

	Participation	MWh Savings	Coincident kW Savings	Total Budget	Percentage of Revenue
2014	12,980	3,255	494	\$678,799	0.51%
2015	16,009	4,106	621	\$841,884	0.63%
2016	19,019	4,900	738	\$996,308	0.75%

	2014	2015	2016
Residential Programs	1.06	1.08	1.10
Commercial & Industrial Programs	1.50	1.55	1.58
Total Portfolio	1.31	1.36	1.39

#### Year 1

	Participation	MWh Savings	Coincident kW Savings	Total Budget
Residential Lighting & Appliances	11,385	407	36	\$62,858
Appliance Recycling	275	341	39	\$59,916
High Efficiency HVAC	262	339	96	\$96,134
Whole House Efficiency	100	85	22	\$28,009
Residential Audit	400	38	4	\$13,860
School-Based Education	300	100	9	\$18,191
Weatherization	25	28	5	\$21,164
Small Business Direct Install	100	893	139	\$319,372
C&I Custom	20	603	90	\$21,649
C&I Prescriptive	113	421	54	\$37,645

#### Year 2

	Participation	MWh Savings	Coincident kW Savings	Total Budget
Residential Lighting & Appliances	14,190	507	45	\$78,110
Appliance Recycling	350	433	49	\$76,256
High Efficiency HVAC	316	392	115	\$115,069
Whole House Efficiency	125	107	28	\$35,011
Residential Audit	400	38	4	\$13,860
School-Based Education	300	100	9	\$18,191
Weatherization	30	34	5	\$25,397
Small Business Direct Install	125	1,116	173	\$399,215
C&I Custom	25	754	113	\$27,062
C&I Prescriptive	148	625	80	\$53,713

#### Year 3

	Participation	MWh Savings	Coincident kW Savings	Total Budget
Residential Lighting & Appliances	17,000	608	54	\$93,423
Appliance Recycling	425	525	60	\$92,597

High Efficiency HVAC	370	445	134	\$134,003
Whole House Efficiency	125	107	28	\$35,011
Residential Audit	400	38	4	\$13,860
School-Based Education	300	100	9	\$18,191
Weatherization	35	39	6	\$29,630
Small Business Direct Install	150	1,340	208	\$479,058
C&I Custom	30	905	136	\$32,474
C&I Prescriptive	184	794	100	\$68,060

See 2/4/14 email from Don Martinez 'BHP-SD Customer Stats\_EES as per

	Percent of Rev.	Program Costs
1st Year	0.75%	\$995,909
2nd Year	1.00%	\$1,327,879
3rd Year	1.25%	\$1,659,849

Revenue	\$132,787,914
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	# Customers	
Residential	41,780	86%
Residential Total Electric	6,598	14%
TOTAL Residential Service	52,369	

General Service	7,177
General Service - Total Electric	833
TOTAL Small General Service	11,851

LIGHTING SERVICE	637
Large General Service & Industrial	155



Measure	Participants			Total kWh Savin	
	2014	2015	2016	2014	2015
<b>Total Portfolio</b>	<b>12,980</b>	<b>16,009</b>	<b>19,019</b>	<b>3,255,280</b>	<b>4,105,514</b>
<b>Residential Programs</b>	<b>12,747</b>	<b>15,711</b>	<b>18,655</b>	<b>1,338,546</b>	<b>1,610,531</b>
<b>Residential Lighting &amp; Appliances</b>	<b>11,385</b>	<b>14,190</b>	<b>17,000</b>	<b>407,497</b>	<b>507,436</b>
CFL	10,000	12,500	15,000	306,541	383,176
LED	500	600	700	19,848	23,818
ENERGY STAR Refrigerator	400	500	600	41,345	51,681
ENERGY STAR Fixture	300	400	500	25,869	34,493
Advanced Power Strip	185	190	200	13,894	14,269
<b>Appliance Recycling</b>	<b>275</b>	<b>350</b>	<b>425</b>	<b>340,675</b>	<b>432,750</b>
Refrigerator Recycle	200	250	300	257,800	322,250
Freezer Recycle	75	100	125	82,875	110,500
<b>High Efficiency HVAC</b>	<b>262</b>	<b>316</b>	<b>370</b>	<b>339,246</b>	<b>392,042</b>
Heat Pump SEER 15	100	125	150	47,880	59,851
Early Retirement Heat Pump SEER 15	20	25	30	9,576	11,970
Heat Pump Water Heater	70	80	90	121,360	138,697
Electric Storage Water Heater	50	60	70	6,371	7,646
Geothermal EER ≥21	12	15	18	59,461	74,327
Early Retirement Geothermal EER ≥21	5	6	7	24,776	29,731
Heat Pump SEER 15 Replace Electric Furnace	5	5	5	69,821	69,821
<b>Whole House Efficiency</b>	<b>100</b>	<b>125</b>	<b>125</b>	<b>85,147</b>	<b>106,700</b>
Air Sealing (Electric Heat)	15	19	19	20,165	25,542
Air Sealing (Gas Heat)	85	106	106	4,857	6,057
CFL	400	500	500	12,262	15,327
Faucet Aerator - Bathroom	100	125	125	6,825	8,531
Low Flow Showerhead	100	125	125	14,276	17,845
Hot Water Pipe Insulation	85	106	106	11,519	14,365
Water Heater Temperature Setback	85	106	106	7,344	9,158
Water Heater Tank Wrap	100	125	125	7,900	9,875
<b>Residential Audit</b>	<b>400</b>	<b>400</b>	<b>400</b>	<b>37,787</b>	<b>37,787</b>
<b>School-Based Education</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>100,088</b>	<b>100,088</b>
<b>Weatherization</b>	<b>25</b>	<b>30</b>	<b>35</b>	<b>28,106</b>	<b>33,728</b>
<b>C&amp;I Programs</b>	<b>233</b>	<b>298</b>	<b>364</b>	<b>1,916,734</b>	<b>2,494,983</b>
<b>SBDI</b>	<b>100</b>	<b>125</b>	<b>150</b>	<b>893,129</b>	<b>1,116,411</b>
<b>C&amp;I Custom</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>603,018</b>	<b>753,773</b>
<b>C&amp;I Prescriptive</b>	<b>113</b>	<b>148</b>	<b>184</b>	<b>420,587</b>	<b>624,799</b>
<b>Lighting</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>57,450</b>	<b>79,749</b>
Delamping (T8 to T8)	6	8	9	646	861
Delamp T12 to T8 (2 Lamp Fixtures)	4	5	6	1,658	2,072
Delamp T12 to T8 (3-4 Lamp Fixtures)	2	3	3	1,772	2,658
T8 (≤4 ft, 1-2 Lamp)	6	8	9	1,365	1,820
T8 (≤4 ft, 3-4 Lamp)	6	8	9	2,097	2,797
T8 (5-8 ft, 1-2 Lamp)	6	8	9	1,998	2,663
High Performance T8 (1-2 Lamp)	10	13	15	555	721
High Performance T8 (3-4 Lamp)	10	13	15	888	1,154
Low-Wattage T8	8	10	12	311	388
Fluorescent Fixture Specular Reflector 4-ft	-	-	-	-	-
Fluorescent Fixture Specular Reflector two 4-ft	-	-	-	-	-
Fluorescent Fixture Specular Reflector 8-ft	-	-	-	-	-
Fluorescent Fixture Specular Reflector two 8-ft	-	-	-	-	-
High Bay Fluorescent Fixture (replace 400W HID)	2	3	3	2,686	4,028
High Bay Fluorescent Fixture (replace 1000 W HID)	2	3	3	5,416	8,123
Pin-Based CFL ≤18W	6	8	9	2,097	2,797
Pin-Based CFL 19W or 32W	6	8	9	3,662	4,883
Pin-Based CFL ≥32W	6	8	9	6,159	8,212
Multi-CFL Fixture	4	5	6	4,750	5,937

Indirect Fixture	-	-	-	-	-
Ceramic Integrated Metal Halide ( $\leq 150W$ )	2	3	3	1,809	2,713
Ceramic Integrated Metal Halide ( $150 < 250W$ )	2	3	3	2,031	3,046
Ceramic Integrated Metal Halide ( $\geq 250 W$ )	2	3	3	943	1,415
Pulse Start Metal Halide ( $\leq 175W$ )	2	3	3	1,875	2,813
Pulse Start Metal Halide ( $175 < 320 W$ )	2	3	3	1,310	1,964
Pulse Start Metal Halide ( $320 < 750 W$ )	2	3	3	899	1,348
Pulse Start Metal Halide ( $\geq 750 W$ )	2	3	3	3,895	5,843
Ceiling Mount Occupancy	-	-	-	-	-
Wall Mount Occupancy	2	3	3	669	1,003
Fixture Mount Photo Sensor	-	-	-	-	-
Fixture Mount Occupancy	2	3	3	669	1,003
Exit Sign	10	13	15	1,809	2,352
LED ( $\leq 5W$ )	4	5	6	1,176	1,470
LED ( $5 \leq 10W$ )	4	5	6	977	1,221
LED ( $> 10W$ )	4	5	6	2,220	2,774
LED Linear Replacement Lamp ( $\leq 4ft$ )	2	3	3	499	749
LED Linear Replacement Lamp ( $5-8ft$ )	2	3	3	610	916
$\leq 25 W$ LED Fixtures (Exterior/Parking Garage)	-	-	-	-	-
$25 \leq 60 W$ LED Fixtures (Exterior/Parking Garage)	-	-	-	-	-
$60 \leq 155 W$ LED Fixtures (Exterior/Parking Garage)	-	-	-	-	-
<b>HVAC</b>	<b>45</b>	<b>62</b>	<b>80</b>	<b>171,710</b>	<b>259,720</b>
Split Package Heat Pump	15	20	25	29,708	39,611
Single System Heat Pump	15	20	25	13,601	18,135
Geothermal Heat Pump	5	8	10	111,064	177,702
Heat Pump Water Heater	10	14	20	17,337	24,272
<b>VFD</b>	<b>8</b>	<b>12</b>	<b>16</b>	<b>185,397</b>	<b>278,095</b>
VFD Fan	4	6	8	70,016	105,023
VFD Pump	4	6	8	115,381	173,072
<b>Motors</b>	<b>20</b>	<b>24</b>	<b>28</b>	<b>6,029</b>	<b>7,235</b>
ODC Motor	10	12	14	3,537	4,245
TEFC Motor	10	12	14	2,492	2,991



-	-	-	-
2,713	0.28	0.42	0.42
3,046	0.31	0.47	0.47
1,415	0.15	0.22	0.22
2,813	0.29	0.44	0.44
1,964	0.20	0.30	0.30
1,348	0.14	0.21	0.21
5,843	0.60	0.90	0.90
-	-	-	-
1,003	0.02	0.03	0.03
-	-	-	-
1,003	0.02	0.03	0.03
2,714	0.33	0.42	0.49
1,765	0.18	0.23	0.27
1,465	0.15	0.19	0.23
3,329	0.34	0.43	0.51
749	0.08	0.12	0.12
916	0.09	0.14	0.14
-	-	-	-
-	-	-	-
-	-	-	-
<b>328,984</b>	<b>20</b>	<b>30</b>	<b>38</b>
49,514	4.51	6.02	7.52
22,668	4.51	6.02	7.52
222,128	10.48	16.77	20.96
34,674	0.82	1.15	1.64
<b>370,794</b>	<b>24</b>	<b>36</b>	<b>48</b>
140,031	14.86	22.29	29.72
230,763	9.00	13.50	17.99
<b>8,441</b>	<b>1</b>	<b>2</b>	<b>2</b>
4,952	0.80	0.96	1.13
3,489	0.57	0.68	0.79

\$60	\$60	\$60
\$145	\$145	\$145
\$98	\$98	\$98
\$42	\$42	\$42
\$161	\$161	\$161
\$185	\$185	\$185
\$283	\$283	\$283
\$381	\$381	\$381
\$125	\$125	\$125
\$55	\$55	\$55
\$65	\$65	\$65
\$55	\$55	\$55
\$25	\$25	\$25
\$34	\$34	\$34
\$40	\$40	\$40
\$65	\$65	\$65
\$10	\$10	\$10
\$10	\$10	\$10
\$125	\$125	\$125
\$250	\$250	\$250
\$375	\$375	\$375
\$370	\$370	\$370
\$370	\$370	\$370
\$4,100	\$4,100	\$4,100
\$700	\$700	\$700
\$2,518	\$2,518	\$2,518
\$2,518	\$2,518	\$2,518
\$115	\$115	\$115
\$115	\$115	\$115

\$24	\$24	\$24
\$17	\$17	\$17
\$28	\$28	\$28
\$45	\$45	\$45
\$25	\$25	\$25
\$40	\$40	\$40
\$55	\$55	\$55
\$65	\$65	\$65
\$30	\$30	\$30
\$12	\$12	\$12
\$12	\$12	\$12
\$28	\$28	\$28
\$6	\$6	\$6
\$10	\$10	\$10
\$17	\$17	\$17
\$25	\$25	\$25
\$25	\$25	\$25
\$35	\$35	\$35
\$35	\$35	\$35
\$75	\$75	\$75
\$100	\$100	\$100
\$250	\$250	\$250
\$250	\$250	\$250
\$700	\$700	\$700
\$200	\$200	\$200
\$750	\$750	\$750
\$750	\$750	\$750
\$50	\$50	\$50
\$50	\$50	\$50

Total Incentives		
2014	2015	2016
\$241,178	\$301,647	\$361,142
\$119,050	\$145,025	\$171,050
\$34,600	\$42,900	\$51,250
\$10,000	\$12,500	\$15,000
\$3,750	\$4,500	\$5,250
\$16,000	\$20,000	\$24,000
\$3,000	\$4,000	\$5,000
\$1,850	\$1,900	\$2,000
\$13,750	\$17,500	\$21,250
\$10,000	\$12,500	\$15,000
\$3,750	\$5,000	\$6,250
\$70,700	\$84,625	\$98,550
\$22,500	\$28,125	\$33,750
\$12,000	\$15,000	\$18,000
\$14,000	\$16,000	\$18,000
\$3,000	\$3,600	\$4,200
\$7,200	\$9,000	\$10,800
\$4,500	\$5,400	\$6,300
\$7,500	\$7,500	\$7,500
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$122,128	\$156,622	\$190,092
\$85,200	\$106,500	\$127,800
\$14,520	\$18,150	\$21,780
\$22,408	\$31,972	\$40,512
\$2,408	\$3,372	\$3,612
\$48	\$64	\$72
\$64	\$80	\$96
\$72	\$108	\$108
\$30	\$40	\$45
\$54	\$72	\$81
\$48	\$64	\$72
\$90	\$117	\$135
\$180	\$234	\$270
\$4	\$5	\$6
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
\$150	\$225	\$225
\$250	\$375	\$375
\$48	\$64	\$72
\$108	\$144	\$162
\$144	\$192	\$216
\$100	\$125	\$150

Non-Incentive Costs		
2014	2015	2016
\$437,621	\$540,237	\$635,166
\$181,082	\$216,869	\$245,666
\$28,258	\$35,210	\$42,173
\$23,820	\$29,699	\$35,577
\$4,438	\$5,512	\$6,596

\$46,166	\$58,756	\$71,347
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\$25,434	\$30,444	\$35,453
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\$28,009	\$35,011	\$35,011
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\$13,860	\$13,860	\$13,860
\$18,191	\$18,191	\$18,191
\$21,164	\$25,397	\$29,630
\$256,539	\$323,368	\$389,500
\$234,172	\$292,715	\$351,258
\$7,129	\$8,912	\$10,694
\$15,237	\$21,741	\$27,548

Delivery	Admin	Market	Eval
\$2.00	5.0%	2.5%	5%

12%	7.5%	7.5%	5%
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\$150	7.5%	7.5%	5%
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12%	7.5%	10.0%	5%
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\$485	5%	5%	5%
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\$12,000	5.0%	5.0%	5%
\$55	5.0%	0%	5%
\$750	7.5%	0.0%	5%
250%	5.0%	2.0%	5%
20%	12.0%	10.0%	5%
30%	15.0%	15.0%	5%



\$0	\$0	\$0
\$34	\$51	\$51
\$56	\$84	\$84
\$90	\$135	\$135
\$50	\$75	\$75
\$80	\$120	\$120
\$110	\$165	\$165
\$130	\$195	\$195
\$0	\$0	\$0
\$24	\$36	\$36
\$0	\$0	\$0
\$56	\$84	\$84
\$60	\$78	\$90
\$40	\$50	\$60
\$68	\$85	\$102
\$100	\$125	\$150
\$50	\$75	\$75
\$70	\$105	\$105
\$0	\$0	\$0
\$0	\$0	\$0
\$0	\$0	\$0
<b>\$13,000</b>	<b>\$18,400</b>	<b>\$23,500</b>
\$3,750	\$5,000	\$6,250
\$3,750	\$5,000	\$6,250
\$3,500	\$5,600	\$7,000
\$2,000	\$2,800	\$4,000
<b>\$6,000</b>	<b>\$9,000</b>	<b>\$12,000</b>
\$3,000	\$4,500	\$6,000
\$3,000	\$4,500	\$6,000
<b>\$1,000</b>	<b>\$1,200</b>	<b>\$1,400</b>
\$500	\$600	\$700
\$500	\$600	\$700

Total Budget		
2014	2015	2016
\$678,799	\$841,884	\$996,308
\$300,132	\$361,894	\$416,716
\$62,858	\$78,110	\$93,423

