☐ **Non Public Document – Contains Trade Secret Data**
☐ **Public Document – Trade Secret Data Excised**
☒ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-1
Date Received: May 15, 2013

Question:
1-1) What percent of Saver's Switches need additional maintenance after install? Are the ongoing maintenance expenses associated with Saver's Switches included in benefit/cost tests? What percent of the residential and business Saver's Switch program costs result from ongoing maintenance expenses?

Response:
The percent of Saver's Switches needing additional maintenance after install is estimated to be less than 3%. The Saver's Switch program in South Dakota launched in the early 1990s. Of the approximately 17,000 residential and 1,500 commercial switches deployed in the state, approximately half were installed in 1996 or earlier. Per the switch manufacturer, the equipment is designed for a 15-year life.

The frequency of needed switch maintenance or switch replacement fluctuates. Over time, all switches will eventually need to be replaced. No non-functioning switches received maintenance or were replaced in 2012. As the hardware ages, the Company projects that in future years as much as a third to half of the annually installed units may require replacement. The cost of replacing a non-functioning unit is generally lower than new installations as there are no marketing expenses associated with recruiting an existing participant. The percent of the residential and business Saver's Switch program costs resulting from ongoing maintenance expenses is estimated to be approximately 30%.

The maintenance and replacements are included in the benefit/cost test – the benefit is accrued on the same basis as a newly installed unit. The costs associated with the hardware and installation are included in the benefit/cost test, as well

Preparer: Patrik Ronnings
Title: Senior Product Manager
Department: Xcel Energy - SD
Telephone: 612-330-5787
Date: June 7, 2013

☐ **Non Public Document – Contains Trade Secret Data**
☐ **Public Document – Trade Secret Data Excised**
☒ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-2
Date Received: May 15, 2013

Question:
1-2) Increased cycling of mechanical components can reduce equipment life and increase maintenance expenses. Do the benefit/cost tests for the Air Conditioning Control program include those types of costs?

Response:
During a control event, the Saver's Switch cycles the participant's air conditioning (AC) unit on and off in 15-20 minute increments. This is done by interrupting the signal from the thermostat to the AC unit. Thus, the AC continues to operate in the same way as it is ordinarily controlled (the interruption is effectively the same as the thermostat turning the AC off and on every day during the cooling season).

The average participant in a normal year experiences about 40 hours of controls. In those 40 hours, the switch temporarily interrupts (turns off) the AC unit's compressor and thereafter allows it to restart 80 times.

The company estimates that the average AC unit is oversized for the need of the household. Thus, the AC does not run continuously throughout a hot day. Instead, the AC is turned off and on multiple times throughout every warm day in the summer. The Company does not believe that the switch operating the AC during a control event has a significant impact on the maintenance or life span of the unit. The number of times the unit is turned off and on by the switch is dwarfed by the operations from regular use.

Because we do not foresee increased maintenance expenses resulting from increased cycling of mechanical components, the benefit/cost tests for the Air Conditioning Control program do not include these expenses.

Preparer:	Patrik Ronnings
Title:	Senior Product Manager
Department:	Xcel Energy - SD
Telephone:	612-330-5787
Date:	June 7, 2013

☐ **Non Public Document – Contains Trade Secret Data**
☐ **Public Document – Trade Secret Data Excised**
☒ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-3
Date Received: May 15, 2013

Question:
1-3) Do LED bulbs work in existing lighting fixtures or are special fixtures needed? If special fixtures are needed, how does Xcel plan to inform consumers taking advantage of LED rebates that the bulbs must be used in LED approved fixtures?

Response:
LED bulbs work in existing incandescent fixtures for both commercial and residential customers and do not require special fixtures.

Preparer: Kim Sherman
Title: Senior Product Manager
Department: Xcel Energy - SD
Telephone: 612-337-2360
Date: June 7, 2013

☐ **Non Public Document – Contains Trade Secret Data**
☐ **Public Document – Trade Secret Data Excised**
☒ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-4
Date Received: May 15, 2013

Question:
1-4) Why are Regulatory Affairs costs included in the DSM budget, when similar regulatory affairs costs are considered "sunk costs" for other programs (e.g. Economic Development Plan)?

Response:
This DSM Regulatory function is within the Marketing Department and is separate from the corporate Rates and Regulatory Affairs Department. The employees' labor on the Marketing Regulatory team is fully dedicated to planning and administering Demand Side Management (DSM) and is budgeted to DSM in all of our jurisdictions. This team not only manages all DSM regulatory filings, but also directs and prepares cost-benefit analyses, provides results of energy conservation achievements, forecasts long-range DSM achievements, and assists in policy and planning of DSM portfolios.

