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February 20, 2009

VIA OVER NIGHT MAIL AND ELECTRONIC FILING

Darrell Nitschke  
Executive Secretary/Director of Administration  
North Dakota Public Service Commission  
600 E. Boulevard, Dept. 408  
Bismarck, ND 58505-0480

RE: Otter Tail Power Company's proposed Energy Efficiency Plan pursuant to Order  
in Case No. PU-06-481

Dear Mr. Nitschke:

Otter Tail Corporation d/b/a Otter Tail Power Company, pursuant to North Dakota Public Service Commission Order in Case No. PU-06-481, submits an original and 7 copies of our proposed North Dakota Energy Efficiency Plan (EEP) for the period January 1, 2010, through December 31, 2011. An electronic copy is also being sent to you at [dnitschk@nd.gov](mailto:dnitschk@nd.gov) and [ndpsc@nd.gov](mailto:ndpsc@nd.gov). Enclosed is the filing fee in the amount of \$50.00.

We are available to meet with the Commission as well as Staff on the details of this filing, and any other ideas the Commission may have to foster wise energy use by North Dakotans.

If you have any questions, please feel free to contact me at 218-739-8303.

Sincerely,

A handwritten signature in cursive script that reads "Kim Pederson".

Kim Pederson, Manager  
Market Planning

Cc: Mark Bring, Associate General Counsel for Otter Tail Corporation  
Dan Kuntz, Associate General Counsel for MDU Resources Group, Inc.

Attachment



**STATE OF NORTH DAKOTA  
BEFORE THE PUBLIC SERVICE COMMISSION**

In the Matter of Otter Tail Power  
Company's Proposed Energy Efficiency  
Plan

Case No. PU-09-\_\_\_\_\_

**APPLICATION FOR APPROVAL  
OF ENERGY EFFICIENCY PLAN**

**I. INTRODUCTION**

Otter Tail Corporation d/b/a Otter Tail Power Company, ("Otter Tail" or "the Company") submits for approval this Application to the North Dakota Public Service Commission ("Commission") as required by Ordering Clause 1 of the Commissions August 27, 2008, Order in Case No. PU-06-481. The specific programs proposed to be offered to North Dakota customers are described in Exhibit 1 attached. This proposal includes a cost recovery mechanism to recover costs specifically related to developing, implementing, and evaluating the plan, and a financial stabilization request.

**II. GENERAL FILING INFORMATION**

Pursuant to § 69-02-02-04, the following information is provided.

**A. Name, address, and telephone number of utility making the filing**

Otter Tail Power Company  
215 South Cascade Street  
Fergus Falls, Minnesota 56538-0496  
(218) 739-8200

**B. Name, address, and telephone number of utility attorney**

Mark Bring  
Associate General Counsel  
Otter Tail Corporation  
215 South Cascade Street  
Fergus Falls, Minnesota 56538-0496  
(218) 998-7152  
mbring@ottertail.com

**C. Date of filing and proposed effective date of rates**

The date of this filing is February 20, 2009. Otter Tail proposes the Energy Efficiency Plan become effective on January 1, 2010, or other appropriate date as determined by the Commission.

**D. Title of utility employee responsible for filing**

Kim Pederson  
Manager, Market Planning  
Otter Tail Power Company  
215 South Cascade Street  
Fergus Falls, Minnesota 56538-0496  
(218) 739-8303  
kpederson@otpc.com

**E. Articles of Incorporation.**

Pursuant to North Dakota Rules Part 69-02-02-04, a certified copy of Otter Tail's Articles of Incorporation is on file with the Commission, as is an original certificate of good standing.

**III. DESCRIPTION AND PURPOSE OF FILING**

The Commission issued its Findings of Fact, Conclusions of Law, and Order in Case No. PU-06-481 on August 27, 2008. Ordering Clause 1 required the following:

1. Otter Tail Corporation's request for advance determination of prudence for ownership in the proposed Big Stone II for a minimum of 121.8 MW up to a maximum of 130 MW and a proportionate ownership share of the associated transmission electric resource additions is APPROVED. This approval is subject to the following condition:
  - a. Within 180 days, Otter Tail shall file for Commission approval proposals to implement the demand-side management and conservation programs identified as more economic resources than Big Stone II in Tables OTP-1 and OTP-2 of Late Filed Exhibit #7. The proposals must include proposed tariffs and supporting documentation including analytical justification for the choice of programming and level of investment, comparative program performance information between programs and between jurisdictions, and studies of methods to maximize the performance of all programs.

Pursuant to Ordering Clause 1, Otter Tail hereby files for Commission Approval its proposed Energy Efficiency Plan, attached as Exhibit 1. Each program is described and has accompanying justification. This proposal includes a cost recovery mechanism to recover costs specifically related to developing, implementing, and evaluating the plan, and a financial stabilization request. Please see the attached Exhibit 1 for a more complete description of the plans and the cost recovery proposal.

### **VIII. CONCLUSION**

Otter Tail respectfully requests the Commission approve the Energy Efficiency Plan and cost recovery mechanism effective January 1, 2010, or other appropriate date as determined by the Commission. Otter Tail looks forward to discussions with the Commission and its staff about the proposals contained in this Application.

Dated: February 20, 2009

Respectfully Submitted,

Otter Tail Corporation d/b/a  
OTTER TAIL POWER COMPANY

By: 

Kim Pederson  
Manager, Market Planning  
Otter Tail Power Company  
215 South Cascade Street  
Fergus Falls, MN 56538-0496  
218-739-8303

# **NORTH DAKOTA ENERGY EFFICIENCY PLAN**

February 20, 2009

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February 20, 2009

## North Dakota Energy Efficiency Plan

### Introduction and Overview

#### History

As part of the North Dakota Public Service Commission's Findings of Fact, Conclusions of Law, and Order dated August 27, 2008 regarding Otter Tail Corporation's Advance Determination of Prudence Application, Case No. PU-06-481, Otter Tail Power Company was required to file for Commission approval proposals to implement the demand-side management and conservation programs identified as more economic resources than Big Stone II.<sup>1</sup> The tables referenced as Tables OTP-1 and OTP-2 of Late Filed Exhibit #7 are included as Attachment A.

Otter Tail Power Company presents for the North Dakota Public Service Commission's consideration a two-year pilot plan to market energy efficiency to our North Dakota customers. The plan as proposed meets the requirements of the above referenced Order and represents each program identified in Attachment B, with the exception of one program identified as Program 480DRE Residential Window Replacement. Otter Tail Power Company historically has been unable to cost-justify this program based on energy efficiency evaluation of cost effectiveness. After review of this filing and its pending approval by the Commission the Company will, if requested, continue to research the program and submit an addendum to this filing targeting residential window replacement, if cost-justified.

#### Demand Side Management as part of an Integrated Resource Plan

Demand side management programs have two separate but closely related goals. The first is to reduce demand for power at times of peak demand. Reductions of this nature are typically measured in megawatts (MW) saved. The second is to reduce energy use over time. Reductions of this nature are typically measured in megawatt-hours saved.

Peak demand can be reduced by either "load management" or by "energy efficiency" and "conservation." Load management programs typically do not save energy, but shift power use to a different time of the day. Energy efficiency and conservation programs, on the other hand, reduce power use over a period of time. The most cost effective programs save the most energy at times of peak demand. The difference between energy efficiency programs and conservation programs is energy efficiency typically results in improved efficiency due to technological advances but doesn't necessarily mean doing without. Examples would include installing more efficient lighting or heating systems. Conservation means reducing use through changes in behavior and habits, such as turning off lights and turning down the thermostat.

Energy efficiency programs like those proposed in this filing are a critical component of keeping rates low when those strategies cost less than supply side options. In addition, efficiency and

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<sup>1</sup> Case No. PU-06-481, Findings of Fact, Conclusions of Law, and Order. Otter Tail Corporation's request for advance determination of prudence for ownership in the proposed Big Stone II for a minimum of 121.8 MW up to a maximum of 130 MW and a proportionate ownership share of the associated transmission electric resource additions is APPROVED. This approval is subject to the following condition: Within 180 days, Otter Tail shall file for Commission approval proposals to implement the demand-side management and conservation programs identified as more economic resources than Big Stone II in Tables OTP-1 and OTP-2 of Late Filed Exhibit #7. The proposals must include proposed tariffs and supporting documentation including analytical justification for the choice of programming and level of investment, comparative program performance information between programs and between jurisdictions, and studies of methods to maximize the performance of all programs.

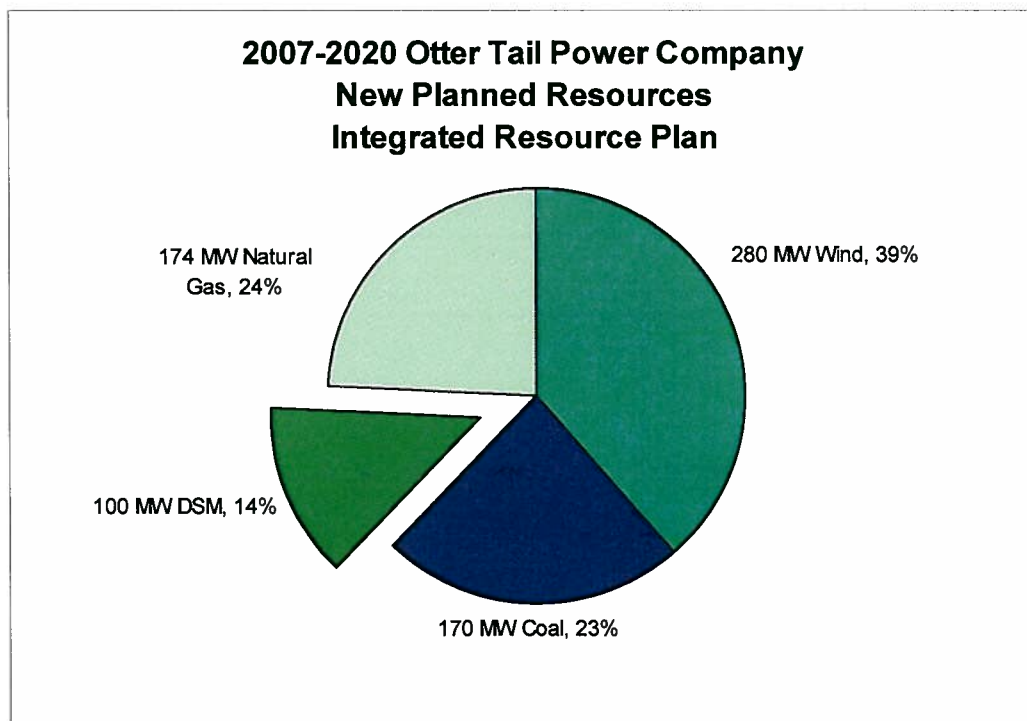
DSM help lower energy bills for customers who participate in the programs. The programs identified in this filing are considered less costly than supply side options and therefore, should be considered as resources needed to meet growing energy demand. Our resource plan creates a balanced resource portfolio that includes energy efficiency, DSM, renewable energy, natural gas, and coal.

We are in support of fostering wise energy use by North Dakotans. Our proposed plan includes programs for all customer classes and major end uses showing the greatest potential for energy savings. The plan is largely based on our 2008 Minnesota Conservation Improvement Program which has been historically successful and cost-effective. The North Dakota Energy Efficiency Plan includes 15 direct impact programs and supporting indirect programs such as financing, audits, and advertising intended to achieve approximately 7,413 MWh in annual energy savings and 2.5 MW of peak demand savings reduction in 2010 and 7,418 MWh in annual energy savings and 2.6 MW demand savings in 2011. The proposed budget for 2010 is \$1,219,800 and the proposed budget for 2011 is \$1,223,800. The lifetime cost per kWh is \$0.01263, which is less than currently available supply side options.

