

MONTANA-DAKOTA UTILITIES CO.
ELECTRIC UTILITY
NORTH DAKOTA
 Embedded Class Cost of Service Study
 Cost of Service by Component
 Projected 2017 - Reflecting Staff Recommended Adjustments
 (000's)

Total North Dakota	Residential Rate 10			Total Residential Rate 10
	Demand Prod. & Trans.	Demand Distribution	Energy	

520,229	145,788	34,043	1,328	62,055	243,214
38,805	10,877	2,539	99	4,629	18,144
34,998	(12,705)	(2,218)	26,388	(173)	11,292
3,807	23,582	4,757	(26,289)	4,802	6,852

Operating Income for Proposed Return
 Current Operating Income
 Increase in Operating Income

2,311	14,328	2,891	(15,977)	2,918	4,160
6,118	37,910	7,648	(42,266)	7,720	11,012

Related Taxes for Increase
 State & Federal Income Taxes
 Total Increase in Revenue

186,308	1,471	427	62,441	11,201	75,540
192,426	39,381	8,075	20,175	18,921	86,552
9,509	1,471	427	1,213	980	4,091
182,917	37,910	7,648	18,962	17,941	82,461

Total Revenue Before Increase
 Total Cost of Service Required from Rates
 Less: Other Operating Revenues (Incl Contract Revenue)
 Revenue Required from Rates

Projected Rate of Return Before Increase 4.643%

2,014,529,000	770,939,000	770,939,000	770,939,000	
3,304,802				960,036
1,170,228				

Projected Billing Units
 Kwh
 Kw Demand
 Bills

0.049	0.010	0.025		18.69
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Unit Cost of Service
 \$ per Kwh
 \$ per Kw Demand
 \$ per Customer Per Month

62.1985%	
7.459%	

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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Total North Dakota	Small General Rate 20				Total Small General Rate 20
	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
520,229	21,245	4,424	194	12,015	37,878
38,805	1,585	330	14	896	2,825
34,998	(1,854)	(287)	3,878	639	2,376
3,807	3,439	617	(3,864)	257	449

Rate Base

Operating Income for Proposed Return
 Current Operating Income
 Increase in Operating Income

Related Taxes for Increase
 State & Federal Income Taxes
 Total Increase in Revenue

2,311	2,090	375	(2,348)	156	273
6,118	5,529	992	(6,212)	413	722

Total Revenue Before Increase

Total Cost of Service Required from Rates
 Less: Other Operating Revenues (Incl Contract Revenue)
 Revenue Required from Rates

186,308	212	55	9,157	3,126	12,550
192,426	5,741	1,047	2,945	3,539	13,272
9,509	212	55	147	176	590
182,917	5,529	992	2,798	3,363	12,682

Projected Rate of Return Before Increase

6.727%

Projected Billing Units

Kwh
 Kw Demand
 Bills

2,014,529,000	112,526,000	112,526,000	112,526,000
3,304,802			138,144
1,170,228			

Unit Cost of Service
 \$ per Kwh
 \$ per Kw Demand
 \$ per Customer Per Month

0.049	0.009	0.025
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24.34

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

6.273%

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Rate Base	Irrigation Rate 25			Total Irrigation Rate 25
	Total North Dakota	Demand Prod. & Trans. Distribution	Energy Customer	
520,229	92	241	2	491
38,805	7	18	0	37
34,998	(7)	(6)	17	(2)
3,807	14	24	(17)	39

2,311	9	15	(10)	11	25
6,118	23	39	(27)	29	64

186,308	1	19	59	12	91
192,426	24	58	32	41	155
9,509	1	3	2	1	7
182,917	23	55	30	40	148

Projected Rate of Return Before Increase (0.407%)

