

**Montana-Dakota Utilities Co.
Electric Utility - South Dakota
Lambda and Capacity Costs
July 2014 through June 2015**

Month		Lambda		
		On-Peak \$/MWh	Off-Peak \$/MWh	Total \$/MWh
July	2014	\$29.16	\$27.29	\$27.76
August	2014	27.88	27.38	27.49
September	2014	25.59	25.59	25.59
October	2014		25.47	25.47
November	2014		25.59	25.59
December	2014		43.22	43.22
January	2015		46.23	46.23
February	2015		46.63	46.63
March	2015		28.64	28.64
April	2015		28.64	28.64
May	2015		28.64	28.64
June	2015	29.59	28.53	28.79
Average		\$28.06	\$31.82	\$31.89

Monthly Capacity Payments

Rate 96	\$7.889	\$/kW-Month	(Cost of an installed peaking combustion turbine)
Rate 97	\$32.953	\$/kW-Month	(Cost of an installed baseload unit)

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2014 Avoided Cost Rate Update
Levelized Fixed Charge Rate - CT**

Summary of Results

Sum of Present Values 1/	1.235861
Capital Recovery Factor 2/	0.088041
Levelized Fixed Charge 3/	<u>10.881%</u>

Assumptions

ROR	8.256%
ROR with taxes	11.207%
Federal Tax Rate	35.000%
State Tax Rate	
Combined Federal/State Tax Rate	35.0000%
1 - Tax Rate	65.0000%
Service Life of Asset (in years)	35
Tax Life (in years - 5, 7, 10, 15, 20 , or 39)	15

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
2014 Avoided Cost Rate Update
Levelized Fixed Charge Rate - CT**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
	Rev. Requ. As % (Net	Return	Book	O&M	Ad Valorem	Total	Present	Present	Accum.	LFCR	Tax	Deferred	
Year	(Investment)		Depr.		Tax	Charge	Value	Value	Value		Accel.	Income	
							Factor					Tax	
1	1	1.000	0.11207	0.02857	0.00000	0.00982	0.15046	0.92374	0.13899	0.13899	0.15046	0.05000	0.00750
2	2	0.964	0.10803	0.02857	0.00000	0.00982	0.14642	0.85329	0.12494	0.26392	0.14852	0.09500	0.02325
3	3	0.912	0.10222	0.02857	0.00000	0.00982	0.14061	0.78821	0.11083	0.37476	0.14609	0.08550	0.01993
4	4	0.864	0.09678	0.02857	0.00000	0.00982	0.13518	0.72810	0.09842	0.47318	0.14368	0.07700	0.01695
5	5	0.818	0.09168	0.02857	0.00000	0.00982	0.13007	0.67257	0.08748	0.56066	0.14137	0.06930	0.01426
6	6	0.775	0.08688	0.02857	0.00000	0.00982	0.12528	0.62128	0.07783	0.63849	0.13919	0.06230	0.01181
7	7	0.735	0.08236	0.02857	0.00000	0.00982	0.12075	0.57390	0.06930	0.70779	0.13714	0.05900	0.01065
8	8	0.696	0.07796	0.02857	0.00000	0.00982	0.11635	0.53013	0.06168	0.76948	0.13520	0.05900	0.01065
9	9	0.656	0.07357	0.02857	0.00000	0.00982	0.11196	0.48970	0.05483	0.82430	0.13336	0.05910	0.01069
10	10	0.617	0.06917	0.02857	0.00000	0.00982	0.10756	0.45236	0.04866	0.87296	0.13160	0.05900	0.01065
11	11	0.578	0.06477	0.02857	0.00000	0.00982	0.10316	0.41786	0.04311	0.91607	0.12992	0.05910	0.01069
12	12	0.539	0.06037	0.02857	0.00000	0.00982	0.09876	0.38599	0.03812	0.95419	0.12830	0.05900	0.01065
13	13	0.499	0.05598	0.02857	0.00000	0.00982	0.09437	0.35655	0.03365	0.98784	0.12675	0.05910	0.01069
14	14	0.460	0.05158	0.02857	0.00000	0.00982	0.08997	0.32936	0.02963	1.01747	0.12526	0.05900	0.01065
15	15	0.421	0.04718	0.02857	0.00000	0.00982	0.08557	0.30424	0.02604	1.04350	0.12382	0.05910	0.01069
16	16	0.382	0.04278	0.02857	0.00000	0.00982	0.08117	0.28104	0.02281	1.06632	0.12245	0.02950	0.00033
17	17	0.353	0.03954	0.02857	0.00000	0.00982	0.07794	0.25961	0.02023	1.08655	0.12116	0.00000	(0.01000)
18	18	0.334	0.03746	0.02857	0.00000	0.00982	0.07585	0.23981	0.01819	1.10474	0.11998	0.00000	(0.01000)
19	19	0.316	0.03538	0.02857	0.00000	0.00982	0.07377	0.22152	0.01634	1.12108	0.11889	0.00000	(0.01000)
20	20	0.297	0.03330	0.02857	0.00000	0.00982	0.07169	0.20463	0.01467	1.13575	0.11789	0.00000	(0.01000)
21	21	0.279	0.03122	0.02857	0.00000	0.00982	0.06961	0.18902	0.01316	1.14891	0.11696	0.00000	(0.01000)
22	22	0.260	0.02914	0.02857	0.00000	0.00982	0.06753	0.17460	0.01179	1.16070	0.11610	0.00000	(0.01000)
23	23	0.241	0.02706	0.02857	0.00000	0.00982	0.06545	0.16129	0.01056	1.17126	0.11529	0.00000	(0.01000)
24	24	0.223	0.02498	0.02857	0.00000	0.00982	0.06337	0.14899	0.00944	1.18070	0.11454	0.00000	(0.01000)
25	25	0.204	0.02289	0.02857	0.00000	0.00982	0.06129	0.13763	0.00843	1.18913	0.11384	0.00000	(0.01000)
26	26	0.186	0.02081	0.02857	0.00000	0.00982	0.05920	0.12713	0.00753	1.19666	0.11319	0.00000	(0.01000)

