

**FILED WITH
Executive Secretary
June 27, 2013
IOWA UTILITIES BOARD**

OFFICE OF CONSUMER ADVOCATE

DIRECT EXHIBIT

OF

SHEILA J. PARKER

**IN RE: BLACK HILLS/IOWA GAS UTILITY COMPANY, LLC
d/b/a BLACK HILLS ENERGY**

DOCKET NO. EEP-2013-0001

June 27, 2013

BLACK HILLS ENERGY

SAVINGS	2014	2015	2016	2017	2018	Average	OCA Calculation of Savings %
Residential Programs							
Residential Evaluation	5,503	5,510	5,517	5,524	5,532	5,517	5.05%
Residential Prescriptive	55,300	56,754	58,060	59,642	61,293	58,210	53.28%
Residential New Construction	9,247	9,720	10,172	10,665	11,158	10,192	9.33%
Residential Subtotal	70,050	71,984	73,749	75,831	77,983	73,919	67.66%
Nonresidential Programs							
Nonresidential Evaluation	320	336	353	371	389	354	0.32%
Nonresidential Prescriptive	17,203	17,921	18,890	18,275	18,996	18,257	16.71%
Nonresidential Custom	5,928	6,224	6,536	6,862	7,206	6,551	6.00%
Nonresidential New Construction	2,625	2,625	2,625	2,625	2,625	2,625	2.40%
Nonresidential Subtotal	26,076	27,106	28,404	28,133	29,216	27,787	25.43%
Low Income							
Weatherization	1,650	1,695	1,740	1,770	1,815	1,734	1.59%
Energy Education	969	969	969	969	969	969	0.89%
Multifamily Efficiency Improvement	2	2	4	4	4	3	0.00%
Affordable Housing	37	37	37	37	37	37	0.03%
Weatherization Team	779	779	779	779	779	779	0.71%
Low-Income Subtotal	3,437	3,482	3,529	3,559	3,604	3,522	3.22%
Public Purpose							
School-Based Energy Education	3,655	3,728	3,803	3,879	3,956	3,804	3.48%
Tree Planting	201	211	222	233	245	222	0.20%
Iowa Energy Center and Center for Regional Environmental Research	-	-	-	-	-	-	0.00%
Public Purpose Subtotal	3,856	3,939	4,025	4,112	4,201	4,027	3.69%
Total	103,419	106,511	109,707	111,635	115,004	109,255	100.00%

Source: Black Hills Energy's Information filing with the IUB, May 13, 2013. Recommendation One, Table I, Updated Table ES-8 from Revised Plan.

BLACK HILLS ENERGY

SPENDING							Average	OCA Calculation of Budget %
	2014	2015	2016	2017	2018			
Residential Programs								
Residential Evaluation	\$ 706,700	\$ 697,000	\$ 697,300	\$ 697,600	\$ 697,900	\$ 699,300	11.35%	
Residential Prescriptive	\$ 2,419,300	\$ 2,523,700	\$ 2,631,700	\$ 2,745,100	\$ 2,862,600	\$ 2,636,480	42.79%	
Residential New Construction	\$ 483,800	\$ 506,800	\$ 530,500	\$ 555,800	\$ 584,200	\$ 532,220	8.64%	
Residential Subtotal	\$ 3,609,800	\$ 3,727,500	\$ 3,859,500	\$ 3,998,500	\$ 4,144,700	\$ 3,868,000	62.78%	
Nonresidential Programs								
Nonresidential Evaluation	\$ 96,700	\$ 101,500	\$ 106,600	\$ 111,900	\$ 117,500	\$ 106,840	1.73%	
Nonresidential Prescriptive	\$ 818,000	\$ 859,700	\$ 910,200	\$ 956,300	\$ 1,004,900	\$ 909,820	14.77%	
Nonresidential Custom	\$ 52,200	\$ 54,800	\$ 57,600	\$ 60,900	\$ 64,000	\$ 57,900	0.94%	
Nonresidential New Construction	\$ 54,200	\$ 54,300	\$ 54,300	\$ 54,400	\$ 54,500	\$ 54,340	0.88%	
Nonresidential Subtotal	\$ 1,021,100	\$ 1,070,300	\$ 1,128,700	\$ 1,183,500	\$ 1,240,900	\$ 1,128,900	18.32%	
Low Income								
Weatherization	\$ 598,100	\$ 614,400	\$ 630,600	\$ 641,800	\$ 658,100	\$ 628,600	10.20%	
Energy Education	\$ 23,500	\$ 23,500	\$ 23,600	\$ 23,600	\$ 23,600	\$ 23,560	0.38%	
Multifamily Efficiency Improvement	\$ 14,700	\$ 14,800	\$ 26,900	\$ 27,000	\$ 27,100	\$ 22,100	0.36%	
Affordable Housing	\$ 3,600	\$ 3,600	\$ 3,600	\$ 3,600	\$ 3,700	\$ 3,620	0.06%	
Weatherization Team	\$ 15,700	\$ 15,700	\$ 15,800	\$ 15,800	\$ 15,900	\$ 15,780	0.26%	
Low-Income Subtotal	\$ 655,600	\$ 672,000	\$ 700,500	\$ 711,800	\$ 728,400	\$ 693,660	11.26%	
Public Purpose								
School-Based Energy Education	\$ 81,300	\$ 82,900	\$ 84,600	\$ 86,300	\$ 88,000	\$ 84,620	1.37%	
Tree Planting	\$ 141,500	\$ 145,000	\$ 148,600	\$ 152,300	\$ 156,100	\$ 148,700	2.41%	
Iowa Energy Center and Center for Regional Environmental Research	\$ 225,500	\$ 231,100	\$ 236,900	\$ 242,800	\$ 248,900	\$ 237,040	3.85%	
Public Purpose Subtotal	\$ 448,300	\$ 459,000	\$ 470,100	\$ 481,400	\$ 493,000	\$ 470,360	7.63%	
Total	\$ 5,734,800	\$ 5,928,800	\$ 6,158,800	\$ 6,375,200	\$ 6,607,000	\$ 6,160,920	100%	

Source: Black Hills Energy Plan, page ES-xiii, table ES-10.

**Black Hills Energy
Residential Evaluation Program**

2014-2018 Plan				
	<u>Participants (measures)</u>	<u>Dekatherms</u>	<u>Peak therms</u>	<u>Budget</u>
2014	2,645	5,503	60	\$ 706,700
2015	2,648	5,510	60	\$ 697,000
2016	2,652	5,517	60	\$ 697,300
2017	2,655	5,524	60	\$ 697,600
2018	2,659	5,532	60	\$ 697,900
Total:	13,259	27,586	300	\$ 3,496,500
	<u>\$ per measure</u>	<u>\$ per therm</u>	<u>\$ per peak therm</u>	
2014	\$ 267.18	\$ 12.84	\$ 1,177.83	
2015	\$ 263.22	\$ 12.65	\$ 1,161.67	
2016	\$ 262.93	\$ 12.64	\$ 1,162.17	
2017	\$ 262.75	\$ 12.63	\$ 1,162.67	
2018	\$ 262.47	\$ 12.62	\$ 1,163.17	

2009-2012 Actual Results				
	<u>Participants (measures)</u>	<u>MCF therms</u>	<u>Peak therms</u>	<u>Budget</u>
2009	1,695	3,504	13	\$ 291,796
2010	2,049	4,200	13	\$ 355,329
2011	1,770	4,026	12	\$ 370,611
2012	1,420	1,574	5	\$ 348,388
	<u>\$ per measure</u>	<u>\$ per therm</u>	<u>\$ per peak therm</u>	
2009	\$ 172.15	\$ 8.33	\$ 2,244.58	
2010	\$ 173.42	\$ 8.46	\$ 2,733.30	
2011	\$ 209.38	\$ 9.21	\$ 3,088.43	
2012	\$ 245.34	\$ 22.13	\$ 6,967.76	
	Average:	\$ 12.03		

Sources: 2014-2018 Plan: From BHE Plan, pages 24-30.

2009-2012 Actual Results: From EEP-2008-0003 Annual Reports.

**Black Hills Energy
Residential Prescriptive Program**

2014-2018 Plan

	<u>Participants (measures)</u>	<u>Dekatherms</u>	<u>Peak therms</u>	<u>Budget*</u>
2014	11,279	55,300	581	\$ 2,378,513
2015	11,705	56,773	597	\$ 2,480,785
2016	12,148	58,069	612	\$ 2,586,710
2017	12,605	59,654	629	\$ 2,697,796
2018	13,079	61,278	646	\$ 2,812,982
Total:	60,816	291,074	3,065	\$ 12,956,786

	<u>\$ per measure</u>	<u>\$ per therm</u>	<u>\$ per peak therm</u>
2014	\$ 210.88	\$ 4.30	\$ 409.38
2015	\$ 211.94	\$ 4.37	\$ 415.54
2016	\$ 212.93	\$ 4.45	\$ 422.67
2017	\$ 214.03	\$ 4.52	\$ 428.90
2018	\$ 215.08	\$ 4.59	\$ 435.45

2009-2012 Actual Results

	<u>Participants (measures)</u>	<u>MCF therms</u>	<u>Peak therms</u>	<u>Budget</u>
2009	11,496	82,399	707	\$ 2,464,166
2010	13,124	95,711	828	\$ 3,094,752
2011	11,094	77,385	670	\$ 2,505,600
2012	12,661	78,597	675	\$ 2,621,404

	<u>\$ per measure</u>	<u>\$ per therm</u>	<u>\$ per peak therm</u>
2009	\$ 214.35	\$ 2.99	\$ 348.54
2010	\$ 235.81	\$ 3.23	\$ 373.76
2011	\$ 225.85	\$ 3.24	\$ 373.97
2012	\$ 207.05	\$ 3.34	\$ 388.36
Average:		\$ 3.20	

Sources: 2014-2018 Plan: From BHE Plan, pages 31-37.

*Budget as corrected in BHE's May 13, 2013 filing with IUB,
Recommendation Six, Table 5.

2009-2012 Actual Results: From EEP-2008-0003 Annual Reports.

