215 South Cascade Street
PO Box 496
Fergus Falls, Minnesota 56538-0496
218 739-8200
www.otpco.com (web site)

April 1, 2016

Mr. Daniel Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, Minnesota 55101-2147

Mr. William Grant
Deputy Commissioner
Minnesota Department of Commerce
Division of Energy Resources
85 7th Place East, Suite 500
St. Paul, Minnesota 55101-2198

RE: 2015 Demand Side Management Financial Incentive Project
Docket No. E017/M-16-

Annual Filing to Update the Conservation Improvement Project Rider
Docket No. E017/M-16-

2015 Conservation Improvement Project Status Report
Docket No. E017/CIP-13-277.02

Dear Mr. Wolf and Deputy Commissioner Grant:

Enclosed please find Otter Tail Power Company's filing in the above referenced matter which includes:

- Executive Summary
- Summary of Filing
- Petition of Otter Tail Power Company
- Financial Incentive
- Status Report
- Conservation Cost Recovery Adjustment
- Appendix A – Tables
- Appendix B – Third Party Evaluations
- Appendix C – Project Information Sheets
- Appendix D – DSM Potential Study

A Certificate of Service is also enclosed. Otter Tail Power Company has served a copy of this filing on all parties listed on the enclosed Service List. If you or Commission Staff have any questions, please contact me at (218) 739-8639 or JGrenier@otpco.com.

Very truly yours,

/s/ JASON GRENIER
Jason Grenier, Manager
Market Planning

jch
Enclosures
By electronic filing
c: Service List

2015 DSM INCENTIVE, FILING TO UPDATE THE RIDER, AND STATUS REPORT EXECUTIVE SUMMARY

On April 1, 2016, Otter Tail Power Company ("Otter Tail", "Company") filed with the Minnesota Public Utilities Commission ("Commission", "PUC") and the Minnesota Division of Energy Resources ("DER") its annual filing of the Demand Side Management ("DSM") Financial Mechanism. The Company is requesting Commission approval of its shared savings incentive of $4,257,105 for 2015.

On April 1, 2016, Otter Tail Power Company filed its 2015 Status Report.

On April 1, 2016, Otter Tail also filed its annual filing to update the Conservation Improvement Project ("CIP") Rider.

Otter Tail would like to emphasize the following points concerning the 2015 Conservation Improvement Program:

- The Company achieved 2.33[1] percent energy savings as a percent of retail energy sales, above our approved goal of 1.51 percent.
- The Company achieved energy savings of 48,711,455 kWh, exceeding goal by 155 percent. Demand savings were 152 percent of goal.
- The cost per kWh for *first year* savings is $0.13 (13 cents) compared to a budgeted cost of $0.18 (18 cents). Costs are in line with historical averages of $0.15.
- Expenditures were over budget (106%) at $6,105,445 based on an approved budget of $5,778,409.
- Net benefits of $38,318,717 were achieved excluding the negative net benefits from assessments.

Requests for Approval

- The Company is requesting approval for $4,257,105 in performance incentives for 2015 CIP activities, a small share of the total net benefits from investments in CIP.
- The Company is requesting the Conservation Cost Recovery Adjustment ("CCRA") factor of $0.00275 per kWh be reflected on customers' bills through the Resource Adjustment starting with bills rendered (dated) on and after October 1, 2016.
- As in prior years, Otter Tail is requesting a variance to Minnesota Rule 7820.3500 (E & K), which

[1] Adjusted for one-third energy savings from behavioral change programs.

require that the Fuel Clause Adjustment ("FCA") be stated as a separate line item on customer bills. The requested variance would allow the Company to continue to combine the FCA with the CCRA on customer bills.

- The Company is requesting approval of the 2015 CIP Tracker, resulting in a year-end balance of $4,333,061.

The financial incentive mechanism in Minnesota has been effective at motivating the utility to achieve energy savings and to do so at a low cost. Otter Tail has committed resources and developed new, creative approaches in pursuit of higher conservation goals.

This pursuit includes an appropriate balance of direct and indirect impact programs. New technologies, delivery mechanisms, and segmentation strategies emphasize Otter Tail's commitment to energy efficiency. Recent accomplishments are particularly noteworthy in the face of new building codes and equipment efficiencies, and saturated markets. A consistent regulatory environment coupled with fair incentives that keep energy efficiency on par with supply side investments is critical to overcoming these challenges as utilities continue to pursue Minnesota's Next Generation Act energy goals. Otter Tail appreciates the support from Minnesota's regulatory agencies as we work together to sustain Minnesota's energy future.

Please note that this filing is available through the eDockets system maintained by the Minnesota Department of Commerce and the Minnesota Public Utilities Commission. Access this document by going to eDockets through the websites of the Department of Commerce or the Public Utilities Commission or going to the eDockets homepage at:

https://www.edockets.state.mn.us/EFiling/home.jsp

Once on the eDockets homepage, this document can be accessed through the Search Documents link and entering in docket number: 13-277.02.

Please contact Otter Tail at 800-493-3299 to request a complete copy of this filing.

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of Otter Tail Power Company's Annual Filing of the Demand Side Management Financial Incentive Project	Docket No. E017/M-16-
In the Matter of Otter Tail Power Company's Annual Filing to Update the Conservation Improvement Project Rider	Docket No. E017/M-16-
Status Report – 2015 CIP Activities	Docket No. E017/CIP-13-277.02

SUMMARY OF FILING

Otter Tail Power Company ("Otter Tail") is requesting approval of a financial incentive of $4,257,105 to be approved and recovered through its Conservation Improvement Project ("CIP") Tracker Account.

Otter Tail is requesting the Conservation Cost Recovery Adjustment ("CCRA") factor of $0.00275 per kWh be reflected on customers' bills through the Resource Adjustment starting with bills rendered (dated) on and after October 1, 2016.

As in prior years, Otter Tail is requesting a variance to Minnesota Rule 7820.3500 (G & K), which require that the Fuel Clause Adjustment ("FCA") be stated as a separate line item on customer bills. The requested variance would allow the Company to continue to combine the FCA with the CCRA on customer bills.

Lastly, Otter Tail is requesting approval of the 2015 CIP Tracker, resulting in a year-end 2015 balance of $4,333,061.

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of Otter Tail Power Company's Annual Filing of the Demand Side Management Financial Incentive Project	Docket No. E017/M-16-
In the Matter of Otter Tail Power Company's Annual Filing to Update the Conservation Improvement Project Rider	Docket No. E017/M-16-
Status Report – 2015 CIP Activities	Docket No. E017/CIP-13-277.02

PETITION OF OTTER TAIL POWER COMPANY

I. INTRODUCTION AND BACKGROUND

Otter Tail Power Company ("Otter Tail", "Company") is requesting approval of a financial incentive of $4,257,105 to be approved and recovered through its Conservation Improvement Project ("CIP") Tracker Account.

Otter Tail is requesting the Conservation Cost Recovery Adjustment ("CCRA") factor of $0.00275 per kWh be reflected on customers' bills through the Resource Adjustment starting with bills rendered (dated) on and after October 1, 2016.

As in prior years, Otter Tail is requesting a variance to Minnesota Rule 7820.3500 (G & K), which require that the Fuel Clause Adjustment ("FCA") be stated as a separate line item on customer bills. The requested variance would allow the Company to continue to combine the FCA with the CCRA on customer bills.

Lastly, Otter Tail is requesting approval of the 2015 CIP Tracker, resulting in a year-end 2015 balance of $4,333,061.

On June 15, 1994, Otter Tail filed a petition for a CIP Adjustment to recover costs associated with CIP. On October 18, 1994, the Company filed a Motion to File Amended Petition and Accept Settlement

Agreement. On December 23, 1994, the Minnesota Public Utilities Commission ("Commission", "PUC") issued an Order Approving Settlement and Proposed CIP Adjustment for Otter Tail.[2] In this Order, the Commission approved a CIP adjustment mechanism to be applied to customers' bills on or after July 1, 1995, which the Company began implementing on July 1, 1995.

On January 27, 2010, the PUC approved a new shared savings model[3] for 2010 and indicated the new shared savings Demand Side Management ("DSM") incentive shall be in operation for the length of each utility's triennial CIP plan.

On March 30, 2012, the PUC approved the removal of the non-linear adjustment from the shared savings DSM financial incentive effective with energy savings achievements in 2012 for all natural gas and electric utilities

On April 26, 2012, the PUC approved application of the Average Savings Method ("ASM") be applied for counting behavioral project savings with a three-year minimum lifetime, effective with the 2013 program year.

On December 20, 2012, the PUC issued an order adopting additional modifications to the Shared Savings Model recommended by the Division of Energy Resources ("DER"). The PUC's order incorporated the modifications set forth below. Included are the modifications that are specific to Otter Tail:

- For utilities with triennial Conservation Improvement Programs beginning in 2014, the threshold shall be set at half of the utility's average achievements from 2008 to 2012, removing both the maximum and minimum achievements, or at 0.4 percent of retail sales, whichever is lowest. The calibration at 1.5 percent of retail sales for each utility set at $0.07 per kWh for electric utilities.
- The incentive shall be capped at 20 percent of net benefits for all utilities except for Minnesota Power.
- The existing cap of 125 percent of a utility's 1.5 percent calibration level for the electric utilities ($0.0875 per kWh).
- The costs of any mandated, non-third-party projects (e.g., Next Generation Energy Act assessment, University of Minnesota Institute for Renewable Energy, and the Environment costs) shall be excluded from the calculation of net benefits awarded at specific energy

[2] Docket No. E017/M-94-539
[3] Docket No. E,G999/CIP-08-133

savings levels (calculated before the CIP year begins) and in the post-CIP year calculations of net benefits and energy savings achieved and incentive awarded.

On January 30, 2015, Otter Tail filed its Financial Incentive Proposal Compliance Filing which included 2015 approved budgets, goals, net benefits, and resulting incentive levels with the PUC and the DER. The filing establishes the 2015 incentive at approved goal. On March 31, 2015, the DER issued a Decision approving the 2015 Compliance Filing.

II. REQUEST FOR APPROVAL

Financial Incentive Filing

Otter Tail respectfully requests that a financial incentive of $4,257,105 be approved and recovered through its CIP Tracker Account.

Details of the incentive calculation and corresponding evaluations of direct impact projects are included in the attached report under the Section entitled "FINANCIAL INCENTIVE."

Conservation Improvement Project Rider

The Company is requesting the Conservation Cost Recovery Adjustment factor of $0.00275 be reflected on customers' bills through the Resource Adjustment starting with bills rendered (dated) on and after October 1, 2016.

III. LEGAL AUTHORITY

The Petition for approval of Otter Tail's Financial Incentive Filing is submitted in accordance with Minn. Stat. § 216B.16, subd. 6c. The Conservation Improvement Project Rider is submitted in accordance with the Miscellaneous Tariff rules.

IV. REQUEST FOR VARIANCE TO MINNESOTA RULES

Otter Tail requests a variance to Minnesota Rules 7820.3500 (G & K), which require that the FCA be stated as a separate line item on customers' bills. The requested variance would allow the Company to continue to combine the FCA with the Conservation Improvement Adjustment on customer bills.

Minnesota Rules 7829.3200 authorizes the Commission to grant a variance to its rules when (1) enforcement of the rule would impose an excessive burden on the applicant, (2) the variance would not adversely affect the public interest, and (3) the variance would not conflict with standards imposed by law. Otter Tail believes the criteria for granting variances are met since the Company has been using the

combined Resource Adjustment since July 1995, and customers have become familiar with the single-line item on their bill.

The continuation of the variance would not adversely affect the public interest and may avoid customer confusion if the bill presentment was altered at this time.

And finally, there are no statutory provisions that would prohibit the variance; therefore, the requirement may be varied pursuant to Minnesota rules 7829.3200.

Once approved by the Commission, the Company will be notifying its Minnesota customers of the new CIP surcharge directly on its customers' bills. A surcharge notification will be printed on the back of each bill on the billing date following closest to October 1, 2016. In general, the notification will state "Beginning October 1, the Resource Adjustment includes a CCRA factor of $0.00275/kWh that has been applied based on the Commission's (date) order."