Preparer: Holly Hinman
Title: Senior Regulatory Analyst
Department: Xcel Energy - SD
Telephone: 612-330-5941
Date: June 7, 2013

☐ **Non Public Document – Contains Trade Secret Data**
☐ **Public Document – Trade Secret Data Excised**
☒ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-5
Date Received: May 15, 2013

Question:
1-5) What results in the limited visibility of mid-month DSM program expenditures?

Response:
Program expenses, including internal labor costs and rebate dollars paid, are reported monthly through Xcel Energy's timekeeping and financial systems. As such, we can run an accurate report of total program expenditures only after the financial month closes. Any interim estimates are useful for directional planning, but are not accurate enough to enable precise financial planning such as that needed to ensure we do not inadvertently overspend our approved budget.

Preparer: Karen Rhodes
Title: Manager, Energy Efficiency Marketing
Department: Xcel Energy - SD
Telephone: 612-330-7566
Date: June 7, 2013

☐ **Non Public Document – Contains Trade Secret Data**
☐ **Public Document – Trade Secret Data Excised**
☒ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-6
Date Received: May 15, 2013

Question:
1-6) With regards to the request for administrative flexibility, how will Xcel ensure that the budget dollars are allocated amongst the programs to maximize energy savings per dollar?

Response:
When we begin a new reporting period, we implement specific plans designed to meet multiple portfolio objectives, namely to ensure all customer classes benefit from program activities as well as to meet the approved budgets and goals for each program. As the year progresses, we evaluate program pipelines and market momentum each month to forecast year-end program performance. If a program is forecasted to underspend its budget, we redirect dollars to other programs in an effort to first support the portfolio objectives listed above, and second, to maximize the number of program participants given the time remaining in the reporting period.

Preparer: Karen Rhodes
Title: Manager, Energy Efficiency Marketing
Department: Xcel Energy - SD
Telephone: 612-330-7566
Date: June 7, 2013

☐ **Non Public Document – Contains Trade Secret Data**
☐ **Public Document – Trade Secret Data Excised**
☒ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-7
Date Received: May 15, 2013

Question:
1-7) For the requested program changes, please provide updated rebate structures similar to those filed with the 2011 Plan.

Response:
Xcel Energy proposes the following rebate measure changes for 2014 to better align with customer demand and to reflect current market pricing.

- Refine Light Emitting Diode (LED) category definitions and rebate levels to better adapt to current market conditions. Prescriptive rebates for a variety of LED measures, including ENERGY STAR qualified interior LED lamps and fixtures, were added to the retrofit and new construction program starting in 2010. Since then, LED technology has improved, expanded into additional measures like retrofit kits, wall packs and integrated stairwell fixtures, and it has enabled the costs for LED products to decrease substantially.

- Redefine rebate categories and rebate levels for occupancy sensors to adapt to market conditions. Occupancy sensor technologies have advanced in the last few years and now it is fairly easy and cost beneficial to purchase fixtures that include an occupancy sensor. As a result, the rebate levels we currently provide for retrofits are no longer appropriate relative to the market cost of the equipment. To address these market conditions, we have modified the measure by adding a connected load requirement and reduced rebate levels for wall and ceiling sensors.

- Remove various prescriptive rebates for products that are not trending in the South Dakota commercial and industrial market. There is currently a low interest for High Intensity Discharge (HID) products, Compact Fluorescent lighting (CFL), T5 Fluorescent retrofits, Traffic lighting retrofits and New Construction

rebates in the South Dakota market. We propose to remove these measures to better align with market demand.

A full view of the 2012 rebate structure and the 2014 rebate structure can be found in the table below.

	2012		2014	
Technology	**Retrofit Rebates (per unit)**	**New Construction Rebates (per unit)**	**Retrofit Rebates (per unit)**	**New Construction Rebates (per unit)**
Fluorescent fixtures with high-efficiency electronic ballasts				
T8	$18.00 - $28.00	N/A	$18.00 - $28.00	N/A
T5	$18.00 - $24.00	N/A	N/A	N/A
T12-T8 Optimization	$20.00 - $26.00	N/A	$20.00 - $26.00	N/A
T8-T8 Optimization	$12.00	N/A	$12.00	N/A
Fluorescent low-wattage lamps				
28W or less	$1.00	$1.00	$1.00	N/A
CFL Plug-in	$4.00	$1.00	N/A	N/A
Compact Fluorescent fixtures				
Pin-based CFLs	$25.00 - $35.00	$10.00 - $20.00	N/A	N/A
High-bay fluorescent fixtures with high-efficiency electronic ballasts				
T5HO or T8	$85.00 - $175.00	$40.00 - $65.00	$85.00 - $175.00	N/A
High Pressure Sodium fixtures				
High pressure sodium	$30.00 - $45.00	N/A	N/A	N/A
Pulse start metal halide	$60.00 - $120.00	$12.00 - $28.00	N/A	N/A
Ceramic metal halide	$25.00 - $100.00	$15.00 - $55.00	N/A	N/A
Controls				
Occupancy sensors	$25.00 - $50.00	N/A	$15.00 - $40.00	N/A
Photocells	$25.00	N/A	$25.00	N/A
Stairwell fixture with integral occupancy sensor	N/A	N/A	$25.00	N/A