Black Hills Energy
Residential New Construction Program

2014-2018 Plan

	<u>Participants</u> <u>(measures)</u>	<u>Dekatherms</u>	<u>Peak</u> <u>therms</u>	<u>Budget</u>
2014	450	9,247	101	\$ 483,800
2015	473	9,720	106	\$ 506,800
2016	495	10,172	111	\$ 530,500
2017	519	10,665	117	\$ 555,800
2018	543	11,158	122	\$ 584,200
Total:	2,480	50,962	557	\$ 2,661,100

	<u>\$ per measure</u>	<u>\$ per therm</u>	<u>\$ per</u> <u>peak therm</u>
2014	\$ 1,075.11	\$ 5.23	\$ 479.01
2015	\$ 1,071.46	\$ 5.21	\$ 478.11
2016	\$ 1,071.72	\$ 5.22	\$ 477.93
2017	\$ 1,070.91	\$ 5.21	\$ 475.04
2018	\$ 1,075.87	\$ 5.24	\$ 478.85

2009-2012 Actual Results

	<u>Participants</u> <u>(measures)</u>	<u>therms</u>	<u>Peak</u> <u>therms</u>	<u>Budget</u>
2009	270	8,431	74	\$ 1,118,644
2010	594	21,608	190	\$ 3,160,673
2011	467	25,897	228	\$ 2,444,617
2012	432	20,043	176	\$ 2,248,449

	<u>\$ per measure</u>	<u>\$ per therm</u>	<u>\$ per</u> <u>peak therm</u>
2009	\$ 4,143.13	\$ 13.27	\$ 1,511.68
2010	\$ 5,321.00	\$ 14.63	\$ 1,663.51
2011	\$ 5,234.73	\$ 9.44	\$ 1,072.20
2012	\$ 5,204.74	\$ 11.22	\$ 1,277.53
Average:		\$ 12.14	

Sources: 2014-2018 Plan: From BHE Plan, pages 38-41.

2009-2012 Actual Results: From EEP-2008-0003 Annual Reports.

**Black Hills Energy
Nonresidential New Construction Program**

2014-2018 Plan

	<u>Participants (measures)</u>	<u>Dekatherms</u>	<u>Peak therms</u>	<u>Budget</u>
2014	2	2,625	27	\$ 54,200
2015	2	2,625	27	\$ 54,300
2016	2	2,625	27	\$ 54,300
2017	2	2,625	27	\$ 54,400
2018	2	2,625	27	\$ 54,500
Total:	10	13,125	135	\$ 271,700

	<u>\$ per measure</u>	<u>\$ per therm</u>	<u>\$ per peak therm</u>
2014	\$ 27,100.00	\$ 2.06	\$ 200.74
2015	\$ 27,150.00	\$ 2.07	\$ 201.11
2016	\$ 27,150.00	\$ 2.07	\$ 201.11
2017	\$ 27,200.00	\$ 2.07	\$ 201.48
2018	\$ 27,250.00	\$ 2.08	\$ 201.85

2009-2012 Actual Results

	<u>Participants (measures)</u>	<u>therms</u>	<u>Peak therms</u>	<u>Budget</u>
2009	-	-	-	\$ 19,184
2010	-	-	-	\$ 30,293
2011	3	3,937	50	\$ 153,299
2012	4	959	12	\$ 103,688

	<u>\$ per measure</u>	<u>\$ per therm</u>	<u>\$ per peak therm</u>
2009	\$ -	\$ -	\$ -
2010	\$ -	\$ -	\$ -
2011	\$ 51,099.67	\$ 3.89	\$ 306.60
2012	\$ 25,922.00	\$ 10.81	\$ 864.07
Average:		\$ 7.35	

Sources: 2014-2018 Plan: From BHE Plan, pages 60-63.
2009-2012 Actual Results: From EEP-2008-0003 Annual Reports.



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Black Hills Energy Residential Prescriptive Program

Line	(a)	Societal Cost Test (b)	Total 5-year Cost (c)	Total 5-year Participants (d)	Total 5- year Savings (e)	Dealer + Customer Incentives as % of Inc. Measure Cost (f)
1	Furnace Quality Install	0.16 \$	414,520	2,763	33,162	50%
2	Furnace 94%-95.9%	1.18 \$	3,000,000	7,500	900,000	27%
3	Furnace 96%+ AFUE	1.12 \$	994,614	1,658	218,815	35%
4	Boiler Quality Install	0.49 \$	19,343	129	4,771	50%
5	Boiler 95%+ AFUE	0.16 \$	249,300	415	19,528	14%
6	Gas Fireplace	0.32 \$	3,983	16	175	50%
7	Duct Sealing	1.37 \$	27,413	137	8,270	34%
8	Integrated Space and Water Heat	1.32 \$	63,392	137	9,218	74%
9	Multi-Zone Thermostat	0.90 \$	7,647	16	1,422	57%
10	Furnace Maintenance	0.58 \$	825,000	16,500	497,805	25%
11	Boiler Maintenance	0.72 \$	75,000	1,500	56,303	25%
12	Setback Thermostat (Customer Installation)	8.95 \$	11,051	553	11,604	60%
13	Setback Thermostat (Professional Installation)	3.58 \$	524,935	10,499	220,473	60%
14	WiFi Programmable thermostat	1.77 \$	6,853	137	2,878	30%
15	Furnace maintenance and setback thermostat	2.92 \$	62,325	415	21,261	53%
16	Boiler maintenance and setback thermostat	3.30 \$	62,325	415	24,321	53%
17	Insulation (ceiling) R-45	0.92 \$	2,900,956	3,868	270,935	62%
18	Insulation (wall) R-13	2.50 \$	623,250	831	213,310	46%
19	Insulation (wall) (R-20 or R-13 w/ R-5 sheathing) (To Code)	2.54 \$	311,625	415	124,893	40%
20	Insulation (basement wall) R-15	2.37 \$	497,307	663	75,224	70%
21	Insulation (foundation) R-30	0.85 \$	19,913	27	1,360	70%
22	Insulation (floor) R-30	0.85 \$	43,059	57	2,941	70%
23	Insulation (Rim and Band Joist) R-10	1.32 \$	19,913	27	387	70%
24	Infiltration control (weather-stripping, caulking, etc.)	1.48 \$	221,025	1,105	50,012	62%
25	Water Heater - Storage Federal Standard April 2015 EF = 0.62	0.17 \$	53,940	348	2,088	61%
26	Thermal Door	4.56 \$	3,315	332	1,747	54%
27	Water Heater - Storage 0.67 to 0.79 EF	0.38 \$	31,775	205	3,075	61%
28	Water Heater - Condensing Greater than 0.80 EF	0.25 \$	6,930	21	1,012	28%
29	Water Heater - Tankless Greater than 0.82 EF	0.82 \$	67,650	205	10,640	49%
30	Water Heater - Condensing Greater than 0.80 EF	0.22 \$	11,550	35	1,372	28%
31	Water Heater Replacement before end of life	0.31 \$	121,120	278	10,024	53%
32	Clothes Washer	0.78 \$	325,000	6,500	97,500	37%
33	Water Heater - Tankless Greater than 0.82 EF	0.74 \$	114,840	348	14,929	49%
34	Rebate Bundle	0.00 \$	276,282	2,763	-	0%

Sources:

Column (a): "BHE IA-DR 5", filed with IUB May 15, 2013.

Column (b): BHE Response to OCA Data Request No. 68, OCA Exhibit____(SJP-1), Schedule E.

Column (c): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PROJECTED UTILITY COSTS (\$)
- customer incentive/evaluation delivery costs and - dealer incentive costs" for 2014 through 2018.

Column (d): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PARTICIPANTS" for 2014 through 2018.

Column (e): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PROJECTED ENERGY SAVINGS (THERMS)"
for 2014 through 2018.

Column (f): "BHE IA-DR 5", filed with IUB May 15, 2013, as titled.

Black Hills Energy Residential Prescriptive Program

Sorted by Societal Test						
Line	(a)	Societal Cost Test (b)	Total 5-year Cost (c)	Total 5-year Participants (d)	Total 5-year Savings (e)	Dealer + Customer Incentives as % of Inc. Measure Cost (f)
1	Setback Thermostat (Customer Installation)	8.95	\$ 11,051	553	11,604	60%
2	Thermal Door	4.56	\$ 3,315	332	1,747	54%
3	Setback Thermostat (Professional Installation)	3.58	\$ 524,935	10,499	220,473	60%
4	Boiler maintenance and setback thermostat	3.30	\$ 62,325	415	24,321	53%
5	Furnace maintenance and setback thermostat	2.92	\$ 62,325	415	21,261	53%
6	Insulation (wall) (R-20 or R-13 w/ R-5 sheathing) (To Code)	2.54	\$ 311,625	415	124,893	40%
7	Insulation (wall) R-13	2.50	\$ 623,250	831	213,310	46%
8	Insulation (basement wall) R-15	2.37	\$ 497,307	663	75,224	70%
9	WiFi Programmable thermostat	1.77	\$ 6,853	137	2,878	30%
10	Infiltration control (weather-stripping, caulking, etc.)	1.48	\$ 221,025	1,105	50,012	62%
11	Duct Sealing	1.37	\$ 27,413	137	8,270	34%
12	Integrated Space and Water Heat	1.32	\$ 63,392	137	9,218	74%
13	Insulation (Rim and Band Joist) R-10	1.32	\$ 19,913	27	387	70%
14	Furnace 94%-95.9%	1.18	\$ 3,000,000	7,500	900,000	27%
15	Furnace 96%+ AFUE	1.12	\$ 994,614	1,658	218,815	35%
16	Insulation (ceiling) R-45	0.92	\$ 2,900,956	3,868	270,935	62%
17	Multi-Zone Thermostat	0.90	\$ 7,647	16	1,422	57%
18	Insulation (foundation) R-3C	0.85	\$ 19,913	27	1,360	70%
19	Insulation (floor) R-3C	0.85	\$ 43,059	57	2,941	70%
20	Water Heater - Tankless Greater than 0.82 EF	0.82	\$ 67,650	205	10,640	49%
21	Clothes Washer	0.78	\$ 325,000	6,500	97,500	37%
22	Water Heater - Tankless Greater than 0.82 EF	0.74	\$ 114,840	348	14,929	49%
23	Boiler Maintenance	0.72	\$ 75,000	1,500	56,303	25%
24	Furnace Maintenance	0.58	\$ 825,000	16,500	497,805	25%
25	Boiler Quality Install	0.49	\$ 19,343	129	4,771	50%
26	Water Heater - Storage 0.67 to 0.79 EF	0.38	\$ 31,775	205	3,075	61%
27	Gas Fireplace	0.32	\$ 3,983	16	175	50%
28	Water Heater Replacement before end of life	0.31	\$ 121,120	278	10,024	53%
29	Water Heater - Condensing Greater than 0.80 EF	0.25	\$ 6,930	21	1,012	28%
30	Water Heater - Condensing Greater than 0.80 EF	0.22	\$ 11,550	35	1,372	28%
31	Water Heater - Storage Federal Standard April 2015 EF = 0.62	0.17	\$ 53,940	348	2,088	61%
32	Furnace Quality Install	0.16	\$ 414,520	2,763	33,162	50%
33	Boiler 95%+ AFUE	0.16	\$ 249,300	415	19,528	14%
34	Rebate Bundle	0.00	\$ 276,282	2,763	-	0%

Sources:

Column (a): "BHE IA-DR 5", filed with IUB May 15, 2013.