2,014,529,000	1,267,000
3,304,802	8,085
1,170,228	8,085
	552

2.84	6.80	0.024
		72.46

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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	Large General Primary Rate 30				Total LG Primary Rate 30	
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy Customer		
Rate Base	520,229	27,557	6,571	334	236	34,698
Operating Income for Proposed Return	38,805	2,055	490	25	18	2,588
Current Operating Income	34,998	(2,404)	2,116	3,229	17	2,958
Increase in Operating Income	3,807	4,459	(1,626)	(3,204)	1	(370)

Related Taxes for Increase State & Federal Income Taxes	2,311	2,710	(988)	(1,947)	1	(224)
Total Increase in Revenue	6,118	7,169	(2,614)	(5,151)	2	(594)

Total Revenue Before Increase	186,308	275	4,188	10,185	53	14,701
Total Cost of Service Required from Rates	192,426	7,444	1,574	5,034	55	14,107
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	275	83	254	4	616
Revenue Required from Rates	182,917	7,169	1,491	4,780	51	13,491

Projected Rate of Return Before Increase 8.525%

Projected Billing Units	2,014,529,000	195,765,000
Kwh	3,304,802	468,864
Kw Demand	1,170,228	516
Bills		

Unit Cost of Service	15.29	3.18	0.024
\$ per Kwh			
\$ per Kw Demand			
\$ per Customer Per Month			98.84

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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Projected 2017 - Reflecting Staff Recommended Adjustments
 (000's)

Total North Dakota	Large General Secondary Rate 30			Total LG Secondary Rate 30
	Demand Prod. & Trans.	Demand Distribution	Energy Customer	
520,229	128,549	27,046	1,302	11,032
38,805	9,588	2,017	97	823
34,998	(11,214)	13,350	13,110	533
3,807	20,802	(11,333)	(13,013)	290

Rate Base

Operating Income for Proposed Return
 Current Operating Income
 Increase in Operating Income

Related Taxes for Increase
 State & Federal Income Taxes
 Total Increase in Revenue

2,311	12,643	(6,888)	(7,909)	176
6,118	33,445	(18,221)	(20,922)	466

Total Revenue Before Increase

Total Cost of Service Required from Rates
 Less: Other Operating Revenues (Incl Contract Revenue)
 Revenue Required from Rates

186,308	1,284	24,793	40,566	2,636
192,426	34,729	6,572	19,644	3,102
9,509	1,284	336	990	159
182,917	33,445	6,236	18,654	2,943

Projected Rate of Return Before Increase

9.396%

Projected Billing Units

Kwh
 Kw Demand
 Bills

2,014,529,000				
3,304,802	2,281,944	2,281,944	755,983,226	
1,170,228				55,044

Unit Cost of Service
 \$ per Kwh
 \$ per Kw Demand
 \$ per Customer Per Month

			0.025	
	14.66	2.73		
				53.47

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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Projected 2017 - Reflecting Staff Recommended Adjustments
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Total North Dakota	TOD Large General Rate 31 Primary			TOD LG Primary Rate 31	
	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	

Rate Base	520,229	292	85	4	6	387
Operating Income for Proposed Return	38,805	22	6	0	0	28
Current Operating Income	34,998	(25)	18	25	1	19
Increase in Operating Income	3,807	47	(12)	(25)	(1)	9

Related Taxes for Increase State & Federal Income Taxes	2,311	29	(7)	(15)	(1)	6
Total Increase in Revenue	6,118	76	(19)	(40)	(2)	15

Total Revenue Before Increase	186,308	3	40	92	1	136
Total Cost of Service Required from Rates	192,426	79	21	52	(1)	151
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	3	1	3	0	7
Revenue Required from Rates	182,917	76	20	49	(1)	144

Projected Rate of Return Before Increase 4.910%

Projected Billing Units	2,014,529,000					
Kwh	3,304,802	3,954	3,954	2,081,000		
Kw Demand	1,170,228					12
Bills						

Unit Cost of Service						
\$ per Kwh		19.22	5.06	0.024		
\$ per Kw Demand						(83.33)
\$ per Customer Per Month						