LED Fixtures				
LED exit signs	$25.00	N/A	$25.00	N/A
LED interior lamps – ENERGY STAR qualified	$20.00 - $35.00	$20.00 - $35.00	$7.00 - $15.00	N/A
LED interior fixtures - ENERGY STAR qualified	$100.00 - $125.00	$50.00 - $75.00	$35.00 - $50.00	N/A
LED interior screw-in fixture retrofit	N/A	N/A	$15.00	N/A
LED refrigerated case lighting	$100.00	$70.00	$100.00	N/A
LED exterior canopy and soffit lighting	$275.00	$150.00	$175.00	N/A
LED traffic balls and arrows (red and green)	$25.00 - $50.00	N/A	N/A	N/A
LED pedestrian signals	$30.00 - $40.00	N/A	N/A	N/A

Preparer: Michael Kunz
Title: Associate Product Manager
Department: Xcel Energy - SD
Telephone: 612-337-2026
Date: June 7, 2013

☐ **Non Public Document – Contains Trade Secret Data**
☒ **Public Document – Trade Secret Data Excised**
☐ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-8
Date Received: May 15, 2013

Question:
1-8) Please explain how Xcel forecasted the sales of 2,028,525 MWh for the next recovery period.

Response:
Our sales forecasts for both 2013 and 2014 came from Xcel Energy's Energy Forecasting department. This is the same department that forecasts sales to be used in Xcel Energy's rate cases. The method used by the Energy Forecasting department is described below.

Forecast Methodology

NSP Electric – South Dakota
Annual Electric Consumption Forecast

OVERALL METHODOLOGICAL FRAMEWORK
Xcel Energy prepared its forecast by major customer class and jurisdiction, using a variety of statistical and econometric techniques. The forecast is referred to as the 2014 Budget (March 2013).

SPECIFIC ANALYTICAL TECHNIQUES
1. Econometric Analysis. Xcel Energy used econometric analysis to develop South Dakota MWh sales forecasts at the customer meter for the following sectors:
    a. Residential without Space Heating;
    b. Residential with Space Heating;
    c. Small Commercial and Industrial;
    d. Public Street and Highway Lighting.

2. Trend analysis was used for the Large Commercial and Industrial sector MWh sales forecast.
3. Judgment is inherent to the development of any forecast. Whenever possible, Xcel Energy used quantitative models to structure its judgment in the forecasting process.

The sales forecasts are estimates of MWh levels measured at the customer meter. They do not include line or other losses. The various class forecasts are summed to yield the total jurisdictional sales forecast.

MODELS USED

1. ***Residential Econometric Models.*** Residential sales are divided into with space heating and without space heating customer classes. Regression models using historical data are developed for each residential sector. A variety of independent variables are used in the models, including:
    - Number of customers;
    - Real Gross State Product;
    - Actual heating and temperature humidity index (THI) degree days;
    - Number of monthly billing days.
2. ***Small Commercial and Industrial Econometric Model.*** The regression model uses historical data. The models include a combination of variables, including the following:
    - Number of small commercial and industrial customers;
    - Gross Metro Product for Sioux Falls;
    - Actual heating and temperature humidity index (THI) degree days.
3. ***Public Street and Highway Lighting Econometric Model.*** The model is a regression model using historical data and a combination of variables, including the following:
    - South Dakota Households;
    - Monthly binary variables.

METHODOLOGY

Data for Forecasts

Xcel Energy used internal and external data to create its MWh sales forecast.

Historical MWh sales are taken from Xcel Energy's internal company records, fed by its billing system.

Weather data (dry bulb temperature and dew points) were collected from the National Oceanic and Atmospheric Administration for the Minneapolis/St. Paul, Fargo, Sioux Falls, and Eau Claire areas. The heating degree-days and THI degree-days were calculated internally based on this weather data.

