

**2017 SOUTH DAKOTA ENERGY EFFICIENCY PLAN**  
**Otter Tail Power Company**

Appendix A, Table 1

	<b>Total Budget</b>	<b>Participation</b>	<b>Proposed Energy Savings (kWh)</b>	<b>Proposed Demand Savings (kW)</b>
<b>DIRECT IMPACT PROJECTS</b>				
<b>Residential</b>				
Air Conditioning Control	\$14,000	591	18,328	437.0
Air Source Heat Pumps	\$20,000	20	298,204	28.3
Geothermal Heat Pumps	\$30,000	9	321,779	23.9
Lighting	\$11,000	900	33,209	3.9
<b>Total Residential</b>	<b>\$75,000</b>	<b>1,520</b>	<b>671,519</b>	<b>493.1</b>
<b>Commercial</b>				
Air Source Heat Pumps	\$18,000	25	291,112	25.6
Custom Efficiency Projects	\$40,000	7	130,729	45.3
Drive Power	\$79,000	44	1,013,339	133.5
Geothermal Heat Pumps	\$73,000	16	730,265	93.0
Lighting	\$127,000	38	957,826	210.0
<b>Total Commercial</b>	<b>\$337,000</b>	<b>130</b>	<b>3,123,271</b>	<b>507.4</b>
<b>TOTAL DIRECT IMPACT PROJECTS</b>	<b>\$412,000</b>	<b>1,650</b>	<b>3,794,791</b>	<b>1,000.5</b>
<b>INDIRECT IMPACT PROJECTS</b>				
Advertising & Education	\$12,000	400	0	0.0
<b>TOTAL INDIRECT IMPACT PROJECTS</b>	<b>\$12,000</b>	<b>400</b>	<b>0</b>	<b>0.0</b>
<b>TOTAL WITHOUT DEVELOPMENT COSTS</b>	<b>\$424,000</b>	<b>2,050</b>	<b>3,794,791</b>	<b>1,000.5</b>
<b>DEVELOPMENT</b>				
EEP Development	\$25,000	0	0	0.0
<b>TOTAL DEVELOPMENT</b>	<b>\$25,000</b>	<b>0</b>	<b>0</b>	<b>0.0</b>
<b>TOTAL ALL PROGRAMS</b>	<b>\$449,000</b>	<b>2,050</b>	<b>3,794,791</b>	<b>1,000.5</b>

**2017 SOUTH DAKOTA ENERGY EFFICIENCY PLAN**

Appendix A, Table 2

**Otter Tail Power Company**

**Benefit/Cost Ratios**

	<b>Utility Test</b>	<b>Total Resource Test</b>	<b>Ratepayer Impact Test</b>	<b>Societal Test</b>	<b>Participant Test</b>
<b>DIRECT IMPACT PROJECTS</b>					
<b>Residential</b>					
Air Conditioning Control	3.38	3.38	3.02	3.38	inf.
Air Source Heat Pumps	8.45	1.81	0.51	2.90	6.18
Geothermal Heat Pumps	7.61	1.61	0.62	2.55	4.34
Lighting	1.65	4.27	0.43	6.37	inf.
<b>Total Residential</b>	6.17	1.83	0.61	2.79	5.32
<b>Commercial</b>					
Air Source Heat Pumps	8.21	1.61	0.57	2.40	3.18
Custom Efficiency Projects	2.98	0.71	0.78	1.07	0.96
Drive Power	6.87	2.98	0.75	4.45	4.61
Geothermal Heat Pumps	6.81	1.35	0.72	1.99	2.03
Lighting	4.68	1.63	0.81	2.39	2.23
<b>Total Commercial</b>	5.64	1.62	0.74	2.40	2.42
<b>INDIRECT IMPACT PROJECTS</b>					
Advertising & Education					
<b>TOTAL INDIRECT IMPACT PROJECTS</b>					
<b>TOTAL ALL PROGRAMS</b>	5.27	1.61	0.70	2.40	2.91

