed O&M Cost (\$000/yr)	16,973	25,546	7,813	4,299	614	886	5,382
Variable O&M Cost (\$/MWh)	2.92	11.00	3.20	1.82	2.36	1.88	4.88
Ongoing Capital Expenditures (\$/kw-yr)	9.96	24.31	4.50	4.97	6.11	1.93	14.67
Heat Rate with Duct Firing (btu/kWh)	NA	NA	7725	NA	NA	NA	NA
Heat Rate 100% Loading (btu/kWh)	9,156	12,096	6,822	7,830	9,942	8,867	14,421
Heat Rate 75% Loading (btu/kWh)	9,190	12,565	6,905	8,010	11,048	9,688	14,580
Heat Rate 50% Loading (btu/kWh)	9,710	13,600	6,943	8,583	14,601	11,161	15,570
Heat Rate 25% Loading (btu/kWh)	11,245	17,140	7,583	9,798	NA	15,067	18,650
Forced Outage Rate	6%	7%	3%	3%	3%	2%	4%
Maintenance (weeks/year)	2	5	5	4	2	2	7
CO2 Emissions (lbs/MMBtu)	216	9	118	118	118	118	211
SO2 Emissions (lbs/MWh)	0.447	0.371	0.005	0.005	0.007	0.007	0.577
NOx Emissions (lbs/MWh)	0.45	0.62	0.06	0.05	0.30	0.08	1.01
PM10 Emissions (lbs/MWh)	0.14	0.14	0.01	0.01	0.01	0.01	0.43
Mercury Emissions (lbs/Million MWh)	0.00007	0.00010	0.00000	0.00000	0.00000	0.00000	0.00017

Table 11: Renewable Generic Information (Costs in 2016 Dollars)

Resource	PTC Wind	Non-PTC Wind	30% ITC Solar	10% ITC Solar
Nameplate Capacity (MW)	200	200	50	50
ELCC Capacity Credit (MW)	29.6	29.6	25	25
Capital Cost (\$/kw)	\$1,312	\$1,312	\$1,094	\$1,094
Electric Transmission Delivery (\$/kw)	\$96	\$96	\$70	\$70
Book life	25	25	25	25
O&M Cost (\$000/yr)	\$4,617	\$4,617	\$471	\$471
Ongoing Capital Expenditures (\$000/yr)	\$1,979	\$1,979	\$0	\$0
Land Lease Payments (\$000/yr)	\$1,131	\$1,131	\$0	\$0

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Year	PTC Wind	Non-PTC Wind	30% ITC Solar	10% ITC Solar
2019	14			
2020	15		44	
2021	15		45	
2022	15		46	
2023	16		47	
2024	16		48	
2025	16	38	48	52
2026	17	39	49	53
2027	17	40	50	54
2028	17	40	51	56
2029	18	41	52	57
2030	18	42	54	58
2031	18	43	55	59
2032	19	44	56	60
2033	19	45	57	61
2034	19	46	58	63
2035	20	47	59	64
2036	20	47	60	65
2037	21	48	61	66
2038	21	49	63	68
2039	22	50	64	69
2040	22	51	65	70
2041	22	52	67	72
2042	23	53	68	73
2043	23	54	69	75
2044		56	71	76
2045		57		78
2046		58		79
2047		59		81
2048		60		83
2049		61		84

27. Distributed Generation

Distributed solar additions have been accelerated from the March 2015 Supplemental Filing of the 2015 Upper Midwest Resource Plan by 422 MW in the pre-2021 timeframe in anticipation of the completion of several Solar*Reward Community projects and continuing our commitment to growing renewable resources. In addition, the costs and payment terms have been revised to payments for 20 years at 12¢/kWh.

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North Dakota Jurisdiction Expansion Plans

BA - Legacy Purchase/Sale	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Shared MW	532	540	550	577	577	593	593	594	538	474	444	389	371	370	371	326	312	310	279	225
Generic CT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115	-	-	-	115
EA - CT and Nuclear	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Shared MW	532	540	550	577	577	593	593	591	532	156	156	154	151	151	151	117	117	117	88	80
Generic CT	-	-	-	-	-	-	-	-	-	230	-	-	-	-	-	115	-	-	-	-
SB - CC and Nuclear	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Shared MW	532	540	550	577	577	593	593	591	532	156	156	154	151	151	151	117	117	117	88	80
Generic CC	-	-	-	-	-	-	-	-	-	389	-	-	-	-	-	-	-	-	-	-
SC - CT	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Shared MW	532	540	550	577	577	593	593	591	532	60	60	60	60	60	60	60	60	60	60	60
Generic CT	-	-	-	-	-	-	-	-	-	345	-	-	-	-	-	-	-	-	-	-
SD - CC	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Shared MW	532	540	550	577	577	593	593	591	532	60	60	60	60	60	60	60	60	60	60	60
Generic CC	-	-	-	-	-	-	-	-	-	389	-	-	-	-	-	-	-	-	-	-

IV. Strategist Outputs

See attached.

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Case	Assum	Basis	Details	Strat SO Name
1	Current	Reference Case	No restack except solar	_1_REFERENCE UPDATED
2	Current	Preferred Plan	No restack except solar, modified to be 1000MW early wind, accelerated CSG, remove only 200MW early utility scale solar (net +200 by 2030)	_2_PREFERRED UPDATED
3A	Current	Preferred Plan	Current with Legacy Purchase/Sale and Jur Future	_3_A_SHARED LEGACY
3B	Current	Preferred Plan	Current with Legacy Purchase/Sale and Jur Future, Restack Solar, CBED, Biomass	
3C	Current	Preferred Plan	Current with Legacy Purchase/Sale and Jur Future, Share 1500MW wind	
4A	Current	Preferred Plan	ND separation Jan 2023, Replace with CT	_4_2023 FULL SEPARATION
5A	Current	Preferred Plan	ND separation Jan 2025, Replace with CT	_5_2025 FULL SEPARATION
5B	Current	Preferred Plan	ND separation Jan 2025, Replace with CC	
5C	Current	Preferred Plan	ND separation Jan 2025, Replace with CT, No Nuclear	
5D	Current	Preferred Plan	ND separation Jan 2025, Replace with CC, No Nuclear	
6A	Current	Preferred Plan	ND separation Jan 2027, Replace with CT	_6_2027 FULL SEPARATION

Base Restack Resources
 Small Solar (never allocated to ND)

Base Assumptions
 CO2 - \$21.50 starting in 2022
 Fuel/markets as of 9/6/2016
 Fall 2016 load forecast
 Current "Strategic Planning" renewable costs

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MN, SD, WI Costs (\$M)

	NPV	NPV 2040	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
1 IRP Reference Case with Updated Assumptions	48,491	38,685	2,479	2,456	2,413	2,541	2,628	2,786	2,821	2,899	2,888	2,972	2,902	3,041	3,132	3,235	3,156	3,498	3,592	3,759	3,724	3,824	3,926
2 Updated Plan	48,302	38,893	2,495	2,489	2,461	2,619	2,699	2,860	2,883	2,915	2,929	2,957	2,938	3,217	3,205	3,462	3,381	3,431	3,497	3,632	3,570	3,721	3,799
3A Updated Plan with Legacy Purchase/Sale and Jur Future	48,348	38,855	2,495	2,489	2,461	2,617	2,697	2,856	2,879	2,908	2,921	2,932	2,913	3,203	3,193	3,460	3,379	3,433	3,490	3,635	3,582	3,667	3,816
3B Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Reallocated Solar, CBED, Biomass	48,404	38,911	2,502	2,497	2,469	2,624	2,704	2,863	2,886	2,914	2,925	2,937	2,916	3,204	3,194	3,461	3,380	3,434	3,491	3,635	3,583	3,667	3,816
3C Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Share 1500MW wind	48,435	38,937	2,495	2,489	2,461	2,620	2,701	2,861	2,886	2,918	2,932	2,944	2,926	3,216	3,207	3,465	3,385	3,439	3,497	3,643	3,590	3,675	3,824
4A ND separation 2023	48,462	39,028	2,495	2,489	2,461	2,617	2,697	2,856	2,879	2,988	2,999	2,983	2,960	3,242	3,223	3,482	3,405	3,441	3,502	3,629	3,568	3,651	3,799
5A ND separation 2025, CT	48,365	38,931	2,495	2,489	2,461	2,617	2,697	2,856	2,879	2,908	2,921	2,983	2,960	3,242	3,223	3,482	3,405	3,441	3,502	3,629	3,568	3,651	3,799
5B ND separation 2025, CC	48,365	38,931	2,495	2,489	2,461	2,617	2,697	2,856	2,879	2,908	2,921	2,983	2,960	3,242	3,223	3,482	3,405	3,441	3,502	3,629	3,568	3,651	3,799
5C ND separation 2025, CT, no nuclear	48,362	38,928	2,495	2,489	2,461	2,617	2,697	2,856	2,879	2,908	2,921	2,990	2,960	3,245	3,213	3,475	3,396	3,443	3,500	3,635	3,569	3,651	3,799
5D ND separation 2025, CC, no nuclear	48,362	38,928	2,495	2,489	2,461	2,617	2,697	2,856	2,879	2,908	2,921	2,990	2,960	3,245	3,213	3,475	3,396	3,443	3,500	3,635	3,569	3,651	3,799
6A ND separation 2027	48,314	38,880	2,495	2,489	2,461	2,617	2,697	2,856	2,879	2,908	2,921	2,932	2,913	3,245	3,223	3,482	3,405	3,441	3,502	3,629	3,568	3,651	3,799

Delta to Scen 2:

1 IRP Reference Case with Updated Assumptions	189	(208)	(16)	(33)	(48)	(78)	(71)	(73)	(62)	(16)	(41)	16	(36)	(177)	(73)	(228)	(225)	67	95	127	154	104	127
2 Updated Plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A Updated Plan with Legacy Purchase/Sale and Jur Future	45	(38)	(0)	0	0	(2)	(3)	(3)	(4)	(7)	(9)	(24)	(25)	(15)	(12)	(3)	(2)	2	(7)	2	12	(54)	17
3B Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Reallocated Solar, CBED, Biomass	102	18	7	7	8	5	4	4	3	(1)	(4)	(20)	(22)	(13)	(11)	(2)	(1)	3	(6)	3	13	(54)	17
3C Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Share 1500MW wind	133	44	(0)	0	0	1	1	1	3	3	3	(12)	(12)	(1)	2	2	4	9	0	10	20	(46)	25
4A ND separation 2023	160	136	0	0	0	(2)	(3)	(3)	(4)	73	69	26	22	25	18	20	24	11	5	(3)	(2)	(70)	0
5A ND separation 2025, CT	63	38	0	0	0	(2)	(3)	(3)	(4)	(7)	(9)	26	22	25	18	19	24	11	5	(3)	(2)	(70)	0
5B ND separation 2025, CC	63	38	0	0	0	(2)	(3)	(3)	(4)	(7)	(9)	26	22	25	18	19	24	11	5	(3)	(2)	(70)	0
5C ND separation 2025, CT, no nuclear	60	35	0	0	0	(2)	(3)	(3)	(4)	(7)	(9)	33	22	28	8	13	15	12	3	3	(1)	(70)	0
5D ND separation 2025, CC, no nuclear	60	35	0	0	0	(2)	(3)	(3)	(4)	(7)	(9)	33	22	28	8	13	15	12	3	3	(1)	(70)	0
6A ND separation 2027	12	(13)	0	0	0	(2)	(3)	(3)	(4)	(7)	(8)	(24)	(25)	28	18	20	24	11	5	(3)	(2)	(70)	0

ND Costs (\$M)

	NPV	NPV 2040	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
1 IRP Reference Case with Updated Assumptions	2,592	2,068	137	134	132	139	139	148	149	154	154	157	153	161	166	172	166	185	190	199	196	202	207
2 Updated Plan	2,567	2,062	138	135	133	141	141	150	151	153	154	155	154	170	169	184	178	180	184	191	186	194	200
3A Updated Plan with Legacy Purchase/Sale and Jur Future	2,515	2,052	138	135	133	143	144	153	155	160	163	161	156	164	161	168	162	178	182	188	178	194	200
3B Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Reallocated Solar, CBED, Biomass	2,467	2,007	130	127	125	136	137	147	149	154	158	156	153	162	160	167	179	180	180	187	176	193	198
3C Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Share 1500MW wind	2,430	1,973	138	135	133	140	140	149	148	150	151	149	144	151	147	163	157	172	176	182	171	187	192
4A ND separation 2023	2,409	1,962	138	135	133	143	144	153	155	160	163	148	145	149	150	156	148	171	176	182	181	181	184
5A ND separation 2025, CT	2,456	2,006	138	135	133	143	144	153	155	160	163	146	148	153	154	159	151	173	178	185	184	184	187
5B ND separation 2025, CC	2,534	2,121	138	135	133	143	144	153	155	160	163	175	183	186	187	191	184	187	188	194	191	191	194
5C ND separation 2025, CT, no nuclear	2,477	2,032	138	135	133	143	144	153	155	160	163	155	166	167	172	174	167	170	171	174	177	179	182
5D ND separation 2025, CC, no nuclear	2,512	2,099	138	135	133	143	144	153	155	160	163	164	178	179	185	186	181	184	185	187	189	191	194
6A ND separation 2027	2,503	2,054	138	135	133	143	144	153	155	160	162	161	156	167	177	181	173	176	178	185	183	184	187

Delta to Scen 2:

1 IRP Reference Case with Updated Assumptions	(48)	(43)	(7)	(7)	(8)	(7)	(7)	(7)	(7)	(6)	(5)	(5)	(3)	(2)	(1)	(1)	17	2	(2)	(2)	(1)	(1)	(1)
2 Updated Plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A Updated Plan with Legacy Purchase/Sale and Jur Future	(52)	(10)	0	0	0	2	3	3	4	7	9	6	2	(6)	(8)	(16)	(16)	(2)	(1)	(2)	(8)	0	(0)
3B Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Reallocated Solar, CBED, Biomass	(100)	(55)	(7)	(7)	(8)	(5)	(4)	(4)	(3)	1	4	1	(0)	(8)	(9)	(17)	1	(0)	(3)	(4)	(10)	(1)	(1)
3C Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Share 1500MW wind	(137)	(89)	0	0	0	(1)	(1)	(1)	(3)	(3)	(3)	(6)	(10)	(19)	(22)	(21)	(21)	(7)	(8)	(9)	(15)	(7)	(8)
4A ND separation 2023	(158)	(100)	0	0	0	2	3	3	4	(21)	(11)	(6)	(9)	(21)	(19)	(28)	(29)	(9)	(8)	(8)	(5)	(13)	(15)
5A ND separation 2025, CT	(111)	(56)	0	0	0	2	3	3	4	7	9	(9)	(6)	(17)	(15)	(25)	(26)	(6)	(5)	(6)	(2)	(10)	(12)
5B ND separation 2025, CC	(33)	59	0	0	0	2	3	3	4	7	9	20	29	16	18	7	6	7	5	3	5	(3)	(6)
5C ND separation 2025, CT, no nuclear	(90)	(30)	0	0	0	2	3	3	4	7	9	(0)	12	(3)	3	(10)	(11)	(10)	(12)	(16)	(9)	(15)	(17)
5D ND separation 2025, CC, no nuclear	(55)	37	0	0	0	2	3	3	4	7	9	9	24	9	16	2	3	4	2	(3)	3	(3)	(6)
6A ND separation 2027	(64)	(8)	0	0	0	2	3	3	4	7	8	6	2	(3)	8	(3)	(5)	(4)	(6)	(6)	(3)	(11)	(13)

Reference Case Comparisons

IRP Reference, MN		38,603	2,367	2,471	2,460	2,574	2,585	2,731	2,750	2,835	2,810	2,885	2,788	2,931	3,005	3,121	3,149	3,609	3,714	3,901	3,831	4,012	4,134
IRP Expansion Plan, MN		39,552	2,382	2,509	2,553	2,653	2,680	2,843	2,841	2,897	2,905	3,001	2,959	3,237	3,263	3,477	3,496	3,585	3,688	3,842	3,798	3,908	4,004
IRP Reference, ND		2,243	134	141	140	147	148	157	158	164	164	168	163	171	174	181	183	212	218	230	226	238	246
IRP Expansion Plan, ND		2,272	135	141	143	149	151	161	161	166	167	173	170	186	187	200	201	207	214	223	221	229	236
IRP Reference, Sys		40,847	2,502	2,611	2,600	2,721	2,733	2,887	2,909	2,999	2,974	3,054	2,951	3,102	3,179	3,302	3,332						

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MN, SD, WI Costs (\$M)

	NPV	NPV 2040	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
1 IRP Reference Case with Updated Assumptions	53,855	42,763	2,559	2,539	2,490	2,622	2,711	2,864	3,176	3,277	3,270	3,427	3,370	3,521	3,587	3,715	3,664	3,942	4,006	4,241	4,254	4,422	4,574
2 Updated Plan	52,493	41,899	2,573	2,568	2,536	2,682	2,764	2,923	3,164	3,212	3,185	3,274	3,247	3,471	3,446	3,709	3,646	3,767	3,837	4,039	4,027	4,188	4,308
3A Updated Plan with Legacy Purchase/Sale and Jur Future	52,350	41,734	2,573	2,568	2,536	2,680	2,761	2,920	3,154	3,199	3,168	3,240	3,213	3,444	3,416	3,688	3,627	3,749	3,819	4,018	4,008	4,153	4,291
3B Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Reallocated Solar, CBED, Biomass	52,403	41,787	2,580	2,576	2,543	2,688	2,768	2,927	3,160	3,204	3,172	3,244	3,215	3,445	3,417	3,688	3,629	3,749	3,819	4,019	4,009	4,152	4,290
3C Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Share 1500MW wind	52,497	41,870	2,573	2,568	2,536	2,684	2,765	2,925	3,167	3,215	3,187	3,260	3,234	3,464	3,438	3,701	3,639	3,763	3,833	4,033	4,023	4,169	4,307
4A ND separation 2023	52,614	42,023	2,573	2,568	2,536	2,680	2,761	2,920	3,154	3,289	3,268	3,295	3,267	3,496	3,468	3,732	3,669	3,774	3,845	4,028	4,008	4,155	4,295
5A ND separation 2025, CT	52,496	41,904	2,573	2,568	2,536	2,680	2,761	2,920	3,154	3,199	3,168	3,295	3,267	3,496	3,467	3,732	3,669	3,773	3,844	4,028	4,008	4,155	4,295
5B ND separation 2025, CC	52,496	41,904	2,573	2,568	2,536	2,680	2,761	2,920	3,154	3,199	3,168	3,295	3,267	3,496	3,467	3,732	3,669	3,773	3,844	4,028	4,008	4,155	4,295
5C ND separation 2025, CT, no nuclear	52,439	41,847	2,573	2,568	2,536	2,680	2,761	2,920	3,154	3,199	3,168	3,287	3,252	3,484	3,442	3,711	3,646	3,765	3,833	4,025	4,005	4,155	4,295
5D ND separation 2025, CC, no nuclear	52,439	41,847	2,573	2,568	2,536	2,680	2,761	2,920	3,154	3,199	3,168	3,287	3,252	3,484	3,442	3,711	3,646	3,765	3,833	4,025	4,005	4,155	4,295
6A ND separation 2027	52,439	41,848	2,573	2,568	2,536	2,680	2,761	2,920	3,154	3,199	3,168	3,240	3,213	3,499	3,468	3,732	3,669	3,774	3,845	4,028	4,008	4,155	4,295

Delta to Scen 2:

1 IRP Reference Case with Updated Assumptions	1,362	864	(14)	(30)	(45)	(60)	(53)	(59)	11	65	85	153	123	50	141	6	18	176	169	201	226	234	266
2 Updated Plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A Updated Plan with Legacy Purchase/Sale and Jur Future	(144)	(165)	(0)	0	0	(2)	(3)	(3)	(10)	(13)	(17)	(34)	(33)	(27)	(30)	(21)	(19)	(18)	(18)	(21)	(19)	(35)	(17)
3B Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Reallocated Solar, CBED, Biomass	(90)	(112)	7	8	8	6	4	4	(4)	(8)	(13)	(30)	(32)	(26)	(29)	(21)	(17)	(18)	(21)	(19)	(36)	(17)	
3C Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Share 1500MW wind	3	(29)	(0)	0	0	1	1	1	3	3	2	(14)	(13)	(7)	(9)	(9)	(7)	(4)	(4)	(6)	(4)	(20)	(1)
4A ND separation 2023	121	124	0	0	0	(2)	(3)	(3)	(10)	77	83	21	20	25	21	23	24	7	8	(11)	(19)	(33)	(13)
5A ND separation 2025, CT	2	5	0	0	0	(2)	(3)	(3)	(10)	(13)	(17)	21	20	25	21	23	23	6	7	(11)	(19)	(33)	(13)
5B ND separation 2025, CC	2	5	0	0	0	(2)	(3)	(3)	(10)	(13)	(17)	21	20	25	21	23	23	6	7	(11)	(19)	(33)	(13)
5C ND separation 2025, CT, no nuclear	(55)	(52)	0	0	0	(2)	(3)	(3)	(10)	(13)	(17)	14	6	13	(4)	1	0	(2)	(4)	(14)	(22)	(33)	(13)
5D ND separation 2025, CC, no nuclear	(55)	(52)	0	0	0	(2)	(3)	(3)	(10)	(13)	(17)	14	6	13	(4)	1	0	(2)	(4)	(14)	(22)	(33)	(13)
6A ND separation 2027	(54)	(51)	0	0	0	(2)	(3)	(3)	(10)	(13)	(17)	(34)	(34)	28	21	23	24	7	8	(11)	(19)	(33)	(13)

ND Costs (\$M)

	NPV	NPV 2040	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
1 IRP Reference Case with Updated Assumptions	2,790	2,224	135	132	131	140	140	149	167	173	171	183	172	188	184	191	186	207	205	217	217	224	234
2 Updated Plan	2,711	2,169	136	134	133	142	141	152	166	169	165	168	168	182	176	191	186	198	195	210	203	215	218
3A Updated Plan with Legacy Purchase/Sale and Jur Future	2,899	2,310	136	134	133	144	144	155	176	183	182	184	182	191	189	197	192	213	219	230	225	245	256
3B Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Reallocated Solar, CBED, Biomass	2,854	2,268	128	126	125	136	137	148	170	177	178	180	180	191	189	197	207	216	218	229	224	245	255
3C Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Share 1500MW wind	2,752	2,174	136	134	133	141	140	150	163	167	163	164	161	171	168	185	179	199	205	215	211	230	240
4A ND separation 2023	2,850	2,267	136	134	133	144	144	155	177	163	175	181	178	183	184	191	184	213	219	228	232	238	243
5A ND separation 2025, CT	2,884	2,299	136	134	133	144	144	155	177	183	182	179	181	187	188	194	188	216	222	231	235	241	246
5B ND separation 2025, CC	2,780	2,295	136	134	133	144	144	155	177	183	182	193	201	204	205	210	203	209	211	218	218	221	224
5C ND separation 2025, CT, no nuclear	2,958	2,378	136	134	133	144	144	155	177	183	182	202	214	215	221	223	218	222	225	229	233	236	241
5D ND separation 2025, CC, no nuclear	2,786	2,301	136	134	133	144	144	155	177	183	182	189	204	205	211	212	207	211	213	216	219	221	224
6A ND separation 2027	2,920	2,336	136	134	133	144	144	155	177	183	182	184	182	200	210	216	208	218	221	231	234	241	245

Delta to Scen 2:

1 IRP Reference Case with Updated Assumptions	79	54	(1)	(2)	(2)	(2)	(2)	(2)	1	4	6	15	5	6	9	0	(0)	9	10	7	14	10	16
2 Updated Plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A Updated Plan with Legacy Purchase/Sale and Jur Future	188	141	0	0	0	2	3	3	10	13	17	15	14	9	13	6	15	24	20	22	31	37	
3B Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Reallocated Solar, CBED, Biomass	143	99	(7)	(8)	(8)	(6)	(4)	(4)	4	8	13	12	12	9	13	6	21	18	23	19	21	30	36
3C Updated Pref Plan with Legacy Purchase/Sale and Jur Future, Share 1500MW wind	41	5	0	0	0	(1)	(1)	(1)	(3)	(3)	(2)	(4)	(6)	(11)	(8)	(6)	(7)	1	10	6	8	15	21
4A ND separation 2023	138	98	0	0	0	2	3	3	10	(6)	10	13	10	1	9	(0)	(2)	15	24	19	29	24	24
5A ND separation 2025, CT	173	130	0	0	0	2	3	3	10	13	17	11	14	5	12	3	1	18	27	22	32	26	27
5B ND separation 2025, CC	69	126	0	0	0	2	3	3	10	13	17	25	33	22	29	19	17	11	16	9	15	6	6
5C ND separation 2025, CT, no nuclear	247	209	0	0	0	2	3	3	10	13	17	34	46	33	46	32	31	24	29	19	30	22	22
5D ND separation 2025, CC, no nuclear	75	132	0	0	0	2	3	3	10	13	17	21	36	23	35	21	21	13	18	6	15	6	6
6A ND separation 2027	209	167	0	0	0	2	3	3	10	13	17	16	14	18	35	25	22	20	26	21	31	26	27

Reference Case Comparisons

IRP Reference, MN		43,513	2,360	2,464	2,448	3,001	3,000	3,145	3,166	3,273	3,248	3,390	3,305	3,461	3,524	3,658	3,705	4,083	4,134	4,384	4,404	4,595	4,765
IRP Expansion Plan, MN		43,375	2,372	2,495	2,532	3,014	3,046	3,204	3,201	3,272	3,231	3,372	3,324	3,541	3,566	3,782	3,810	3,969	4,043	4,258	4,255	4,433	4,565
IRP Reference, ND		2,441	126	132	131	167	167	178	179	186	182	198	190	195	195	203	206	229	233	247	260	261	271
IRP Expansion Plan, ND		2,413	127	133	134	166	169	180	180	186	179	188	190	195	196	209	213	231	225	238	238	250	258
IRP Reference, Sys		45,955	2,487	2,597	2,579	3,168	3,166	3,323	3,346														

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MN, SD, WI Costs (\$M)

		NPV	NPV 2040	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
1	IRP Reference Case with Updated Assumptions	48,218	38,444	2,459	2,436	2,391	2,516	2,603	2,760	2,794	2,871	2,862	2,972	2,902	3,041	3,112	3,215	3,142	3,498	3,564	3,739	3,695	3,816	3,926	4,040	4,145	4,250	4,387
2	Updated Plan	48,062	38,686	2,474	2,467	2,438	2,593	2,673	2,832	2,855	2,887	2,903	2,957	2,938	3,217	3,202	3,460	3,381	3,431	3,492	3,632	3,564	3,689	3,771	3,830	3,924	4,008	4,108
3A	Updated Plan with Legacy Purchase/Sale and Jur Future	48,035	38,606	2,474	2,467	2,438	2,591	2,671	2,829	2,851	2,879	2,893	2,930	2,912	3,200	3,183	3,449	3,372	3,424	3,485	3,622	3,558	3,659	3,774	3,835	3,938	4,023	4,125
4A	ND separation 2023	48,213	38,828	2,474	2,467	2,438	2,591	2,671	2,829	2,851	2,866	2,988	2,979	2,958	3,242	3,223	3,482	3,405	3,439	3,502	3,624	3,548	3,651	3,761	3,826	3,921	4,009	4,110
5A	ND separation 2025, CT	48,101	38,715	2,474	2,467	2,438	2,591	2,671	2,829	2,851	2,879	2,893	2,979	2,958	3,242	3,223	3,482	3,405	3,439	3,502	3,624	3,548	3,651	3,761	3,826	3,921	4,009	4,110
5B	ND separation 2025, CC	48,101	38,715	2,474	2,467	2,438	2,591	2,671	2,829	2,851	2,879	2,893	2,979	2,958	3,242	3,223	3,482	3,405	3,439	3,502	3,624	3,548	3,651	3,761	3,826	3,921	4,009	4,110
5C	ND separation 2025, CT, no nuclear	48,082	38,697	2,474	2,467	2,438	2,591	2,671	2,829	2,851	2,879	2,893	2,979	2,952	3,238	3,213	3,475	3,396	3,436	3,498	3,625	3,547	3,651	3,761	3,826	3,921	4,009	4,110
5D	ND separation 2025, CC, no nuclear	48,082	38,697	2,474	2,467	2,438	2,591	2,671	2,829	2,851	2,879	2,893	2,979	2,952	3,238	3,213	3,475	3,396	3,436	3,498	3,625	3,547	3,651	3,761	3,826	3,921	4,009	4,110
6A	ND separation 2027	48,051	38,665	2,474	2,467	2,438	2,591	2,671	2,829	2,851	2,879	2,894	2,930	2,912	3,245	3,223	3,482	3,405	3,439	3,502	3,624	3,549	3,651	3,761	3,826	3,921	4,009	4,110

