

**Montana-Dakota Utilities Co.
Electric Utility - South Dakota
Lambda and Capacity Costs
2022**

Month		Lambda		
		On-Peak \$/MWh	Off-Peak \$/MWh	Total \$/MWh
January	2022		\$25.22	\$25.22
February	2022		28.78	28.78
March	2022		18.70	18.70
April	2022		19.47	19.47
May	2022		18.13	18.13
June	2022	\$18.49	18.23	18.29
July	2022	20.88	19.65	19.93
August	2022	23.06	21.64	21.99
September	2022	20.46	20.28	20.32
October	2022		20.92	20.92
November	2022		22.30	22.30
December	2022		23.31	23.31
Average		\$20.72	\$21.39	\$21.45

Montana-Dakota Utilities Co.
Electric Utility - South Dakota
Calculation of Capacity Payments
2031

Rate 96

Capital cost of combustion turbine	\$1,252	1/
Levelized Fixed Charge	8.969%	2/
Monthly Capacity Payments:	\$9.358	\$/kW-Month 3/

1/ Cost of combustion turbine based on projected cost of a GE 7EA simple cycle unit in 2019 dollars of \$878 escalated at a rate of 3.0% per year to 2031.

2/ See Attachment A pages 2-6.

3/ Rate 96 Capacity Payment formula = $\$878 \times 1.030^{(2031-2019)} \times .08969 / 12$.

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2022 Avoided Cost Rate Update
Levelized Fixed Charge Rate - CT**

Summary of Results

Sum of Present Values 1/	1.240286
Capital Recovery Factor 2/	0.072316
Levelized Fixed Charge 3/	<u><u>8.969%</u></u>

1/ Sum of annual net present values.

2/ $((+ROR*(1+ROR)^{book\ life})/((1+ROR)^{book\ life}-1))$.

3/ Product of annual present value x capital recovery factor.

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2022 Avoided Cost Rate Update
Levelized Fixed Charge Rate - CT**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
	Net	Return	Book	O&M	Ad Valorem	Total	Present	Present	Accum.		Tax	Deferred	
Year	Investment		Depr.		Tax	Charge	Value	Value	Present	Value	Depr.	Income	
							Factor			LFGR	Accel.	Tax	
1	1	1.000	0.07894	0.02500	0.01000	0.00390	0.11784	0.93730	0.11045	0.11045	0.11784	0.05000	0.00525
2	2	0.970	0.07655	0.02500	0.01000	0.00390	0.11545	0.87854	0.10143	0.21188	0.11668	0.09500	0.01470
3	3	0.930	0.07342	0.02500	0.01000	0.00390	0.11232	0.82346	0.09249	0.30437	0.11532	0.08550	0.01271
4	4	0.892	0.07044	0.02500	0.01000	0.00390	0.10934	0.77183	0.08439	0.38876	0.11397	0.07700	0.01092
5	5	0.856	0.06761	0.02500	0.01000	0.00390	0.10651	0.72344	0.07705	0.46581	0.11266	0.06930	0.00930
6	6	0.822	0.06490	0.02500	0.01000	0.00390	0.10380	0.67808	0.07038	0.53620	0.11141	0.06230	0.00783
7	7	0.789	0.06231	0.02500	0.01000	0.00390	0.10121	0.63557	0.06432	0.60052	0.11022	0.05900	0.00714
8	8	0.757	0.05977	0.02500	0.01000	0.00390	0.09867	0.59572	0.05878	0.65930	0.10908	0.05900	0.00714
9	9	0.725	0.05723	0.02500	0.01000	0.00390	0.09613	0.55837	0.05368	0.71298	0.10799	0.05910	0.00716
10	10	0.693	0.05469	0.02500	0.01000	0.00390	0.09359	0.52336	0.04898	0.76196	0.10693	0.05900	0.00714
11	11	0.661	0.05216	0.02500	0.01000	0.00390	0.09106	0.49055	0.04467	0.80663	0.10591	0.05910	0.00716
12	12	0.629	0.04962	0.02500	0.01000	0.00390	0.08852	0.45980	0.04070	0.84733	0.10492	0.05900	0.00714
13	13	0.596	0.04708	0.02500	0.01000	0.00390	0.08598	0.43097	0.03705	0.88438	0.10396	0.05910	0.00716
14	14	0.564	0.04454	0.02500	0.01000	0.00390	0.08344	0.40395	0.03371	0.91809	0.10303	0.05900	0.00714
15	15	0.532	0.04200	0.02500	0.01000	0.00390	0.08090	0.37862	0.03063	0.94872	0.10213	0.05910	0.00716
16	16	0.500	0.03947	0.02500	0.01000	0.00390	0.07837	0.35488	0.02781	0.97653	0.10125	0.02950	0.00094
17	17	0.474	0.03742	0.02500	0.01000	0.00390	0.07632	0.33263	0.02539	1.00192	0.10042	0.00000	(0.00525)
18	18	0.454	0.03586	0.02500	0.01000	0.00390	0.07476	0.31178	0.02331	1.02523	0.09964	0.00000	(0.00525)
19	19	0.435	0.03430	0.02500	0.01000	0.00390	0.07320	0.29223	0.02139	1.04662	0.09891	0.00000	(0.00525)
20	20	0.415	0.03274	0.02500	0.01000	0.00390	0.07164	0.27391	0.01962	1.06624	0.09823	0.00000	(0.00525)
21	21	0.395	0.03118	0.02500	0.01000	0.00390	0.07008	0.25674	0.01799	1.08423	0.09758	0.00000	(0.00525)
22	22	0.375	0.02962	0.02500	0.01000	0.00390	0.06852	0.24064	0.01649	1.10072	0.09696	0.00000	(0.00525)
23	23	0.355	0.02806	0.02500	0.01000	0.00390	0.06696	0.22555	0.01510	1.11583	0.09638	0.00000	(0.00525)
24	24	0.336	0.02650	0.02500	0.01000	0.00390	0.06540	0.21141	0.01383	1.12965	0.09582	0.00000	(0.00525)
25	25	0.316	0.02495	0.02500	0.01000	0.00390	0.06385	0.19816	0.01265	1.14230	0.09529	0.00000	(0.00525)
26	26	0.296	0.02339	0.02500	0.01000	0.00390	0.06229	0.18573	0.01157	1.15387	0.09479	0.00000	(0.00525)
27	27	0.276	0.02183	0.02500	0.01000	0.00390	0.06073	0.17409	0.01057	1.16445	0.09431	0.00000	(0.00525)