**2018 SOUTH DAKOTA ENERGY EFFICIENCY PLAN**  
**Otter Tail Power Company**

Appendix A, Table 3

	<b>Total Budget</b>	<b>Participation</b>	<b>Proposed Energy Savings (kWh)</b>	<b>Proposed Demand Savings (kW)</b>
<b>DIRECT IMPACT PROJECTS</b>				
<b>Residential</b>				
Air Conditioning Control	\$14,000	626	19,413	462.9
Air Source Heat Pumps	\$20,000	20	298,204	28.3
Geothermal Heat Pumps	\$30,000	9	321,779	23.9
Lighting	\$11,000	900	33,209	3.9
<b>Total Residential</b>	<b>\$75,000</b>	<b>1,555</b>	<b>672,605</b>	<b>519.0</b>
<b>Commercial</b>				
Air Source Heat Pumps	\$18,000	25	291,112	25.6
Custom Efficiency Projects	\$40,000	7	130,729	45.3
Drive Power	\$79,000	44	1,013,339	133.5
Geothermal Heat Pumps	\$73,000	16	730,265	93.0
Lighting	\$127,000	38	957,826	210.0
<b>Total Commercial</b>	<b>\$337,000</b>	<b>130</b>	<b>3,123,271</b>	<b>507.4</b>
<b>TOTAL DIRECT IMPACT PROJECTS</b>	<b>\$412,000</b>	<b>1,685</b>	<b>3,795,876</b>	<b>1,026.4</b>
<b>INDIRECT IMPACT PROJECTS</b>				
Advertising & Education	\$12,000	400	0	0.0
<b>TOTAL INDIRECT IMPACT PROJECTS</b>	<b>\$12,000</b>	<b>400</b>	<b>0</b>	<b>0.0</b>
<b>TOTAL WITHOUT DEVELOPMENT COSTS</b>	<b>\$424,000</b>	<b>2,085</b>	<b>3,795,876</b>	<b>1,026.4</b>
<b>DEVELOPMENT</b>				
EEP Development	\$25,000	0	0	0.0
<b>TOTAL DEVELOPMENT</b>	<b>\$25,000</b>	<b>0</b>	<b>0</b>	<b>0.0</b>
<b>TOTAL ALL PROGRAMS</b>	<b>\$449,000</b>	<b>2,085</b>	<b>3,795,876</b>	<b>1,026.4</b>

**2018 SOUTH DAKOTA ENERGY EFFICIENCY PLAN**

Appendix A, Table 4

**Otter Tail Power Company**

**Benefit/Cost Ratios**

	<b>Utility Test</b>	<b>Total Resource Test</b>	<b>Ratepayer Impact Test</b>	<b>Societal Test</b>	<b>Participant Test</b>
<b>DIRECT IMPACT PROJECTS</b>					
<b>Residential</b>					
Air Conditioning Control	3.98	3.98	3.52	3.98	inf.
Air Source Heat Pumps	8.82	1.89	0.52	3.01	6.27
Geothermal Heat Pumps	7.85	1.66	0.63	2.62	4.41
Lighting	1.73	4.47	0.44	6.63	inf.
<b>Total Residential</b>	6.49	1.92	0.63	2.90	5.40
<b>Commercial</b>					
Air Source Heat Pumps	8.58	1.69	0.58	2.50	3.23
Custom Efficiency Projects	3.12	0.75	0.81	1.12	0.97
Drive Power	7.19	3.12	0.77	4.63	4.69
Geothermal Heat Pumps	7.07	1.40	0.73	2.05	2.07
Lighting	4.92	1.71	0.84	2.49	2.27
<b>Total Commercial</b>	5.90	1.69	0.76	2.49	2.46
<b>INDIRECT IMPACT PROJECTS</b>					
Advertising & Education					
<b>TOTAL INDIRECT IMPACT PROJECTS</b>					
<b>TOTAL ALL PROGRAMS</b>					
	5.51	1.69	0.73	2.50	2.95