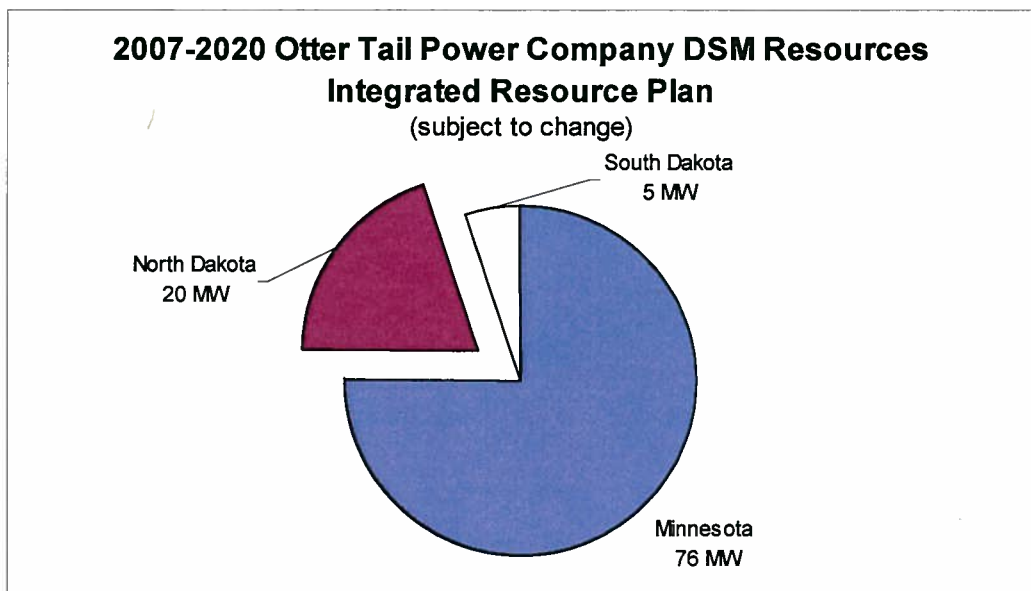
We would propose launching these programs January 1, 2010, unless ordered otherwise.

<b>2010-11 Energy Efficiency Plan - North Dakota</b>		
<b>Summary</b>		
	<b>2010</b>	<b>2011</b>
Energy savings	7,413 MWh	7,418 MWh
Demand reduction	2.5 MW	2.6 MW
Budget	\$1,219,800	\$1,223,800

The chart below identifies the most recently approved Integrated Resource Plan goals through 2020. As you can see DSM plays an integral part of meeting our customer's future resource needs.



We are anticipating North Dakota to play an integral role in meeting our customers' resource needs through energy efficiency and demand side management.



### Cost effectiveness tests

Many states and utilities around the country measure the cost-effectiveness of demand side management programs from four different perspectives—societal, utility, program participant, and ratepayer. The California Public Utilities Commission and the California Energy Commission developed a manual for carrying out these tests, which are used widely around the country. Benefit-cost ratios are typically based on benefits that will be received and costs that will be incurred over a 10 to 20 year period. The National Action Plan for Energy Efficiency has developed a thorough explanation of the tests, including their strengths and weaknesses, some of which has been used in this explanation.

Many states rely on the *societal test* to determine cost-effectiveness of a program. These states have a goal of serving the overall public interest, not the interest of one particular segment of society such as utilities, program participants, or other ratepayers. The *societal test* is really a combination of the participant and ratepayer tests with environmental factors typically, but not necessarily, included.

The *utility test* (also referred to as the revenue requirements test) compares the funds that a utility would need to carry out two alternative strategies to meet its customers' energy needs. The first approach includes the utility sponsoring and funding a demand side management program and compares that to production or a supply side option. The utility test is beneficial for resource planning purposes but is somewhat of a misnomer because it does not show the impact of conservation on the utility for two reasons. First, it does not include the loss of revenues that utilities will experience by selling less energy because of conservation. Second, the model is based on the assumption that utilities will pass the costs and benefits of conservation, including lost revenues, onto their customers by raising or lowering their electric rates.

The *participant test* compares the costs incurred by the participant with the financial benefit the participant receives. The costs are simply the direct costs the participant pays for the energy

efficiency improvement. The benefits to the participant are the utility bill savings at the retail rate and rebates or other financial incentives provided by the utility.

The *ratepayer impact (RIM, or non-participant test as it is often called)* test results are probably less certain than those of other tests because the test is sensitive to the differences between long-term projections of marginal costs and long-term projections of rates, two cost streams that are difficult to quantify with certainty. The RIM test measures impacts to non-participants and uses the same costs and benefits as the Revenue Requirements Test (utility test) but adds the utility's "lost revenues" as a cost. Many states do not rely on the RIM test because of the assumption that "lost revenues" will cause rates to increase because the utility will not be able to recover its revenue requirement. Because the RIM test includes the lost revenue from the energy efficiency program, many such programs will not pass the RIM test but load management programs typically will. The overall level of sales over which future revenue requirements will be spread obviously has an impact on rates. However, since there is no lost revenue counterpart on the supply side, including lost sales skews the analysis in favor of the supply-side option instead of the energy efficiency or conservation option. Thus, the RIM test measures the impact of energy efficiency on utilities before they pass the benefits and costs onto ratepayers.

More important, since lost revenues are a function of current and projected rates, including them introduces the utility's embedded costs into what is otherwise a marginal analysis. Including revenues lost over the life of a DSM program as a direct cost inappropriately distorts the comparison between alternative supply- and demand-side investments.

Note that programs which have capacity savings substantial enough to offset the revenue loss to the Company will generally pass the RIM test. This doesn't mean that only those programs that pass the RIM test should be approved for the reasons stated above.

The Company recommends that all tests be contemplated in the review of demand-side management programs; however, from a utility resource planning perspective we rely on the utility test.

**2010-11 North Dakota Energy Efficiency Plan Benefit/Cost Results**

Otter Tail Power Company is pleased with the long-term cost-effectiveness of the proposed 2010-11 North Dakota Energy Efficiency Plan reflected in the benefit/cost ratios below:

<b>2010-11 Energy Efficiency Plan - North Dakota</b>				
<b>Benefit / Cost Results</b>				
<b>Participant Test</b>	<b>Ratepayer Impact Test</b>	<b>Total Resource Test</b>	<b>Societal Test</b>	<b>Utility Test</b>
1.91	1.28	2.22	2.22	6.91

### **Supporting tariffs**

Ordering Clause 1 also required Otter Tail Power Company to include proposed tariffs as part of this filing. This filing includes two tariffs required to implement this plan. The first is the Air Conditioning Control Rider (Attachment C). This Rider was included in our North Dakota general rate case (Case No. PU-08-862) and is necessary to implement Air Conditioning Cycling, which has been included as part of this filing. The Rider is included here for reference. The second tariff is the Energy Efficiency Program Cost Recovery Rider (Attachment D), which allows for cost recovery of expenses associated with developing, implementing, and evaluating the plan. Cost recovery details are included in the Cost Recovery and Stabilization section of this filing.

### **Supporting documentation**

Ordering Clause 1 also required Otter Tail Power Company to include analytical justification for program choices and investment. The Company's response is outlined below:

#### **Analysis**

- *Demand Side Management Option Risk Evaluator (DSMore)* was used to evaluate the costs, benefits, and risks of demand side management (DSM) programs and services.
- DSMore allows sensitivity analysis on varying weather and wholesale market prices.
- Avoided cost models in *DSMore* tie to our Integrated Resource Plan in Minnesota. Changes to that plan may necessitate revisions to this EEP filing.
- Benefit/cost data for each program is included and in aggregate in Attachment B. The Company can provide additional documentation and analysis of supporting assumptions as requested.

#### **Deemed Savings Database**

In 2007 and 2008 the Minnesota Office of Energy Security convened a workgroup and engaged a consulting firm to quantify, and to some degree standardize, energy impacts associated with thousands of end-use energy efficiency applications and measures. The data is based on engineering, technical, and field data testing. Data from that analysis has been used when appropriate in energy and demand savings calculations and lifetime of measures in our program analysis.

### **Modifications and evaluation**

Our intention is to evaluate this plan on an ongoing basis and propose any major modifications to the Commission in a timely fashion. The Company proposes that major modifications would include new programs, increases to proposed budgets by more than 30%, or closing programs. One of the most uncertain variables in our proposal is labor. We have based our labor estimate on our history in Minnesota. However, we are not sure how North Dakotans will respond to the opportunity to participate in energy savings programs, and it may initially require more labor than our proposal indicates. As indicated, we'll monitor financial reports closely and regularly and if we find our budgets need to be increased by more than 30%, we'll notify Commission Staff. We propose that the plan remain fairly flexible and dynamic, with minimal administrative overhead required both on our part and the Commission.

While we are filing this as a two-year pilot, we would anticipate continuation of this effort as long as it remains cost-effective to do so, and adequate cost recovery and financial stabilization are in place. By the end of 2010 we'll have a pretty solid understanding of what is working and what is not in North Dakota, and we encourage the Commission to engage in active dialogue with us on the same. Because we have significant history of managing a very cost-effective Conservation Improvement Program in Minnesota, we believe our plan will be successful in North Dakota. We propose that unless otherwise notified for the reasons stated above, the Commission can expect a rollover of the proposed portfolio, including approximate budgets and

goals, into 2011. Based on our practical experience, we likely would want to refile programs and budgets for 2012 and beyond, sometime in mid 2011.

**Discount Rates**

Discount rates are the rate at which future benefits and costs are discounted to reflect their value today. Because energy efficiency benefits may last for 10 to 20 years, the value of these benefits need to be discounted to reflect the fact that a dollar received in the future is less valuable than a dollar received today.

Otter Tail Power Company has used the following discount rates as inputs to DSMore.

<b>2010-11 Energy Efficiency Plan - North Dakota</b>				
<b>Discount Rates</b>				
<b>Participant Test</b>	<b>Ratepayer Impact Test</b>	<b>Total Resource Test</b>	<b>Societal Test</b>	<b>Utility Test</b>
8.0%	8.0%	8.0%	8.0%	8.0%

**Externality Values**

No externality values were used in this filing.

**Electronic Transfer of Data**

Electronic data will be supplied to you upon request. Please notify the Company of your specific data requirements.

**Confidentiality of Data**

Much of the data used in EEP analysis, specifically that which would be transferred electronically, is considered proprietary. This filing does not include trade secret data; however, subsequent submissions may.

**Format of filing**

The remainder of this filing is organized as follows:

- Executive Summary and Goals
- Program descriptions
- Cost recovery and financial stabilization
- Summary

## I. EXECUTIVE SUMMARY

### *Programs*

Otter Tail Power Company is proposing to launch a portfolio of energy efficiency programs in North Dakota modeled after cost-effective programs with a proven track record currently operating in Minnesota and to some extent, South Dakota. A full program description is included as part of this plan. Briefly, the portfolio includes:

#### **Residential/Farm**

- HotPacks (promotes more efficient use of electric water heating)
- Change a Light, Change the World (promotes efficient lighting)
- Air source and Geothermal heat pumps (promotes efficient heating and cooling)
- Air Conditioning Control (promotes managing demand of cooling systems)
- Residential Demand Control (promotes efficient whole house energy management)

#### **Low-Income**

- House Therapy (promotes energy efficient measures in the home)

#### **Commercial/Industrial/Farm**

- Grants (promotes and encourages efficient energy use in large customer facilities, such as adjustable speed drives, heat recovery, and process improvements)
- Motors (promotes and encourages energy efficient motor installation)
- Lighting (promotes encourages energy efficient lighting retrofits)
- Cooking (promotes and encourages efficient commercial cooking equipment)
- Refrigeration (promotes and encourages efficient commercial refrigeration systems)
- Air source and Geothermal heat pumps (promotes and encourages efficient heating and cooling)
- Plan Review (promotes and encourages commercial building envelopes, lighting, HVAC, and other mechanical systems that exceed energy efficiency standards).
- Energy Analysis and Recommissioning

#### **All sectors**

- Advertising & Education
- Financing
- Implementation & Training
- Program Development
- Technical Research

### *Goals*

<b>North Dakota Data</b> <b>(Source: OTPCO 2007 Statistical Report)</b>	
<b>Customers</b>	56,936
<b>MWH sales</b>	1,592,820 MWH
<b>Retail revenue</b>	\$108,263,131

<b>2010 North Dakota Energy Efficiency Plan</b>				
<b>Customer Class</b>	<b>Budget</b>	<b>Annual KWH savings</b>	<b>Annual KW savings</b>	<b>Annual Participants</b>
Residential	\$392,100	1,463,454	817	20,450
Low income	\$87,000	176,152	73	135
Commercial/Industrial/Farm	\$650,700	5,773,878	1,634	458
Indirect impact (other)	\$90,000	n/a	n/a	2
<b>Totals</b>	<b>\$1,219,800</b>	<b>7,413,483</b>	<b>2,524</b>	<b>21,045</b>

<b>2011 North Dakota Energy Efficiency Plan</b>				
<b>Customer Class</b>	<b>Budget</b>	<b>Annual KWH savings</b>	<b>Annual KW savings</b>	<b>Annual Participants</b>
Residential	\$396,100	1,468,089	909	20,545
Low income	\$87,000	176,152	73	135
Commercial/Industrial/Farm	\$650,700	5,773,878	1,634	458
Indirect impact (other)	\$90,000	n/a	n/a	2
<b>Totals</b>	<b>\$1,223,800</b>	<b>7,418,119</b>	<b>2,616</b>	<b>21,140</b>

The plan as proposed represents an annual energy savings goal of approximately .47% of MWh sales in ND. The budget as proposed represents approximately 1.13% of retail revenues in ND. (Based on 2007 data) We believe the plan as proposed is a reasonable approach for North Dakota. The energy goal as a percent of MWh sales is substantially less than Minnesota but greater than our South Dakota plan. The budget as a percent of revenue is substantially less than Minnesota but greater than in South Dakota.