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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**Embedded Class Cost of Service Study
 Cost of Service by Component**

**Projected 2017 - Reflecting Staff Recommended Adjustments
 (000's)**

Total North Dakota	TOD Large General Rate 31 Secondary			Total TOD LG Seconda Rate 31	
	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	

520,229	3,010	634	30	190	3,864
38,805	225	47	2	14	288
34,998	(263)	313	206	4	260
3,807	488	(266)	(204)	10	28

Operating Income for Proposed Return
 Current Operating Income
 Increase in Operating Income

Related Taxes for Increase
 State & Federal Income Taxes
 Total Increase in Revenue

2,311	297	(162)	(124)	6	17
6,118	785	(428)	(328)	16	45

Total Revenue Before Increase

186,308	30	582	785	39	1,436
192,426	815	154	457	55	1,481
9,509	30	7	23	1	61
182,917	785	147	434	54	1,420

Total Cost of Service Required from Rates
 Less: Other Operating Revenues (Incl Contract Revenue)
 Revenue Required from Rates

Projected Rate of Return Before Increase

6.727% 6.729%

Projected Billing Units

2,014,529,000					
3,304,802	46,446	46,446			816
1,170,228					

Unit Cost of Service
 \$ per Kwh
 \$ per Kw Demand
 \$ per Customer Per Month

	16.90	3.16			66.18
			0.025		

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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 Cost of Service by Component
 Projected 2017 - Reflecting Staff Recommended Adjustments
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Total North Dakota	Space Heating Rate 32			Total Space Heating Rate 32
	Demand Prod. & Trans.	Demand Distribution	Energy Customer	

Rate Base	520,229	6,858	2,836	96	282	10,072
Operating Income for Proposed Return	38,805	512	212	7	21	752
Current Operating Income	34,998	(597)	159	1,143	(6)	699
Increase in Operating Income	3,807	1,109	53	(1,136)	27	53

Related Taxes for Increase State & Federal Income Taxes	2,311	674	32	(690)	16	32
Total Increase in Revenue	6,118	1,783	85	(1,826)	43	85

Total Revenue Before Increase	186,308	69	591	3,282	118	4,060
Total Cost of Service Required from Rates	192,426	1,852	676	1,456	161	4,145
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	69	35	73	6	183
Revenue Required from Rates	182,917	1,783	641	1,383	155	3,962

Projected Rate of Return Before Increase 6.727%

Projected Billing Units	2,014,529,000	55,941,000
Kwh	3,304,802	273,550
Kw Demand	1,170,228	273,550
Bills		7,476

Unit Cost of Service		
\$ per Kwh	6.52	0.025
\$ per Kw Demand	2.34	
\$ per Customer Per Month		20.73

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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	Small Municipal Rate 40			Total Sm Municipal Rate 40
	Demand Prod. & Trans.	Demand Distribution	Energy	
Rate Base	711	175	7	389
Operating Income for Proposed Return	53	13	1	29
Current Operating Income	(62)	18	80	11
Increase in Operating Income	115	(5)	(79)	18
				50

Related Taxes for Increase	70	(3)	(48)	11
State & Federal Income Taxes	185	(8)	(127)	29
Total Increase in Revenue				79

Total Revenue Before Increase	7	50	234	79
Total Cost of Service Required from Rates	192	42	107	108
Less: Other Operating Revenues (Incl Contract Revenue)	7	1	5	4
Revenue Required from Rates	185	41	102	104

Projected Rate of Return Before Increase 3.588%

Projected Billing Units				
Kwh	2,014,529,000		4,076,000	
Kw Demand	3,304,802	9,468	9,468	3,708
Bills	1,170,228			

Unit Cost of Service				
\$ per Kwh			0.025	
\$ per Kw Demand	19.54	4.33		
\$ per Customer Per Month				28.05