**2019 SOUTH DAKOTA ENERGY EFFICIENCY PLAN**  
**Otter Tail Power Company**

Appendix A, Table 5

	<b>Total Budget</b>	<b>Participation</b>	<b>Proposed Energy Savings (kWh)</b>	<b>Proposed Demand Savings (kW)</b>
<b>DIRECT IMPACT PROJECTS</b>				
<b>Residential</b>				
Air Conditioning Control	\$14,000	661	20,498	488.8
Air Source Heat Pumps	\$20,000	20	298,204	28.3
Geothermal Heat Pumps	\$30,000	9	321,779	23.9
Lighting	\$11,000	900	33,209	3.9
<b>Total Residential</b>	<b>\$75,000</b>	<b>1,590</b>	<b>673,690</b>	<b>544.9</b>
<b>Commercial</b>				
Air Source Heat Pumps	\$18,000	25	291,112	25.6
Custom Efficiency Projects	\$168,281	88	4,274,737	598.5
Drive Power	\$200,719	147	3,980,517	608.9
Geothermal Heat Pumps	\$73,000	16	730,265	93.0
Lighting	\$127,000	38	957,826	210.0
<b>Total Commercial</b>	<b>\$587,000</b>	<b>314</b>	<b>10,234,457</b>	<b>1,536.0</b>
<b>TOTAL DIRECT IMPACT PROJECTS</b>	<b>\$662,000</b>	<b>1,904</b>	<b>10,908,147</b>	<b>2,080.9</b>
<b>INDIRECT IMPACT PROJECTS</b>				
Advertising & Education	\$12,000	400	0	0.0
<b>TOTAL INDIRECT IMPACT PROJECTS</b>	<b>\$12,000</b>	<b>400</b>	<b>0</b>	<b>0.0</b>
<b>TOTAL WITHOUT DEVELOPMENT COSTS</b>	<b>\$674,000</b>	<b>2,304</b>	<b>10,908,147</b>	<b>2,080.9</b>
<b>DEVELOPMENT</b>				
EEP Development	\$25,000	0	0	0.0
<b>TOTAL DEVELOPMENT</b>	<b>\$25,000</b>	<b>0</b>	<b>0</b>	<b>0.0</b>
<b>TOTAL ALL PROGRAMS</b>	<b>\$699,000</b>	<b>2,304</b>	<b>10,908,147</b>	<b>2,080.9</b>

**2019 SOUTH DAKOTA ENERGY EFFICIENCY PLAN**

**Otter Tail Power Company**

**Benefit/Cost Ratios**

	<b>Utility Test</b>	<b>Total Resource Test</b>	<b>Ratepayer Impact Test</b>	<b>Societal Test</b>	<b>Participant Test</b>
<b>DIRECT IMPACT PROJECTS</b>					
<b>Residential</b>					
Air Conditioning Control	4.33	4.33	3.78	4.33	inf.
Air Source Heat Pumps	9.17	1.96	0.54	3.11	6.35
Geothermal Heat Pumps	8.07	1.71	0.64	2.68	4.46
Lighting	1.80	4.66	0.46	6.87	inf.
<b>Total Residential</b>	6.75	2.00	0.65	3.00	5.47
<b>Commercial</b>					
Air Source Heat Pumps	8.95	1.76	0.60	2.59	3.28
Custom Efficiency Projects	15.24	14.75	0.87	21.75	20.76
Drive Power	12.32	3.96	0.85	5.84	5.42
Geothermal Heat Pumps	7.32	1.44	0.75	2.12	2.10
Lighting	5.15	1.79	0.87	2.59	2.30
<b>Total Commercial</b>	10.88	3.93	0.84	5.78	5.35
<b>INDIRECT IMPACT PROJECTS</b>					
Advertising & Education					
<b>TOTAL INDIRECT IMPACT PROJECTS</b>					
<b>TOTAL ALL PROGRAMS</b>	9.86	3.60	0.82	5.30	5.37