\$59,916	\$76,256	\$92,597
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\$96,134	\$115,069	\$134,003
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\$28,009	\$35,011	\$35,011
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\$13,860	\$13,860	\$13,860
\$18,191	\$18,191	\$18,191
\$21,164	\$25,397	\$29,630
\$378,667	\$479,990	\$579,592
\$319,372	\$399,215	\$479,058
\$21,649	\$27,062	\$32,474
\$37,645	\$53,713	\$68,060

TRC		
2014	2015	2016
1.31	1.36	1.39
1.06	1.08	1.10
1.18	1.20	1.22
3.85	3.91	3.97
0.64	0.65	0.66
1.04	1.05	1.07
1.34	1.36	1.38
1.23	1.25	1.26
1.31	1.33	1.35
3.82	3.88	3.94
3.28	3.33	3.38
1.04	1.04	1.06
1.00	1.02	1.03
0.86	0.87	0.89
1.01	1.03	1.04
1.07	1.08	1.10
1.89	1.91	1.94
2.50	2.54	2.57
1.47	1.49	1.52
1.01	1.03	1.05
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
0.52	0.53	0.53
1.04	1.05	1.07
0.48	0.48	0.49
1.50	1.55	1.58
1.01	1.02	1.04
3.21	3.25	3.30
2.11	2.17	2.21
3.25	3.28	3.35
3.15	3.19	3.24
2.64	2.68	2.72
2.55	2.58	2.62
2.48	2.51	2.55
2.97	3.02	3.06
1.68	1.70	1.73
1.57	1.59	1.62
2.09	2.13	2.16
4.35	4.41	4.48
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
6.16	6.25	6.35
7.50	7.61	7.72
5.74	5.83	5.92
5.02	5.09	5.17
6.75	6.85	6.95
5.67	5.75	5.84

n/a	n/a	n/a
2.92	2.96	3.01
4.85	4.92	4.99
5.25	5.33	5.41
2.73	2.77	2.81
1.66	1.68	1.71
0.74	0.75	0.77
2.39	2.43	2.46
n/a	n/a	n/a
1.63	1.65	1.68
n/a	n/a	n/a
1.63	1.65	1.68
3.10	3.15	3.19
2.84	2.89	2.93
2.01	2.04	2.07
2.81	2.85	2.89
11.57	11.74	11.92
14.14	14.35	14.56
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
1.86	1.92	1.93
2.27	2.30	2.34
1.11	1.12	1.14
2.25	2.28	2.32
1.01	1.03	1.04
3.87	3.93	3.99
3.01	3.06	3.10
4.73	4.80	4.87
1.14	1.16	1.18
1.34	1.36	1.38
0.94	0.96	0.97

Year 2014

Program	Participation	Measure Life	Remaining Life
<b>Total Portfolio</b>			
<b>Residential Programs</b>			
<b>Residential Lighting &amp; Appliances</b>	<b>11,385</b>		
CFL	10,000	5	-
LED	500	10	-
ENERGY STAR Refrigerator	400	14	-
ENERGY STAR Fixture	300	8	-
Advanced Power Strip	185	10	-
<b>Appliance Recycling</b>	<b>275</b>		
Refrigerator Recycle	200	8	-
Freezer Recycle	75	8	-
<b>High Efficiency HVAC</b>	<b>262</b>		
Heat Pump SEER 15	100	18	-
Early Retirement Heat Pump SEER 15	20	18	8
Heat Pump Water Heater	70	15	-
Electric Storage Water Heater	50	15	-
Geothermal EER ≥21	12	18	-
Early Retirement Geothermal EER ≥21	5	18	6
Heat Pump SEER 15 Replace Electric Furnace	5	18	-
<b>Whole House Efficiency</b>	<b>100</b>		
Air Sealing (Electric Heat)	15	15	-
Air Sealing (Gas Heat)	85	15	-
CFL	400	5	-
Faucet Aerator - Bathroom	100	9	-
Low Flow Showerhead	100	10	-
Hot Water Pipe Insulation	85	15	-
Water Heater Temperature Setback	85	2	-
Water Heater Tank Wrap	100	5	-
<b>Residential Audit</b>	<b>400</b>	<b>5</b>	<b>-</b>
<b>School-Based Education</b>	<b>300</b>	<b>5</b>	<b>-</b>
<b>Weatherization</b>	<b>25</b>		
Air Sealing	25	15	-
CFL	100	5	-
Water Heater Tank Wrap	25	5	-
Hot Water Pipe Insulation	25	15	-
Water Heater Temperature Setback	25	2	-
<b>C&amp;I Programs</b>			
<b>SBDI</b>	<b>100</b>	<b>15</b>	
<b>C&amp;I Custom</b>	<b>20</b>	<b>15</b>	
<b>C&amp;I Prescriptive</b>	<b>113</b>		
<b>Lighting</b>	<b>40</b>		
Delamping (T8 to T8)	6	11	-
Delamp T12 to T8 (2 Lamp Fixtures)	4	11	-
Delamp T12 to T8 (3-4 Lamp Fixtures)	2	11	-
T8 (≤4 ft, 1-2 Lamp)	6	18	-
T8 (≤4 ft, 3-4 Lamp)	6	18	-
T8 (5-8 ft, 1-2 Lamp)	6	18	-
High Performance T8 (1-2 Lamp)	10	15	-
High Performance T8 (3-4 Lamp)	10	15	-
Low-Wattage T8	8	6	-
Fluorescent Fixture Specular Reflector 4-ft	-	15	-
Fluorescent Fixture Specular Reflector two 4-ft	-	15	-
Fluorescent Fixture Specular Reflector 8-ft	-	15	-
Fluorescent Fixture Specular Reflector two 8-ft	-	15	-
High Bay Fluorescent Fixture (replace 400W HID)	2	18	-
High Bay Fluorescent Fixture (replace 1000 W HID)	2	18	-
Pin-Based CFL ≤18W	6	10	-
Pin-Based CFL 19W or 32W	6	10	-
Pin-Based CFL ≥32W	6	10	-
Multi-CFL Fixture	4	18	-
Indirect Fixture	-	18	-

Total Annual	
kWh	Ret. kWh
<b>426,649</b>	
320,948	
20,781	
43,288	
27,085	
14,546	
<b>356,687</b>	
269,917	
86,770	
<b>355,190</b>	<b>127,460</b>
50,131	-
10,026	68,867
127,064	-
6,671	-
62,256	-
25,940	58,593
73,103	-
<b>89,149</b>	
21,112	
5,085	
12,838	
7,146	
14,947	
12,061	
7,689	
8,271	
<b>39,563</b>	
<b>104,792</b>	
<b>29,427</b>	
18,341	
3,209	
2,068	
3,547	
2,262	
<b>935,106.08</b>	
<b>631,360</b>	
<b>440,355</b>	
<b>60,151</b>	
676	
1,736	
1,856	
1,429	
2,196	
2,091	
581	
930	
325	
-	
-	
-	
-	
2,812	
5,670	
2,196	
3,834	
6,449	
4,973	
-	

Ceramic Integrated Metal Halide ( $\leq 150W$ )	2	18	-	1,894
Ceramic Integrated Metal Halide ( $150 < 250W$ )	2	18	-	2,126
Ceramic Integrated Metal Halide ( $\geq 250 W$ )	2	18	-	988
Pulse Start Metal Halide ( $\leq 175W$ )	2	18	-	1,964
Pulse Start Metal Halide ( $175 < 320 W$ )	2	18	-	1,371
Pulse Start Metal Halide ( $320 < 750 W$ )	2	18	-	941
Pulse Start Metal Halide ( $\geq 750 W$ )	2	18	-	4,078
Ceiling Mount Occupancy	-	8	-	-
Wall Mount Occupancy	2	8	-	700
Fixture Mount Photo Sensor	-	8	-	-
Fixture Mount Occupancy	2	8	-	700
Exit Sign	10	15	-	1,894
LED ( $\leq 5W$ )	4	10	-	1,232
LED ( $5 \leq 10W$ )	4	10	-	1,022
LED ( $> 10W$ )	4	10	-	2,324
LED Linear Replacement Lamp ( $\leq 4ft$ )	2	16	-	523
LED Linear Replacement Lamp (5-8ft)	2	16	-	639
$\leq 25 W$ LED Fixtures (Exterior/Parking Garage)	-	15	-	-
$25 \leq 60 W$ LED Fixtures (Exterior/Parking Garage)	-	15	-	-
$60 \leq 155 W$ LED Fixtures (Exterior/Parking Garage)	-	15	-	-
<b>HVAC</b>	<b>45</b>			<b>45,345</b>
Split Package Heat Pump	15	15	-	31,105
Single System Heat Pump	15	15	-	14,240
Geothermal Heat Pump	5	15	-	116,284
Heat Pump Water Heater	10	15	-	18,152
<b>VFD</b>	<b>8</b>			<b>194,111</b>
VFD Fan	4	15	-	73,306
VFD Pump	4	15	-	120,804
<b>Motors</b>	<b>20</b>			<b>6,313</b>
ODC Motor	10	15	-	3,703
TEFC Motor	10	15	-	2,609



Savings	
kW	Ret. kW

Incremental Cost per Unit	Future Avoided Cost	Total Costs	
		Incentives	Admin

B/C Ratio -- Cost Tests			
TRC	Utility	Societal	Participant

<b>38.09</b>	
29	
2	
5	
0	
2	
<b>40.72</b>	
31	
10	
<b>100.06</b>	<b>48.63</b>
52	-
10	40.08
6	-
1	-
10	-
4	8.55
16	-
<b>23.08</b>	
9	
8	
1	
1	
1	
1	
1	
1	
<b>4.52</b>	
<b>9.17</b>	
<b>4.77</b>	
3.58	
0.29	
0.24	
0.40	
0.26	
<b>145.08</b>	
<b>94.59</b>	
<b>56.88</b>	
<b>9.18</b>	
0.10	
0.27	
0.29	
0.22	
0.34	
0.32	
0.09	
0.14	
0.05	
-	
-	
-	
-	
0.43	
0.88	
0.34	
0.59	
1.00	
0.77	
-	

		<b>\$34,600</b>	<b>\$28,258</b>
\$1.50	\$0.00	\$10,000	
\$20.00	\$0.00	\$3,750	
\$40.00	\$0.00	\$16,000	
\$17.00	\$0.00	\$3,000	
\$20.00	\$0.00	\$1,850	
		<b>\$13,750</b>	<b>\$46,166</b>
\$93.00	\$0.00	\$10,000	
\$93.00	\$0.00	\$3,750	
		<b>\$70,700</b>	<b>\$25,434</b>
\$293.81	\$0.00	\$22,500	
\$2,480.15	\$2,186.34	\$12,000	
\$700.00	\$0.00	\$14,000	
\$50.00	\$0.00	\$3,000	
\$1,230.00	\$0.00	\$7,200	
\$2,913.00	\$2,376.00	\$4,500	
\$4,554.00	\$0.00	\$7,500	
		<b>\$0</b>	<b>\$28,009</b>
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0</b>	<b>\$13,860</b>
<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0</b>	<b>\$18,191</b>
		<b>\$0</b>	<b>\$21,164</b>
\$0.00	#N/A	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
<b>\$1,420.00</b>		<b>\$85,200</b>	<b>\$234,172</b>
<b>\$3,630.00</b>		<b>\$14,520</b>	<b>\$7,129</b>
		<b>\$22,408</b>	<b>\$15,237</b>
		<b>\$2,408</b>	<b>\$0</b>
\$12.00	\$0.00	\$48	\$0
\$55.00	\$0.00	\$64	\$0
\$122.00	\$0.00	\$72	\$0
\$43.00	\$0.00	\$30	\$0
\$55.00	\$0.00	\$54	\$0
\$93.00	\$0.00	\$48	\$0
\$15.00	\$0.00	\$90	\$0
\$18.00	\$0.00	\$180	\$0
\$2.00	\$0.00	\$4	\$0
\$30.00	\$0.00	\$0	\$0
\$30.00	\$0.00	\$0	\$0
\$50.00	\$0.00	\$0	\$0
\$50.00	\$0.00	\$0	\$0
\$102.00	\$0.00	\$150	\$0
\$169.00	\$0.00	\$250	\$0
\$20.00	\$0.00	\$48	\$0
\$40.00	\$0.00	\$108	\$0
\$50.00	\$0.00	\$144	\$0
\$98.00	\$0.00	\$100	\$0
\$60.00	\$0.00	\$0	\$0

<b>1.31</b>	<b>1.84</b>	<b>1.64</b>	<b>7.61</b>
<b>1.06</b>	<b>1.45</b>	<b>1.33</b>	<b>6.50</b>
<b>1.18</b>	<b>1.47</b>	<b>1.49</b>	<b>6.73</b>
3.85	5.77	4.89	13.22
0.64	1.70	0.80	2.45
1.04	1.04	1.30	4.36
1.34	2.28	1.71	5.11
1.23	2.46	1.54	4.43
<b>1.31</b>	<b>1.57</b>	<b>1.65</b>	<b>12.42</b>
3.82	7.11	4.83	12.90
3.28	6.10	4.14	11.13
<b>1.04</b>	<b>1.93</b>	<b>1.28</b>	<b>4.12</b>
1.00	1.31	1.19	3.20
0.86	1.96	1.05	2.79
1.01	3.54	1.27	3.64
1.07	0.89	1.34	4.65
1.89	3.87	2.35	6.49
2.50	4.12	3.13	8.58
1.47	4.47	1.82	4.90
<b>1.01</b>	<b>1.01</b>	<b>1.25</b>	<b>n/a</b>
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
<b>0.52</b>	<b>0.52</b>	<b>0.66</b>	<b>n/a</b>
<b>1.04</b>	<b>1.04</b>	<b>1.31</b>	<b>n/a</b>
<b>0.48</b>	<b>0.48</b>	<b>0.60</b>	<b>n/a</b>
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
<b>1.50</b>	<b>2.14</b>	<b>1.88</b>	<b>8.50</b>
<b>1.01</b>	<b>1.19</b>	<b>1.26</b>	<b>9.11</b>
<b>3.21</b>	<b>11.81</b>	<b>4.01</b>	<b>8.94</b>
<b>2.11</b>	<b>4.68</b>	<b>2.64</b>	<b>6.78</b>
<b>3.25</b>	<b>9.81</b>	<b>4.06</b>	<b>8.39</b>
3.15	4.72	3.94	8.47
2.64	9.08	3.31	6.84
2.55	8.63	3.19	6.61
2.48	21.29	3.08	6.26
2.97	18.17	3.70	7.54
1.68	19.47	2.09	4.24
1.57	2.62	1.96	4.49
2.09	2.09	2.62	6.19
4.35	17.39	5.48	11.03
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
6.16	8.38	7.67	16.01
7.50	10.14	9.34	19.33
5.74	14.36	7.21	14.65
5.02	11.14	6.30	12.89
6.75	14.06	8.47	17.21
5.67	22.22	7.06	14.31
n/a	n/a	n/a	n/a

0.29	
0.33	
0.15	
0.30	
0.21	
0.15	
0.63	
-	
0.02	
-	
0.02	
0.34	
0.19	
0.16	
0.36	
0.08	
0.10	
-	
-	
-	
<b>9.45</b>	
4.73	
4.73	
10.97	
0.86	
<b>24.98</b>	
15.56	
9.42	
<b>1.43</b>	
0.84	
0.59	

\$145.00	\$0.00	\$34	\$0
\$98.00	\$0.00	\$56	\$0
\$42.00	\$0.00	\$90	\$0
\$161.00	\$0.00	\$50	\$0
\$185.00	\$0.00	\$80	\$0
\$283.00	\$0.00	\$110	\$0
\$381.00	\$0.00	\$130	\$0
\$125.00	\$0.00	\$0	\$0
\$55.00	\$0.00	\$24	\$0
\$65.00	\$0.00	\$0	\$0
\$55.00	\$0.00	\$56	\$0
\$25.00	\$0.00	\$60	\$0
\$34.00	\$0.00	\$40	\$0
\$40.00	\$0.00	\$68	\$0
\$65.00	\$0.00	\$100	\$0
\$9.50	\$0.00	\$50	\$0
\$9.50	\$0.00	\$70	\$0
\$125.00	\$0.00	\$0	\$0
\$250.00	\$0.00	\$0	\$0
\$375.00	\$0.00	\$0	\$0
		<b>\$13,000</b>	<b>\$0</b>
\$370.00	\$0.00	\$3,750	\$0
\$370.00	\$0.00	\$3,750	\$0
\$4,100.00	\$0.00	\$3,500	\$0
\$700.00	\$0.00	\$2,000	\$0
		<b>\$6,000</b>	<b>\$0</b>
\$2,518.00	\$0.00	\$3,000	\$0
\$2,518.00	\$0.00	\$3,000	\$0
		<b>\$1,000</b>	<b>\$0</b>
\$115.00	\$0.00	\$500	\$0
\$115.00	\$0.00	\$500	\$0

2.92	24.89	3.64	7.35
4.85	16.97	6.04	12.31
5.25	4.90	6.55	14.10
2.73	17.55	3.40	6.91
1.66	7.66	2.06	4.32
0.74	3.82	0.93	2.04
2.39	14.02	2.98	6.10
n/a	n/a	n/a	n/a
1.63	7.46	2.07	4.44
n/a	n/a	n/a	n/a
1.63	3.20	2.07	4.73
3.10	12.92	3.87	7.86
2.84	9.67	3.57	7.34
2.01	4.72	2.52	5.40
2.81	7.29	3.52	7.34
11.57	4.39	14.43	31.31
14.14	3.84	17.64	38.74
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
<b>1.86</b>	<b>5.54</b>	<b>2.33</b>	<b>5.02</b>
2.27	3.36	2.84	6.31
1.11	1.64	1.37	3.26
2.25	13.18	2.82	5.87
1.01	3.54	1.27	2.89
<b>3.87</b>	<b>13.00</b>	<b>4.84</b>	<b>9.99</b>
3.01	10.11	3.75	7.62
4.73	15.88	5.94	12.36
<b>1.14</b>	<b>2.63</b>	<b>1.42</b>	<b>3.19</b>
1.34	3.08	1.66	3.67
0.94	2.17	1.17	2.72





