

**Montana-Dakota Utilities Co.
Electric Utility - South Dakota
Lambda and Capacity Costs
2020**

Month		Lambda		
		On-Peak \$/MWh	Off-Peak \$/MWh	Total \$/MWh
January	2020		\$30.34	\$30.34
February	2020		30.04	30.04
March	2020		24.24	24.24
April	2020		23.14	23.14
May	2020		17.92	17.92
June	2020	\$18.39	16.98	17.32
July	2020	26.04	25.91	25.94
August	2020	28.68	25.77	26.43
September	2020	24.65	24.65	24.65
October	2020		24.58	24.58
November	2020		25.47	25.47
December	2020		26.61	26.61
Average		\$24.44	\$24.64	\$24.72

Monthly Capacity Payments

Rate 96 \$7.539 \$/kW-Month (Cost of an installed peaking
combustion turbine)

Montana-Dakota Utilities Co.
Electric Utility - South Dakota
Calculation of Capacity Payments
2022

Rate 96

Capital cost of combustion turbine	\$973	1/
Levelized Fixed Charge	9.298%	2/
Monthly Capacity Payments:	<u>\$7.539</u>	\$/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 3.5% per year to 2022.
- 2/ See Attachment A pages 2-5.
- 3/ Rate 96 Capacity Payment formula: = $\$878 \times 1.035^{(2022-2019)} \times .09298 / 12$

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2020 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	Accel.	Income	
							Factor			LCFR		Tax	
1	1	1.000	0.08292	0.02500	0.01000	0.00394	0.12186	0.93430	0.11385	0.11385	0.12186	0.05000	0.00525
2	2	0.970	0.08041	0.02500	0.01000	0.00394	0.11935	0.87292	0.10418	0.21804	0.12065	0.09500	0.01470
3	3	0.930	0.07712	0.02500	0.01000	0.00394	0.11606	0.81557	0.09465	0.31269	0.11922	0.08550	0.01271
4	4	0.892	0.07399	0.02500	0.01000	0.00394	0.11293	0.76198	0.08605	0.39875	0.11781	0.07700	0.01092
5	5	0.856	0.07101	0.02500	0.01000	0.00394	0.10995	0.71192	0.07828	0.47702	0.11644	0.06930	0.00930
6	6	0.822	0.06817	0.02500	0.01000	0.00394	0.10711	0.66515	0.07124	0.54827	0.11514	0.06230	0.00783
7	7	0.789	0.06545	0.02500	0.01000	0.00394	0.10439	0.62145	0.06487	0.61314	0.11390	0.05900	0.00714
8	8	0.757	0.06278	0.02500	0.01000	0.00394	0.10172	0.58062	0.05906	0.67220	0.11271	0.05900	0.00714
9	9	0.725	0.06012	0.02500	0.01000	0.00394	0.09906	0.54247	0.05374	0.72594	0.11157	0.05910	0.00716
10	10	0.693	0.05745	0.02500	0.01000	0.00394	0.09639	0.50683	0.04885	0.77479	0.11048	0.05900	0.00714
11	11	0.661	0.05479	0.02500	0.01000	0.00394	0.09373	0.47353	0.04438	0.81917	0.10942	0.05910	0.00716
12	12	0.629	0.05212	0.02500	0.01000	0.00394	0.09106	0.44242	0.04029	0.85946	0.10839	0.05900	0.00714
13	13	0.596	0.04945	0.02500	0.01000	0.00394	0.08839	0.41335	0.03654	0.89600	0.10740	0.05910	0.00716
14	14	0.564	0.04679	0.02500	0.01000	0.00394	0.08573	0.38620	0.03311	0.92911	0.10644	0.05900	0.00714
15	15	0.532	0.04412	0.02500	0.01000	0.00394	0.08306	0.36082	0.02997	0.95908	0.10551	0.05910	0.00716
16	16	0.500	0.04146	0.02500	0.01000	0.00394	0.08040	0.33712	0.02710	0.98618	0.10462	0.02950	0.00094
17	17	0.474	0.03930	0.02500	0.01000	0.00394	0.07824	0.31497	0.02464	1.01083	0.10376	0.00000	(0.00525)
18	18	0.454	0.03767	0.02500	0.01000	0.00394	0.07661	0.29428	0.02254	1.03337	0.10297	0.00000	(0.00525)
19	19	0.435	0.03603	0.02500	0.01000	0.00394	0.07497	0.27494	0.02061	1.05398	0.10222	0.00000	(0.00525)
20	20	0.415	0.03439	0.02500	0.01000	0.00394	0.07333	0.25688	0.01884	1.07282	0.10152	0.00000	(0.00525)
21	21	0.395	0.03275	0.02500	0.01000	0.00394	0.07169	0.24000	0.01721	1.09002	0.10086	0.00000	(0.00525)
22	22	0.375	0.03112	0.02500	0.01000	0.00394	0.07006	0.22423	0.01571	1.10573	0.10023	0.00000	(0.00525)
23	23	0.355	0.02948	0.02500	0.01000	0.00394	0.06842	0.20950	0.01433	1.12007	0.09964	0.00000	(0.00525)
24	24	0.336	0.02784	0.02500	0.01000	0.00394	0.06678	0.19574	0.01307	1.13314	0.09907	0.00000	(0.00525)
25	25	0.316	0.02620	0.02500	0.01000	0.00394	0.06514	0.18288	0.01191	1.14505	0.09854	0.00000	(0.00525)
26	26	0.296	0.02457	0.02500	0.01000	0.00394	0.06351	0.17086	0.01085	1.15590	0.09803	0.00000	(0.00525)
27	27	0.276	0.02293	0.02500	0.01000	0.00394	0.06187	0.15964	0.00988	1.16578	0.09755	0.00000	(0.00525)

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2020 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	Tax	Charge	Value	Value	Present	Value	Depr.	Income	
							Factor			LFCR	Accel.	Tax	
28	28	0.257	0.02129	0.02500	0.01000	0.00394	0.06023	0.14915	0.00898	1.17476	0.09709	0.00000	(0.00525)
29	29	0.237	0.01965	0.02500	0.01000	0.00394	0.05859	0.13935	0.00816	1.18293	0.09665	0.00000	(0.00525)
30	30	0.217	0.01801	0.02500	0.01000	0.00394	0.05695	0.13019	0.00742	1.19034	0.09623	0.00000	(0.00525)
31	31	0.197	0.01638	0.02500	0.01000	0.00394	0.05532	0.12164	0.00673	1.19707	0.09584	0.00000	(0.00525)
32	32	0.178	0.01474	0.02500	0.01000	0.00394	0.05368	0.11365	0.00610	1.20317	0.09546	0.00000	(0.00525)
33	33	0.158	0.01310	0.02500	0.01000	0.00394	0.05204	0.10618	0.00553	1.20870	0.09509	0.00000	(0.00525)
34	34	0.138	0.01146	0.02500	0.01000	0.00394	0.05040	0.09921	0.00500	1.21370	0.09475	0.00000	(0.00525)
35	35	0.118	0.00983	0.02500	0.01000	0.00394	0.04877	0.09269	0.00452	1.21822	0.09442	0.00000	(0.00525)
36	36	0.099	0.00819	0.02500	0.01000	0.00394	0.04713	0.08660	0.00408	1.22230	0.09410	0.00000	(0.00525)
37	37	0.079	0.00655	0.02500	0.01000	0.00394	0.04549	0.08091	0.00368	1.22598	0.09380	0.00000	(0.00525)
38	38	0.059	0.00491	0.02500	0.01000	0.00394	0.04385	0.07559	0.00331	1.22929	0.09351	0.00000	(0.00525)
39	39	0.039	0.00328	0.02500	0.01000	0.00394	0.04222	0.07063	0.00298	1.23227	0.09324	0.00000	(0.00525)
40	40	0.020	0.00164	0.02500	0.01000	0.00394	0.04058	0.06599	0.00268	1.23495	0.09298	0.00000	(0.00525)

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	(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	LFCR	Depr.	Income
							Factor		Value		Accel.	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	7.032%
ROR with taxes	8.292%
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	0.394%