V. MISCELLANEOUS FILING AND REGULATORY REQUIREMENTS

A. All correspondence with respect to this filing should be sent to:

Jason Grenier
Otter Tail Power Company
215 South Cascade Street
P.O. Box 496
Fergus Falls, MN 56538-0496
(218) 739-8639 Phone
(218) 739-8941 FAX

B. The effective date of the CIP Rider is October 1, 2016. The effective date of the other filings is the date of Commission approval.

C. Otter Tail Power Company agrees that the notice and comment periods set forth in the Miscellaneous Tariff Filing rules control the time frame for processing this type of filing.

D. The reason for the filing and its impacts is explained above and in the attached report.

E. Minn. Rules Ch. 7690 contains the requirements and procedures for CIP filings. Minn. Stat. §§ 216B.2401, 216B.241, and 216B.2411 contain provisions utilities must meet in CIP. All compliance points are addressed in this section.

Statutory Requirements

2015 Minimum Spending Requirement

Minn. Stat. § 216B.241, requires that 1.5 percent of the Company's electric gross operating revenues be spent on CIP. Otter Tail's spending in relation to approved minimum spending is as follows:

Minimum Spending Requirement	$2,334,820
Approved Budget	$5,778,409
2015 Actual Spending	$6,105,445

2015 Minimum Energy Savings Goal

The Company has complied with Minn. Stat. § 216B.241 which sets the minimum energy savings goal of one percent of MWh sales, determined as a percent of 2010-2012 weather normalized sales.

Energy savings goal @ 1%	20,914,413 kWh
Approved Energy Savings Goal	31,483,317 kWh
2015 Actual Energy Savings Goal	48,711,455 kWh

2015 Low-Income Spending Requirement

The Company has complied with Minn. Stat. § 216B.241, subd. 7 requiring utilities to spend 0.2 percent of residential electric gross operating revenues on low-income programs.

Low-income minimum spend @ 0.2%	$ 98,776
Low-income approved budget	$150,000
Low-income actual spend	$148,992

2015 Research and Development 10 Percent spending cap

The Company has complied with Minn. Stat. § 216B.241, subd. 2c that limits spending on Research and Development to 10 percent of the minimum spending requirement.

Distributed Energy Resource Five Percent spending cap

The Company has complied with Minn. Stat. § 216B.2411, subd. 1(a) that allows utilities to spend up to five percent of the utility's minimum spending requirement on distributed generation project.

Lighting Use and Recycling Programs

The Company has complied with Minn. Stat. § 216B.241 that requires utilities to invest in projects that encourage the use of energy efficient lighting and reclamation and recycling of spent fluorescent and high intensity discharge lamps. Otter Tail met this requirement through its commercial and residential lighting programs.

Sustainable Buildings Certification

The Company has complied with Minn. Stat. § 216B.241, subd. 1f(c) that requires utilities to include in their CIP plans projects that facilitate professional engineering verification to qualify a building as ENERGY STAR labeled, Leadership in Energy and Environmental Design (LEED) certified, or Green Globes certified. The Company's Commercial Design Assistance project facilitates sustainable building labeling and certification.

Sustainable Building 2030 Standards

The Company has complied with Minn. Stat. § 216B.241, subd. 9(e) that requires utilities to develop conservation improvement projects to support attaining energy efficiency goals consistent with Sustainable Buildings 2030 (SB 2030) standards. The Company's Commercial Design Assistance project supports the SB 2030 standards.

Triennial Decision Requirements

The Company has complied with the following additional requirements established in the DER Deputy Commissioner's Decision on October 10, 2013:

- The Company is required to submit a Compliance Filing within 45 days of the adoption of new state energy codes analyzing the impact of the new codes on the Company's approved energy savings methodologies. The Company continues to monitor the development and implementation of new energy codes.
- Inclusion of any formal or informal modifications to its CIP in the Status Report
- Inclusion of programs that facilitate Energy Star labeling, LEED certification, or Green Globes certification of commercial buildings; and

- Offer Sustainable Buildings 2030-specific services through its existing programs.

Budget Modifications

No budget modifications were requested for 2015 CIP.

Measurement and Verification (M & V) Protocols for Large Custom CIP Projects.

On July 23, 2008, the Deputy Commissioner approved M & V Protocols for Large Custom CIP Projects. The protocols apply to custom projects that have savings greater than one GWh and are initiated after April 1, 2008.

In 2014, Otter Tail had one Custom Grant application estimated to save greater than one GWH. Otter Tail claimed the entire projected annual energy savings in 2014 with any adjustment being accounted for in 2015. Measurement and verification of the project occurred in 2015. The actual annual savings realized fell within the 10 percent threshold allowed in the M & V protocols requiring no adjustment to the 2014 savings claimed. Otter Tail provided a full report of the project to the DER for review. The DER approved the Post-M & V Plan for the project on March 2, 2016. Otter Tail submitted no additional M&V projects to the DER in 2015.

CIP Employee Related Expenses

In its November 5, 2010 Order in Docket No. E017/M-10-220, the Commission agreed with and adopted the recommendations of the DER regarding reporting of employee expenses in utility status reports. The DER's recommendation included guidelines for public utilities to report employee related expenses that have been charged as Conservation Improvement Program ("CIP") expenses. Public utilities must clearly identify all expenses in the four sections below:

- Travel expenses
- Employee meals
- Entertainment expenses, and
- Employee awards.

The DER further recommended, *"to limit the impacts on ratepayers, that these types of expenses remain a minor part of the overall annual budget or expenses, with a cap of 0.5 percent of total annual budgets or expenses."*

Otter Tail Power summarizes the Company's 2015 employee expenses as follows:

Section	Amount	Description
Travel Expense	$35,438.21	Travel expenses include mileage, rental vehicles, taxi services, and air fare for offsite meetings, customer site visits, and travel to training and conferences. All travel expenses are directly related to CIP program design, training, delivery, and promotion.
Lodging Expenses	$8,813.41	Lodging expenses include any lodging used for customer site offsite meetings, customer site visits, and lodging for training and conferences. All lodging expenses are directly related to CIP program design, training, delivery, and promotion.
Meal and Entertainment Expenses	$5,801.65	Meal and entertainment expenses include employee meals while attending offsite meetings, and meals while attending training and conferences. All meal and entertainment expenses are directly related to CIP program design, training, delivery, promotion, and review.
Employee Awards	$0.00	The CIP Tracker does not include any employee awards.
TOTAL	$50,053.27	

Total 2015 employee expenses that were included in Otter Tail's CIP Tracker were $50,053. The total employee expense is 0.82 percent of the total 2015 CIP Tracker expenses of $6,105,444.87.

Otter Tail's total employee expense exceeds the DER recommended employee expense of 0.5 percent of total CIP expenses by $19,526. Otter Tail believes the recommended cap of 0.5 percent of CIP expenses is not reasonable when considering the 153 communities spread across 25,700 square miles of Minnesota service territory. Customers are not clustered in metro areas. In addition, stakeholder meetings, Commission hearings, and regulatory consultation all typically occur in the Minneapolis/St. Paul area. Otter Tail employees frequently travel hundreds of miles a day for the development and promotion of CIP. Otter Tail respectfully asks the DER to consider these circumstances when reviewing Otter Tail's employee expenses.

Incorporation of the Average Savings Method (ASM) to account for Behavioral Savings.

On April 26, 2012, in Docket Nos. E,G999/CI-08-133 and E017/CIP-10-356, the Deputy Commissioner of the Department of Commerce made a decision in how to count energy savings from behavioral projects in CIP programs and the Shared Savings Demand-Side Management Financial Incentive calculations. The Commissioner ordered the following points that pertain to Otter Tail:

- The Average Savings Method ("ASM") proposed by Staff is approved with a three-year minimum lifetime, effective with the 2014 program year. The specific timing that utilities must apply the ASM is shown below.

Utility Group	Status Reports	Plans
MP and Otter Tail	Apply ASM beginning with 2013 status reports.	Apply ASM to 2014-2016 triennial plans.

- This Decision is effective through December 31, 2015, for all utilities except MP and OTP unless modified by the Deputy Commissioner. For MP and Otter Tail, this order is effective through December 31, 2016, unless modified by the Deputy Commissioner.

Otter Tail has implemented the Deputy Commissioner's decision for calculating the energy savings for behavioral projects. The results have been incorporated in both the energy savings results counted towards the 1.5 percent energy savings goal and the Financial Incentive calculation.

VI. CONCLUSION

Based on information provided throughout this filing, Otter Tail requests the following:

From the PUC:

- Approval of the 2015 DSM Financial Incentive, totaling $4,257,105.
- Approval of the 2015 CIP Tracker, resulting in a year-end balance of $4,333,061
- Approval to implement the CCRA factor of $0.00275/kWh reflected on customers' bills through the Resource Adjustment starting with bills rendered on and after October 1, 2016.
- Approval of a variance to Minnesota Rule 7820.3500 to allow Otter Tail to continue to combine the FCA with the Conservation Improvement Adjustment on customer bills.

From the Division of Energy Resources:

- Approval of the individual 2015 CIP Projects, Evaluations, Energy and Demand Savings
- Approval of Otter Tail's response to various DER orders as indicated in the Miscellaneous Filing and Regulatory Compliance section of this filing.

If there are any questions concerning this filing, please contact Jason Grenier at (218) 739-8639 or JGrenier@otpco.com.

Dated: April 1, 2016

Respectfully submitted,

OTTER TAIL POWER COMPANY

By: */s/ JASON GRENIER*

Jason Grenier
Manager, Market Planning
Otter Tail Power Company
P.O. Box 496
215 South Cascade Street
Fergus Falls, MN 56538-0496
(218) 739-8639

Financial Incentive

FINANCIAL INCENTIVE

Otter Tail Power Company ("Company", "Otter Tail") hereby submits this filing in compliance with the Minnesota Public Utilities Commission's ("Commission", "PUC") January 27, 2010 Order Approving Demand Side Management ("DSM") Financial Incentive Plans.[1]

The filing consists of the following items.

I. Discussion of 2015 Financial Incentive
II. Financial Incentive - Statutory Criteria
III. Cost Comparisons / Net Benefits
IV. Request for Approval

Tables referenced in this Financial Incentive are located in Appendix A and include the following information.

Table 1	Calculation of Carrying Charge – 2015 CIP Tracker
Table 2A	2015 Incentive Mechanism – Pre-Year Inputs
Table 2B	2015 Incentive Mechanism – Post-Year Results
Table 3	2015 Project Costs, Savings, and Benefits
Table 4	2015 Benefit Cost Ratios
Table 5	2015 CIP Program Status Report
Table 6	2015 CIP Program Status Report – Costs per kW & per kWh

[1] Docket No. E,G999/CI-08-133

I. DISCUSSION OF 2015 FINANCIAL INCENTIVE

The current shared-savings financial incentive plan awards Otter Tail Power Company a small share of the net benefits from investments in energy efficiency. The plan links the incentive to the utilities' performance in achieving cost-effective energy efficiency.

INCENTIVE CALCULATION

On January 27, 2010, the Minnesota PUC approved a new shared savings model[2] for 2010 and indicated the new shared savings DSM incentive shall be in operation for the length of each utility's triennial Conservation Improvement Project ("CIP") plan. Otter Tail's triennial plan is approved for 2014-2016.

On March 30, 2012, the PUC approved the removal of the non-linear adjustment from the shared savings DSM financial incentive effective with energy savings achievements in 2012 for all natural gas and electric utilities.

On April 26, 2012, the PUC approved application of the Average Savings Method ("ASM") to be applied for counting behavioral project savings with a three-year minimum lifetime, effective with the 2013 program year. Otter Tail has adopted the ASM for calculating energy savings applied to the incentive calculation.