<b>RIM</b>

<b>0.29</b>
<b>0.26</b>
<b>0.25</b>
0.29
0.26
0.24
0.26
0.28
<b>0.26</b>
0.30
0.29
<b>0.28</b>
0.31
0.31
0.28
0.23
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<b>0.25</b>
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<b>0.19</b>
<b>0.24</b>
<b>0.19</b>
0.32
0.31
0.31
0.31
0.31
<b>0.30</b>
<b>0.25</b>
<b>0.39</b>
<b>0.37</b>
<b>0.39</b>
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n/a

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n/a
n/a
<b>0.37</b>
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0.38
0.35
<b>0.39</b>
0.40
0.38
<b>0.36</b>
0.36
0.35































Year 2015

Program	Participation	Measure Life	Remaining Life
<b>Total Portfolio</b>			
<b>Residential Programs</b>			
<b>Residential Lighting &amp; Appliances</b>	<b>14,190</b>		
CFL	12,500	5	-
LED	600	10	-
ENERGY STAR Refrigerator	500	14	-
ENERGY STAR Fixture	400	8	-
Advanced Power Strip	190	10	-
<b>Appliance Recycling</b>	<b>350</b>		
Refrigerator Recycle	250	8	-
Freezer Recycle	100	8	-
<b>High Efficiency HVAC</b>	<b>316</b>		
Heat Pump SEER 15	125	18	-
Early Retirement Heat Pump SEER 15	25	18	8
Heat Pump Water Heater	80	15	-
Electric Storage Water Heater	60	15	-
Geothermal EER ≥21	15	18	-
Early Retirement Geothermal EER ≥21	6	18	6
Heat Pump SEER 15 Replace Electric Furnace	5	18	-
<b>Whole House Efficiency</b>	<b>125</b>		
Air Sealing (Electric Heat)	19	15	-
Air Sealing (Gas Heat)	106	15	-
CFL	500	5	-
Faucet Aerator - Bathroom	125	9	-
Low Flow Showerhead	125	10	-
Hot Water Pipe Insulation	106	15	-
Water Heater Temperature Setback	106	2	-
Water Heater Tank Wrap	125	5	-
<b>Residential Audit</b>	<b>400</b>	<b>5</b>	<b>-</b>
<b>School-Based Education</b>	<b>300</b>	<b>5</b>	<b>-</b>
<b>Weatherization</b>	<b>30</b>		
Air Sealing	30	15	-
CFL	120	5	-
Water Heater Tank Wrap	30	5	-
Hot Water Pipe Insulation	30	15	-
Water Heater Temperature Setback	30	2	-
<b>C&amp;I Programs</b>			
<b>SBDI</b>	<b>125</b>	<b>15</b>	
<b>C&amp;I Custom</b>	<b>25</b>	<b>15</b>	
<b>C&amp;I Prescriptive</b>	<b>148</b>		
<b>Lighting</b>	<b>50</b>		
Delamping (T8 to T8)	8	11	-
Delamp T12 to T8 (2 Lamp Fixtures)	5	11	-
Delamp T12 to T8 (3-4 Lamp Fixtures)	3	11	-
T8 (≤4 ft, 1-2 Lamp)	8	18	-
T8 (≤4 ft, 3-4 Lamp)	8	18	-
T8 (5-8 ft, 1-2 Lamp)	8	18	-
High Performance T8 (1-2 Lamp)	13	15	-
High Performance T8 (3-4 Lamp)	13	15	-
Low-Wattage T8	10	6	-
Fluorescent Fixture Specular Reflector 4-ft	-	15	-
Fluorescent Fixture Specular Reflector two 4-ft	-	15	-
Fluorescent Fixture Specular Reflector 8-ft	-	15	-
Fluorescent Fixture Specular Reflector two 8-ft	-	15	-
High Bay Fluorescent Fixture (replace 400W HID)	3	18	-
High Bay Fluorescent Fixture (replace 1000 W HID)	3	18	-
Pin-Based CFL ≤18W	8	10	-
Pin-Based CFL 19W or 32W	8	10	-
Pin-Based CFL ≥32W	8	10	-
Multi-CFL Fixture	5	18	-
Indirect Fixture	-	18	-
Ceramic Integrated Metal Halide (≤150W)	3	18	-

Total Annual	
kWh	Ret. kWh
<b>531,286</b>	
401,185	
24,937	
54,110	
36,114	
14,940	
<b>453,089</b>	
337,396	
115,694	
<b>410,468</b>	<b>156,395</b>
62,664	-
12,533	86,084
145,215	-
8,005	-
77,820	-
31,128	70,312
73,103	-
<b>111,715</b>	
26,742	
6,341	
16,047	
8,932	
18,684	
15,040	
9,589	
10,339	
<b>39,563</b>	
<b>104,792</b>	
<b>35,313</b>	
22,010	
3,851	
2,481	
4,257	
2,714	
<b>1,168,882.60</b>	
<b>789,200</b>	
<b>654,165</b>	
<b>83,497</b>	
902	
2,170	
2,783	
1,906	
2,928	
2,789	
755	
1,208	
407	
-	
-	
-	
-	
4,218	
8,505	
2,928	
5,112	
8,598	
6,216	
-	
2,841	

Ceramic Integrated Metal Halide (150 < 250W)	3	18	-	3,189
Ceramic Integrated Metal Halide (≥250 W)	3	18	-	1,481
Pulse Start Metal Halide (≤175W)	3	18	-	2,945
Pulse Start Metal Halide (175 < 320 W)	3	18	-	2,057
Pulse Start Metal Halide (320 < 750 W)	3	18	-	1,412
Pulse Start Metal Halide (≥750 W)	3	18	-	6,117
Ceiling Mount Occupancy	-	8	-	-
Wall Mount Occupancy	3	8	-	1,051
Fixture Mount Photo Sensor	-	8	-	-
Fixture Mount Occupancy	3	8	-	1,051
Exit Sign	13	15	-	2,462
LED (≤5W)	5	10	-	1,540
LED (5 ≤ 10W)	5	10	-	1,278
LED (>10W)	5	10	-	2,905
LED Linear Replacement Lamp (≤4ft)	3	16	-	784
LED Linear Replacement Lamp (5-8ft)	3	16	-	959
≤25 W LED Fixtures (Exterior/Parking Garage)	-	15	-	-
25≤60 W LED Fixtures (Exterior/Parking Garage)	-	15	-	-
60≤155 W LED Fixtures (Exterior/Parking Garage)	-	15	-	-
<b>HVAC</b>	<b>62</b>			<b>60,460</b>
Split Package Heat Pump	20	15	-	41,473
Single System Heat Pump	20	15	-	18,987
Geothermal Heat Pump	8	15	-	186,054
Heat Pump Water Heater	14	15	-	25,413
<b>VFD</b>	<b>12</b>			<b>291,166</b>
VFD Fan	6	15	-	109,960
VFD Pump	6	15	-	181,206
<b>Motors</b>	<b>24</b>			<b>7,575</b>
ODC Motor	12	15	-	4,444
TEFC Motor	12	15	-	3,131





0.49
0.23
0.46
0.32
0.22
0.95
-
0.03
-
0.03
0.44
0.24
0.20
0.45
0.12
0.15
-
-
-
<b>12.61</b>
6.30
6.30
17.56
1.20
<b>37.47</b>
23.34
14.13
<b>1.72</b>
1.01
0.71

\$98.00	\$0.00	\$84	\$0
\$42.00	\$0.00	\$135	\$0
\$161.00	\$0.00	\$75	\$0
\$185.00	\$0.00	\$120	\$0
\$283.00	\$0.00	\$165	\$0
\$381.00	\$0.00	\$195	\$0
\$125.00	\$0.00	\$0	\$0
\$55.00	\$0.00	\$36	\$0
\$65.00	\$0.00	\$0	\$0
\$55.00	\$0.00	\$84	\$0
\$25.00	\$0.00	\$78	\$0
\$34.00	\$0.00	\$50	\$0
\$40.00	\$0.00	\$85	\$0
\$65.00	\$0.00	\$125	\$0
\$9.50	\$0.00	\$75	\$0
\$9.50	\$0.00	\$105	\$0
\$125.00	\$0.00	\$0	\$0
\$250.00	\$0.00	\$0	\$0
\$375.00	\$0.00	\$0	\$0
		<b>\$18,400</b>	<b>\$0</b>
\$370.00	\$0.00	\$5,000	\$0
\$370.00	\$0.00	\$5,000	\$0
\$4,100.00	\$0.00	\$5,600	\$0
\$700.00	\$0.00	\$2,800	\$0
		<b>\$9,000</b>	<b>\$0</b>
\$2,518.00	\$0.00	\$4,500	\$0
\$2,518.00	\$0.00	\$4,500	\$0
		<b>\$1,200</b>	<b>\$0</b>
\$115.00	\$0.00	\$600	\$0
\$115.00	\$0.00	\$600	\$0

4.92	17.22	6.11	12.49
5.33	4.98	6.62	14.30
2.77	17.81	3.44	7.01
1.68	7.77	2.09	4.38
0.75	3.88	0.94	2.06
2.43	14.23	3.02	6.19
n/a	n/a	n/a	n/a
1.65	7.57	2.09	4.50
n/a	n/a	n/a	n/a
1.65	3.25	2.09	4.79
3.15	13.11	3.91	7.97
2.89	9.81	3.61	7.45
2.04	4.79	2.55	5.47
2.85	7.40	3.56	7.45
11.74	4.46	14.61	31.74
14.35	3.89	17.85	39.26
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
<b>1.92</b>	<b>6.00</b>	<b>2.40</b>	<b>5.16</b>
2.30	3.41	2.87	6.40
1.12	1.66	1.38	3.29
2.28	13.38	2.86	5.96
1.03	3.59	1.29	2.93
<b>3.93</b>	<b>13.19</b>	<b>4.90</b>	<b>10.13</b>
3.06	10.26	3.79	7.73
4.80	16.12	6.01	12.54
<b>1.16</b>	<b>2.67</b>	<b>1.44</b>	<b>3.24</b>
1.36	3.13	1.68	3.72
0.96	2.20	1.19	2.75



<b>RIM</b>

<b>0.29</b>
<b>0.26</b>
<b>0.25</b>
0.29
0.26
0.24
0.26
0.28
<b>0.26</b>
0.30
0.29
<b>0.28</b>
0.32
0.31
0.28
0.23
0.29
0.29
0.30
<b>0.25</b>
0.34
0.47
0.31
0.31
0.30
0.31
0.31
0.31
<b>0.19</b>
<b>0.24</b>
<b>0.19</b>
0.32
0.31
0.31
0.31
0.31
<b>0.31</b>
<b>0.25</b>
<b>0.39</b>
<b>0.37</b>
<b>0.39</b>
0.37
0.39
0.39
0.40
0.39
0.40
0.35
0.34
0.39
n/a
n/a
n/a
n/a
0.39
0.39
0.39
0.39
0.39
0.40
n/a
0.40

0.39
0.37
0.39
0.38
0.37
0.39
n/a
0.37
n/a
0.34
0.39
0.39
0.37
0.38
0.37
0.37
n/a
n/a
n/a
<b>0.37</b>
0.36
0.34
0.38
0.35
<b>0.39</b>
0.40
0.38
<b>0.36</b>
0.37
0.35































Year **2016**

Program	Participation	Measure Life	Remaining Life
<b>Total Portfolio</b>			
<b>Residential Programs</b>			
<b>Residential Lighting &amp; Appliances</b>	<b>17,000</b>		
CFL	15,000	5	-
LED	700	10	-
ENERGY STAR Refrigerator	600	14	-
ENERGY STAR Fixture	500	8	-
Advanced Power Strip	200	10	-
<b>Appliance Recycling</b>	<b>425</b>		
Refrigerator Recycle	300	8	-
Freezer Recycle	125	8	-
<b>High Efficiency HVAC</b>	<b>370</b>		
Heat Pump SEER 15	150	18	-
Early Retirement Heat Pump SEER 15	30	18	8
Heat Pump Water Heater	90	15	-
Electric Storage Water Heater	70	15	-
Geothermal EER ≥21	18	18	-
Early Retirement Geothermal EER ≥21	7	18	6
Heat Pump SEER 15 Replace Electric Furnace	5	18	-
<b>Whole House Efficiency</b>	<b>125</b>		
Air Sealing (Electric Heat)	19	15	-
Air Sealing (Gas Heat)	106	15	-
CFL	500	5	-
Faucet Aerator - Bathroom	125	9	-
Low Flow Showerhead	125	10	-
Hot Water Pipe Insulation	106	15	-
Water Heater Temperature Setback	106	2	-
Water Heater Tank Wrap	125	5	-
<b>Residential Audit</b>	<b>400</b>	<b>5</b>	<b>-</b>
<b>School-Based Education</b>	<b>300</b>	<b>5</b>	<b>-</b>
<b>Weatherization</b>	<b>35</b>		
Air Sealing	35	15	-
CFL	140	5	-
Water Heater Tank Wrap	35	5	-
Hot Water Pipe Insulation	35	15	-
Water Heater Temperature Setback	35	2	-
<b>C&amp;I Programs</b>			
<b>SBDI</b>	<b>150</b>	<b>15</b>	
<b>C&amp;I Custom</b>	<b>30</b>	<b>15</b>	
<b>C&amp;I Prescriptive</b>	<b>184</b>		
<b>Lighting</b>	<b>60</b>		
Delamping (T8 to T8)	9	11	-
Delamp T12 to T8 (2 Lamp Fixtures)	6	11	-
Delamp T12 to T8 (3-4 Lamp Fixtures)	3	11	-
T8 (≤4 ft, 1-2 Lamp)	9	18	-
T8 (≤4 ft, 3-4 Lamp)	9	18	-
T8 (5-8 ft, 1-2 Lamp)	9	18	-
High Performance T8 (1-2 Lamp)	15	15	-
High Performance T8 (3-4 Lamp)	15	15	-
Low-Wattage T8	12	6	-
Fluorescent Fixture Specular Reflector 4-ft	-	15	-
Fluorescent Fixture Specular Reflector two 4-ft	-	15	-
Fluorescent Fixture Specular Reflector 8-ft	-	15	-
Fluorescent Fixture Specular Reflector two 8-ft	-	15	-
High Bay Fluorescent Fixture (replace 400W HID)	3	18	-
High Bay Fluorescent Fixture (replace 1000 W HID)	3	18	-
Pin-Based CFL ≤18W	9	10	-
Pin-Based CFL 19W or 32W	9	10	-
Pin-Based CFL ≥32W	9	10	-
Multi-CFL Fixture	6	18	-
Indirect Fixture	-	18	-
Ceramic Integrated Metal Halide (≤150W)	3	18	-

Total Annual	
kWh	Ret. kWh
<b>636,316</b>	
481,422	
29,093	
64,932	
45,142	
15,726	
<b>549,492</b>	
404,875	
144,617	
<b>465,745</b>	<b>185,331</b>
75,196	-
15,039	103,300
163,367	-
9,339	-
93,384	-
36,316	82,030
73,103	-
<b>111,715</b>	
26,742	
6,341	
16,047	
8,932	
18,684	
15,040	
9,589	
10,339	
<b>39,563</b>	
<b>104,792</b>	
<b>41,198</b>	
25,678	
4,493	
2,895	
4,966	
3,166	
<b>1,402,659.13</b>	
<b>947,040</b>	
<b>831,731</b>	
<b>90,226</b>	
1,014	
2,604	
2,783	
2,144	
3,294	
3,137	
871	
1,394	
488	
-	
-	
-	
-	
4,218	
8,505	
3,294	
5,751	
9,673	
7,459	
-	
2,841	

Ceramic Integrated Metal Halide (150 < 250W)	3	18	-	3,189
Ceramic Integrated Metal Halide (≥250 W)	3	18	-	1,481
Pulse Start Metal Halide (≤175W)	3	18	-	2,945
Pulse Start Metal Halide (175 < 320 W)	3	18	-	2,057
Pulse Start Metal Halide (320 < 750 W)	3	18	-	1,412
Pulse Start Metal Halide (≥750 W)	3	18	-	6,117
Ceiling Mount Occupancy	-	8	-	-
Wall Mount Occupancy	3	8	-	1,051
Fixture Mount Photo Sensor	-	8	-	-
Fixture Mount Occupancy	3	8	-	1,051
Exit Sign	15	15	-	2,841
LED (≤5W)	6	10	-	1,847
LED (5 ≤ 10W)	6	10	-	1,534
LED (>10W)	6	10	-	3,486
LED Linear Replacement Lamp (≤4ft)	3	16	-	784
LED Linear Replacement Lamp (5-8ft)	3	16	-	959
≤25 W LED Fixtures (Exterior/Parking Garage)	-	15	-	-
25≤60 W LED Fixtures (Exterior/Parking Garage)	-	15	-	-
60≤155 W LED Fixtures (Exterior/Parking Garage)	-	15	-	-
<b>HVAC</b>	<b>80</b>			<b>75,575</b>
Split Package Heat Pump	25	15	-	51,841
Single System Heat Pump	25	15	-	23,734
Geothermal Heat Pump	10	15	-	232,568
Heat Pump Water Heater	20	15	-	36,304
<b>VFD</b>	<b>16</b>			<b>388,221</b>
VFD Fan	8	15	-	146,613
VFD Pump	8	15	-	241,609
<b>Motors</b>	<b>28</b>			<b>8,838</b>
ODC Motor	14	15	-	5,185
TEFC Motor	14	15	-	3,653





