

Attachment 3



**Black Hills Power South Dakota  
2014-2016  
Demand-Side  
Management Portfolio  
Update (Docket No. EL14-  
038)**

**Prepared by:**

Applied Energy Group  
211 Broad Street, Suite 206, Red Bank, NJ 07701  
Tel (732) 945-9940 · Fax (732) 945-9942  
[www.appliedenergygroup.com](http://www.appliedenergygroup.com)

# Table of Contents

- 1. Portfolio Overview ..... 1
- 2. Portfolio Development ..... 1
- 3. DSM Portfolio Update ..... 3
  - Residential Lighting ..... 4
  - Residential Appliance Recycling Program ..... 5
  - Residential High Efficiency HVAC Program ..... 6
  - Whole House Efficiency Program ..... 8
  - Residential Audit Program ..... 9
  - School-Based Education Program ..... 10
  - Weatherization Program ..... 11
  - Commercial and Industrial Rebate Program ..... 12

# Tables

- Table 1: Portfolio Summary by Program Year ..... 1
- Table 2: Cost-Effectiveness by Program Year ..... 1
- Table 3: Cost-Effectiveness Model Inputs ..... 2

## 1. Portfolio Overview

Black Hills Power (“BHP” or “Company”) is an investor-owned utility that provides electricity to approximately 70,000 customers in western South Dakota, northern Wyoming and southeastern Montana. Black Hills Power is part of Black Hills Corporation, which provides natural gas and electricity to more than 765,000 customers throughout the Midwest region of the United States.

Black Hills Power retained Applied Energy Group (“AEG”) to update the demand-side management (“DSM”) portfolio for Program Years 2015 and 2016 for the Company’s South Dakota service area. The three key tenets of BHP’s DSM programs are:

- **Black Hills Power customers benefit from energy efficiency programs.** Energy efficiency can result in lower energy bills, immediately reducing program participant’s consumption of electricity. Furthermore, the programs are designed to be inclusive, giving all customers the opportunity to benefit from participating in BHP’s energy efficiency programs.
- **The service territory benefits from energy efficiency programs.** As part of the overall strategy for meeting the needs of its customers, cost-effective energy-efficiency programs offer an alternative to the construction of infrastructure and purchase of fuel for generation.
- **State energy goals benefit from energy-efficiency programs.** Effective energy efficiency programs can help BHP and the State of South Dakota meet the renewable and recycled energy objective that ten percent of all electricity sold at retail within South Dakota by 2015 be obtained from renewable, recycled, and conserved energy sources.<sup>1</sup>

Based on experience in other jurisdictions, including those where other BHP companies operate, the proposed programs have been designed to maximize participation. In addition to ensuring participation while efficiently utilizing budget resources, incentives have been targeted to promote the adoption of qualifying energy efficiency measures that maximize savings. BHP’s program portfolio uses a combination of education and customer incentives to advance energy efficiency in South Dakota.

TABLE 1: PORTFOLIO SUMMARY BY PROGRAM YEAR<sup>2</sup>

	Participation	MWh Savings	Coincident kW Savings	Total Budget
2015	5,634	5,798	1,247	\$804,949
2016	6,815	7,108	1,558	\$936,791

TABLE 2: COST-EFFECTIVENESS BY PROGRAM YEAR

	2015	2016
Residential Programs	1.01	1.04
Commercial & Industrial Programs	2.45	2.62
<b>Total Portfolio</b>	<b>2.03</b>	<b>2.13</b>

## 2. Portfolio Development

The Total Resource Cost Test (“TRC”) was the primary method of assessing the cost-effectiveness of energy efficient measures and programs. The TRC test is a widely-accepted methodology that has been used across the United States for over twenty-five years. TRC measures the net costs and benefits of an

<sup>1</sup> See [South Dakota Codified Laws 49-34A-101 through 49-34A-106](#).

<sup>2</sup> The total budget includes cross marketing and training.

energy efficiency program as a resource option based on the total costs of the program, including both the participant’s and the utility’s costs. This test represents the combination of the effects of a program on both participating and non-participating customers.

Four other commonly used and standardized benefit-cost tests were utilized to analyze cost-effectiveness from different perspectives:

- **Participant Cost Test** quantifies the benefits and costs to the customer due to program participation.
- **Ratepayer Impact Measure (“RIM”) Cost Test** measures what happens to a customer’s rates due to changes in utility revenues and operating costs.
- **Utility Cost Test** measures the net costs of a program as a resource option based on the costs incurred by the program administrator, excluding any net costs incurred by the participant.
- **Societal Cost Test** measures the effects of a program on society as a whole (the Societal Test is a variation on TRC and often includes the non-energy benefits associated with energy efficient technologies).

The cost-effectiveness analysis was performed using Black Hills South Dakota-specific data. The software used to perform the benefit-cost screening has been adapted from Minnesota Office of Energy Security “BenCost” software and is consistent with the California Standard Practice Manual. The input data gathered for the model included:

TABLE 3: COST-EFFECTIVENESS MODEL INPUTS

General Inputs	Specific-Project Inputs
Retail Rate (\$/kWh)	Utility Project Costs
Commodity Cost (\$/kWh)	Direct Participant Project Costs
Demand Cost (\$/kW-Year)	Project Life (Years)
Environmental Damage Cost (\$/kWh)	kWh/Participant Saved
Discount Rate (%)	kW/Participant Saved
Escalation Rate (%)	Number of Participants
Line Losses (%)	

Energy efficient measure energy and demand impacts were calculated using generally accepted engineering algorithms based on a set of reasonable assumptions. Because of the diversity in equipment and energy consumption patterns across multiple building types and end-uses, there is variability in these savings estimates as they relate to program design and target markets, particularly at the planning stage of these programs. The project-specific inputs were developed using a variety of sources, including BHP South Dakota’s historic demand-side management programs, other Black Hills’ company energy efficiency programs, ENERGY STAR, the Consortium for Energy Efficiency and additional regional and national sources.

Measures were bundled into programs and re-screened for cost-effectiveness to ensure BHP’s DSM programs and portfolio is cost-effective. The portfolio incorporates measures that were cost-effective on a stand-alone basis as well as measures that were not cost-effective but were determined to provide ample benefits to BHP customers.

### 3. DSM Portfolio Update

Black Hills Power is proposing to continue its DSM portfolio for the 2015 – 2016 program years, with modifications to both the 2015 and 2016 program years. The DSM portfolio is comprised of seven residential programs and two commercial and industrial programs, which provide a variety of opportunities for customers to participate in energy efficiency programs offered by the Company.

A few of the programs were modified from the 2014 – 2016 Energy Efficiency Plan, currently being implemented by BHP. The proposed 2015 – 2016 DSM Portfolio program updates include:

#### *Residential*

- **Residential Lighting** The offerings for this program were reduced to adjust for market changes. The CFL incentive has been discontinued due to market shifts. The ENERGY STAR refrigerator offering was reconfigured and moved to the Appliance Recycling program.
- **Appliance Recycling.** BHP will continue to offer a customer rebate for recycling a secondary refrigerator or freezer. Additionally, BHP will offer a \$25 rebate to the dealer for each appliance collected. A new measure was added to this program: Recycle and Replace – ENERGY STAR Refrigerator. Customers that recycle an inefficient secondary refrigerator will be eligible for a \$75 incentive for the purchase of a new ENERGY STAR refrigerator.
- **Residential Efficiency HVAC.** BHP will add several measures to the Residential High Efficiency HVAC program, including a ductless mini split air conditioner, ductless mini split heat pump and a central air conditioner. Additionally, the electric storage water heater measure has been split into two tiers: EF=0.95 and EF >0.95.
- **Whole House Efficiency.** BHP and Montana-Dakota Utilities (“MDU”) will continue to jointly offer a Whole House Efficiency Program to residential customers. BHP will now offer a Residential Kit containing easy to install measures at no cost to customers who participate in the program. The CFL rebate has been discontinued due to market shifts.
- **Residential Audit.** This program will continue to consist of an online energy audit for customers. BHP will also offer the option to receive a Residential Kit containing easy to install measures at no cost to customers who complete an online energy audit.
- **Student- Based Education.** The core of this program will remain the same, but the participation goal has been increased to target a broader range of students.
- **Weatherization.** BHP will continue to offer the installation of measures to qualifying low income customers, however, the CFL rebate has been discontinued due to market shifts. In addition to those installation measures, BHP will offer a Residential Kit containing easy to install measures at no cost to customers who participate in the program.

#### *Commercial & Industrial*

- **Small Business Direct Install.** The direct install lighting program has been discontinued.
- **C&I Prescriptive.** The list of qualifying prescriptive measures was modified based on current federal baseline standards and equipment costs. VFDs have been taken out of the program due to low participation.
- **C&I Custom.** No program changes.

## Residential Lighting

<b>Target Market</b>	Lighting retailers and residential customers.												
<b>Description</b>	<p>The program's primary objective is to secure energy savings by incentivizing the purchase of ENERGY STAR® qualified lighting. Mail-in rebates would be available to residential customers that purchase efficient appliances, including:</p> <ul style="list-style-type: none"> <li>- ENERGY STAR Lighting Fixtures</li> <li>- Advanced Power Strips</li> </ul> <p>Rebates would be mailed to the customer upon receipt and approval of the rebate application.</p> <p>Customers have the option to purchase discounted LEDs on the BHP website. Customers would then pick up their purchases at the BHP headquarters.</p>												
<b>Program Goals</b>	<ul style="list-style-type: none"> <li>- Help residential customers reduce their electricity bills.</li> <li>- Educate residential customers about the benefits of efficient lighting.</li> <li>- Demonstrate persistent energy savings and provide other benefits to end-users such as improved health, safety and comfort.</li> </ul>												
<b>Eligible Measures and Incentives</b>	<p>The LED bulb incentives vary upon the bulb offered.</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>LED</th> <th>\$5</th> </tr> </thead> <tbody> <tr> <td>ENERGY STAR Lighting Fixture</td> <td></td> <td>\$10</td> </tr> <tr> <td>Advanced Power Strip</td> <td></td> <td>\$10</td> </tr> </tbody> </table>		LED	\$5	ENERGY STAR Lighting Fixture		\$10	Advanced Power Strip		\$10			
	LED	\$5											
ENERGY STAR Lighting Fixture		\$10											
Advanced Power Strip		\$10											
<b>Marketing Strategy</b>	<p>Marketed activities may include bill inserts, email blasts and community events. Implementation and marketing will be reviewed and updated upon determination of the exact method of distributing the LED bulbs.</p>												
<b>Estimated Participation</b>	<table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>PY 2015</th> <th>PY 2016</th> </tr> </thead> <tbody> <tr> <td>LED</td> <td>3,000</td> <td>4,000</td> </tr> <tr> <td>ENERGY STAR Lighting Fixture</td> <td>500</td> <td>550</td> </tr> <tr> <td>Advanced Power Strip</td> <td>10</td> <td>10</td> </tr> </tbody> </table>		PY 2015	PY 2016	LED	3,000	4,000	ENERGY STAR Lighting Fixture	500	550	Advanced Power Strip	10	10
	PY 2015	PY 2016											
LED	3,000	4,000											
ENERGY STAR Lighting Fixture	500	550											
Advanced Power Strip	10	10											
<b>Estimated Savings</b>	<table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>PY 2015</th> <th>PY 2016</th> </tr> </thead> <tbody> <tr> <td>Energy (kWh) Savings</td> <td>152,004</td> <td>193,951</td> </tr> <tr> <td>Demand (kW) Savings</td> <td>18</td> <td>23</td> </tr> </tbody> </table>		PY 2015	PY 2016	Energy (kWh) Savings	152,004	193,951	Demand (kW) Savings	18	23			
	PY 2015	PY 2016											
Energy (kWh) Savings	152,004	193,951											
Demand (kW) Savings	18	23											
<b>Estimated Budget</b>	<table border="1" style="margin-left: 20px;"> <thead> <tr> <th>PY 2015</th> <th>PY 2016</th> </tr> </thead> <tbody> <tr> <td>\$31,635</td> <td>\$40,555</td> </tr> </tbody> </table>	PY 2015	PY 2016	\$31,635	\$40,555								
PY 2015	PY 2016												
\$31,635	\$40,555												

## Residential Appliance Recycling Program

<b>Target Market</b>	Residential customers disposing of secondary inefficient refrigerators or freezers.												
<b>Description</b>	<p>The Appliance Recycling Program encourages customers to turn in their old inefficient refrigerators and freezers, removing them from the electric system and disposing of them in an environmentally safe and responsible manner. Customers will receive \$50 for each secondary refrigerator or freezer recycled, limited to 2 rebates per program year. The refrigerator/freezer must be in working condition and between 10 and 30 cubic feet in size. The refrigerators and freezers will be picked-up at no cost to the customer.</p> <p>Customers that recycle an inefficient secondary refrigerator with an ENERGY STAR unit will be eligible for a \$75 incentive for the purchase of a new ENERGY STAR refrigerator.</p> <p>BHP will engage a third-party implementation contractor to handle scheduling, transportation and disposal of the refrigerators and freezers. The contractor will specialize in appliance recycling and have access to a recycling facility. Dealers who collect the appliance will receive a \$25 incentive.</p>												
<b>Program Goals</b>	<ul style="list-style-type: none"> <li>– Promote appliance recycling.</li> <li>– Educate customers about the benefits of recycling their inefficient appliances.</li> <li>– Influence consumer behavior by encouraging residential customers to avoid replacing recycled secondary refrigerators or freezers.</li> </ul>												
<b>Eligible Measures and Incentives</b>	<p>Dealers will be eligible for a \$25 incentive per appliance recycled.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: left;">Recycle Secondary Refrigerator/Freezer</td> <td style="text-align: right;">\$50</td> </tr> <tr> <td style="text-align: left;">ENERGY STAR Refrigerator</td> <td style="text-align: right;">\$75</td> </tr> </table>	Recycle Secondary Refrigerator/Freezer	\$50	ENERGY STAR Refrigerator	\$75								
Recycle Secondary Refrigerator/Freezer	\$50												
ENERGY STAR Refrigerator	\$75												
<b>Marketing Strategy</b>	Marketing activities may include bill inserts, print and electronic advertisements, community events, billboards, radio advertisements, and community events.												
<b>Estimated Participation</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">PY 2015</th> <th style="text-align: center;">PY 2016</th> </tr> </thead> <tbody> <tr> <td style="text-align: right;">Refrigerator</td> <td style="text-align: center;">40</td> <td style="text-align: center;">50</td> </tr> <tr> <td style="text-align: right;">Recycle &amp; Replace ENERGY STAR Refrigerator</td> <td style="text-align: center;">50</td> <td style="text-align: center;">65</td> </tr> <tr> <td style="text-align: right;">Freezer</td> <td style="text-align: center;">25</td> <td style="text-align: center;">30</td> </tr> </tbody> </table>		PY 2015	PY 2016	Refrigerator	40	50	Recycle & Replace ENERGY STAR Refrigerator	50	65	Freezer	25	30
	PY 2015	PY 2016											
Refrigerator	40	50											
Recycle & Replace ENERGY STAR Refrigerator	50	65											
Freezer	25	30											
<b>Estimated Savings</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">PY 2015</th> <th style="text-align: center;">PY 2016</th> </tr> </thead> <tbody> <tr> <td style="text-align: right;">Energy (kWh) Savings</td> <td style="text-align: center;">81,400</td> <td style="text-align: center;">100,479</td> </tr> <tr> <td style="text-align: right;">Demand (kW) Savings</td> <td style="text-align: center;">9</td> <td style="text-align: center;">12</td> </tr> </tbody> </table>		PY 2015	PY 2016	Energy (kWh) Savings	81,400	100,479	Demand (kW) Savings	9	12			
	PY 2015	PY 2016											
Energy (kWh) Savings	81,400	100,479											
Demand (kW) Savings	9	12											
<b>Estimated Budget</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">PY 2015</th> <th style="text-align: center;">PY 2016</th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;">\$23,999</td> <td style="text-align: center;">\$30,319</td> </tr> </tbody> </table>		PY 2015	PY 2016		\$23,999	\$30,319						
	PY 2015	PY 2016											
	\$23,999	\$30,319											

## Residential High Efficiency HVAC Program

<b>Target Market</b>	Residential customers, including owners of rental properties and new construction, as well as HVAC contractors.																																				
<b>Description</b>	<p>The objective of the program is to encourage residential customers to purchase and install energy-efficient HVAC equipment. Residential customers will be eligible to receive incentives for the purchase and installation of the following efficient equipment:</p> <ul style="list-style-type: none"> <li>- Heat Pump SEER 15, (1-5 tons) SEER ≥15 and HSPF ≥8.5</li> <li>- Early Retirement Heat Pump SEER 15, (1-5 tons) SEER ≥15 and HSPF ≥8.5</li> <li>- Heat Pump replace Electric Furnace, (1-5 tons) SEER ≥15 and HSPF ≥8.5</li> <li>- Central Air Conditioner, (1-5 tons) SEER 15</li> <li>- Ductless Mini-Split AC SEER ≥19</li> <li>- Ductless Mini-Split HP SEER ≥19</li> <li>- Heat Pump Water Heater EF ≥2.0</li> <li>- Electric Storage Water Heater, EF ≥0.95</li> <li>- Geothermal, (1-5 tons) EER ≥21</li> <li>- Early Retirement Geothermal, (1-5 tons) EER ≥21</li> </ul> <p>Dealers will be eligible for a \$50 incentive for each energy efficiency equipment installation.</p>																																				
<b>Program Goals</b>	<ul style="list-style-type: none"> <li>- Educate customers about the benefits of installing high efficiency HVAC equipment.</li> <li>- Develop partnerships with contractors to bring efficient systems to market.</li> <li>- Help customers reduce their electricity bills.</li> </ul>																																				
<b>Eligible Measures and Incentives</b>	<p>Dealers will be eligible for a \$50 incentive for each energy efficiency equipment installation.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 20%;"></th> </tr> </thead> <tbody> <tr> <td>Heat Pump SEER 15</td> <td>\$75 per ton</td> </tr> <tr> <td>Early Retirement Heat Pump SEER 15</td> <td>\$200 per ton</td> </tr> <tr> <td>Heat Pump SEER 15 Replace Electric Furnace</td> <td>\$1,500 per unit</td> </tr> <tr> <td>CAC SEER 15</td> <td>\$60 per ton</td> </tr> <tr> <td>Ductless Mini-Split AC SEER ≥19</td> <td>\$50 per ton</td> </tr> <tr> <td>Ductless Mini-Split HP SEER ≥19</td> <td>\$50 per ton</td> </tr> <tr> <td>Heat Pump Water Heater</td> <td>\$5.00 per tank gallon</td> </tr> <tr> <td>Electric Storage Water Heater EF 0.95</td> <td>\$1.25 per tank gallon</td> </tr> <tr> <td>Electric Storage Water Heater EF &gt;0.95</td> <td>\$1.75 per tank gallon</td> </tr> <tr> <td>Geothermal EER ≥21</td> <td>\$200 per ton</td> </tr> <tr> <td>Early Retirement Geothermal EER ≥21</td> <td>\$300 per ton</td> </tr> </tbody> </table>			Heat Pump SEER 15	\$75 per ton	Early Retirement Heat Pump SEER 15	\$200 per ton	Heat Pump SEER 15 Replace Electric Furnace	\$1,500 per unit	CAC SEER 15	\$60 per ton	Ductless Mini-Split AC SEER ≥19	\$50 per ton	Ductless Mini-Split HP SEER ≥19	\$50 per ton	Heat Pump Water Heater	\$5.00 per tank gallon	Electric Storage Water Heater EF 0.95	\$1.25 per tank gallon	Electric Storage Water Heater EF >0.95	\$1.75 per tank gallon	Geothermal EER ≥21	\$200 per ton	Early Retirement Geothermal EER ≥21	\$300 per ton												
Heat Pump SEER 15	\$75 per ton																																				
Early Retirement Heat Pump SEER 15	\$200 per ton																																				
Heat Pump SEER 15 Replace Electric Furnace	\$1,500 per unit																																				
CAC SEER 15	\$60 per ton																																				
Ductless Mini-Split AC SEER ≥19	\$50 per ton																																				
Ductless Mini-Split HP SEER ≥19	\$50 per ton																																				
Heat Pump Water Heater	\$5.00 per tank gallon																																				
Electric Storage Water Heater EF 0.95	\$1.25 per tank gallon																																				
Electric Storage Water Heater EF >0.95	\$1.75 per tank gallon																																				
Geothermal EER ≥21	\$200 per ton																																				
Early Retirement Geothermal EER ≥21	\$300 per ton																																				
<b>Marketing Strategy</b>	The program will be marketed to residential customers, including owners of rental properties and new construction, as well as HVAC contractors. Marketing activities may include, bill inserts, newspaper advertisements, on-bill messaging, and local HVAC contractors.																																				
<b>Estimated Participation</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%;">PY 2015</th> <th style="width: 20%;">PY 2016</th> </tr> </thead> <tbody> <tr> <td>Heat Pump SEER 15</td> <td>50</td> <td>60</td> </tr> <tr> <td>Early Retirement Heat Pump SEER 15</td> <td>5</td> <td>8</td> </tr> <tr> <td>Heat Pump SEER 15 Replace Electric Furnace</td> <td>3</td> <td>8</td> </tr> <tr> <td>CAC SEER 15</td> <td>8</td> <td>10</td> </tr> <tr> <td>Ductless Mini-Split AC SEER ≥19</td> <td>5</td> <td>10</td> </tr> <tr> <td>Ductless Mini-Split HP SEER ≥19</td> <td>5</td> <td>10</td> </tr> <tr> <td>Heat Pump Water Heater</td> <td>12</td> <td>15</td> </tr> <tr> <td>Electric Storage Water Heater EF 0.95</td> <td>10</td> <td>10</td> </tr> <tr> <td>Electric Storage Water Heater EF &gt;0.95</td> <td>10</td> <td>10</td> </tr> <tr> <td>Geothermal EER ≥21</td> <td>12</td> <td>15</td> </tr> <tr> <td>Early Retirement Geothermal EER ≥21</td> <td>5</td> <td>8</td> </tr> </tbody> </table>		PY 2015	PY 2016	Heat Pump SEER 15	50	60	Early Retirement Heat Pump SEER 15	5	8	Heat Pump SEER 15 Replace Electric Furnace	3	8	CAC SEER 15	8	10	Ductless Mini-Split AC SEER ≥19	5	10	Ductless Mini-Split HP SEER ≥19	5	10	Heat Pump Water Heater	12	15	Electric Storage Water Heater EF 0.95	10	10	Electric Storage Water Heater EF >0.95	10	10	Geothermal EER ≥21	12	15	Early Retirement Geothermal EER ≥21	5	8
	PY 2015	PY 2016																																			
Heat Pump SEER 15	50	60																																			
Early Retirement Heat Pump SEER 15	5	8																																			
Heat Pump SEER 15 Replace Electric Furnace	3	8																																			
CAC SEER 15	8	10																																			
Ductless Mini-Split AC SEER ≥19	5	10																																			
Ductless Mini-Split HP SEER ≥19	5	10																																			
Heat Pump Water Heater	12	15																																			
Electric Storage Water Heater EF 0.95	10	10																																			
Electric Storage Water Heater EF >0.95	10	10																																			
Geothermal EER ≥21	12	15																																			
Early Retirement Geothermal EER ≥21	5	8																																			

<b>Estimated Savings</b>	<b>PY 2015</b>		<b>PY 2016</b>
	Energy (kWh) Savings	193,824	324,063
	Demand (kW) Savings	69	116
<b>Estimated Budget</b>	<b>PY 2015</b>		<b>PY 2016</b>
	\$57,661	\$84,944	

## Whole House Efficiency Program

<b>Target Market</b>	Residential customers that own or rent a residence.									
<b>Description</b>	<p>The Whole House Efficiency Program will encourage whole-house improvements to existing homes by enhancing home energy audits and promoting comprehensive retrofit services. Black Hills Power and Montana-Dakota Utilities (“MDU”) will jointly offer a Whole House Efficiency Program to residential customers. The program will provide a home energy audit, air sealing, and low-cost, easy-to-install measures at no cost to the customer, which includes a Residential Kit (described below). The home energy audit will identify efficiency improvements and provide information on BHP and MDU energy efficiency programs.</p> <p>Measures offered through the program will include:</p> <ul style="list-style-type: none"> <li>- Air sealing</li> <li>- Hot Water Pipe Insulation</li> <li>- Water Heater Tank Wrap</li> <li>- Residential Kit             <ul style="list-style-type: none"> <li>o LEDs</li> <li>o Faucet Aerator</li> <li>o Low Flow Showerhead</li> </ul> </li> </ul>									
<b>Program Goals</b>	<ul style="list-style-type: none"> <li>- Encourage energy saving behavior and whole house improvements.</li> <li>- Increase awareness of energy efficiency and energy use in the home.</li> <li>- Educate residential customers about the benefits of energy efficiency and the opportunities to reduce energy consumption.</li> <li>- Increase awareness of and participation in other BHP energy efficiency programs.</li> </ul>									
<b>Eligible Measures and Incentives</b>	A home energy audit, air sealing and installation of measures will be provided at no cost to the customer.									
<b>Marketing Strategy</b>	An implementation contractor selected by BHP and MDU will assist with program awareness and marketing. Marketing activities may include direct outreach to customers, including bill inserts, email blasts, and community outreach events.									
<b>Estimated Participation</b>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>PY 2015</th> <th>PY 2016</th> </tr> </thead> <tbody> <tr> <td></td> <td>100</td> <td>125</td> </tr> </tbody> </table>		PY 2015	PY 2016		100	125			
	PY 2015	PY 2016								
	100	125								
<b>Estimated Savings</b>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>PY 2015</th> <th>PY 2016</th> </tr> </thead> <tbody> <tr> <td>Energy (kWh) Savings</td> <td>90,540</td> <td>113,463</td> </tr> <tr> <td>Demand (kW) Savings</td> <td>23</td> <td>29</td> </tr> </tbody> </table>		PY 2015	PY 2016	Energy (kWh) Savings	90,540	113,463	Demand (kW) Savings	23	29
	PY 2015	PY 2016								
Energy (kWh) Savings	90,540	113,463								
Demand (kW) Savings	23	29								
<b>Estimated Budget</b>	<p>BHP’s portion of the budget is presented.</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>PY 2015</th> <th>PY 2016</th> </tr> </thead> <tbody> <tr> <td></td> <td>\$32,288</td> <td>\$37,078</td> </tr> </tbody> </table>		PY 2015	PY 2016		\$32,288	\$37,078			
	PY 2015	PY 2016								
	\$32,288	\$37,078								

## Residential Audit Program

<b>Target Market</b>	Residential customers.									
<b>Description</b>	The objective of the Residential Audit Program is to encourage energy education and conservation. The program will provide customers access to a free online tool to analyze their home's energy use and educational materials regarding energy efficiency and conservation. In addition, BHP will offer the option to receive a Residential Kit that contains easy to install measures at no cost to the customer.									
<b>Program Goals</b>	<ul style="list-style-type: none"> <li>- Increase awareness of energy efficiency and energy use.</li> <li>- Educate residential customers about the benefits of energy efficiency and the opportunities to reduce energy consumption.</li> <li>- Increase awareness of and participation in other BHP energy efficiency programs.</li> </ul>									
<b>Eligible Measures and Incentives</b>	<p>Customers have to the option to receive a Residential Kit, the kit includes:</p> <ul style="list-style-type: none"> <li>- LEDs</li> <li>- Faucet Aerator</li> <li>- Low Flow Showerhead</li> </ul>									
<b>Marketing Strategy</b>	The program will be marketed on the BHP DSM website, at community events and in conjunction with other residential DSM Programs.									
<b>Estimated Participation</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">PY 2015</th> <th style="width: 25%; text-align: center;">PY 2016</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">400</td> <td style="text-align: center;">400</td> <td style="text-align: center;">400</td> </tr> </tbody> </table>		PY 2015	PY 2016	400	400	400			
	PY 2015	PY 2016								
400	400	400								
<b>Estimated Savings</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 20%; text-align: center;">PY 2015</th> <th style="width: 20%; text-align: center;">PY 2016</th> </tr> </thead> <tbody> <tr> <td>Energy (kWh) Savings</td> <td style="text-align: center;">79,400</td> <td style="text-align: center;">79,400</td> </tr> <tr> <td>Demand (kW) Savings</td> <td style="text-align: center;">8</td> <td style="text-align: center;">8</td> </tr> </tbody> </table>		PY 2015	PY 2016	Energy (kWh) Savings	79,400	79,400	Demand (kW) Savings	8	8
	PY 2015	PY 2016								
Energy (kWh) Savings	79,400	79,400								
Demand (kW) Savings	8	8								
<b>Estimated Budget</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">PY 2015</th> <th style="width: 25%; text-align: center;">PY 2016</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">\$25,263</td> <td style="text-align: center;">\$25,263</td> <td style="text-align: center;">\$25,263</td> </tr> </tbody> </table>		PY 2015	PY 2016	\$25,263	\$25,263	\$25,263			
	PY 2015	PY 2016								
\$25,263	\$25,263	\$25,263								

### School-Based Education Program

<b>Target Market</b>	School administrators (including teachers), students and parents.									
<b>Description</b>	The School-Based Education Program seeks long-term energy savings through enhanced education and awareness of energy efficiency among 5 <sup>th</sup> grade students within BHP's service territory. Students will participate in a classroom lesson plan and receive a kit of low-cost energy savings measures at no cost. The kits will help ideas and concepts to resonate with participating students, providing hands-on methods for the students to understand energy and conservation.									
<b>Program Goals</b>	<ul style="list-style-type: none"> <li>– Educate students about the benefits of efficiency and the opportunities to reduce energy consumption.</li> <li>– Increase awareness of and participation in other BHP energy efficiency programs.</li> <li>– Long-term energy savings through enhanced education and awareness of energy efficiency among students and parents.</li> </ul>									
<b>Incentives</b>	Educational materials and Energy Education Kits are provided at no cost.									
<b>Marketing Strategy</b>	The program is marketed to schools officials, including teachers, principals and school personnel. Information on the benefits of this program will be explained teachers or principals prior to handing out the energy kits. Teachers and principals will also receive information on how to present the kits to students.									
<b>Estimated Participation</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%;">PY 2015</th> <th style="width: 25%;">PY 2016</th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;">1,200</td> <td style="text-align: center;">1,200</td> </tr> </tbody> </table>		PY 2015	PY 2016		1,200	1,200			
	PY 2015	PY 2016								
	1,200	1,200								
<b>Estimated Savings</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%;">PY 2015</th> <th style="width: 25%;">PY 2016</th> </tr> </thead> <tbody> <tr> <td>Energy (kWh) Savings</td> <td style="text-align: center;">476,397</td> <td style="text-align: center;">476,397</td> </tr> <tr> <td>Demand (kW) Savings</td> <td style="text-align: center;">48</td> <td style="text-align: center;">48</td> </tr> </tbody> </table>		PY 2015	PY 2016	Energy (kWh) Savings	476,397	476,397	Demand (kW) Savings	48	48
	PY 2015	PY 2016								
Energy (kWh) Savings	476,397	476,397								
Demand (kW) Savings	48	48								
<b>Estimated Budget</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%;">PY 2015</th> <th style="width: 25%;">PY 2016</th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;">\$66,150</td> <td style="text-align: center;">\$66,150</td> </tr> </tbody> </table>		PY 2015	PY 2016		\$66,150	\$66,150			
	PY 2015	PY 2016								
	\$66,150	\$66,150								

## Weatherization Program

<b>Target Market</b>	Low-income residential homeowners and renters.											
<b>Description</b>	The Weatherization Program's long-term goal is to deliver long-term energy savings and bill reductions to low-income customers. The program delivers weatherization measures to low income homeowners and renters, at no cost to the participant. Home efficiency is improved through the installation of energy saving measures, such as caulking, weather stripping, pipe insulation and receipt of Residential Kit containing easy to install measures.											
<b>Program Goals</b>	<ul style="list-style-type: none"> <li>- Demonstrate persistent energy savings.</li> <li>- Encourage energy saving behavior.</li> <li>- Help residential customers reduce their electricity bills.</li> </ul>											
<b>Eligible Measures and Incentives</b>	<p>The following measures are provided at no cost to the customer:</p> <ul style="list-style-type: none"> <li>- Air Sealing</li> <li>- Water Heater Tank Wrap</li> <li>- Hot Water Pipe Insulation</li> <li>- Water Heater Temperature Setback</li> <li>- Residential Kit                             <ul style="list-style-type: none"> <li>o LEDs</li> <li>o Faucet Aerator</li> <li>o Low Flow Showerhead</li> </ul> </li> </ul>											
<b>Marketing Strategy</b>	Marketing includes community events, internet, churches and nonprofit organizations within the service territory.											
<b>Estimated Participation</b>	<table border="1"> <thead> <tr> <th></th> <th>PY 2015</th> <th>PY 2016</th> </tr> </thead> <tbody> <tr> <td></td> <td>25</td> <td>30</td> </tr> </tbody> </table>				PY 2015	PY 2016		25	30			
	PY 2015	PY 2016										
	25	30										
<b>Estimated Savings</b>	<table border="1"> <thead> <tr> <th></th> <th>PY 2015</th> <th>PY 2016</th> </tr> </thead> <tbody> <tr> <td>Energy (kWh) Savings</td> <td>41,480</td> <td>49,776</td> </tr> <tr> <td>Demand (kW) Savings</td> <td>6</td> <td>7</td> </tr> </tbody> </table>				PY 2015	PY 2016	Energy (kWh) Savings	41,480	49,776	Demand (kW) Savings	6	7
	PY 2015	PY 2016										
Energy (kWh) Savings	41,480	49,776										
Demand (kW) Savings	6	7										
<b>Estimated Budget</b>	<table border="1"> <thead> <tr> <th></th> <th>PY 2015</th> <th>PY 2016</th> </tr> </thead> <tbody> <tr> <td></td> <td>\$9,647</td> <td>\$11,576</td> </tr> </tbody> </table>				PY 2015	PY 2016		\$9,647	\$11,576			
	PY 2015	PY 2016										
	\$9,647	\$11,576										

## Commercial and Industrial Rebate Program

Target Market	Commercial and industrial customers									
Description	<p>The Commercial and Industrial Rebate Program will encourage the purchase and installation of energy efficient equipment by providing incentives to lower the cost of purchasing efficient equipment for commercial and industrial facilities. The program will consist of prescriptive and custom rebates.</p> <p><b>Prescriptive.</b> Pre-qualified prescriptive rebates will be available for new construction and retrofits. The rebated measures, including lighting, HVAC equipment, and motors are proven technologies that are readily available with known performance characteristics (see incentives listed in the table below).</p> <p><b>Custom.</b> Equipment that does not qualify for a prescriptive rebate will be eligible for a custom rebate. Applications must be pre-approved by BHP before equipment is purchased and installed to ensure they produce a Benefit-Cost Test of 1.0 or higher and have an incremental payback greater than two years. Incentives will be the lesser of the following:</p> <ul style="list-style-type: none"> <li>– A buy-down to a two year payback; or</li> <li>– 50% of the incremental cost.</li> </ul> <p>A \$25,000 incentive cap will be imposed per facility per program year. Multiple rebate applications for different measures may be submitted. All C&amp;I customers are eligible to participate in this program. The same customer can participate in more than one measure in the same year (e.g., retrofit a lighting system and upgrade to a more efficient HVAC system).</p>									
Goals	<ul style="list-style-type: none"> <li>– Educate customers about the benefits of installing high efficiency equipment.</li> <li>– Demonstrate persistent energy savings.</li> <li>– Help commercial and industrial customers reduce their electricity bills.</li> </ul>									
Marketing Strategy	Marketing activities may include newspaper advertisements, email blasts, targeted mailings to customers and contractors, and bill inserts.									
Estimated Participation	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">PY 2015</th> <th style="text-align: center;">PY 2016</th> </tr> </thead> <tbody> <tr> <td>C&amp;I Custom</td> <td style="text-align: center;">45</td> <td style="text-align: center;">45</td> </tr> <tr> <td>C&amp;I Prescriptive</td> <td style="text-align: center;">114</td> <td style="text-align: center;">136</td> </tr> </tbody> </table>		PY 2015	PY 2016	C&I Custom	45	45	C&I Prescriptive	114	136
	PY 2015	PY 2016								
C&I Custom	45	45								
C&I Prescriptive	114	136								
Estimated Savings	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">PY 2015</th> <th style="text-align: center;">PY 2016</th> </tr> </thead> <tbody> <tr> <td>Energy (kWh) Savings</td> <td style="text-align: center;">4,683,170</td> <td style="text-align: center;">5,770,366</td> </tr> <tr> <td>Demand (kW) Savings</td> <td style="text-align: center;">1,636</td> <td style="text-align: center;">1,315</td> </tr> </tbody> </table>		PY 2015	PY 2016	Energy (kWh) Savings	4,683,170	5,770,366	Demand (kW) Savings	1,636	1,315
	PY 2015	PY 2016								
Energy (kWh) Savings	4,683,170	5,770,366								
Demand (kW) Savings	1,636	1,315								
Estimated Budget	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">PY 2015</th> <th style="text-align: center;">PY 2016</th> </tr> </thead> <tbody> <tr> <td>C&amp;I Custom</td> <td style="text-align: center;">\$275,746</td> <td style="text-align: center;">\$318,682</td> </tr> <tr> <td>C&amp;I Prescriptive</td> <td style="text-align: center;">\$242,915</td> <td style="text-align: center;">\$272,322</td> </tr> </tbody> </table>		PY 2015	PY 2016	C&I Custom	\$275,746	\$318,682	C&I Prescriptive	\$242,915	\$272,322
	PY 2015	PY 2016								
C&I Custom	\$275,746	\$318,682								
C&I Prescriptive	\$242,915	\$272,322								

Measure	Baseline	Incentive	Unit
High Bay Fluorescent Fixture w/ HE Electronic Ballast (T5 4-6 lamp)	400W Metal Halide	\$75	per fixture
High Bay Fluorescent Fixture w/ HE Electronic Ballast (T5 8-lamp)	750W Metal Halide	\$40	per fixture
High Bay Fluorescent Fixture w/ HE Electronic Ballast (T5 10-lamp)	1000W Metal Halide	\$125	per fixture
High Bay Fluorescent Fixture w/ HE Electronic Ballast (T8 6-8 lamp)	400W Metal Halide	\$75	per fixture
High Bay Fluorescent Fixture w/ HE Electronic Ballast (T8 12-16 lamp)	750W Metal Halide	\$125	per fixture
CFL Lamp ( $\leq 18W$ )	Halogen	\$8	per lamp
CFL Lamp (18-32W)	Halogen	\$18	per lamp
CFL Lamp ( $\geq 33W$ )	Incandescent	\$24	per lamp
Low Wattage T8 Lamp	Std T8	\$1	per lamp
Ceramic Metal Halide Fixture ( $\leq 150W$ )	HID $\leq 150W$	\$17	per fixture
Ceramic Metal Halide Fixture (150-250W)	HID 200-400W	\$28	per fixture
Ceramic Metal Halide Fixture ( $\geq 250W$ )	HID 400-1000W	\$45	per fixture
Pulse Start Metal Halide Fixture ( $\leq 175W$ )	Metal Halide	\$25	per fixture
Pulse Start Metal Halide Fixture (175-320W)	Metal Halide	\$40	per fixture
Pulse Start Metal Halide Fixture (320-750W)	Metal Halide	\$55	per fixture
Pulse Start Metal Halide Fixture ( $\geq 750W$ )	Metal Halide	\$65	per fixture
Energy Star LED Lamp ( $\leq 5W$ )	Halogen	\$5	per lamp
Energy Star LED Lamp (5-10W)	Halogen	\$9	per lamp
Energy Star LED Lamp ( $> 10W$ )	Halogen	\$13	per lamp
High Performance T8 (1-2 Lamp)	T8	\$9	per lamp
High Performance T8 (3-4 Lamp)	T8	\$18	per lamp
LED Parking Garage/Canopy ( $< 30W$ )	100W Metal Halide	\$35	per fixture
LED Parking Garage/Canopy (30-75W)	175W Metal Halide	\$75	per fixture
LED Parking Garage/Canopy ( $\geq 75W$ )	250W Metal Halide	\$100	per fixture
Lighting Optimization - Remove Lamp from T8 System		\$8	per lamp
Lighting Optimization - Remove 2 Lamps from T8 System		\$16	per lamp
T8 ( $\leq 4$ ft, 1-2 Lamp)	T12	\$5	per lamp
T8 ( $\leq 4$ ft, 3-4 Lamp)	T12	\$9	per lamp
T8 (5-8 ft, 1-2 Lamp)	T12	\$8	per lamp
LED Linear Replacement Lamp ( $\leq 4ft$ )	T12 or T8	\$16	per lamp
LED Linear Replacement Lamp (5-8ft)	T12 or T8	\$23	per lamp
Ceiling Mount Occupancy	No control	\$30	per control
Wall Mount Occupancy	No control	\$12	per control
Fixture Mount Occupancy	No control	\$12	per control
Exit Sign		\$6	per fixture
Single Phase Package or Split Systems	SEER $\geq 14$ , $< 5.4$ tons	\$50	per ton
Geothermal Heat Pump	EER $\geq 17.1$ , COP $\geq 3.6$	\$70	per ton
Heat Pump Water Heater	EF $\geq 2.0$	\$5	per gallon

NEMA Nominal Efficiency Motors							
Motor Size (HP)	Open Drip-Proof (ODP)			Totally Enclosed Fan-Cooled (TEFC)			Incentive per Motor
	Speed (RPM)						
	1200	1800	3600	1200	1800	3600	
1	82.5%	85.5%	77.0%	82.5%	85.5%	77.0%	\$10
1.5	86.5%	86.5%	84.0%	87.5%	86.5%	84.0%	\$15
2	87.5%	86.5%	85.5%	86.5%	86.5%	85.5%	\$20
3	88.5%	89.5%	85.5%	89.5%	89.5%	86.5%	\$25
5	89.5%	89.5%	86.5%	89.5%	89.5%	88.5%	\$35
7.5	90.2%	91.0%	88.5%	91.0%	91.7%	89.5%	\$50
10	91.7%	91.7%	89.5%	91.0%	91.7%	90.2%	\$65
15	91.7%	93.0%	90.2%	91.7%	92.4%	91.0%	\$75
20	92.4%	93.0%	91.0%	91.7%	93.0%	91.0%	\$100
25	93.0%	93.6%	91.7%	93.0%	93.6%	91.7%	\$125
30	93.6%	94.1%	91.7%	93.0%	93.6%	91.7%	\$150
40	94.1%	94.1%	92.4%	94.1%	94.1%	92.4%	\$200
50	94.1%	94.5%	93.0%	94.1%	94.5%	93.0%	\$250
60	94.5%	95.0%	93.6%	94.5%	95.0%	93.6%	\$300
75	94.5%	95.0%	93.6%	94.5%	95.4%	93.6%	\$350
100	95.0%	95.4%	93.6%	95.0%	95.4%	94.1%	\$450
125	95.0%	95.4%	94.1%	95.0%	95.4%	95.0%	\$500
150	95.4%	95.8%	94.1%	95.8%	95.8%	95.0%	\$550
200	95.4%	95.8%	95.0%	95.8%	96.2%	95.4%	\$600