On December 20, 2012, the PUC issued an order adopting additional modifications to the Shared Savings Model recommended by the DER. The PUC's order incorporated the modifications set forth below. Included are the modifications that are specific to Otter Tail:

- For utilities with triennial Conservation Improvement Programs beginning in 2014, the threshold shall be set at half of the utility's average achievements from 2008 to 2012, removing both the maximum and minimum achievements, or at 0.4 percent of retail sales, whichever is lowest. The calibration at 1.5 percent of retail sales for each utility set at $0.07 per kWh for electric utilities.

[2] Docket E,G999/CIP-08-133

- The incentive shall be capped at 20 percent of net benefits for all utilities except for Minnesota Power.
- The existing cap of 125 percent of a utility's 1.5 percent calibration level for the electric utilities ($0.0875 per kWh).
- The costs of any mandated, non-third-party projects (e.g., Next Generation Energy Act assessment, University of Minnesota Institute for Renewable Energy, and the Environment costs) shall be excluded from the calculation of net benefits awarded at specific energy savings levels (calculated before the CIP year begins) and in the post-CIP year calculations of net benefits and energy savings achieved and incentive awarded.

On January 30, 2015, Otter Tail filed its Financial Incentive Proposal Compliance Filing which included 2015 approved budgets, goals, net benefits, and resulting incentive levels with the Minnesota PUC and the Department of Commerce ("Department"). The filing establishes the 2015 incentive at approved goal. On March 31, 2015, the Department issued a Decision approving the 2015 Compliance Filing.

As part of this April 1, 2016, filing under section II, the Company is providing the 2015 proposed incentive. The following steps are used in the incentive calculation:

1. The 2015 incentive is calculated using the model provided by the Department and detailed in Appendix A, Tables 2A and 2B. The kWh earnings threshold is set at 50 percent of the utility's average energy savings over the years 2008-2012, removing both the maximum and minimum achievements, or at energy savings equal to 0.4 percent of retail sales, whichever is lower.
2. The resulting 2015 energy saving model is calibrated at 20,914,413 kWh, which is one percent of the Company's average three-year, weather normalized retail sales. This goal is used in the calculation of the incentive only. Otter Tail's 2015 CIP approved energy goal is 31,483,317 kWh as shown in Appendix A, Table 2, based on the DER's May 20, 2014 approval of Otter Tail's 2014–2016 CIP plan.

3. As outlined in Appendix A, Table 2A, the incentive calibration establishes that the Company will receive a linear multiplier of 0.00807 for every 0.1 percent of sales saved above the zero point. Appendix A, Table 2B provides the results of the financial incentive calculation, showing the Company achieved roughly 20.05 steps of "0.1 percent of sales saved" above the zero point. (20.26 x .00807 multiplier = 16.35 percent multiplier of 2015 net benefits.)
4. At year-end, the utility calculates the net benefits for the CIP projects based on actual participation and costs. The net benefits are the avoided costs less the total CIP costs, including both direct and indirect projects.
5. Appendix A, Table 3 lists the 2015 CIP Projects, each as proposed and approved by the Department, and each with actual 2015 results. Also listed are total project costs, resulting benefits, and net benefits for each project and as a total CIP Program.
6. **Actual energy savings was 48,652,628 kWh, excluding Made in Minnesota allocated savings, or 2.33 percent of historic average retail sales, and total net benefits are calculated to be $38,318,747, excluding assessments.** The 2015 results for energy savings, costs, and net benefits are entered in the post-year financial incentive tool as shown in Appendix A, Table 2B.
7. Appendix A, Table 4 outlines the benefit/cost ratios for each 2015 CIP Project. Figures are listed for each project "as filed" as part of the 2014-2016 CIP Triennial Filing and "as actual" reflecting 2015 actual participation, savings, and costs.
8. As detailed in Appendix A, Table 2B and based on the corresponding percentage of net benefits (16.35%), the total incentive amount requested is **$4,257,105.**

II. FINANCIAL INCENTIVE - STATUTORY CRITERIA

Minn. Stat. §216B.16, subd. 6c(b), sets forth four statutory criteria with respect to approval by the Minnesota Public Utilities Commission of utility financial incentive plans for energy conservation improvements. In approving incentive plans, the Commission shall consider:

(1) whether the plan is likely to increase utility investments in cost-effective energy

conservation.

(2) whether the plan is compatible with the interest of utility ratepayers and other interested parties.

(3) whether the plan links the incentive to the utility's performance in achieving cost-effective conservation.

(4) whether the plan is in conflict with other provisions of this chapter.

Consistent with the Commission's January 27, 2010 Order Approving Demand Side Management Financial Incentive Plans in Docket No. E,G999/CI-08-133, the following discussion describes how Otter Tail's proposed 2015 Demand Side Management financial incentive in the present docket is consistent with each of these statutory criteria.

Otter Tail's financial incentive mechanism is consistent with the considerations set forth by the Commission as follows:

1. Increase investments: The incentive mechanism encourages increased utility investment in cost-effective conservation, recognizing higher incentives for greater energy savings. The increasing increments of the incentive motivate utilities to exceed savings achievable at statutory spending levels. The current incentive focuses on energy savings goals, rather than spending.
2. Interest of ratepayers and others: The current mechanism is in the interest of ratepayers because it awards utilities a small percentage of net benefits achieved. The mechanism does not award the incentives for simply complying with statutory spending, but encourages additional cost-effective energy-efficiency investment, which is in the ratepayer's interest.
3. Links incentive to performance: The current incentive is a shared savings mechanism that awards utilities a share of the total utility benefits from investments in energy efficiency. There is a direct link between the amount of the incentive and the utility's performance of achieving cost-effective efficiency. As cost-effectiveness increases, net benefits increase, and thus, the incentive increases. Therefore, the mechanism is directly linked to cost-effective performance.
4. Conflict with other provisions: Otter Tail does not believe the current incentive

conflicts with other provisions of law. It does not result in unjust or unreasonable rates since the mechanism awards for cost effective energy efficiency at a cost less than supply side options.

Otter Tail's financial incentive mechanism is consistent with the Deputy Commissioner's April 26, 2012, decision in Docket Nos. E,G999/CI-08-133 and E017/CIP-10-356, on implementing the Average Savings Method in counting savings from Behavioral projects.

III. COST COMPARISONS / NET BENEFITS

In 2015, Otter Tail's average first year cost per kWh saved was 13 cents, which is less than the six-year average of 15 cents. As noted in the Table 1, the average first year costs per kWh range have remained relatively consistent.

Table 1: History of Otter Tail's CIP Achievements, Tracker, and Incentives (2010-2015)

	2010	2011	2012	2013	2014	2015
DSM Financial Incentive	$3,531,538	$2,608,094	$2,681,575	$4,026,600	$2,957,972	$4,257,105
CIP Expenditures	$4,984,050	$4,344,581	$4,816,994	$5,259,625	$5,188,931	$6,105,445
Achieved Energy Savings (kWh)	31,792,750	27,957,635	30,793,654	35,792,002	33,805,392	48,204,254
Average Cost per kWh Saved	$0.16	$0.16	$0.16	$0.15	$0.15	$0.13

NET BENEFITS

The definition of "net benefits" used in the financial incentive calculation is the total utility benefits less the total utility costs for the entire CIP portfolio for a single year. These figures are derived from a single year (2015) benefit/cost analysis using DSMore™ software. The utility benefits are aggregated for the lifetime of all CIP energy efficiency measures, discounted back to 2015 dollars using the utility discount rate of 8.61 percent for the utility test and 2.68 percent for the societal test, these rates were approved in the 2014-2016 CIP filing.

As shown in Table 3 of Appendix A, the estimated net benefits for the 2015 Proposed CIP are $22,548,140. Additional details of the total costs and the total benefits from

benefit/cost analysis of the 2015 Proposed CIP portfolio include:

Program Costs - Proposed 2015**	
Delivery/Implementation/Administration Costs	3,090,232
Incentives	2,688,177
Total Costs	5,778,409
Program Benefits - Proposed 2015*	
Avoided T&D Electric	7,324,169
Cost-Based Avoided Electric Production	14,048,652
Cost-Based Avoided Electric Capacity	6,902,645
Cost-Based Avoided Ancillary	51,083
Total Benefits	28,326,549
Net Benefits - Proposed 2015	22,548,140
Benefit/Cost Results - Proposed 2015	4.90

*Benefits are based on lifetime benefits, discounted back to 2015 dollars using 8.61 percent utility discount rate.
**Costs include assessments.

As shown in Table 3 of Appendix A, the actual net benefits of $38,079,065 for 2015 CIP are higher than the proposed net benefits. Additional details of the total costs and the total benefits from the DSMore analysis of the 2015 Actual CIP portfolio include:

Program Costs - Actual 2015**	
Delivery/Implementation/Administration Costs	2,825,815
Incentives	3,279,630
Total Costs	6,105,445
Program Benefits - Actual 2015*	
Avoided T&D Electric	9,713,588
Cost-Based Avoided Electric Production	24,092,552
Cost-Based Avoided Electric Capacity	10,292,890
Cost-Based Avoided Ancillary	85,480
Total Benefits	44,184,510
Net Benefits - Actual 2015	38,079,065
Benefit/Cost Results - Actual 2015	7.24

*Benefits are based on lifetime benefits, discounted back to 2015 dollars using 8.61 percent utility discount rate.
**Costs include assessments.

CIP Cost Breakdown - 2015				
	Proposed Costs		Actual Costs	
Delivery	$3,090,232	53%	$2,825,815	46%
Incentives	$2,688,177	47%	$3,279,630	54%
Budget Modification	$0	0%	$0	0%
Total CIP Costs	$5,778,409	100%	$6,105,445	100%

IV. REQUEST FOR APPROVAL

Financial Incentive Filing

- Otter Tail respectfully requests that an incentive of $4,257,105 be recoverable through its CIP Tracker Account;
- Otter Tail is requesting that the Conservation Cost Recovery Adjustment factor based on the Commission's determination of appropriate calculation methodology be reflected on customers' bills through the Resource Adjustment starting with bills rendered (dated) on and after October 1, 2016.
- Otter Tail is requesting a variance to Minnesota Rules to allow the Company to continue to combine the Fuel Clause Adjustment with the Conservation Improvement Adjustment on customer bills.

If there are any questions concerning this filing, please contact Jason Grenier at (218)739-8639 or JGrenier@otpco.com.

Dated: April 1, 2016

Respectfully submitted,

OTTER TAIL POWER COMPANY

By: */s/ JASON GRENIER*

Jason Grenier, Market Planning
Otter Tail Power Company
P.O. Box 496
215 South Cascade Street
Fergus Falls, MN 56538-0496
(218) 739-8639

Status Report

Status Report

Table of Contents

STATUS REPORT - 2015 CIP PROJECTS

The 2015 Conservation Improvement Project (CIP) Status Report has been combined with the 2015 Financial Incentive Filing, produced annually on April 1. The Status Report covers all 2015 programs, including direct impact, indirect impact, and miscellaneous programs. Participation, program costs, and energy and demand savings for all programs are outlined in Appendix A, Table 5.

Direct Impact Projects

Residential

- Air Conditioning Control
- Air Source Heat Pumps
- Appliance Recycling
- Be Bright
- Electronically Commutated Motors
- Energy Feedback Program
- Geothermal Heat Pumps
- Home Insulation
- Home Transformer
- School Kits
- Water Heater Store & Save

Commercial

- Adjustable Speed Drives
- Air Conditioning Control
- Air Source Heat Pumps
- Commercial Design Assistance
- Geothermal Heat Pumps
- Grants
- Industrial Focused Efficiency
- Lighting – Retrofits
- Lighting – New Construction
- Motors
- PC Power Supply
- Recommissioning
- Refrigeration

Low-Income

- House Therapy

Indirect Impact Projects / Regulatory Requirements

- Advertising & Education
- Compressed Air Audits
- Financing
- Implementation & Training
- Program Development
- PUC Assessments / Regulatory (NGEA) Assessments
- Made in Minnesota Solar Assessment

Miscellaneous / Inactive Program Costs

- Accounting Adjustments
- Town Energy Challenge Pilot
- Otter Tail Power Company CIP Projects
- Carrying Charges

DIRECT IMPACT – RESIDENTIAL

AIR CONDITIONING CONTROL

The CoolSavings air conditioning control program targets residential customers with central air conditioning. Customers are encouraged to enroll in the program and receive a $7/month credit for each of the four summer months (June-September).