Delta to Scen 2:

1	IRP Reference Case with Updated Assumptions	156	(242)	(14)	(31)	(47)	(77)	(70)	(72)	(61)	(15)	(41)	16	(36)	(177)	(91)	(244)	(239)	67	72	107	132	127	155	210	222	242	279
2	Updated Plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future	(28)	(80)	(0)	0	0	(2)	(3)	(3)	(4)	(7)	(10)	(26)	(26)	(17)	(20)	(10)	(9)	(6)	(6)	(11)	(6)	(31)	3	5	15	15	17
4A	ND separation 2023	151	142	0	0	0	(2)	(3)	(3)	(5)	80	85	22	20	24	21	23	24	9	10	(8)	(15)	(38)	(10)	(4)	(3)	1	2
5A	ND separation 2025, CT	38	29	0	0	0	(2)	(3)	(3)	(5)	(7)	(10)	23	20	24	21	22	24	9	10	(8)	(15)	(38)	(10)	(4)	(3)	1	2
5B	ND separation 2025, CC	38	29	0	0	0	(2)	(3)	(3)	(5)	(7)	(10)	23	20	24	21	22	24	9	10	(8)	(15)	(38)	(10)	(4)	(3)	1	2
5C	ND separation 2025, CT, no nuclear	20	10	0	0	0	(2)	(3)	(3)	(5)	(7)	(10)	23	14	21	11	16	15	6	7	(7)	(16)	(38)	(10)	(4)	(3)	1	2
5D	ND separation 2025, CC, no nuclear	20	10	0	0	0	(2)	(3)	(3)	(5)	(7)	(10)	23	14	21	11	16	15	6	7	(7)	(16)	(38)	(10)	(4)	(3)	1	2
6A	ND separation 2027	(12)	(21)	0	0	0	(2)	(3)	(3)	(5)	(7)	(10)	(27)	(26)	28	21	23	24	9	10	(8)	(15)	(38)	(10)	(4)	(3)	1	2

ND Costs (\$M)

		NPV	NPV 2040	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
1	IRP Reference Case with Updated Assumptions	2,465	1,971	129	126	125	134	134	143	144	149	146	156	145	159	156	162	155	181	179	187	185	190	197	206	212	213	221
2	Updated Plan	2,449	1,973	130	128	127	137	136	146	147	149	147	148	148	166	160	175	169	177	173	184	175	184	187	190	196	200	210
3A	Updated Plan with Legacy Purchase/Sale and Jur Future	2,459	2,009	130	128	127	139	139	150	151	156	157	156	153	164	161	168	162	177	182	188	178	193	199	201	201	201	206
4A	ND separation 2023	2,377	1,930	130	128	127	139	139	150	152	132	143	148	145	149	150	156	148	171	176	182	181	181	184	188	190	193	198
5A	ND separation 2025, CT	2,417	1,968	130	128	127	139	139	150	152	156	157	146	148	153	154	159	151	173	178	185	184	184	187	191	193	196	199
5B	ND separation 2025, CC	2,496	2,083	130	128	127	139	139	150	152	156	157	175	183	186	187	191	184	187	188	194	191	191	194	195	197	199	203
5C	ND separation 2025, CT, no nuclear	2,439	1,994	130	128	127	139	139	150	152	156	157	155	166	167	172	174	167	170	171	174	177	179	182	186	188	191	195
5D	ND separation 2025, CC, no nuclear	2,474	2,061	130	128	127	139	139	150	152	156	157	164	178	179	185	186	181	184	185	187	189	191	194	195	197	199	203
6A	ND separation 2027	2,461	2,012	130	128	127	139	139	150	152	156	157	156	154	167	177	181	173	176	178	185	183	184	187	190	193	195	199

Delta to Scen 2:

1	IRP Reference Case with Updated Assumptions	16	(2)	(1)	(2)	(2)	(3)	(3)	(3)	(3)	(0)	(1)	8	(4)	(6)	(4)	(13)	(14)	4	6	3	9	5	11	15	16	13	11
2	Updated Plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future	10	36	0	0	0	2	3	3	4	7	10	8	5	(2)	2	(6)	(7)	0	9	4	3	9	12	11	5	1	(4)
4A	ND separation 2023	(72)	(43)	0	0	0	2	3	3	5	(17)	(4)	0	(4)	(16)	(9)	(19)	(21)	(6)	2	(2)	6	(3)	(2)	(3)	(5)	(7)	(12)
5A	ND separation 2025, CT	(32)	(5)	0	0	0	2	3	3	5	7	10	(2)	0	(13)	(6)	(16)	(18)	(3)	5	1	9	(0)	1	0	(2)	(5)	(11)
5B	ND separation 2025, CC	47	110	0	0	0	2	3	3	5	7	10	26	34	21	27	17	15	10	15	9	16	7	7	5	2	(1)	(7)
5C	ND separation 2025, CT, no nuclear	(11)	21	0	0	0	2	3	3	5	7	10	6	18	2	13	(1)	(2)	(7)	(2)	(10)	2	(5)	(4)	(4)	(7)	(9)	(15)
5D	ND separation 2025, CC, no nuclear	25	88	0	0	0	2	3	3	5	7	10	15	29	14	25	11	12	7	12	3	14	7	7	5	2	(1)	(7)
6A	ND separation 2027	12	40	0	0	0	2	3	3	5	7	10	8	6	1	17	7	4	(1)	4	0	8	(1)	0	0	(3)	(5)	(11)

Reference Case Comparisons

	IRP Reference, MN	38,407	2,360	2,464	2,448	2,550	2,561	2,704	2,724	2,807	2,786	2,885	2,788	2,931	2,989	3,106	3,139	3,604	3,670	3,865	3,831	3,986	4,122	4,201	4,343	4,440	4,527	
	IRP Expansion Plan, MN	39,365	2,372	2,495	2,532	2,628	2,655	2,816	2,813	2,868	2,881	3,001	2,959	3,234	3,263	3,477	3,496	3,585	3,663	3,825	3,770	3,904	4,000	4,057	4,177	4,249	4,314	
	IRP Reference, ND	2,130	126	132	131	140	140	151	152	158	154	167	158	162	162	170	171	200	204	215	225	223	232	237	245	252	259	
	IRP Expansion Plan, ND	2,165	127	133	134	143	145	157	157	161	157	165	167	167	176	177	190	193	207	201	211	208	216	222	226	234	240	246
	IRP Reference, Sys	40,536	2,487	2,597	2,579	2,690	2,701	2,855	2,876	2,965	2,940	3,053																

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MN, SD, WI Costs (\$M)

	NPV	NPV 2040	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
1 IRP Reference Case with Updated Assumptions, LG	50,337	41,371	2,559	2,539	2,490	2,621	2,708	2,859	3,160	3,252	3,260	3,417	3,368	3,588	3,647	3,742	3,679	3,685	3,716	3,886	3,824	3,908	4,009	4,099	4,060	4,151	4,259
2 Updated Plan, LG	49,213	40,596	2,573	2,568	2,536	2,682	2,764	2,924	3,165	3,209	3,167	3,244	3,207	3,400	3,370	3,614	3,538	3,591	3,644	3,788	3,707	3,791	3,865	3,917	3,863	3,944	4,022
3A Updated Plan with Legacy Purchase/Sale and Jur Future, LG	49,182	40,502	2,573	2,568	2,536	2,681	2,762	2,921	3,157	3,198	3,155	3,215	3,178	3,379	3,347	3,600	3,527	3,584	3,637	3,779	3,702	3,771	3,866	3,916	3,873	3,956	4,039
4A ND separation 2023, LG	49,399	40,771	2,573	2,568	2,536	2,681	2,762	2,921	3,157	3,290	3,252	3,267	3,228	3,427	3,395	3,641	3,567	3,607	3,661	3,788	3,702	3,772	3,865	3,921	3,864	3,951	4,028
5A ND separation 2025, CT, LG	49,282	40,653	2,573	2,568	2,536	2,681	2,762	2,921	3,157	3,198	3,155	3,267	3,228	3,427	3,394	3,640	3,566	3,607	3,661	3,788	3,702	3,772	3,865	3,921	3,864	3,951	4,028
5B ND separation 2025, CC, LG	49,282	40,653	2,573	2,568	2,536	2,681	2,762	2,921	3,157	3,198	3,155	3,267	3,228	3,427	3,394	3,640	3,566	3,607	3,661	3,788	3,702	3,772	3,865	3,921	3,864	3,951	4,028
5C ND separation 2025, CT, no nuclear, LG	49,252	40,624	2,573	2,568	2,536	2,681	2,762	2,921	3,157	3,198	3,155	3,263	3,218	3,420	3,381	3,631	3,556	3,603	3,656	3,788	3,700	3,772	3,865	3,921	3,864	3,951	4,028
5D ND separation 2025, CC, no nuclear, LG	49,252	40,624	2,573	2,568	2,536	2,681	2,762	2,921	3,157	3,198	3,155	3,263	3,218	3,420	3,381	3,631	3,556	3,603	3,656	3,788	3,700	3,772	3,865	3,921	3,864	3,951	4,028
6A ND separation 2027, LG	49,228	40,599	2,573	2,568	2,536	2,681	2,762	2,921	3,157	3,198	3,155	3,215	3,177	3,431	3,395	3,641	3,567	3,607	3,661	3,788	3,702	3,772	3,865	3,921	3,864	3,951	4,028

Delta to Scen 2:

1 IRP Reference Case with Updated Assumptions, LG	1,124	775	(14)	(30)	(45)	(61)	(56)	(65)	(6)	44	93	173	162	188	277	128	141	94	72	98	117	117	145	182	197	207	237
2 Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A Updated Plan with Legacy Purchase/Sale and Jur Future, LG	(31)	(95)	(0)	0	0	(2)	(2)	(3)	(8)	(10)	(13)	(29)	(21)	(23)	(14)	(11)	(7)	(7)	(9)	(5)	(20)	1	(1)	10	12	17	
4A ND separation 2023, LG	186	174	0	0	0	(2)	(2)	(3)	(8)	82	85	23	22	27	24	27	29	16	18	(0)	(5)	(19)	0	4	2	7	6
5A ND separation 2025, CT, LG	68	56	0	0	0	(2)	(2)	(3)	(8)	(10)	(13)	23	22	27	24	26	29	16	17	(0)	(5)	(19)	0	4	2	7	6
5B ND separation 2025, CC, LG	68	56	0	0	0	(2)	(2)	(3)	(8)	(10)	(13)	23	22	27	24	26	29	16	17	(0)	(5)	(19)	0	4	2	7	6
5C ND separation 2025, CT, no nuclear, LG	39	27	0	0	0	(2)	(2)	(3)	(8)	(10)	(13)	19	12	20	11	17	18	12	13	0	(7)	(19)	0	4	2	7	6
5D ND separation 2025, CC, no nuclear, LG	39	27	0	0	0	(2)	(2)	(3)	(8)	(10)	(13)	19	12	20	11	17	18	12	13	0	(7)	(19)	0	4	2	7	6
6A ND separation 2027, LG	15	3	0	0	0	(2)	(2)	(3)	(8)	(10)	(12)	(29)	(29)	31	24	27	29	16	18	(0)	(5)	(19)	0	4	2	7	6

ND Costs (\$M)

	NPV	NPV 2040	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
1 IRP Reference Case with Updated Assumptions, LG	2,590	2,139	135	132	131	140	140	149	166	171	169	183	173	186	187	192	186	191	188	196	192	195	202	209	207	208	214
2 Updated Plan, LG	2,521	2,086	136	134	133	142	141	151	166	169	163	165	164	177	170	184	178	186	182	193	183	190	192	195	192	197	205
3A Updated Plan with Legacy Purchase/Sale and Jur Future, LG	2,575	2,151	136	134	133	144	144	154	174	179	176	176	174	179	175	181	175	190	195	201	190	204	209	212	203	203	206
4A ND separation 2023, LG	2,444	2,024	136	134	133	144	144	154	174	150	157	162	158	160	159	163	154	175	180	186	183	183	184	188	188	189	192
5A ND separation 2025, CT, LG	2,491	2,068	136	134	133	144	144	154	174	179	176	160	161	164	162	166	157	178	183	188	186	185	187	190	190	191	194
5B ND separation 2025, CC, LG	2,507	2,139	136	134	133	144	144	154	174	179	176	182	189	191	189	192	183	184	185	189	185	183	184	184	185	186	187
5C ND separation 2025, CT, no nuclear, LG	2,522	2,104	136	134	133	144	144	154	174	179	176	172	183	182	183	183	175	176	177	178	180	181	182	186	186	187	189
5D ND separation 2025, CC, no nuclear, LG	2,485	2,117	136	134	133	144	144	154	174	179	176	172	185	185	187	187	180	181	181	182	182	183	184	184	185	186	187
6A ND separation 2027, LG	2,541	2,119	136	134	133	144	144	154	174	179	176	177	174	177	184	188	178	181	182	188	185	185	187	190	190	191	193

Delta to Scen 2:

1 IRP Reference Case with Updated Assumptions, LG	69	53	(1)	(2)	(2)	(2)	(2)	(2)	0	3	6	18	8	9	17	8	8	5	6	2	9	5	10	14	15	11	9
2 Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A Updated Plan with Legacy Purchase/Sale and Jur Future, LG	54	65	0	0	0	2	2	3	8	10	13	11	9	3	5	(3)	(4)	4	12	7	7	14	18	17	11	7	1
4A ND separation 2023, LG	(77)	(62)	0	0	0	2	2	3	8	(19)	(6)	(3)	(7)	(17)	(11)	(21)	(24)	(11)	(2)	(8)	(0)	(8)	(8)	(8)	(5)	(7)	(13)
5A ND separation 2025, CT, LG	(30)	(18)	0	0	0	2	2	3	8	10	13	(6)	(3)	(13)	(8)	(18)	(21)	(8)	1	(5)	2	(5)	(5)	(5)	(2)	(5)	(12)
5B ND separation 2025, CC, LG	(14)	52	0	0	0	2	2	3	8	10	13	17	25	14	19	8	5	(2)	3	(4)	1	(7)	(8)	(11)	(7)	(11)	(18)
5C ND separation 2025, CT, no nuclear, LG	1	18	0	0	0	2	2	3	8	10	13	7	18	5	13	(1)	(3)	(10)	(5)	(15)	(4)	(10)	(9)	(9)	(7)	(10)	(16)
5D ND separation 2025, CC, no nuclear, LG	(36)	31	0	0	0	2	2	3	8	10	13	7	20	8	17	3	1	(6)	(1)	(12)	(1)	(7)	(8)	(11)	(7)	(11)	(18)
6A ND separation 2027, LG	20	33	0	0	0	2	2	3	8	10	12	11	9	1	15	4	(0)	(5)	(0)	(6)	2	(5)	(5)	(5)	(2)	(5)	(12)

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MN, SD, WI Costs (\$M)		2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
1	IRP Reference Case with Updated Assumptions, LG	4,296	4,403	4,482	4,578	4,710	4,858	4,951	5,136	5,289	5,398	5,511	5,640	5,751
2	Updated Plan, LG	4,047	4,136	4,214	4,470	4,609	4,683	4,778	4,945	5,103	5,206	5,328	5,484	5,602
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	4,059	4,158	4,239	4,504	4,642	4,716	4,810	4,984	5,144	5,257	5,384	5,540	5,665
4A	ND separation 2023, LG	4,046	4,141	4,225	4,484	4,618	4,687	4,781	4,955	5,089	5,198	5,337	5,509	5,627
5A	ND separation 2025, CT, LG	4,046	4,141	4,225	4,484	4,618	4,687	4,781	4,955	5,089	5,198	5,337	5,509	5,627
5B	ND separation 2025, CC, LG	4,046	4,141	4,225	4,484	4,618	4,687	4,781	4,955	5,089	5,198	5,337	5,509	5,627
5C	ND separation 2025, CT, no nuclear, LG	4,046	4,141	4,225	4,484	4,618	4,687	4,781	4,955	5,089	5,198	5,337	5,509	5,627
5D	ND separation 2025, CC, no nuclear, LG	4,046	4,141	4,225	4,484	4,618	4,687	4,781	4,955	5,089	5,198	5,337	5,509	5,627
6A	ND separation 2027, LG	4,046	4,141	4,225	4,484	4,618	4,687	4,781	4,955	5,089	5,198	5,337	5,509	5,627
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, LG	248	267	268	109	101	175	172	192	186	192	183	156	149
2	Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	12	22	25	34	32	32	32	39	41	51	56	56	63
4A	ND separation 2023, LG	(2)	6	11	15	9	3	2	10	(14)	(8)	9	25	26
5A	ND separation 2025, CT, LG	(2)	6	11	15	9	3	2	10	(14)	(8)	9	25	26
5B	ND separation 2025, CC, LG	(2)	6	11	15	9	3	2	10	(14)	(8)	9	25	26
5C	ND separation 2025, CT, no nuclear, LG	(2)	6	11	15	9	3	2	10	(14)	(8)	9	25	26
5D	ND separation 2025, CC, no nuclear, LG	(2)	6	11	15	9	3	2	10	(14)	(8)	9	25	26
6A	ND separation 2027, LG	(2)	6	11	15	9	3	2	10	(14)	(8)	9	25	26
ND Costs (\$M)														
1	IRP Reference Case with Updated Assumptions, LG	215	220	225	230	234	246	256	257	266	271	277	283	288
2	Updated Plan, LG	201	214	223	224	229	233	238	247	261	264	267	275	280
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	220	226	227	228	229	231	233	235	237	234	242	240	243
4A	ND separation 2023, LG	216	222	223	225	226	228	230	233	237	237	246	243	238
5A	ND separation 2025, CT, LG	218	223	224	226	228	229	231	234	238	238	247	244	246
5B	ND separation 2025, CC, LG	189	191	193	195	198	200	203	206	208	211	213	217	219
5C	ND separation 2025, CT, no nuclear, LG	213	219	221	223	225	227	229	232	236	236	245	242	244
5D	ND separation 2025, CC, no nuclear, LG	189	191	193	195	198	200	203	206	208	211	213	217	219
6A	ND separation 2027, LG	217	221	223	225	227	229	231	234	238	238	247	244	246
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, LG	14	6	2	6	5	13	18	10	5	7	10	8	8
2	Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	19	11	4	4	(0)	(3)	(5)	(12)	(24)	(30)	(25)	(35)	(38)
4A	ND separation 2023, LG	15	7	0	1	(3)	(5)	(8)	(14)	(24)	(27)	(21)	(32)	(42)
5A	ND separation 2025, CT, LG	17	8	2	2	(1)	(4)	(6)	(13)	(23)	(26)	(20)	(30)	(34)
5B	ND separation 2025, CC, LG	(12)	(24)	(30)	(28)	(31)	(33)	(35)	(41)	(53)	(54)	(54)	(58)	(61)
5C	ND separation 2025, CT, no nuclear, LG	12	5	(2)	(1)	(4)	(6)	(9)	(15)	(25)	(28)	(22)	(32)	(36)
5D	ND separation 2025, CC, no nuclear, LG	(12)	(24)	(30)	(28)	(31)	(33)	(35)	(41)	(53)	(54)	(54)	(58)	(61)
6A	ND separation 2027, LG	16	7	0	1	(2)	(4)	(7)	(13)	(23)	(26)	(20)	(31)	(34)

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MN, SD, WI Costs (\$M)

		<u>NPV</u>	<u>NPV 2040</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>	
1	IRP Reference Case with Updated Assumptions, HG	59,955	45,354	2,559	2,539	2,490	2,623	2,714	2,869	3,194	3,301	3,323	3,507	3,468	3,739	3,823	3,952	3,914	4,295	4,380	4,710	4,837	5,133	5,366	5,556	5,770	5,940	6,203	
2	Updated Plan, HG	57,477	43,631	2,573	2,568	2,536	2,682	2,763	2,923	3,175	3,225	3,207	3,305	3,279	3,545	3,530	3,817	3,770	3,978	4,075	4,359	4,447	4,718	4,908	5,054	5,237	5,389	5,605	
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	57,296	43,435	2,573	2,568	2,536	2,680	2,760	2,918	3,165	3,211	3,189	3,269	3,243	3,515	3,496	3,792	3,746	3,954	4,050	4,332	4,422	4,680	4,885	5,027	5,218	5,369	5,588	
4A	ND separation 2023, HG	57,477	43,658	2,573	2,568	2,536	2,680	2,760	2,918	3,165	3,299	3,287	3,321	3,294	3,563	3,542	3,829	3,780	3,966	4,062	4,324	4,401	4,661	4,872	5,020	5,202	5,357	5,570	
5A	ND separation 2025, CT, HG	57,360	43,541	2,573	2,568	2,536	2,680	2,760	2,918	3,165	3,211	3,188	3,321	3,294	3,562	3,541	3,828	3,779	3,966	4,061	4,324	4,401	4,661	4,872	5,020	5,202	5,357	5,570	
5B	ND separation 2025, CC, HG	57,360	43,541	2,573	2,568	2,536	2,680	2,760	2,918	3,165	3,211	3,188	3,321	3,294	3,562	3,541	3,828	3,779	3,966	4,061	4,324	4,401	4,661	4,872	5,020	5,202	5,357	5,570	
5C	ND separation 2025, CT, no nuclear, HG	57,260	43,441	2,573	2,568	2,536	2,680	2,760	2,918	3,165	3,211	3,188	3,304	3,268	3,538	3,508	3,798	3,747	3,946	4,040	4,310	4,392	4,661	4,872	5,020	5,202	5,357	5,570	
5D	ND separation 2025, CC, no nuclear, HG	57,260	43,441	2,573	2,568	2,536	2,680	2,760	2,918	3,165	3,211	3,188	3,304	3,268	3,538	3,508	3,798	3,747	3,946	4,040	4,310	4,392	4,661	4,872	5,020	5,202	5,357	5,570	
6A	ND separation 2027, HG	57,307	43,488	2,573	2,568	2,536	2,680	2,760	2,918	3,165	3,211	3,189	3,269	3,242	3,566	3,542	3,829	3,780	3,966	4,062	4,324	4,401	4,661	4,872	5,020	5,202	5,357	5,570	
<u>Delta to Scen 2:</u>																													
1	IRP Reference Case with Updated Assumptions, HG	2,477	1,723	(14)	(30)	(45)	(59)	(49)	(54)	19	76	116	203	189	194	293	134	144	317	306	352	390	415	459	502	533	551	598	
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	(181)	(197)	(0)	0	0	(2)	(3)	(4)	(10)	(14)	(19)	(36)	(36)	(30)	(34)	(25)	(24)	(24)	(24)	(27)	(25)	(38)	(22)	(27)	(19)	(20)	(17)	
4A	ND separation 2023, HG	(0)	27	0	0	0	(2)	(3)	(4)	(11)	74	80	16	16	17	12	11	10	(12)	(13)	(35)	(46)	(57)	(35)	(35)	(34)	(32)	(35)	
5A	ND separation 2025, CT, HG	(117)	(90)	0	0	0	(2)	(3)	(4)	(11)	(14)	(19)	16	15	17	11	11	9	(12)	(14)	(35)	(46)	(57)	(35)	(35)	(34)	(32)	(35)	
5B	ND separation 2025, CC, HG	(117)	(90)	0	0	0	(2)	(3)	(4)	(11)	(14)	(19)	16	15	17	11	11	9	(12)	(14)	(35)	(46)	(57)	(35)	(35)	(34)	(32)	(35)	
5C	ND separation 2025, CT, no nuclear, HG	(217)	(190)	0	0	0	(2)	(3)	(4)	(11)	(14)	(19)	(1)	(10)	(7)	(22)	(19)	(24)	(32)	(35)	(49)	(55)	(57)	(35)	(35)	(34)	(32)	(35)	
5D	ND separation 2025, CC, no nuclear, HG	(217)	(190)	0	0	0	(2)	(3)	(4)	(11)	(14)	(19)	(1)	(10)	(7)	(22)	(19)	(24)	(32)	(35)	(49)	(55)	(57)	(35)	(35)	(34)	(32)	(35)	
6A	ND separation 2027, HG	(171)	(144)	0	0	0	(2)	(3)	(4)	(11)	(14)	(18)	(36)	(37)	21	12	11	10	(12)	(13)	(35)	(46)	(57)	(35)	(35)	(34)	(32)	(35)	

ND Costs (\$M)

		<u>NPV</u>	<u>NPV 2040</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>
1	IRP Reference Case with Updated Assumptions, HG	3,126	2,370	135	132	131	140	140	150	168	174	174	189	179	195	198	205	201	228	227	244	250	265	279	291	302	308	322
2	Updated Plan, HG	2,993	2,274	136	134	133	142	142	152	167	170	167	170	170	187	181	198	195	212	210	229	229	246	254	261	271	279	294
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	3,243	2,460	136	134	133	144	145	156	177	184	185	188	187	200	200	210	206	234	242	258	259	287	302	310	317	323	335
4A	ND separation 2023, HG	3,276	2,485	136	134	133	144	145	156	178	168	184	192	192	199	205	214	210	247	255	270	281	294	303	314	321	329	341
5A	ND separation 2025, CT, HG	3,307	2,513	136	134	133	144	145	156	178	184	186	190	195	202	208	218	214	250	258	273	284	297	306	316	323	332	343
5B	ND separation 2025, CC, HG	3,182	2,506	136	134	133	144	145	156	178	184	186	205	215	221	226	233	230	243	247	259	266	276	283	290	296	302	311
5C	ND separation 2025, CT, no nuclear, HG	3,382	2,601	136	134	133	144	145	156	178	184	186	213	230	234	247	253	251	260	265	274	282	289	298	308	315	323	334
5D	ND separation 2025, CC, no nuclear, HG	3,218	2,542	136	134	133	144	145	156	178	184	186	206	223	228	240	245	245	253	257	264	270	276	283	290	296	302	311
6A	ND separation 2027, HG	3,336	2,543	136	134	133	144	145	156	178	184	185	188	188	216	231	240	235	252	257	272	283	297	306	316	323	331	342
<u>Delta to Scen 2:</u>																												
1	IRP Reference Case with Updated Assumptions, HG	134	96	(1)	(2)	(2)	(2)	(1)	(2)	1	4	7	19	9	8	17	7	6	16	17	14	22	19	25	30	32	29	27
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	251	186	0	0	0	2	3	4	10	14	19	18	17	13	18	11	12	22	32	28	31	41	48	49	46	44	41
4A	ND separation 2023, HG	284	211	0	0	0	2	3	4	11	(3)	17	22	21	12	23	16	15	35	45	40	52	48	50	53	50	51	47
5A	ND separation 2025, CT, HG	314	239	0	0	0	2	3	4	11	14	19	20	25	15	27	19	19	38	48	44	55	51	52	55	53	53	48
5B	ND separation 2025, CC, HG	189	232	0	0	0	2	3	4	11	14	19	35	45	34	44	35	31	37	30	44	55	51	52	55	53	53	48
5C	ND separation 2025, CT, no nuclear, HG	389	327	0	0	0	2	3	4	11	14	19	43	59	47	66	54	56	48	55	44	54	43	44	47	44	44	40
5D	ND separation 2025, CC, no nuclear, HG	225	268	0	0	0	2	3	4	11	14	19	35	53	41	59	47	50	41	47	34	42	30	29	28	25	24	17
6A	ND separation 2027, HG	343	269	0	0	0	2	3	4	11	14	18	18	18	29	50	41	40	41	47	43	54	51	52	55	53	53	48

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MN, SD, WI Costs (\$M)		2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
1	IRP Reference Case with Updated Assumptions, HG	6,540	6,806	7,009	7,238	7,539	7,930	8,182	8,526	8,835	9,115	9,412	9,747	10,043
2	Updated Plan, HG	5,924	6,151	6,335	7,049	7,350	7,553	7,802	8,119	8,429	8,733	9,107	9,516	9,834
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	5,899	6,134	6,321	7,061	7,355	7,557	7,808	8,130	8,495	8,774	9,133	9,542	9,867
4A	ND separation 2023, HG	5,882	6,117	6,305	7,033	7,325	7,522	7,764	8,138	8,442	8,754	9,157	9,517	9,810
5A	ND separation 2025, CT, HG	5,882	6,117	6,305	7,033	7,325	7,522	7,764	8,138	8,442	8,754	9,157	9,517	9,810
5B	ND separation 2025, CC, HG	5,882	6,117	6,305	7,033	7,325	7,522	7,764	8,138	8,442	8,754	9,157	9,517	9,810
5C	ND separation 2025, CT, no nuclear, HG	5,882	6,117	6,305	7,033	7,325	7,522	7,764	8,138	8,442	8,754	9,157	9,517	9,810
5D	ND separation 2025, CC, no nuclear, HG	5,882	6,117	6,305	7,033	7,325	7,522	7,764	8,138	8,442	8,754	9,157	9,517	9,810
6A	ND separation 2027, HG	5,882	6,117	6,305	7,033	7,325	7,522	7,764	8,138	8,442	8,754	9,157	9,517	9,810
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, HG	616	655	674	188	189	377	379	406	406	382	305	231	209
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	(25)	(17)	(14)	11	5	4	5	11	66	41	26	26	33
4A	ND separation 2023, HG	(42)	(34)	(30)	(16)	(24)	(31)	(38)	19	13	21	50	1	(24)
5A	ND separation 2025, CT, HG	(42)	(34)	(30)	(16)	(24)	(31)	(38)	19	13	21	50	1	(24)
5B	ND separation 2025, CC, HG	(42)	(34)	(30)	(16)	(24)	(31)	(38)	19	13	21	50	1	(24)
5C	ND separation 2025, CT, no nuclear, HG	(42)	(34)	(30)	(16)	(24)	(31)	(38)	19	13	21	50	1	(24)
5D	ND separation 2025, CC, no nuclear, HG	(42)	(34)	(30)	(16)	(24)	(31)	(38)	19	13	21	50	1	(24)
6A	ND separation 2027, HG	(42)	(34)	(30)	(16)	(24)	(31)	(38)	19	13	21	50	1	(24)
ND Costs (\$M)														
1	IRP Reference Case with Updated Assumptions, HG	339	352	364	376	388	413	431	440	457	470	485	502	517
2	Updated Plan, HG	305	326	340	367	378	390	402	418	440	452	468	489	504
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	369	385	394	404	413	423	434	448	460	467	486	496	509
4A	ND separation 2023, HG	373	386	396	406	416	427	438	451	464	476	495	504	510
5A	ND separation 2025, CT, HG	375	388	397	408	417	428	440	453	466	477	496	505	518
5B	ND separation 2025, CC, HG	319	327	336	346	355	365	375	387	397	408	420	434	445
5C	ND separation 2025, CT, no nuclear, HG	367	379	389	400	410	421	433	446	459	470	489	498	516
5D	ND separation 2025, CC, no nuclear, HG	319	327	336	346	355	365	375	387	397	408	420	434	445
6A	ND separation 2027, HG	374	386	396	407	417	428	439	453	465	477	496	505	518
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, HG	33	26	23	9	10	23	29	22	17	18	17	14	13
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	64	59	54	37	34	33	32	29	20	15	18	7	4
4A	ND separation 2023, HG	68	60	55	39	38	37	36	33	25	23	27	15	6
5A	ND separation 2025, CT, HG	69	61	57	41	39	38	38	34	26	24	28	17	14
5B	ND separation 2025, CC, HG	13	1	(5)	(21)	(23)	(25)	(27)	(32)	(43)	(44)	(48)	(55)	(59)
5C	ND separation 2025, CT, no nuclear, HG	61	53	49	33	32	32	31	27	19	17	21	9	12
5D	ND separation 2025, CC, no nuclear, HG	13	1	(5)	(21)	(23)	(25)	(27)	(32)	(43)	(44)	(48)	(55)	(59)
6A	ND separation 2027, HG	68	60	55	40	39	38	37	34	26	24	28	16	14

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MN, SD, WI Costs (\$M)

		<u>NPV</u>	<u>NPV 2040</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>
1	IRP Reference Case with Updated Assumptions, LG	44,940	37,302	2,459	2,436	2,391	2,515	2,600	2,755	2,789	2,862	2,875	2,989	2,927	3,174	3,235	3,312	3,232	3,263	3,297	3,407	3,289	3,325	3,385	3,466	3,467	3,547	3,629
2	Updated Plan, LG	44,866	37,479	2,474	2,467	2,438	2,593	2,674	2,833	2,858	2,888	2,893	2,937	2,907	3,154	3,134	3,373	3,284	3,272	3,315	3,399	3,263	3,316	3,355	3,379	3,376	3,437	3,486
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	44,890	37,434	2,474	2,467	2,438	2,592	2,672	2,830	2,855	2,883	2,886	2,914	2,884	3,140	3,119	3,367	3,281	3,273	3,315	3,395	3,264	3,289	3,364	3,392	3,399	3,461	3,514
4A	ND separation 2023, LG	45,095	37,683	2,474	2,467	2,438	2,592	2,672	2,830	2,855	2,969	2,981	2,962	2,930	3,183	3,160	3,403	3,317	3,293	3,339	3,406	3,267	3,293	3,361	3,392	3,388	3,455	3,505
5A	ND separation 2025, CT, LG	44,984	37,572	2,474	2,467	2,438	2,592	2,672	2,830	2,855	2,883	2,886	2,962	2,930	3,183	3,160	3,403	3,317	3,293	3,339	3,407	3,267	3,293	3,361	3,392	3,388	3,455	3,505
5B	ND separation 2025, CC, LG	44,984	37,572	2,474	2,467	2,438	2,592	2,672	2,830	2,855	2,883	2,886	2,962	2,930	3,183	3,160	3,403	3,317	3,293	3,339	3,407	3,267	3,293	3,361	3,392	3,388	3,455	3,505
5C	ND separation 2025, CT, no nuclear, LG	44,996	37,584	2,474	2,467	2,438	2,592	2,672	2,830	2,855	2,883	2,886	2,969	2,931	3,187	3,159	3,405	3,318	3,297	3,342	3,413	3,269	3,293	3,361	3,392	3,388	3,455	3,505
5D	ND separation 2025, CC, no nuclear, LG	44,996	37,584	2,474	2,467	2,438	2,592	2,672	2,830	2,855	2,883	2,886	2,969	2,931	3,187	3,159	3,405	3,318	3,297	3,342	3,413	3,269	3,293	3,361	3,392	3,388	3,455	3,505
6A	ND separation 2027, LG	44,934	37,522	2,474	2,467	2,438	2,592	2,672	2,830	2,855	2,883	2,886	2,914	2,884	3,186	3,160	3,403	3,317	3,293	3,339	3,406	3,267	3,293	3,361	3,392	3,388	3,455	3,505

Delta to Scen 2:

1	IRP Reference Case with Updated Assumptions, LG	73	(177)	(14)	(31)	(47)	(78)	(74)	(78)	(69)	(26)	(19)	52	20	20	101	(61)	(52)	(9)	(18)	8	26	9	31	87	91	110	142
2	Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	24	(45)	(0)	0	0	(2)	(2)	(3)	(3)	(6)	(7)	(23)	(23)	(14)	(15)	(6)	(4)	1	(1)	(4)	1	(27)	9	13	23	24	28
4A	ND separation 2023, LG	229	204	0	0	0	(2)	(2)	(3)	(3)	(8)	87	25	22	29	26	30	32	21	24	8	4	(23)	6	13	13	18	18
5A	ND separation 2025, CT, LG	117	93	0	0	0	(2)	(2)	(3)	(3)	(5)	(7)	25	23	29	26	30	32	21	24	8	4	(23)	6	13	13	18	18
5B	ND separation 2025, CC, LG	117	93	0	0	0	(2)	(2)	(3)	(3)	(5)	(7)	25	23	29	26	30	32	21	24	8	4	(23)	6	13	13	18	18
5C	ND separation 2025, CT, no nuclear, LG	129	105	0	0	0	(2)	(2)	(3)	(3)	(5)	(7)	31	23	32	25	32	34	25	27	15	6	(23)	6	13	13	18	18
5D	ND separation 2025, CC, no nuclear, LG	129	105	0	0	0	(2)	(2)	(3)	(3)	(5)	(7)	31	23	32	25	32	34	25	27	15	6	(23)	6	13	13	18	18
6A	ND separation 2027, LG	67	43	0	0	0	(2)	(2)	(3)	(3)	(5)	(7)	(23)	(23)	32	26	30	32	21	24	8	4	(23)	6	13	13	18	18

ND Costs (\$M)

		<u>NPV</u>	<u>NPV 2040</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>
1	IRP Reference Case with Updated Assumptions, LG	2,280	1,902	129	126	125	134	133	143	144	148	146	158	146	161	163	167	160	167	163	168	161	162	167	173	174	174	179
2	Updated Plan, LG	2,266	1,897	130	128	127	137	136	146	147	149	146	146	146	161	155	169	162	166	162	170	157	162	162	164	164	168	175
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	2,199	1,885	130	128	127	139	138	149	150	154	153	151	148	155	151	156	149	159	163	165	150	159	162	162	155	154	155
4A	ND separation 2023, LG	2,043	1,736	130	128	127	139	138	149	150	124	131	135	130	132	130	134	124	140	144	147	140	135	136	137	137	138	139
5A	ND separation 2025, CT, LG	2,092	1,782	130	128	127	139	138	149	150	154	153	132	133	135	133	137	127	143	147	150	143	138	139	140	140	140	140
5B	ND separation 2025, CC, LG	2,226	1,930	130	128	127	139	138	149	150	154	153	164	171	173	171	173	164	162	162	165	158	153	153	153	153	153	153
5C	ND separation 2025, CT, no nuclear, LG	2,082	1,777	130	128	127	139	138	149	150	154	153	135	143	142	143	142	133	133	133	133	134	133	134	135	135	135	136
5D	ND separation 2025, CC, no nuclear, LG	2,180	1,883	130	128	127	139	138	149	150	154	153	148	160	160	161	161	153	153	153	153	153	153	153	153	153	153	153
6A	ND separation 2027, LG	2,145	1,837	130	128	127	139	138	149	150	154	153	151	148	149	156	159	149	146	146	150	143	138	138	139	139	140	140

Delta to Scen 2:

1	IRP Reference Case with Updated Assumptions, LG	14	4	(1)	(2)	(2)	(3)	(3)	(3)	(3)	(1)	0	11	1	(0)	8	(2)	(2)	1	1	(2)	5	(0)	5	9	10	7	4
2	Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	(67)	(13)	0	0	0	2	2	3	3	6	7	5	2	(6)	(4)	(12)	(13)	(7)	1	(5)	(7)	(3)	0	(2)	(9)	(13)	(19)
4A	ND separation 2023, LG	(223)	(161)	0	0	0	2	2	3	3	(25)	(15)	(12)	(16)	(29)	(24)	(35)	(38)	(26)	(18)	(22)	(16)	(27)	(26)	(27)	(27)	(30)	(36)
5A	ND separation 2025, CT, LG	(174)	(115)	0	0	0	2	2	3	3	5	7	(14)	(13)	(26)	(21)	(32)	(35)	(23)	(15)	(20)	(13)	(24)	(23)	(24)	(25)	(28)	(34)
5B	ND separation 2025, CC, LG	(40)	33	0	0	0	2	2	3	3	5	7	18	25	11	16	5	2	(5)	0	(5)	1	(9)	(9)	(11)	(11)	(15)	(21)
5C	ND separation 2025, CT, no nuclear, LG	(184)	(120)	0	0	0	2	2	3	3	5	7	(12)	(2)	(19)	(12)	(26)	(29)	(33)	(29)	(36)	(23)	(29)	(28)	(29)	(29)	(33)	(39)
5D	ND separation 2025, CC, no nuclear, LG	(86)	(14)	0	0	0	2	2	3	3	5	7	2	15	(1)	6	(8)	(9)	(13)	(9)	(17)	(4)	(9)	(9)	(11)	(11)	(15)	(21)
6A	ND separation 2027, LG	(121)	(60)	0	0	0	2	2	3	3	5	7	5	2	(12)	2	(10)	(13)	(20)	(16)	(20)	(14)	(24)	(23)	(25)	(25)	(28)	(35)

PVRRcc LOW GAS

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MN, SD, WI Costs (\$M)		2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
1	IRP Reference Case with Updated Assumptions, LG	3,696	3,776	3,838	3,915	4,018	4,123	4,194	4,361	4,496	4,584	4,673	4,775	4,864
2	Updated Plan, LG	3,547	3,610	3,673	3,826	3,940	3,998	4,072	4,219	4,359	4,430	4,511	4,630	4,720
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	3,570	3,642	3,708	3,863	3,975	4,032	4,104	4,263	4,377	4,476	4,575	4,682	4,778
4A	ND separation 2023, LG	3,558	3,628	3,696	3,851	3,960	4,013	4,086	4,227	4,336	4,413	4,507	4,661	4,762
5A	ND separation 2025, CT, LG	3,558	3,628	3,696	3,851	3,960	4,013	4,086	4,227	4,336	4,413	4,507	4,661	4,762
5B	ND separation 2025, CC, LG	3,558	3,628	3,696	3,851	3,960	4,013	4,086	4,227	4,336	4,413	4,507	4,661	4,762
5C	ND separation 2025, CT, no nuclear, LG	3,558	3,628	3,696	3,851	3,960	4,013	4,086	4,227	4,336	4,413	4,507	4,661	4,762
5D	ND separation 2025, CC, no nuclear, LG	3,558	3,628	3,696	3,851	3,960	4,013	4,086	4,227	4,336	4,413	4,507	4,661	4,762
6A	ND separation 2027, LG	3,558	3,628	3,696	3,851	3,960	4,013	4,086	4,227	4,336	4,413	4,507	4,661	4,762
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, LG	150	166	165	89	78	125	122	142	137	153	162	146	144
2	Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	23	32	36	37	35	34	33	44	18	46	64	52	58
4A	ND separation 2023, LG	11	18	24	26	20	15	14	7	(23)	(17)	(4)	32	42
5A	ND separation 2025, CT, LG	11	18	24	26	20	15	14	7	(23)	(17)	(4)	32	42
5B	ND separation 2025, CC, LG	11	18	24	26	20	15	14	7	(23)	(17)	(4)	32	42
5C	ND separation 2025, CT, no nuclear, LG	11	18	24	26	20	15	14	7	(23)	(17)	(4)	32	42
5D	ND separation 2025, CC, no nuclear, LG	11	18	24	26	20	15	14	7	(23)	(17)	(4)	32	42
6A	ND separation 2027, LG	11	18	24	26	20	15	14	7	(23)	(17)	(4)	32	42
ND Costs (\$M)														
1	IRP Reference Case with Updated Assumptions, LG	182	186	189	193	197	206	215	215	223	227	232	237	241
2	Updated Plan, LG	173	185	193	188	193	196	200	208	221	223	224	230	234
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	169	173	173	173	172	173	173	173	171	168	169	171	172
4A	ND separation 2023, LG	162	166	166	166	167	167	168	169	169	170	171	172	166
5A	ND separation 2025, CT, LG	163	167	167	168	168	168	169	170	170	171	172	173	174
5B	ND separation 2025, CC, LG	154	155	157	158	160	161	163	165	166	168	169	172	173
5C	ND separation 2025, CT, no nuclear, LG	159	164	164	165	165	166	167	168	168	169	170	171	172
5D	ND separation 2025, CC, no nuclear, LG	154	155	157	158	160	161	163	165	166	168	169	172	173
6A	ND separation 2027, LG	162	166	166	167	167	168	169	170	170	171	172	173	174
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, LG	9	1	(3)	5	4	10	15	7	2	4	7	7	7
2	Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	(4)	(12)	(20)	(16)	(20)	(23)	(26)	(35)	(50)	(55)	(56)	(59)	(62)
4A	ND separation 2023, LG	(11)	(19)	(27)	(22)	(26)	(29)	(32)	(40)	(52)	(53)	(54)	(58)	(68)
5A	ND separation 2025, CT, LG	(10)	(18)	(25)	(20)	(25)	(28)	(31)	(38)	(51)	(52)	(52)	(57)	(60)
5B	ND separation 2025, CC, LG	(19)	(30)	(36)	(30)	(33)	(35)	(37)	(44)	(55)	(56)	(55)	(58)	(61)
5C	ND separation 2025, CT, no nuclear, LG	(14)	(22)	(29)	(24)	(28)	(30)	(33)	(41)	(53)	(54)	(54)	(59)	(62)
5D	ND separation 2025, CC, no nuclear, LG	(19)	(30)	(36)	(30)	(33)	(35)	(37)	(44)	(55)	(56)	(55)	(58)	(61)
6A	ND separation 2027, LG	(11)	(19)	(27)	(21)	(25)	(28)	(31)	(39)	(51)	(52)	(53)	(57)	(61)

PVRRec HIGH GAS

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		<u>NPV</u>	<u>NPV 2040</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>	
1	IRP Reference Case with Updated Assumptions, HG	54,238	40,956	2,459	2,436	2,391	2,517	2,606	2,765	2,800	2,881	2,904	3,041	2,989	3,258	3,336	3,441	3,382	3,846	3,929	4,202	4,270	4,518	4,709	4,877	5,153	5,300	5,534	
2	Updated Plan, HG	52,961	40,332	2,474	2,467	2,438	2,593	2,673	2,832	2,852	2,885	2,915	2,977	2,960	3,281	3,277	3,558	3,497	3,633	3,721	3,945	3,976	4,206	4,355	4,474	4,722	4,847	5,035	
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	52,851	40,199	2,474	2,467	2,438	2,591	2,670	2,827	2,847	2,876	2,902	2,947	2,930	3,259	3,250	3,541	3,481	3,618	3,705	3,924	3,959	4,172	4,348	4,464	4,722	4,847	5,036	
4A	ND separation 2023, HG	52,992	40,378	2,474	2,467	2,438	2,591	2,670	2,827	2,846	2,963	2,998	2,996	2,977	3,300	3,289	3,572	3,509	3,624	3,711	3,913	3,931	4,146	4,319	4,439	4,694	4,820	5,006	
5A	ND separation 2025, CT, HG	52,877	40,264	2,474	2,467	2,438	2,591	2,670	2,827	2,846	2,876	2,901	2,996	2,977	3,299	3,289	3,572	3,508	3,623	3,711	3,913	3,931	4,146	4,319	4,439	4,694	4,820	5,006	
5B	ND separation 2025, CC, HG	52,877	40,264	2,474	2,467	2,438	2,591	2,670	2,827	2,846	2,876	2,901	2,996	2,977	3,299	3,289	3,572	3,508	3,623	3,711	3,913	3,931	4,146	4,319	4,439	4,694	4,820	5,006	
5C	ND separation 2025, CT, no nuclear, HG	52,819	40,206	2,474	2,467	2,438	2,591	2,670	2,827	2,846	2,876	2,901	2,989	2,962	3,286	3,268	3,553	3,488	3,611	3,698	3,905	3,926	4,146	4,319	4,439	4,694	4,820	5,006	
5D	ND separation 2025, CC, no nuclear, HG	52,819	40,206	2,474	2,467	2,438	2,591	2,670	2,827	2,846	2,876	2,901	2,989	2,962	3,286	3,268	3,553	3,488	3,611	3,698	3,905	3,926	4,146	4,319	4,439	4,694	4,820	5,006	
6A	ND separation 2027, HG	52,827	40,214	2,474	2,467	2,438	2,591	2,670	2,827	2,846	2,876	2,902	2,946	2,930	3,303	3,289	3,572	3,509	3,624	3,711	3,913	3,932	4,146	4,319	4,439	4,694	4,820	5,006	
<u>Delta to Scen 2:</u>																													
1	IRP Reference Case with Updated Assumptions, HG	1,277	624	(14)	(31)	(47)	(77)	(67)	(67)	(52)	(3)	(11)	64	29	(23)	60	(117)	(115)	212	208	257	294	313	354	404	431	453	499	
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	(110)	(133)	(0)	0	0	(2)	(3)	(4)	(6)	(9)	(13)	(30)	(30)	(22)	(27)	(17)	(16)	(15)	(15)	(20)	(17)	(33)	(8)	(10)	(1)	(1)	1	
4A	ND separation 2023, HG	31	46	0	0	0	(2)	(3)	(4)	(6)	78	83	19	17	18	13	14	12	(10)	(10)	(32)	(44)	(59)	(36)	(34)	(29)	(27)	(29)	
5A	ND separation 2025, CT, HG	(84)	(68)	0	0	0	(2)	(3)	(4)	(6)	(9)	(13)	19	17	18	12	13	12	(10)	(10)	(32)	(44)	(59)	(36)	(34)	(29)	(27)	(29)	
5B	ND separation 2025, CC, HG	(84)	(68)	0	0	0	(2)	(3)	(4)	(6)	(9)	(13)	19	17	18	12	13	12	(10)	(10)	(32)	(44)	(59)	(36)	(34)	(29)	(27)	(29)	
5C	ND separation 2025, CT, no nuclear, HG	(142)	(126)	0	0	0	(2)	(3)	(4)	(6)	(9)	(13)	12	2	5	(9)	(5)	(9)	(22)	(23)	(39)	(50)	(59)	(36)	(34)	(29)	(27)	(29)	
5D	ND separation 2025, CC, no nuclear, HG	(142)	(126)	0	0	0	(2)	(3)	(4)	(6)	(9)	(13)	12	2	5	(9)	(5)	(9)	(22)	(23)	(39)	(50)	(59)	(36)	(34)	(29)	(27)	(29)	
6A	ND separation 2027, HG	(134)	(118)	0	0	0	(2)	(3)	(4)	(6)	(9)	(13)	(30)	(31)	22	13	14	12	(9)	(10)	(32)	(44)	(59)	(36)	(34)	(29)	(27)	(29)	

ND Costs (\$M)

		<u>NPV</u>	<u>NPV 2040</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>
1	IRP Reference Case with Updated Assumptions, HG	2,798	2,113	129	126	125	134	134	144	145	150	148	161	151	167	169	175	170	201	201	214	218	230	242	253	268	272	285
2	Updated Plan, HG	2,728	2,075	130	128	127	137	136	146	147	149	148	150	150	170	165	182	177	190	188	204	201	216	221	228	241	248	262
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	2,857	2,183	130	128	127	139	140	151	153	158	161	162	160	175	175	184	180	202	209	221	218	241	252	258	268	272	282
4A	ND separation 2023, HG	2,874	2,197	130	128	127	139	140	151	153	141	157	165	163	171	176	185	181	212	219	232	238	247	255	263	270	278	288
5A	ND separation 2025, CT, HG	2,905	2,225	130	128	127	139	140	151	153	158	162	162	167	174	180	188	184	215	222	234	241	250	258	266	273	280	289
5B	ND separation 2025, CC, HG	2,899	2,295	130	128	127	139	140	151	153	158	162	187	197	203	208	215	211	221	224	235	239	246	252	258	264	270	278
5C	ND separation 2025, CT, no nuclear, HG	2,967	2,292	130	128	127	139	140	151	153	158	162	178	193	198	210	215	213	220	225	232	240	245	253	261	268	275	285
5D	ND separation 2025, CC, no nuclear, HG	2,910	2,306	130	128	127	139	140	151	153	158	162	182	199	204	215	219	218	226	229	235	241	246	252	258	264	270	278
6A	ND separation 2027, HG	2,937	2,257	130	128	127	139	140	151	153	158	161	162	161	188	203	211	205	217	221	234	241	250	258	266	273	280	289
<u>Delta to Scen 2:</u>																												
1	IRP Reference Case with Updated Assumptions, HG	70	39	(1)	(2)	(2)	(3)	(2)	(3)	(2)	0	0	11	0	(4)	4	(7)	(8)	11	12	10	17	14	20	25	27	24	22
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	129	108	0	0	0	2	3	4	6	9	13	12	10	4	9	2	2	11	20	16	17	25	31	31	27	24	20
4A	ND separation 2023, HG	146	122	0	0	0	2	3	4	6	(8)	9	15	13	0	11	3	3	22	31	27	38	32	34	35	29	30	26
5A	ND separation 2025, CT, HG	178	150	0	0	0	2	3	4	6	9	13	12	17	4	15	6	6	25	34	30	41	34	36	38	32	32	27
5B	ND separation 2025, CC, HG	172	220	0	0	0	2	3	4	6	9	13	37	47	33	42	33	33	30	36	30	38	30	31	30	23	22	15
5C	ND separation 2025, CT, no nuclear, HG	239	217	0	0	0	2	3	4	6	9	13	28	43	28	45	33	35	30	36	28	39	30	32	33	27	27	23
5D	ND separation 2025, CC, no nuclear, HG	182	231	0	0	0	2	3	4	6	9	13	32	48	33	49	37	41	35	41	31	41	30	31	30	23	22	15
6A	ND separation 2027, HG	209	183	0	0	0	2	3	4	6	9	13	12	11	18	38	29	28	27	33	30	40	34	36	38	31	32	27

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MN, SD, WI Costs (\$M)		2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
1	IRP Reference Case with Updated Assumptions, HG	5,944	6,182	6,368	6,578	6,853	7,200	7,431	7,756	8,047	8,307	8,580	8,889	9,164
2	Updated Plan, HG	5,428	5,630	5,798	6,413	6,686	6,874	7,102	7,400	7,692	7,965	8,299	8,671	8,964
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	5,419	5,629	5,801	6,428	6,696	6,882	7,108	7,420	7,731	8,002	8,333	8,689	8,983
4A	ND separation 2023, HG	5,397	5,607	5,780	6,404	6,672	6,852	7,074	7,417	7,697	7,979	8,339	8,680	8,953
5A	ND separation 2025, CT, HG	5,397	5,607	5,780	6,404	6,672	6,852	7,074	7,417	7,697	7,979	8,339	8,680	8,953
5B	ND separation 2025, CC, HG	5,397	5,607	5,780	6,404	6,672	6,852	7,074	7,417	7,697	7,979	8,339	8,680	8,953
5C	ND separation 2025, CT, no nuclear, HG	5,397	5,607	5,780	6,404	6,672	6,852	7,074	7,417	7,697	7,979	8,339	8,680	8,953
5D	ND separation 2025, CC, no nuclear, HG	5,397	5,607	5,780	6,404	6,672	6,852	7,074	7,417	7,697	7,979	8,339	8,680	8,953
6A	ND separation 2027, HG	5,397	5,607	5,780	6,404	6,672	6,852	7,074	7,417	7,697	7,979	8,339	8,680	8,953
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, HG	516	552	570	166	167	327	330	356	356	341	281	218	200
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	(9)	(1)	2	15	10	8	20	39	37	33	18	19	
4A	ND separation 2023, HG	(31)	(23)	(18)	(9)	(15)	(21)	(27)	17	6	13	39	9	(11)
5A	ND separation 2025, CT, HG	(31)	(23)	(18)	(9)	(15)	(21)	(27)	17	6	13	39	9	(11)
5B	ND separation 2025, CC, HG	(31)	(23)	(18)	(9)	(15)	(21)	(27)	17	6	13	39	9	(11)
5C	ND separation 2025, CT, no nuclear, HG	(31)	(23)	(18)	(9)	(15)	(21)	(27)	17	6	13	39	9	(11)
5D	ND separation 2025, CC, no nuclear, HG	(31)	(23)	(18)	(9)	(15)	(21)	(27)	17	6	13	39	9	(11)
6A	ND separation 2027, HG	(31)	(23)	(18)	(9)	(15)	(21)	(27)	17	6	13	39	9	(11)
ND Costs (\$M)														
1	IRP Reference Case with Updated Assumptions, HG	306	318	328	340	350	374	390	399	414	427	441	456	470
2	Updated Plan, HG	278	297	311	331	342	353	364	380	400	412	426	444	459
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	318	332	340	348	356	365	375	386	394	401	412	426	438
4A	ND separation 2023, HG	319	331	339	348	356	366	376	387	397	408	420	433	438
5A	ND separation 2025, CT, HG	321	332	340	349	358	367	377	388	398	409	421	434	446
5B	ND separation 2025, CC, HG	284	292	300	309	317	326	335	346	355	365	376	388	399
5C	ND separation 2025, CT, no nuclear, HG	316	328	337	346	355	365	375	386	396	407	419	432	444
5D	ND separation 2025, CC, no nuclear, HG	284	292	300	309	317	326	335	346	355	365	376	388	399
6A	ND separation 2027, HG	320	331	339	348	357	367	377	388	398	409	421	434	445
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, HG	28	21	18	8	8	21	26	19	14	15	15	12	11
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	40	35	29	17	14	12	10	6	(7)	(11)	(14)	(18)	(21)
4A	ND separation 2023, HG	41	33	28	16	14	13	11	7	(3)	(4)	(6)	(11)	(21)
5A	ND separation 2025, CT, HG	43	35	30	18	15	14	13	8	(2)	(3)	(5)	(10)	(13)
5B	ND separation 2025, CC, HG	7	(6)	(11)	(23)	(25)	(27)	(29)	(34)	(45)	(47)	(50)	(56)	(60)
5C	ND separation 2025, CT, no nuclear, HG	39	31	26	15	13	12	11	6	(4)	(5)	(7)	(12)	(15)
5D	ND separation 2025, CC, no nuclear, HG	7	(6)	(11)	(23)	(25)	(27)	(29)	(34)	(45)	(47)	(50)	(56)	(60)
6A	ND separation 2027, HG	42	33	28	17	15	14	13	8	(2)	(3)	(5)	(10)	(13)

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		<u>NPV</u>	<u>NPV 2040</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>
1	IRP Reference Case with Updated Assumptions, LG	45,193	37,523	2,479	2,456	2,413	2,540	2,625	2,782	2,816	2,890	2,875	2,989	2,927	3,200	3,244	3,319	3,233	3,263	3,325	3,427	3,318	3,333	3,385	3,499	3,467	3,577	3,651
2	Updated Plan, LG	45,106	37,685	2,495	2,489	2,461	2,619	2,700	2,860	2,886	2,917	2,920	2,937	2,907	3,154	3,136	3,376	3,284	3,272	3,321	3,399	3,269	3,348	3,383	3,387	3,392	3,442	3,486
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	45,203	37,683	2,495	2,489	2,461	2,617	2,698	2,858	2,883	2,912	2,914	2,916	2,885	3,143	3,128	3,377	3,287	3,281	3,320	3,408	3,288	3,297	3,406	3,429	3,443	3,477	3,522
4A	ND separation 2023, LG	45,344	37,884	2,495	2,489	2,461	2,617	2,698	2,858	2,883	2,990	2,991	2,966	2,931	3,183	3,160	3,403	3,317	3,295	3,339	3,412	3,286	3,293	3,399	3,418	3,424	3,459	3,505
5A	ND separation 2025, CT, LG	45,248	37,788	2,495	2,489	2,461	2,617	2,698	2,858	2,883	2,912	2,914	2,966	2,931	3,183	3,160	3,403	3,317	3,295	3,339	3,412	3,286	3,293	3,399	3,418	3,424	3,459	3,505
5B	ND separation 2025, CC, LG	45,248	37,788	2,495	2,489	2,461	2,617	2,698	2,858	2,883	2,912	2,914	2,966	2,931	3,183	3,160	3,403	3,317	3,295	3,339	3,412	3,286	3,293	3,399	3,418	3,424	3,459	3,505
5C	ND separation 2025, CT, no nuclear, LG	45,276	37,815	2,495	2,489	2,461	2,617	2,698	2,858	2,883	2,912	2,914	2,979	2,939	3,194	3,159	3,405	3,318	3,303	3,344	3,423	3,290	3,293	3,399	3,418	3,424	3,459	3,505
5D	ND separation 2025, CC, no nuclear, LG	45,276	37,815	2,495	2,489	2,461	2,617	2,698	2,858	2,883	2,912	2,914	2,979	2,939	3,194	3,159	3,405	3,318	3,303	3,344	3,423	3,290	3,293	3,399	3,418	3,424	3,459	3,505
6A	ND separation 2027, LG	45,197	37,737	2,495	2,489	2,461	2,617	2,698	2,858	2,883	2,912	2,914	2,916	2,885	3,186	3,160	3,403	3,317	3,295	3,339	3,412	3,286	3,293	3,399	3,418	3,424	3,459	3,505

Delta to Scen 2:

1	IRP Reference Case with Updated Assumptions, LG	87	(162)	(16)	(33)	(48)	(79)	(75)	(78)	(70)	(27)	(45)	52	20	46	107	(57)	(51)	(9)	4	28	48	(14)	3	112	74	135	165
2	Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	97	(2)	(0)	0	0	(2)	(2)	(2)	(3)	(5)	(6)	(21)	(22)	(11)	(8)	1	3	9	(1)	9	19	(51)	23	42	50	36	35
4A	ND separation 2023, LG	238	198	0	0	0	(2)	(2)	(2)	(3)	74	71	29	24	29	24	27	32	23	18	13	16	(55)	16	31	32	17	18
5A	ND separation 2025, CT, LG	142	103	0	0	0	(2)	(2)	(2)	(3)	(5)	(6)	29	24	29	24	27	32	24	18	13	16	(55)	16	31	32	17	18
5B	ND separation 2025, CC, LG	142	103	0	0	0	(2)	(2)	(2)	(3)	(5)	(6)	29	24	29	24	27	32	24	18	13	16	(55)	16	31	32	17	18
5C	ND separation 2025, CT, no nuclear, LG	169	130	0	0	0	(2)	(2)	(2)	(3)	(5)	(6)	42	31	39	23	29	34	31	23	25	21	(55)	16	31	32	17	18
5D	ND separation 2025, CC, no nuclear, LG	169	130	0	0	0	(2)	(2)	(2)	(3)	(5)	(6)	42	31	39	23	29	34	31	23	25	21	(55)	16	31	32	17	18
6A	ND separation 2027, LG	91	52	0	0	0	(2)	(2)	(2)	(3)	(5)	(5)	(21)	(22)	32	24	27	32	23	18	13	16	(55)	16	31	32	17	18

ND Costs (\$M)

		<u>NPV</u>	<u>NPV 2040</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>
1	IRP Reference Case with Updated Assumptions, LG	2,409	2,000	137	134	132	139	139	148	149	153	153	158	154	170	172	177	170	171	175	180	173	173	177	184	182	189	194
2	Updated Plan, LG	2,384	1,987	138	135	133	141	141	150	151	153	153	153	151	165	164	178	171	169	172	176	167	172	175	177	178	182	185
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	2,245	1,928	138	135	133	143	143	152	154	158	159	156	150	155	151	156	149	160	163	165	150	161	163	163	155	154	155
4A	ND separation 2023, LG	2,075	1,769	138	135	133	143	143	152	154	124	131	135	130	132	130	134	124	140	144	147	140	135	136	137	137	138	139
5A	ND separation 2025, CT, LG	2,130	1,821	138	135	133	143	143	152	154	158	159	132	133	135	133	137	127	143	147	150	143	138	139	140	140	140	140
5B	ND separation 2025, CC, LG	2,265	1,968	138	135	133	143	143	152	154	158	159	164	171	173	171	173	164	162	162	165	158	153	153	153	153	153	153
5C	ND separation 2025, CT, no nuclear, LG	2,120	1,816	138	135	133	143	143	152	154	158	159	135	143	142	143	142	133	133	133	133	134	133	134	135	135	135	136
5D	ND separation 2025, CC, no nuclear, LG	2,218	1,921	138	135	133	143	143	152	154	158	159	148	160	160	161	161	153	153	153	153	153	153	153	153	153	153	153
6A	ND separation 2027, LG	2,187	1,879	138	135	133	143	143	152	154	158	159	156	150	149	156	159	149	146	146	150	143	138	138	139	139	140	140

Delta to Scen 2:

1	IRP Reference Case with Updated Assumptions, LG	25	14	(0)	(0)	(1)	(2)	(2)	(2)	(2)	1	(1)	5	3	5	8	(1)	(1)	2	3	4	5	2	2	7	4	7	9
2	Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	(139)	(59)	0	0	0	2	2	2	3	5	6	3	(1)	(10)	(13)	(22)	(22)	(9)	(9)	(11)	(17)	(11)	(12)	(14)	(23)	(27)	(29)
4A	ND separation 2023, LG	(309)	(218)	0	0	0	2	2	2	3	(29)	(22)	(18)	(22)	(33)	(34)	(44)	(46)	(29)	(28)	(29)	(27)	(36)	(39)	(40)	(41)	(44)	(46)
5A	ND separation 2025, CT, LG	(254)	(166)	0	0	0	2	2	2	3	5	6	(21)	(18)	(30)	(31)	(41)	(44)	(26)	(25)	(26)	(24)	(34)	(36)	(37)	(38)	(42)	(44)
5B	ND separation 2025, CC, LG	(119)	(19)	0	0	0	2	2	2	3	5	6	11	20	7	7	(5)	(7)	(8)	(10)	(11)	(10)	(19)	(22)	(24)	(25)	(29)	(31)
5C	ND separation 2025, CT, no nuclear, LG	(264)	(171)	0	0	0	2	2	2	3	5	6	(18)	(8)	(23)	(21)	(36)	(38)	(36)	(39)	(43)	(34)	(38)	(41)	(42)	(43)	(47)	(49)
5D	ND separation 2025, CC, no nuclear, LG	(166)	(66)	0	0	0	2	2	2	3	5	6	(5)	9	(6)	(3)	(17)	(18)	(16)	(19)	(23)	(14)	(19)	(22)	(24)	(25)	(29)	(31)
6A	ND separation 2027, LG	(196)	(108)	0	0	0	2	2	2	3	5	5	3	(1)	(16)	(8)	(19)	(22)	(23)	(26)	(26)	(25)	(34)	(36)	(38)	(39)	(42)	(45)

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MN, SD, WI Costs (\$M)		2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
1	IRP Reference Case with Updated Assumptions, LG	3,728	3,796	3,855	3,929	4,023	4,123	4,194	4,370	4,532	4,615	4,700	4,799	4,884
2	Updated Plan, LG	3,551	3,610	3,673	3,858	3,963	4,017	4,085	4,249	4,398	4,468	4,547	4,646	4,726
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	3,595	3,655	3,718	3,911	4,023	4,077	4,143	4,317	4,381	4,532	4,632	4,729	4,815
4A	ND separation 2023, LG	3,563	3,641	3,706	3,896	4,005	4,058	4,125	4,228	4,363	4,430	4,515	4,715	4,815
5A	ND separation 2025, CT, LG	3,563	3,641	3,706	3,896	4,005	4,058	4,125	4,228	4,363	4,430	4,515	4,715	4,815
5B	ND separation 2025, CC, LG	3,563	3,641	3,706	3,896	4,005	4,058	4,125	4,228	4,363	4,430	4,515	4,715	4,815
5C	ND separation 2025, CT, no nuclear, LG	3,563	3,641	3,706	3,896	4,005	4,058	4,125	4,228	4,363	4,430	4,515	4,715	4,815
5D	ND separation 2025, CC, no nuclear, LG	3,563	3,641	3,706	3,896	4,005	4,058	4,125	4,228	4,363	4,430	4,515	4,715	4,815
6A	ND separation 2027, LG	3,563	3,641	3,706	3,896	4,005	4,058	4,125	4,228	4,363	4,430	4,515	4,715	4,815
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, LG	176	186	182	71	60	106	109	121	134	147	154	153	158
2	Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	44	45	45	53	60	60	58	68	(17)	64	85	83	89
4A	ND separation 2023, LG	12	31	33	39	42	41	40	(21)	(35)	(38)	(32)	69	89
5A	ND separation 2025, CT, LG	12	31	33	39	42	41	40	(21)	(35)	(38)	(32)	69	89
5B	ND separation 2025, CC, LG	12	31	33	39	42	41	40	(21)	(35)	(38)	(32)	69	89
5C	ND separation 2025, CT, no nuclear, LG	12	31	33	39	42	41	40	(21)	(35)	(38)	(32)	69	89
5D	ND separation 2025, CC, no nuclear, LG	12	31	33	39	42	41	40	(21)	(35)	(38)	(32)	69	89
6A	ND separation 2027, LG	12	31	33	39	42	41	40	(21)	(35)	(38)	(32)	69	89
ND Costs (\$M)														
1	IRP Reference Case with Updated Assumptions, LG	197	201	205	209	213	219	223	233	242	247	251	256	261
2	Updated Plan, LG	188	191	195	206	211	214	218	228	237	241	246	251	255
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	172	175	175	174	174	174	175	173	171	168	169	171	172
4A	ND separation 2023, LG	162	166	166	166	167	167	168	169	169	170	171	172	166
5A	ND separation 2025, CT, LG	163	167	167	168	168	168	169	170	170	171	172	173	174
5B	ND separation 2025, CC, LG	154	155	157	158	160	161	163	165	166	168	169	172	173
5C	ND separation 2025, CT, no nuclear, LG	159	164	164	165	165	166	167	168	168	169	170	171	172
5D	ND separation 2025, CC, no nuclear, LG	154	155	157	158	160	161	163	165	166	168	169	172	173
6A	ND separation 2027, LG	162	166	166	167	167	168	169	170	170	171	172	173	174
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, LG	9	10	9	3	2	5	5	5	5	5	6	6	6
2	Updated Plan, LG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, LG	(16)	(17)	(21)	(32)	(37)	(40)	(43)	(55)	(66)	(73)	(77)	(80)	(83)
4A	ND separation 2023, LG	(26)	(25)	(29)	(39)	(44)	(47)	(51)	(59)	(68)	(71)	(75)	(79)	(89)
5A	ND separation 2025, CT, LG	(25)	(24)	(28)	(38)	(43)	(46)	(49)	(58)	(67)	(70)	(74)	(78)	(82)
5B	ND separation 2025, CC, LG	(34)	(36)	(39)	(47)	(51)	(53)	(55)	(63)	(71)	(74)	(76)	(79)	(82)
5C	ND separation 2025, CT, no nuclear, LG	(29)	(28)	(31)	(41)	(46)	(48)	(52)	(60)	(69)	(72)	(76)	(80)	(83)
5D	ND separation 2025, CC, no nuclear, LG	(34)	(36)	(39)	(47)	(51)	(53)	(55)	(63)	(71)	(74)	(76)	(79)	(82)
6A	ND separation 2027, LG	(26)	(26)	(29)	(39)	(43)	(46)	(50)	(58)	(67)	(70)	(74)	(78)	(82)