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## II. PROGRAM DESCRIPTIONS

### HOTPACKS (Residential)

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#### A. PROJECT DESCRIPTION AND JUSTIFICATION

Water heating is the second biggest energy cost in the average home. Otter Tail Power Company offers rebates on new or replacement electric water heaters 80 gallons or larger that are put on an off-peak rate. Residential customers who receive a rebate will also receive a HOTPACK kit as will other reported customers who have installed an electric water heater. This will not be only for customers who have put their water heater on off-peak.

The HOTPACK consists of a water-saver showerhead, a flow tester, a kitchen and bath aerator, pipe wrap or tape, a water temperature gauge card, and instructions for installation of these items.

#### Promotion

HOTPACKS will "piggy back" our water heating rebate program. The rebate program is planned to be promoted through direct mail, bill inserts, bill return envelopes, billboards, radio, and newspaper.

#### B. LONG TERM DEMAND SIDE MANAGEMENT GOALS

	2010-11
KWH – Generator	116,423
Cost / KWH	\$0.12
KW – Generator	21.71
Cost / KW	\$645

#### C. PROJECT BUDGET & PARTICIPATION

	2010-11
Project Delivery & Administration	\$8,000
Incentives	\$6,000
Total	\$14,000
Participation	150

**CHANGE A LIGHT, CHANGE THE WORLD  
(Residential)**

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**A. PROJECT DESCRIPTION AND JUSTIFICATION**

The Change a Light, Change the World Project consists of a joint effort between Midwest Energy Efficiency Alliance (MEEA), participating electric utilities, and various hardware retailers and cooperatives. The project aims to increase the market share for ENERGY STAR qualified compact fluorescent lamps (CFLs) while educating both consumers and retailers about the benefits of CFLs.

Otter Tail proposes to participate in the 2010 Change a Light, Change the World project. The Company plans to work with Wisconsin Energy Conservation Corporation (WECC) to develop, implement, and administer the project. WECC has contracted with utilities throughout Wisconsin and Minnesota to recruit and train participating retailers and to provide program administration services. WECC feels North Dakota will be a great candidate for this program as well.

A typical household spends about \$90 per year, or 10 to 15 percent of its annual electric bill on lighting, mostly due to inefficient light fixtures and bulbs. On average, ENERGY STAR qualified CFL bulbs cost less than half as much to operate as incandescent bulbs, resulting in an average annual energy savings of \$4 to \$6 per bulb replaced.

Other benefits of ENERGY STAR CFL lamps include:

- 1) *Lamp life—one CFL bulb can last as long as 10 standard incandescent bulbs, saving consumers as much as \$35 over the life a single CFL bulb.*
- 2) *Fire safety—not only do ENERGY STAR CFL lamps help consumers save money and energy; they also reduce home fire hazards. All ENERGY STAR labeled lighting follows National Fire Protection Association (NFPA) guidelines for fire safety. CFL bulbs generate 90% less heat than incandescent bulbs while remaining cool to the touch.*

**Promotion**

The Change a Light, Change the World project will rely on the following promotional methods: retailer training & recruitment, targeted advertising, instant - time of sale- rebates on Energy Star qualified CFLs, point of sale materials, and possibly a cooperative advertising budget for participating retailers.

**B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

	<b>2010-11</b>
KWH – Generator	1,042,865
Cost / KWH	\$0.07
KW – Generator	194.43
Cost / KW	\$370

**C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$45,000
Incentives	\$27,000
Total	\$72,000
Participation	18,000

## **AIR CONDITIONING CONTROL (Residential)**

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### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

The Air Conditioning Control program will add to Otter Tail Power Company's extensive portfolio of demand and price response programs. About one-third of the Company's residential and small commercial customers in Minnesota are participating in one or another of the Company's demand response programs. Through these programs, the Company has made significant progress in ensuring that its winter and summer demand is responsive to electric prices.

Residential customers who enroll in the program will receive a \$7 credit for 4 months – June, July, August, and September. A controller is installed to cycle customer-cooling loads on a schedule of 15 minutes on followed by 15 minutes off throughout peak periods. Otter Tail cycles load to both maintain system reliability and to reduce the need to purchase high-priced spot market electricity. During normal summers, control of air conditioners is projected to occur for no more than 300 hours, controlling at an average of six to eight hours at a time. However, these are both estimates.

Research conducted by other utilities has shown that load control customers are not aware that their air conditioners are being cycled. These results were substantiated by us through a participant survey conducted in 2002, and has allowed us to conclude that cycling air-conditioning units did not normally inconvenience customers. An additional finding of Otter Tail's survey was that customers signed up for the program in response to their belief that it was a way to positively impact environmental concerns.

#### **Promotion**

The program will target residential customers with central air conditioning systems that are not currently controlled. Commercial customers will not be targeted for this program. The target group will be found through analysis of summer usage. Direct mail or bill inserts may be used as our primary marketing methods.

### **B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

	<b>2010-11</b>
KWH – Generator	4,881
Cost / KWH	\$12.29
KW – Generator *	96.75
Cost / KW	\$620

### **C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$57,200
Incentives	\$2,800
Total	\$60,000
Participation	100

**Note:** Budgets, participation, and savings are slightly higher in 2011 than listed here for 2010.

## **RESIDENTIAL DEMAND CONTROL (Residential)**

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### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

The Residential Energy and Demand Control (RDC) Project is a close-to-real-time pricing project based on the installation and use of a special monitoring device that will notify customers of the need to curtail or reduce energy demand from major energy-consuming appliances in their homes during periods of high demand on Otter Tail's generation, transmission, and distribution systems. Customers that install a demand controller benefit from a reduced energy rate.

The rate structure applying to customers who install the RDC system is based on separate charges for demand (capacity) and energy. The rate encourages customers to better manage their energy use, especially by limiting energy use during utility peak demand periods. This Project is particularly beneficial in helping customers understand how they can respond to wholesale market fluctuations and reduce overall demand for energy and capacity.

The RDC technology itself is highly effective because it enables customers to retain control over which end uses in their homes are interrupted by the RDC system. Customers can choose to pay a higher price in order to use more energy during periods of high demand if they desire, or they can pay less for their home energy use by using less energy during times of peak demand.

The Project assists Otter Tail in controlling its load during system peak times and in emergency conditions and continues to offer significant demand savings potential. Load management in general offers the utility an exceptional opportunity to make better use of existing generation facilities, reduce the costs of service, and better recognize and meet customer needs. In addition, the RDC Project significantly alters consumers' electricity consumption patterns, thereby making them a partner in the energy efficiency business.

North Dakota has an existing approved electric rate for residential demand control customers (Rate Designation R-03S, Code 42-241). Through this Project as part of North Dakota Conservation Improvement Program, Otter Tail Power Company is proposing that high-use electric heating customers would be provided with a free demand controller and receive a cash incentive of \$300 to help offset the costs of installing the Residential Demand Control equipment in their home on the 241 rate.

#### **Promotion**

We plan to capitalize on existing customer awareness of the RDC program in North Dakota through bill inserts, printed and Internet-based educational materials.

### **B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

	<b>2010-11</b>
KWH – Generator	29,890
Cost / KWH	\$2.09
KW – Generator	390.39
Cost / KW	\$160

**C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$20,000
Incentives	\$42,500
Total	\$62,500
Participation	50

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## HOUSE THERAPY

(Low-Income)

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### A. PROJECT DESCRIPTION AND JUSTIFICATION

The House Therapy Project's primary focus is to provide energy conservation measures to Otter Tail's low-income residential and farm sector. Depending on eligibility some of the items may be energy efficient shower head and faucet aerators, compact fluorescent bulbs, and car timer. The Project also provides other services including a refrigerator and freezer replacement and installation of RDC units for participants with high-energy usage. At this time we are proposing to not include weatherization as it is the least cost effective and administratively burdensome. Participants can receive an energy analysis and a direct install of certain service components of House Therapy. We plan to implement the program by partnering with Community Action Council/Programs (CAPS) or other approved providers.

House Therapy did not pass the RIM test and that is due primarily because the customer does not pay anything for this program. Because it is low-income this was the best way possible to offer the program.

#### Promotion

A bill stuffer will be planned to notify customers of the program which will include income guidelines as well as were to call. Also CAPs will be made aware of the program and will promote to those receiving energy assistance.

### B. LONG TERM DEMAND SIDE MANAGEMENT GOALS

	2010-11
KWH – Generator	176,152
Cost / KWH	\$0.49
KW – Generator	73.15
Cost / KW	\$1,189

### C. PROJECT BUDGET & PARTICIPATION

	2010-11
Project Delivery & Administration	\$24,692
Incentives	\$62,308
Total	\$87,000
Participation	135

## **HEAT PUMPS**

### **(Residential & Commercial)**

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#### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

##### **End-use market**

Space heating accounts for about 8% of total energy use in the U.S. In the residential sector, energy use for space heating accounts for nearly half of U.S. household site energy consumption. About one-third of residences in the U.S. are electrically heated, with 2/3 of homes relying on standard efficiency resistance heating technologies and 1/3 relying on higher efficiency heat pumps.

Commercial space heating also offers an opportunity for energy savings. In any typical year, the total amount of energy used for commercial space heating in the U.S. doubles that used for space cooling. Electricity accounts for heating 29% of all commercial floor space in the U.S. with packaged HVAC systems being the most popular heating plant for commercial customers in the U.S.

The Heat Pump Project targets residential and commercial customers currently using or considering the installation of standard efficiency resistance heating and cooling systems. The program offers cash rebate incentives to customers for replacing standard efficiency electric systems with higher efficiency heat pump systems or for purchasing high efficiency equipment for first-time retrofit or new construction installations.

Otter Tail has structured the Heat Pumps Project with separate energy, demand, and cost effectiveness goals for the following market segments:

1. Residential air source heat pumps;
2. Commercial air source heat pumps;
3. Residential geothermal heat pumps; and,
4. Commercial geothermal heat pumps.

Energy Star standards will be used as benchmark efficiency requirements to meet rebate qualifications.

##### **Technology**

The definition of a heat pump is "a device that extracts energy from one substance and transfers it to another at a higher temperature. A heat pump takes low-temperature heat from an outdoor source (such as the air, ground, groundwater, or surface water) and mechanically concentrates it to produce high-temperature heat. Since most of the heat is simply moved (pumped) from the outdoor source to the indoors, the amount of electricity required to deliver it is typically less than would be required if using electric heat directly.

Heat pumps are available in a number of configurations, with the following two being the most popular:

##### **1) *Air to air***

The most common type of heat pumps, air-to-air (air source) units are used widely for residential heating and cooling. Outdoor air is the source of heat, with this heat delivered to the house as hot air, either through duct systems or air handlers. Air to air heat pumps that heat the home year-round without supplemental resistance electric heat are not yet widely available. However, an all-electric heating system taking advantage of a heat pump's high efficiency characteristics and resistance electric heat for severe

weather operates at an average over-all efficiency of about 140%, compared to a standard electric resistance heating system operating at 100% efficiency.

**2) Ground source heat pump (GSHP).**

Also called geothermal heat pumps, these devices are most often used in the coldest climates where the ground temperature is significantly warmer and less variable than outside air temperatures. Because of the consistent, steady ground temperatures, geothermal heat pumps often boast efficiencies of up to 400%.

**Promotion**

The Heat Pump Project will be promoted through bill stuffers, printed materials and DVDs, as well as newspaper ads and articles. Three separate workshops for contractors will provide training on incentives from Otter Tail Power Company and various energy efficient electric end-use technologies, including air-source and geothermal heat pumps.

**B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

<b>2010-11</b>	<b>Residential Air Source</b>	<b>Residential Geothermal</b>	<b>Commercial Air Source</b>	<b>Commercial Geothermal</b>
KWH – Generator	148,995	120,400	110,639	982,013
Cost / KWH	\$0.23	\$0.12	\$0.34	\$0.07
KW – Generator *	27.78	86.00	16.71	657.23
Cost / KW	\$1,260	\$174	\$2,274	\$110

**C. PROJECT BUDGET & PARTICIPATION**

<b>2010-11</b>	<b>Residential Air Source</b>	<b>Residential Geothermal</b>	<b>Commercial Air Source</b>	<b>Commercial Geothermal</b>
Project Delivery & Administration	\$11,600	\$7,250	\$13,520	\$13,970
Incentives	\$23,400	\$7,750	\$24,480	\$58,030
Total	\$35,000	\$15,000	\$38,000	\$72,000
Participation	60	10	40	70

## **GRANTS**

### **(Commercial, Industrial & Farm)**

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#### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

Commercial and industrial customers are energy-intensive users of electricity. The Energy Information Administration reports that from 1990 to 2006, megawatt hour electricity sales to the commercial and industrial sectors in North Dakota grew by 130% and 86%, respectively. Over the same period, residential energy use grew by just 30%. The growth of energy use in the commercial and industrial sectors suggests the presence of opportunities for commercial and industrial customers to learn about and take advantage of custom improvements to enhance the energy efficiency of their business operations.

The Grant project pays incentives to commercial and industrial customers for energy saving installations, including new energy-efficient end use equipment and process changes. The Grant Project is a comprehensive project, designed to cover energy saving applications outside of normal project guidelines. Specifically, incentives include, but are not limited to additions of efficient motor controls such as adjustable speed drives and process changes that allow customers to increase plant throughput compared to energy consumption.

Typical energy efficiency measures that might qualify for incentives through the Grants Project include:

##### **1) Adjustable Speed Drives**

Induction motors are the workhorses of industry, used widely and often exclusively in virtually every manufacturing plant and office building. However, the single most potent source of energy savings in induction motor systems lies not in the motor, but rather in the controls that govern the motor's operation. Adjustable speed drives (ASDs), also known as variable speed drives (VSDs), variable frequency drives (VFD's), or variable frequency invertors (VFIs), are one method of modifying or controlling motor behavior that is a proven option for improving performance and efficiency in drive systems.

Adjustable speed drives can be used to match the speed of an AC motor to the requirements of a fluctuating load, such as a pump that must move volumes of fluid that change in the course of a production shift. When this happens, the control valves, dampers, or other throttling mechanisms can be removed (or locked in full open positions), thereby dramatically improving energy efficiency. E-Source reports that in cube-law applications, energy savings from speed drives can exceed 50%.

In its Drivpower Technology Atlas, E-Source reports that the market potential for ASDs is huge, with many opportunities. Specifically, less than 5% of U.S. motors in the 1 to 200-hp range currently have any kind of adjustable speed control. E-Source further estimates that the estimated market potential for ASD's in the U.S. is roughly 9,000,000 units.

The U.S. Department of Energy reports that the saturation of ASDs is fairly low: nine percent of motors which represent four percent of total motor system energy use. The saturation of ASDs, both in terms of units and energy is highest in the smallest horsepower classes.

##### **2) Compressed Air Systems**

Compressed air systems account for 10% of all electricity and roughly 16% of all motor system energy use in the U.S. manufacturing industries. Seventy percent of all manufacturing facilities in the United States have some form of compressed air system.

The U.S. Department of Energy suggests that over 50% of industrial plant air systems harbor opportunities for large energy savings with relatively low project costs. Compressed air system measures identified in energy audits of small- to medium-sized industrial facilities by the Industrial Assessment Centers had average projected savings of 15% of compressed air system energy usage with simple paybacks in less than 2 years. Many case studies conducted have identified savings in the range of 30 to 60% of initial system usage.

Commercial and Industrial customers will have the opportunity to identify feasible and cost effective compressed air system efficiency improvements through the Energy Analysis & Recommissioning Project. Incentives for eligible measures are available through the Grants Project.

### **3) Manufacturing throughput efficiency**

Some retrofits of process systems, packaging systems, or automated assembly lines may use more energy than the existing process system, but produce more products. In these cases, energy use per product produced is lower and thus the process line retrofit achieves overall energy savings. One example would be the installation of a new process line that produces greater molded plastic parts. In this example, the process is a thermal former that uses electric energy for heating plastic stock material, motor energy for forming and product transfer through the line, as well as compressed air energy and cooling water from existing shared systems or central plant systems. The project energy savings would be based on production per kilowatt hour before and after the plant retrofit.

Impact savings estimates from Energy Grants are based on data that come directly from the customer, who submits detailed information showing demand and energy savings for each proposed measure. The Company then verifies the feasibility of the proposed savings, and if necessary, makes modifications to the submitted figures. Otter Tail Power Company offers assistance to our commercial and industrial customers to help them determine the energy and demand savings necessary in developing a grant proposal.

End-use metering is also an option for verifying impact savings. In addition, the customer often works with internal or third party engineers to determine and verify savings. Currently, each Grant Proposal is studied to see if the existing metering arrangement is appropriate for the proposed measure, or if additional equipment should be employed.

### **Promotion**

Otter Tail will use a multi-faceted approach to create both push and pull in the market for energy savings incentives available through the Grants Project. Specific marketing plan items include:

- 1) **Print and mail**—Otter Tail will develop a variety of promotional materials to educate customers on the Grants Project and encourage use of the Project's incentives for efficiency improvements. A multi-paged, full sized booklet titled "Taking Care of Business" will feature all commercial and industrial programs and will reach approximately 8,000 commercial and industrial customers in North Dakota through a targeted mailing in 2010. In 2011, Otter Tail will implement a second mailing offering the Taking Care of Business booklet upon request.
- 2) **Website**—Otter Tail's website will include detailed information on end-use efficiency technologies, rebates, and incentives available through the commercial and industrial projects. In addition, easy-to-read tables will summarize rebate incentives for various end-use technologies.

- 3) Contractor/customer workshops and expos—Otter Tail will sponsor three, one-day workshops in different locations throughout North Dakota to educate electrical, HVAC, and refrigeration contractors, other industry professionals, and energy users on energy efficient technologies and the Company's new portfolio of energy efficiency programs and incentives. Costs to attend the seminars will be approximately \$25 per attendee. Otter Tail will encourage attendance from manufacturer's representatives and allow distributors to display, demonstrate and explain the latest in efficient end-use electric technologies.

**B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

	<b>2010-11</b>
KWH – Generator	2,408,000
Cost / KWH	\$0.09
KW – Generator	516.00
Cost / KW	\$419

**C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$40,000
Incentives	\$176,000
Total	\$216,000
Participation	16

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## **MOTORS**

### **(Commercial, Industrial & Farm)**

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#### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

Electricity use in commercial and industrial electric motor systems in the U.S. accounts for a significant amount of total U.S. energy consumption. E-Source reports that about 52% of all U.S. electricity flows through motor-driven systems. Worldwide, about half of all electricity flows through electric motors, resulting in a total electric bill of \$90 billion for motor-driven systems in the U.S. alone. Pumps, fans and compressors operating in the industrial sectors are the largest users of motor output, with approximately 69% of industrial energy use flowing through electric motors.

Since such an immense amount of energy and money are devoted to motor-driven systems, even seemingly small improvements in motor efficiency can yield huge savings. Further, the economics of premium efficiency motors are unique in that many energy-using devices in operation today cost much more to purchase than the energy they use in a single year. Motors are completely opposite. For example, a typical automobile costs about 20 times as much to purchase as it costs in fuel to run each year. A motor running 4,000 hours per year in an industrial setting will consume on order of ten times its capital cost's worth of electricity every year, and roughly two hundred times its capital cost over a 20-year lifetime.

Despite the end-use market statistics and unique attributes regarding the economics of premium efficiency motors, only 11% of the installed motor stock in the U.S. is considered energy efficient. The goal of the Motors Project is to educate dealers and customers on the benefits of installing new and replacement electric motors that meet the NEMA Premium efficiency requirements. The Project provides cash incentives to customers for the purchase of NEMA Premium rated electric motors

For the 2010 and 2011 Motors Project, Otter Tail proposes the NEMA Premium Efficiency standards (along with any updates) for eligibility of customer rebate incentives. The NEMA Premium Efficiency program aims to standardize the values industry-wide of premium efficiency motors. Energy and demand savings have been based on the comparison to an average motor efficiency from the U.S. Department of Energy Motor/Master software.

Otter Tail is further proposing higher rebate incentives for motors replaced prior to end-of-life failure for the purpose of increasing energy efficiency. For motors replaced with a qualifying NEMA Premium Efficiency motor prior to failure, Otter Tail is proposing higher rebate incentives to encourage customers to retrofit inefficient motors with NEMA Premium Efficiency motors

#### **Promotion**

Otter Tail will use a multi-faceted approach to create both push and pull in the market for energy savings incentives available through the Motors Project. Specific marketing plan items include:

- 1) Print and mail—Otter Tail will develop a variety of promotional materials to educate customers on the Motors Project and encourage use of the Project's incentives for efficiency improvements. A multi-paged, full sized booklet titled "Taking Care of Business" will feature all commercial and industrial programs and will reach approximately 8,000 commercial and industrial customers in North Dakota through a

targeted mailing in 2010. In 2011, Otter Tail will implement a second mailing offering the Taking Care of Business booklet upon request.

- 2) Website—Otter Tail’s website will include detailed information on end-use efficiency technologies, rebates, and incentives available through the commercial and industrial projects. In addition, easy-to-read tables will summarize rebate incentives for various end-use technologies, including NEMA Premium efficiency electric motors.
- 3) Contractor/customer workshops and expos—Otter Tail will sponsor three full, one-day workshops in different locations throughout North Dakota to educate electrical, HVAC, and refrigeration contractors, other industry professionals, and energy users on energy efficient technologies and the Company’s new portfolio of energy efficiency programs and incentives. Costs to attend the seminars will be approximately \$25 per attendee. Otter Tail will encourage attendance from manufacturer’s representatives and distributors to display, demonstrate and explain the latest in efficient end-use electric technologies.

**B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

	<b>2010-11</b>
KWH – Generator	171,310
Cost / KWH	\$0.23
KW – Generator	27.83
Cost / KW	\$1,437

**C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$20,200
Incentives	\$19,800
Total	\$40,000
Participation	80

## **LIGHTING**

### **(Commercial, Industrial & Farm)**

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#### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

Consumers and businesses spend approximately \$58 billion per year to light their homes, offices, streets, and factories. The conversion of electricity into useful light is one of the least efficient energy conversion processes in buildings today. Advanced lighting technologies can significantly improve the energy efficiency of lighting and reduce building energy consumption and costs.

Lighting in the United States uses 656 terrawatt hours of electricity annually, accounting for about 18 percent of the nation's total electricity use. Of this total, the commercial and industrial sectors account for about 71 percent. In commercial buildings, lighting systems consume 39% of all electricity—more than refrigeration, water heating, office equipment and space cooling combined. Further, the U.S. Department of Energy indicates that lighting load in commercial buildings coincides with peak electrical demand and contributes to a building's internal heat generation, increasing air-conditioning load.

The energy efficiency of specific *new* lighting products has improved, but opportunities still exist for improvements in existing commercial, industrial, and farm buildings. An estimated half a billion incandescent downlights operate in the United States. Converting 2/3 of these fixtures used in residential markets alone would save customers \$3 billion per year in energy costs and free up approximately seven MW of electric capacity.

Otter Tail's Lighting Project focuses on replacing inefficient lighting systems with new and retrofit systems based on more efficient technology. Typical retrofit applications include:

- Inefficient incandescent to screw-in compact fluorescent lamp;
- Inefficient fluorescent systems (T12 lamps and magnetic ballasts) to high efficiency fluorescent systems (electronic ballasts with T5 and T8 lamps);
- LED lighting; and,
- High efficiency pulse-start metal halide.

#### **Promotion**

Otter Tail will use a multi-faceted approach to create both push and pull in the market for energy savings incentives available through the Lighting Project. Specific marketing plan items include:

- 1) **Print and mail**—Otter Tail will develop a variety of promotional materials to educate customers on the Lighting Project and encourage use of the Project's incentives for efficiency improvements. A multi-paged, full sized booklet titled "Taking Care of Business" will feature all commercial and industrial programs and will reach approximately 8,000 commercial and industrial customers in North Dakota through a targeted mailing in 2010. In 2011, Otter Tail will implement a second mailing offering the Taking Care of Business booklet upon request.
- 2) **Website**—Otter Tail's website will include detailed information on end-use efficiency technologies, rebates, and incentives available through the commercial and industrial projects. In addition, easy-to-read tables will summarize rebate incentives for various end-use technologies, including retrofits to high efficiency lighting systems.
- 3) **Contractor/customer workshops and expos**—Otter Tail will sponsor three full, one-day workshops in different locations throughout North Dakota to educate electrical,

HVAC, and refrigeration contractors, other industry professionals, and energy users on energy efficient technologies and the Company's new portfolio of energy efficiency programs and incentives. Costs to attend the seminars will be approximately \$25 per attendee. Otter Tail will encourage attendance from manufacturer's representatives and distributors to display, demonstrate and explain the latest in efficient end-use electric technologies.

**B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

	<b>2010-11</b>
KWH – Generator	1,051,799
Cost / KWH	\$0.07
KW – Generator	257.70
Cost / KW	\$272

**C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$25,724
Incentives	\$44,276
Total	\$70,000
Participation	48

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## **COOKING (Commercial & Industrial)**

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### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

Foodservice establishments account for 13% or more of all commercial electricity sales in this country. (This was confirmed by members of the Electric Food Service Council from Georgia Power and Alabama Power.) Commercial kitchens, found in restaurants and hospitality and institutional facilities, are intense energy users, putting food service facilities among the biggest energy consumers per square foot of all commercial buildings. In a typical food service facility, food preparation, water heating, and refrigeration combined represent nearly 60 percent of total energy use, making those systems excellent targets for energy savings.

Design and installation of energy-efficient electric cooking equipment in businesses such as supermarket delis, schools, hospitals, colleges, and restaurants can reduce energy use and demand. Implementation of efficient cooking measures can result in measurable energy savings compared to standard, less efficient electric equipment that is currently being used.

#### Promotion

Otter Tail will use a multi-faceted approach to create both push and pull in the market for energy savings incentives available through the commercial Cooking Project. Specific marketing plan items include:

- 1) **Print and mail**—Otter Tail will develop a variety of promotional materials to educate customers on the Lighting Project and encourage use of the Project's incentives for efficiency improvements. A multi-paged, full sized booklet titled "Taking Care of Business" will feature all commercial and industrial programs and will reach approximately 8,000 commercial and industrial customers in North Dakota through a targeted mailing in 2010. In 2011, Otter Tail will implement a second mailing offering the Taking Care of Business booklet upon request.
- 2) **Website**—Otter Tail's website will include detailed information on end-use efficiency technologies, rebates, and incentives available through the commercial and industrial projects. In addition, easy-to-read tables will summarize rebate incentives for various end-use technologies, including retrofits to high efficiency lighting systems.
- 3) **Contractor/customer workshops and expos**—Otter Tail will sponsor three full, one-day workshops in different locations throughout North Dakota to educate electrical, HVAC, and refrigeration contractors, other industry professionals, and energy users on energy efficient technologies and the Company's new portfolio of energy efficiency programs and incentives. Costs to attend the seminars will be approximately \$25 per attendee. Otter Tail will encourage attendance from manufacturer's representatives and distributors to display, demonstrate and explain the latest in efficient end-use electric technologies.

**B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

	<b>2010-11</b>
KWH – Generator	72,320
Cost / KWH	\$0.28
KW – Generator	10.92
Cost / KW	\$1,831

**C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$11,803
Incentives	\$8,197
Total	\$20,000
Participation	11

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## **REFRIGERATION**

### **(Commercial, Industrial & Farm)**

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#### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

Refrigeration is a major source of energy use in certain commercial, institutional, and industrial settings. The “National Action Plan for Energy Efficiency Sector Collaborative on Energy Efficiency Supermarket Energy Use Profile” featured on the EPA website indicates that energy consumption for refrigeration in grocery stores and convenience stores accounts for 50% to 60% of total electricity consumption. The EPA further reports that in commissaries, refrigeration systems can account for 50% of all energy use.

Technological advances in commercial refrigeration systems have paralleled those in residential refrigeration since the 1970's. The Supermarket Energy Use Profile further indicates that a 10% reduction in energy costs for the average supermarket is equivalent to increasing net profit margin by 16%, indicating that energy savings through refrigeration system upgrades are not only technically possible, but often economically justifiable.

The Commercial Refrigeration Project is designed to promote high-efficiency refrigeration technologies by offering rebates for new and retrofit installation of refrigeration system components. Specific measures proposed to qualify for rebate incentives include:

##### **Compressor and condenser measures**

- Retrofits to parallel rack systems
- Retrofits to floating head pressure on existing stand alone and parallel compressor rack systems
- Retrofits to solid state compressor controls
- Retrofits to sold state condenser fan controls
- Retrofits to preservation of condenser subcooling

##### **Display and walk-in measures**

- New and retrofit installations of premium efficiency evaporator fan motors
- LED display case lighting
- Anti-sweat heater controls
- High efficiency case doors

#### **Promotion**

Otter Tail will use a multi-faceted approach to create both push and pull in the market for energy savings incentives available through the Refrigeration Project. Specific marketing plan items include:

- 1) Print and mail—Otter Tail will develop a variety of promotional materials to educate customers on the Refrigeration Project and encourage use of the Project's incentives for efficiency improvements. A multi-paged, full sized booklet titled “Taking Care of Business” will feature all commercial and industrial programs and will reach approximately 8,000 commercial and industrial customers in North Dakota through a targeted mailing in 2010. In 2011, Otter Tail will implement a second mailing offering the Taking Care of Business booklet upon request.

- 2) Website—Otter Tail’s website will include detailed information on end-use efficiency technologies, rebates, and incentives available through the commercial and industrial projects. In addition, easy-to-read tables will summarize rebate incentives for various end-use technologies, including new and retrofit installations of high efficiency refrigeration systems.
  
- 3) Contractor/customer workshops and expos—Otter Tail will sponsor three full, one-day workshops in different locations throughout North Dakota to educate electrical, HVAC, and refrigeration contractors, other industry professionals, and energy users on energy efficient technologies and the Company’s new portfolio of energy efficiency programs and incentives. Costs to attend the seminars will be approximately \$25 per attendee. Otter Tail will encourage attendance from manufacturer’s representatives and distributors to display, demonstrate and explain the latest in efficient end-use electric technologies.

**B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

	<b>2010-11</b>
KWH – Generator	441,155
Cost / KWH	\$0.09
KW – Generator	66.63
Cost / KW	\$600

**C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$16,404
Incentives	\$23,596
Total	\$40,000
Participation	25

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## **PLAN REVIEW (Commercial, Industrial & Farm)**

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### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

The Plan Review Project, marketed as SmartPlan, is designed to encourage building owners, architects and design engineers to incorporate energy efficient designs into new building construction. Incorporating energy efficient systems and controls during new building design is the most cost effective and opportune time since energy efficient design strategies often reduce system capacities required, which often pay for the added cost of efficient systems and controls. In addition, energy savings reduce annual utility and operating costs.

With the Plan Review Project, participating customers receive free reviews of proposed building plans and specifications during the preliminary design process. Energy efficiency improvements that exceed the minimum recommended efficiency levels of the State of North Dakota are eligible for incentives. In cases where the State of North Dakota recommends efficiency levels of applicable ASHRAE standards, Otter Tail is prepared to adopt these standards as baseline technologies.

The program is viewed as a win-win strategy for all stakeholders in the process; building owner, utility and architects and engineers. The building owner gets an energy efficient building often at no additional costs and with lower annual operating costs. The utility realizes energy saving credits. Architects and engineers gain knowledge about energy efficient designs and cost savings that can be applied to future projects.

#### **Promotion**

Otter Tail will use a multi-faceted approach to create both push and pull in the market for energy savings incentives available through the Plan Review Project. Specific marketing plan items include:

- 1) **Print and mail**—Otter Tail will develop a variety of promotional materials to educate customers on the Plan Review Project and encourage use of the Project's incentives for efficiency improvements. A multi-paged, full sized booklet titled "Taking Care of Business" will feature all commercial and industrial programs and will reach approximately 8,000 commercial and industrial customers in North Dakota through a targeted mailing in 2010. In 2011, Otter Tail will implement a second mailing offering the Taking Care of Business booklet upon request.
- 2) **Website**—Otter Tail's website will include detailed information on end-use efficiency technologies, rebates, and incentives available through the commercial and industrial projects. In addition, easy-to-read tables will summarize rebate incentives for various end-use technologies, including new and retrofit installations of high efficiency refrigeration systems.
- 3) **Contractor/customer workshops and expos**—Otter Tail will sponsor three full, one-day workshops in different locations throughout North Dakota to educate electrical, HVAC, and refrigeration contractors, other industry professionals, and energy users on energy efficient technologies and the Company's new portfolio of energy efficiency programs and incentives. Costs to attend the

seminars will be approximately \$25 per attendee. Otter Tail will encourage attendance from manufacturer's representatives and distributors to display, demonstrate and explain the latest in efficient end-use electric technologies.

**B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

	<b>2010-11</b>
KWH – Generator	536,642
Cost / KWH	\$0.10
KW – Generator	81.06
Cost / KW	\$654

**C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$21,082
Incentives	\$31,918
Total	\$53,000
Participation	7

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## **ENERGY ANALYSIS AND RECOMMISSIONING (Commercial, Industrial & Farm)**

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### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

This project includes both compressed air audits and commercial/industrial audits, as well as a focus on recommissioning.

#### **Compressed Air Audits**

Compressed air systems account for 10% of all electricity and roughly 16% of all motor system energy use in the U.S. manufacturing industries. Seventy percent of all manufacturing facilities in the United States have some form of compressed air system.

The U.S. Department of Energy suggests that over 50% of industrial plant air systems harbor opportunities for large energy savings with relatively low project costs. Compressed air system measures identified in energy audits of small- to medium-sized industrial facilities by the Industrial Assessment Centers had average projected savings of 15% of compressed air system energy usage with simple paybacks in less than 2 years. Many case studies conducted have identified savings in the range of 30 to 60% of initial system usage.

Commercial and Industrial customers will have the opportunity to identify feasible and cost effective compressed air system efficiency improvements through the Energy Analysis & Recommissioning Project. Incentives for eligible measures are available through the Grants Project.

Otter Tail Power Company will pay 50% of the audit cost up to \$10,000. Compressed air audits will be paid up to 80% of cost, up to \$10,000.

#### **Commercial Audits**

Energy auditing is the study of an energy system (a factory or building) to determine where and how well energy is being used. As a very effective tool, but not a total solution, energy practical auditing is a nucleus of any energy saving program.

The program will provide audits to commercial and non-profit customers, which will be designed to assist the business customer in improving the efficiency of existing buildings/operating systems. The basic components to any energy audit include:

- 1) Analysis of energy consumption data;
- 2) Investigation of existing facilities; and,
- 3) Analysis and recommendations concerning areas where efficiency improvements are technically and economically feasible.

The Energy Analysis and Recommissioning Project will provide cash incentives of 50% of audit costs, up to \$10,000 for participating customers.

#### **Recommissioning**

Recommissioning is a systematic process for investigating, analyzing, and optimizing the performance of building systems through operational and maintenance improvement measures and ensuring their continued performance over time. The recommissioning process assists in making the building systems perform interactively to meet the building owner's current operational needs. Recommissioning will ensure cooling and mechanical system functionality by optimizing equipment operation and the interactions between

individual equipment components that must function together as a complete system. The goals include reduced energy usage, energy cost savings for the customer, and reduced peak electric demand for Otter Tail Power Company.

The Energy Analysis and Recommissioning Project will provide cash incentives of 50% of audit costs, up to \$10,000 for participating customers.

**Promotion**

Otter Tail will use a multi-faceted approach to create both push and pull in the market for energy savings incentives available through the Energy Analysis and Recommissioning Project. Specific marketing plan items include:

- 1) Print and mail—Otter Tail will develop a variety of promotional materials to educate customers on the Energy Analysis and Recommissioning Project’s benefits and to encourage use of the Project’s incentives for efficiency improvements. A multi-paged, full sized booklet titled “Taking Care of Business” will feature all commercial and industrial programs and will reach approximately 8,000 commercial and industrial customers in North Dakota through a targeted mailing in 2010. In 2011, Otter Tail will implement a second mailing offering the Taking Care of Business booklet upon request.
- 2) Website—Otter Tail’s website will include detailed information on end-use efficiency technologies, rebates, and incentives available through the commercial and industrial projects. In addition, easy-to-read tables will summarize rebate incentives for various end-use technologies and other projects, including Energy Analysis and Recommissioning.
- 3) Contractor/customer workshops and expos—Otter Tail will sponsor three full, one-day workshops in different locations throughout North Dakota to educate electrical, HVAC, and refrigeration contractors, other industry professionals, and energy users on energy efficient technologies and the Company’s new portfolio of energy efficiency programs and incentives. Costs to attend the seminars will be approximately \$25 per attendee. Otter Tail will encourage attendance from manufacturer’s representatives and distributors to display, demonstrate and explain the latest in efficient end-use electric technologies.

**B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

This project is not a direct impact project; therefore no estimates have been made to determine any effects on peak demand or energy consumption.

**C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$5,000
Incentives	\$35,000
Total	\$40,000
Participation	6

## **ADVERTISING AND EDUCATION (Residential, Commercial, Industrial & Farm)**

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### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

The goal of advertising and education efforts is to inform, persuade, remind, and add value. Advertising and education makes individuals aware of product options, informs them about those options, and assists the individual in making decisions about a course of action or purchase. Effective advertising and education prepares an individual to respond when a need or opportunity arises. This likely does not occur simultaneously with the message being received, but has an effect, non-the-less, on decisions made.

Energy-efficiency advertising and education programs can (1) inform customers about available programs offered, (2) persuade them to contact Otter Tail Power Company for assistance, or try a particular energy-efficient product such as energy-efficiency appliances or lighting, and (3) teach energy efficient behaviors and the benefits of those behaviors.

The range and complexity of energy related decisions consumers must make continue to multiply. This is due to the variety of energy-powered technologies used in modern life; the variety of construction materials available; the number of construction techniques represented in today's housing stock; and the number of options available for heating, cooling, and ventilation systems.

The primary purpose of this project is educational outreach targeting residential customers and children across economic groups from within the Otter Tail Power Company customer base. The program objective is to promote consumer awareness of energy-saving practices and to educate both today's consumers and future consumers to help prepare them to make lifestyle choices and buying decisions that maximize energy efficiency and savings.

Primary program components include educational materials including newsletter articles and literature; web based educational information, and offering educational assemblies to school aged children and their teachers.

#### **1. Educational assemblies for teachers and school aged children.**

The Energy Connection program is a production and tour offered by the Minnesota Science Museum. The energy tour will be offered free to selected schools in North Dakota in the spring of 2010 for implementation in 2011. The goal will be to provide the assembly program to at least 10 schools. The assembly program targets students in grades 4 – 6 with interactive displays and activities to develop an understanding of energy, alternative fuels and energy resources used to generate electricity, and energy conservation methods to use at home and at school. The program is supplemented with workshop and materials for teachers to assist them in meeting their energy education requirements for grades 4 – 6.

The objective of the program is to educate approximately 800 students on energy use, its impact on the environment, and how behavior and technology interact. In addition, a minimum of at least 300 pieces of energy efficient literature will be distributed to customers upon their request.

#### **2. Television and radio promotions**

This segment of the program consists of a prorated portion of a full media campaign using TV, radio, and newspaper, and one radio-only media campaigns. All campaigns will be supported by web resources and literature. Campaign messages will be aimed

at educating customers about specific steps they can take to reduce their own energy use. Campaigns will target lifestyle choices and behaviors to reduce energy consumption such as reducing heating temperatures, increasing cooling temperatures, turning off lights and other electronics when you leave a room, and raising awareness of television and electronics consumption.

**3. Internet based resources**

Ads and materials prepared through this program will direct customers to [www.ConservingElectricity.com](http://www.ConservingElectricity.com) where they will find more detailed educational materials. [www.ConservingElectricity.com](http://www.ConservingElectricity.com) was developed and introduced by Otter Tail Power Company in 2005 as a conservation resource for residential adults and children. Resource materials and links are added to support media campaigns and conservation programs.

The most significant portion of the web based services is an upgraded online home energy audit and bill analysis tool. This tool was launched in 2009 and is targeted to be further refined and maintained to provide in-depth understanding of individual home energy use to residential customers. It enables users to examine usage patterns by providing up to 25 months of bill history, identify causes for changes in consumption and costs, compare their usage between one month and another as well as to other similar households, and to be guided to actions to reduce energy consumption. A further benefit is that the tool is available through two channels—web self service on [www.otpco.com](http://www.otpco.com) for those comfortable with computers and accessing the internet and through customer service representatives serving customers by phone and in person at customer service centers. It is anticipated that at least 900 customers will participate in use of the bill analyzer tool annually

**1. Literature, newsletters, general information.**

Appropriate literature and material will be located and ordered or developed and produced as companion pieces to the education effort that will take place through advertising and web-based education. Customers will be offered educational materials as free resources as a part of the advertising campaigns, in educational displays at home shows, school visits, in local company offices in the North Dakota service territory, and online through the Company web sites at [otpco.com](http://otpco.com) or [conservingelectricity.com](http://conservingelectricity.com). In addition, conservation information will be published through a bimonthly newsletter for residential customers.

**B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

This project is not a direct impact project; therefore no estimates have been made to determine any effects on peak demand or energy consumption.

**C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$100,000
Total	\$100,000
Participation	2,000

**FINANCING**  
**(Residential, Commercial, Industrial & Farm)**

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**A. PROJECT DESCRIPTION AND JUSTIFICATION**

Otter Tail Power Company's customer financing project is designed to provide low interest loans for energy efficiency improvement projects currently included in our Conservation Improvement Program. These improvements include, but would not be limited to, lighting, motors, variable speed drives, process improvements, and heat pumps.

Financing applies to new equipment, materials, and contract labor for installation. Customer's internal labor is not covered.

The customer will be charged a low interest rate of approximately 1.9% at the time of loan origination.

The subsidy charged to the Conservation Improvement Program Tracker Account will be calculated using Otter Tail's cost of capital. The difference between the interest expense at our after tax cost of capital and the interest expense at the customers' rate is the cost associated with subsidizing the interest. The interest subsidy, loan defaults, and associated administration would be charged monthly to the EEP tracker.

Loans would be financed at up to 80% of the total project cost with a maximum loan term of five years. Loans will be repaid on the customer's service bill. Financing will be available to those Otter Tail customers who have a favorable credit rating and have a satisfactory 12-month electric utility payment history. Otter Tail will review all applications internally and loans will require credit checks. Loans of \$5,000 or more will be secured.

Customers will be allowed either the low interest financing or the rebate but not both.

**Promotion**

This project will be marketed primarily through our marketing supervisors and representatives, who have contact with our customers through other EEP projects. The Project will serve as a tool to promote energy efficiency improvements across all conservation end uses. In addition, the project will be marketed through all applicable project promotions.

**B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

Energy and demand impacts will result from the Financing Project, but the individual impacts will be credited to the appropriate project. Therefore, it is difficult to determine cost-effectiveness at this time.

**C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$30,300
Interest Subsidy and defaults	\$15,000
Total	\$45,300
Participation	10

## **IMPLEMENTATION AND TRAINING (Residential, Commercial, Industrial & Farm)**

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### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

This Project's main objective will be to provide training on conservation improvement and DSM technologies and methods for the Company's design, implementation, and sales staff. A portion of the budget will be used for customer training on new energy conserving technologies.

Otter Tail Power Company believes training customers and staff in energy efficient end-uses and new emerging technologies is a vital part of conservation improvement.

### **B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

This project is not a direct impact project; therefore no estimates have been made to determine any effects on peak demand or energy consumption.

### **C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$50,000
<b>Total</b>	<b>\$50,000</b>
Participation	225

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## **EEP DEVELOPMENT (Residential, Commercial, Industrial & Farm)**

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### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

Evaluating research and trends in the area of conservation is trends in the area of conservation is a critical step in ensuring that Otter Tail Power Company's Conservation Improvement Program plan remains relevant and effective to North Dakota customers over the long term. The Program Development project is designed to allow for both long-term and near-term management and development of conservation programs at Otter Tail Power Company.

The Project will encompass analyzing new trends and technologies and conducting CIP-related strategic market planning (economic and impact), CIP-related resource planning, and CIP-related regulatory coordination. Analysis activities will focus on national, state, and other utility trends; legislative and regulatory activity; and private sector development of new technologies and programs aligned with energy conservation efforts.

New project development remains essential to the Company's overall EEP effort and allows cost-effective and energy-efficient projects to be advanced. Therefore the Project includes development labor and expenditures. Examples of interest in future program development are efficient lighting technologies, developments of efficient power supply devices, as well as other cost effective conservation programs.

### **B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

This project is not a direct impact project; therefore no estimates have been made to determine any effects on peak demand or energy consumption.

### **C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$60,000
Total	\$60,000
Participation	0

## **TECHNICAL RESEARCH (Residential, Commercial, Industrial & Farm)**

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### **A. PROJECT DESCRIPTION AND JUSTIFICATION**

The Project has two primary focuses:

1. **General Market Research:** The market research portion provides funds for general market research that will identify and support demand-side management opportunities. The Project is designed to enhance EEP projects and DSM efforts by using information that may be used across multiple project lines. In addition, the Project provides for a means to allocate end-use metering and data logging devices used in a variety of EEP and DSM projects that generate research data.
2. **Technical Research:** This portion assists industrial companies with researching technologies that may improve overall energy efficiency. The project also includes a logical association to the Commercial & Industrial Grant Project that involves customized rebates for energy-efficiency improvements, and an in-depth diagnostic assessment of the business. The assessment covers four areas: management, finance, market, and operations. Because some larger projects may require additional research or a higher level of engineering design, customers may also propose to use their funds for applied research or engineering projects. Funds may be used to fund up to 50% of these engineering or research projects. Customers and the Company logically would only be interested in funding studies with a high potential for actual implementation.

### **B. LONG TERM DEMAND SIDE MANAGEMENT GOALS**

This project is not a direct impact project; therefore no estimates have been made to determine any effects on peak demand or energy consumption.

### **C. PROJECT BUDGET & PARTICIPATION**

	<b>2010-11</b>
Project Delivery & Administration	\$30,000
Total	\$30,000
Participation	2

### III. COST RECOVERY AND FINANCIAL STABILITY

Consistent with our experience in other states, cost recovery methods for energy efficiency programs can vary:

- Through base rates (\$1 million has been included in our general rate case filing now before the Commission)
- An adjustment on customer bills
- A combination of base rates and an adjustment

In addition, because energy efficiency results in lost energy sales, the Company has also proposed a financial stabilization plan. The two components are described below.

#### *Cost recovery, tracker account, and carrying charge*

Energy efficiency programs can save resources, lower utility costs, and reduce customer energy bills. As such energy efficiency is a key component of Otter Tail Power Company's energy resource mix. Our history of providing cost-effective energy efficiency programs in Minnesota and recently in South Dakota has helped defer investments in new plants and helped lower the total cost of delivering electricity to all customers.

Key to maximizing this resource is cost recovery and maintaining utility financial health from lost energy sales. Cost recovery of energy efficiency programs can be obtained through inclusion of expenses in base rates or through a cost recovery mechanism that could appear as a separate line item on customer bills or be included as a separate calculation in another adjustment line such as the Energy Adjustment.

Otter Tail Power Company has proposed to include \$1 million in our North Dakota Rate Case filing on November 3, 2008. Actual expenses will be monitored through a balancing account to track costs. Any amounts over the amount in base rates could be recovered through a rider. A second option for Commission consideration is recovery of costs entirely through a rider mechanism, with no recovery of expenses included in base rates.

In addition to the actual expenses in the tracker, the Company proposes including a carrying charge on unrecovered costs for the time value of the money invested by the Company in energy efficiency projects. For billing purposes, the cost recovery charge as proposed is applied on a kilowatt-hour basis and could be a standalone item or combined with other charges such as the Energy Adjustment that appears on customers' electric service bills.

We are not currently recovering any of these costs in base rates or through a rider; therefore, we propose a combination of recovery through base rates, and a cost recovery mechanism and carrying charge, as an appropriate means to recover costs associated with developing and implementing the North Dakota Energy Efficiency Plan. Attachment E includes two tables. Table 1 illustrates a combination of base rate and rider rate recovery and Table 2 illustrates cost recovery through a rider alone.

At the time of the Commission Findings of Fact, Conclusions of Law, and Order in Otter Tail Power Company's Advance Determination of Prudence Application, the Company established a balancing account to track costs associated with development of a portfolio of energy efficiency programs in North Dakota. This is consistent with our current Minnesota Conservation Improvement Program and South Dakota Energy Efficiency Partnership.

We propose the tracker be allowed to build through December 31, 2011, at which point the Company will notify the Commission on March 1, 2012 of the tracker balance, including carrying

charges and any applicable financial offsets. The Company proposes that the monthly carrying charge be equivalent to the Company's currently approved rate of return.

The March 1, 2012, filing will also include the amount of the conservation cost recovery charge, if any, and will request approval to implement the charge on customers' bills, effective July 1, 2012. If the Commission determines that the Energy Efficiency Plan should stay in place for subsequent years, the Company proposes to provide a report to the Commission every March 1, thereafter. The report will show the EEP expenses, including carrying charges and incentives that are accounted for yearly in the tracker, and the amount recovered from customers through the cost recovery charge, minus recovery in base rates. The report will develop a new cost recovery charge based on the outstanding balance of the tracker account and request approval to implement the new charge effective each July 1.

If the Commission finds that all costs should be recovered through a rider, then we propose the tracker be allowed to build until no later than March 2011.

### ***Financial stabilization***

While energy efficiency programs can save resources, they also reduce utility sales. Therefore, the effect on utility financial health needs to be considered to keep utilities financially health as energy efficiency opportunities are pursued and accomplished. The Company proposes a financial stabilization mechanism be established as part of a successful energy-efficiency partnership in North Dakota. There are a number of mechanisms that can reduce the disincentive associated with lost revenue through conservation or energy efficiency programs.

One method is lost margin recovery, where the lost margin is calculated and added to the Energy Efficiency tracker account. The lost margin per kilowatt-hour for a customer class is determined by the difference between the tariffed energy rate (without the fuel clause adjustment) and Otter Tail Power Company's base cost of fuel, as established in the Company's last general rate case. A lost margin would continue to be calculated on all kilowatt-hours conserved until the next general rate case or as ordered by the Commission. Recoverable lost margins will be added to the tracker account.

Another method would be to capitalize efficiency costs. Capitalizing allows for cost recovery over time. The appropriate amortization periods for program costs, balancing concern for rate impacts, would need to be examined. The return on energy efficiency investments is generally higher. To encourage energy efficiency investments over supply investments, regulators can authorize a return on investment that is slightly higher (e.g., 5 percent greater than ROI on supply side) for energy efficiency investments.

Another approach is to share a percentage of the energy savings value. This can be expressed as a percentage of the financial value of the next marginal resource.

A flat cents per kWh saved can also be used based on a comparable return to a supply side investment. The Company proposes that a flat cents per kWh be agreed upon and used as a financial incentive mechanism for ease of implementation.

Regardless of which method is chosen it is imperative that a financial stabilization plan is in place before energy efficiency programs are implemented.

## **SUMMARY**

Otter Tail Power Company looks forward to working with the Commission and staff on our North Dakota Energy Efficiency Plan. Our proposed plan includes:

- 23 programs covering major end uses in residential, commercial, industrial and farm sectors, including all end uses identified as more economic resources than Big Stone II, with the exception of residential window replacement
- Annual energy savings of approximately 7,413 and 7,418 MWh
- Annual budgets of \$1,219,800 and \$1,223,800
- Cost recovery either through base rates or an approved rider, or a combination thereof
- Financial stabilization

Company representatives are available to answer any questions you might have. We look forward to your response.

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<b>Table OTP – 1</b>	
<b>DSM Programs in Effect at the Time of Development of the 2006 – 2020 IRP</b>	
<b>Program</b>	<b>Description</b>
<b>HotPack</b>	Provides residential customers installing new or replacement electric water heaters with a free packet of energy saving devices, including a showerhead, waterflow tester, kitchen and bathroom aerator, pipe wrap insulation, and water temperature gauge card.
<b>Air Source Heat Pump</b>	Targets residential/commercial/industrial customers currently using or considering the installation of less efficient resistance electric heating and cooling systems by offering rebates for new or retrofit installations air source heat pumps.
<b>Geothermal Heat Pump</b>	Targets residential/commercial/industrial customers by offering rebates for replacing low-efficiency electric heating systems with higher efficiency geothermal heat pumps or purchasing geothermal heat pumps for first time retrofit or new construction installations.
<b>Financing</b>	Provides low interest loans for energy-efficiency improvement projects that are currently included in the Conservation Improvement Program.
<b>Residential Demand Control</b>	Provides a rebate and special rate to customers who install a monitoring device that notifies customers of high energy and demand use and that allows Otter Tail to control the load.
<b>Air Conditioning Control</b>	Offers residential customers a free programmable thermostat and compact fluorescent light bulbs in exchange for allowing cycling control of central air conditioning systems.
<b>Change A Light</b>	Otter Tail participates in a Change A Light, Change the World project, which is a program developed by outside entities. The purpose is to offer compact fluorescent bulbs at a discount through retail stores.
<b>Refrigeration</b>	A commercial program designed to promote high-efficiency refrigeration technologies by offering rebates for new and retrofit installations of compressor systems, condenser systems, subcooling systems, refrigerated display cases, and air circulation.
<b>Cooking</b>	A commercial program intended to assist with the design and installation of energy efficient cooking systems in businesses such as supermarket delis, schools, hospitals, colleges, and restaurants.
<b>Grants</b>	This is a customized incentive program where commercial/industrial customers can propose conservation and efficiency improvements. Rebates are determined based on the expected energy and demand savings.
<b>Lighting</b>	Provides rebates to commercial/industrial customers for the purchase of energy efficient lighting technologies such as T8 lamps, compact fluorescent fixtures and lamps, efficient HID lighting, induction lighting systems, electronic ballasts, and occupancy sensors.
<b>Motors</b>	Provides rebates to commercial/industrial customers for the installation of higher efficiency motors.
<b>Energy Analysis and Recommissioning</b>	Includes both compressed air audits and commercial/industrial audits designed to assist the customer in improving the efficiency of existing building operating systems.
<b>House Therapy</b>	This program's primary focus is audit and weatherization services to low-income residential customers. The project provides other services

	including electric water heating, refrigerator/freezer replacement, and installation of residential demand control units.
<b>Table OTP – 2</b>	
<b>DSM Programs Selected by IRP-Manager PRIOR to the Selection of BSPH During the Development of the 2006 2020 IRP</b>	
<b>Program</b>	<b>Description</b>
060DIN	This program would provide rebates for industrial customers to recover lost heat from their processes and re-use that heat for other purposes, such as building heat. This is already available to industrial customers through the grant program.
26049DCO	This program would provide rebates to commercial customers to increase the ceiling/roof insulation level to R-49, for those installations that use electric heating.
30DIN260	This program would provide rebates to industrial customers to increase the ceiling/roof installation to R-30, for those installations that use electric heating. This would only be available as a retrofit to older existing structures, since current building codes would require at least that level of insulation for new facilities.
70030DCO	This program would provide rebates to commercial customers to increase wall insulation to R-30.
290DRE	This residential program would be primarily informational in targeting customers to lower the temperature settings on their water heater.
480DRE	This residential program would target new and existing window replacements with Low E glass.

		USING DISCOUNT RATE OF 8.0% - 2010 & 2011									
		Utility	TRC	RIM	RIM	RIM	Societal	Participant			
		Test	Test	Test	Test	(net fuel)	Test	Test			
<b>2010/2011 -- PROJECTS BY CUSTOMER CLASS</b>											
<b>RESIDENTIAL</b>											
	HOTPACKS	4.93	8.63	0.80	0.88		8.63	inf.			
	RESIDENTIAL DEMAND CONTROL	10.29	8.30	1.78	1.79		8.30	5.95			
	AIR SOURCE HEAT PUMPS - RESIDENTIAL	3.50	1.21	0.80	0.88		1.21	1.58			
	GEO THERMAL HEAT PUMPS - RESIDENTIAL	17.91	3.27	2.41	2.68		3.27	1.39			
	AIR CONDITIONING CONTROL	3.11	3.33	2.92	2.94		3.33	inf.			
	CHANGE A LIGHT	9.05	6.45	0.96	1.07		6.45	11.31			
	INDIRECT IMPACT PROJECTS - RESIDENTIAL - UPD	N/A	N/A	N/A	N/A		N/A	N/A			
	<b>ALL RESIDENTIAL PROGRAMS</b>	4.94	3.47	1.22	1.31		3.47	4.70			
<b>LOW-INCOME</b>											
	HOUSE THERAPY	1.75	1.75	0.73	0.78		1.75	inf.			
<b>COMMERCIAL</b>											
	GRANT	11.08	1.81	1.34	1.54		1.81	1.36			
	MOTORS	3.42	2.09	0.94	1.05		2.09	2.77			
	LIGHTING	11.97	1.34	1.06	1.18		1.34	1.28			
	COOKING	2.61	1.24	0.75	0.82		1.24	1.89			
	COMMERCIAL REFRIGERATION	6.90	2.30	0.85	0.95		2.30	2.96			
	AIR SOURCE HEAT PUMPS - COMMERCIAL	2.55	0.99	0.75	0.82		0.99	1.37			
	GEO THERMAL HEAT PUMPS - COMMERCIAL	28.74	4.11	2.35	2.63		4.11	1.77			
	PLAN REVIEW	9.03	2.49	0.96	1.07		2.49	2.78			
	INDIRECT IMPACT PROJECTS - COMMERCIAL	N/A	N/A	N/A	N/A		N/A	N/A			
	<b>ALL COMMERCIAL PROGRAMS</b>	9.75	2.07	1.34	1.51		2.07	1.59			
<b>OTHER INDIRECT IMPACT PROJECTS</b>											
	INDIRECT IMPACT PROJECTS - OTHER - UPDATED	N/A	N/A	N/A	N/A		N/A	N/A			
	<b>TOTAL - ALL PROGRAMS</b>	6.91	2.22	1.28	1.41		2.22	1.91			

**2010-11 NORTH DAKOTA Energy Efficiency Plan**  
**OTTER TAIL POWER COMPANY**  
**February 20, 2009**

**Attachment B**  
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	2010 SUMMARY	BUDGET	PART.	KWH	COST/KWH	KW	COST/KW
RESIDENTIAL					1.		
HOTPACKS	\$14,000	150	116,423	\$0.12	21.71	\$645.00	
RESIDENTIAL DEMAND CONTROL	\$62,500	50	29,890	\$2.09	390.39	\$160.10	
AIR SOURCE HEAT PUMPS - RESIDENTIAL	\$35,000	60	148,995	\$0.23	27.78	\$1,259.98	
GEOTHERMAL HEAT PUMPS - RESIDENTIAL	\$15,000	10	120,400	\$0.12	86.00	\$174.42	
AIR CONDITIONING CONTROL	\$60,000	100	4,881	\$12.29	96.75	\$620.16	
CHANGE A LIGHT	\$72,000	18,000	1,042,865	\$0.07	194.43	\$370.32	
FINANCING	\$13,600	5					
ADVERTISING & EDUCATION	\$100,000	2,000					
IMPLEMENTATION & TRAINING	\$20,000	75					
TOTAL - RESIDENTIAL PROGRAMS	\$392,100	20,450	1,463,453	\$0.27	817.05	\$479.90	
LOW-INCOME							
HOUSE THERAPY	\$87,000	135	176,152	\$0.49	73.15	\$1,189.36	
COMMERCIAL							
GRANT	\$216,000	16	2,408,000	\$0.09	516.00	\$418.60	
MOTORS	\$40,000	80	171,310	\$0.23	27.83	\$1,437.29	
LIGHTING	\$70,000	48	1,051,799	\$0.07	257.70	\$271.64	
COOKING	\$20,000	11	72,320	\$0.28	10.92	\$1,890.92	
COMMERCIAL REFRIGERATION	\$40,000	25	441,155	\$0.09	66.63	\$600.29	
AIR SOURCE HEAT PUMPS - COMMERCIAL	\$38,000	40	110,639	\$0.34	16.71	\$2,273.89	
GEOTHERMAL HEAT PUMPS - COMMERCIAL	\$72,000	70	982,013	\$0.07	657.23	\$109.55	
PLAN REVIEW	\$53,000	7	536,642	\$0.10	81.06	\$653.86	
FINANCING	\$31,700	5					
ENERGY ANALYSIS	\$40,000	6					
IMPLEMENTATION & TRAINING	\$30,000	150					
TOTAL - COMMERCIAL PROGRAMS	\$650,700	458	5,773,878	\$0.11	1,634.09	\$398.20	
OTHER INDIRECT IMPACT							
TECHNICAL RESEARCH	\$30,000	2					
PROGRAM DEVELOPMENT	\$60,000	0					
TOTAL - OTHER INDIRECT IMPACT PROGRAMS	\$90,000	2					
TOTAL - ALL PROGRAMS	\$1,219,800	21,045	7,413,483	\$0.16	2,524.28	\$483.23	

1. Cost per kwh is based on 1 year of energy savings. Measure lifetimes can vary from 5 to 15 years.

2010-11 NORTH DAKOTA Energy Efficiency Plan  
 OTTER TAIL POWER COMPANY  
 February 20, 2009

Attachment B  
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2011 SUMMARY	BUDGET	PART.	KWH	COST/KWH	KW	COST/KW
<b>RESIDENTIAL</b>						
HOTPACKS	\$14,000	150	116,423	\$0.12	21.71	\$645.00
RESIDENTIAL DEMAND CONTROL	\$62,500	50	29,890	\$2.09	390.39	\$160.10
AIR SOURCE HEAT PUMPS - RESIDENTIAL	\$35,000	60	148,995	\$0.23	27.78	\$1,259.98
GEOTHERMAL HEAT PUMPS - RESIDENTIAL	\$15,000	10	120,400	\$0.12	86.00	\$174.42
AIR CONDITIONING CONTROL	\$64,000	195	9,517	\$6.72	188.66	\$339.23
CHANGE A LIGHT	\$72,000	18,000	1,042,865	\$0.07	194.43	\$370.32
FINANCING	\$13,600	5				
ADVERTISING & EDUCATION	\$100,000	2,000				
IMPLEMENTATION & TRAINING	\$20,000	75				
<b>TOTAL - RESIDENTIAL PROGRAMS</b>	<b>\$396,100</b>	<b>20,545</b>	<b>1,468,089</b>	<b>\$0.27</b>	<b>908.96</b>	<b>\$435.77</b>
<b>LOW-INCOME</b>						
HOUSE THERAPY	\$87,000	135	176,152	\$0.49	73.15	\$1,189.36
<b>COMMERCIAL</b>						
GRANT	\$216,000	16	2,408,000	\$0.09	516.00	\$418.60
MOTORS	\$40,000	80	171,310	\$0.23	27.83	\$1,437.29
LIGHTING	\$70,000	48	1,051,799	\$0.07	257.70	\$271.64
COOKING	\$20,000	11	72,320	\$0.28	10.92	\$1,830.92
COMMERCIAL REFRIGERATION	\$40,000	25	441,155	\$0.09	66.63	\$600.29
AIR SOURCE HEAT PUMPS - COMMERCIAL	\$38,000	40	110,639	\$0.34	16.71	\$2,273.89
GEOTHERMAL HEAT PUMPS - COMMERCIAL	\$72,000	70	982,013	\$0.07	657.23	\$109.55
PLAN REVIEW	\$53,000	7	536,642	\$0.10	81.06	\$653.86
FINANCING	\$31,700	5				
ENERGY ANALYSIS	\$40,000	6				
IMPLEMENTATION & TRAINING	\$30,000	150				
<b>TOTAL - COMMERCIAL PROGRAMS</b>	<b>\$650,700</b>	<b>458</b>	<b>5,773,878</b>	<b>\$0.11</b>	<b>1,634.09</b>	<b>\$398.20</b>
<b>OTHER INDIRECT IMPACT</b>						
TECHNICAL RESEARCH	\$30,000	2				
PROGRAM DEVELOPMENT	\$60,000	0				
<b>TOTAL - OTHER INDIRECT IMPACT PROGRAMS</b>	<b>\$90,000</b>	<b>2</b>				
<b>TOTAL - ALL PROGRAMS</b>	<b>\$1,223,800</b>	<b>21,140</b>	<b>7,418,119</b>	<b>\$0.16</b>	<b>2,616.20</b>	<b>\$467.78</b>



North Dakota, Section 14.08  
**ELECTRIC RATE SCHEDULE**  
 Air Conditioning Control Rider  
 (CoolSavings)  
 Page 1 of 1  
 Original

**AIR CONDITIONING CONTROL RIDER**  
 (Commonly identified as *CoolSavings*)

DESCRIPTION	RATE CODE
Air Conditioning Control Rider	50-760

**RULES AND REGULATIONS:** Terms and conditions of this tariff and the General Rules and Regulations govern use of this schedule.

**AVAILABILITY:** This rider is available to residential Customers only with central cooling equipment.

**COMPENSATION:** The Customer will be compensated for taking service on this rider by receiving a \$7.00 per month bill credit during the billing months June through September. The credit will be applied on the Customer's account.

**MANDATORY AND VOLUNTARY RIDERS:** The amount of a bill for service will be modified by any Mandatory Rate Riders that must apply or Voluntary Rate Riders selected by the Customer, unless otherwise noted in this rider. See Sections 12.00, 13.00 and 14.00 of the North Dakota electric rates for the applicability matrices of riders.

**TERMS AND CONDITIONS:**

1. Summer season hours of interruptions per year shall not exceed 300, except during periods of Company system emergencies. Central cooling equipment will be cycled approximately 15 minutes on/15 minutes off.
2. The Company will install, own, and maintain the load management devices controlling the Customer's central cooling equipment.
3. The Customer is required to remain on the rider for 12 consecutive months unless given special approval by the Company. If the Customer leaves the program, they may not participate for another 12 months and may not receive any form of compensation as determined by the Company.
4. The Company has the right to test the function of the load management devices at any time.
5. The Customer must agree to allow the Company to control all central cooling equipment at the location of service.

NORTH DAKOTA PUBLIC  
 SERVICE COMMISSION  
 Case No. PU-08-\_\_\_\_\_  
 Approved: (Date)

EFFECTIVE with bills rendered on  
 and after December 3, 2008, in North Dakota

APPROVED: Bernadeen Brutlag  
 Manager, Regulatory Services

Otter Tail Corporation d/b/a



Fergus Falls, Minnesota

North Dakota, Section 13.02  
 ELECTRIC RATE SCHEDULE  
 Conservation Improvement Project (CIP) Rider  
 Page 1 of 1  
 Original

### ENERGY EFFICIENCY PROGRAM (EEP) COST RECOVERY RIDER

**REGULATIONS:** Terms and conditions of this rider and the General Rules and Regulations govern use of this schedule.

**APPLICATION OF SCHEDULE:** This rate schedule is applicable to any electric service under all of Otter Tail Power Company's retail rate schedules, except for Standby Service, Section 11.01.

**CONSERVATION SURCHARGE:** There shall be added to each customer's bill an Energy Efficiency Adjustment based on the applicable adjustment factor multiplied by the customer's monthly energy (kWh) usage. The Energy Efficiency Adjustment for 2010 is 0.xxx per kWh.

**DETERMINATION OF ENERGY EFFICIENCY ADJUSTMENT:** The Energy Efficiency Adjustment shall be the quotient of the recoverable EEP Tracker Balance, divided by projected retail sales (kWh) for a designated 12-month recovery period. The Adjustment may be updated annually by approval of the North Dakota Public Service Commission (NDPSC). The recoverable EEP Tracker Balance is determined as follows:

1. ND PSC accepted EEP Tracker account balance as of the end of the prior year;
2. Add current year EEP approved spending levels;
3. Add financial incentives awarded by the ND PSC not reflected in the prior year-end EEP Tracker balance;
4. Subtract EEP cost recovery through base rates.

All costs appropriately charged to the EEP Tracker account shall be eligible for recovery through this Rider and all revenues received from the application of the Energy Efficiency Adjustment shall be credited to the EEP Tracker account.

NORTH DAKOTA PUBLIC  
 SERVICE COMMISSION  
 Docket No. PU-09-\_\_\_\_  
 Approved: \_\_\_\_\_, 2009

EFFECTIVE for bills rendered on  
 and after \_\_\_\_\_ 1, 2010, in North Dakota

APPROVED: Bernadeen Brutlag  
 Regulatory Services Manager

TABLE 1

EEP Tracker Account - Example for Illustration Only  
Cost recovery through base rates and Rider

Expenditures	\$1,219,800	(1)
Less recovered amount	<u>1,000,000</u>	(2)
Subtotal	\$219,800	
Carrying cost	<u>18,947</u>	(3)
Total for recovery	<u><u>\$238,747</u></u>	(4)
Sales budget	2,020,126,000	(5)
<b>Rider rate per kWh (cents)</b>	<b>0.012</b>	<b>(6)</b>

- (1) Total EEP expenditures  
(2) Credit for amount previously recovered through Rider or in base rates  
(3) ROR agreed to in OTP's current general rate case; Case No. PU-08-862 8.62%  
(4) Total for recovery  
(5) OTP's ND retail sales budget for Rider period  
(6) Item (4) divided by (5); the rate is applied to all billed kWh

TABLE 2

EEP Tracker Account - Example for Illustration Only  
Cost recovery through Rider only

Expenditures	\$1,219,800	(1)
Less recovered amount	<u>0</u>	(2)
Subtotal	\$1,219,800	
Carrying cost	<u>105,147</u>	(3)
Total for recovery	<u><u>\$1,324,947</u></u>	(4)
Sales budget	2,020,126,000	(5)
<b>Rider rate per kWh (cents)</b>	<b>0.066</b>	<b>(6)</b>

- (1) Total EEP expenditures  
(2) Credit for amount previously recovered through Rider or in base rates  
(3) ROR agreed to in OTP's current general rate case; Case No. PU-08-862 8.62%  
(4) Total for recovery  
(5) OTP's ND retail sales budget for Rider period  
(6) Item (4) divided by (5); the rate is applied to all billed kWh