Otter Tail Power Company (the Company, Otter Tail) promotes air conditioning control using various resources listed below:

- Bill inserts sent to customers in January, March, June, and December 2015.
- Television and radio campaign conducted in conjunction with the Advertising and Education program.
- Customer care booklet that is sent to all new customers.
- Hero-spots on the Company website during April and May.
- Pocket calendar and products and services guide.
- Presentations and literature distribution at workshops.
- Annual and monthly service rep training.
- Agency training for House Therapy contractors.
- Brochures available in customer service center lobbies and by request.
- Inclusion as appropriate on Home Energy Reports mailed to customers through the Energy Feedback program.
- Program, rate, and rebate page described within the Company's web site.

In 2015, Otter Tail controlled air conditioning 24 days totaling 39 hours and 16 minutes. This control time is within the 300-hour control limit in the air conditioning rider.

This Program has been approved for continuation in the 2016 CIP.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Air Conditioning Control (R)	**Actual**	**Proposed**	**% of Goal**
Participation	162*	150	108%
Budget $	$65,889	$81,000	81%

*On January 13, 2016, Otter Tail received approval from the Minnesota Department of Commerce - Division of Energy Resources to include customers on its off-peak cycling rates as part of this program. Customers on an off-peak cycling service have the same technology, are controlled the same, and contribute to the same kWh savings as those enrolled in Air Conditioning Control. These customers receive a lower energy rate in lieu of the $7 monthly credit.

Evaluation Methodology

Energy savings for this program are consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

ENERGY AND DEMAND RESULTS – 2015	
Air Conditioning Control (R)	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	7,817
Demand Savings – kW	115.089

AIR SOURCE HEAT PUMPS
(Residential)

The Air Source Heat Pump ("ASHP") Program targets residential customers currently using or considering the installation of less efficient resistance electric heating and cooling systems by offering rebates for high-efficiency air source heat pumps. For 2015, Otter Tail again relied on Energy Star qualifications as the minimum equipment efficiency requirement for this program. This program is included for continuation in the 2016 CIP.

Energy Star – ASHP	HSPF	SEER	EER
Split System	> or = 8.2	> or = 14.5	12.0
Package Terminal			> or = 11.0

Otter Tail Power Company promotes energy efficient heat pumps using various resources listed below:

- *Taking care of business* commercial CIP brochure.
- *Guide to programs and services* sent to contractors.
- Brochures available in customer service center lobbies and by request.
- Print advertisement to regional home owners in *Lake & Home Magazine.*
- Presentations and literature distribution at Builder and Electrical Contractor workshops.
- Bill messages included on all customer statements.
- Bill inserts about heat pump efficiency, financing, and rebates.
- Training material covered with service representatives in annual and monthly training.
- Program, rate, and rebate pages described within the Company's web site.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Air Source Heat Pumps (R)	**Actual**	**Proposed**	**% of Goal**
Participation	123	137	90%
Budget $	$172,951	$122,000	142%

To increase 2015 participation, the Company increased rebates for ASHP from $240/ton to $400/ton. This increased our participation from 72 percent of goal in 2014 to 90 percent in 2015. The Company began offering 1.9 percent financing in addition to rebates mid-year and

anticipates the increased rebate amount and financing will drive customer participation in 2016.

Evaluation Methodology

An engineering analysis was used to determine energy savings for each air source heat pump system installed. The engineering analysis is consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

For 2015, Otter Tail recognizes 9,356 kilowatt-hours of energy savings at the generator, based on an actual installed average size residential air source unit of greater than 2.5 tons, including both summer cooling and winter shoulder-heating savings. Summer coincident demand savings are approximately 0.08 kW per unit at the generator.

In compliance with the November 5, 2010 Final Decision in the 2011-2013 Triennial filing[1], customers may not have natural gas as their primary heat source to qualify for an air source heat pump CIP rebate. Energy savings and rebates from these projects were not included in the 2015 CIP.

ENERGY AND DEMAND RESULTS – 2015	
Air Source Heat Pumps (R)	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	1,150,790
Demand Savings – kW	9.797

APPLIANCE RECYCLING

The Appliance Recycling Program offers residential customers an incentive to recycle inefficient, but operating refrigerators and freezers.

Otter Tail Power Company promotes appliance recycling using various resources.

- Bill inserts targeted at residential customers in May and July.
- Radio campaign on local stations.
- Program information, instructions about how to schedule appliance pickup, hero ads placed on the Company's web page.
- Inclusion as appropriate on Home Energy Reports mailed to customers through the Energy Feedback program.
- Inserts available in customer service center lobbies and by request.

[1] Otter Tail Power Company's 2011-13 Triennial CIP Filing, Docket No. E017/CIP-10-356

Otter Tail provides customers a $50/unit incentive to recycle their old, operating refrigerators and freezers, at no cost to the customer.

Appliance Type	Units Recycled
Refrigerators	312
Freezers	97
Total Units Recycled	409

This Program is included in the 2016 CIP.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Appliance Recycling	**Actual**	**Proposed**	**% of Goal**
Participation	409	545	75%
Budget $	$84,472	$117,000	72%

Evaluation Methodology

The Company uses figures from the Technical Reference Manual ("TRM") for calculating savings for the removal and recycling of second household refrigerators and freezers.

Energy Savings & Adjustments

ENERGY AND DEMAND RESULTS – 2015	
Appliance Recycling	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	425,693
Demand Savings – kW	60.754

BE BRIGHT

The Be Bright program aims to increase the market share for ENERGY STAR qualified compact fluorescent lamps ("CFLs") and LEDs, while educating both consumers and retailers about the benefits of energy efficient lighting. Promotion of LEDs was expanded, with limited penetration. LED promotions will be expanded in 2016.

Through the services of Wisconsin Energy Conservation Corporation ("WECC"), Otter Tail offers the Be Bright campaign with the following objectives:

- Leverage manufacturer dollars for instant consumer rebate incentives of up to $2.50 per CFL and $10 per LED,
- Leverage advertising dollars for retailer,

- Highlight Otter Tail's sponsorship of the promotions through press releases, in store displays, and special public relations events and CFL/LED bulb sales, and;
- Implement the program with seamless coordination with other Be Bright promotions throughout Minnesota and the Midwest.

There were approximately 12 retailers in our service territory who participated in the 2015 campaign, contributing to sales of approximately 119,000 bulbs. This is a substantial increase in bulb sales when compared to 2014.

Otter Tail promotes the Be Bright Program using various resources listed below:

- Bill inserts.
- Radio spots.
- The Company's web site.
- On-site promotion at the location of a participating retailer.
- Inclusion as appropriate on Home Energy Reports mailed to customers through the Energy Feedback program.
- Brochures available in customer service center lobbies and by request.

In 2015, the Company continued to offer CFLs to non-profit organizations to sell to our customers as a fundraising program. In 2014, the program was offered initially in the southern portion of our service area and expanded to our central service area late in the year. In 2015, we continued the offer in the central area and then expanded to our northern service area. Interested eligible groups and organizations were recruited. Each participating organization signed a contract and agreed to sell bulbs only to Otter Tail customers and to use an approved signature sheet to collect the names and location of those buying the bulbs.

To reconcile the bulb disbursement the organizations returned signature sheets and a count of any remaining bulb inventories. There were 35 organizations that participated and approximately 10,700 bulbs sold.

In 2016, we will continue the non-profit fundraiser promotion of CFLs throughout the service area and will consider an option to offer LEDs as well.

We promoted the non-profit part of the program through:

- Radio announcements.
- Mailers sent to schools in the territory eligible for the program.
- Information cards placed in our Customer Service Center and distributed by local service reps.
- Promotion through OTP employees.

The Be Bright Program has been approved for continuation in the 2016 CIP.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Be Bright	**Actual**	**Proposed**	**% of Goal**
Participation	129,607	99,000	131%
Budget $	$249,015	$356,000	70%

Evaluation Methodology

Energy savings for this program are consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

ENERGY AND DEMAND RESULTS – 2015	
Be Bright	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	4,547,734
Demand Savings – kW	531.352

ELECTRONICALLY COMMUTATED MOTORS

The Electronically Commutated Motors (ECM) program encourages customers to install an efficient ECM as a part of a new heating system rather than selecting a system with a lower efficiency motor option. ECMs use significantly less electricity to deliver warm air from the furnace and cool air from the central air conditioner throughout a home. They can result in up to 75 percent less energy used than standard fan motors.

ECM efficiency was marketed to customers and contractors through:

- Bill inserts targeted at residential customers.
- *Guide to programs and services* sent to contractors.
- Program information on the home page at www.otpco.com.
- Training material covered with service representatives in annual and monthly training.

Otter Tail provides customers a $100/unit rebate when contractor installed.

The ECM Program has been approved for continuation in the 2016 CIP.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Electronically Commutated Motors	**Actual**	**Proposed**	**% of Goal**
Participation	111	120	93%
Budget $	$20,451	$36,000	57%

Evaluation Methodology

Energy savings for this program are consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

ENERGY AND DEMAND RESULTS – 2015	
Electronically Commutated Motors	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	86,973
Demand Savings – kW	7.850

ENERGY FEEDBACK

The Energy Feedback program consists of two program components: the Aclara Technologies Energy Prism Home Energy Analyzer ("HEA") and an Opower Home Energy Report project ("HER"). These behavior-based energy savings programs aim to maximize energy savings achieved through behavior changes that result from providing customers comparative energy use information.

The HEA component is an opt-in program that provides feedback to residential users through an online interface. The HER project is an opt-out program based on direct mail delivery of up to 6 comparative energy usage reports to participating Minnesota residential customers each year.

Home Energy Analyzer- HEA enables users to understand their individual energy use through online presentation of 25 months of billing history, analytic tools, and calculators. It includes a "My Energy" portal that includes a home energy profile, into which details about the age and size of home, number and type of appliances in use, insulation and window features, heating system, and energy consumption are compiled and included in energy analysis. Participants that complete the energy profile are presented with performance benchmarks, comparing their energy use to similar homes. Customers can set their money savings goal and select an energy savings theme that reflects their approach to energy savings and are presented options that will help them achieve their desired energy savings goal.

Because it is an opt-in tool total user participation in HEA is lower than HER but consists of a more highly motivated group of customers who have chosen to use the tool.

Minnesota residential customers were encouraged to participate in use of the HEA tool in the following ways:

- Company website including hero-spot ads presented on the home page for three months, a program page, and a demo tool within the website.
- Messaging presented on service statements during one billing period.
- Bill inserts sent twice to all residential customers.
- Customer service guide sent to all new customers.
- Online services brochure sent to all new customers.
- *Guide to programs and services* sent to contractors.
- Lobby signs in company office entries displayed for two months
- A billboard display.
- A web campaign through online media outlets.

Opower Home Energy Reports – The HER program delivers comparative energy usage information to selected Minnesota residential customers. Program participants received up to six home energy reports during 2015.

Each Home Energy Report contained various personalized components, including:

- Comparisons of recent energy use to a group of 100 similar homes.
- Comparison of recent energy use to current use, tracking changes over time.
- Targeted energy efficiency tips selected based on the home's energy use pattern and season, and household heating type.

Participation in the program is defined as any Minnesota residential customer that received one or more personalized Home Energy Report during 2015 or who received reports in a previous year, has an active electric service account, and has not opted out of the program.

In an effort to permit as many Otter Tail Power Company customers from benefiting from the HER program offering, the Company sought approval to disband use of a control group and incorporate as many eligible customers into the program as possible in 2015. The Minnesota Department of Commerce - Division of Energy Resources (DER) approved this request on June 9, 2015. As a result, approximately 9,500 additional residential customers were added as a refill and expansion of the program. Of those approximately 9,423 received reports, 8,613 remained active at year-end. This group helped the company achieve the highest number of annual participants for a year with 35,626 customers receiving reports during the year.