Savings	
kW	Ret. kW

Incremental Cost per Unit	Future Avoided Cost	Total Costs	
		Incentives	Admin

B/C Ratio -- Cost Tests			
TRC	Utility	Societal	Participant

<b>56.10</b>	
44	
3	
7	
0	
2	
<b>62.73</b>	
46	
17	
<b>140.06</b>	<b>72.09</b>
79	-
16	60.12
8	-
1	-
15	-
6	11.97
16	-
<b>28.98</b>	
11	
10	
1	
1	
1	
2	
1	
1	
<b>4.52</b>	
<b>9.17</b>	
<b>6.67</b>	
5.01	
0.41	
0.33	
0.57	
0.36	
<b>217.62</b>	
<b>141.88</b>	
<b>105.16</b>	
<b>13.77</b>	
0.16	
0.40	
0.43	
0.33	
0.51	
0.49	
0.13	
0.22	
0.08	
-	
-	
-	
-	
0.65	
1.32	
0.51	
0.89	
1.50	
1.15	
-	
0.44	

		<b>\$51,250</b>	<b>\$42,173</b>
\$1.50	\$0.00	\$15,000	
\$20.00	\$0.00	\$5,250	
\$40.00	\$0.00	\$24,000	
\$17.00	\$0.00	\$5,000	
\$20.00	\$0.00	\$2,000	
		<b>\$21,250</b>	<b>\$71,347</b>
\$93.00	\$0.00	\$15,000	
\$93.00	\$0.00	\$6,250	
		<b>\$98,550</b>	<b>\$35,453</b>
\$293.81	\$0.00	\$33,750	
\$2,480.15	\$2,186.34	\$18,000	
\$700.00	\$0.00	\$18,000	
\$50.00	\$0.00	\$4,200	
\$1,230.00	\$0.00	\$10,800	
\$2,913.00	\$2,376.00	\$6,300	
\$4,554.00	\$0.00	\$7,500	
		<b>\$0</b>	<b>\$35,011</b>
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0</b>	<b>\$13,860</b>
<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0</b>	<b>\$18,191</b>
		<b>\$0</b>	<b>\$29,630</b>
\$0.00	#N/A	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
\$0.00	\$0.00	\$0	
<b>\$1,420.00</b>		<b>\$127,800</b>	<b>\$351,258</b>
<b>\$3,630.00</b>		<b>\$21,780</b>	<b>\$10,694</b>
		<b>\$40,512</b>	<b>\$27,548</b>
		<b>\$3,612</b>	<b>\$0</b>
\$12.00	\$0.00	\$72	\$0
\$55.00	\$0.00	\$96	\$0
\$122.00	\$0.00	\$108	\$0
\$43.00	\$0.00	\$45	\$0
\$55.00	\$0.00	\$81	\$0
\$93.00	\$0.00	\$72	\$0
\$15.00	\$0.00	\$135	\$0
\$18.00	\$0.00	\$270	\$0
\$2.00	\$0.00	\$6	\$0
\$30.00	\$0.00	\$0	\$0
\$30.00	\$0.00	\$0	\$0
\$50.00	\$0.00	\$0	\$0
\$50.00	\$0.00	\$0	\$0
\$102.00	\$0.00	\$225	\$0
\$169.00	\$0.00	\$375	\$0
\$20.00	\$0.00	\$72	\$0
\$40.00	\$0.00	\$162	\$0
\$50.00	\$0.00	\$216	\$0
\$98.00	\$0.00	\$150	\$0
\$60.00	\$0.00	\$0	\$0
\$145.00	\$0.00	\$51	\$0

<b>1.39</b>	<b>1.95</b>	<b>1.72</b>	<b>7.83</b>
<b>1.10</b>	<b>1.50</b>	<b>1.37</b>	<b>6.65</b>
<b>1.22</b>	<b>1.51</b>	<b>1.54</b>	<b>7.00</b>
3.97	5.95	5.00	13.60
0.66	1.75	0.82	2.52
1.07	1.07	1.33	4.46
1.38	2.35	1.75	5.25
1.26	2.53	1.58	4.55
<b>1.35</b>	<b>1.61</b>	<b>1.69</b>	<b>12.74</b>
3.94	7.33	4.94	13.27
3.38	6.28	4.24	11.45
<b>1.06</b>	<b>1.91</b>	<b>1.30</b>	<b>4.19</b>
1.03	1.35	1.22	3.27
0.89	2.02	1.08	2.86
1.04	3.65	1.30	3.74
1.10	0.92	1.37	4.75
1.94	3.98	2.41	6.68
2.57	4.24	3.20	8.83
1.52	4.60	1.87	5.04
<b>1.05</b>	<b>1.05</b>	<b>1.29</b>	<b>n/a</b>
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
<b>0.53</b>	<b>0.53</b>	<b>0.67</b>	<b>n/a</b>
<b>1.07</b>	<b>1.07</b>	<b>1.35</b>	<b>n/a</b>
<b>0.49</b>	<b>0.49</b>	<b>0.61</b>	<b>n/a</b>
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
<b>1.58</b>	<b>2.28</b>	<b>1.96</b>	<b>8.66</b>
<b>1.04</b>	<b>1.22</b>	<b>1.29</b>	<b>9.37</b>
<b>3.30</b>	<b>12.16</b>	<b>4.10</b>	<b>9.21</b>
<b>2.21</b>	<b>5.04</b>	<b>2.74</b>	<b>7.03</b>
<b>3.35</b>	<b>10.11</b>	<b>4.15</b>	<b>8.63</b>
3.24	4.86	4.04	8.70
2.72	9.36	3.39	7.04
2.62	8.89	3.27	6.80
2.55	21.93	3.16	6.44
3.06	18.72	3.79	7.76
1.73	20.06	2.14	4.37
1.62	2.70	2.01	4.61
2.16	2.16	2.68	6.35
4.48	17.91	5.62	11.36
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
6.35	8.63	7.86	16.47
7.72	10.44	9.57	19.89
5.92	14.80	7.39	15.08
5.17	11.48	6.45	13.26
6.95	14.48	8.68	17.72
5.84	22.90	7.23	14.74
n/a	n/a	n/a	n/a
3.01	25.65	3.72	7.57

0.49
0.23
0.46
0.32
0.22
0.95
-
0.03
-
0.03
0.51
0.29
0.24
0.54
0.12
0.15
-
-
-
<b>15.76</b>
7.88
7.88
21.95
1.72
<b>49.96</b>
31.12
18.84
<b>2.01</b>
1.18
0.83

\$98.00	\$0.00	\$84	\$0
\$42.00	\$0.00	\$135	\$0
\$161.00	\$0.00	\$75	\$0
\$185.00	\$0.00	\$120	\$0
\$283.00	\$0.00	\$165	\$0
\$381.00	\$0.00	\$195	\$0
\$125.00	\$0.00	\$0	\$0
\$55.00	\$0.00	\$36	\$0
\$65.00	\$0.00	\$0	\$0
\$55.00	\$0.00	\$84	\$0
\$25.00	\$0.00	\$90	\$0
\$34.00	\$0.00	\$60	\$0
\$40.00	\$0.00	\$102	\$0
\$65.00	\$0.00	\$150	\$0
\$9.50	\$0.00	\$75	\$0
\$9.50	\$0.00	\$105	\$0
\$125.00	\$0.00	\$0	\$0
\$250.00	\$0.00	\$0	\$0
\$375.00	\$0.00	\$0	\$0
		<b>\$23,500</b>	<b>\$0</b>
\$370.00	\$0.00	\$6,250	\$0
\$370.00	\$0.00	\$6,250	\$0
\$4,100.00	\$0.00	\$7,000	\$0
\$700.00	\$0.00	\$4,000	\$0
		<b>\$12,000</b>	<b>\$0</b>
\$2,518.00	\$0.00	\$6,000	\$0
\$2,518.00	\$0.00	\$6,000	\$0
		<b>\$1,400</b>	<b>\$0</b>
\$115.00	\$0.00	\$700	\$0
\$115.00	\$0.00	\$700	\$0

4.99	17.48	6.19	12.67
5.41	5.05	6.70	14.50
2.81	18.08	3.48	7.12
1.71	7.89	2.11	4.45
0.77	3.94	0.95	2.09
2.46	14.44	3.05	6.28
n/a	n/a	n/a	n/a
1.68	7.69	2.12	4.57
n/a	n/a	n/a	n/a
1.68	3.29	2.12	4.86
3.19	13.31	3.96	8.09
2.93	9.96	3.65	7.56
2.07	4.86	2.58	5.55
2.89	7.52	3.61	7.55
11.92	4.53	14.78	32.18
14.56	3.95	18.07	39.80
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
<b>1.93</b>	<b>6.04</b>	<b>2.40</b>	<b>5.17</b>
2.34	3.46	2.90	6.48
1.14	1.69	1.40	3.33
2.32	13.58	2.89	6.05
1.04	3.65	1.30	2.97
<b>3.99</b>	<b>13.39</b>	<b>4.96</b>	<b>10.28</b>
3.10	10.42	3.84	7.84
4.87	16.36	6.08	12.72
<b>1.18</b>	<b>2.71</b>	<b>1.45</b>	<b>3.28</b>
1.38	3.17	1.71	3.77
0.97	2.24	1.20	2.79



<b>RIM</b>

<b>0.29</b>
<b>0.26</b>
<b>0.25</b>
0.29
0.26
0.24
0.26
0.28
<b>0.26</b>
0.30
0.29
<b>0.28</b>
0.32
0.31
0.28
0.23
0.29
0.29
0.30
<b>0.25</b>
0.34
0.47
0.31
0.31
0.30
0.31
0.31
0.31
<b>0.20</b>
<b>0.24</b>
<b>0.19</b>
0.32
0.31
0.31
0.31
0.31
<b>0.31</b>
<b>0.25</b>
<b>0.39</b>
<b>0.37</b>
<b>0.39</b>
0.37
0.39
0.39
0.40
0.39
0.40
0.35
0.34
0.39
n/a
n/a
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0.39
0.37
0.39
0.38
0.37
0.39
n/a
0.37
n/a
0.35
0.39
0.39
0.37
0.38
0.37
0.37
n/a
n/a
n/a
<b>0.37</b>
0.36
0.34
0.38
0.35
<b>0.39</b>
0.40
0.38
<b>0.36</b>
0.37
0.35































**Black Hills Power - South Dakota**

	<b>Year 1 (Sept)</b>	<b>Year 2 (Sept)</b>
	<b>Participants</b>	<b>Participants</b>
<b>TOTAL RESIDENTIAL</b>	<b>659</b>	<b>583</b>
Water Heating	19	51
Refrigerator Recycling	154	80
Air Source Heat Pump	20	32
Geothermal Heat Pumps	2	3
ASHP Retro-Commissioning Rebate	88	107
Residential Audits	68	33
School Based Education	289	253
Weatherization	19	24
<b>TOTAL COMMERCIAL / INDUSTRIAL</b>	<b>32</b>	<b>49</b>
C&I Lighting	19	27
C&I Motors		0
C&I VFDs	2	0
C&I Air Source Heat Pumps	2	1
C&I Ground Source Heat Pumps		1
C&I Water Heaters		2
C&I Refrigerator Recycling	5	0
C&I Custom Rebate	4	18
<b>Cross Marketing &amp; Training</b>	<b>-</b>	<b>-</b>
<b>General Administration</b>	<b>-</b>	<b>-</b>
<b>Total Program</b>	<b>691</b>	<b>632</b>

142  
23%  
2%  
75%

Sector	Measure	Measure Life	Remaining Life
Residential	CFL	5	
Residential	LED	10	
Residential	ENERGY STAR Fixture	8	
Residential	ENERGY STAR Dehumidifier	12	
Residential	ENERGY STAR Clothes Washer	14	
Residential	ENERGY STAR Refrigerator	14	
Residential	ENERGY STAR Freezer	11	
Residential	ES Dishwasher (Electric DHW)	10	
Residential	ES Dishwasher (Gas DHW)	10	
Residential	ENERGY STAR Room Air Conditioner	9	
Residential	Advanced Power Strip	10	
Residential	Refrigerator Recycle	8	
Residential	Freezer Recycle	8	
Residential	Air Sealing (Electric Heat)	15	
Residential	Air Sealing (Gas Heat)	15	
Residential	Attic Insulation	20	
Residential	Wall Insulation	20	
Residential	Faucet Aerator - Kitchen	9	
Residential	Faucet Aerator - Bathroom	9	
Residential	Low Flow Showerhead	10	
Residential	Water Heater Tank Wrap	5	
Residential	Hot Water Pipe Insulation	15	
Residential	CAC/ASHP Tune-Up	2	
Residential	CAC SEER 14	18	
Residential	CAC SEER 15	18	
Residential	CAC SEER 16	18	
Residential	Early Retirement CAC SEER 14	18	8
Residential	Early Retirement CAC SEER 15	18	8
Residential	Early Retirement CAC SEER 16	18	8
Residential	Programmable Tstat CAC	10	
Residential	Heat Pump SEER 15	18	
Residential	Heat Pump SEER 16	18	
Residential	Early Retirement Heat Pump SEER 15	18	8
Residential	Early Retirement Heat Pump SEER 16	18	8
Residential	Programmable Tstat	10	
Residential	Heat Pump SEER 15 Replace Electric Furnace	18	
Residential	ECM Blower Motor	20	
Residential	Ductless Mini-Split SEER 21	18	
Residential	Geothermal EER ≥21	18	
Residential	Early Retirement Geothermal EER ≥21	18	6
Residential	Heat Pump Water Heater	15	
Residential	Electric Storage Water Heater	15	
Residential	Water Heater Temperature Setback	2	
Residential	School-Based Education	5	
C&I	Delamping (T8 to T8)	11	

Gross Savings per Unit				
kWh	Ret. kWh	Coincident Peak kW	Ret. Peak kW	Incremental Cost
31		0.003		\$2
40		0.004		\$20
86		0.000		\$17
161		0.037		\$45
273		0.035		\$450
103		0.012		\$40
30		0.003		\$40
12		0.006		\$50
5		0.003		\$50
38		0.029		\$200
75		0.011		\$20
1,289		0.147		\$93
1,105		0.126		\$93
1,344		0.572		\$272
57		0.088		\$272
515		0.219		\$575
4,842		2.060		\$1,012
161		0.018		\$8
68		0.008		\$8
143		0.010		\$12
79		0.009		\$10
136		0.015		\$15
107		0.070		\$175
170		0.250		\$417
219		0.405		\$556
308		0.461		\$834
170	663	0.250	0.835	\$2,065
219	712	0.405	0.991	\$2,204
308	801	0.461	1.047	\$2,482
128		0.233		\$30
479		0.501		\$294
568		0.501		\$588
479	3,289	0.501	1.914	\$2,480
568	3,378	0.501	1.914	\$2,774
829		0.237		\$30
13,964		3.149		\$4,554
720		0.066		\$250
1,216		0.558		\$1,056
4,955		0.775		\$1,230
4,955	11,193	0.775	1.633	\$2,913
1,734		0.082		\$700
127		0.015		\$50
86		0.010		\$5
334		0.029		\$0
108		0.017		\$12

C&I	Delamp T12 to T8 (2 Lamp Fixtures)	11	
C&I	Delamp T12 to T8 (3-4 Lamp Fixtures)	11	
C&I	T8 ( $\leq 4$ ft, 1-2 Lamp)	18	
C&I	T8 ( $\leq 4$ ft, 3-4 Lamp)	18	
C&I	T8 (5-8 ft, 1-2 Lamp)	18	
C&I	High Performance T8 (1-2 Lamp)	15	
C&I	High Performance T8 (3-4 Lamp)	15	
C&I	Low-Wattage T8	6	
C&I	Fluorescent Fixture Specular Reflector 4-ft	15	
C&I	Fluorescent Fixture Specular Reflector two 4-ft	15	
C&I	Fluorescent Fixture Specular Reflector 8-ft	15	
C&I	Fluorescent Fixture Specular Reflector two 8-ft	15	
C&I	High Bay Fluorescent Fixture (replace 400W HID)	18	
C&I	High Bay Fluorescent Fixture (replace 1000 W HID)	18	
C&I	Pin-Based CFL $\leq 18$ W	10	
C&I	Pin-Based CFL 19W or 32W	10	
C&I	Pin-Based CFL $\geq 32$ W	10	
C&I	Multi-CFL Fixture	18	
C&I	Indirect Fixture	18	
C&I	Ceramic Integrated Metal Halide ( $\leq 150$ W)	18	
C&I	Ceramic Integrated Metal Halide (150 < 250W)	18	
C&I	Ceramic Integrated Metal Halide ( $\geq 250$ W)	18	

414		0.064	\$55
886		0.137	\$122
227		0.035	\$43
350		0.054	\$55
333		0.051	\$93
55		0.009	\$15
89		0.014	\$18
39		0.006	\$2
111		0.017	\$30
144		0.022	\$30
128		0.020	\$50
272		0.042	\$50
1,343		0.208	\$102
2,708		0.419	\$169
350		0.054	\$20
610		0.094	\$40
1,027		0.159	\$50
1,187		0.184	\$98
150		88.330	\$60
904		0.140	\$145
1,015		0.157	\$98
472		0.073	\$42