Column (b): BHE Response to OCA Data Request No. 68, OCA Exhibit____(SJP-1), Schedule E.

Column (c): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PROJECTED UTILITY COSTS (\$)" - customer incentive/evaluation delivery costs and - dealer incentive costs" for 2014 through 2018.

Column (d): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PARTICIPANTS" for 2014 through 2018.

Column (e): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PROJECTED ENERGY SAVINGS (THERMS)" for 2014 through 2018.

Column (f): "BHE IA-DR 5", filed with IUB May 15, 2013, as titled.

Black Hills Energy Residential Prescriptive Program

Sorted by Savings							
Line	(a)	Societal Cost Test (b)	Total 5-year Cost (c)	Total 5-year Participants (d)	Total 5- year Savings (e)	Dealer + Customer Incentives as % of Inc. Measure Cost (f)	Contributi on to Savings (g)
1	Furnace 94%-95.9%	1.18	\$ 3,000,000	7,500	900,000	27%	30.91%
2	Furnace Maintenance	0.58	\$ 825,000	16,500	497,805	25%	17.10%
3	Insulation (ceiling) R-45	0.92	\$ 2,900,956	3,868	270,935	62%	9.31%
4	Setback Thermostat (Professional Installation)	3.58	\$ 524,935	10,499	220,473	60%	7.57%
5	Furnace 96%+ AFUE	1.12	\$ 994,614	1,658	218,815	35%	7.52%
6	Insulation (wall) R-13	2.50	\$ 623,250	831	213,310	46%	7.33%
7	Insulation (wall) (R-20 or R-13 w/ R-5 sheathing) (To Code)	2.54	\$ 311,625	415	124,893	40%	4.29%
8	Clothes Washer	0.78	\$ 325,000	6,500	97,500	37%	3.35%
9	Insulation (basement wall) R-15	2.37	\$ 497,307	663	75,224	70%	2.58%
10	Boiler Maintenance	0.72	\$ 75,000	1,500	56,303	25%	1.93%
11	Infiltration control (weather-stripping, caulking, etc.)	1.48	\$ 221,025	1,105	50,012	62%	1.72%
12	Furnace Quality Install	0.16	\$ 414,520	2,763	33,162	50%	1.14%
13	Boiler maintenance and setback thermostat	3.30	\$ 62,325	415	24,321	53%	0.84%
14	Furnace maintenance and setback thermostat	2.92	\$ 62,325	415	21,261	53%	0.73%
15	Boiler 95%+ AFUE	0.16	\$ 249,300	415	19,528	14%	0.67%
16	Water Heater - Tankless Greater than 0.82 EF	0.74	\$ 114,840	348	14,929	49%	0.51%
17	Setback Thermostat (Customer Installation)	8.95	\$ 11,051	553	11,604	60%	0.40%
18	Water Heater - Tankless Greater than 0.82 EF	0.82	\$ 67,650	205	10,640	49%	0.37%
19	Water Heater Replacement before end of life	0.31	\$ 121,120	278	10,024	53%	0.34%
20	Integrated Space and Water Heat	1.32	\$ 63,392	137	9,218	74%	0.32%
21	Duct Sealing	1.37	\$ 27,413	137	8,270	34%	0.28%
22	Boiler Quality Install	0.49	\$ 19,343	129	4,771	50%	0.16%
23	Water Heater - Storage 0.67 to 0.79 EF	0.38	\$ 31,775	205	3,075	61%	0.11%
24	Insulation (floor) R-30	0.85	\$ 43,059	57	2,941	70%	0.10%
25	WiFi Programmable thermostat	1.77	\$ 6,853	137	2,878	30%	0.10%
26	Water Heater - Storage Federal Standard April 2015 EF = 0.62	0.17	\$ 53,940	348	2,088	61%	0.07%
27	Thermal Door	4.56	\$ 3,315	332	1,747	54%	0.06%
28	Multi-Zone Thermostat	0.90	\$ 7,647	16	1,422	57%	0.05%
29	Water Heater - Condensing Greater than 0.80 EF	0.22	\$ 11,550	35	1,372	28%	0.05%
30	Insulation (foundation) R-30	0.85	\$ 19,913	27	1,360	70%	0.05%
31	Water Heater - Condensing Greater than 0.80 EF	0.25	\$ 6,930	21	1,012	28%	0.03%
32	Insulation (Rim and Band Joist) R-10	1.32	\$ 19,913	27	387	70%	0.01%
33	Gas Fireplace	0.32	\$ 3,983	16	175	50%	0.01%
34	Rebate Bundle	0.00	\$ 276,282	2,763	-	0%	0.00%
35	Total Cost-effective Measures				2,911,457		64.66%

Sources:

Column (a): "BHE IA-DR 5", filed with IUB May 15, 2013.

Column (b): BHE Response to OCA Data Request No. 68, OCA Exhibit____(SJP-1), Schedule E.

Column (c): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PROJECTED UTILITY COSTS (\$)
 - customer incentive/evaluation delivery costs and - dealer incentive costs" for 2014 through 2018.

Column (d): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PARTICIPANTS" for 2014 through 2018.

Column (e): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PROJECTED ENERGY SAVINGS (THERMS)"
 for 2014 through 2018.

Column (f): "BHE IA-DR 5", filed with IUB May 15, 2013, as titled.

Column (g): column (e) divided by total savings column (e) line 35.

Black Hills Energy Residential Prescriptive Program

Sorted by Total Cost							
Line	(a)	Societal Cost Test (b)	Total 5-year Cost (c)	Total 5-year Participants (d)	Total 5-year Savings (e)	Dealer + Customer Incentives as % of Inc. Measure Cost (f)	% of Total Program Costs (g)
1	Furnace 94%-95.9%	1.18	\$ 3,000,000	7,500	900,000	27%	25.01%
2	Insulation (ceiling) R-45	0.92	\$ 2,900,956	3,868	270,935	62%	24.18%
3	Furnace 96%+ AFUE	1.12	\$ 994,614	1,658	218,815	35%	8.29%
4	Furnace Maintenance	0.58	\$ 825,000	16,500	497,805	25%	6.88%
5	Insulation (wall) R-13	2.50	\$ 623,250	831	213,310	46%	5.19%
6	Setback Thermostat (Professional Installation)	3.58	\$ 524,935	10,499	220,473	60%	4.38%
7	Insulation (basement wall) R-15	2.37	\$ 497,307	663	75,224	70%	4.15%
8	Furnace Quality Install	0.16	\$ 414,520	2,763	33,162	50%	3.46%
9	Clothes Washer	0.78	\$ 325,000	6,500	97,500	37%	2.71%
10	Insulation (wall) (R-20 or R-13 w/ R-5 sheathing) (To Code)	2.54	\$ 311,625	415	124,893	40%	2.60%
11	Rebate Bundle	0.00	\$ 276,282	2,763	-	0%	2.30%
12	Boiler 95%+ AFUE	0.16	\$ 249,300	415	19,528	14%	2.08%
13	Infiltration control (weather-stripping, caulking, etc.)	1.48	\$ 221,025	1,105	50,012	62%	1.84%
14	Water Heater Replacement before end of life	0.31	\$ 121,120	278	10,024	53%	1.01%
15	Water Heater - Tankless Greater than 0.82 EF	0.74	\$ 114,840	348	14,929	49%	0.96%
16	Boiler Maintenance	0.72	\$ 75,000	1,500	56,303	25%	0.63%
17	Water Heater - Tankless Greater than 0.82 EF	0.82	\$ 67,650	205	10,640	49%	0.56%
18	Integrated Space and Water Heat	1.32	\$ 63,392	137	9,218	74%	0.53%
19	Furnace maintenance and setback thermostat	2.92	\$ 62,325	415	21,261	53%	0.52%
20	Boiler maintenance and setback thermostat	3.30	\$ 62,325	415	24,321	53%	0.52%
21	Water Heater - Storage Federal Standard April 2015 EF = 0.62	0.17	\$ 53,940	348	2,088	61%	0.45%
22	Insulation (floor) R-30	0.85	\$ 43,059	57	2,941	70%	0.36%
23	Water Heater - Storage 0.67 to 0.79 EF	0.38	\$ 31,775	205	3,075	61%	0.26%
24	Duct Sealing	1.37	\$ 27,413	137	8,270	34%	0.23%
25	Insulation (foundation) R-30	0.85	\$ 19,913	27	1,360	70%	0.17%
26	Insulation (Rim and Band Joist) R-10	1.32	\$ 19,913	27	387	70%	0.17%
27	Boiler Quality Install	0.49	\$ 19,343	129	4,771	50%	0.16%
28	Water Heater - Condensing Greater than 0.80 EF	0.22	\$ 11,550	35	1,372	28%	0.10%
29	Setback Thermostat (Customer Installation)	8.95	\$ 11,051	553	11,604	60%	0.09%
30	Multi-Zone Thermostat	0.90	\$ 7,647	16	1,422	57%	0.06%
31	Water Heater - Condensing Greater than 0.80 EF	0.25	\$ 6,930	21	1,012	28%	0.06%
32	WIFI Programmable thermostat	1.77	\$ 6,853	137	2,878	30%	0.06%
33	Gas Fireplace	0.32	\$ 3,983	16	175	50%	0.03%
34	Thermal Door	4.56	\$ 3,315	332	1,747	54%	0.03%
35	Total Cost-effective Measures		\$ 11,997,148				53.59%

Sources:

Column (a): "BHE IA-DR 5", filed with IUB May 15, 2013.