PARTICIPATION AND BUDGET – 2015			
Energy Feedback	**Actual**	**Proposed**	**% of Goal**
Aclara HEA Participation	2,995	1,500	200%
Opower HER Participation	35,626*	31,000	115%
Budget $	$413,946	$370,600	112%

*In 2015, Otter Tail found one duplicate account within Opower's data. Otter Tail has excluded the duplicate account in all evaluations and tables

Evaluation Methodology – Home Energy Analyzer

Annually since 2010, Otter Tail contracted with Integral Analytics to perform an evaluation of the Bill Analyzer project. The methodology used in 2010 was approved by DER staff. The evaluation relied upon a statistical analysis of the actual billed electricity consumption before and after participation in the HEA project.

The evaluation found that savings varied by the component or level of the HEA tool the participant used. In addition to calculating the savings by component or level, Integral Analytics again calculated an average overall savings calculation.

In 2015, the evaluation demonstrated an average 664 kWh per year as measured at the meter, based on 2,995 participants.

In addition to analysis of post-participation usage compared to the customer's own pre-participation usage, Integral Analytics completed an analysis of the participant group against a randomly selected control group.

The HEA evaluation is included in Appendix B-Third Party Evaluations.

Evaluation Methodology – Opower HER

The 2015 evaluation of energy savings for the Opower HER program was completed by Opower using integrated data from a variety of sources that allow for detailed analysis of energy savings results. The evaluation is included in Appendix B - Third Party Evaluations. The data included:

1. **Consumption data:** Otter Tail provided weekly updates of monthly consumption data for all households in the program, including historical consumption information.

2. **Parcel data:** Opower received data, to the extent available from a third-party vendor, about household parcels, including house size, age and value, heating and cooling type, as well as pool and hot tub data. Parcel data elements for age and value are static. Other data elements may be updated at the customer's request.

3. **Demographic data:** Opower received demographic data, to the extent available from a third-party vendor, about participants, including household income, age of occupant(s), number of occupants, and an owner/renter indicator. The number of occupants is a field is available for update at customer's request.

Opower's analysis of the Home Energy Reports program relies upon a fixed-effects regression model indicating that this statistical methodology is standard procedure for the analysis of controlled experiments, is a well-accepted practice within the energy efficiency program measurement and verification community, and closely resembles the "Large Scale Data Analysis" techniques described in the Model Energy Efficiency Program Impact Evaluation Guide from the National Action Plan on Energy Efficiency.

As of August 2015, the control group associated with the 2011 pilot wave was converted to recipient status, and began receiving reports as participants in the program. Opower began reporting all savings for the program under the Modeled Savings Protocol. This method was approved by the DER in October 2010.

Energy Savings & Adjustments

Overall adjusted energy savings associated with the HER program in 2015 totaled 5,897 MWh, equal to an average 166 kWh per participant household.

Overall adjusted energy savings associated with the HEA program in 2015 totaled 1,989 MWh, equal to an average 664 kWh per participant household for 2015.

In accordance with the Decision of the DER, these full savings are used in calculating the net benefits and cost effectiveness of the Energy Feedback program. For 2015, the energy savings associated with behavioral change has been reduced by two-thirds in the financial incentive calculation, based on the Decision[2] by the Deputy Commissioner of the DER.

ENERGY AND DEMAND RESULTS – 2015	
Aclara Home Energy Analyzer	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	1,988,680
Demand Savings – kW	400,079

ENERGY AND DEMAND RESULTS – 2015	
Opower Home Energy Reports	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	6,347,531
Demand Savings – kW	1,186.348

ENERGY AND DEMAND RESULTS – 2015	
Energy Feedback Combined Results	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	8,488,146
Demand Savings – kW	1,586.428

GEOTHERMAL HEAT PUMPS
(Residential)

The Geothermal Heat Pump Program capitalizes on a renewable technology and targets residential customers currently using or considering the installation of less efficient resistance

[2] April 26, 2012, Docket Nos. E,G999/CI-08-133, E017/CIP-10-356

electric heating and cooling systems by offering rebates for high-efficiency geothermal heat pumps. During 2015, units were required to meet an Energy Star qualification. This Program is included for continuation in the 2016 CIP.

Type	COP	
	Open	Closed
Water to air	4.1	3.6
Water to water	3.5	3.1
Direct exchange	3.6	

Otter Tail promotes energy efficient heat pumps using the following resources:

- *Taking care of business* commercial CIP brochure.
- *Guide to programs and services* available to contractors.
- Brochures available in customer service center lobbies and by request.
- Presentations and literature distribution at Builder and Electrical Workshops.
- Bill messages included on customer statements.
- Bill inserts about heat pump efficiency, financing, and rebates.
- Training material covered with service representatives in annual and monthly training.
- Program, rate, and rebate pages described within the Company's web site.

The emphasis on energy efficiency coupled with federal incentives has helped drive participation in geothermal heat pump installations.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Geothermal Heat Pumps (R)	**Actual**	**Proposed**	**% of Goal**
Participation	34	43	79%
Budget $	$174,094	$144,000	121%

To promote participation, Otter Tail Power Company increased rebates in 2015 for geothermal heat pumps from $600/ton to $800/ton. The Company offered 1.9 percent financing in addition to rebates beginning in mid-2015 and anticipates this combined offer will drive customer participation in 2016.

Although we did not see an increase in participation, we will continue to offer the increased rebate amount as well as financing in an effort to drive customers to install an efficient geothermal heat pump.

Evaluation Methodology

An engineering analysis was used to determine energy savings for each geothermal heat pump system installed. The engineering analysis is consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

Otter Tail recognizes 24,789 kilowatt-hours of energy savings at the generator, based on an actual installed average size residential geothermal heat pump unit of 5.2 tons, including both summer cooling and winter heating savings. Demand savings are approximately 0.52 kW for summer coincident peak savings per unit at the generator.

ENERGY AND DEMAND RESULTS – 2015	
Geothermal Heat Pumps (R)	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	842,842
Demand Savings – kW	17.567

In compliance with the November 5, 2010 Final Decision in the 2011-2013 Triennial filing[3], customers may not have natural gas as their primary heat source to qualify for a geothermal heat pump CIP rebate. Energy savings and rebates from these projects were not included in the 2015 CIP.

HOME INSULATION

The Home Insulation Program targets residential customers with primary electric heat by offering rebates for contractor-installed weatherization and insulation measures.

Otter Tail promoted the Insulation Program through:

- Bill inserts sent to all residential customers in the month of August.
- Radio campaign during September.
- Web Campaign during September.
- Program information was included as part of the Company's web site.
- Rebate materials and program information was shared in addition to literature distribution at the Builder and Electrical workshops. Training material was presented to service reps and Idea Center personnel.
- Brochures available in customer service center lobbies and by request.
- Inclusion as appropriate on Home Energy Reports mailed to customers through the Energy Feedback program.

This Program is included for continuation in the 2016 CIP.

[3] Otter Tail Power Company's 2011-13 Triennial CIP Filing, Docket No. E017/CIP-10-356

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Home Insulation	**Actual**	**Proposed**	**% of Goal**
Participation	21	55	38%
Budget $	$27,119	$57,000	48%

We will continue to offer increased incentives and seek additional marketing channels to drive increased participation in 2016.

Evaluation Methodology

Otter Tail collected information on the measures completed by the customers, including weatherization, attic and sealing insulation, and/or wall insulation, square footage of area being insulated and the pre and post insulation values.

Energy savings for this program are consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

ENERGY AND DEMAND RESULTS – 2015	
Home Insulation	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	80,749
Demand Savings – kW	0.000

HOME TRANSFORMER

The Home Transformer program aims to identify and assist customers in reducing energy loss and waste in their home and to save energy and money through efficiency improvements.

Through the program, selected high use and/or electric heating customers were offered an energy audit and installations of select energy-efficiency products. To gage customer commitment to follow through on audit recommendations, they were charged a nominal fee of $89 for a bundle of products and services that included:

- An energy audit, a blower door test, and thermal imaging analysis.
- A detailed report on audit findings, including recommendations for energy saving measures (recommendations included estimated costs, annual savings, and simple payback).
- Efficiency products, installation demonstration, and education.
    - Electric measures – CFLs of various wattages, and LED bulb, and engine block heater timer.

- Heating and cooling measures – exterior door sweep, outlet gaskets, caulking, weather-stripping for windows.
- Hot water measures – pipe insulation, low-flow showerheads and faucet aerators, temperature assessment and setback of water heater.

A community action agency was hired to deliver the home energy audits and complete the direct installs. High energy use customers and those on controlled rates were targeted as most of them could have primary electric heat and electric water heating.

Promotion materials were revised in an effort to attract customers to participate. It has remained difficult to capture customer interest in this program. In 2016, we will expand to our northern service territory so all qualifying customers will have access to the program.

The program ended the year with just 42 participants completing 670 measures.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Home Transformer	**Actual**	**Proposed**	**% of Goal**
Participation	670	1,575	43%
Budget $	$21,619	$61,000	35%

Evaluation Methodology

Energy savings for this program are consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

ENERGY AND DEMAND RESULTS – 2015	
Home Transformer	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	113,358
Demand Savings – kW	6.043

SCHOOL KITS

The School Kit program offered energy efficient items and educational materials to fifth through eighth grade students at two area schools. Students took home the kit to share with their parents. The families were asked to install the items contained in the kit and to report back the actions they had taken. Otter Tail joined forces with Great Plains Natural Gas and Lake Region Electric Cooperative (Great River Energy) in order to ensure that all students in the school could be served.

The Company purchased the kits through competitive bids. The kits included: an energy saving shower head and faucet aerators, a car timer, three 13-Watt and three 23-Watt CFLs, two 9-Watt LED bulbs along with information regarding the products and installation instructions. The kits were delivered to all students in 12 classrooms one day and nine classrooms another day with a short Company presentation on the products, why they were included in the kit, and why conservation is important.

Parents and students filled out a survey to gather details on home energy providers, fuels, and installation of the kit items with responses due back within one week. Survey results were used to verify installations and determine which utility would claim the savings for each item in the kit. As an incentive for the students, the classroom with the highest percentage of returned surveys was awarded a pizza party. The pizza party was again a terrific motivator as 100 percent of surveys were returned by one class. All classes had high return rates, and the teachers, principal, and students all seem to appreciate the program.

No promotion outside of the school was done for this program. The program had 257 students in Otter Tail's territory participate and complete 2,913 measures.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
School Kits	**Actual**	**Proposed**	**% of Goal**
Participation	2,913	1,275	228%
Budget $	$19,684	$25,000	79%

Evaluation Methodology

Energy and demand savings for this program are consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

ENERGY AND DEMAND RESULTS – 2015	
School Kits	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	240,090
Demand Savings – kW	13.131

WATER HEATING STORE & SAVE
(Residential)

Controlled water heating storage is one of Otter Tail's largest residential direct load management programs. The program gives participating customers a discounted rate or a bill credit in

exchange for the customer allowing the Company to reduce their water heating energy use during peak and high energy price periods. During a control event, water heaters are interrupted entirely for the duration of the control period, which can occur at any time of the year.

Water heaters were controlled approximately 88.5 hours in 2015 over approximately 49 different days.

Promotion of the program was done through bill inserts, bill messages, return envelope spots, through the Company's website, an ad in the local Lake and Home magazine, customer service representatives, an article in the customer newsletter, personal contacts, and the contractor guide to program services.

Effort was made to inform customers about technology changes for large capacity water heaters and to introduce customers to grid enabled water heater options.

Participation & Budget

Otter Tail initially filed the Water Heating Store & Save program with 100 percent residential participation. In 2015, the program has a ratio of 94 percent residential and 6 percent commercial. Otter Tail has included participation data for both classes in this section of the Status Report.