C&I	Pulse Start Metal Halide (≤175W)	18	
C&I	Pulse Start Metal Halide (175 < 320 W)	18	
C&I	Pulse Start Metal Halide (320 < 750 W)	18	
C&I	Pulse Start Metal Halide (≥750 W)	18	
C&I	Ceiling Mount Occupancy	8	
C&I	Wall Mount Occupancy	8	
C&I	Fixture Mount Occupancy	8	
C&I	Fixture Mount Photo Sensor	8	
C&I	Exit Sign	15	
C&I	LED (≤5W)	10	
C&I	LED (5 ≤ 10W)	10	
C&I	LED (>10W)	10	
C&I	LED Linear Replacement Lamp (≤4ft)	16	
C&I	LED Linear Replacement Lamp (5-8ft)	16	
C&I	≤25 W LED Fixtures (Exterior/Parking Garage)	15	
C&I	25≤60 W LED Fixtures (Exterior/Parking Garage)	15	
C&I	60≤155 W LED Fixtures (Exterior/Parking Garage)	15	
C&I	CAC 65 - 135 kBtuh	15	
C&I	CAC 135 - 240 kBtuh	15	
C&I	CAC 240 - 760 kBtuh	15	
C&I	CAC >760 kBtuh	15	
C&I	Split Package Heat Pump	15	
C&I	Single System Heat Pump	15	
C&I	Heat Pump 65 < 135 kBtuh	15	
C&I	Heat Pump 135 < 240 kBtuh	15	
C&I	Heat Pump >240 kBtuh	15	
C&I	Geothermal Heat Pump	15	
C&I	Electric Storage Water Heater (>50 gallons)	5	
C&I	Heat Pump Water Heater	15	
C&I	VFD Fan	15	
C&I	VFD Pump	15	
C&I	ODC Motor	15	
C&I	TEFC Motor	15	
C&I	Chiller	20	

	938	0.145	\$161
	655	0.101	\$185
	449	0.069	\$283
	1,948	0.301	\$381
	334	0.011	\$125
	334	0.011	\$55
	334	0.011	\$55
	391	0.021	\$65
	181	0.033	\$25
	294	0.045	\$34
	244	0.038	\$40
	555	0.086	\$65
	250	0.039	\$10
	305	0.047	\$10
	374	-	\$125
	462	-	\$250
	866	-	\$375
	190	0.293	\$700
	387	0.596	\$1,000
	678	1.043	\$2,000
	939	1.445	\$6,333
	1,981	0.301	\$370
	907	0.301	\$370
	1,863	0.063	\$700
	185	0.284	\$1,000
	890	1.370	\$2,000
	22,213	2.096	\$4,100
	1,781	0.200	\$1,050
	1,734	0.082	\$700
	17,504	3.715	\$2,518
	28,845	2.249	\$2,518
	354	0.080	\$115
	249	0.057	\$115
	2,680	1.841	\$6,350

	Unit Count	kWh	Coincident Peak kW	Incremental Cost	Full Cost
Custom		30,151	4.52		\$3,630
Multi-CFL Fixture	20	1,187	0.18	\$98	\$98
Split Package Heat Pump	2	1,981	0.30	\$370	\$370
Heat Pump Water Heater	1	1,734	0.08	\$700	\$700
ODC Motor	2	354	0.08	\$115	\$115
SBDI		8,931	1.39		\$1,420
Delamping (T12 to T8)	5	108	0.02	\$12	\$12
T8 (≤4 ft, 3-4 Lamp)	20	350	0.05	\$55	\$55
LED (5 ≤ 10W)	5	244	0.04	\$40	\$45
Exit Sign	1	181	0.03	\$25	\$35

Residential Audits

		94	0.01		
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Avg kWh / Residential Customer	9,447
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see 'BHP-SD Customer Stats\_EES as percentage of Revenue' from Don Martinex Feb 3, 2014

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	\$55
	\$122
	\$4
	\$282
	\$524
	\$38
	\$76
	\$103
	\$204
	\$290
	\$295

2.64	2.68	2.72
2.55	2.58	2.62
2.48	2.51	2.55
2.97	3.02	3.06
1.68	1.70	1.73
1.57	1.59	1.62
2.09	2.13	2.16
4.35	4.41	4.48
1.57	1.59	1.62
2.04	2.07	2.10
1.08	1.10	1.12
2.31	2.34	2.38
6.16	6.25	6.35
7.50	7.61	7.72
5.74	5.83	5.92
5.02	5.09	5.17
6.75	6.85	6.95
5.67	5.75	5.84
#####	#####	#####
2.92	2.96	3.01
4.85	4.92	4.99
5.25	5.33	5.41

Illinois	Illinois	Illinois	Illinois
Illinois	Illinois	Illinois	Illinois
PSC Colorado, Vision DSM	Illinois	PSC Colorado	PSC Colorado
PSC Colorado, Vision DSM	Illinois	PSC Colorado	PSC Colorado
PSC Colorado, Vision DSM	Illinois	PSC Colorado	PSC Colorado
Illinois	Illinois	Illinois	Illinois
Illinois	Illinois	Illinois	Illinois
PSC Colorado, Vision DSM	Illinois	PSC Colorado	PSC Colorado
PSC Colorado, Vision DSM	Illinois	PSC Colorado	PSC Colorado
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PSC Colorado, Vision DSM	Illinois	PSC Colorado	PSC Colorado
PSC Colorado, Vision DSM	Illinois	PSC Colorado	PSC Colorado



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Sector	Program	Measure Life	Remaining Life	Annual Savings			
				kWh	Ret. kWh	kW	Ret. kW
Residential	CFL	5	-	32	-	0.00	-
Residential	LED	10	-	42	-	0.00	-
Residential	ENERGY STAR Fixture	8	-	90	-	0.00	-
Residential	ENERGY STAR Dehumidifier	12	-	169	-	0.04	-
Residential	ENERGY STAR Clothes Washer	14	-	286	-	0.04	-
Residential	ENERGY STAR Refrigerator	14	-	108	-	0.01	-
Residential	ENERGY STAR Freezer	11	-	32	-	0.00	-
Residential	ES Dishwasher (Electric DHW)	10	-	13	-	0.01	-
Residential	ES Dishwasher (Gas DHW)	10	-	6	-	0.00	-
Residential	ENERGY STAR Room Air Conditioner	9	-	40	-	0.03	-
Residential	Advanced Power Strip	10	-	79	-	0.01	-
Residential	Refrigerator Recycle	8	-	1,350	-	0.15	-
Residential	Freezer Recycle	8	-	1,157	-	0.13	-
Residential	Air Sealing (Electric Heat)	15	-	1,407	-	0.60	-
Residential	Air Sealing (Gas Heat)	15	-	60	-	0.09	-
Residential	Attic Insulation	20	-	539	-	0.23	-
Residential	Wall Insulation	20	-	5,070	-	2.16	-
Residential	Faucet Aerator - Kitchen	9	-	169	-	0.02	-
Residential	Faucet Aerator - Bathroom	9	-	71	-	0.01	-
Residential	Low Flow Showerhead	10	-	149	-	0.01	-
Residential	Water Heater Tank Wrap	5	-	83	-	0.01	-
Residential	Hot Water Pipe Insulation	15	-	142	-	0.02	-
Residential	CAC/ASHP Tune-Up	2	-	112	-	0.07	-
Residential	CAC SEER 14	18	-	178	-	0.26	-
Residential	CAC SEER 15	18	-	229	-	0.42	-
Residential	CAC SEER 16	18	-	322	-	0.48	-
Residential	Early Retirement CAC SEER 14	18	8	178	694	0.26	0.87
Residential	Early Retirement CAC SEER 15	18	8	229	745	0.42	1.04
Residential	Early Retirement CAC SEER 16	18	8	322	838	0.48	1.10
Residential	Programmable Tstat CAC	10	-	134	-	0.24	-
Residential	Heat Pump SEER 15	18	-	501	-	0.52	-
Residential	Heat Pump SEER 16	18	-	594	-	0.52	-
Residential	Early Retirement Heat Pump SEER 15	18	8	501	3,443	0.52	2.00
Residential	Early Retirement Heat Pump SEER 16	18	8	594	3,536	0.52	2.00
Residential	Programmable Tstat	10	-	868	-	0.25	-
Residential	Heat Pump SEER 15 Replace Electric Furnace	18	-	14,621	-	3.30	-
Residential	ECM Blower Motor	20	-	754	-	0.07	-
Residential	Ductless Mini-Split SEER 21	18	-	1,273	-	0.58	-
Residential	Geothermal EER ≥21	18	-	5,188	-	0.81	-
Residential	Early Retirement Geothermal EER ≥21	18	6	5,188	11,719	0.81	1.71
Residential	Heat Pump Water Heater	15	-	1,815	-	0.09	-
Residential	Electric Storage Water Heater	15	-	133	-	0.02	-
Residential	Water Heater Temperature Setback	2	-	90	-	0.01	-
Residential	School-Based Education	5	-	349	-	0.03	-
C&I	Delamping (T8 to T8)	11	-	113	-	0.02	-
C&I	Delamp T12 to T8 (2 Lamp Fixtures)	11	-	434	-	0.07	-
C&I	Delamp T12 to T8 (3-4 Lamp Fixtures)	11	-	928	-	0.14	-
C&I	T8 (≤4 ft, 1-2 Lamp)	18	-	238	-	0.04	-
C&I	T8 (≤4 ft, 3-4 Lamp)	18	-	366	-	0.06	-
C&I	T8 (5-8 ft, 1-2 Lamp)	18	-	349	-	0.05	-
C&I	High Performance T8 (1-2 Lamp)	15	-	58	-	0.01	-
C&I	High Performance T8 (3-4 Lamp)	15	-	93	-	0.01	-
C&I	Low-Wattage T8	6	-	41	-	0.01	-
C&I	Fluorescent Fixture Specular Reflector 4-ft	15	-	116	-	0.02	-
C&I	Fluorescent Fixture Specular Reflector two 4-ft	15	-	151	-	0.02	-
C&I	Fluorescent Fixture Specular Reflector 8-ft	15	-	134	-	0.02	-
C&I	Fluorescent Fixture Specular Reflector two 8-ft	15	-	285	-	0.04	-
C&I	High Bay Fluorescent Fixture (replace 400W HID)	18	-	1,406	-	0.22	-
C&I	High Bay Fluorescent Fixture (replace 1000 W HID)	18	-	2,835	-	0.44	-
C&I	Pin-Based CFL ≤18W	10	-	366	-	0.06	-
C&I	Pin-Based CFL 19W or 32W	10	-	639	-	0.10	-
C&I	Pin-Based CFL ≥32W	10	-	1,075	-	0.17	-
C&I	Multi-CFL Fixture	18	-	1,243	-	0.19	-



C&I	Indirect Fixture	18	-	157	-	92.48	-
C&I	Ceramic Integrated Metal Halide ( $\leq 150W$ )	18	-	947	-	0.15	-
C&I	Ceramic Integrated Metal Halide ( $150 < 250W$ )	18	-	1,063	-	0.16	-
C&I	Ceramic Integrated Metal Halide ( $\geq 250 W$ )	18	-	494	-	0.08	-
C&I	Pulse Start Metal Halide ( $\leq 175W$ )	18	-	982	-	0.15	-
C&I	Pulse Start Metal Halide ( $175 < 320 W$ )	18	-	686	-	0.11	-
C&I	Pulse Start Metal Halide ( $320 < 750 W$ )	18	-	471	-	0.07	-
C&I	Pulse Start Metal Halide ( $\geq 750 W$ )	18	-	2,039	-	0.32	-
C&I	Ceiling Mount Occupancy	8	-	350	-	0.01	-
C&I	Wall Mount Occupancy	8	-	350	-	0.01	-
C&I	Fixture Mount Occupancy	8	-	350	-	0.01	-
C&I	Fixture Mount Photo Sensor	8	-	409	-	0.02	-
C&I	Exit Sign	15	-	189	-	0.03	-
C&I	LED ( $\leq 5W$ )	10	-	308	-	0.05	-
C&I	LED ( $5 \leq 10W$ )	10	-	256	-	0.04	-
C&I	LED ( $>10W$ )	10	-	581	-	0.09	-
C&I	LED Linear Replacement Lamp ( $\leq 4ft$ )	16	-	261	-	0.04	-
C&I	LED Linear Replacement Lamp (5-8ft)	16	-	320	-	0.05	-
C&I	$\leq 25 W$ LED Fixtures (Exterior/Parking Garage)	15	-	392	-	-	-
C&I	$25 \leq 60 W$ LED Fixtures (Exterior/Parking Garage)	15	-	483	-	-	-
C&I	$60 \leq 155 W$ LED Fixtures (Exterior/Parking Garage)	15	-	907	-	-	-
C&I	CAC 65 - 135 kBtuh	15	-	199	-	0.31	-
C&I	CAC 135 - 240 kBtuh	15	-	405	-	0.62	-
C&I	CAC 240 - 760 kBtuh	15	-	710	-	1.09	-
C&I	CAC $>760$ kBtuh	15	-	983	-	1.51	-
C&I	Split Package Heat Pump	15	-	2,074	-	0.32	-
C&I	Single System Heat Pump	15	-	949	-	0.32	-
C&I	Heat Pump $65 < 135$ kBtuh	15	-	1,951	-	0.07	-
C&I	Heat Pump $135 < 240$ kBtuh	15	-	193	-	0.30	-
C&I	Heat Pump $>240$ kBtuh	15	-	932	-	1.43	-
C&I	Geothermal Heat Pump	15	-	23,257	-	2.19	-
C&I	Electric Storage Water Heater ( $>50$ gallons)	5	-	1,865	-	0.21	-
C&I	Heat Pump Water Heater	15	-	1,815	-	0.09	-
C&I	VFD Fan	15	-	18,327	-	3.89	-
C&I	VFD Pump	15	-	30,201	-	2.35	-
C&I	ODC Motor	15	-	370	-	0.08	-
C&I	TEFC Motor	15	-	261	-	0.06	-
C&I	Chiller	20	-	2,806	-	1.93	-

Incremental Cost per Unit	Future Avoided Cost
\$2	\$0
\$20	\$0
\$17	\$0
\$45	\$0
\$450	\$0
\$40	\$0
\$40	\$0
\$50	\$0
\$50	\$0
\$200	\$0
\$20	\$0
\$93	\$0
\$93	\$0
\$272	\$0
\$272	\$0
\$575	\$0
\$1,012	\$0
\$8	\$0
\$8	\$0
\$12	\$0
\$10	\$0
\$15	\$0
\$175	\$0
\$417	\$0
\$556	\$0
\$834	\$0
\$2,065	\$1,649
\$2,204	\$1,649
\$2,482	\$1,649
\$30	\$0
\$294	\$0
\$588	\$0
\$2,480	\$2,186
\$2,774	\$2,186
\$30	\$0
\$4,554	\$0
\$250	\$0
\$1,056	\$0
\$1,230	\$0
\$2,913	\$2,376
\$700	\$0
\$50	\$0
\$5	\$0
\$0	\$0
\$12	\$0
\$55	\$0
\$122	\$0
\$43	\$0
\$55	\$0
\$93	\$0
\$15	\$0
\$18	\$0
\$2	\$0
\$30	\$0
\$30	\$0
\$50	\$0
\$50	\$0
\$102	\$0
\$169	\$0
\$20	\$0
\$40	\$0
\$50	\$0
\$98	\$0

TRC
3.85
0.64
1.34
1.36
0.25
1.04
0.26
0.09
0.04
0.07
1.23
3.82
3.28
2.30
0.13
0.48
2.58
6.05
2.56
3.80
1.50
3.78
0.06
0.28
0.30
0.26
0.25
0.26
0.24
2.23
1.00
0.57
0.86
0.73
9.51
1.47
1.39
0.60
1.89
2.50
1.01
1.07
1.45
n/a
3.15
2.64
2.55
2.48
2.97
1.68
1.57
2.09
4.35
1.57
2.04
1.08
2.31
6.16
7.50
5.74
5.02
6.75
5.67

NPV (Current Avoided Costs)		
Avoided Energy Costs	Avoided Demand Costs	Incremental Cost
\$6	\$0	\$2
\$12	\$0	\$20
\$23	\$0	\$17
\$56	\$5	\$45
\$105	\$5	\$450
\$40	\$2	\$40
\$10	\$0	\$40
\$4	\$1	\$50
\$2	\$0	\$50
\$11	\$3	\$200
\$23	\$1	\$20
\$341	\$15	\$93
\$292	\$13	\$93
\$539	\$86	\$272
\$23	\$13	\$272
\$240	\$38	\$575
\$2,252	\$360	\$1,012
\$46	\$2	\$8
\$20	\$1	\$8
\$44	\$1	\$12
\$14	\$1	\$10
\$54	\$2	\$15
\$9	\$2	\$175
\$75	\$42	\$417
\$97	\$67	\$556
\$136	\$77	\$834
\$205	\$100	\$1,228
\$227	\$126	\$1,367
\$266	\$135	\$1,645
\$40	\$27	\$30
\$212	\$83	\$294
\$251	\$83	\$588
\$955	\$224	\$1,370
\$994	\$224	\$1,664
\$258	\$28	\$30
\$6,175	\$524	\$4,554
\$335	\$11	\$250
\$538	\$93	\$1,056
\$2,191	\$129	\$1,230
\$3,511	\$197	\$1,484
\$696	\$12	\$700
\$51	\$2	\$50
\$7	\$0	\$5
\$61	\$2	\$0
\$36	\$2	\$12
\$137	\$8	\$55
\$294	\$17	\$122
\$101	\$6	\$43
\$155	\$9	\$55
\$147	\$9	\$93
\$22	\$1	\$15
\$36	\$2	\$18
\$8	\$0	\$2
\$45	\$3	\$30
\$58	\$3	\$30
\$51	\$3	\$50
\$109	\$6	\$50
\$594	\$35	\$102
\$1,197	\$70	\$169
\$109	\$6	\$20
\$190	\$11	\$40
\$319	\$19	\$50
\$525	\$31	\$98