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MN, SD, WI Costs (\$M)		NPV	NPV 2040	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	
1	IRP Reference Case with Updated Assumptions, HG	54,492	41,177	2,479	2,456	2,413	2,542	2,632	2,791	2,827	2,909	2,904	3,041	2,989	3,285	3,345	3,448	3,383	3,846	3,957	4,222	4,299	4,526	4,709	4,910	5,153	5,329	5,557	
2	Updated Plan, HG	53,201	40,538	2,495	2,489	2,461	2,619	2,699	2,859	2,880	2,913	2,941	2,977	2,960	3,281	3,279	3,561	3,497	3,633	3,726	3,945	3,982	4,237	4,383	4,481	4,739	4,851	5,035	
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	53,164	40,448	2,495	2,489	2,461	2,617	2,696	2,855	2,875	2,905	2,929	2,949	2,931	3,261	3,260	3,552	3,488	3,626	3,710	3,937	3,983	4,180	4,389	4,501	4,766	4,863	5,044	
4A	ND separation 2023, HG	53,240	40,579	2,495	2,489	2,461	2,617	2,696	2,855	2,875	2,985	3,008	3,000	2,978	3,300	3,289	3,572	3,509	3,626	3,711	3,918	3,951	4,146	4,358	4,465	4,730	4,825	5,006	
5A	ND separation 2025, CT, HG	53,141	40,480	2,495	2,489	2,461	2,617	2,696	2,855	2,875	2,905	2,929	3,000	2,978	3,300	3,289	3,572	3,508	3,625	3,711	3,918	3,951	4,146	4,358	4,465	4,730	4,825	5,006	
5B	ND separation 2025, CC, HG	53,141	40,480	2,495	2,489	2,461	2,617	2,696	2,855	2,875	2,905	2,929	3,000	2,978	3,300	3,289	3,572	3,508	3,625	3,711	3,918	3,951	4,146	4,358	4,465	4,730	4,825	5,006	
5C	ND separation 2025, CT, no nuclear, HG	53,099	40,437	2,495	2,489	2,461	2,617	2,696	2,855	2,875	2,905	2,929	3,000	2,970	3,293	3,268	3,553	3,488	3,618	3,699	3,916	3,947	4,146	4,358	4,465	4,730	4,825	5,006	
5D	ND separation 2025, CC, no nuclear, HG	53,099	40,437	2,495	2,489	2,461	2,617	2,696	2,855	2,875	2,905	2,929	3,000	2,970	3,293	3,268	3,553	3,488	3,618	3,699	3,916	3,947	4,146	4,358	4,465	4,730	4,825	5,006	
6A	ND separation 2027, HG	53,090	40,429	2,495	2,489	2,461	2,617	2,696	2,855	2,875	2,905	2,930	2,949	2,931	3,303	3,289	3,572	3,509	3,626	3,711	3,918	3,951	4,146	4,358	4,465	4,730	4,825	5,006	
Delta to Scen 2:																													
1	IRP Reference Case with Updated Assumptions, HG	1,291	639	(16)	(33)	(48)	(77)	(67)	(68)	(53)	(4)	(37)	64	29	3	66	(113)	(114)	212	231	277	317	289	326	429	414	478	522	
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	(37)	(91)	(0)	0	0	(2)	(3)	(4)	(5)	(9)	(12)	(28)	(29)	(20)	(19)	(9)	(7)	(16)	(7)	1	(57)	6	20	27	11	8		
4A	ND separation 2023, HG	40	41	0	0	0	(2)	(3)	(4)	(6)	71	67	23	18	10	11	12	(8)	(15)	(26)	(31)	(91)	(26)	(16)	(9)	(27)	(29)		
5A	ND separation 2025, CT, HG	(59)	(58)	0	0	0	(2)	(3)	(4)	(6)	(9)	(12)	23	18	10	10	10	12	(8)	(15)	(27)	(31)	(91)	(26)	(16)	(9)	(27)	(29)	
5B	ND separation 2025, CC, HG	(59)	(58)	0	0	0	(2)	(3)	(4)	(6)	(9)	(12)	23	18	10	10	10	12	(8)	(15)	(27)	(31)	(91)	(26)	(16)	(9)	(27)	(29)	
5C	ND separation 2025, CT, no nuclear, HG	(102)	(101)	0	0	0	(2)	(3)	(4)	(6)	(9)	(12)	23	10	12	(11)	(8)	(9)	(15)	(27)	(29)	(35)	(91)	(26)	(16)	(9)	(27)	(29)	
5D	ND separation 2025, CC, no nuclear, HG	(102)	(101)	0	0	0	(2)	(3)	(4)	(6)	(9)	(12)	23	10	12	(11)	(8)	(9)	(15)	(27)	(29)	(35)	(91)	(26)	(16)	(9)	(27)	(29)	
6A	ND separation 2027, HG	(111)	(110)	0	0	0	(2)	(3)	(4)	(6)	(9)	(11)	(28)	(29)	22	10	11	12	(8)	(15)	(26)	(31)	(91)	(26)	(16)	(9)	(27)	(29)	
ND Costs (\$M)																													
1	IRP Reference Case with Updated Assumptions, HG	2,926	2,212	137	134	132	139	139	148	150	155	155	162	159	176	179	185	180	206	212	226	229	242	252	263	276	287	299	
2	Updated Plan, HG	2,846	2,164	138	135	133	141	141	150	151	153	155	157	156	175	175	191	186	193	199	210	211	226	234	241	255	262	272	
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	2,903	2,227	138	135	133	143	144	155	157	162	167	167	163	175	175	184	180	203	209	221	218	243	253	259	268	272	282	
4A	ND separation 2023, HG	2,907	2,229	138	135	133	143	144	155	157	141	157	165	163	171	176	185	181	212	219	232	238	247	255	263	270	278	288	
5A	ND separation 2025, CT, HG	2,944	2,263	138	135	133	143	144	155	157	162	167	162	167	174	180	188	184	215	222	234	241	250	258	266	273	280	289	
5B	ND separation 2025, CC, HG	2,937	2,333	138	135	133	143	144	155	157	162	167	187	197	203	208	215	211	221	224	235	239	246	252	258	264	270	278	
5C	ND separation 2025, CT, no nuclear, HG	3,005	2,330	138	135	133	143	144	155	157	162	167	178	193	198	210	215	213	220	225	232	240	245	253	261	268	275	285	
5D	ND separation 2025, CC, no nuclear, HG	2,948	2,344	138	135	133	143	144	155	157	162	167	182	199	204	215	219	218	226	229	235	241	246	252	258	264	270	278	
6A	ND separation 2027, HG	2,979	2,299	138	135	133	143	144	155	157	162	167	167	163	188	203	211	205	217	221	234	241	250	258	266	273	280	289	
Delta to Scen 2:																													
1	IRP Reference Case with Updated Assumptions, HG	81	48	(0)	(0)	(1)	(2)	(2)	(2)	(1)	1	(1)	5	3	1	5	(6)	(6)	13	13	16	18	16	18	23	21	25	27	
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	57	62	0	0	0	2	3	4	5	9	12	10	7	0	(0)	(7)	(6)	10	10	10	6	17	19	18	13	10	10	
4A	ND separation 2023, HG	61	65	0	0	0	2	3	4	6	(12)	2	8	7	(4)	2	(6)	(5)	18	20	21	27	22	21	22	15	16	16	
5A	ND separation 2025, CT, HG	98	99	0	0	0	2	3	4	6	9	12	6	11	(0)	5	(3)	(2)	22	24	24	30	24	23	25	18	18	17	
5B	ND separation 2025, CC, HG	92	169	0	0	0	2	3	4	6	9	12	31	41	28	33	24	25	27	26	24	27	20	18	18	9	8	5	
5C	ND separation 2025, CT, no nuclear, HG	159	166	0	0	0	2	3	4	6	9	12	22	37	23	36	23	27	26	22	28	20	19	21	13	13	13		
5D	ND separation 2025, CC, no nuclear, HG	102	180	0	0	0	2	3	4	6	9	12	25	43	29	40	28	32	32	31	25	30	20	18	18	9	8	5	
6A	ND separation 2027, HG	133	135	0	0	0	2	3	4	6	9	11	10	8	14	28	19	19	24	23	23	29	24	23	25	17	18	17	

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MN, SD, WI Costs (\$M)		2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
1	IRP Reference Case with Updated Assumptions, HG	5,975	6,202	6,386	6,592	6,858	7,200	7,431	7,766	8,083	8,339	8,608	8,913	9,184
2	Updated Plan, HG	5,433	5,630	5,798	6,445	6,709	6,893	7,115	7,430	7,731	8,003	8,335	8,687	8,970
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	5,444	5,641	5,810	6,476	6,744	6,926	7,147	7,474	7,734	8,058	8,389	8,736	9,020
4A	ND separation 2023, HG	5,403	5,620	5,790	6,449	6,717	6,897	7,114	7,418	7,724	7,996	8,347	8,733	9,007
5A	ND separation 2025, CT, HG	5,403	5,620	5,790	6,449	6,717	6,897	7,114	7,418	7,724	7,996	8,347	8,733	9,007
5B	ND separation 2025, CC, HG	5,403	5,620	5,790	6,449	6,717	6,897	7,114	7,418	7,724	7,996	8,347	8,733	9,007
5C	ND separation 2025, CT, no nuclear, HG	5,403	5,620	5,790	6,449	6,717	6,897	7,114	7,418	7,724	7,996	8,347	8,733	9,007
5D	ND separation 2025, CC, no nuclear, HG	5,403	5,620	5,790	6,449	6,717	6,897	7,114	7,418	7,724	7,996	8,347	8,733	9,007
6A	ND separation 2027, HG	5,403	5,620	5,790	6,449	6,717	6,897	7,114	7,418	7,724	7,996	8,347	8,733	9,007
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, HG	543	572	587	147	148	307	316	336	352	336	273	226	214
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	11	11	11	31	35	33	32	44	3	55	55	49	50
4A	ND separation 2023, HG	(30)	(10)	(9)	4	7	4	(1)	(12)	(6)	(7)	12	46	37
5A	ND separation 2025, CT, HG	(30)	(10)	(9)	4	7	4	(1)	(12)	(6)	(7)	12	46	37
5B	ND separation 2025, CC, HG	(30)	(10)	(9)	4	7	4	(1)	(12)	(6)	(7)	12	46	37
5C	ND separation 2025, CT, no nuclear, HG	(30)	(10)	(9)	4	7	4	(1)	(12)	(6)	(7)	12	46	37
5D	ND separation 2025, CC, no nuclear, HG	(30)	(10)	(9)	4	7	4	(1)	(12)	(6)	(7)	12	46	37
6A	ND separation 2027, HG	(30)	(10)	(9)	4	7	4	(1)	(12)	(6)	(7)	12	46	37
ND Costs (\$M)														
1	IRP Reference Case with Updated Assumptions, HG	321	333	344	355	367	386	398	416	433	446	460	476	490
2	Updated Plan, HG	293	303	313	349	360	371	383	400	416	430	447	466	480
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	321	334	341	350	358	366	376	386	394	401	412	426	438
4A	ND separation 2023, HG	319	331	339	348	356	366	376	387	397	408	420	433	438
5A	ND separation 2025, CT, HG	321	332	340	349	358	367	377	388	398	409	421	434	446
5B	ND separation 2025, CC, HG	284	292	300	309	317	326	335	346	355	365	376	388	399
5C	ND separation 2025, CT, no nuclear, HG	316	328	337	346	355	365	375	386	396	407	419	432	444
5D	ND separation 2025, CC, no nuclear, HG	284	292	300	309	317	326	335	346	355	365	376	388	399
6A	ND separation 2027, HG	320	331	339	348	357	367	377	388	398	409	421	434	445
Delta to Scen 2:														
1	IRP Reference Case with Updated Assumptions, HG	28	30	31	6	7	15	16	16	17	16	13	11	10
2	Updated Plan, HG	0	0	0	0	0	0	0	0	0	0	0	0	0
3A	Updated Plan with Legacy Purchase/Sale and Jur Future, HG	28	30	28	1	(3)	(5)	(7)	(14)	(22)	(29)	(35)	(39)	(42)
4A	ND separation 2023, HG	26	27	25	(1)	(4)	(5)	(7)	(13)	(19)	(22)	(27)	(32)	(42)
5A	ND separation 2025, CT, HG	28	29	27	0	(3)	(4)	(6)	(11)	(18)	(21)	(26)	(31)	(34)
5B	ND separation 2025, CC, HG	(8)	(12)	(14)	(40)	(43)	(45)	(47)	(54)	(61)	(65)	(71)	(77)	(81)
5C	ND separation 2025, CT, no nuclear, HG	24	25	23	(3)	(5)	(6)	(8)	(14)	(20)	(23)	(28)	(33)	(36)
5D	ND separation 2025, CC, no nuclear, HG	(8)	(12)	(14)	(40)	(43)	(45)	(47)	(54)	(61)	(65)	(71)	(77)	(81)
6A	ND separation 2027, HG	27	27	25	(1)	(3)	(4)	(6)	(12)	(18)	(21)	(26)	(31)	(35)