Column (b): BHE Response to OCA Data Request No. 68, OCA Exhibit____(SJP-1), Schedule E.

Column (c): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PROJECTED UTILITY COSTS (\$)
- customer incentive/evaluation delivery costs and - dealer incentive costs" for 2014 through 2018.

Column (d): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PARTICIPANTS" for 2014 through 2018.

Column (e): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PROJECTED ENERGY SAVINGS (THERMS)" for 2014 through 2018.

Column (f): "BHE IA-DR 5", filed with IUB May 15, 2013, as titled.

Column (g): column (c) divided by total costs column (c) line 35.

Black Hills Energy Residential Prescriptive Program

Sorted by Incentive as % of Incremental Cost						
Line	(a)	Societal Cost Test (b)	Total 5-year Cost (c)	Total 5-year Participants (d)	Total 5- year Savings (e)	Dealer + Customer Incentives as % of Inc. Measure Cost (f)
1	Integrated Space and Water Heat	1.32 \$	63,392	137	9,218	74%
2	Insulation (basement wall) R-15	2.37 \$	497,307	663	75,224	70%
3	Insulation (floor) R-30	0.85 \$	43,059	57	2,941	70%
4	Insulation (foundation) R-30	0.85 \$	19,913	27	1,360	70%
5	Insulation (Rim and Band Joist) R-10	1.32 \$	19,913	27	387	70%
6	Insulation (ceiling) R-49	0.92 \$	2,900,956	3,868	270,935	62%
7	Infiltration control (weather-stripping, caulking, etc.)	1.48 \$	221,025	1,105	50,012	62%
8	Water Heater - Storage 0.67 to 0.79 EF	0.38 \$	31,775	205	3,075	61%
9	Water Heater - Storage Federal Standard April 2015 EF = 0.62	0.17 \$	53,940	348	2,088	61%
10	Setback Thermostat (Customer Installation)	8.95 \$	11,051	553	11,604	60%
11	Setback Thermostat (Professional Installation)	3.58 \$	524,935	10,499	220,473	60%
12	Multi-Zone Thermostat	0.90 \$	7,647	16	1,422	57%
13	Thermal Door	4.56 \$	3,315	332	1,747	54%
14	Boiler maintenance and setback thermostat	3.30 \$	62,325	415	24,321	53%
15	Furnace maintenance and setback thermostat	2.92 \$	62,325	415	21,261	53%
16	Water Heater Replacement before end of life	0.31 \$	121,120	278	10,024	53%
17	Furnace Quality Install	0.16 \$	414,520	2,763	33,162	50%
18	Boiler Quality Install	0.49 \$	19,343	129	4,771	50%
19	Gas Fireplace	0.32 \$	3,983	16	175	50%
20	Water Heater - Tankless Greater than 0.82 EF	0.74 \$	114,840	348	14,929	49%
21	Water Heater - Tankless Greater than 0.82 EF	0.82 \$	67,650	205	10,640	49%
22	Insulation (wall) R-13	2.50 \$	623,250	831	213,310	46%
23	Insulation (wall) (R-20 or R-13 w/ R-5 sheathing) (To Code)	2.54 \$	311,625	415	124,893	40%
24	Clothes Washer	0.78 \$	325,000	6,500	97,500	37%
25	Furnace 96%+ AFUE	1.12 \$	994,614	1,658	218,815	35%
26	Duct Sealing	1.37 \$	27,413	137	8,270	34%
27	WIFI Programmable thermostat	1.77 \$	6,853	137	2,878	30%
28	Water Heater - Condensing Greater than 0.80 EF	0.22 \$	11,550	35	1,372	28%
29	Water Heater - Condensing Greater than 0.80 EF	0.25 \$	6,930	21	1,012	28%
30	Furnace 94%-95.9%	1.18 \$	3,000,000	7,500	900,000	27%
31	Furnace Maintenance	0.58 \$	825,000	16,500	497,805	25%
32	Boiler Maintenance	0.72 \$	75,000	1,500	56,303	25%
33	Boiler 95%+ AFUE	0.16 \$	249,300	415	19,528	14%
34	Rebate Bundle	0.00 \$	276,282	2,763	-	0%

Sources:

- Column (a): "BHE IA-DR 5", filed with IUB May 15, 2013.
- Column (b): BHE Response to OCA Data Request No. 68, OCA Exhibit____(SJP-1), Schedule E.
- Column (c): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PROJECTED UTILITY COSTS (\$)
- customer incentive/evaluation/delivery costs and - dealer incentive costs" for 2014 through 2018.
- Column (d): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PARTICIPANTS" for 2014 through 2018.
- Column (e): "BHE IA-DR 5", filed with IUB May 15, 2013, sum of "PROJECTED ENERGY SAVINGS (THERMS)"
for 2014 through 2018.
- Column (f): "BHE IA-DR 5", filed with IUB May 15, 2013, as titled.

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : May 29, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Residential Evaluation Program

8.

- A. What efforts have been made to identify the reasons for the low participation rate in the current HPwES program and to correct them?

Response: The 2010 Evaluation Report (provided as Appendix C to the Annual Report) found there is perceived cost barrier to completing actions by customers and low value to completion. Black Hills Energy has engaged trade allies through education and communication outreach, ATEC has been instructed to educate customers regarding HPwES and outreach is conducted with Home Energy Raters.

- B. How is REP an improvement over the HPwES pilot? Does a Tier I on-site assessment provide the same degree of comprehensiveness that HPwES did?

Response: Tier I provides the same level of comprehensiveness as the test-in portion of HPwES. Tier II provides the follow-up test-out required in HPwES. The revised REP provides customers with multiple levels of comprehensiveness to fit their needs while encouraging customers to increase their knowledge of energy-efficiency and take advantage of Black Hills Energy rebates, as appropriate.

- C. In the event that a Tier II test-out indicates a problematic measure installation (e.g., the condensing furnace does not condense so operates as a baseline efficiency piece of equipment) or an important efficiency opportunity has been missed (e.g., there is still a high air leakage rate and obvious air leakage sites remain), what procedures exist for remediation? To what extent is the contractor accountable?

Response: Customers who choose to participate in a Tier II evaluation will work directly with their selected contractor. This contractor is under contractual agreement with the customer and is therefore liable as stated in their agreement.

Responded by: Jim Dillon

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : May 29, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Residential Evaluation Program

9. The Plan appears to presume that the on-line and on-site evaluations would lead to an increase in Residential Prescriptive Program participation.

A. How is such an increase to be tracked?

Response: Tracking occurs between on-site evaluation and submission of prescriptive rebate applications. While there is no direct tracking between the on-line evaluation and rebate submissions, Black Hills Energy will track on-line participation.

B. What efforts are made to encourage on-line and free walk through participants to receive the more comprehensive audit and efficiency measures?

Response: The on-line evaluation component will be designed to increase customer interest to learn more about their homes. Those who are interested can easily sign-up for a free walk-through or a Tier I or II evaluation based on the customers level of interest. Customers who select any on-site option will receive personal attention and encouragement from the energy evaluator (formally auditor). Encouragement will be both verbal to increase the customers understanding of the home's energy use, as well as written in form of a customized report.

C. Why was duct insulation removed as a measure qualifying for an incentive?

Response: Measure incentives are not part of the residential evaluation program. However, duct insulation was removed from the residential prescriptive program because historical experience indicates that it is difficult to constrain duct insulation to unconditioned space resulting in ineffective installation of insulation.

Responded by: Jim Dillon

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : May 29, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Residential Evaluation Program: QA/QC

11.

- A. What QA/QC steps are taken to ensure the installers and the evaluators are providing good quality work and accurate evaluation?

Response: Black Hills Energy will continue to modify agreements with any contractors providing evaluation services to ensure customer receive high-quality services. Contracts related to installation are between the customer and contractor.

- B. What happens when/if a customer complains?

Response: Complaints related to the evaluator are sent directly to Black Hills Energy. Complaints related to installation of measures are resolved directly between the contractor and customer.

- C. What is the QA/QC budget per year and who performs the evaluation; Black Hills staff, the implementation contractor or a 3rd party?

Response: Internal QA/QC is embedded in the administrative budget and is not separate. Black Hills Energy provides oversight of the evaluation program including quarterly meetings with the implementation firm and contracts with a third party for EM&V activities.

- D. What specific BPI certification is required for participation as a contractor?

Response: Evaluators are required to have BPI Building Analyst certification.

Responded by: Jim Dillon

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : May 29, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Residential Evaluation Program: Contractor Eligibility Qualifications

12.

- A. Is contractor participation limited to individuals employed by a single implementation contractor, or can private companies perform the evaluations provided they are qualified and under the oversight of the implementation contractor?

Response: Any qualified contractor may be eligible to participate under a contractual agreement and oversight from the implementation contractor.

What qualifications must installation contractors possess? How are these qualification assessed by the program?

Response: There are no installation contractors as part of the Residential Evaluation Program.

- B. What are the qualifications an on-site evaluator must possess to participate in REP? Are they all employees of the implementation contractor or is this function subcontracted?

Response: All evaluators must be certified by the Building Performance Institute. All qualified contractors must work under the implementation vendor.

- C. If the wider contractor market is able to participate, will Black Hills provide any assistance for contractors to develop relationships or cooperatives with each other, to produce a network of qualified professionals?

Response: Black Hills Energy encourages its trade allies to collaborate where appropriate.

- D. How will contactors report their job information?

Response: Contractors will report evaluations through the implementation contractor.

Will Black Hills be developing or using tools for this purpose?

NOTE: In the event the response to this data request contains confidential information, do not simply mark the entire response or attached document(s) confidential. Please highlight, or otherwise identify, the specific information that is claimed to be confidential.