**2020 SOUTH DAKOTA ENERGY EFFICIENCY PLAN**  
**Otter Tail Power Company**

Appendix A, Table 7

	<b>Total Budget</b>	<b>Participation</b>	<b>Proposed Energy Savings (kWh)</b>	<b>Proposed Demand Savings (kW)</b>
<b>DIRECT IMPACT PROJECTS</b>				
<b>Residential</b>				
Air Conditioning Control	\$14,000	649	20,126	479.9
Air Source Heat Pumps*	\$20,000	20	298,204	28.3
Geothermal Heat Pumps*	\$30,000	9	321,779	23.9
Lighting*	\$11,000	900	33,209	3.9
<b>Total Residential</b>	<b>\$75,000</b>	<b>1,578</b>	<b>673,318</b>	<b>536.0</b>
<b>Commercial</b>				
Air Source Heat Pumps*	\$18,000	25	291,112	25.6
Custom Efficiency Projects	\$172,000	88	4,274,737	598.5
Drive Power*	\$197,000	156	4,408,944	607.5
Geothermal Heat Pumps*	\$73,000	16	730,265	93.0
Lighting	\$127,000	38	957,826	210.0
<b>Total Commercial</b>	<b>\$587,000</b>	<b>323</b>	<b>10,662,885</b>	<b>1,534.6</b>
<b>TOTAL DIRECT IMPACT PROJECTS</b>	<b>\$662,000</b>	<b>1,901</b>	<b>11,336,203</b>	<b>2,070.6</b>
<b>INDIRECT IMPACT PROJECTS</b>				
Advertising & Education	\$12,000	400	0	0.0
<b>TOTAL INDIRECT IMPACT PROJECTS</b>	<b>\$12,000</b>	<b>400</b>	<b>0</b>	<b>0.0</b>
<b>TOTAL WITHOUT DEVELOPMENT COSTS</b>	<b>\$674,000</b>	<b>2,301</b>	<b>11,336,203</b>	<b>2,070.6</b>
<b>DEVELOPMENT</b>				
EEP Development	\$25,000	0	0	0.0
<b>TOTAL DEVELOPMENT</b>	<b>\$25,000</b>	<b>0</b>	<b>0</b>	<b>0.0</b>
<b>TOTAL ALL PROGRAMS</b>	<b>\$699,000</b>	<b>2,301</b>	<b>11,336,203</b>	<b>2,070.6</b>

**2020 SOUTH DAKOTA ENERGY EFFICIENCY PLAN**

Appendix A, Table 8

**Otter Tail Power Company**

**Benefit/Cost Ratios**

	<b>Utility Test</b>	<b>Total Resource Test</b>	<b>Ratepayer Impact Test</b>	<b>Societal Test</b>	<b>Participant Test</b>
<b>DIRECT IMPACT PROJECTS</b>					
<b>Residential</b>					
Air Conditioning Control	4.29	4.29	3.75	4.29	inf.
Air Source Heat Pumps	9.47	2.02	0.52	3.20	6.77
Geothermal Heat Pumps	8.25	1.75	0.62	2.73	4.75
Lighting	1.86	4.82	0.45	7.07	inf.
<b>Total Residential</b>	6.90	2.04	0.63	3.07	5.82
<b>Commercial</b>					
Air Source Heat Pumps	9.24	1.81	0.58	2.66	3.47
Custom Efficiency Projects	15.44	14.95	0.85	21.95	21.92
Drive Power	13.79	4.35	0.81	6.39	5.95
Geothermal Heat Pumps	7.52	1.48	0.73	2.17	2.21
Lighting	5.36	1.86	0.86	2.68	2.41
<b>Total Commercial</b>	11.53	4.16	0.82	6.09	5.74
<b>INDIRECT IMPACT PROJECTS</b>					
Advertising & Education					
<b>TOTAL INDIRECT IMPACT PROJECTS</b>					
<b>TOTAL ALL PROGRAMS</b>	10.42	3.80	0.80	5.57	5.75



2017-2020 SOUTH DAKOTA ENERGY EFFICIENCY PLAN

Appendix A, Table 9

Otter Tail Power Company

Benefit/Cost Ratios

	Utility Test	Total Resource Test	Ratepayer Impact Test	Societal Test	Participant Test
<b>DIRECT IMPACT PROJECTS</b>					
<b>Residential</b>					
Air Conditioning Control	4.00	4.00	3.52	4.00	inf.
Air Source Heat Pumps	8.98	1.92	0.52	3.06	6.39
Geothermal Heat Pumps	7.95	1.68	0.63	2.64	4.49
Lighting	1.76	4.55	0.45	6.73	inf.
<b>Total Residential</b>	6.58	1.95	0.63	2.94	5.50
<b>Commercial</b>					
Air Source Heat Pumps	8.75	1.72	0.58	2.54	3.29
Custom Efficiency Projects	13.00	7.98	0.86	11.75	11.15
Drive Power	11.34	3.91	0.82	5.76	5.46
Geothermal Heat Pumps	7.18	1.42	0.73	2.08	2.10
Lighting	5.03	1.75	0.85	2.54	2.30
<b>Total Commercial</b>	9.22	3.04	0.81	4.47	4.24
<b>INDIRECT IMPACT PROJECTS</b>					
Advertising & Education					
<b>TOTAL INDIRECT IMPACT PROJECTS</b>					
<b>TOTAL ALL PROGRAMS</b>					
	8.28	2.81	0.78	4.14	4.43