Economic and demographic data was obtained from the Bureau of Labor Statistics, U.S. Department of Commerce, and the Bureau of Economic Analysis. Typically they are accessed from Global Insight, Inc. data banks, and reflect the most recent values of those series at the time of modeling.

Demand-Side Management Programs

The regression model results for the residential and commercial and industrial classes were reduced to account for the expected incremental impacts of demand-side management ("DSM") programs. An annual forecast of the impact of new DSM programs (excluding Saver's Switch) is developed by Xcel Energy's DSM Regulatory Strategy and Planning Department. The impacts are converted by class from calendar month energy to billing month sales volumes. The resulting sales volumes are used to reduce the class level sales forecasts that result from the regression modeling process. Impacts from all program installations through 2012 are assumed to be imbedded in the historical data, so only new program installations are included in the DSM adjustment.

The Company's Saver's Switch program results in short-term interruptions of service designed to reduce system capacity requirements rather than permanent reductions in energy use, so it is not considered here.

Data Adjustments and Assumptions

1. Weather Adjustments. Xcel Energy adjusted its monthly weather data to reflect billing schedules. Therefore, the monthly weather data corresponds exactly with the billing month schedule.

2. Economic Adjustments. All monetary data and related economic series were deflated to 2005 constant dollars.

Assumptions and Special Information

Xcel Energy believes that its process is a reasonable and workable one to use as a guide for its future energy and load requirements. The underlying assumptions used to prepare Xcel Energy's median forecast are as follows:

1. Demographic Assumption. Population or household projections are essential in the development of the long-range forecast. The forecasts of customers are derived from population and household projections provided by Global Insight, Inc., and reviewed by Xcel Energy staff. Xcel Energy customer growth mirrors demographic growth over the forecast period.

2. Weather Assumption. Xcel Energy assumed "normal" weather in the forecast horizon. Normal weather is defined as the average weather pattern over the 20-year period from 1993-2012. The variability of weather is an important source of uncertainty. Xcel Energy's energy forecasts are based on the assumption that the normal weather conditions will prevail in the forecast horizon. Weather-related demand uncertainties are not treated explicitly in this forecast.

Final MWh Sales Forecast for 2014

Class	2014 MWh Sales Forecast
Residential without Space Heating	657,757
Residential with Space Heating	57,333
Small Commercial and Industrial	991,056
Large Commercial and Industrial	340,158
Public Street & Highway Lighting	12,271
Total Retail	2,058,575

In reviewing our filing to respond to this data request, it was noticed that the 2013 sales forecast was wrongfully used on page 12. The forecast of 2,028,525 MWh is for 2013. The sales forecast for 2014 is 2,058,575. Both the DSM Trackers and actual calculation of the updated DSM Cost Adjustment Factor used the correct 2014 sales forecasts. The only correction that is needed is to page 12 of our filing where we discuss what the rate is calculated to be before factoring in carrying charges. Below is the updated language.

[CONFIDENTIAL DATA EXCISED]

The resulting rate is **$0.000486 per kWh**.

Again, this does not impact the requested DSM Cost Adjustment Factor in our May 1, 2013 filing.

Preparer: Kelsey Genung & Lucy Pavlovic

Title:	Senior Regulatory Analyst & Senior Energy Forecasting Analyst
Department:	Xcel Energy - SD
Telephone:	612-337-2328 & 303-571-7182
Date:	June 7, 2013

☐ **Non Public Document – Contains Trade Secret Data**
☐ **Public Document – Trade Secret Data Excised**
☒ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-9
Date Received: May 15, 2013

Question:
1-9) Has the Company considered increasing the budget for the Lighting Efficiency program, under the assumption that program participation should be maximized given its strong cost-effectiveness ratios?

Response:
The proposed Lighting Efficiency program budget includes an increase of $50,375, nearly 13% over the current approved program budget. This increase will help cover the backlog of lighting projects already received. The extra budget dollars for Lighting Efficiency came primarily by shifting budget dollars from the Ground Source Heat Pump program, a program that had few participants in 2012 but is gaining momentum in 2013.

Preparer: Karen Rhodes
Title: Manager, Energy Efficiency Marketing
Department: Xcel Energy - SD
Telephone: 612-330-7566
Date: June 7, 2013

☐ **Non Public Document – Contains Trade Secret Data**
☐ **Public Document – Trade Secret Data Excised**
☒ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-10
Date Received: May 15, 2013

Question:
1-10) What evidence does the Company have that a rebate of up to $10/LED bulb is cost effective? How does this compare to rebates for CFLs?

Response:
The result of the TRC test for the LED measure is 1.24 with net benefits of $2,141. This demonstrates that the LED measure itself is cost-effective using the TRC cost test. For comparison, the result of the TRC test for the CFL measure is 4.67. However, the TRC test does not account for rebate levels. Rebates are treated as a pass-through cost in the TRC, so the TRC is not useful in determining the cost-effectiveness of the rebate level. Instead the Utility Cost Test and the Participant Payback periods should be considered to determine the cost effectiveness of the rebate level.

The Utility Cost Test measures whether the avoided system benefits exceed the cost of the DSM program. For the LED measures, the total avoided system benefits equal $16,684. By comparison, CFLs generate $329,364 in avoided system benefits. The total corresponding rebate cost at $10/LED bulb totals $4,000. For CFL rebates of $1.25/bulb, total rebate cost is $28,500. This shows that the avoided system benefits exceed the rebate level by a margin greater than 4:1 for LEDs (11:1 for CFLs) and that the rebate level is effective from the Utility Cost Test perspective.

To determine whether the rebate level is effective in encouraging customers to install the equipment, the Participant Payback periods with and without rebates should be examined. For the LED measures, the payback period without rebate of an LED bulb installed at a residence is 11 years (2 years for CFLs), while the payback period of an LED installed at a business is 2 years (5 months for CFLs). The $10/LED bulb rebate effectively reduces the payback periods to 6 years (residential) and 1 year

(business), payback period thresholds that should lead to a reasonable level of participation. For CFLs, the $1.25 rebate/bulb has a payback of just over 1 year (residential) and 3 months (business). This shows that the LED rebate level is effective in encouraging customers to install equipment.

Preparer:	Kim Sherman
Title:	Senior Product Manager
Department:	Xcel Energy - SD
Telephone:	612-337-2360
Date:	June 7, 2013

☐ **Non Public Document – Contains Trade Secret Data**
☐ **Public Document – Trade Secret Data Excised**
☒ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-11
Date Received: May 15, 2013

Question:
1-11) If the Company decides to partner with the City of Sioux Falls or MidAmerican Energy Company on home audits, is there an opportunity to claim cooling benefits from improvements to the building envelope?

Response:
Xcel Energy's Home Energy Audit program does not include an electric cooling component due to additional infrastructural enhancements needed to support the savings. The MidAmerican Energy program model captures gas savings for space heating through the installation of insulation measures. Unlike the other measures installed in the home that use deemed average savings, the insulation measures require calculated savings based on each home's square footage and pre- and post-R values. The capture of electric cooling savings through this model would require the development of technical assumptions and a calculator, and would require additional funds to pay for the electric portion of the audit. The audit is offered to customers at no cost. This additional cost to Xcel Energy could be as high as 40%, or $31,000, toward the cost of the 2014 audits in addition to the share of the insulation rebate costs – as much as $458,000 - should all customers take advantage of both attic and wall insulation opportunities. The potential extra cost is prohibitive at this time.

Preparer: Jean Hammer
Title: Team Lead Residential
Department: Xcel Energy - SD
Telephone: 612-330-5871
Date: June 7, 2013

☐ **Non Public Document – Contains Trade Secret Data**
☐ **Public Document – Trade Secret Data Excised**
☒ **Public Document**

Xcel Energy
Docket No.: EL13-017
Response To: SDPUC Data Request No.
Requestor: Brian Rounds 1-12
Date Received: May 15, 2013

Question:
1-12) Projected benefit-cost ratios for the Business Saver Switch and the Residential GSHP programs are below 1 in 2014. Should these programs be discontinued? Why or why not?

Response:
Similar to Company's response to Staff's inquiry on Data Request No. 1-1 on Docket No. EL11-013 (from 2011), the Ground Source Heat Pump program, despite its benefit cost-ratio score of less than 1.0, remains in the portfolio due to Staff's original request for the Company to offer the program due to customer need and the Commission's interest in including this program offering.

The commercial Saver's Switch program in South Dakota dates back to the early 1990s and has approximately 1,500 switches deployed on about 500 commercial premises. The projected benefit/cost is low for 2014; however, the early indications for 2013 are that the program is performing better than anticipated, with 13 signups so far (the average participant has about 3 switches). The company anticipates that program years 2013 and 2014 will finish stronger than originally projected.

Preparer: Patrik Ronnings
Title: Senior Product Manager
Department: Xcel Energy - SD
Telephone: 612-330-5787
Date: June 7, 2013