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2022 Avoided Cost Rate Update
Levelized Fixed Charge Rate - CT**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
	Net	Return	Book	Ad Valorem	Total	Present	Present	Accum.		Tax	Deferred		
Year	Investment		Depr.	O&M	Charge	Value	Value	Present	Value	LFCR	Depr.	Income	
						Factor					Accel.	Tax	
28	28	0.257	0.02027	0.02500	0.01000	0.00390	0.05917	0.16317	0.00965	1.17410	0.09385	0.00000	(0.00525)
29	29	0.237	0.01871	0.02500	0.01000	0.00390	0.05761	0.15294	0.00881	1.18291	0.09341	0.00000	(0.00525)
30	30	0.217	0.01715	0.02500	0.01000	0.00390	0.05605	0.14335	0.00803	1.19095	0.09299	0.00000	(0.00525)
31	31	0.197	0.01559	0.02500	0.01000	0.00390	0.05449	0.13437	0.00732	1.19827	0.09259	0.00000	(0.00525)
32	32	0.178	0.01403	0.02500	0.01000	0.00390	0.05293	0.12594	0.00667	1.20493	0.09221	0.00000	(0.00525)
33	33	0.158	0.01247	0.02500	0.01000	0.00390	0.05137	0.11805	0.00606	1.21100	0.09185	0.00000	(0.00525)
34	34	0.138	0.01091	0.02500	0.01000	0.00390	0.04981	0.11065	0.00551	1.21651	0.09150	0.00000	(0.00525)
35	35	0.118	0.00935	0.02500	0.01000	0.00390	0.04825	0.10371	0.00500	1.22151	0.09116	0.00000	(0.00525)
36	36	0.099	0.00780	0.02500	0.01000	0.00390	0.04670	0.09721	0.00454	1.22605	0.09084	0.00000	(0.00525)
37	37	0.079	0.00624	0.02500	0.01000	0.00390	0.04514	0.09111	0.00411	1.23017	0.09053	0.00000	(0.00525)
38	38	0.059	0.00468	0.02500	0.01000	0.00390	0.04358	0.08540	0.00372	1.23389	0.09024	0.00000	(0.00525)
39	39	0.039	0.00312	0.02500	0.01000	0.00390	0.04202	0.08004	0.00336	1.23725	0.08996	0.00000	(0.00525)
40	40	0.020	0.00156	0.02500	0.01000	0.00390	0.04046	0.07503	0.00304	1.24029	0.08969	0.00000	(0.00525)

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2022 Avoided Cost Rate Update
Levelized Fixed Charge Rate - CT**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Net	Return	Book	Ad Valorem	Total	Present	Present	Present	Accum.	LFCR	Tax	Deferred
Year	Investment		Depr.	O&M	Tax	Charge	Value	Value	Present	Value	Accel.	Income
							Factor		Value			Tax
(1)	Prior year's Net investment - Book Depreciation - Deferred Income Tax.											
(2)	Return (adjusted for taxes) x Net Investment.											
(3)	Depreciation rate based on the life of the investment.											
(4)	Distribution O&M expense as percent of distribution plant.											
(5)	Ad valorem tax rate on distribution plant.											
(6)	Sum of return, depreciation, O&M and ad valorem taxes.											
(7)	Present value factor reflecting overall rate of return.											
(8)	Present value factor x total charge.											
(9)	Accumulated present value.											
(10)	Levelized fixed charge rate = accumulated present value x $((+ROR*(1+ROR)^{book\ life})/((1+ROR)^{book\ life}-1))$											
(11)	Tax depreciation rates for a CT uses a 15 year tax life.											
(12)	(Tax life - book life) x tax rate.											

Assumptions

ROR	6.689%
ROR with taxes	7.894%
Federal Tax Rate	21.000%
State Tax Rate	
Combined Federal/State Tax Rate	21.0000%
1 - Tax Rate	79.0000%
Service Life of Asset (in years)	40
Tax Life (in years - 5, 7, 10, 15, 20 , or 39)	15
Property Tax Rate	0.390%