Response: The implementation contractor maintains a database for this purpose.

What will be the incentive to the contractor to report jobs?

Response: Contractors will not receive any spiffs for participating in REP. However, contractors will be paid for performing each evaluation.

- E. How will Black Hills help contractors to market this service and to help them sell both more jobs and more extensive jobs?

Response: Black Hills Energy engages customers through the online evaluation, website education, and evaluator communications.

Responded by: Jim Dillon

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : May 29, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Residential Prescriptive Program: Savings Estimates for
File BHE-IA-DR 5

14.

- A. The “Installed Therms” for the envelope measures (insulation and infiltration control) are the only ones that are not calculated as the Baseline Therms * (1-savings percentage). What is the additional calculation step for these measures?

Response: The table is in error. The therm savings for the envelope measures were taken directly from the IUA State-Wide Savings Potential, which assumed a baseline consumption with a 90% AFUE furnace, based on the now-rescinded federal furnace standard. The value in the DR 5 workbook was inadvertently not updated to reflect this change.

- B. How does Black Hills account for the interactive effects of the various measures? For example if someone replaces both their furnace and insulates their walls, is the reduced heating load due to insulation taken into account when calculating furnace savings?

Response: The savings used in the EEP are assumed to be stand-alone savings, not accounting for interactive effects.

- C. Explain why it is reasonable to assume a thermostat upgrade would last 15 years.

Response: The source for the 15-year measure life for programmable thermostats is: "Rebuilding For Efficiency: Improving the Energy Use of Reconstructed Residences in South Florida", Prepared for U.S. Department of Energy, Florida Energy Office, and Florida Power & Light Company, FSEC-CR-562-92, December 1992.

- D. All insulation is rated at a 20-year life. Why is such a conservative value used for insulation when insulating the thermal envelope to optimal levels may be expected to last as long as the house itself?

NOTE: In the event the response to this data request contains confidential information, do not simply mark the entire response or attached document(s) confidential. Please highlight, or otherwise identify, the specific information that is claimed to be confidential.

Response: The measure lives for insulation is based on Database for Energy Efficient Resources (DEER), Summary of EUL Analysis, April 2008. Cadmus used DEER as the source given its wide acceptance as a resource.

E. Why is infiltration reduction only expected to last for 11 years?

Response: The measure life for infiltration is based on Database for Energy Efficient Resources (DEER), Summary of EUL Analysis, April 2008. Cadmus used DEER as the source given its wide acceptance as a resource.

Responded by: Jim Dillon

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : May 29, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Residential Prescriptive Program: Space Heating Equipment QA Control

17.

A. The other two Iowa IOUs now require SAVE certified installation for HVAC systems. Is there a reason why Black Hills is not requiring this quality installation requirement?

Response: Due to the rural nature of the Black Hills Energy Service territory, Black Hills Energy believes requiring SAVE certified installation would be burdensome on local contractors. However, contractors submitting applications for quality installation spiffs must either use the SAVE software or be North American Technician Excellence (NATE) certified.

B. What QA processes are in place to ensure that measures are being installed appropriately and the savings claims are appropriate?

Response: Participants must have a blower door test to confirm the proper installation of infiltration measures prior to submitting the rebate application and those customers receiving the duct sealing rebate must confirm proper sealing with a duct blaster test. To ensure quality installation compliance, the dealer spiff for furnaces and boilers will be contingent on receiving documentation showing proper installation practice and/or proof that the contractor completed a training course.

A third party vendor preforms onsite verification of five percent of installed measures. If the verification determines that a contractor's installations are sub-standard then a higher percentage of installs are verified.

C. Why are the impact and process evaluations being performed internally? Why not contract a third-party organization to provide a transparent and independent review.

Response: Black Hills does not perform the evaluations internally. Black Hills will contract with a third party evaluator.

Responded by: Jim Dillon

NOTE: In the event the response to this data request contains confidential information, do not simply mark the entire response or attached document(s) confidential. Please highlight, or otherwise identify, the specific information that is claimed to be confidential.

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : May 29, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Residential New Construction Prescriptive Program Framework

19. Who is verifying the individual component requirements for the Residential New Construction Prescriptive Program? Are HERS raters or other qualified inspectors performing the verification?

Response: Builders are required to submit a proof of code compliance to be eligible for program participation. HERS raters will inspect participating homes.

Responded by: Jim Dillon

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : May 29, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Residential New Construction: Savings Estimate

28.

- a. Are measures modeled as a package to generate these savings, or are savings estimated from actual historic data?

Response: Savings are based on REMRate models for those measures that are available within the software. Savings for additional measures (e.g. drain-water heat recovery) were based on the IUA State-Wide Savings Potential percent savings applied to the water heating end use consumption determined through REMRate.

- b. If measures are modeled to estimate savings, are interactive effects accounted for (i.e., all measures modeled together as a package)? Please explain.

Response: Yes, for the measures that can be modeled within REMRate, the software accounts for interactive effects.

- c. While 205 therms per home seems reasonable, it is higher than the Mid-American estimate of 165 therms/home for gas heated homes. Please provide more details about how savings estimates were derived.

Response: Savings were modeled based on REMRate.

Responded by: Jim Dillon

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : June 3, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Measure Selection
Residential Prescriptive

43. A. Were there additional measures that Black Hills considered that passed the societal test that did not make it into the plan ((e.g., energy management systems, water heater thermostat setbacks))? Please identify the specific criteria with which they were declined.

Response: Based on the IA potential study, the following measures pass the SCT, but were not included in the 2014-2018 plan. Some of these measures have had limited participation in the past, e.g., pool covers, and did not have substantial projected savings to merit inclusion in the program. Other measures such as the 92% furnace were not included as Black Hills Energy wanted to encourage the highest efficiency units to customers.

- Siding insulation
- Slab insulation
- Thermal door
- Home Energy Mgmt System
- Boiler controls
- Construction SIP
- Pool cover
- Water Heater thermostat setback
- 92% furnace
- Duct insulation

- B. Were higher efficiency tiers (e.g., CEE Tiers 1-3, ENERGY STAR Most Efficient, or Top Ten) for the measures listed in (A) above considered and, if so, with what criteria were they declined?

Response: No, all efficiency tiers that were included in the IUA State-Wide Savings Potential study were considered.

Responded by: Jim Dillon

NOTE: In the event the response to this data request contains confidential information, do not simply mark the entire response or attached document(s) confidential. Please highlight, or otherwise identify, the specific information that is claimed to be confidential.

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : June 3, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Collaboration
Residential Evaluation
REFERENCE : Plan, page 25

44. The Plan states: “In addition, participating energy professionals inform customers of the program as they promote their own services throughout the service territory.”

A. Has Black Hills Energy worked with the other utilities, municipalities, any State agencies, or any other entities, to provide evaluations to customers purchasing natural gas service from Black Hills Energy and electricity from another utility?

Response: Yes, Black Hills Energy works closely with the other state IOU’s to build the programs as well as promote them. In addition, Black Hills Energy communicates with various municipalities within the service territory when overlapping projects are identified. Representatives from the REC’s as well as from municipalities attend the stakeholder meetings and are educated on the IOU programs. Black Hills Energy also partnered with Winneshiek Energy District (WED) in Decorah Iowa on a HPwES pilot to help educate and identify energy efficiency savings.

B. What progress has been made in achieving coordination agreements for such services under Black Hills Energy’s current EEP plan?

Response: Black Hills Energy signed an agreement with WED in June of 2012 for a one year pilot to determine how a local presence could potentially affect the participation in the energy efficiency plans.

Responded by: Jim Dillon

OFFICE OF CONSUMER ADVOCATE

DATA REQUEST

DATE : June 3, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Baseline assumptions
Residential New Construction
REFERENCE : BHE Plan, page 38

46. “Builders are required to submit a proof of code compliance to be eligible for program participation.”

A. Provide a narrative description and/or definition of “code compliance” as it will be defined during each year of the five-year plan.

Response: Code compliance is a matter of City and state regulation.

B. Identify any and all baseline or code compliance studies relied on by BHE to design the Residential New Construction program.

Response: Black Hills Energy referred to the IECC 2012 as the baseline standard.

C. What are the assumed code compliance rates?

Response: The savings estimates assume full compliance for participants in the program.

D. How will BHE adjust the baseline assumptions over the course of the five-year plan?

Response: If the code changes, the baseline assumptions would be reviewed.

Responded by: Jim Dillon

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : June 3, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Incentive Levels
REFERENCE : BHE May 15, 2013 filing with IUB – Iowa DR 5

47. The referenced Excel spreadsheet includes columns titled “Incremental Measure Cost” and “Dealer + Customer Incentives as Percent of Inc. Measure Cost.”

Provide a narrative explanation of program assumptions relied on to establish incentive levels and incentive/cost ratio guidelines.

Response: Each incentive was looked at individually. Black Hills Energy reviewed historical and regional incentive levels, cost effectiveness, participation and expenditure impacts to determine an appropriate incentive level to encourage customer participation.

Responded by: Jim Dillon

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : June 11, 2013

DOCKET NO. : EEP-2013-0001

COMPANY : Black Hills Energy

SUBJECT : EM&V Recommendations
Residential New Construction

REFERENCE : Tetra Tech Report: Black Hills Energy 2012 Comprehensive
Process and Impact Evaluation – Iowa Gas Territory April 2, 2013,
Section 3

62. Tetra Tech noted (p. 3-7): “The performance path is not going to be available in the 2014-2018 energy efficiency plan, and the prescriptive path is changing significantly.” Tetra Tech found the ABOP savings were “consistent with current or proposed code requirements, program assumptions, and engineering fundamentals.” Why was this fundamentally sound program path (ABOP) eliminated from the Residential New Construction Program?

Response (Jim Dillon on behalf of the Company): Historically, the ABOP has not had participants. In addition, many of the requirements of the ABOP are met by or exceeded by 2012 IECC. The 2014-2018 Residential New Construction (RNC) program was designed to capture the key features from the prescriptive path that would result in savings above code, and therefore ABOP was eliminated.

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : June 11, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Target Market
Residential New Construction
REFERENCE : Plan, p. 38

64.

- A. Please provide the square footage and savings assumption for a duplex that would be eligible for incentives in the Residential New Construction Program. As part of the response, identify each unit's square footage and savings assumption.

Response (Jim Dillon on behalf of the Company): Though a duplex may be eligible to participate in the Residential New Construction program, duplex participation is anticipated to be minimal and therefore Cadmus only modeled savings assumptions for a single family detached home.

- B. Please provide the square footage assumption and savings assumption for a triplex that would be eligible for incentives in the Residential New Construction Program. As part of the response, identify each unit's square footage and savings assumption.

Response (Jim Dillon on behalf of the Company): Though a triplex may be eligible to participate in the Residential New Construction program, triplex participation is anticipated to be minimal and therefore Cadmus only modeled savings assumptions for a single family detached home.

- C. Please provide the square footage assumption and savings assumption for a single family detached home that would be eligible for incentives in the Residential New Construction Program.

Response (Jim Dillon on behalf of the Company): Cadmus modeled a single family detached home with a square footage assumption of 2,200 square feet. The savings assumption for a single family detached home was 205 therms.

**OFFICE OF CONSUMER ADVOCATE
 DATA REQUEST**

DATE : June 11, 2013
 DOCKET NO. : EEP-2013-0001
 COMPANY : Black Hills Energy
 SUBJECT : Target Market
 Residential New Construction
 REFERENCE : Plan, pp. 38-41

65. Separate the participation goals, energy savings goals, and budget between single family homes, duplexes, and triplexes for each year of the 2014–2018 Plan.

Response (Jim Dillon on behalf of the Company): Due to low participation anticipated for duplexes and triplexes, participation goals, energy savings goals, and budgets are only provided for single family homes, which are listed below by year:

	2014	2015	2016	2017	2018
Participation Goals	450	473	495	519	543
Therm Savings Goals	92,470	97,196	101,717	106,577	111,663
Budget	\$483,750	\$506,750	\$530,475	\$555,775	\$584,155

NOTE: In the event the response to this data request contains confidential information, do not simply mark the entire response or attached document(s) confidential. Please highlight, or otherwise identify, the specific information that is claimed to be confidential.

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : June 11, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Furnaces
Residential Prescriptive Program
REFERENCE : BHE May 15, 2013 filing with IUB – Iowa DR 5 and
Plan, p. 33

66.

- A. Provide the underlying assumptions relied on by BHE to include the Furnace Replacement before end of life, Minimum 94% AFUE measure with a \$1,350 incentive. As part of the response, include a narrative explanation of why the 94% AFUE furnace was chosen, rather than a higher efficiency, such as a 96% AFUE furnace.

Response (Jim Dillon on behalf of the Company): This measure listing is a typo and was not included in the final plan.

- B. The Furnace Replacement before end of life, Minimum 94% AFUE measure on page 33 of the Plan with a \$1,350 incentive does not appear in the BHE May 15, 2013, filing with IUB – Iowa DR 5. Please provide this measure’s detailed information in the same format as the BHE May 15, 2013, filing with IUB – Iowa DR 5.

Response (Jim Dillon on behalf of the Company): The Furnace Replacement before end of life measure was not included in the IUB – Iowa DR-5 submission because it was removed from the program and the listing of this measure in the submitted plan is a typo.

**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : June 11, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Cost-Effectiveness
Residential Prescriptive Program
REFERENCE : Plan, pp. 33-34 and BHE May 15, 2013, filing IUB-Iowa DR 5

68. Provide the Societal Cost Test Ratio for each individual measure included in the Residential Prescriptive Program.

Response (Jim Dillon on behalf of the Company): The Societal Cost Test ratios for the individual measures included in the Residential Prescriptive program are listed below. These SCT ratios are solely for the measures and do not included costs such as marketing and administration, which are not allocated to measures and only included at the program level.

Measure Name	BASE EQUIPMENT	Measure Level SCT BC Ratio
Furnace Quality Install	Standard Install	0.16
Furnace 94%-95.9%	Federal Standard 78% AFUE	1.18
Furnace 96%+ AFUE	Federal Standard 78% AFUE	1.12
Boiler Quality Install	Standard Install	0.49
Boiler 95%+ AFUE	Federal Standard 82% AFUE (EISA 2007)	0.16
Gas Fireplace	60% AFUE	0.32
Duct Sealing	Existing CFM/100sqft of CFA	1.37
Integrated Space and Water Heat	Standard Boiler AFUE 82% and Water Heater EF = 0.59	1.32
Multi-Zone Thermostat	Programmable Thermostat - Central Control Only	0.90
Furnace Maintenance	Unmaintained Furnace	0.58
Boiler Maintenance	Unmaintained Boiler	0.72
Setback Thermostat (Customer Installation)	Manual thermostat	8.95
Setback Thermostat (Professional Installation)	Manual thermostat	3.58

NOTE: In the event the response to this data request contains confidential information, do not simply mark the entire response or attached document(s) confidential. Please highlight, or otherwise identify, the specific information that is claimed to be confidential.

Measure Name	BASE EQUIPMENT	Measure Level SCT BC Ratio
WiFi Programmable thermostat	Manual thermostat	1.77
Furnace maintenance and setback thermostat	Unmaintained furnace; manual thermostat	2.92
Boiler maintenance and setback thermostat	Unmaintained furnace; manual thermostat	3.30
Insulation (ceiling) R-49	Average Existing Insulation (R-15.7)	0.92
Insulation (wall) R-13	Average Existing Insulation (R-2.1)	2.50
Insulation (wall) (R-20 or R-13 w/ R-5 sheathing) (To Code)	Average Existing Insulation (R-2.1)	2.54
Insulation (basement wall) R-15	Average Existing Insulation (R-2.1)	2.37
Insulation (foundation) R-30	Average Existing Insulation (R-1.8)	0.85
Insulation (floor) R-30	Average Existing Insulation (R-1.8)	0.85
Insulation (Rim and Band Joist) R-10	No Rim And Band Joist Insulation	1.32
Infiltration control (weather-stripping, caulking, etc.)	Existing Infiltration (10 ACH50)	1.48
Water Heater - Storage 0.67 to 0.79 EF	Federal Standard April 2015 EF = 0.62	0.17
Thermal Door	Standard Code Door (R-2.9)	4.56
Water Heater - Storage 0.67 to 0.79 EF	EF = 0.59 Federal Standard 2001	0.38
Water Heater - Condensing Greater than 0.80 EF	EF = 0.59 Federal Standard 2001	0.25
Water Heater - Tankless Greater than 0.82 EF	EF = 0.59 Federal Standard 2001	0.82
Water Heater - Condensing Greater than 0.80 EF	Federal Standard April 2015	0.22
Water Heater Replacement before end of life	Below federal standard 0.55	0.31
Clothes Washer	Standard Clothes Washer MEF = 1.26 and WF = 9.5 (Federal Standard)	0.78
Water Heater - Tankless Greater than 0.82 EF	Federal Standard April 2015	0.74

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**OFFICE OF CONSUMER ADVOCATE
DATA REQUEST**

DATE : June 11, 2013
DOCKET NO. : EEP-2013-0001
COMPANY : Black Hills Energy
SUBJECT : Cost Effectiveness
2014–2018 Plan
REFERENCE : Black Hills Energy 2014–2018 Plan

72.

- A. What measures are included in the Plan that do not pass the Societal Cost Test on an individual measure basis? Identify each such measure by Program name, Measure name, Measure description, and include the measure's Participant Test, Ratepayer Impact Test, Utility Cost Test, and Societal Test.

Response (Jim Dillon on behalf of the Company): Please see attached table entitled DR72A - BHE BC ratios.

- B. For each measure identified in (A), separately provide for each measure the underlying assumptions and specific criteria relied on by Black Hills Energy to choose to include the measure in the 2014–2018 Plan.

Response (Jim Dillon on behalf of the Company): Please see the table below.

Official Program Name	Measure Name	Measure Description	Base Equipment	Underlying Assumptions and Selection Criteria for Plan Inclusion
Low Income Programs				
	Multi-Family & Institutional Efficiency Improvements	Faucet aerators, hot water pipe insulation, low-flow showerheads	Existing condition	Low income programs are not required to be cost effective.
	Weatherization	Infiltration, insulation, equipment, direct install	Existing condition	Low income programs are not required to be cost effective.
Nonresidential Evaluations				
	Small Commercial Evaluation	Small Commercial Evaluation	No Evaluation	Evaluations are used to inform customers of opportunities for energy savings through other programs and measures.
	Large Commercial Evaluation	Large Commercial Evaluation	No Evaluation	Evaluations are used to inform customers of opportunities for energy savings through other programs and measures.
Nonresidential Prescriptive Rebates				
	Quality Install Boiler	Quality Install Boiler	Standard Install	QI was included to continue to encourage market transformation and ensure customers receive the full benefits of efficient units.
	Quality Install Furnace	Quality Install Furnace	Standard Install	QI was included to continue to encourage market transformation and ensure customers receive the full benefits of efficient units.
	Spa Covers	Greater than R-14	No cover	Spa covers have been historically included and target a traditionally underserved audience.
	Swimming Pool Covers	Transparent	No cover	Swimming pool covers have been historically included and target a traditionally underserved audience.
	Insulation Upgrades (floor) R-30	R30 floor	Average Existing Insulation (R-10)	To provide a comprehensive package of insulation related natural gas measures.
	Insulation Upgrades (roof) R20ci	R20ci roof	Average Existing Insulation (R-10)	To provide a comprehensive package of insulation related natural gas measures.
	Insulation Upgrades (wall) R13 + R7.5	R13 + R7.5 wall	Average Existing Insulation (R-10)	To provide a comprehensive package of insulation related natural gas measures.

NOTE: In the event the response to this data request contains confidential information, do not simply mark the entire response or attached document(s) confidential. Please highlight, or otherwise identify, the specific information that is claimed to be confidential.

Official Program Name	Measure Name	Measure Description	Base Equipment	Underlying Assumptions and Selection Criteria for Plan Inclusion
Other Public Purpose				
	Iowa Energy Center and Center for Global & Regional Environmental Research	N/A	N/A	To support local and regional efforts to enhance energy-efficiency..
	Trees Forever and Trees for Kids	N/A	N/A	The Iowa Administrative Code states that a utility shall consider including a tree planting program.
Residential Evaluations				
<i>Single Family Evaluations</i>	Online Evaluation	Online evaluation	No evaluation	Evaluations are used to inform customers of opportunities for energy savings through other programs and measures.
	Walk Through Evaluation	Walk-through evaluation, including installation of faucet aerators, hot water pipe insulation, low-flow showerheads, water heater blankets, ES infiltration kit (includes outlet gaskets and other measures), and set-backs thermostats	No evaluation; existing conditions	Evaluations are used to inform customers of opportunities for energy savings through other programs and measures.
	Tier 1 Evaluation	Comprehensive whole-house evaluation including diagnostic testing , leave-behind measures	No evaluation	Evaluations are used to inform customers of opportunities for energy savings through other programs and measures.
	Tier 2 Evaluation	Comprehensive whole-house evaluation including diagnostic testing & test-out, leave-behind measures	No evaluation	Evaluations are used to inform customers of opportunities for energy savings through other programs and measures.
<i>Multi-Family Evaluations</i>	Evaluation of common areas	Walk-through evaluation	No evaluation	Evaluations are used to inform customers of opportunities for energy savings through other programs and measures.
Residential New				

NOTE: In the event the response to this data request contains confidential information, do not simply mark the entire response or attached document(s) confidential. Please highlight, or otherwise identify, the specific information that is claimed to be confidential.

Official Program Name	Measure Name	Measure Description	Base Equipment	Underlying Assumptions and Selection Criteria for Plan Inclusion
Construction				
	Prescriptive Path (BOP)	Quality Installation (QI)	Standard Installation	QI was included to continue to encourage market transformation and ensure customers receive the full benefits of efficient units.
		Wall Insulation R20+ R5	Average Existing Insulation (R-2.1)	To provide a comprehensive package of insulation related natural gas measures.
		96% AFUE	Federal Standard 78% AFUE	To provide a comprehensive package of relevant natural gas measures.
		Power Pipe System	No Drain Water Heat Recovery	To provide a comprehensive package of relevant natural gas measures.
		EF = 0.67	EF = 0.59 Federal Standard 2001	To provide a comprehensive package of relevant natural gas measures.
Residential Prescriptive Rebates				
	Furnace Quality Install	Furnace Quality Install	Standard Install	QI was included to continue to encourage market transformation and ensure customers receive the full benefits of efficient units.
	Boiler Quality Install	Boiler Quality Install	Standard Install	QI was included to continue to encourage market transformation and ensure customers receive the full benefits of efficient units.
	Boiler 95%+ AFUE	95%+ AFUE	Federal Standard 82% AFUE (EISA 2007)	To provide a comprehensive package of relevant natural gas measures.
	Gas Fireplace	70%+ AFUE, intermittent ignition, heat rated, thermostatic control with blower	60% AFUE	To provide a comprehensive package of relevant natural gas measures.
	Multi-Zone Thermostat	Individual Room Temperature Control for Major Occupied Rooms	Programmable Thermostat - Central Control Only	To provide a comprehensive package of relevant natural gas measures.
	Furnace Maintenance	Furnace Maintenance	Unmaintained Furnace	To ensure customers receive the full benefits of the HVAC system.
	Boiler Maintenance	Boiler Maintenance	Unmaintained Boiler	To ensure customers receive the full benefits of the boiler system.
	Insulation (ceiling) R-49	R-49	Average Existing Insulation (R-15.7)	To provide a comprehensive package of insulation related natural gas measures.

NOTE: In the event the response to this data request contains confidential information, do not simply mark the entire response or attached document(s) confidential. Please highlight, or otherwise identify, the specific information that is claimed to be confidential.

Official Program Name	Measure Name	Measure Description	Base Equipment	Underlying Assumptions and Selection Criteria for Plan Inclusion
	Insulation (foundation) R-30	R-30	Average Existing Insulation (R-1.8)	To provide a comprehensive package of insulation related natural gas measures.
	Insulation (floor) R-30	R-30	Average Existing Insulation (R-1.8)	To provide a comprehensive package of insulation related natural gas measures.
	Water Heater - Storage 0.67 to 0.79 EF	Water Heater - Storage 0.67 to 0.79 EF	Federal Standard April 2015 EF = 0.62	To provide a comprehensive package of relevant natural gas measures.
	Water Heater - Storage 0.67 to 0.79 EF	Water Heater - Storage 0.67 to 0.79 EF	EF = 0.59 Federal Standard 2001	To provide a comprehensive package of relevant natural gas measures.
	Water Heater - Condensing Greater than 0.80 EF	Water Heater - Condensing Greater than 0.80 EF	EF = 0.59 Federal Standard 2001	To provide a comprehensive package of relevant natural gas measures.
	Water Heater - Tankless Greater than 0.82 EF	Water Heater - Tankless Greater than 0.82 EF	EF = 0.59 Federal Standard 2001	To provide a comprehensive package of relevant natural gas measures.
	Water Heater - Condensing Greater than 0.80 EF	Water Heater - Condensing Greater than 0.80 EF	Federal Standard April 2015	To provide a comprehensive package of relevant natural gas measures.
	Water Heater Replacement before end of life	Replacement before end of life (only Orphan Water Heating) (Storage) Minimum EF = 0.67	Below federal standard 0.55	To provide a comprehensive package of relevant natural gas measures.
	Clothes Washer	Clothes Washer ENERGY STAR MEF = 2.0 and WF = 6.0	Standard Clothes Washer MEF = 1.26 and WF = 9.5 (Federal Standard)	To provide a comprehensive package of relevant natural gas measures.
	Water Heater - Tankless Greater than 0.82 EF	Water Heater - Tankless Greater than 0.82 EF	Federal Standard April 2015	To provide a comprehensive package of relevant natural gas measures.
	Rebate Bundle	10% bonus incentive on top of rebate packaged if minimum 3 residential prescriptive measures installed; 10% of total incentives received	N/A	To encourage customers to install a comprehensive package of natural gas measures.

NOTE: In the event the response to this data request contains confidential information, do not simply mark the entire response or attached document(s) confidential. Please highlight, or otherwise identify, the specific information that is claimed to be confidential.

- C. For each measure identified in (A), separately provide for each measure the underlying assumptions and specific criteria relied on by Black Hills Energy to establish the measure's incentive.

Response: (Jim Dillon on behalf of the Company): For each measure, Black Hills Energy considered the historical incentive level, incentives provided by regional utilities for similar measures, the incremental cost of upgrading from the base equipment to the more efficient measure, as well as the projected participation level for each measure when determining the appropriate incentive level for the 2014-2018 program cycle. Please note: Low income programs are fully covered and provided at no cost to participants.

DR72A - BHE BC ratios

Official Program Name	Measure Name	Measure Description	Base Equipment	SCT	UCT	PCT	RIM
Low Income Programs							
	Multi-Family & Institutional Efficiency Improvements	Faucet aerators, hot water pipe insulation, low-flow showerheads	Existing condition	0.00	0.01	0.45	0.01
	Weatherization	Infiltration, insulation, equipment, direct install	Existing condition	0.40	0.25	1.24	0.20
Nonresidential Evaluations							
	Small Commercial Evaluation	Small Commercial Evaluation	No Evaluation	0.04	0.05	0.90	0.04
	Large Commercial Evaluation	Large Commercial Evaluation	No Evaluation	0.01	0.01	0.81	0.01
Nonresidential Prescriptive Rebates							
	Quality Install Boiler	Quality Install Boiler	Standard Install	0.72	2.41	0.85	0.70
	Quality Install Furnace	Quality Install Furnace	Standard Install	0.31	1.05	0.51	0.51
	Spa Covers	Greater than R-14	No cover	0.06	0.92	0.11	0.45
	Swimming Pool Covers	Transparent	No cover	0.02	0.06	0.25	0.06
	Insulation Upgrades (floor) R-30	R30 floor	Average Existing Insulation (R-10)	0.21	0.16	0.79	0.14
	Insulation Upgrades (roof) R20ci	R20ci roof	Average Existing Insulation (R-10)	0.11	0.08	0.75	0.07
	Insulation Upgrades (wall) R13 + R7.5	R13 + R7.5 wall	Average Existing Insulation (R-10)	0.42	0.31	0.90	0.23
Other Public Purpose							
	Iowa Energy Center and Center for Global & Regional Environmental Research	N/A	N/A	0.00	0.00	N/A	0.00
	Trees Forever and Trees for Kids	N/A	N/A	0.31	0.16	N/A	0.14
Residential Evaluations							
	Online Evaluation	Online evaluation	No evaluation	N/A	N/A	N/A	N/A
	Walk Through Evaluation	Walk-through evaluation, including installation of faucet aerators, hot water pipe insulation, low-flow showerheads, water heater blankets, ES infiltration kit (includes outlet gaskets and other measures), and set-backs thermostats	No evaluation; existing conditions	0.79	0.59	1.59	0.37
	Tier 1 Evaluation	Comprehensive whole-house evaluation including diagnostic testing , leave-behind measures	No evaluation	0.40	0.40	1.04	0.28
	Tier 2 Evaluation	Comprehensive whole-house evaluation including diagnostic testing & test-out, leave-behind measures	No evaluation	0.26	0.24	1.03	0.19
Multi-Family Evaluations							
	Evaluation of common areas	Walk-through evaluation	No evaluation	0.00	0.00	0.50	0.00
Residential New Construction							

DR72A - BHE BC ratios

Official Program Name	Measure Name	Measure Description	Base Equipment	SCT	UCT	PCT	RIM
	Prescriptive Path (BOP)	Multiple Measures	Standard Installation	0.71	1.71	0.59	0.63
Residential Prescriptive Rebates							
	Furnace Quality Install	Furnace Quality Install	Standard Install	0.16	0.27	0.63	0.21
	Boiler Quality Install	Boiler Quality Install	Standard Install	0.49	0.82	0.91	0.45
	Boiler 95%+ AFUE	95%+ AFUE	Federal Standard 82% AFUE (EISA 2007)	0.16	0.70	0.23	0.41
	Gas Fireplace	70%+ AFUE, intermittent ignition, heat rated, thermostatic control with blower	60% AFUE	0.32	0.39	0.69	0.28
	Multi-Zone Thermostat	Individual Room Temperature Control for Major Occupied Rooms	Programmable Thermostat - Central Control Only	0.90	1.14	1.14	0.53
	Furnace Maintenance	Furnace Maintenance	Unmaintained Furnace	0.58	1.95	0.74	0.65
	Boiler Maintenance	Boiler Maintenance	Unmaintained Boiler	0.72	2.42	0.86	0.69
	Insulation (ceiling) R-49	R-49	Average Existing Insulation (R-15.7)	0.92	0.83	1.11	0.45
	Insulation (foundation) R-30	R-30	Average Existing Insulation (R-1.8)	0.85	0.74	1.20	0.43
	Insulation (floor) R-30	R-30	Average Existing Insulation (R-1.8)	0.85	0.74	1.20	0.43
	Water Heater - Storage Federal Standard April 2015 EF = 0.62	Water Heater - Storage 0.67 to 0.79 EF	Federal Standard April 2015 EF = 0.62	0.17	0.21	0.72	0.17
	Water Heater - Storage 0.67 to 0.79 EF	Water Heater - Storage 0.67 to 0.79 EF	EF = 0.59 Federal Standard 2001	0.38	0.46	0.91	0.30
	Water Heater - Condensing Greater than 0.80 EF	Water Heater - Condensing Greater than 0.80 EF	EF = 0.59 Federal Standard 2001	0.25	0.71	0.46	0.39
	Water Heater - Tankless Greater than 0.82 EF	Water Heater - Tankless Greater than 0.82 EF	EF = 0.59 Federal Standard 2001	0.82	1.11	0.99	0.49
	Water Heater - Condensing Greater than 0.80 EF	Water Heater - Condensing Greater than 0.80 EF	Federal Standard April 2015	0.22	0.63	0.43	0.37
	Water Heater Replacement before end of life	Replacement before end of life (only Orphan Water Heating) (Storage) Minimum EF = 0.67	Below federal standard 0.55	0.31	0.40	0.80	0.28
	Clothes Washer	Clothes Washer ENERGY STAR MEF = 2.0 and WF = 6.0	Standard Clothes Washer MEF = 1.26 and WF = 9.5 (Federal Standard)	0.78	1.53	0.99	0.56
	Water Heater - Tankless Greater than 0.82 EF	Water Heater - Tankless Greater than 0.82 EF	Federal Standard April 2015	0.74	1.00	0.93	0.47
	Rebate Bundle	10% bonus incentive on top of rebate packaged if minimum 3 residential prescriptive measures installed; 10% of total incentives received	N/A	N/A	0.00	N/A	0.00

DR72A - BHE BC ratios

Official Program Name	Measure Name	Measure Description	Base Equipment	Underlying Assumptions and Selection Criteria
Low Income Programs				
	Multi-Family & Institutional Efficiency Improvements	Faucet aerators, hot water pipe insulation, low-flow showerheads	Existing condition	
	Weatherization	Infiltration, insulation, equipment, direct install	Existing condition	
Nonresidential Evaluations				
	Small Commercial Evaluation	Small Commercial Evaluation	No Evaluation	
	Large Commercial Evaluation	Large Commercial Evaluation	No Evaluation	
Nonresidential Prescriptive Rebates				
	Quality Install Boiler	Quality Install Boiler	Standard Install	
	Quality Install Furnace	Quality Install Furnace	Standard Install	
	Spa Covers	Greater than R-14	No cover	
	Swimming Pool Covers	Transparent	No cover	
	Insulation Upgrades (floor) R-30	R30 floor	Average Existing Insulation (R-10)	
	Insulation Upgrades (roof) R20ci	R20ci roof	Average Existing Insulation (R-10)	
	Insulation Upgrades (wall) R13 + R7.5	R13 + R7.5 wall	Average Existing Insulation (R-10)	
Other Public Purpose				
	Iowa Energy Center and Center for Global & Regional Environmental Research	N/A	N/A	
	Trees Forever and Trees for Kids	N/A	N/A	
Residential Evaluations				
	Online Evaluation	Online evaluation	No evaluation	
<i>Single Family Evaluations</i>	Walk Through Evaluation	Walk-through evaluation, including installation of faucet aerators, hot water pipe insulation, low-flow showerheads, water heater blankets, ES infiltration kit (includes outlet gaskets and other measures), and set-backs thermostats	No evaluation; existing conditions	
	Tier 1 Evaluation	Comprehensive whole-house evaluation including diagnostic testing , leave-behind measures	No evaluation	
	Tier 2 Evaluation	Comprehensive whole-house evaluation including diagnostic testing & test-out, leave-behind measures	No evaluation	
	<i>Multi-Family Evaluations</i>	Evaluation of common areas	Walk-through evaluation	No evaluation
Residential New Construction				
	Prescriptive Path (BOP)	Quality Installation (QI)	Standard Installation	
		Wall Insulation R20+ R5	Average Existing Insulation (R-2.1)	
		96% AFUE	Federal Standard 78% AFUE	
		Power Pipe System	No Drain Water Heat Recovery	
		EF = 0.67	EF = 0.59 Federal Standard 2001	
Residential Prescriptive Rebates				
	Furnace Quality Install	Furnace Quality Install	Standard Install	
	Boiler Quality Install	Boiler Quality Install	Standard Install	
	Boiler 95%+ AFUE	95%+ AFUE	Federal Standard 82% AFUE (EISA 2007)	
	Gas Fireplace	70%+ AFUE, intermittent ignition, heat rated, thermostatic control with blower	60% AFUE	

DR72A - BHE BC ratios

Official Program Name	Measure Name	Measure Description	Base Equipment	Underlying Assumptions and Selection Criteria
	Multi-Zone Thermostat	Individual Room Temperature Control for Major Occupied Rooms	Programmable Thermostat - Central Control Only	
	Furnace Maintenance	Furnace Maintenance	Unmaintained Furnace	
	Boiler Maintenance	Boiler Maintenance	Unmaintained Boiler	
	Insulation (ceiling) R-49	R-49	Average Existing Insulation (R-15.7)	
	Insulation (foundation) R-30	R-30	Average Existing Insulation (R-1.8)	
	Insulation (floor) R-30	R-30	Average Existing Insulation (R-1.8)	
	Water Heater - Storage Federal Standard April 2015 EF = 0.62	Water Heater - Storage 0.67 to 0.79 EF	Federal Standard April 2015 EF = 0.62	
	Water Heater - Storage 0.67 to 0.79 EF	Water Heater - Storage 0.67 to 0.79 EF	EF = 0.59 Federal Standard 2001	
	Water Heater - Condensing Greater than 0.80 EF	Water Heater - Condensing Greater than 0.80 EF	EF = 0.59 Federal Standard 2001	
	Water Heater - Tankless Greater than 0.82 EF	Water Heater - Tankless Greater than 0.82 EF	EF = 0.59 Federal Standard 2001	
	Water Heater - Condensing Greater than 0.80 EF	Water Heater - Condensing Greater than 0.80 EF	Federal Standard April 2015	
	Water Heater Replacement before end of life	Replacement before end of life (only Orphan Water Heating) (Storage) Minimum EF = 0.67	Below federal standard 0.55	
	Clothes Washer	Clothes Washer ENERGY STAR MEF = 2.0 and WF = 6.0	Standard Clothes Washer MEF = 1.26 and WF = 9.5 (Federal Standard)	
	Water Heater - Tankless Greater than 0.82 EF	Water Heater - Tankless Greater than 0.82 EF	Federal Standard April 2015	
	Rebate Bundle	10% bonus incentive on top of rebate packaged if minimum 3 residential prescriptive measures installed; 10% of total incentives received	N/A	

**OFFICE OF CONSUMER ADVOCATE
 DATA REQUEST**

DATE : June 19, 2013
 DOCKET NO. : EEP-2013-0001
 COMPANY : Black Hills Energy Company
 SUBJECT : Multifamily New Construction

76.

- A. Based on the annual reports for the current plan (2009-2013), insert the number of multifamily* (MF) units that are reflected as program participants in the Prescriptive, Performance Tier 1, and Performance Tier 2 paths in BHE’s new construction program:

Response (Jim Dillon on behalf of the Company): Historically, Black Hills Energy did not track multifamily construction separately from single family construction under the Residential New Construction program. Therefore, these numbers are not available for 2009-2011. However, starting in 2012 Black Hills Energy implemented a new tracking system which allowed tracking of the multifamily construction separately from single family construction. See participation for 2012 below.

Residential New Construction Efficiency Level	2009 Participation		2010 Participation		2011 Participation		2012 Participation	
	Total	MF	Total	MF	Total	MF	Total	MF
Prescriptive	24	NA	15	NA	9	NA	10	0
Performance Tier 1	79	NA	5	NA	6	NA	33	16
Performance Tier 2	167	NA	574	NA	446	NA	389	131

- B. Considering participation goals for BHE’s Nonresidential New Construction Program, Proposed Plan 2014-2018, p. 61, how many multifamily buildings and units does BHE project will participate in its proposed new construction energy efficiency program for each year of the proposed plan 2014-2018?

Response (Jim Dillon on behalf of the Company): Based on historical participation, no multifamily complexes have participated. Therefore, no multifamily complexes are included in the 2014-2018 program projections.

- C. Comparing the number of MF units that participated in the current plan to the number of units that are projected to be included in eligible MF dwelling participants under

NOTE: In the event the response to this data request contains confidential information, do not simply mark the entire response or attached document(s) confidential. Please highlight, or otherwise identify, the specific information that is claimed to be confidential.

the proposed plan, please explain whether BHE is projecting a reduction in MF unit participation in the new plan and the reason for such projection.

Response (Jim Dillon on behalf of the Company): For the Nonresidential New Construction Program, the proposed plan does not project a decrease in multifamily participation as there has been no historical participation of multifamily complexes in that program.

In addition, in the Residential New Construction Program Black Hills Energy does not project any multifamily complexes to participate in the 2014-2018 program cycle, a decrease from historical levels, as that program will be limited to buildings with one to three dwelling units.

*For purposes of this question, multifamily includes dwellings with four or more individual units.