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2014 Avoided Cost Rate Update
Levelized Fixed Charge Rate - CT**

		(1) Rev. Requ. As % (Net Investment)	(2) Return	(3) Book Depr.	(4) O&M	(5) Ad Valorem Tax	(6) Total Charge	(7) Present Value Factor	(8) Present Value	(9) Accum. Present Value	(10) LFCR	(11) Tax Depr. Accel.	(12) Deferred Income Tax
Year	Year												
27	27	0.167	0.01873	0.02857	0.00000	0.00982	0.05712	0.11743	0.00671	1.20337	0.11257	0.00000	(0.01000)
28	28	0.149	0.01665	0.02857	0.00000	0.00982	0.05504	0.10848	0.00597	1.20934	0.11199	0.00000	(0.01000)
29	29	0.130	0.01457	0.02857	0.00000	0.00982	0.05296	0.10021	0.00531	1.21465	0.11145	0.00000	(0.01000)
30	30	0.111	0.01249	0.02857	0.00000	0.00982	0.05088	0.09256	0.00471	1.21935	0.11094	0.00000	(0.01000)
31	31	0.093	0.01041	0.02857	0.00000	0.00982	0.04880	0.08550	0.00417	1.22353	0.11046	0.00000	(0.01000)
32	32	0.074	0.00833	0.02857	0.00000	0.00982	0.04672	0.07898	0.00369	1.22722	0.11001	0.00000	(0.01000)
33	33	0.056	0.00624	0.02857	0.00000	0.00982	0.04464	0.07296	0.00326	1.23047	0.10958	0.00000	(0.01000)
34	34	0.037	0.00416	0.02857	0.00000	0.00982	0.04255	0.06740	0.00287	1.23334	0.10918	0.00000	(0.01000)
35	35	0.019	0.00208	0.02857	0.00000	0.00982	0.04047	0.06226	0.00252	1.23586	0.10881	0.00000	(0.01000)

- (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.

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2014 Avoided Cost Rate Update
Levelized Fixed Charge Rate - Baseload**

Summary of Results

Sum of Present Values 1/	1.258330
Capital Recovery Factor 2/	0.084154
Levelized Fixed Charge 3/	<u>10.589%</u>

Assumptions

ROR	8.256%
ROR with taxes	11.207%
Federal Tax Rate	35.000%
State Tax Rate	
Combined Federal/State Tax Rate	35.0000%
1 - Tax Rate	65.0000%
Service Life of Asset (in years)	50
Tax Life (in years - 5, 7, 10, 15, 20 , or 39)	20

1/ Sum of annual net present values.

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

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

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2014 Avoided Cost Rate Update
Calculation of Levelized Fixed Charge Rate - Baseload**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
	Rev. Requ. As % (Net Investment)	Return	Book Depr.	O&M	Ad Valorem Tax	Total Charge	Present Value Factor	Present Value	Accum. Present Value	LFCR	Tax Depr. Accel.	Deferred Income Tax	
Year													
1	1	1.000	0.11207	0.02000	0.00000	0.00982	0.14189	0.92374	0.13107	0.13107	0.14189	0.03750	0.00613
2	2	0.974	0.10914	0.02000	0.00000	0.00982	0.13896	0.85329	0.11857	0.24964	0.14048	0.07219	0.01827
3	3	0.936	0.10485	0.02000	0.00000	0.00982	0.13467	0.78821	0.10615	0.35580	0.13870	0.06677	0.01637
4	4	0.899	0.10078	0.02000	0.00000	0.00982	0.13060	0.72810	0.09509	0.45088	0.13691	0.06177	0.01462
5	5	0.865	0.09690	0.02000	0.00000	0.00982	0.12672	0.67257	0.08523	0.53611	0.13518	0.05713	0.01300
6	6	0.832	0.09320	0.02000	0.00000	0.00982	0.12302	0.62128	0.07643	0.61254	0.13353	0.05285	0.01150
7	7	0.800	0.08967	0.02000	0.00000	0.00982	0.11949	0.57390	0.06858	0.68112	0.13197	0.04888	0.01011
8	8	0.770	0.08630	0.02000	0.00000	0.00982	0.11612	0.53013	0.06156	0.74267	0.13049	0.04522	0.00883
9	9	0.741	0.08307	0.02000	0.00000	0.00982	0.11289	0.48970	0.05528	0.79795	0.12910	0.04462	0.00862
10	10	0.713	0.07986	0.02000	0.00000	0.00982	0.10968	0.45236	0.04961	0.84757	0.12777	0.04461	0.00861
11	11	0.684	0.07665	0.02000	0.00000	0.00982	0.10647	0.41786	0.04449	0.89206	0.12651	0.04462	0.00862
12	12	0.655	0.07344	0.02000	0.00000	0.00982	0.10326	0.38599	0.03986	0.93192	0.12531	0.04461	0.00861
13	13	0.627	0.07024	0.02000	0.00000	0.00982	0.10006	0.35655	0.03568	0.96759	0.12415	0.04462	0.00862
14	14	0.598	0.06703	0.02000	0.00000	0.00982	0.09685	0.32936	0.03190	0.99949	0.12304	0.04461	0.00861
15	15	0.569	0.06382	0.02000	0.00000	0.00982	0.09364	0.30424	0.02849	1.02798	0.12198	0.04462	0.00862
16	16	0.541	0.06062	0.02000	0.00000	0.00982	0.09044	0.28104	0.02542	1.05340	0.12096	0.04461	0.00861
17	17	0.512	0.05741	0.02000	0.00000	0.00982	0.08723	0.25961	0.02265	1.07604	0.11999	0.04462	0.00862
18	18	0.484	0.05420	0.02000	0.00000	0.00982	0.08402	0.23981	0.02015	1.09619	0.11905	0.04461	0.00861
19	19	0.455	0.05100	0.02000	0.00000	0.00982	0.08082	0.22152	0.01790	1.11409	0.11815	0.04462	0.00862
20	20	0.426	0.04779	0.02000	0.00000	0.00982	0.07761	0.20463	0.01588	1.12998	0.11729	0.04461	0.00861
21	21	0.398	0.04458	0.02000	0.00000	0.00982	0.07440	0.18902	0.01406	1.14404	0.11647	0.02231	0.00081
22	22	0.377	0.04225	0.02000	0.00000	0.00982	0.07207	0.17460	0.01258	1.15662	0.11569	0.00000	(0.00700)
23	23	0.364	0.04079	0.02000	0.00000	0.00982	0.07061	0.16129	0.01139	1.16801	0.11498	0.00000	(0.00700)
24	24	0.351	0.03934	0.02000	0.00000	0.00982	0.06916	0.14899	0.01030	1.17832	0.11431	0.00000	(0.00700)
25	25	0.338	0.03788	0.02000	0.00000	0.00982	0.06770	0.13763	0.00932	1.18763	0.11370	0.00000	(0.00700)
26	26	0.325	0.03642	0.02000	0.00000	0.00982	0.06624	0.12713	0.00842	1.19605	0.11313	0.00000	(0.00700)