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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Total North Dakota	Municipal Lighting Primary Rate 41			Total Mun Lighting Pri Rate 41
	Demand Prod. & Trans.	Demand Distribution	Energy Customer	
520,229	114	82	3	28
38,805	9	6	0	2
34,998	(9)	(5)	51	(2)
3,807	18	11	(51)	4

Rate Base	520,229	114	82	3	28	227
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Operating Income for Proposed Return	38,805	9	6	0	2	17
Current Operating Income	34,998	(9)	(5)	51	(2)	34
Increase in Operating Income	3,807	18	11	(51)	4	(17)

Related Taxes for Increase	2,311	11	7	(31)	2	(12)
State & Federal Income Taxes	6,118	29	18	(82)	6	(29)
Total Increase in Revenue	186,308	1	0	126	0	127

Total Revenue Before Increase	192,426	30	18	44	6	98
Total Cost of Service Required from Rates	9,509	1	0	2	0	3
Less: Other Operating Revenues (Incl Contract Revenue)	182,917	29	18	42	6	95

Projected Rate of Return Before Increase

6.727%

14.9785%

Projected Billing Units	2,014,529,000	1,719,000	1,719,000	1,719,000
Kwh	3,304,802			
Kw Demand	1,170,228			
Bills				

Unit Cost of Service	0.017	0.010	0.024
\$ per Kwh			
\$ per Kw Demand			
\$ per Customer Per Month			

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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	Municipal Lighting Secondary Rate 41			Total Mun Lighting Sec Rate 41
	Total North Dakota	Demand Prod. & Trans. Distribution	Energy Customer	
Rate Base	520,229	1,139	31	4,640
Operating Income for Proposed Return	38,805	85	2	346
Current Operating Income	34,998	(100)	599	553
Increase in Operating Income	3,807	185	(597)	(207)

Related Taxes for Increase	2,311	112	108	(363)	17	(126)
State & Federal Income Taxes	6,118	297	285	(960)	45	(333)
Total Increase in Revenue						

Total Revenue Before Increase	186,308	11	16	1,434	645	2,106
Total Cost of Service Required from Rates	192,426	308	301	474	690	1,773
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	11	16	24	645	696
Revenue Required from Rates	182,917	297	285	450	45	1,077

Projected Rate of Return Before Increase 11.918%

Projected Billing Units						
Kwh	2,014,529,000	18,127,000	18,127,000	18,127,000		
Kw Demand	3,304,802					
Bills	1,170,228					

Unit Cost of Service						
\$ per Kwh	0.016	0.016	0.016	0.025		
\$ per Kw Demand						
\$ per Customer Per Month						

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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Total North Dakota	Municipal Pumping Primary Rate 48			Total Mun Pumping Pri Rate 48
	Demand Prod. & Trans.	Demand Distribution	Energy Customer	

520,229	2,056	645	24	28	2,753
38,805	153	48	2	2	205
34,998	(179)	67	189	0	77
3,807	332	(19)	(187)	2	128

Operating Income for Proposed Return
 Current Operating Income
 Increase in Operating Income

Related Taxes for Increase
 State & Federal Income Taxes
 Total Increase in Revenue

2,311	202	(12)	(114)	1	77
6,118	534	(31)	(301)	3	205

Total Revenue Before Increase

186,308	20	184	658	1	863
192,426	554	153	357	4	1,068
9,509	20	8	18	0	46
182,917	534	145	339	4	1,022

Total Cost of Service Required from Rates
 Less: Other Operating Revenues (Incl Contract Revenue)
 Revenue Required from Rates

Projected Rate of Return Before Increase

6.727%

Projected Billing Units

2,014,529,000			13,894,000	
3,304,802	35,805	35,805		48
1,170,228				

Unit Cost of Service
 \$ per Kwh
 \$ per Kw Demand
 \$ per Customer Per Month

	14.91	4.05	0.024	
				83.33

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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	Municipal Pumping Secondary Rate 48			Total Mun Pumping Sec Rate 48
	Demand Prod. & Trans.	Demand Distribution	Energy Customer	
Rate Base	520,229	1,350	43	5,854
Operating Income for Proposed Return	38,805	284	3	437
Current Operating Income	34,998	(331)	281	289
Increase in Operating Income	3,807	615	(180)	148

