

**Montana-Dakota Utilities Co.  
Electric Utility - South Dakota  
Lambda and Capacity Costs  
2019**

Month		Lambda		
		On-Peak \$/MWh	Off-Peak \$/MWh	Total \$/MWh
January	2019		\$27.21	\$27.21
February	2019		21.06	21.06
March	2019		19.24	19.24
April	2019		20.83	20.83
May	2019		20.23	20.23
June	2019	\$20.42	20.23	20.27
July	2019	25.25	25.18	25.20
August	2019	25.74	24.79	25.01
September	2019	24.79	24.98	24.93
October	2019		21.04	21.04
November	2019		21.12	21.12
December	2019		24.31	24.31
Average		\$24.05	\$22.52	\$22.54

Monthly Capacity Payments

Rate 96      \$8.203      \$/kW-Month      (Cost of an installed peaking  
combustion turbine)

**Montana-Dakota Utilities Co.  
Electric Utility - South Dakota  
Calculation of Capacity Payments  
2024**

**Rate 96**

Capital cost of combustion turbine	\$1,043	1/
Escalation rate	3.5%	
Levelized Fixed Charge	9.438%	2/
Monthly Capacity Payments:	<u>\$8.203</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 2024.
- 2/ See Attachment A pages 2-5.
- 3/ Rate 96 Capacity Payment formula: =  $\$878 \times 1.035^{(2024-2019)} \times .09438 / 12$

**Montana-Dakota Utilities Co.  
Electric Utility- South Dakota  
2019 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.	LFCR	Tax	Deferred	
Year	Investment		Depr.		Tax	Charge	Value	Value	Present		Depr.	Income	
							Factor		Value		Accel.	Tax	
1	1	1.000	0.08448	0.02500	0.01000	0.00396	0.12344	0.93270	0.11513	0.11513	0.12344	0.05000	0.00525
2	2	0.970	0.08192	0.02500	0.01000	0.00396	0.12088	0.86992	0.10516	0.22029	0.12221	0.09500	0.01470
3	3	0.930	0.07857	0.02500	0.01000	0.00396	0.11753	0.81137	0.09536	0.31565	0.12076	0.08550	0.01271
4	4	0.892	0.07539	0.02500	0.01000	0.00396	0.11435	0.75677	0.08653	0.40219	0.11932	0.07700	0.01092
5	5	0.856	0.07235	0.02500	0.01000	0.00396	0.11131	0.70583	0.07857	0.48075	0.11793	0.06930	0.00930
6	6	0.822	0.06945	0.02500	0.01000	0.00396	0.10841	0.65833	0.07137	0.55212	0.11661	0.06230	0.00783
7	7	0.789	0.06668	0.02500	0.01000	0.00396	0.10564	0.61402	0.06486	0.61699	0.11535	0.05900	0.00714
8	8	0.757	0.06396	0.02500	0.01000	0.00396	0.10292	0.57269	0.05894	0.67593	0.11415	0.05900	0.00714
9	9	0.725	0.06125	0.02500	0.01000	0.00396	0.10021	0.53415	0.05353	0.72946	0.11299	0.05910	0.00716
10	10	0.693	0.05853	0.02500	0.01000	0.00396	0.09749	0.49820	0.04857	0.77803	0.11188	0.05900	0.00714
11	11	0.661	0.05582	0.02500	0.01000	0.00396	0.09478	0.46467	0.04404	0.82207	0.11081	0.05910	0.00716
12	12	0.629	0.05310	0.02500	0.01000	0.00396	0.09206	0.43340	0.03990	0.86197	0.10978	0.05900	0.00714
13	13	0.596	0.05038	0.02500	0.01000	0.00396	0.08934	0.40423	0.03612	0.89808	0.10878	0.05910	0.00716
14	14	0.564	0.04767	0.02500	0.01000	0.00396	0.08663	0.37702	0.03266	0.93074	0.10781	0.05900	0.00714
15	15	0.532	0.04495	0.02500	0.01000	0.00396	0.08391	0.35165	0.02951	0.96025	0.10687	0.05910	0.00716
16	16	0.500	0.04224	0.02500	0.01000	0.00396	0.08120	0.32798	0.02663	0.98688	0.10597	0.02950	0.00094
17	17	0.474	0.04004	0.02500	0.01000	0.00396	0.07900	0.30591	0.02417	1.01105	0.10511	0.00000	(0.00525)
18	18	0.454	0.03838	0.02500	0.01000	0.00396	0.07734	0.28532	0.02206	1.03311	0.10431	0.00000	(0.00525)
19	19	0.435	0.03671	0.02500	0.01000	0.00396	0.07567	0.26611	0.02014	1.05325	0.10356	0.00000	(0.00525)
20	20	0.415	0.03504	0.02500	0.01000	0.00396	0.07400	0.24820	0.01837	1.07162	0.10286	0.00000	(0.00525)
21	21	0.395	0.03337	0.02500	0.01000	0.00396	0.07233	0.23150	0.01674	1.08836	0.10219	0.00000	(0.00525)
22	22	0.375	0.03170	0.02500	0.01000	0.00396	0.07066	0.21592	0.01526	1.10362	0.10157	0.00000	(0.00525)
23	23	0.355	0.03003	0.02500	0.01000	0.00396	0.06899	0.20139	0.01389	1.11751	0.10097	0.00000	(0.00525)
24	24	0.336	0.02836	0.02500	0.01000	0.00396	0.06732	0.18783	0.01265	1.13016	0.10041	0.00000	(0.00525)
25	25	0.316	0.02670	0.02500	0.01000	0.00396	0.06566	0.17519	0.01150	1.14166	0.09988	0.00000	(0.00525)
26	26	0.296	0.02503	0.02500	0.01000	0.00396	0.06399	0.16340	0.01046	1.15212	0.09937	0.00000	(0.00525)
27	27	0.276	0.02336	0.02500	0.01000	0.00396	0.06232	0.15240	0.00950	1.16161	0.09889	0.00000	(0.00525)

**Montana-Dakota Utilities Co.  
Electric Utility- South Dakota  
2019 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	LFCR	Depr.	Income	
							Factor		Value		Accel.	Tax	
28	28	0.257	0.02169	0.02500	0.01000	0.00396	0.06065	0.14214	0.00862	1.17023	0.09844	0.00000	(0.00525)
29	29	0.237	0.02002	0.02500	0.01000	0.00396	0.05898	0.13258	0.00782	1.17805	0.09800	0.00000	(0.00525)
30	30	0.217	0.01835	0.02500	0.01000	0.00396	0.05731	0.12366	0.00709	1.18514	0.09759	0.00000	(0.00525)
31	31	0.197	0.01668	0.02500	0.01000	0.00396	0.05564	0.11533	0.00642	1.19156	0.09719	0.00000	(0.00525)
32	32	0.178	0.01502	0.02500	0.01000	0.00396	0.05398	0.10757	0.00581	1.19736	0.09682	0.00000	(0.00525)
33	33	0.158	0.01335	0.02500	0.01000	0.00396	0.05231	0.10033	0.00525	1.20261	0.09646	0.00000	(0.00525)
34	34	0.138	0.01168	0.02500	0.01000	0.00396	0.05064	0.09358	0.00474	1.20735	0.09612	0.00000	(0.00525)
35	35	0.118	0.01001	0.02500	0.01000	0.00396	0.04897	0.08728	0.00427	1.21163	0.09579	0.00000	(0.00525)
36	36	0.099	0.00834	0.02500	0.01000	0.00396	0.04730	0.08141	0.00385	1.21548	0.09548	0.00000	(0.00525)
37	37	0.079	0.00667	0.02500	0.01000	0.00396	0.04563	0.07593	0.00346	1.21894	0.09519	0.00000	(0.00525)
38	38	0.059	0.00501	0.02500	0.01000	0.00396	0.04397	0.07082	0.00311	1.22205	0.09490	0.00000	(0.00525)
39	39	0.039	0.00334	0.02500	0.01000	0.00396	0.04230	0.06605	0.00279	1.22485	0.09464	0.00000	(0.00525)
40	40	0.020	0.00167	0.02500	0.01000	0.00396	0.04063	0.06161	0.00250	1.22735	0.09438	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	LFPCR	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	7.216%
ROR with taxes	8.448%
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	0.396%