\$60	\$0
\$145	\$0
\$98	\$0
\$42	\$0
\$161	\$0
\$185	\$0
\$283	\$0
\$381	\$0
\$125	\$0
\$55	\$0
\$55	\$0
\$65	\$0
\$25	\$0
\$34	\$0
\$40	\$0
\$65	\$0
\$10	\$0
\$10	\$0
\$125	\$0
\$250	\$0
\$375	\$0
\$700	\$0
\$1,000	\$0
\$2,000	\$0
\$6,333	\$0
\$370	\$0
\$370	\$0
\$700	\$0
\$1,000	\$0
\$2,000	\$0
\$4,100	\$0
\$1,050	\$0
\$700	\$0
\$2,518	\$0
\$2,518	\$0
\$115	\$0
\$115	\$0
\$6,350	\$0

245.95
2.92
4.85
5.25
2.73
1.66
0.74
2.39
0.72
1.63
1.63
1.62
3.10
2.84
2.01
2.81
11.57
14.14
1.20
0.74
0.93
0.17
0.25
0.21
0.09
2.27
1.11
1.08
0.12
0.28
2.25
0.32
1.01
3.01
4.73
1.34
0.94
0.25

\$66	\$14,691	\$60
\$400	\$23	\$145
\$449	\$26	\$98
\$209	\$12	\$42
\$415	\$24	\$161
\$290	\$17	\$185
\$199	\$12	\$283
\$861	\$50	\$381
\$88	\$1	\$125
\$88	\$1	\$55
\$88	\$1	\$55
\$103	\$2	\$65
\$73	\$5	\$25
\$91	\$5	\$34
\$76	\$4	\$40
\$172	\$10	\$65
\$104	\$6	\$10
\$127	\$7	\$10
\$150	\$0	\$125
\$185	\$0	\$250
\$347	\$0	\$375
\$76	\$44	\$700
\$155	\$90	\$1,000
\$272	\$157	\$2,000
\$377	\$218	\$6,333
\$795	\$45	\$370
\$364	\$45	\$370
\$747	\$9	\$700
\$74	\$43	\$1,000
\$357	\$207	\$2,000
\$8,912	\$316	\$4,100
\$324	\$14	\$1,050
\$696	\$12	\$700
\$7,023	\$561	\$2,518
\$11,573	\$339	\$2,518
\$142	\$12	\$115
\$100	\$9	\$115
\$1,246	\$322	\$6,350

Sector	Program	Measure Life	Remaining Life	Annual Savings			
				kWh	Ret. kWh	kW	Ret. kW
Residential	CFL	5	-	32	-	0.00	-
Residential	LED	10	-	42	-	0.00	-
Residential	ENERGY STAR Fixture	8	-	90	-	0.00	-
Residential	ENERGY STAR Dehumidifier	12	-	169	-	0.04	-
Residential	ENERGY STAR Clothes Washer	14	-	286	-	0.04	-
Residential	ENERGY STAR Refrigerator	14	-	108	-	0.01	-
Residential	ENERGY STAR Freezer	11	-	32	-	0.00	-
Residential	ES Dishwasher (Electric DHW)	10	-	13	-	0.01	-
Residential	ES Dishwasher (Gas DHW)	10	-	6	-	0.00	-
Residential	ENERGY STAR Room Air Conditioner	9	-	40	-	0.03	-
Residential	Advanced Power Strip	10	-	79	-	0.01	-
Residential	Refrigerator Recycle	8	-	1,350	-	0.15	-
Residential	Freezer Recycle	8	-	1,157	-	0.13	-
Residential	Air Sealing (Electric Heat)	15	-	1,407	-	0.60	-
Residential	Air Sealing (Gas Heat)	15	-	60	-	0.09	-
Residential	Attic Insulation	20	-	539	-	0.23	-
Residential	Wall Insulation	20	-	5,070	-	2.16	-
Residential	Faucet Aerator - Kitchen	9	-	169	-	0.02	-
Residential	Faucet Aerator - Bathroom	9	-	71	-	0.01	-
Residential	Low Flow Showerhead	10	-	149	-	0.01	-
Residential	Water Heater Tank Wrap	5	-	83	-	0.01	-
Residential	Hot Water Pipe Insulation	15	-	142	-	0.02	-
Residential	CAC/ASHP Tune-Up	2	-	112	-	0.07	-
Residential	CAC SEER 14	18	-	178	-	0.26	-
Residential	CAC SEER 15	18	-	229	-	0.42	-
Residential	CAC SEER 16	18	-	322	-	0.48	-
Residential	Early Retirement CAC SEER 14	18	8	178	694	0.26	0.87
Residential	Early Retirement CAC SEER 15	18	8	229	745	0.42	1.04
Residential	Early Retirement CAC SEER 16	18	8	322	838	0.48	1.10
Residential	Programmable Tstat CAC	10	-	134	-	0.24	-
Residential	Heat Pump SEER 15	18	-	501	-	0.52	-
Residential	Heat Pump SEER 16	18	-	594	-	0.52	-
Residential	Early Retirement Heat Pump SEER 15	18	8	501	3,443	0.52	2.00
Residential	Early Retirement Heat Pump SEER 16	18	8	594	3,536	0.52	2.00
Residential	Programmable Tstat	10	-	868	-	0.25	-
Residential	Heat Pump SEER 15 Replace Electric Furnace	18	-	14,621	-	3.30	-
Residential	ECM Blower Motor	20	-	754	-	0.07	-
Residential	Ductless Mini-Split SEER 21	18	-	1,273	-	0.58	-
Residential	Geothermal EER ≥21	18	-	5,188	-	0.81	-
Residential	Early Retirement Geothermal EER ≥21	18	6	5,188	11,719	0.81	1.71
Residential	Heat Pump Water Heater	15	-	1,815	-	0.09	-
Residential	Electric Storage Water Heater	15	-	133	-	0.02	-
Residential	Water Heater Temperature Setback	2	-	90	-	0.01	-
Residential	School-Based Education	5	-	349	-	0.03	-
C&I	Delamping (T8 to T8)	11	-	113	-	0.02	-
C&I	Delamp T12 to T8 (2 Lamp Fixtures)	11	-	434	-	0.07	-
C&I	Delamp T12 to T8 (3-4 Lamp Fixtures)	11	-	928	-	0.14	-
C&I	T8 (≤4 ft, 1-2 Lamp)	18	-	238	-	0.04	-
C&I	T8 (≤4 ft, 3-4 Lamp)	18	-	366	-	0.06	-
C&I	T8 (5-8 ft, 1-2 Lamp)	18	-	349	-	0.05	-
C&I	High Performance T8 (1-2 Lamp)	15	-	58	-	0.01	-
C&I	High Performance T8 (3-4 Lamp)	15	-	93	-	0.01	-
C&I	Low-Wattage T8	6	-	41	-	0.01	-
C&I	Fluorescent Fixture Specular Reflector 4-ft	15	-	116	-	0.02	-
C&I	Fluorescent Fixture Specular Reflector two 4-ft	15	-	151	-	0.02	-
C&I	Fluorescent Fixture Specular Reflector 8-ft	15	-	134	-	0.02	-
C&I	Fluorescent Fixture Specular Reflector two 8-ft	15	-	285	-	0.04	-
C&I	High Bay Fluorescent Fixture (replace 400W HID)	18	-	1,406	-	0.22	-
C&I	High Bay Fluorescent Fixture (replace 1000 W HID)	18	-	2,835	-	0.44	-
C&I	Pin-Based CFL ≤18W	10	-	366	-	0.06	-
C&I	Pin-Based CFL 19W or 32W	10	-	639	-	0.10	-
C&I	Pin-Based CFL ≥32W	10	-	1,075	-	0.17	-
C&I	Multi-CFL Fixture	18	-	1,243	-	0.19	-

C&I	Indirect Fixture	18	-	157	-	92.48	-
C&I	Ceramic Integrated Metal Halide ( $\leq 150W$ )	18	-	947	-	0.15	-
C&I	Ceramic Integrated Metal Halide ( $150 < 250W$ )	18	-	1,063	-	0.16	-
C&I	Ceramic Integrated Metal Halide ( $\geq 250 W$ )	18	-	494	-	0.08	-
C&I	Pulse Start Metal Halide ( $\leq 175W$ )	18	-	982	-	0.15	-
C&I	Pulse Start Metal Halide ( $175 < 320 W$ )	18	-	686	-	0.11	-
C&I	Pulse Start Metal Halide ( $320 < 750 W$ )	18	-	471	-	0.07	-
C&I	Pulse Start Metal Halide ( $\geq 750 W$ )	18	-	2,039	-	0.32	-
C&I	Ceiling Mount Occupancy	8	-	350	-	0.01	-
C&I	Wall Mount Occupancy	8	-	350	-	0.01	-
C&I	Fixture Mount Occupancy	8	-	350	-	0.01	-
C&I	Fixture Mount Photo Sensor	8	-	409	-	0.02	-
C&I	Exit Sign	15	-	189	-	0.03	-
C&I	LED ( $\leq 5W$ )	10	-	308	-	0.05	-
C&I	LED ( $5 \leq 10W$ )	10	-	256	-	0.04	-
C&I	LED ( $>10W$ )	10	-	581	-	0.09	-
C&I	LED Linear Replacement Lamp ( $\leq 4ft$ )	16	-	261	-	0.04	-
C&I	LED Linear Replacement Lamp ( $5-8ft$ )	16	-	320	-	0.05	-
C&I	$\leq 25 W$ LED Fixtures (Exterior/Parking Garage)	15	-	392	-	-	-
C&I	$25 \leq 60 W$ LED Fixtures (Exterior/Parking Garage)	15	-	483	-	-	-
C&I	$60 \leq 155 W$ LED Fixtures (Exterior/Parking Garage)	15	-	907	-	-	-
C&I	CAC 65 - 135 kBtuh	15	-	199	-	0.31	-
C&I	CAC 135 - 240 kBtuh	15	-	405	-	0.62	-
C&I	CAC 240 - 760 kBtuh	15	-	710	-	1.09	-
C&I	CAC $>760$ kBtuh	15	-	983	-	1.51	-
C&I	Split Package Heat Pump	15	-	2,074	-	0.32	-
C&I	Single System Heat Pump	15	-	949	-	0.32	-
C&I	Heat Pump $65 < 135$ kBtuh	15	-	1,951	-	0.07	-
C&I	Heat Pump $135 < 240$ kBtuh	15	-	193	-	0.30	-
C&I	Heat Pump $>240$ kBtuh	15	-	932	-	1.43	-
C&I	Geothermal Heat Pump	15	-	23,257	-	2.19	-
C&I	Electric Storage Water Heater ( $>50$ gallons)	5	-	1,865	-	0.21	-
C&I	Heat Pump Water Heater	15	-	1,815	-	0.09	-
C&I	VFD Fan	15	-	18,327	-	3.89	-
C&I	VFD Pump	15	-	30,201	-	2.35	-
C&I	ODC Motor	15	-	370	-	0.08	-
C&I	TEFC Motor	15	-	261	-	0.06	-
C&I	Chiller	20	-	2,806	-	1.93	-

Incremental Cost per Unit	Future Avoided Cost	TRC
\$2	\$0	3.91
\$20	\$0	0.65
\$17	\$0	1.36
\$45	\$0	1.38
\$450	\$0	0.25
\$40	\$0	1.05
\$40	\$0	0.27
\$50	\$0	0.09
\$50	\$0	0.04
\$200	\$0	0.07
\$20	\$0	1.25
\$93	\$0	3.88
\$93	\$0	3.33
\$272	\$0	2.33
\$272	\$0	0.14
\$575	\$0	0.48
\$1,012	\$0	2.56
\$8	\$0	6.14
\$8	\$0	2.60
\$12	\$0	3.85
\$10	\$0	1.52
\$15	\$0	3.84
\$175	\$0	0.06
\$417	\$0	0.28
\$556	\$0	0.30
\$834	\$0	0.26
\$2,065	\$1,649	0.25
\$2,204	\$1,649	0.26
\$2,482	\$1,649	0.25
\$30	\$0	2.27
\$294	\$0	1.02
\$588	\$0	0.58
\$2,480	\$2,186	0.87
\$2,774	\$2,186	0.74
\$30	\$0	9.65
\$4,554	\$0	1.49
\$250	\$0	1.37
\$1,056	\$0	0.61
\$1,230	\$0	1.91
\$2,913	\$2,376	2.54
\$700	\$0	1.03
\$50	\$0	1.08
\$5	\$0	1.47
\$0	\$0	n/a
\$12	\$0	3.19
\$55	\$0	2.68
\$122	\$0	2.58
\$43	\$0	2.51
\$55	\$0	3.02
\$93	\$0	1.70
\$15	\$0	1.59
\$18	\$0	2.13
\$2	\$0	4.41
\$30	\$0	1.59
\$30	\$0	2.07
\$50	\$0	1.10
\$50	\$0	2.34
\$102	\$0	6.25
\$169	\$0	7.61
\$20	\$0	5.83
\$40	\$0	5.09
\$50	\$0	6.85
\$98	\$0	5.75

\$60	\$0	249.64
\$145	\$0	2.96
\$98	\$0	4.92
\$42	\$0	5.33
\$161	\$0	2.77
\$185	\$0	1.68
\$283	\$0	0.75
\$381	\$0	2.43
\$125	\$0	0.73
\$55	\$0	1.65
\$55	\$0	1.65
\$65	\$0	1.65
\$25	\$0	3.15
\$34	\$0	2.89
\$40	\$0	2.04
\$65	\$0	2.85
\$10	\$0	11.74
\$10	\$0	14.35
\$125	\$0	1.22
\$250	\$0	0.75
\$375	\$0	0.94
\$700	\$0	0.17
\$1,000	\$0	0.25
\$2,000	\$0	0.22
\$6,333	\$0	0.10
\$370	\$0	2.30
\$370	\$0	1.12
\$700	\$0	1.10
\$1,000	\$0	0.12
\$2,000	\$0	0.29
\$4,100	\$0	2.28
\$1,050	\$0	0.33
\$700	\$0	1.03
\$2,518	\$0	3.06
\$2,518	\$0	4.80
\$115	\$0	1.36
\$115	\$0	0.96
\$6,350	\$0	0.24

Sector	Program	Measure Life	Remaining Life	Annual Savings		
				kWh	Ret. kWh	kW
Residential	CFL	5	-	32	-	0.00
Residential	LED	10	-	42	-	0.00
Residential	ENERGY STAR Fixture	8	-	90	-	0.00
Residential	ENERGY STAR Dehumidifier	12	-	169	-	0.04
Residential	ENERGY STAR Clothes Washer	14	-	286	-	0.04
Residential	ENERGY STAR Refrigerator	14	-	108	-	0.01
Residential	ENERGY STAR Freezer	11	-	32	-	0.00
Residential	ES Dishwasher (Electric DHW)	10	-	13	-	0.01
Residential	ES Dishwasher (Gas DHW)	10	-	6	-	0.00
Residential	ENERGY STAR Room Air Conditioner	9	-	40	-	0.03
Residential	Advanced Power Strip	10	-	79	-	0.01
Residential	Refrigerator Recycle	8	-	1,350	-	0.15
Residential	Freezer Recycle	8	-	1,157	-	0.13
Residential	Air Sealing (Electric Heat)	15	-	1,407	-	0.60
Residential	Air Sealing (Gas Heat)	15	-	60	-	0.09
Residential	Attic Insulation	20	-	539	-	0.23
Residential	Wall Insulation	20	-	5,070	-	2.16
Residential	Faucet Aerator - Kitchen	9	-	169	-	0.02
Residential	Faucet Aerator - Bathroom	9	-	71	-	0.01
Residential	Low Flow Showerhead	10	-	149	-	0.01
Residential	Water Heater Tank Wrap	5	-	83	-	0.01
Residential	Hot Water Pipe Insulation	15	-	142	-	0.02
Residential	CAC/ASHP Tune-Up	2	-	112	-	0.07
Residential	CAC SEER 14	18	-	178	-	0.26
Residential	CAC SEER 15	18	-	229	-	0.42
Residential	CAC SEER 16	18	-	322	-	0.48
Residential	Early Retirement CAC SEER 14	18	8	178	694	0.26
Residential	Early Retirement CAC SEER 15	18	8	229	745	0.42
Residential	Early Retirement CAC SEER 16	18	8	322	838	0.48
Residential	Programmable Tstat CAC	10	-	134	-	0.24
Residential	Heat Pump SEER 15	18	-	501	-	0.52
Residential	Heat Pump SEER 16	18	-	594	-	0.52
Residential	Early Retirement Heat Pump SEER 15	18	8	501	3,443	0.52
Residential	Early Retirement Heat Pump SEER 16	18	8	594	3,536	0.52
Residential	Programmable Tstat	10	-	868	-	0.25
Residential	Heat Pump SEER 15 Replace Electric Furnace	18	-	14,621	-	3.30
Residential	ECM Blower Motor	20	-	754	-	0.07
Residential	Ductless Mini-Split SEER 21	18	-	1,273	-	0.58
Residential	Geothermal EER ≥21	18	-	5,188	-	0.81
Residential	Early Retirement Geothermal EER ≥21	18	6	5,188	11,719	0.81
Residential	Heat Pump Water Heater	15	-	1,815	-	0.09
Residential	Electric Storage Water Heater	15	-	133	-	0.02
Residential	Water Heater Temperature Setback	2	-	90	-	0.01
Residential	School-Based Education	5	-	349	-	0.03
C&I	Delamping (T8 to T8)	11	-	113	-	0.02
C&I	Delamp T12 to T8 (2 Lamp Fixtures)	11	-	434	-	0.07
C&I	Delamp T12 to T8 (3-4 Lamp Fixtures)	11	-	928	-	0.14
C&I	T8 (≤4 ft, 1-2 Lamp)	18	-	238	-	0.04
C&I	T8 (≤4 ft, 3-4 Lamp)	18	-	366	-	0.06
C&I	T8 (5-8 ft, 1-2 Lamp)	18	-	349	-	0.05
C&I	High Performance T8 (1-2 Lamp)	15	-	58	-	0.01
C&I	High Performance T8 (3-4 Lamp)	15	-	93	-	0.01
C&I	Low-Wattage T8	6	-	41	-	0.01
C&I	Fluorescent Fixture Specular Reflector 4-ft	15	-	116	-	0.02
C&I	Fluorescent Fixture Specular Reflector two 4-ft	15	-	151	-	0.02
C&I	Fluorescent Fixture Specular Reflector 8-ft	15	-	134	-	0.02
C&I	Fluorescent Fixture Specular Reflector two 8-ft	15	-	285	-	0.04
C&I	High Bay Fluorescent Fixture (replace 400W HID)	18	-	1,406	-	0.22
C&I	High Bay Fluorescent Fixture (replace 1000 W HID)	18	-	2,835	-	0.44
C&I	Pin-Based CFL ≤18W	10	-	366	-	0.06
C&I	Pin-Based CFL 19W or 32W	10	-	639	-	0.10
C&I	Pin-Based CFL ≥32W	10	-	1,075	-	0.17
C&I	Multi-CFL Fixture	18	-	1,243	-	0.19