Related Taxes for Increase State & Federal Income Taxes	2,311	374	(109)	(226)	52	91
Total Increase in Revenue	6,118	989	(289)	(598)	137	239

Total Revenue Before Increase	186,308	38	613	1,250	47	1,948
Total Cost of Service Required from Rates	192,426	1,027	324	652	184	2,187
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	38	16	33	10	97
Revenue Required from Rates	182,917	989	308	619	174	2,090

Projected Rate of Return Before Increase 4.937%

Projected Billing Units	2,014,529,000					
Kwh	3,304,802	91,118	91,118	25,168,000		
Kw Demand	1,170,228				3,828	
Bills						

Unit Cost of Service						
\$ per Kwh		10.85	3.38	0.025		
\$ per Kw Demand						45.45
\$ per Customer Per Month						

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return:

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Total North Dakota	Outdoor Lighting Rate 52			Total Outdoor Lighting Rate 52
	Demand Prod. & Trans.	Demand Distribution	Energy Customer	

Rate Base	520,229	747	389	13	635	1,784
Operating Income for Proposed Return	38,805	56	29	1	47	133
Current Operating Income	34,998	(66)	(27)	324	1	232
Increase in Operating Income	3,807	122	56	(323)	46	(99)

Related Taxes for Increase

State & Federal Income Taxes	2,311	74	34	(196)	28	(60)
Total Increase in Revenue	6,118	196	90	(519)	74	(159)

Total Revenue Before Increase

Total Revenue Before Increase	186,308	8	4	715	209	936
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Total Cost of Service Required from Rates

Total Cost of Service Required from Rates	192,426	204	94	196	283	777
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	8	4	10	209	231
Revenue Required from Rates	182,917	196	90	186	74	546

Projected Rate of Return Before Increase

6.727% 13.004%

Projected Billing Units

Kwh	2,014,529,000	7,437,000	7,437,000	7,437,000
Kw Demand	3,304,802			
Bills	1,170,228			

Unit Cost of Service

\$ per Kwh				
\$ per Kw Demand		0.026	0.012	0.025
\$ per Customer Per Month				

Operating Income/Inverse of Federal income tax rate:

Operating Income for Proposed Return:

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Total North Dakota	Interruptible Demand Response Rate 38			Total Demand Response Rate 38
	Demand Prod. & Trans.	Demand Distribution	Energy Customer	

Rate Base	520,229	3,917	1,169	54	16	5,156
Operating Income for Proposed Return	38,805	292	87	4	1	384
Current Operating Income	34,998	(343)	286	432	10	386
Increase in Operating Income	3,807	635	(199)	(428)	(9)	(2)

Related Taxes for Increase	2,311	386	(121)	(260)	(5)	1
State & Federal Income Taxes	6,118	1,021	(320)	(688)	(14)	(1)
Total Increase in Revenue	186,308	39	601	1,507	18	2,165

Total Revenue Before Increase	192,426	1,060	281	819	4	2,164
Total Cost of Service Required from Rates	9,509	39	15	41	0	95
Less: Other Operating Revenues (Incl Contract Revenue)	182,917	1,021	266	778	4	2,069

Projected Rate of Return Before Increase 7.486%

Projected Billing Units	2,014,529,000	31,911,000
Kwh	3,304,802	85,568
Kw Demand	1,170,228	36
Bills		

Unit Cost of Service	11.93	3.11	0.024
\$ per Kwh			
\$ per Kw Demand			
\$ per Customer Per Month			111.11

Operating Income/Inverse of Federal income tax rate:
 Operating Income for Proposed Return: