

SOUTH DAKOTA

Demand Side Management Plan April 4, 2014

Table of Contents

SOUTH DAKOTA 1						
Table of Contents 2						
I.	Introduction 3					
П.	DSM Goals and Objectives 3					
Ш.	Overview and Background of Demand Side Management 4					
IV.	Benefits and Risks Associated with DSM5					
V.	Growth of DSM at NorthWestern7					
VI.	DSM Cost Effectiveness 8					
VII.	DSM Annual Targets10					
VIII.	DSM Acquisition11					
IX.	Transition to DSM Programs in South Dakota11					
х.	DSM Program Development and Delivery11					
XI.	Program Evaluations12					
XII.	DSM Program Descriptions14					
XIII.	DSM Program Marketing and Communications Plan20					
XIV.	Future Programs					
XV.	DSM Program Budget and Schedule28					
XVI.	Recovery of DSM Costs and Lost Margin31					
XVII.	Proposed DSM Cost Tracking and Lost Margin Recovery					
XVIII.	Conclusion					

I. Introduction

NorthWestern Energy (NorthWestern) believes Demand Side Management (DSM) is a necessary and important part of a balanced portfolio of electric and natural gas supply resources that it acquires to serve the energy needs of its customers.

A primary benefit of DSM is that it displaces the need to purchase more expensive electric or natural gas resources by reducing customer energy usage through efficiency gains. In that sense, DSM can be viewed as an energy resource. Another important benefit of DSM is that it provides tools individual customers can use to reduce their energy bills without loss of comfort or convenience. Also, environmental benefits are an important aspect of DSM. Energy saved through DSM activities reduces the need for electric generation, and/or consumption of natural gas, and the associated emissions and other environmental impacts.

DSM is available in relatively small and variable amounts from large numbers of individual utility customers. A structured DSM Plan must be developed and implemented in a manner that will successfully educate and motivate customers into action on a scale sufficient to produce meaningful amounts of cost effective DSM resources.

NorthWestern presents this plan as its proposed initial commitment to Demand Side Management and increased energy efficiency efforts with its customers. This plan is based on NorthWestern's successful experience in Montana, experience in talking with South Dakota customers about what they seek for energy efficiency services, and best practices in the utility industry. The plan will continue to evolve as business conditions change and as DSM program experience in South Dakota is gained.

II. DSM Goals and Objectives

There are two fundamental purposes for NorthWestern's proposed DSM plan:

- 1) Acquire low-cost energy resources for the benefit of NorthWestern customers, and
- 2) Help customers better understand ways that energy efficiency can assist them in managing their energy usage and costs.

Following successful implementation of initial DSM programs intended for mass residential and commercial customer markets, NorthWestern will work to complete design and implementation of a comprehensive group of DSM programs that will address the entire natural gas and electric customer base. When the DSM program portfolio is fully implemented, the programs will have broad applicability and should provide opportunities for expanded energy efficiency and savings to almost all customers. NorthWestern will develop the DSM delivery infrastructure (programs, contractors, funding sources, trade ally relationships, etc.) necessary to maintain a steady, sustainable DSM acquisition schedule into the future. DSM program activities will include customer education and multiple program mechanisms that offer customers several energy efficiency choices and additional control over their energy usage and cost.

III. Overview and Background of Demand Side Management

DSM is a term used in the energy industry to describe strategies aimed at proactively influencing the manner in which customers use energy. Basic DSM strategies include persuading customers to use energy more efficiently and/or encouraging customers to shift portions of their energy usage away from peak periods (generally high system usage periods as defined by the utility).

DSM strategies that promote more efficient energy use generally include customer education and financial incentives to persuade customers to adopt energy efficient technologies and/or change energy usage-related behavior. An example of an energy efficient technology is a compact fluorescent light bulb (CFL). Turning down the temperature setting on an electric water heater is an example of a behavioral change. DSM strategies aimed at efficiency improvements may also reduce energy usage during peak periods.

Another category of DSM programs, typically referred to collectively as Demand Response, is aimed at shifting the times of energy use and generally includes education, appropriate rate design and/or financial incentives to encourage the desired behavior. Such Demand Response DSM programs may contemplate voluntary actions by customers to shift usage (nondispatchable) or, for customers willing to participate, can include active control of specific customer equipment by the utility (dispatchable).



As proposed, this plan includes DSM techniques to encourage more efficient use of energy through programs that educate customers and provide financial incentives to encourage customers to adopt efficient technologies. Throughout the remainder of this section and the rest of this document where the terms DSM or Demand Side Management are used, the reference is to the more efficient use of energy unless specifically stated otherwise.¹

IV. Benefits and Risks Associated with DSM

One primary benefit of DSM is that it displaces the need to purchase more expensive energy resources by reducing customer energy usage through efficiency gains. In that sense, DSM is viewed by the industry as a resource option. The average levelized cost of electric DSM is estimated at about \$20-25 per MWh, which compares quite favorably with other resource alternatives. Because of this relatively low cost, DSM decreases total energy supply portfolio costs over the long run and, on average, customer bills are lower as a result. DSM provides a tool individual customers can use to reduce their energy bills from what they otherwise would be, absent adoption of efficient technologies. Environmental benefits are another important aspect of DSM. Energy saved through DSM activities reduces the need for electric generation and natural gas supply and the associated emissions and other environmental impacts.

There is a capital cost risk associated with DSM. DSM related costs are incurred up-front to pay for the installation of efficient technologies or DSM measures that are expected to generate savings many years into the future. There is the risk that the expected savings will not materialize. Some reasons the expected savings may not materialize include equipment not performing as specified, incorrect assumptions about the efficiency and operating parameters of the equipment that is replaced, or changes in customer behavior after adoption of energy efficient technologies². Other reasons for why DSM savings may not materialize as expected relates to the removal of DSM measures due to premature equipment failure, changes in



¹ There is potentially a small amount of cost effective electric DSM associated with switching electric and water space heat to natural gas in the residential sector.

² An example of a change in behavior that could reduce actual savings from expected is a customer who, after installing more efficient lights, is less conscientious about turning off unneeded light fixtures. This is also known as "take-back".

equipment/facility use, business closure, or customer dissatisfaction with performance of the DSM measures. DSM programs are generally designed such that program participants pay for a portion of the measures so the capital risk is shared between program participants and the utility. This cost sharing approach reduces NorthWestern's cost of acquiring the DSM resources and helps to increase the likelihood that anticipated savings will materialize since customers have a financial stake in the success of the DSM measures as well. Up to the cost effective limit, NorthWestern is guided by the principle of contributing only as much as is necessary to cause customers to act and install DSM measures. To the extent actual savings is less than anticipated, DSM resource becomes relatively more expensive and thus, cost effectiveness from both the customer and utility perspectives is reduced.

While the capital cost risk associated with DSM is a consideration, it does not necessarily make DSM unattractive or uneconomic. In fact, utilities across the country have a long history of operating cost effective DSM programs while managing the associated capital cost risk. NorthWestern, through its predecessor utility Montana Power Company, operated energy efficiency programs in Montana beginning in the late 1980's that were generally confirmed through rigorous program evaluations as being cost effective. More recently, NorthWestern has operated diverse portfolios of electric and natural gas energy efficiency programs in its Montana service territory. Third party evaluations of these programs for the years 2006-20011 found NorthWestern-MT's portfolios to be cost effective.³ While DSM related capital cost risk has not gone away, NorthWestern believes it is a risk that can be effectively managed through appropriate program design, regular program evaluations, and ongoing program adjustments and modifications as more information and experience is gained.

V. Growth of DSM at NorthWestern

NorthWestern has taken the initiative to add new energy conservation activities since 2004, including more extensive use of its website to inform and educate its customers. Using a



³ A comprehensive evaluation by an independent third party of NorthWestern's DSM programs operated during the period 2006-2011 years completed in January 2013.

product called "Calc-U-Pal" (located on NorthWestern's website⁴) provides a means for customers to identify opportunities to control and reduce their energy consumption. Another tool for customers on NorthWestern's website is a list of energy savings tips for the highest energy end-uses within a home. There are also tools for commercial and industrial customers. Energy Management Solutions, for example, is an e-mail service for commercial and industrial It is a free service that provides technical advice, energy operations and customers. maintenance information, business research and information assistance guickly and easily.

In addition to greater use of on-line tools through its website, NorthWestern has sponsored customer appreciation "Open Houses" at its local office sites. Tabletop displays and videos with information on energy efficiency are located at local offices for customers to review during Open Houses. Similar events have proven quite popular and provide an excellent opportunity for positive "one on one" interaction between NorthWestern and its customers.

NorthWestern has also used its customer newsletters and bill inserts as another method for distributing information to its customers concerning energy efficiency, preparing their homes for winter, or understanding and using budget billing. NorthWestern attends home shows, state fairs, trade association conventions, and other community events regularly as an opportunity to distribute energy efficiency information to customers.

Plus



⁴ http://c03.apogee.net/clients/default.aspx?hostheader=northwestern&utilityid=northwestern

VI. DSM Cost Effectiveness

In 2003, NorthWestern contracted with KEMA, Inc. to perform an assessment of the electric DSM potential in its Montana service territory. The assessment work was updated in 2005, and the research was repeated and expanded in 2009 using a different contractor, NEXANT, Inc. These studies began with a comprehensive starting list of possible DSM measures, which were then analyzed for cost-effectiveness. The consultants' analyses of the initial DSM prospects resulted in a list of DSM measures that were deemed suitable for Montana electric DSM programs. A Total Resource Cost Test (TRC) was employed to screen individual DSM measures for cost effectiveness. The TRC is a ratio of benefits to costs. TRC costs include both utility costs and customer costs. TRC benefits are avoidable costs, which for this assessment equal the present value of the estimated electric or natural gas savings provided by the DSM measure multiplied by NorthWestern's estimated avoidable electric or natural gas supply costs (avoided costs) over a 20-year period.

Separately but similarly, NorthWestern has conducted an analysis of natural gas DSM measures for its Montana market, screening them for cost effectiveness using natural gas avoided costs, best available installation cost information, and application of the TRC. As with the electric DSM assessment work, a list of qualifying measures resulted from this analysis.

Building on work done for the Montana portion of NorthWestern's system, service territory and customer base, NorthWestern applied South Dakota-specific electric and natural gas avoided costs to DSM measures considered for initial programs in South Dakota. Additionally, updated information on costs for materials and installation of many DSM measures was included in the calculations for South Dakota.⁵ The TRC test using these measure costs and South Dakota's current electric and natural gas avoided costs were used to select the cost-effective measures for inclusion in this proposal for DSM programs.



⁵ Costs for DSM measures are gathered from many sources, including national and regional databases, other utility DSM programs, and substantial field experience with Montana DSM programs. Additionally, a comprehensive DSM program evaluation completed in 2007 by NEXANT, Inc. verified the costs for materials and labor used in TRC calculations. NorthWestern believes these costs are relevant and reasonably appropriate for the South Dakota region. Future program evaluations of the South Dakota DSM effort will necessarily revisit these cost assumptions.

A. <u>Environmental Benefit Factor</u>: It is generally accepted that DSM mitigates environmental impacts associated with emissions that would have resulted from the typical supply side resources it displaces. It is, however, extremely difficult to accurately quantify. An environmental benefit factor is used in the TRC-based screening and decision rule for eligible DSM measures to recognize that such emissions may have societal costs beyond those internalized in the price of the energy produced by the displaced resources.

Discussions with other interested parties⁶ produced an agreement that some recognition of environmental externalities is needed in TRC calculations, but no certainty on precisely how such quantification should be done. Therefore, NorthWestern did not attempt to explicitly quantify the appropriate environmental benefit factor for use in this DSM assessment. Rather a 10% environmental benefit factor was chosen as a reasonable surrogate.⁷ This 10% factor has not been challenged since its initial use, and is considered to be adequate recognition of environmental externalities.

B. <u>The Cost Effectiveness Decision Rule</u>: Absent additional considerations, a DSM measure is deemed cost effective when the TRC (the ratio of benefits to costs) as described above is equal to 1.0 or greater. However, when a 10% environmental benefit factor is applied, a measure is considered cost effective when its cost is equal to or less than 110% of the avoided cost value, or the benefits, of the associated electric savings. This is a cost/benefit ratio. As discussed previously, the TRC is a benefit/cost ratio or the reciprocal of the cost/benefit ratio. Consequently, in this analysis, The Cost Effectiveness Decision Rule establishes that all measures with a TRC equal to 0.9 or greater are considered cost effective for purposes of screening the DSM measures for inclusion in NorthWestern DSM programs.



⁶ Discussions included staff of The Montana Public Service Commission, the Montana Electric Technical Advisory Group, and of the Northwest Power and Conservation Council. ⁷ Previous to the adoption of the Electric Default Supplier Procurement Guidelines in Montana, electric supply planning was conducted under sections 38.5.2001ARM through 38.5.20016 ARM dated 12/31/92. In accordance with section 38.5.2003, ARM, "Environmental Externalities" NorthWestern (formerly MPC) had previously estimated the external environmental costs associated with gas-fired combined cycle generation at 5% of avoided costs. Additionally, section 38.5.2011, ARM, "Regulatory and Market Barriers to Integrated Least Cost Planning and Acquisition of Demand-Side Resources, specified that DSM resources be considered cost effective up to 115% of the utility's avoided costs. In essence, DSM was afforded a 20% cost advantage. It is possible that government regulations have since caused generation projects to internalize environmental costs to a great extent, which would be reflected in market prices. If so, the environmental benefit factor could be zero or close to it. However, as discussed above, NorthWestern chooses to give DSM the benefit of the doubt in using 10%.

The impact of using a 10% environmental benefit factor is that more measures are considered cost effective than if the 10% is not applied, which results in an increase in DSM potential.

C. <u>Cost Effective Measures</u>: The measures that were determined to be cost effective for residential and commercial/industrial customers respectively, and will be included in the initial set of DSM programs are provided in Section XII DSM Program Descriptions, and are also listed in Appendix A.

VII. DSM Annual Targets

Developing a portfolio of DSM programs typically includes establishment of annual targets or goals for specific levels of acquired DSM. At this time, and given the desire of NorthWestern to expand its DSM program offerings immediately, establishment of specific annual electric and natural gas DSM targets is speculative. NorthWestern proposes to go forward with specific DSM programs based on cost effective measures and estimated funding levels for the first two years. An initial ramp-up period is expected to allow the expanded DSM program portfolio to become fully operational and the customer base to become better informed about the program features and availability. Following two years of activity, these initial programs should be fully implemented and functioning well, and NorthWestern will have gained knowledge of the potential annual amounts of DSM the portfolio of programs can deliver. At that time, NorthWestern can set better-informed annual targets.

The quantity of achievable and cost effective DSM available is finite. Because of that, the number of opportunities available to acquire DSM in terms of both customers and measures decreases over time. Customers that are relatively more inclined to adopt energy efficient technologies, for whatever reason, will likely participate in the earlier years of the DSM plan. Relatively more of the DSM opportunities remaining will reside in facilities whose owners are less inclined to adopt energy efficient technologies for any number of reasons. Such reasons may include measures that, while cost effective, are relatively costly as compared to the billing savings they generate, high investment hurdle rates, distrust of new technology, a lack of knowledge of the availability and benefits of energy efficient technologies, and/or simply an



indifferent attitude. Thus, more focused promotional efforts and/or relatively higher average incentives will likely be required to achieve the targets in later years of the DSM plan.

VIII. DSM Acquisition

With the exception of the Residential Home Energy Audit, DSM will be acquired through programs incorporating measures identified as passing the Cost Effectiveness Decision Rule (TRC = 0.9 or greater) as well as any measures subsequently determined by NorthWestern to be cost effective based on further analysis. The program mix will be designed to target all customer sectors. Programs will be designed to minimize cream skimming.⁸

IX. Transition to DSM Programs in South Dakota

The DSM programs and infrastructure to support NorthWestern activities in Montana are wellestablished. Even so, programs and mechanisms are adjusted based upon opportunities and needs. The experience of the delivery team and the many proven mechanisms will contribute to successful DSM programs in South Dakota. Initially, there are some program startup expenses that may not be required in later years. It is recognized that the plan described in this document is a starting point based upon a wide range of assumptions. For instance, the rebate budget for each year has been estimated at \$900,000. Depending upon customer demand for rebates, actual expenditures may be lower or greater. As more direct experience in the South Dakota markets is gained, the plan will be adjusted to better suit the market conditions to deliver successful cost effective programs. As a result, the timing of activities, the number of measures or programs, and implementation strategies will continue to be modified over time.

X. DSM Program Development and Delivery

The DSM development and delivery infrastructure will consist of a team of NorthWestern personnel (NorthWestern DSM Team) and outside contractors.

⁸" Cream skimming" is a term used to describe the undesirable practice of acquiring the least expensive DSM without acquiring more expensive, but cost effective, DSM at the same time. Added costs associated with having to "return" to acquire the more expensive DSM can render such DSM non-cost effective or "stranded".



The NorthWestern DSM Team has two components with primary responsibilities as described below:

- A. Administration is responsible for developing, pre-packaging, and managing programs. Related duties include designing programs, issuing requests for proposals, contracting for services and administering such contract(s), developing standardized promotional materials for use in the field and for general program promotion, establishing and tracking overall program budgets, developing DSM goals by area, consolidating/reporting results, and supporting DSM tracker filings.
- B. Local NorthWestern personnel are responsible for providing input for program development and for program outreach at the local level including promoting DSM programs to customers and civic groups, coordinating promotion efforts with the outside contractor(s), and monitoring performance of contractors at the local level. These NorthWestern employees will provide for "on-the-ground" representation of NorthWestern's DSM efforts.

Outside contractors are responsible for program implementation to achieve overall and local DSM targets, including procurement and installation of all DSM measures, coordinating program outreach activities with both the administration and field components of NorthWestern DSM team, and reporting program activities/results. Work placed with outside contractors will generally be competitively bid except where it is clear and demonstrable that sole sourcing is prudent and in the best interests of customers. NorthWestern intends to use one of its contractors that provide DSM support in Montana to support the DSM programs included in this Plan.

XI. Program Evaluations

The DSM savings and costs associated with this DSM plan are based on the DSM assessment, program experience and comprehensive DSM program evaluation in Montana, and analysis specific to South Dakota. Going forward, it is important to conduct evaluations of DSM programs on a regular basis to identify needs for program related changes, verify program savings, and evaluate program cost effectiveness. There are three core tasks involved in a comprehensive DSM program evaluation; process, impact, and economic evaluation.



Process evaluations focus mainly on DSM program delivery issues. Examples of questions that process evaluations attempt to answer are:

- Is the program targeted at the correct customer segment(s)?
- Is program promotion reaching the targeted customer segment(s)?
- Are incentive levels and promotion budgets and activities appropriate for the desired program results?
- Does the potential associated with the program match planned future targets for the program?
- What are customer attitudes about the program?
- Are there areas where the program can be improved and/or made more efficient?

Impact evaluations focus mainly on DSM program results with respect to DSM acquisition. Some of the questions impact evaluations seek to answer include:

- What are the actual savings achieved by the program/technology?
- Do program savings persist over time?
- Is the program cost effective?

Economic evaluation is intended to determine whether the overall DSM program effort, and the respective individual DSM programs and DSM measures within each, are cost-effective. Also, the economic evaluation will produce the levelized cost of DSM resource acquisition by individual program and for the overall portfolio of programs.

NorthWestern intends to commence program evaluation activities no later than the first half of year 4 of DSM program operation. A Request for Proposals will be issued and a blind, competitive bidding process will be used to select a qualified DSM Program Evaluation Contractor. Evaluations will occur on a regular basis thereafter as needed. In order to eliminate potential conflict of interest issues, evaluations will be administered primarily by outside contractors not engaged in other aspects of DSM program implementation and delivery.

A general description of the type of work that the selected independent DSM Program Evaluation Contractor will be required to perform is included in Appendix B.

XII. DSM Program Descriptions

NorthWestern proposes to initiate several programs that are well developed in Montana and can be rolled out quickly in South Dakota. NorthWestern intends to use an outside services contractor with experience in these programs. When the initial programs are fully operational, additional programs will be added.

Effort in the beginning will focus on building the capability to deliver DSM programs and services in the South Dakota service territory. This DSM infrastructure development involves acquiring and training people, establishing and building relationships with market participants like retailers, wholesalers, builders, trade groups, engineering/architectural firms, government officials, operators and decision-makers of commercial and public buildings and facilities.

The DSM Program Portfolio will be organized into the five general programs listed below. Qualifying energy efficiency measures for the rebate programs (non-energy audit programs) are shown, with additional details on each qualifying measure presented in Appendix A:

A. Residential In-home Energy Audit Program

This program is proposed as a foundational energy conservation program that will be available to all qualifying customers at no direct charge. Residential customers in singlefamily dwellings whose space and/or water heating fuels are delivered by NorthWestern and whose home is at least five years old are eligible for an on-site energy audit. Homeowners and renters will generally qualify. On-site audits are conducted to survey energy use, to install certain energy saving measures, and to identify energy saving opportunities.

This service will include the following activities:

- 1) A dedicated toll-free number for customers to use to request or schedule an audit
- 2) Providing customers with a reminder call and/or a reminder postcard

- A customer-specific report home audit report that will be sent to the customer within 12 business days of the appointment
- 4) In-home audits include (as applicable):
 - a. Installing hot water energy saving measures where appropriate:
 - 1) Water heater insulation blanket
 - 2) Pipe insulation (up to 10 feet on the hot water line)
 - 3) Water and energy saving showerheads; kitchen and bath faucet aerators
 - b. Educating customers on the benefits of Do-It-Yourself (DIY) air-sealing materials.
 - c. Supplying education, services, and measures where appropriate:
 - 1) Air tightness analysis on the home (blower door test)
 - 2) Computer analysis of energy usage in the home, which includes energy-saving recommendations and payback information
 - Water heater safety check including carbon monoxide test for homes using NorthWestern natural gas
 - 4) Insulation and ventilation inspection
 - 5) Door and window inspection

A customized report with energy saving recommendations is generated for the customer for on-site audits. Although homes cannot be re-audited, a customer can request a copy of a previous audit report.

B. Residential Existing Construction Program (Electric and Natural Gas): This

program may include rebates for the following measures:

Compact Fluorescent Lamp (CFL) Compact Fluorescent Lamp (CFL) Fixture Canned Lighting Air Tight Sealing Light Colored Shingles Door R – 11 Door R – 5 Doors - Weatherization Ground / Water Source Heat Pump Desuperheater Duct Sealing Insulation Basement or Crawl Space Wall Insulation (Ceiling/Attic) Proper Sizing of Central Air Conditioner



Proper Sizing of Heat Pump ENERGY STAR® Refrigerator/Freezer Thermostat - Clock/Programmable - Electric Water Heater Tank Insulation Blanket Water Heater Thermostat Set-back Attic/Ceiling R-0 to R-49 Insulation Crawlspace R-0 to R-19 Insulation High Efficiency Condensing Boiler Boiler Diagnostics - testing, repair and maintenance **High Efficiency Condensing Furnace** High Efficiency Gas Room Heater Heater Diagnostics - testing, repair and maintenance Programmable Thermostat - Natural Gas

C. Residential New Construction Program (Electric and Natural Gas): This program includes rebates for the following measures that may be offered during the second year

of the program rollout:

Compact Fluorescent Lamp Fixture Door R-11 Door R-5 Faucet Aerators Ground / Water Source Heat Pump Desuperheater Low Flow Shower Heads **Pool Pump Timers** Water Heater Thermostat Set-back ENERGY STAR Refrigerator/Freezer ENERGY STAR TV **High Efficiency Condensing Boiler** High Efficiency Condensing Furnace

D. Commercial Existing Construction Program (Electric and Natural Gas): This

program may include rebates for the following measures:

One or Two Lamp Fixture 1/1, 2/1 (lamp/ballast) Three Lamp Fixture 3/1, 3/2 (lamp/ballast) Four Lamp Fixture 4/1, 4/2 (lamp/ballast) T-8 lamp 4 foot Mercury Vapor (MV), High Pressure Sodium Vapor (HPSV) or Metal Halide (MH) to T-8 Other Approved Lighting Retrofits Compact Fluorescent Lamp (CFL)



- Integral (screw-in) or Modular
- Hard-Wired CFL Fixture

LED Solid State White Lighting for

- Exterior Landscape, Signage & Structure Only
- LED Face Exit Sign

Photocell

Occupancy Sensor or Sweep Control

Day lighting Controls - Dimming-Continuous, Fluorescent Fixtures Continuou

Dimming, Fluorescent Fixtures (Day-Lighting)

ENERGY STAR – Computer

ENERGY STAR – Printers

ENERGY STAR - Residential-Size Refrigerator

Server (Early Retirement)

Server Virtualization (4:1)

Motor - Fan System - Variable Speed Control

Motor – Pump System – Variable Speed Control

Night Cover for Display Cases – Refrigeration

Reduced Speed or Cycling of Evaporator Fans

Refrigeration with heat recovery

Special Glass Doors for Refrigerated Glass Cases

Strip Curtains for Freezer Walk-ins

Programmable Thermostats

Refrigerated Vending Machine

Anti-sweat Controls (Humidistat)

Automated Exhaust VFD Control – Parking Garage

Centrifugal Chiller Variable Frequency Drive

Refrigerator Compressor Variable Frequency Drive

Cooling Tower 2 Speed Fan Motor

Cooling Tower Variable Frequency Drive

Dishwashing Chemical System

Exhaust Hood Make-up Air

Floating Head Pressure Control

Hot Food Holding Cabinets

Hot Water Pipe Insulation

Hotel Key Card Room Energy Control System

Wall Insulation – R-20.5

High Efficiency Water Heater

High Efficiency Furnace/Boiler (AFUE ≥ 90% or 90% Thermal Efficiency)

17

Ceiling Insulation $R \ge 38$

Exterior Wall Insulation (above grade, $R \ge 21$)

E. Commercial New Construction Program (Electric and Natural Gas): This program includes rebates for the following measures that may be offered during the second year of the program rollout:

Compact Fluorescent Fixture (CFL) LED Solid State White Lighting for Exterior Landscape, Signage & Structure Only MV, HPSV or MH to T-8 **ENERGY STAR – Computer ENERGY STAR – Fax ENERGY STAR – Printers ENERGY STAR – Water Cooler ENERGY STAR – Residential** PC Power Supply 80+ Motor - Fan System - Variable Speed Control **Optimized Variable Volume Lab Hood Design** Reduced Speed or Cycling of Evaporator Fans **Refrigeration with Heat Recovery** Special Glass Doors for Refrigerated Cases Strip Curtains for Freezer Walk-ins **Refrigerated Vending Machine** Anti-sweat Controls (Humidistat) Automated Exhaust VFD Control – Parking Garage Automated Ventilation Control Cooling Tower Decrease Approach Temperature Cooling Tower 2 Speed Fan Motor Cooling Tower Variable Frequency Drive Defrost Demand Control with Hot Gas Dishwashing Chemical System Exhaust Hood Make-up Air Floating Head Pressure Control Hot Food Holding Cabinets **Faucet Aerators** Hotel Key Card Room Energy Control System Low Flow Shower Heads High Efficiency Water Heater Water Heater Tank Insulation Stack Heater Exchanger High Efficiency Furnace/Boiler (AFUE ≥90% or 90% Thermal Efficiency)



DSM Program Rebates

A. Residential Rebates and Incentives

In general, participating customers can claim rebates for eligible DSM Program measures by completing a Rebate Application Form (available in NorthWestern offices or from the NorthWestern Energy web site) and mailing the form along with proof-of-purchase documentation to NorthWestern's DSM Program contractor.

In addition to rebates for various types of equipment, the program promotes energy efficient lighting projects by providing prescriptive rebates to encourage residential customers to switch from incandescent/halogen bulbs to more efficient ENERGY STAR compact fluorescent lamps (CFLs) in their homes. All NorthWestern electric residential customers will be eligible to participate. The program employs the following delivery approaches to encourage customers to install ENERGY STAR CFLs:

- 1. *In-Store*: Coupons worth \$1.00 per CFL toward the purchase of up to ten CFLs at participating retailers are mailed to customers. Each coupon has a unique bar code that indicates which coupons are used. Customers are limited to one coupon per promotion; promotions occur twice annually.
- 2. *Mail-In:* Rebates for a minimum of five and a maximum of 15 CFLs, limited in amount to the lesser of \$1.00 per bulb or the bulb's purchase price, and rebates of \$5.00 per fixture for ENERGY STAR lighting fixtures (fixtures with electronic ballasts, although outdoor ENERGY STAR fixtures with magnetic ballasts are also acceptable).
- B. Commercial Rebates and Incentives

As with residential rebates, participating commercial customers can claim rebates for eligible DSM Program measures by completing a Rebate Application Form (available in NorthWestern offices or from the NorthWestern Energy web site) and mailing the form along with proof-of-purchase documentation to NorthWestern's DSM Program contractor.

The Commercial DSM Programs target NorthWestern's commercial, industrial, and institutional customers in South Dakota. In addition to rebates for various types of



equipment, the program promotes energy efficient lighting projects by providing prescriptive rebates for customers who replace lighting equipment with more efficient technologies or who install lighting controls. Equipment must operate a minimum of 1,000 hours per year to qualify, and projects must qualify for at least a \$50 rebate to be eligible.

Projects will be given a window of time in which they must be completed to ensure project funds are assigned only to projects that are actively underway. In addition, rebates will not be provided for lamps or fixtures placed in stock in excess of 5% of installed equipment.

Program marketing includes outreach to and cultivation of working relationships with area retailers and trade allies. Action will be taken to promote the program, interact with trade allies, provide technical assistance to participants, and perform pre- and post-installation inspections.

Appendix A provides additional detail on eligible DSM program measures, qualification criteria, and the rebate/incentive structure for all DSM programs.

XIII. DSM Program Marketing and Communications Plan

The South Dakota DSM Communications Plan is intended as a guide to identify and direct the communications strategies associated with the implementation of NorthWestern Energy's DSM programs in South Dakota. The plan will be modified as needed to suit changing opportunities and conditions.

Goals, Objectives and Audiences

NorthWestern's communications and marketing goal is to effectively and efficiently introduce DSM programs to NorthWestern's South Dakota natural gas and electric customers through NorthWestern Energy employees and its program contractors, and by generating increased public awareness of the programs and the opportunity to save energy.

Specific DSM marketing and communications objectives are to engage trade allies in our communities and public entities to incorporate energy efficiency in their messages and marketing, and also to engage customers to demand energy efficiency from service providers.

Audiences that will be targeted by NorthWestern's marketing and communications activities include:

- NorthWestern Energy employees
- NorthWestern Energy program contractors and partner contractors
- Residential customers (natural gas and electric)
- Commercial and Industrial Customers (natural gas and electric)
- Trade Allies:
 - Electrical vendors-i.e. Grainger, WesCo, CED;
 - Service providers—electricians, refrigeration, HVAC, motors, architects, engineers, insulation;
 - o Distributors-lighting, equipment;
 - Retailers—of CFLs, building supplies, appliances, air sealing, and water measures; building contractors and general contractors;
 - o HVAC and insulation contractors; and
 - Trade associations—i.e. AIA, ASHRAE, Hospital Association and Hospitality and Lodging Association.
- Public officials and government departments
- Media—mass and trades

Implementation Strategies

NorthWestern Energy will engage its employees, program implementation representatives, and program/partner contractors to utilize existing and new methods and tools to cultivate customer participation in the DSM programs.

Implementation tactics are targeted by customer sector and directed at defined audiences in most cases. Cross-marketing of programs within the customer sector is incorporated as appropriate.

Programs will be offered under the Efficiency Plus (E+) umbrella and mirror best practice strategies that have been successfully implemented with Montana customers. Modification to communications and program design to fit the South Dakota market will be incorporated.

Tactics

Residential Programs will be promoted using the following techniques and mechanisms:

- Target direct mail and limited media for E+ Audits for the Home.
- CFL instant coupon offerings to increase installation of CFLs, incorporating the educational messages (4L's) into various residential lighting messages for lighting activities
- Develop program materials/resources (Web and Brochures)
- Develop contacts by program contractors/local NorthWestern employees
- Provide training on DSM programs for Customer Service Representatives (CSRs)
- Messages in Energy Connections and news releases regarding saving energy and the introduction of E+ Programs in South Dakota.
- Participate in local events as appropriate
- Contact trade allies and solicit their participation in promotion of E+ Programs with their customers/members (Preferred Contractors, lighting retailers, homebuilding associations)

Commercial and industrial DSM Programs will be promoted using the following techniques and mechanisms:

- Develop materials to support the outreach for E+ Commercial Lighting rebates
- Integrate commercial program messages into tradeshow displays

22

Initiate customer and trade ally contacts by program/partner contractors and CSRs

- Participate in local events where appropriate
- Targeted outreach for customer/trade ally training and partnership opportunities
- Develop trade ally databases
- Develop program-at-a-glance summary
- Populate the South Dakota E+ web resources with program information

Methods and Tools

Residential Sector

- Program Brochures that describe individual programs and cross-market same sector programs and highlight resources for more information directing customers to website or program contact phone numbers. Targeted to general audiences.
- Web/interactive Media tools that include the Efficiency Plus (E+) web section of www.NorthWesternEnergy.com/Eplus, Twitter, YouTube, Facebook, and Search Engine Marketing (SEM) as appropriate. Targeted to general audiences.
- Internal Communications throughout the year such as FYI, TEAM, iConnect, emails, employee training sessions, etc. to introduce South Dakota program offerings and inform all or targeted groups of employees of programs, featured projects/promotions, training, and events. Targeted to NorthWestern employees.
- Billing Messages in the message box of the NorthWestern Energy billing statement and in Energy Connections to encourage program participation. Targeted to residential customers.
- Direct Mail to Trade Allies and targeted customers of individual program offering and related trainings along with cross-marketing of other programs. Targeted for individual mailing.

- One-on-One Contact by program representatives, program contractors, CSRs communicate residential program offerings based upon opportunity and direct to appropriate resources. May include interactions during: E+ Audit for the Home, tradeshow/fair discussions, customer care calls, or normal company interactions with the customer. Opportunity driven.
- One-to-Many Contact through speakers' bureau, service organization presentations by program contractors and employees as appropriate to increase awareness of programs and opportunities to save energy. Company or customer initiated.
- Trade and Home Improvement Shows and other community events to reach targeted audiences with information about programs and opportunities. Company or organization initiated.
- Trade Association Events, Publications, and Websites to target presentations, displays and messages about opportunities for customers to save energy and the programs that NorthWestern Energy offers. Targeted to trade allies and customer groups.
- **Targeted Media Advertising** tied to special campaigns, programs or events. Targeted to eligible residential audiences.
- Earned Media Feature Stories on projects and opportunities in trade or mass media. Targeted to general audiences.

Commercial/Industrial Sector

 Brochures that describe program offerings and highlight resources for more information directing customers to website or program contact phone numbers. Initial offering will focus on the E+ Commercial Lighting Rebates. Targeted to general audiences.

- Web/interactive Media Tools: use of the Efficiency Plus (E+) web section of www.northwesternenergy.com and SEM as appropriate. Targeted to general audiences.
- Internal Communications throughout the year such as FYI, TEAM, I-Connect, e-mails, CSR trainings, etc. to inform all or targeted employees groups about programs, featured projects/promotions, training, and events. Targeted to employees and program partners as appropriate.
- Case Studies of customer projects as they become available to demonstrate various types of customer participation and customer benefits. Targeted to trade allies and key contacts and certain customers/customer sector subsets.
- Billing Messages in the message box of NorthWestern Energy billing statements and in Energy Connections to encourage program participation. Targeted to all commercial and industrial customers.
- Direct Mail to trade allies and targeted customers regarding individual program offering and related trainings along with cross-marketing of other programs. Targeted to individual customer mailings.
- **Customer Care E-Newsletter** to key customers will include information about programs, training, and case studies throughout the year.
- One-on-one Contact by program representatives, program contractors, employees communicate commercial and industrial program offerings based upon opportunity and direct to appropriate resources. May include interactions during informal facility assessment, project completion review, cold calls, trade ally visits, or normal company interactions with the customer. This activity is opportunity driven.

- **One-to-Many Contact** through speakers' bureau, service organization presentations by program contractors and employees to increase awareness of programs and opportunities to save energy. This activity is either company or customer initiated.
- Trade Association Events, Publications, and Websites for making presentations, setting up displays and delivering messages about opportunities for customers to save energy and programs offered by NorthWestern Energy. Targeted to specific trade allies or customer groups as appropriate.
- Targeted Media Advertising tied to events, projects, or programs. E+ Commercial Lighting Rebate program advertising through television and radio to promote lighting as a universal way for businesses to save energy. Targeted to general audiences with an emphasis on commercial lighting or other specific project-related audiences.
- Earned Media Feature Stories on projects and opportunities in trade or mass media.
 Targeted to general audiences with an emphasis on commercial lighting or other specific project-related audiences.
- Supporting Commercial Program Contractors with consistent marketing materials to describe working relationship with NorthWestern Energy.

NorthWestern Energy has defined an overall budget for marketing and communication for the electric and natural gas DSM programs as presented in Table 1 below. This includes mass media development and placement as well as all other marketing expenses.



Table 1: NorthWestern DSM Program Advertising Budget

		Year 1	Year 2			TOTAL		
Advertising	120	語にある	IL.	erry plets	H.			
Newspaper—CFLElectric markets only, 2 campaigns; 2 insert ea., 1 inserts ea. ¹ / ₄ page =\$4,100 EA, Creative \$2,200	¢	20,800	¢	20.800	¢	41 (00		
Direct Mail CEL Coupon Electric markets only 2 coupons	Э	20,800	\$	20,800	3	41,000		
Development of coupon, banner, POP, print ad = \$5,000, Printing and deliver of 52.453 pieces = postage and								
printing/piece of \$0.40 total app \$21,000	\$	50,000	\$	50,000	\$	100,000		
Single Direct Response Audit All Res 69,037 customers, Development of mailing = \$15,000, List prep, printing, lettershop, poster= agency est, \$35,000	\$	50.000	\$	50.000	\$	100.000		
Billboard 1 campaign with 20 signs, \$3,000 creative; \$2,700 production= \$5,700, Placement \$11,000/4 weeks at 12 weeks = \$33,000	\$	38,000	\$	40,000	\$	78,000		
Radio 1 campaign at 4 weeks (Kick offgeneral), \$3,500 creative and \$14,500 for 4 weeks Placement	\$	17,500	\$	19,000	\$	36,500		
Television 3 campaign =\$10,000/ 4 weeks ea, Portion of TV Creative=\$10,500	\$	40,500	\$	30,000	\$	70,500		
Trade shows/association 5 events year 1 plus development, 7 year 2 \$1,500 for Displays,booth, promo,								
preferably with speaker commitments	\$	10,500	\$	10,500	\$	21,000		
Digital Media \$1,750 creative; \$3,600/4 weeks Media, 6 rounds creative, 6 flights placement	\$	23,350	\$	23,350	\$	46,700		
Search Engine Marketing (SEM), \$1,250 creative and \$700/4								
weeks media, 4 rounds creative, 12 hights placemment	\$	13,400	\$	13,400	\$	26,800		
Local Office Display materials 15 locations @\$700 ea.	\$	10,500	\$	10,500	\$	21,000		
Advertising total	\$	274,550	\$	267,550	\$	542,100		



XIV. Future Programs

Following successful introduction of the programs described above NorthWestern will examine whether the following additional programs are appropriate and cost effective additions for an expanded DSM portfolio.

A. E+ Business Partners Program

This program would serve all NorthWestern commercial and industrial electric customers for new or existing facilities. NorthWestern would solicit proposals for projects that incorporate conservation measures that provide a unique benefit to NorthWestern's distribution system. Project proposals would have to demonstrate the cost effectiveness of the project, prove the availability of qualified design services, contractors, and maintenance service, and describe the projects' use of reliable and available equipment.

B. Residential and Commercial New Construction Electric and Natural Gas Rebate programs.

These programs would reach new construction projects that cost effectively exceed code on qualifying measures or designs.

XV. DSM Program Budget and Schedule

To the extent practical all programs should be offered to NorthWestern electric and natural gas customers on a consistent basis, in order to maximize program effectiveness, minimize customer confusion, and minimize administration cost and effort.

NorthWestern DSM funds should be used only to acquire DSM from NorthWestern customers, not customers served by other utilities or non-utility energy suppliers. DSM funds should fund programs for all NorthWestern customers as allowed by DSM budgets.



A. Budget

NorthWestern is introducing a group of new DSM programs into its South Dakota service area. Without historical DSM program participation data to use, it is difficult to estimate the level of rebates and incentives that will be claimed by participating customers. NorthWestern has received a bid for certain services from DNV GL (KEMA Services Inc), one of its DSM Program implementation contractors in Montana. This bid includes estimates to establish a presence in South Dakota, recruit and train staff and field personnel, and put various computer, software, data collection, and administrative systems into place.

DSM program spending is substantially dependent on customer participation. NorthWestern will make every attempt to adhere to the budget estimates shown in Table 2 below. It is possible that total annual DSM spending will vary from the budget. NorthWestern will monitor customer participation and spending as the programs proceed. NorthWestern will notify the SDPUC if the spending in either of the two years appears to be likely to deviate from the estimated budget (Table 2) amounts by greater than or less than 30%.

The expected budget for all DSM programs to be introduced in 2014 is summarized in Table 2.



NorthWestern South Dakota DSM Prog	rar	n Bud	ge	et Esti	ma	tes
	2014-15		2015-16		2-Year Total	
Contractor Expenses (DNV GL)					-	
Residential Audit Program	-					
Program Startup (contractor cost):						
Tw o vehicles (approximate, at cost)	\$	66,000	\$	141	\$	66,000
RECAP & Database Development (T&M, not to exceed)	\$	50,000	\$	-	\$	50,000
In-home audits		\$482,638		\$433,440	\$	916,078
Program Subtotal	\$	598,638	\$	433,440	\$	1,032,078
Residential/Commercial Electric & Natural Gas Rebate Programs	-					
Program Startup (contractor cost)	\$	16,692	\$	11,692	\$	28,384
Outside Services:	\$	236,900	\$	266,150	\$	503,050
Program Subtotal	\$	253,592	\$	277,842	\$	531,434
Contractor Expenses (DNV GL) Total	\$	852,230	\$	711,282	\$	1,563,512
NorthWestern Energy Expenses:	-				_	
Rebates	\$	900,000	\$	900,000	\$	1,800,000
Admin/non-labor (Travel, office supplies, etc.)	\$	16,000	\$	8,000	\$	24,000
Advertising						
New spaper	\$	20,800	\$	20,800	\$	41,600
Direct Mail	\$	100,000	\$	100,000	\$	200,000
Billboard	\$	38,000	\$	40,000	\$	78,000
Radio	\$	17,500	\$	19,000	\$	36,500
Television	\$	40,500	\$	30,000	\$	70,500
Trade Show /Association Events	\$	10,500	\$	10,500	\$	21,000
Digital Media	\$	23,350	\$	23,350	\$	46,700
Search Engine Marketing (SEM)	\$	13,400	\$	13,400	\$	26,800
Local Office Displays	\$	10,500	\$	10,500	\$	21,000
Advertising Subtotal	\$	274,550	\$	267,550	\$	542,100
NorthWestern Energy Expenses Total	\$	1,190,550	\$	1,175,550	\$	2,366,100
Total Estimated Budget	\$	2,042,780	\$	1,886,832	\$	3,929,612

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B. Schedule

NorthWestern intends to proceed along the following schedule:

- 1. As part of the Commission's review of this DSM plan, NorthWestern expects to receive critical review and feedback from the Commission specific to its DSM plan and its proposed DSM Program Cost Tracking and Lost Margin Recovery Mechanism.
- The NorthWestern DSM team is formed and will commence planning activities including developing overall DSM program strategies, developing definitions of responsibilities for the NorthWestern DSM team and outside contractors, identifying preferred program delivery alternatives, and developing competitive solicitations.
- 3. NorthWestern will undertake additional activities including, program implementation and delivery once the planning work is complete and upon receiving; (1) a strong indication from the Commission that NorthWestern's DSM plan is reasonable and (2) approval from the Commission of the proposed mechanism for recovering prudently incurred DSM program costs and associated lost margin. NorthWestern proposes such a mechanism in the next section.

XVI. Recovery of DSM Costs and Lost Margin

There are two general categories of costs associated with DSM activities; DSM Program costs and Lost Margin. Full recovery of both categories of costs is necessary to align interests and incentives of both NorthWestern and its customers with respect to utility-sponsored DSM.

XVII. Proposed DSM Cost Tracking and Lost Margin Recovery

NorthWestern believes that DSM program costs and Lost Margin should be expensed and recovered through a tracker mechanism. Accordingly, NorthWestern describes its proposed DSM Program Cost Tracking and Lost Margin Recovery Mechanism in the following sections.



A separate DSM Electric/Natural Gas Tracker (DSM Tracker) will be implemented on a 12 calendar month cycle each year, with annual rate adjustments as necessary and appropriate. A brief description of the mechanics and anticipated timing is provided below.

Lost Margin will be calculated as a percentage of DSM Program Costs. NorthWestern proposes a straight forward percentage adder to each year's DSM Program costs to compensate it for Lost Margin. The Lost Margin Percentage is as follows:

- Electric Lost Margin Percentage = 30.0%
- Natural Gas Lost Margin Percentage = 7.79%

These percentages, for both electric DSM Program costs and natural gas DSM Program costs, will be applied to the forecasted DSM Program spending for each forthcoming year, and will be included as part of the overall DSM Expenses used to calculate rates to recover the cost of the DSM Program effort.

Example #1 using hypothetical electric DSM Program cost:

Year 1 estimated (forecasted) electric DSM Program cost	= \$1,000,000
Plus Year 1 electric Lost Margin adder (@ 30%)	= <u>\$ 300,000</u>
Total Year 1 (to tracker)	= \$1,300,000

Example #2 using proposed DSM budget amounts in this DSM Plan:

The estimated Year 1 total DSM program budget must first be split into electric and natural gas budgets using an estimated percentage split. Because this Plan represents an introductory step into NorthWestern's South Dakota service territory and there is no history from which to make an estimate of this split, NorthWestern proposes a 50/50 split of the Year 1 budget for purposes of calculating the Lost Margin amounts:

•	Electric DSM budget:	\$2,042,780 x 0.50	=	\$ 1,021,390
•	Natural Gas DSM budget:	\$2,042,780 x 0.50	=	\$ 1,021,390
	•			\$ 2,042,780



		LOST			
	YEAR 1 PROGRAM BUDGET	Electric @ 30.0 %	Natural Gas @ 7.79%	TOTAL	
Electric DSM	\$1,021,390	\$ 306,417		\$1,327,807	
Natural Gas DSM	\$1,021,390		\$ 79,566	\$1,100,956	
Total	\$2,042,780	\$ 306,417	\$ 79,566	\$2,428,763	

[Note: figures may not total precisely due to rounding.]

A forecast of DSM Program Costs and Lost Margin will be developed for each tracker year. Any over/under collection for the first year (including interest), plus forecasted DSM Program Costs and Lost Margin for the second year are added together to compute rates for the second year.

Adjustments Resulting from Program Evaluations

NorthWestern intends to report DSM related energy and demand savings based on deemed savings, results from previous DSM Evaluation studies, and engineering calculations. Practice has proven that engineering estimates tend to differ from actual savings (many times actual savings are somewhat lower). To account for this difference in the DSM Tracker, NorthWestern proposes to utilize the results of future program evaluations to develop appropriate savings adjustment factors (adjustment factors) that can be applied to engineering estimates to better reflect actual savings. As discussed previously, NorthWestern plans to commission initial program evaluations in year 4 and will conduct subsequent evaluations as necessary. The evaluations will be conducted by independent outside contractors not engaged in other aspects of DSM program implementation and delivery.

NorthWestern will not have the benefit of the results of program evaluations of DSM program activity in South Dakota in the first few years of implementation.



DSM Program Cost Tracking and Lost Margin Recovery Tracker Period

NorthWestern will identify a first-day-of-month starting date for the tracker period in its initial filing of its DSM Plan. The initial tracker period will begin the first day of the month following the month of SDPUC approval of this DSM Plan ("Tracking Period Starting Date"). Upon receiving approval to implement the DSM Plan, it is possible that NorthWestern will begin to incur costs related to work necessary to begin the start-up process and prepare to offer its initial energy efficiency programs. These costs at the beginning may occur after the approval date but before the Tracking Period Starting Date. These costs that accrue in the days after SDPUC approval but before the before Tracking Period Starting Date will be included in the total year one tracking period program expenses. The initial tracker period will end on the last day of the month one full year (12 months) later.

The year two tracker period will begin on the first day of the same month as the initial tracker period starting month.

NorthWestern believes that customers will find value in continuing energy efficiency programs in South Dakota and that energy efficiency programs will continue for many more years. However, in the event that energy efficiency programs do not continue into the future, NorthWestern proposes to continue to collect any unrecovered energy efficiency costs, lost margin and reconciliation amounts through the cost recovery mechanisms described in this Plan until all such costs are recovered. Likewise, NorthWestern would return any over-collections to customers through the cost recovery factor until all over-collections are returned.

XVIII. Conclusion

NorthWestern has described its intentions with regard to implementation of this proposed DSM plan. Further, NorthWestern has proposed a mechanism for recovery of DSM Program Costs and Lost Margin. NorthWestern has stated its intent to form a DSM team beginning in 2014 and commence program planning and development activities upon final approval of its Plan.