C&I	Indirect Fixture	18	-	157	-	92.48
C&I	Ceramic Integrated Metal Halide ( $\leq 150W$ )	18	-	947	-	0.15
C&I	Ceramic Integrated Metal Halide ( $150 < 250W$ )	18	-	1,063	-	0.16
C&I	Ceramic Integrated Metal Halide ( $\geq 250 W$ )	18	-	494	-	0.08
C&I	Pulse Start Metal Halide ( $\leq 175W$ )	18	-	982	-	0.15
C&I	Pulse Start Metal Halide ( $175 < 320 W$ )	18	-	686	-	0.11
C&I	Pulse Start Metal Halide ( $320 < 750 W$ )	18	-	471	-	0.07
C&I	Pulse Start Metal Halide ( $\geq 750 W$ )	18	-	2,039	-	0.32
C&I	Ceiling Mount Occupancy	8	-	350	-	0.01
C&I	Wall Mount Occupancy	8	-	350	-	0.01
C&I	Fixture Mount Occupancy	8	-	350	-	0.01
C&I	Fixture Mount Photo Sensor	8	-	409	-	0.02
C&I	Exit Sign	15	-	189	-	0.03
C&I	LED ( $\leq 5W$ )	10	-	308	-	0.05
C&I	LED ( $5 \leq 10W$ )	10	-	256	-	0.04
C&I	LED ( $>10W$ )	10	-	581	-	0.09
C&I	LED Linear Replacement Lamp ( $\leq 4ft$ )	16	-	261	-	0.04
C&I	LED Linear Replacement Lamp ( $5-8ft$ )	16	-	320	-	0.05
C&I	$\leq 25 W$ LED Fixtures (Exterior/Parking Garage)	15	-	392	-	-
C&I	$25 \leq 60 W$ LED Fixtures (Exterior/Parking Garage)	15	-	483	-	-
C&I	$60 \leq 155 W$ LED Fixtures (Exterior/Parking Garage)	15	-	907	-	-
C&I	CAC 65 - 135 kBtuh	15	-	199	-	0.31
C&I	CAC 135 - 240 kBtuh	15	-	405	-	0.62
C&I	CAC 240 - 760 kBtuh	15	-	710	-	1.09
C&I	CAC $>760$ kBtuh	15	-	983	-	1.51
C&I	Split Package Heat Pump	15	-	2,074	-	0.32
C&I	Single System Heat Pump	15	-	949	-	0.32
C&I	Heat Pump $65 < 135$ kBtuh	15	-	1,951	-	0.07
C&I	Heat Pump $135 < 240$ kBtuh	15	-	193	-	0.30
C&I	Heat Pump $>240$ kBtuh	15	-	932	-	1.43
C&I	Geothermal Heat Pump	15	-	23,257	-	2.19
C&I	Electric Storage Water Heater ( $>50$ gallons)	5	-	1,865	-	0.21
C&I	Heat Pump Water Heater	15	-	1,815	-	0.09
C&I	VFD Fan	15	-	18,327	-	3.89
C&I	VFD Pump	15	-	30,201	-	2.35
C&I	ODC Motor	15	-	370	-	0.08
C&I	TEFC Motor	15	-	261	-	0.06
C&I	Chiller	20	-	2,806	-	1.93

Ret. kW	Incremental Cost per Unit	Future Avoided Cost	TRC
-	\$2	\$0	3.97
-	\$20	\$0	0.66
-	\$17	\$0	1.38
-	\$45	\$0	1.40
-	\$450	\$0	0.25
-	\$40	\$0	1.07
-	\$40	\$0	0.27
-	\$50	\$0	0.09
-	\$50	\$0	0.04
-	\$200	\$0	0.07
-	\$20	\$0	1.26
-	\$93	\$0	3.94
-	\$93	\$0	3.38
-	\$272	\$0	2.37
-	\$272	\$0	0.14
-	\$575	\$0	0.47
-	\$1,012	\$0	2.53
-	\$8	\$0	6.23
-	\$8	\$0	2.64
-	\$12	\$0	3.91
-	\$10	\$0	1.55
-	\$15	\$0	3.89
-	\$175	\$0	0.06
-	\$417	\$0	0.29
-	\$556	\$0	0.30
-	\$834	\$0	0.26
0.87	\$2,065	\$1,649	0.26
1.04	\$2,204	\$1,649	0.27
1.10	\$2,482	\$1,649	0.25
-	\$30	\$0	2.30
-	\$294	\$0	1.03
-	\$588	\$0	0.59
2.00	\$2,480	\$2,186	0.89
2.00	\$2,774	\$2,186	0.75
-	\$30	\$0	9.79
-	\$4,554	\$0	1.52
-	\$250	\$0	1.36
-	\$1,056	\$0	0.62
-	\$1,230	\$0	1.94
1.71	\$2,913	\$2,376	2.57
-	\$700	\$0	1.04
-	\$50	\$0	1.10
-	\$5	\$0	1.50
-	\$0	\$0	n/a
-	\$12	\$0	3.24
-	\$55	\$0	2.72
-	\$122	\$0	2.62
-	\$43	\$0	2.55
-	\$55	\$0	3.06
-	\$93	\$0	1.73
-	\$15	\$0	1.62
-	\$18	\$0	2.16
-	\$2	\$0	4.48
-	\$30	\$0	1.62
-	\$30	\$0	2.10
-	\$50	\$0	1.12
-	\$50	\$0	2.38
-	\$102	\$0	6.35
-	\$169	\$0	7.72
-	\$20	\$0	5.92
-	\$40	\$0	5.17
-	\$50	\$0	6.95
-	\$98	\$0	5.84

-	\$60	\$0	253.39
-	\$145	\$0	3.01
-	\$98	\$0	4.99
-	\$42	\$0	5.41
-	\$161	\$0	2.81
-	\$185	\$0	1.71
-	\$283	\$0	0.77
-	\$381	\$0	2.46
-	\$125	\$0	0.74
-	\$55	\$0	1.68
-	\$55	\$0	1.68
-	\$65	\$0	1.67
-	\$25	\$0	3.19
-	\$34	\$0	2.93
-	\$40	\$0	2.07
-	\$65	\$0	2.89
-	\$10	\$0	11.92
-	\$10	\$0	14.56
-	\$125	\$0	1.24
-	\$250	\$0	0.76
-	\$375	\$0	0.95
-	\$700	\$0	0.18
-	\$1,000	\$0	0.25
-	\$2,000	\$0	0.22
-	\$6,333	\$0	0.10
-	\$370	\$0	2.34
-	\$370	\$0	1.14
-	\$700	\$0	1.11
-	\$1,000	\$0	0.12
-	\$2,000	\$0	0.29
-	\$4,100	\$0	2.32
-	\$1,050	\$0	0.33
-	\$700	\$0	1.04
-	\$2,518	\$0	3.10
-	\$2,518	\$0	4.87
-	\$115	\$0	1.38
-	\$115	\$0	0.97
-	\$6,350	\$0	0.24

	CFL Bulb	LED Bulb	
Halogen Watts	53	53	Energy Star
Efficient Watts	15	17	Energy Star
Annual Operating Hours	1,095	1,095	Energy Star
WHFe	1.06	1.06	Illinois
WHFd	1.11	1.11	Illinois
In-Service Rate	70%	95%	Illinois
Coincidence Factor	9.5%	9.5%	Illinois
kW Saved per Unit	0.003	0.004	
kWh Saved per Unit	31	40	
Incremental Cost	\$1.50	\$20	Illinois/Michigan
Lifetime (years)	5	10	Illinois

#### Energy Star Fixture

Incandescent Watts	72	Illinois
Efficient Watts	18	Energy Star
Annual Operating Hours	1,825	Energy Star
In-Service Rate	88%	Illinois
Coincidence Factor	0.4%	Illinois
kW Saved per Unit	0.0002	
kWh Saved per Unit	86.23	
Incremental Cost	\$17	Illinois
Lifetime (years)	8	Illinois

#### Energy Star Dehumidifier

Base Energy Factor (Liter/kWh)	1.50	DOE
Efficient Energy Factor (Liter/kWh)	1.85	Energy Star
Capacity (Pint/Day)	40	Energy Star
Annual Operating Hours	1,620	Energy Star
Conversion (Pint to Liter)	0.473	Energy Star
Coincidence Factor	37%	MN TRM
kW Saved per Unit	0.037	
kWh Saved per Unit	161	
Incremental Cost	\$45	Illinois
Lifetime (years)	12	Energy Star

#### Energy Star Clothes Washer

March 2015 Federal standard effective

Capacity (cubic feet)	3.5	Energy Star
MEFbase	1.29	DOE
MEFee	2.60	Energy Star
Annual Clothes Washer Cycles	295	Energy Star
% Energy Consumption for Clothes Washer	7%	MN TRM
% Energy Consumption for Water Heating	33%	MN TRM
% Energy Consumption for Dryer	59%	MN TRM
% Electric Hot Water	39%	MN TRM
% Electric Dryer	81%	MN TRM
Coincident Factor	3.80%	Illinois
kW Saved per Unit	0.04	
kWh Saved per Unit	273	
Incremental Cost	\$450	Energy Star
Lifetime (years)	14	Illinois

#### Energy Star Refrigerator/Freezer

September 2014 ENERGY STAR/Federal standard effective

	Fridge (Top-Freezer)	Freezer	
Adjusted Volume (Cubic Feet)	26	27	Illinois
Coincident Factor	100%	100%	MN TRM
kW Saved per Unit	0.01	0.00	
kWh Saved per Unit	103	30	DOE/ENERGY STAR
Incremental Cost	\$40	\$40	MN TRM
Lifetime (years)	14	11	MN TRM

#### Energy Star Dishwasher

	Electric DHW	Gas DHW
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Standard Unit kWh	307	307	DOE
Energy Star Unit kWh	295	295	Energy Star
Annual Dishwasher Cycles	208	208	Energy Star
% Energy Consumption for Water Heating	56%	56%	Energy Star
Coincident Factor	10.0%	10.0%	MN TRM
kW Saved per Unit	0.01	0.00	
kWh Saved per Unit	12	5	
Incremental Cost	\$50	\$50	Illinois
Lifetime (years)	10	10	Energy Star

### Energy Star Room Air Conditioner

June 2014 Federal standard effective

Capacity (Btu/h)	10,000	Energy Star
Standard Unit EER	10.9	DOE
Efficient Unit EER	11.3	Energy Star
Annual Operating Hours	1,178	Energy Star
Coincidence Factor	90%	MN TRM
kW Saved per Unit	0.03	
kWh Saved per Unit	38	
Incremental Cost	\$200	Michigan
Lifetime (years)	9	MN TRM

### Appliance Recycling

	Refrigerator	Freezer	
kW Saved per Unit	0.147	0.126	
kWh Saved per Unit	1,289	1,105	NMR
Lifetime (years)	8	8	Illinois

### Air Sealing

	Electric Heat	Gas Heat	
CFM50 Pre	3,000	3,000	
CFM50 Post	2,250	2,250	
Pascal Conversion Factor	18.5	18.5	
kW Saved per Unit	0.57	0.09	Illinois
kWh Saved per Unit	1,344	57	Illinois
Incremental Cost	\$272	\$272	PSC Colorado
Lifetime (years)	15	15	Illinois

### Insulation

	Attic Insulation (R-40)	Wall Insulation (R-13)	
Existing R-Value	19	3	PSC Colorado
Efficient R-Value	38	11	<a href="http://www.energystar.gov">http://www.energystar.gov</a>
Insulated Area (sq ft)	750	765	
kW Saved per Unit	0.22	2.06	Illinois
kWh Saved per Unit	515	4,842	Illinois
Incremental Cost	\$575	\$1,012	PSC Colorado
Lifetime (years)	20	20	PSC Colorado

	Faucet Aerator (Kitchen)	Faucet Aerator (Bath)	Low Flow Showerhead
GPMbase	1.2	1.2	2.35
GPMlow	0.94	0.94	2.0
Daily Usage per Person (minutes)	9.85	9.85	8.2
Daily Shower per Person (#)			0.75
Household Size (# Individuals)	2.56	2.56	2.56
Drain Factor	75%	90%	
Units per Household	1	2.83	1.79
EPGelectric	0.0897	0.0897	0.1271
Hours	197	197	380
Coincidence Factor	2.20%	2.20%	2.78%
kW Saved per Unit	0.018	0.008	0.010
kWh Saved per Unit	161	68	143
Incremental Cost	\$8	\$8	\$12
Lifetime (years)	9	9	10

**Water Heater Wrap**

Coincidence Factor	100%	Ohio
kW Saved per Unit	0.01	Ohio
kWh Saved per Unit	79	Ohio
Incremental Cost	\$10	<a href="http://aceee.org/consumer/water-heating">http://aceee.org/consumer/water-heating</a>
Lifetime (years)	5	Ohio

**Hot Water Pipe Insulation**

Uninsulated Pipe Heat Loss Coefficient	1	
Insulated Pipe Heat Loss Coefficient	5	
Length of Pipe (ft)	5.0	
Circumference of Pipe (Ft)	0.20	
Tank Water Temperature (°F)	120	Arkansas
Well/Pipe Water Temperature (°F)	54.0	Illinois
Recovery of Hot Water Heater	0.98	
Coincidence Factor	100%	Ohio
kW Saved per Unit	0.015	Ohio
kWh Saved per Unit	136	Ohio
Incremental Cost	\$15	Ohio
Lifetime (years)	15	Ohio

**CAC Tune-Up**

Standard Unit SEER	10	
Standard Unit EER	9.20	
Maintenance Energy Savings Factor	5%	MN TRM
Maintenance Demand Savings Factor	2%	MN TRM
Coincidence Factor	90%	
kW Saved per Unit	0.070	
kWh Saved per Unit	107	
Incremental Cost	\$175	MN TRM
Lifetime (years)	2	MN TRM

**Central Air Conditioner**

	New/Replacement		
	SEER 14.5	SEER 15	SEER 16
Efficient Unit SEER	14.5	15	16
Efficient Unit EER	12	12.72	13.00
Standard Unit SEER	13	13	13
Standard Unit EER	11.00	11.00	11.00
kW Saved per Unit	0.250	0.405	0.461
kWh Saved per Unit	170	219	308

**Air Source Heat Pump**

January 2015 Federal standards effective

	New/Replacement		Early Re
	SEER 15	SEER 16	SEER 15
Efficient Unit SEER	15	16	15
Efficient Unit EER	12.5	12.50	12.5
Efficient Unit HSPF	8.50	8.50	8.5
Standard Unit SEER	14	14	10
Standard Unit EER	11.00	11.00	9.20
Standard Unit HSPF	8.20	8.20	6.80
kW Saved per Unit	0.501	0.501	1.914
kWh Saved per Unit	479	568	3,289

**Air Source Heat Pump Replace Resistance Heat**

Efficient Unit SEER	15	
Efficient Unit EER	12.5	
Efficient Unit HSPF	8.50	
Existing Unit SEER	-	Illinois
Existing Unit EER	-	Illinois
Existing Unit HSPF	3.41	Illinois
kW Saved per Unit	3.149	
kWh Saved per Unit	13,964	

**Programmable Thermostat**

	CAC	ASHP
kW Saved per Unit	0.233	0.237
kWh Saved per Unit	128	829
Incremental Cost	\$30	\$30
Lifetime (years)	10	10