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2014 Avoided Cost Rate Update
Calculation of Levelized Fixed Charge Rate - Baseload**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
	Rev. Requ. As % (Net Investment)	Return	Book Depr.	O&M	Ad Valorem Tax	Total Charge	Present Value Factor	Present Value	Accum. Present Value	LFCR	Tax Depr. Accel.	Deferred Income Tax	
Year	Year												
27	27	0.312	0.03497	0.02000	0.00000	0.00982	0.06479	0.11743	0.00761	1.20366	0.11260	0.00000	(0.00700)
28	28	0.299	0.03351	0.02000	0.00000	0.00982	0.06333	0.10848	0.00687	1.21053	0.11210	0.00000	(0.00700)
29	29	0.286	0.03205	0.02000	0.00000	0.00982	0.06187	0.10021	0.00620	1.21673	0.11164	0.00000	(0.00700)
30	30	0.273	0.03060	0.02000	0.00000	0.00982	0.06042	0.09256	0.00559	1.22232	0.11121	0.00000	(0.00700)
31	31	0.260	0.02914	0.02000	0.00000	0.00982	0.05896	0.08550	0.00504	1.22737	0.11081	0.00000	(0.00700)
32	32	0.247	0.02768	0.02000	0.00000	0.00982	0.05750	0.07898	0.00454	1.23191	0.11043	0.00000	(0.00700)
33	33	0.234	0.02622	0.02000	0.00000	0.00982	0.05604	0.07296	0.00409	1.23600	0.11007	0.00000	(0.00700)
34	34	0.221	0.02477	0.02000	0.00000	0.00982	0.05459	0.06740	0.00368	1.23968	0.10974	0.00000	(0.00700)
35	35	0.208	0.02331	0.02000	0.00000	0.00982	0.05313	0.06226	0.00331	1.24298	0.10943	0.00000	(0.00700)
36	36	0.195	0.02185	0.02000	0.00000	0.00982	0.05167	0.05751	0.00297	1.24595	0.10914	0.00000	(0.00700)
37	37	0.182	0.02040	0.02000	0.00000	0.00982	0.05022	0.05312	0.00267	1.24862	0.10887	0.00000	(0.00700)
38	38	0.169	0.01894	0.02000	0.00000	0.00982	0.04876	0.04907	0.00239	1.25102	0.10861	0.00000	(0.00700)
39	39	0.156	0.01748	0.02000	0.00000	0.00982	0.04730	0.04533	0.00214	1.25316	0.10837	0.00000	(0.00700)
40	40	0.143	0.01603	0.02000	0.00000	0.00982	0.04585	0.04187	0.00192	1.25508	0.10815	0.00000	(0.00700)
41	41	0.130	0.01457	0.02000	0.00000	0.00982	0.04439	0.03868	0.00172	1.25680	0.10794	0.00000	(0.00700)
42	42	0.117	0.01311	0.02000	0.00000	0.00982	0.04293	0.03573	0.00153	1.25833	0.10774	0.00000	(0.00700)
43	43	0.104	0.01166	0.02860	0.00000	0.00982	0.05008	0.03300	0.00165	1.25998	0.10757	0.00000	(0.01001)
44	44	0.085	0.00957	0.02860	0.00000	0.00982	0.04799	0.03049	0.00146	1.26145	0.10742	0.00000	(0.01001)
45	45	0.067	0.00749	0.02860	0.00000	0.00982	0.04591	0.02816	0.00129	1.26274	0.10727	0.00000	(0.01001)
46	46	0.048	0.00541	0.02860	0.00000	0.00982	0.04383	0.02601	0.00114	1.26388	0.10713	0.00000	(0.01001)
47	47	0.030	0.00332	0.02860	0.00000	0.00982	0.04174	0.02403	0.00100	1.26488	0.10700	0.00000	(0.01001)
48	48	0.011	0.00124	0.02860	0.00000	0.00982	0.03966	0.02220	0.00088	1.26576	0.10687	0.00000	(0.01001)
49	49	-0.008	(0.00085)	0.02860	0.00000	0.00982	0.03757	0.02050	0.00077	1.26653	0.10675	0.00000	(0.01001)
50	50	-0.026	(0.00293)	0.02860	0.00000	0.00982	0.03549	0.01894	0.00067	1.26720	0.10664	0.00000	(0.01001)

**Montana-Dakota Utilities Co.
Electric Utility- South Dakota
2014 Avoided Cost Rate Update
Calculation of Levelized Fixed Charge Rate - Baseload**

Year	(1) Rev. Requ. As % (Net Investment)	(2) Return	(3) Book Depr.	(4) O&M	(5) Ad Valorem Tax	(6) Total Charge	(7) Present Value Factor	(8) Present Value	(9) Accum. Present Value	(10) LFCR	(11) Tax Depr. Accel.	(12) Deferred Income Tax
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- (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 = $((+ROR \cdot (1+ROR)^{\text{book life}}) / ((1+ROR)^{\text{book life}} - 1))$
- (11) Tax depreciation rates for distribution plant uses 20 year tax life.
- (12) (Tax life - book life) x tax rate.