Illinois  
Illinois

#### ECM Blower Motors

Coincidence Factor	90%	MN TRM
kW Saved per Unit	0.066	MN TRM
kWh Saved per Unit	720	MN TRM
Incremental Cost	\$250	MN TRM
Lifetime (years)	20	MN TRM

#### Ductless Mini-Split Heat Pump

January 2015 Federal standards effective

Capacity (Btu/h)	18,000	Mass
Efficient Unit SEER	21	
Efficient Unit EER	12.5	
Efficient Unit HSPF	10.0	
kW Saved per Unit	0.558	
kWh Saved per Unit	1,216	
Incremental Cost	\$1,056	Michigan
Lifetime (years)	18	Mass

#### Geothermal Heat Pump

	New	Early Ret
Efficient Unit EER	21.10	21.10
Efficient Unit COP	4.10	4.10
Standard Unit SEER		9.12
Standard Unit EER		8.55
Standard Unit HSPF		5.44
kW Saved per Unit	0.775	1.633
kWh Saved per Unit	4,955	11,193
Incremental Cost	\$1,230	
Lifetime (years)	18	6

Illinois  
Illinois  
Michigan/Illinois  
Illinois

#### Heat Pump Water Heater

Tank Volume	40.0	<a href="http://energy.gov/eere/buildings/downloads/ba-">http://energy.gov/eere/buildings/downloads/ba-</a>
Tank Water Temperature (°F)	130	<a href="http://energy.gov/eere/buildings/downloads/ba-">http://energy.gov/eere/buildings/downloads/ba-</a>
Well/Pipe Water Temperature (°F)	54	Illinois
Standard Energy Factor	0.877	DOE
Efficient Energy Factor	2.0	Energy Star
Annual Operating Hours	2,533	
Coincidence Factor	12%	
kW Saved per Unit	0.0821	Illinois
kWh Saved per Unit	1,734	Illinois
Incremental Cost	\$700	Michigan
Lifetime (years)	15	Michigan

#### Storage Water Heater (April 2015)

Tank Volume	40.0	<a href="http://energy.gov/eere/buildings/downloads/ba-">http://energy.gov/eere/buildings/downloads/ba-</a>
Tank Water Temperature (°F)	130	<a href="http://energy.gov/eere/buildings/downloads/ba-">http://energy.gov/eere/buildings/downloads/ba-</a>
Well/Pipe Water Temperature (°F)	54	Illinois
Ambient Air Temperature (°F)	70	NY TRM
Gallons per Day	50.0	Illinois
EFbase	0.92	DOE
EFee	0.95	
Tank Heat Loss Coefficient (base)	1.7	
Tank Heat Loss Coefficient (efficient)	0.6	
Recovery Efficiency	0.97	NY TRM
Capacity	15,400	NY TRM
Coincidence Factor	80%	NY TRM
kW Saved per Unit	0.0152	
kWh Saved per Unit	127	
Incremental Cost	\$50	
Lifetime (years)	15	Michigan

**Water Heater Temperature Setback**

Coincidence Factor	100%	
Annual Operating Hours	8,766	
kW Saved per Unit	0.01	Illinois
kWh Saved per Unit	86	Illinois
Incremental Cost	\$5	Illinois
Lifetime (years)	2	Illinois

Rapid City, SD

Conditioned Space (sq ft)	2,296
Wall Area (sq ft)	765
Window Area (sq ft)	400
HDD	7,078
CDD	725

<http://energy.gov/eere/buildings/downloads/ba-analysis-existing-homes>

**Non-Residential Measures**

Annual Operating Hours	4,439	Illinois (Office)
WHFe	1.25	Illinois (Office)
WHFd	1.30	Illinois (Office)
Coincidence Factor	66%	Illinois

	Delamping (T8 to T8)		
	Remove 1 Lamp	Delamp T12 to T8 (2-Lamp Fixtures)	Delamp T12 to T8 (3-4 Lamp Fixtures)
<b>Base</b>	<b>1 T8 Lamp</b>	<b>1 T8 Lamp</b>	<b>2 T8 Lamps</b>
Inefficient Watts	19	130	376
Efficient Watts	-	55	216
kW Saved per Unit	0.02	0.06	0.14
kWh Saved per Unit	108	414	886
Incremental Cost	\$12	\$55	\$122
Total Cost			
Lifetime (years)	11	11	11

	Measures		
	Multi-CFL Fixture	Pulse Start (≤175W)	Pulse Start (175 < 320 W)
<b>Base</b>	<b>Metal Halide</b>	<b>Metal Halide</b>	<b>Metal Halide</b>
Inefficient Watts	313	402	376
Efficient Watts	99	233	258
kW Saved per Unit	0.18	0.15	0.10
kWh Saved per Unit	1,187	938	655
Incremental Cost	\$98	\$161	\$185
Lifetime (years)	18	18	18

	High Bay Fluorescent Fixture		
	≤ 300 W	≤ 900 W	Low-Wattage T8
<b>Base</b>	<b>Metal Halide</b>	<b>Metal Halide</b>	<b>Standard T8</b>
Inefficient Watts	550	1,397	35
Efficient Watts	308	909	28
kW Saved per Unit	0.21	0.42	0.01
kWh Saved per Unit	1,343	2,708	39
Incremental Cost	\$102	\$169	\$2
Total Cost	\$282	\$524	\$4
Lifetime (years)	18	18	6

	Fluorescent Fixture w/ Specular Reflectors		
	4-ft	Two 4-ft	8-ft
Inefficient Watts	50	86	83
Efficient Watts	30	60	60
kW Saved per Unit	0.02	0.02	0.02
kWh Saved per Unit	111	144	128

(BHE CO Inputs)



**Lighting Controls**

	Ceiling Mount Occupancy	Wall Mount Occupancy	Fixture Mount Occupancy
WATTbase	275	275	275
WATTe	192	192	192
EFLH	3100	3100	3100
Savings Factor	0.15	0.15	0.15
kW Saved per Unit	0.01	0.01	0.01
kWh Saved per Unit	334	334	334
Incremental Cost	\$125	\$55	\$55
Lifetime (years)	8	8	8

**LED Fixtures for Exterior & Parking Garage Installations**

	25W or less	25 - 60W	60 - 100W
Base	HID	HID	HID
Inefficient Watts	124	183	361
Efficient Watts	19	53	117
Hours	3,540	3,540	3,540
CF	-	-	-
kW Saved per Unit	-	-	-
kWh Saved per Unit	374	462	866
Incremental Cost	\$125	\$250	\$375
Lifetime (years)	15	15	15

**LED Exit Sign**

Wattspre	40	PSC Colorado
Wattspos	2.0	PSC Colorado
kW Saved per Unit	0.03	
kWh Saved per Unit	181	
Incremental Cost	\$25	Michigan
Total Cost	\$35	Michigan
Lifetime (years)	15	Arkansas

**Central Air Conditioners**

	65 - 135 kBtuh	135 - 240 kBtuh	240 - 760 kBtuh
Capacity (thousand Btu/h)	84	120	240
Efficient Unit SEER/EER	11.7	11.7	10.5
Standard Unit SEER/EER	11.2	11.0	10.0
kW Saved per Unit	0.29	0.60	1.04
kWh Saved per Unit	190	387	678
Incremental Cost	\$700	\$1,000	\$2,000
Lifetime (years)	15	15	15

**Air Source Heat Pumps**

	Split <65kBtuh	Single <65 kBtuh	65 < 135 kBtuh
Capacity (thousand Btu/h)	60	60	84
Efficient Unit SEER/EER	14.0	14.0	11.1
Efficient Unit HSPF/COP	8.5	8.0	3.4
Standard Unit SEER/EER	13.0	13.0	11.0
Standard Unit HSPF/COP	7.7	7.7	3.3
kW Saved per Unit	0.30	0.30	0.06
kWh Saved per Unit	1,981	907	1,863
Incremental Cost	\$370	\$370	\$700
Lifetime (years)	15	15	15
	5.00	5.00	7.00

**Geothermal Heat Pump**

Capacity (Btu/h)	120,000	
Efficient Unit EER	17.1	
Efficient Unit COP	3.6	
Standard Unit EER	13.4	
Standard Unit COP	3.1	
kW Saved per Unit	2.10	Illinois
kWh Saved per Unit	22,213	Illinois
Incremental Cost	\$4,100	Illinois
Lifetime (years)	15	Illinois

<b>Water Heaters</b>		<b>Electric Storage</b>	<b>Heat Pump</b>	
kW Saved per Unit		0.200	0.08	Illinois
kWh Saved per Unit		1,781	1,734	Illinois
Incremental Cost		\$1,050	\$700	Illinois/Michigan
Lifetime (years)		5	15	Illinois/Michigan

<b>Variable Frequency Drive</b>		<b>Fan</b>	<b>Pump</b>	
Horsepower		15	15	
Motor Efficiency		90%	90%	VisionDSM
Energy Savings Factor		0.35	0.58	VisionDSM
Demand Savings Factor		0.332	0.201	VisionDSM
Annual Operating Hours		4,000	4,000	Minimum
kW Saved per Unit		3.7	2.2	
kWh Saved per Unit		17,504	28,845	
Incremental Cost		\$2,518	\$2,518	Ohio
Lifetime (years)		15	15	Ohio

<b>Motors</b>		<b>ODP</b>	<b>TEFC</b>	
Horsepower		15	15	
Existing Motor Efficiency		91.00%	91.00%	1800 RPM
New Motor Efficiency		93.00%	92.40%	Office
Annual Operating Hours		4,400	4,400	Ohio
Coincidence Factor		38%	38%	
kW Saved per Unit		0.1	0.1	
kWh Saved per Unit		354	249	
Incremental Cost		\$115	\$115	Ohio
Lifetime (years)		15	15	Ohio

<b>Chiller</b>			
Tons		50	
Standard Full Load/IPLV		9.6	
Efficient Full Load/IPLV		10.0	
Annual Operating Hours		975	Vision DSM Retail
Coincidence Factor		67%	Illinois
kW Saved per Unit		1.8	
kWh Saved per Unit		2,680	
Incremental Cost		\$6,350	Illinois
Lifetime (years)		20	Illinois



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Existing Cooling Unit SEER	10	
Existing Heating Unit HSPF	1.7	
% Summer Air Conditioner Usage	0.75	
Framing Factor	15%	
Cooling Degree Days	725	Rapid City, SD Degree Days
Heating Degree Days	7,078	Rapid City, SD Degree Days
Coincidence Factor	91.50%	Illinois

Illinois  
Illinois  
Illinois  
Illinois

Early Retirement		
SEER 14.5	SEER 15	SEER 16
14.5	15	16
12	12.72	13.00
10	10.00	10.00
9.2	9.2	9.2
0.835	0.991	1.047
663	712	801

DOE  
DOE

Annual Heating Hrs (Rapid City)  
Annual Cooling Hrs (Rapid City)  
Capacity (Btu/h)  
Incidence Factor  
Heating  
Cooling  
Lifetime  
(years)

retirement
SEER 16
16
12.50
8.50
10
9.20
6.80
1.914
3,378

DOE  
DOE  
DOE

**\$/Ton**  
Base Unit  
Efficient Unit

Incremental Co  
Base Unit  
New Efficient U

analysis-existing-homes  
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High Performance T8	
1-2 Lamp	3-4 Lamp
Standard T8	Standard T8
32	59
22	43
0.01	0.01
55	89
\$15	\$18
\$33	\$33
15	15

Illinois  
Illinois  
Illinois  
Illinois  
Illinois  
Illinois

Metal Halide Fixture		LED Linear Replacement Lamp (≤4ft)	LED Linear Replacement Lamp (5-8ft)	≤4 ft, 1-2 Lamp
Pulse Start (320 < 750 W)	Pulse Start (≥750 W)	T12 or T8	T12 or T8	T12, Incandescent
589	1,404	75	85	96
508	1,053	30	30	55
0.07	0.30	0.04	0.05	0.04
449	1,948	250	305	227
\$283	\$381	\$9.50	\$9.50	\$43
18	18	16	16	18

Ceramic Metal Halide (≤150W)	Ceramic Metal Halide (150 < 250W)	Ceramic Metal Halide (≥250 W)	LED (≤5W)	LED (5 ≤ 10W)
Incandescent	Metal Halide	Metal Halide	Incandescent	Incandescent
229	483	590	59	52
66	300	505	6	8
0.14	0.16	0.07	0.05	0.04
904	1,015	472	294	244
\$145	\$98	\$42	\$34	\$40
\$204	\$290	\$295	\$40	\$45
18	18	18	10	10

Two 8-ft	Indirect Fixtures
158	88
109	61
0.04	0.02
272	150

Fixture Mount Photo Sensor	
275	PSC Colorado
178	PSC Colorado
3100	Vision DSM
0.25	Vision DSM
0.02	
391	
\$65	PSC Colorado
8	Illinois

>760 kBtuh	
760	
9.9	CEE
9.7	Illinois
1.45	
939	
\$6,333	Michigan
15	Illinois

135 < 240 kBtuh	>240 kBtuh
120	240
10.9	10.1 CEE
3.2	3.2 CEE
10.6	9.5 Illinois
3.2	3.2 Illinois
0.28	1.37
185	890
\$1,000	\$2,000 Michigan
15	15 Illinois
10.00	20.00

Annual Cooling Hours	593
Annual Heating Hours	2,434
Coincidence Factor	91.3%









2,434 Energy Star
593 Energy Star
36,000 Energy Star
91.50% Illinois
<b>Thermostat Savings</b>
6.8% NY TRM
9.0% NY TRM
18 MN TRM

CAC SEER 14.5	CAC SEER 15	CAC SEER 16	HP SEER 15	HP SEER 16	
\$550	\$550	\$550	\$729	\$729	Michigan
\$688	\$735	\$827	\$827	\$925	Michigan
\$417	\$556	\$834	\$294	\$588	
\$1,649	\$1,649	\$1,649	\$2,186	\$2,186	
\$2,065	\$2,204	\$2,482	\$2,480	\$2,774	





T8 Lamps		
(≤4 ft, 3-4 Lamp)	(5-8 ft, 1-2 Lamp)	
T12, Incandescent	T12	
171	122	PSC Colorado
108	62	PSC Colorado
0.05	0.05	
350	333	
\$55	\$93	PSC Colorado
18	18	PSC Colorado

LED (>10W)	CFL ≤19W	CFL 19 < 32W	CFL ≥32W	
Incandescent	Incandescent	Incandescent	Incandescent	
117	83	153	257	PSC Colorado
17	20	43	72	PSC Colorado
0.09	0.05	0.09	0.16	
555	350	610	1,027	
\$65	\$20	\$40	\$50	PSC Colorado
\$70	\$38	\$76	\$103	PSC Colorado
10	10	10	10	PSC Colorado



















**Black Hills Power - South Dakota**

Discount Rate 

8.84%
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Energy Line Losses 

1.047
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Peak Line Losses 

1.047
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	Escalation Rate	2008	2014	2015	2016
Avoided Energy Cost (\$/kWh)	1.50%	\$0.04	\$0.04	\$0.04	\$0.04
Avoided Demand Forecast (\$/kW-year)	1.50%	\$13.69	\$14.97	\$15.20	\$15.43
Environmental Costs (\$/kWh)	0.00%	\$0.01	\$0.01	\$0.01	\$0.01

Average Retail Rate (\$/kWh)

Residential	1.50%		\$0.134	\$0.14	\$0.14
Residential All Electric	1.50%		\$0.109	\$0.11	\$0.11
Commercial	1.50%		\$0.128	\$0.13	\$0.13
Industrial	1.50%		\$0.081	\$0.08	\$0.08
C&I			\$0.104	\$0.106	\$0.108

*Pages from Energy Efficiency Solutions Plan\_RateAssumptions (see email from Don Martinez 11/4/2013)  
2014 Rates were increased 8% per Jim & Don (12.11.13 meeting)*

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
\$0.04	\$0.04	\$0.04	\$0.04	\$0.04	\$0.04	\$0.05	\$0.05	\$0.05	\$0.05
\$15.66	\$15.89	\$16.13	\$16.37	\$16.62	\$16.87	\$17.12	\$17.38	\$17.64	\$17.90
\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01

\$0.14	\$0.14	\$0.14	\$0.15	\$0.15	\$0.15	\$0.15	\$0.16	\$0.16	\$0.16
\$0.11	\$0.12	\$0.12	\$0.12	\$0.12	\$0.12	\$0.12	\$0.13	\$0.13	\$0.13
\$0.13	\$0.14	\$0.14	\$0.14	\$0.14	\$0.14	\$0.15	\$0.15	\$0.15	\$0.15
\$0.09	\$0.09	\$0.09	\$0.09	\$0.09	\$0.09	\$0.09	\$0.09	\$0.10	\$0.10

\$0.109	\$0.111	\$0.113	\$0.114	\$0.116	\$0.118	\$0.119	\$0.121	\$0.123	\$0.125
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2027	2028	2029	2030	2031	2032	2033
\$0.05	\$0.05	\$0.05	\$0.05	\$0.05	\$0.05	\$0.05
\$18.17	\$18.44	\$18.72	\$19.00	\$19.29	\$19.58	\$19.87
\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01

\$0.16	\$0.17	\$0.17	\$0.17	\$0.17	\$0.18	\$0.18
\$0.13	\$0.13	\$0.14	\$0.14	\$0.14	\$0.14	\$0.14
\$0.15	\$0.16	\$0.16	\$0.16	\$0.16	\$0.17	\$0.17
\$0.10	\$0.10	\$0.10	\$0.10	\$0.10	\$0.11	\$0.11

\$0.127	\$0.129	\$0.131	\$0.133	\$0.135	\$0.137	\$0.139
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