PARTICIPATION AND BUDGET – 2015			
Water Heating Control	**Actual**	**Proposed**	**% of Goal**
Participation	16,165	8,622	187%
Budget $	$11,491	$40,000	29%

Evaluation Methodology

Energy savings for this program are consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

ENERGY AND DEMAND RESULTS – 2015	
Water Heating Control (R&C)	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	401,286
Demand Savings – kW	3,706.201

DIRECT IMPACT – COMMERCIAL

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 are one method of modifying or controlling motor operation that is a proven option for improving performance and efficiency in drive systems.

Otter Tail Power Company promotes adjustable speed drives using various resources.

- *Taking care of business* commercial CIP brochure.
- *Guide to programs and services* available to contractors.
- Promotions and technical discussions at Builder and Electrical workshops for contractors.
- Directly to potential program participants in the educational sector at the annual Minnesota School Board Association conference.
- Bill inserts promoting drive power system efficiency to commercial and industrial customers.
- Program, technology, and rebate information available on the Company's web site at www.otpco.com.
- Through Otter Tail's Commercial Advertising and Education program targeting agricultural producers and processors.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Adjustable Speed Drives	**Actual**	**Proposed**	**% of Goal**
Participation	365	135	270%
Budget $	$736,720	$340,400	216%

Otter Tail is pleased with 2015 participation exceeding goal. The Company attributes program participation to customers in the industrial sector developing a better understanding of the energy efficiency benefits of adjustable speed drives in industrial motor systems. The Adjustable Speed Drives program has created expectations of rebate incentives for customers incorporating adjustable speed drive technology into new equipment specifications and plant expansions.

Evaluation Methodology

Engineering estimates are used to determine energy savings from each adjustable speed drive system installed. Energy and demand savings for this program are consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

The Company utilizes engineering calculations that are based on methodologies developed by

the Electric Power Research Institute for fan- and pump-based adjustable speed drive systems. Hours of operation and associated loading factors are provided by the customer as inputs for the energy and demand savings calculations.

ENERGY AND DEMAND RESULTS – 2015	
Adjustable Speed Drives	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	14,374,741
Demand Savings – kW	2,135.579

Numerous adjustable speed drives projects completed by customers in the industrial sector contributed to the program exceeding energy and demand savings goals.

AIR CONDITIONING CONTROL

The CoolSavings air conditioning control program targets small commercial customers in MN with central air conditioning systems. Customers are encouraged to enroll in the program and receive a bill credit of $5 per ton of connected load for each summer month (June-September).

Otter Tail Power Company promotes the program through the following resources:

- Personal business contacts.
- *Taking care of business* commercial CIP brochure.
- *Guide to programs and services* available to contractors.
- Program, technology, and rebate information available on the Company's web site.

Two customers enrolled in the program in 2015, for a total of six air conditioning units averaging 6.70 tons per unit.

In 2015, Otter Tail controlled air conditioning 24 days, totaling 39 hours and 16 minutes. This control time is within the 300-hour control limit in the air conditioning rider.

PARTICIPATION AND BUDGET – 2015			
Air Conditioning Control (C)	**Actual**	**Proposed**	**% of Goal**
Participation	6	25	24%
Budget $	$15,482	$36,000	43%

<u>Evaluation Methodology</u>

Load data recorders are being installed at each of the locations enrolled. Otter Tail is collecting the data from these recorders for EM & V purposes. The results of the evaluation will be used in Otter Tail's upcoming triennial filing for 2017-2019. Current energy and demand savings for this program are consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

ENERGY AND DEMAND RESULTS – 2015	
Air Conditioning Control (C)	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	592.35
Demand Savings – kW	13.140

AIR SOURCE HEAT PUMPS
(Commercial)

The Air Source Heat Pump Program targets commercial customers currently using or considering the installation of less efficient resistance electric heating and cooling systems by offering rebates for high-efficiency air source heat pumps. For 2015, Otter Tail relied on Energy Star qualifications as the minimum equipment efficiency requirement. The program is included in the 2016 CIP.

Energy Star – ASHP	HSPF	SEER	EER
Split System	> or = 8.2	> or = 14.5	12.0
Package Terminal			> or = 11.0

Otter Tail Power Company promotes energy efficient heat pumps using various resources:

- *Taking Care of Business* commercial CIP brochure.
- *Guide to programs and services* available to contractors.
- Brochures available in customer service center lobbies.
- Presentations and literature distribution at the Builder and Electrical workshops for contractors.
- Directly to potential program participants at the annual Minnesota School Board Association conference.
- Bill messages included on all customer statements.
- Bill inserts about heat pump efficiency, financing, and rebates.
- Training material covered with service representatives in annual and monthly training.
- Program, rate, and rebates described within the Company's web site.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Air Source Heat Pumps (C)	**Actual**	**Proposed**	**% of Goal**
Participation	131	131	100%
Budget $	$145,340	$69,000	211%

To increase participation, the Company increased rebates for ASHP from $240/ton to $400/ton in 2015 as well as offering 1.9 percent financing later in the year. The Company anticipates the

increased rebate amount will drive customers to install an efficient ASHP in 2016 as well.

Evaluation Methodology

An engineering analysis was used to determine energy savings for each air source heat pump system installed. The engineering analysis is consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

Otter Tail recognizes 6,832 kilowatt-hours of energy savings, based on an actual average installed size commercial air source unit of approximately 1.9 tons, including summer and winter energy savings as approved in Otter Tail's 2014-2016 Triennial Filing. Demand savings are approximately 0.08 kW at the generator for peak savings per unit.

ENERGY AND DEMAND RESULTS – 2015	
Air Source Heat Pumps (C)	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	895,049
Demand Savings – kW	10.435

In compliance with the November 5, 2010 Final Decision in the 2011-2013 Triennial filing[4], customers may not have natural gas as their primary heat source to qualify for an air source heat pump CIP rebate. Energy savings and rebates from these projects were not included in the 2015 CIP.

COMMERCIAL DESIGN ASSISTANCE

The Commercial Design Assistance Program offers building owners, architects, engineering firms, and developers the opportunity to participate in an integrated design process to identify and implement cost effective, energy-efficient design strategies in commercial new construction and major renovation projects.

The Commercial Design Assistance Program is implemented with the assistance of a consultant in the architectural industry that specializes in early design review, energy efficient building simulation, LEED certification, evaluation of Sustainable Buildings 2030 (SB2030) energy goals, and facilitation of interactive meetings to select energy efficient design strategies. Tools available through the State of Minnesota are used to develop SB2030 performance standards for all applicable projects.

Otter Tail promotes Commercial Design Assistance using various resources:

- *Taking Care of Business* commercial CIP brochure.
- *Guide to Programs and Services* available to contractors.

[4] Otter Tail Power Company's 2011-13 Triennial CIP Filing, Docket No. E017/CIP-10-356

- The *Make it Electric* newsletter targeting commercial and industrial customers (when feasible).
- Brochures available in customer service center lobbies.
- Presentations and literature distribution at the Builder and Electrical workshops for contractors.
- Directly with potential program participants in the educational sector at the annual Minnesota School Board Association conference.
- Bill messages included on all customer statements.
- Program, technology, and rebate information available on the Company's web site.
- Through the program consultant's network, membership, and participation as professionals in architectural and engineering organizations, including ASHRAE, AIA, and IES.

PARTICIPATION AND BUDGET – 2015			
Commercial Design Assistance	**Actual**	**Proposed**	**% of Goal**
Participation	8	6	133%
Budget $	$344,530	$490,500	70%

The Commercial Design Assistance program was new to Otter Tail's CIP with the Company's 2011-2013 CIP triennial filing. In the original filing of the Commercial Design Assistance program, Otter Tail proposed initiating approximately six projects in 2011, six projects in 2012, and six in 2013. Due to the length of the project lifecycle, Otter Tail further proposed completion of two projects starting in 2012 and eventually reached the measurement and verification stage of six projects in 2013. The project lifecycle has continued to evolve close to Otter Tail's original projections with eight projects completed in 2015.

ENERGY AND DEMAND RESULTS – 2015	
Commercial Design Assistance	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	1,406,516
Demand Savings – kW	278.720

Evaluation Methodology

Otter Tail's program implementation consultant has taken all necessary steps to assure that baseline energy efficiency levels moving forward reflect 2015 energy code modifications. Otter Tail submitted a compliance filing to the DER in 2015 detailing the Company's strategy for integrating changes to the Minnesota energy code into future energy savings analyses for Commercial Design Assistance projects. The Commercial Design Assistance program is included in the Company's 2016 CIP.

GEOTHERMAL HEAT PUMPS
(Commercial)

The Geothermal Heat Pump Program capitalizes on a renewable technology and targets commercial customers currently using or considering the installation of less efficient resistance electric heating and cooling systems by offering rebates for high-efficiency geothermal heat pumps. This Program is included in the 2016 CIP.

Type	COP	
	Open	Closed
Water to air	4.1	3.6
Water to water	3.5	3.1
Direct exchange	3.6	

Otter Tail Power Company promotes energy efficient heat pumps using various promotional resources:

- *Taking Care of Business* commercial CIP brochure.
- *Guide to Programs and Services* available to contractors.
- Brochures available in customer service center lobbies.
- Presentations and literature distribution at Builder and Electrical Workshops for contractors.
- Directly with potential program participants in the educational sector at the annual Minnesota School Board Association conference.
- Bill messages included on all customer statements.
- Bill inserts about heat pump efficiency, financing, and rebates.
- Training material covered with service representatives in annual and monthly training.
- Program, rate, and rebates described within the Company's web site at www.otpco.com.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Geothermal Heat Pumps (C)	**Actual**	**Proposed**	**% of Goal**
Participation	25	35	71%
Budget $	$108,507	$122,000	89%

To increase participation, Otter Tail Power Company increased rebates in 2015 for geothermal heat pumps from $600/ton to $800/ton as well as offering 1.9 percent financing later in the year. We believe the increased rebate amount drove customers to install an efficient geothermal heat pump and will continue to affect 2016 numbers.

Evaluation Methodology

An engineering analysis was used to determine energy savings for each geothermal heat pump system installed. The engineering analysis is consistent with Attachment B: Electric Product

Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

Otter Tail recognizes 18,977 kilowatt-hours of energy savings at the generator, based on an average size commercial geothermal heat pump unit of 4.2 tons, including both summer cooling and winter heating savings. Demand savings are on average 0.52 kW for summer peak coincident savings per unit at the generator.

ENERGY AND DEMAND RESULTS – 2015	
Geothermal Heat Pumps (C)	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	474,417
Demand Savings – kW	12.917

In compliance with the November 5, 2010 Final Decision in the 2011-2013 Triennial filing[5], customers may not have natural gas as their primary heat source to qualify for a geothermal heat pump CIP rebate. Energy savings and rebates from these projects were not included in the 2015 CIP.

GRANTS (CUSTOM PROJECTS)

The Grants Program offers customized incentives to commercial and industrial customers for conservation and efficiency improvements.

In 2015, Otter Tail analyzed a variety of customer-submitted grant projects with 41 of these projects approved for incentives.

Grant Custom Projects	Quantity
Automation	6
Building Envelope	8
Compressed Air System	4
Cooking Equipment	1
Cooling System	3
Heating System	1
Heat Recovery System	1
Process Improvements	2
Production Equipment	3
Pump	1
Refrigeration System	3
Variable Speed Drive	2
Ventilation System	5

[5] Otter Tail Power Company's 2011-13 Triennial CIP Filing, Docket No. E017/CIP-10-356

Welding	1
Total	41

The Company believes that its Advertising and Education strategy and development of sector-specific programs such as Recommissioning/Retrocommissioning (RCx) and Industrial Focused Efficiency lead to increased participation in the Grants Program.

Otter Tail Power Company promotes the Grant Program through a variety of resources:

- *Taking Care of Business* commercial CIP brochure.
- *Guide to Programs and Services* available to contractors.
- Presentations and literature distribution at the Company's annual Builder and Electrical workshops for contractors.
- Directly with potential program participants in the educational sector at the annual Minnesota School Board Association conference.
- Through Otter Tail's Advertising and Education campaign targeting agricultural processors, producers, and customers with intense commercial refrigeration loads.
- Program, technology, and rebate information available on the Company's web site at www.otpco.com.
- *Make It Electric* newsletter for commercial and industrial customers.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Grants	**Actual**	**Proposed**	**% of Goal**
Participation	41	38	108%
Budget $	$422,609	$721,000	59%

Evaluation Methodology

Estimated savings from custom grant measures initially come directly from customers submitting detailed information documenting demand and energy savings for each proposed measure. The Company verifies the feasibility of the proposed savings, and if necessary, makes modifications to the customer's submitted figures. Otter Tail offers assistance as needed for our commercial and industrial customers to help determine the energy and demand savings needed to develop 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.

The Large Custom Grant Measurement and Verification ("M&V") protocols affect any large project with estimated savings exceeding one million kilowatts hours. The protocols include several options for measurement and verification of large grant projects that meet the protocol criteria. Otter Tail had no 2015 projects that qualified for formal M&V.

Energy Savings & Adjustments

Energy savings are based on customer data and verification by engineering staff.

ENERGY AND DEMAND RESULTS – 2015	
Grants	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	2,921,377
Demand Savings – kW	617.348

The Grant program is included in Otter Tail's 2016 CIP.

INDUSTRIAL FOCUSED EFFICIENCY

The Industrial Focused Efficiency program targets large industrial customers with potential for improvements in production processes, end-use efficiency, and energy management practices. The program uses a proactive approach to benchmarking energy management practices and identifies specific opportunities for efficiency improvements in large industrial facilities. In 2015, Otter Tail's largest industrial customers accounted for just 1.3 percent of all Minnesota accounts yet were over 60 percent of retail energy sales. As significant consumers of electricity, the industrial sector often provides abundant opportunities for improvements in energy management practices and implementation of energy efficiency upgrades.

Implementation of the Industrial Focused Efficiency program consists of the following strategies:

1. Proactive project identification
   Otter Tail considers both customer engagement and energy savings potential in screening potential participants. The program focuses on customers with annual savings potential of 250,000 kWh or greater, typically requiring annual consumption of 5,000,000 kWh or more. Potential participants bringing engaged and enthusiastic management and employee teams to the table are more likely to pursue the most cost effective energy saving behaviors and options.

2. Energy management benchmarking
   For qualifying customers, Otter Tail funds the Envinta One2 Five energy management benchmarking analysis. The benchmarking session focuses on management practices related to energy efficiency by incorporating participation from across the customer's organization.

3. Project identification
   Forming an engaged and knowledgeable energy management team is imperative to identifying efficiency opportunities on the customer site. To facilitate identification of efficiency measures, Otter Tail funds 50 percent of engineering studies needed to identify and evaluate energy savings opportunities. Possible efficiency measures include lighting,

drive-power systems, process efficiency improvements, refrigeration systems, compressed air systems and custom efficiency projects.

4. Project implementation
   Working in tandem with the customer's representation on the energy management team, Otter Tail develops a schedule of efficiency projects with bonus incentives provided in exchange for the participant's completion of all measures before established deadlines. Efficiency measures might include projects traditionally accounted for under Otter Tail's prescriptive rebate programs, but Otter Tail attributes energy savings for each efficiency measure to the Industrial Process Efficiency program.

5. Measurement and verification
   Otter Tail follows the Measurement and Verification Protocols for end-use efficiency projects meeting the formal measurement and verification requirements established by the DER.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Industrial Process Efficiency	**Actual**	**Proposed**	**% of Goal**
Participation	2	2	100%
Budget $	$215,889	$135,000	160%

Two industrial customers – both operating in the manufacturing sector – participated in the Industrial Process Efficiency program in 2015, with each participant completing the following required actions:

1. Formation of a facility energy management team with representation from Otter Tail Power Company and leadership from an independent, third party energy management consultant.
2. Completed Envinta One2Five energy management benchmark with participation from customer's executive management group and energy management team.
3. Completed an onsite engineering study identifying end-use energy efficiency opportunities.
4. Analyzed and evaluated cost effectiveness and any possible production impacts of energy efficiency measures identified in the engineering study.
5. Together with Otter Tail, identified bonus incentive levels needed to prioritize capital-intensive energy efficiency projects for completion in 2015.

The participating customers concluded 2015 activities by implementing end-use efficiency measures as follows:

Participant	Efficiency Measures
Participant 1	Compressed air, lighting, motors, adjustable speed drives, HVAC, refrigeration
Participant 2	Adjustable speed drives, motors, lighting

Evaluation Methodology

Otter Tail developed energy savings estimates through both established methodologies for prescriptive measures and also through engineering calculations for custom measures implemented by the customer.

Energy Savings & Adjustments

ENERGY AND DEMAND RESULTS – 2015	
Industrial Process Efficiency	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	1,596,207
Demand Savings – kW	169.917

LIGHTING RETROFIT

The Lighting Retrofit program provides cash incentives to commercial and industrial customers for purchasing and installing energy-efficient lighting technologies including high efficiency fluorescent fixtures and lamps, compact fluorescent fixtures and lamps, efficient high-intensity discharge (HID) fixtures and lamps, LED systems, induction lighting systems, electronic ballasts, and lighting controls.

Otter Tail actively promotes the Lighting Program through a variety of strategies.

- *Taking Care of Business* commercial and industrial CIP brochure.
- Bill inserts targeting commercial and industrial customers.
- Presentations and literature distribution at Builder and Electrical workshops for contractors.
- Personal interactions between customers and Company program implementation staff.
- Directly with potential customers in the educational sector at the annual Minnesota School Board Association conference.
- Through Otter Tail's commercial Advertising and Education campaign targeting agricultural producers and processors and customers with intense commercial refrigeration loads.
- *Guide to Programs and Services* sent to contractors.
- Program, technology, and rebate information available on the Company's web site.
- *Make it Electric* newsletter for commercial and industrial customers.

Otter Tail has accounted for and included lamp disposal and recycling costs for all energy efficiency measures evaluated in the Lighting Retrofit program.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Lighting	**Actual**	**Proposed**	**% of Goal**
Participation	548	346	158%
Budget $	$1,020,718	$563,000	181%

Otter Tail is optimistic about significant market penetration of LED lighting systems. Retrofits to hard-wired LED lighting systems accounted for a significant percentage of participation and energy savings in the Company's 2015 Lighting Retrofit program results.

Evaluation Methodology

Engineering analysis, survey data, and the TRM are being used to calculate impact savings for the Lighting Retrofit program. The Company has documented all existing lighting wattage that is removed at each site, and compared that to the actual energy efficient lighting wattage being installed to calculate energy savings. Hours of operation are determined by the TRM according to customer type. The engineering analysis is consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

For retrofit lighting, wattage of measures being installed is compared with wattage of measures being removed to determine kilowatt savings. The TRM establishes hours of operation. In accordance with the TRM protocols, energy savings adjustments of 9.5 percent were allocated to those businesses having electric mechanical cooling.

ENERGY AND DEMAND RESULTS – 2015	
Lighting	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	6,238,971
Demand Savings – kW	1,599.399

The Lighting Retrofit program is continued in Otter Tail's 2016 CIP.

LIGHTING – NEW CONSTRUCTION

Opportunities exist for customers to implement lighting technologies that are more efficient than widely-accepted, standard efficiency lighting systems during the new construction process. Examples of these technologies and systems include:

- High Intensity fluorescent
- High Performance T8 lamps & ballasts/reduced wattage T8 lamps
- High efficiency ceramic metal halide
- High efficiency exit lighting
- LED fixtures and lamps

Otter Tail Power Company promotes the Lighting--New Construction program using various promotional resources.

- *Taking Care of Business* commercial CIP brochure.
- Bill inserts targeting commercial and industrial customers.
- *Guide to Programs and Services* available to contractors.
- Promotions and technical discussions at Builder and Electrical workshops for contractors.
- Directly with potential customers in the educational sector at the annual Minnesota School Board Association conference.
- Through Otter Tail's commercial Advertising and Education program targeting agricultural producers and processors and customers with intense commercial refrigeration loads.
- Program, technology, rebate information available on the Company's web site at www.otpco.com.
- Personal consultations between program implementation staff and customers.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Lighting – New Construction	**Actual**	**Proposed**	**% of Goal**
Participation	277	202	137%
Budget $	$249,497	$143,000	174%

Evaluation Methodology

Engineering estimates and the TRM are used to calculate impact savings for the program. Hours of operation are determined by the TRM according to customer type.

Energy Savings & Adjustments

For newly-installed lighting systems, qualifying installed measures are compared to baseline efficiency systems to determine kilowatt-hour savings. The TRM provided savings, hours of operation, and adjustment for participants with electric mechanical cooling.

ENERGY AND DEMAND RESULTS – 2015	
Lighting – New Construction	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	7,599,977
Demand Savings – kW	1,080.319

This Program is continued in the 2016 CIP.

MOTORS

The goal of the Motors program is to reduce system peak demand and energy use by offering customers incentives to purchase and install motors that meet and/or exceed NEMA Premium® efficiency ratings in various applications. The Motors program covers motor sizes from one horsepower up to 500 horsepower in size.

The Motors program included additional incentives for customers upgrading to high-efficiency motors with explosion-proof enclosures. For explosion-proof motors, the Company has developed minimum efficiency levels needed to qualify for rebate incentives based on the following criteria from MotorMaster software:

- Motor horsepower
- NEMA Premium® efficiency levels
- Energy Policy Act 1992 efficiency levels
- Motor Revolutions per minute (RPM)
- Motor costs

Otter Tail Power Company promotes the Motors Program through a variety of resources:

- *Taking Care of Business* commercial CIP brochure.
- *Guide to Programs and Services* available to contractors.
- Through bill inserts targeting commercial and industrial customers.
- Presentations and literature distribution at the Company's annual Builder and Electrical workshops for contractors.
- Directly to potential participants in the educational sector at the annual Minnesota School Board Association conference.
- Through the commercial Advertising and Education campaign targeting agricultural producers and processers and customers with intense commercial refrigeration loads.
- In the *Make It Electric* newsletter for commercial and industrial customers.
- Personal consultations between program implementation staff and customers.
- Program, technology, and rebate information available on the Company's web site.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Motors	**Actual**	**Proposed**	**% of Goal**
Participation	204	71	287%
Budget $	$194,528	$81,000	240%

Motor Types Rebated	
New / replace non-operating	30
Replace operating	174
Total Motors Rebated	204

Participation in the 2015 Motors program exceeded goals. Otter Tail attributes 2015 participation to increasing availability of motors that meet Otter Tail's efficiency requirements.

This Program is continued in the 2016 CIP.

Evaluation Methodology

Otter Tail Power Company used Minnesota's TRM data, when applicable, along with engineering estimates and MotorMaster software to determine energy savings for specialty motors currently not in the TRM. For 1 to 200 horsepower motors installed in new applications and for motors replaced at failure, Otter Tail used NEMA Premium efficiency levels as baseline efficiency for totally-enclosed fan-cooled and open drip-proof motors.

Energy Savings & Adjustments

Impacts for the Motors Program are based on TRM calculations and engineering estimates. In accordance with the TRM, a standard 78 percent loading factor was used in the calculation for kilowatt-hour savings.

NEMA efficiency rating, horsepower, motor speed, run-time hours, and quantity are taken from the customer's application form.

The Motors program is included in the 2016 CIP.

ENERGY AND DEMAND RESULTS – 2015	
Motors	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	1,261,134
Demand Savings – kW	175.871

PC POWER SUPPLY

The PC Power Supply Program unites electric utilities, the computer industry, and consumers in an effort to bring more efficient computer power supply technology to the marketplace. The program provides manufacturer incentives for certain qualifying energy efficient computer and server product categories and is intended to accelerate market adoption for products within each of these categories that meet ENERGY STAR and 80 Plus product efficiency specifications.

A third party program management and implementation specialist works directly with PC manufacturers with program outreach efforts and incentives for integrating qualifying power supplies into various manufacturers' computer products. The third party provides Otter Tail with a monthly report detailing the quantity and measure type of each PC power supply as featured in Otter Tail's approved 2014—2016 triennial CIP filing.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
PC Power Supply	**Actual**	**Proposed**	**% of Goal**
Participation	457	3,562	13%
Budget $	$6,081	$67,000	9%

Participation in the PC Power Supply program was less than the projected goal. When developing original participation forecasts, Otter Tail's program implementation consultant attempted to account for expected unit deliveries based on the population proportion of business accounts to residential accounts similar to other regions supporting the PC Power Supply program. Typically, program participation will be higher in territories with more commercial accounts. It is very likely that there is a lower concentration of business accounts in Otter Tail's service territory than in the average territory of utilities supporting the PC Power Supply program. This trend would explain the 2015 results of lower participation in the program than expected.

Evaluation Methodology

Reported energy and demand savings are based on actual measure quantities and types as reported by Otter Tail's third party program specialist. Energy and demand savings for this program are based on Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

ENERGY AND DEMAND RESULTS – 2015	
PC Power Supply	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	73,137
Demand Savings – kW	17.052

RECOMMISSIONING

The *Energy Star Building Manual* defines commissioning as the process of ensuring that systems are designed, installed, functionally tested, and capable of being operated and maintained to the owner's operational needs.

- Retrocommissioning is the systematic process applied to existing buildings that have never been commissioned to ensure that their systems can be operated and maintained according to the owners' needs.
- Recommissioning is the term used for applying the process to a building that has been commissioned previously (either during construction or as an existing building).

Building tune-ups, RCx Lite, and building optimization all refer to an evolution of the traditional RCx process. The approach starts by targeting the most common RCx measures with the highest chances of returning payback on operations and maintenance improvements. Often, these operation and maintenance improvements are associated with advanced control strategies. Engineering firms completing RCx Lite studies are often capable of identifying these measures through spot inspections and direct digital control systems without the added costs of seasonal monitoring and functional performance testing done in formal RCx studies. Consequently, the RCx Lite process can identify up to 75 percent of the savings of a more formal RCx study at approximately 25 percent of the cost.

Otter Tail's Recommissioning/Retrocommissioning ("RCx") program provides incentives to qualifying commercial customers to complete RCx studies and implement cost effective, energy savings measures. The RCx program proposes a tiered approach to delivering RCx services. The RCx Lite tier provides incentives for building tune-ups, where the RCx tier incentivizes customers to implement formal RCx studies with more expansive measures. Potential participants must complete a pre-approval application form prior to initiating any RCx projects to be assured of eventual study funding from Otter Tail. Not all buildings and building types are ideal candidates for achieving energy savings through traditional RCx efficiency measures; the pre-approval process increases the likelihood that customers with buildings and building types with the best RCx opportunities capitalize on the RCx process

Otter Tail Power Company promotes the RCx program through a variety of resources:

- *Taking Care of Business* commercial CIP brochure.
- *Guide to Programs and Services* available to contractors.
- Through bill inserts targeting commercial and industrial customers.
- Presentations and literature distribution at the Company's annual Builder and Electrical workshops for contractors.
- Through brochures and literature explaining the RCx process and program.
- Directly with customers in the educational sector at the annual Minnesota School Board Association conference.
- Personal consultations between program implementation staff and customers.
- Program, technology, and rebate information available on the Company's web site at www.otpco.com.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Recommissioning	**Actual**	**Proposed**	**% of Goal**
Participation	0	10	0%
Budget $	$33,390	$272,000	12%

Otter Tail's program model relies on industry engineering firms to provide RCx services to potential participants in the program. The Company worked with its third party engineering firm in evaluating one RCx study concluding in 2015 but does not anticipate implementation of identified energy efficiency measures until 2016.

In 2015, Otter Tail offered an additional new program concept with a turn-key service provider through three separate RCx projects. Otter Tail notified DER staff of this informal modification to the RCx program concept in April of 2014. Two of the three projects entering the screening process qualified for actual study incentives, with the majority of engineering work completed in 2015. Energy savings, demand savings, and cost data from both 2015 projects have produced preliminary evaluations that are favorable and encouraging. Otter Tail anticipates project implementation on customer sites in 2016 and will report verified energy and demand savings results accordingly in the Company's 2016 Status Report.

Evaluation Methodology

Traditional RCx

The RCx program process includes the following steps. The Study Review (Step 3) specifically discusses evaluation activities taking place in the RCx process.

1. **Study pre-approval**
   Otter Tail requires that all potential RCx program participants complete a study pre-approval application form. Otter Tail reviews the application along with the applicant's building energy use history to determine if the proposed RCx project is likely to return adequate energy savings. The pre-approval form also provides the potential participant's engineering firm with the study requirements needed for the participant to receive Otter Tail's approval and future study incentives funding.

2. **Study completion**
   Once Otter Tail notifies the customer of the study pre-approval, the customer's engineering firm completes the draft RCx study.

3. **Study review**
   Otter Tail, together with a third party engineering consulting firm, reviews the study for accuracy of calculations, assumptions, and inclusion of all required RCx study requirements. The third party engineering firm does not provide direct RCx services for customers or compete with engineering firms providing these services. Otter Tail works with the customer and the customer's engineering firm as needed to assure engineering

calculations, assumptions, and the study all meet the Company's RCx program requirements.

4. **Implementation**
   The customer submits a final RCx study rebate application, along with documentation of completing all measures with a payback of two years or less and a capital cost of $5,000 or less to receive RCx study rebate funding per program guidelines.

Turn-key RCx

The Turn-key RCx process closely resembles that of traditional RCx process. However, the Turn-key RCx process relies on functional performance testing and customer bill analysis for a period of three to six months upon completion of all required RCx measures as a strategy for verification and evaluation of RCx measures.

Energy Savings

ENERGY AND DEMAND RESULTS – 2015	
Recommissioning	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	0
Demand Savings – kW	0

REFRIGERATION

The Refrigeration Program is designed to promote high-efficiency refrigeration technologies, including measures to upgrade compressor, condenser, and display case efficiency.

A 2009 study completed by Navigant titled, "Energy Savings Potential and R&D Opportunities for Commercial Refrigeration" identified the following commercially available technologies as opportunities for improving energy efficiency in super market refrigeration systems:

- High efficiency fan motors
- High efficiency compressor upgrades
- Improved refrigeration controls
- High efficiency lighting
- Advanced door technologies

Otter Tail incorporates incentives for these and other measures in its program.

Otter Tail is currently working jointly with Center for Energy and the Environment, independent refrigeration contractors and specialized refrigeration consultants to reach the commercial market for refrigeration efficiency upgrades and the installation of high efficiency refrigeration systems in new construction applications.

Otter Tail Power Company promotes the Refrigeration Program using various promotional resources:

- *Taking care of business* commercial CIP brochure.
- *Guide to programs and services* available to contractors.
- Program technology, and rebate information available on the Company's web site.
- Specialized contractor information kits provided for refrigeration contractors.
- Follow-up with personal contractor contacts.
- Focused, personal contacts targeting grocery and convenience stores and other facilities with intensive refrigeration loads.

This Program is included for continuation in Otter Tail's 2016 CIP.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
Refrigeration	**Actual**	**Proposed**	**% of Goal**
Participation	103	119	87%
Budget $	$150,685	$170,000	89%

Evaluation Methodology

Otter Tail Power Company used Minnesota's TRM for the Refrigeration program efficiency measures. The Company also used additional research from American Society of Heating, Refrigerating and Air-conditioning Engineers ("ASHRAE") and E-Source to determine energy savings from the refrigeration clean-and-tune measures.

Energy Savings & Adjustments

The Company has used the TRM and engineering estimates for each of the different refrigeration measures. Savings for each refrigeration measure rebated is adjusted according to the standard size and its associated savings. Energy and demand savings for this program are consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

ENERGY AND DEMAND RESULTS – 2015	
Refrigeration	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	830,140
Demand Savings – kW	134.581

DIRECT IMPACT – LOW INCOME

HOUSE THERAPY

The House Therapy Program's primary focus is audit and weatherization services for low-income residential customers. The following table provides details on measures installed and whether the participants were owners or renters.

House Therapy -- Owner / Renter Detail 2015			
Installed measures	**Owners**	**Renters**	**Total**
Audit	131	10	141
Attic Insulation Materials	5	8	13
Compact Fluorescent Lamp	1,345	122	1,467
Door Maintenance Materials	0	8	8
Engine Heater Timer	125	8	133
Faucet Aerator	225	26	251
Foundation Insulation Materials	1	0	1
Freezer	16	0	16
Low-flow Showerhead	98	4	102
Pipe Insulation	36	1	37
Refrigeration	63	0	63
Water Heater	13	0	13
Water Heater - Reduce Temperature	92	10	102
Water Heater--Controlled Ser. Rate	4	0	4
Weatherization	4	8	12

House Therapy -- Owner / Renter Detail - 2015				
	CAP Spending	**Percent**	**Participation**	**Percent**
Owners	$102,797	84%	135	93%
Renters	$19,505	16%	10	7%
Total	$122,302	100%	145	100%

The Company meets yearly with the local Community Action Program ("CAP") Agencies to implement House Therapy as cost-effectively as possible and commends the agencies that are committed to the program.

Otter Tail Power Company promotes House Therapy using various resources.

- Residential bill insert.
- Part of the environment disclosure insert posted on our website annually.
- Part of the Company's website listing the program and each of the agencies that implement the program.

This Program has been approved for continuation in the 2016 CIP.

Participation & Budget

PARTICIPATION AND BUDGET – 2015			
House Therapy	**Actual**	**Proposed**	**% of Goal**
Participation	145	160	91%
Budget $	$148,992	$150,000	99%

Evaluation Methodology

In 2015, the TRM was used for many of the House Therapy components. Where TRM was not available, engineering estimates were used. Energy and demand savings for this program are consistent with Attachment B: Electric Product Assumptions, approved in the Company's triennial plan.

Energy Savings & Adjustments

Weatherization is an average of wall, sealing, and attic insulation savings. The TRM and engineering estimates were used for the additional measures installed, including CFLs, energy efficient refrigerators, freezers, water heaters, and kits including faucet aerators, showerheads, and pipe-wrap.

Technical resource Measures – House Therapy, kWh at the meter	
CFL installation	49
Engine Block Timer	244
Aerators, Showerhead, Pipe-wrap	895
Water Heater Temp Set-Back	141
Refrigerator Remove & Replace	492
Freezer Remove & Replace	776
Water Heater Replace	195

ENERGY AND DEMAND RESULTS – 2015	
House Therapy	**At the Generator (DSMore Summer Coincident Peak kW)**
Energy Savings – kWh	253,694
Demand Savings – kW	24.035

INDIRECT IMPACT PROJECTS / REGULATORY REQUIREMENTS
ADVERTISING & EDUCATION – Residential & Commercial

Advertising & Education – Residential
The Advertising & Education Program for 2015 targeted Minnesota residential customers and students with reinforcing messages to make conserving energy a lifestyle. Three approaches were used:

- *Advertising* that increases awareness, educates about technologies and personal energy usage, and motivates individuals to take action to conserve energy.
- *Internet-based resources* including YouTube.com videos, web advertisements, and web-based content on company websites.
- *Classroom based presentations* targeting fourth through sixth graders with educational messages about energy production, energy use, and conservation education across all economic groups.

Advertising
Two campaigns that included runs on television, radio, and streaming media channels ran with energy efficiency messages that focused on reaching residential customers during 2015. These included:

- *Be the Lead:* A new media campaign that included television, radio, streaming media, a web landing page was completed to educate customers about promoting energy conservation to the next generation by being a role model.
- *A little reward:* A rerun of a previously created media campaign that included television, radio, streaming media, and a web landing page promoted the energy conservation and peak demand management benefits of cycling central air-conditioning systems. The ad was also used to raise awareness and drive participation in the CoolSavings program.

Internet-based resources
This program supports development of online resources to promote participation in direct impact energy efficiency programs in the CIP portfolio. Data are collected from web analytic tools used on the company websites. Minnesota customer web participation is calculated as 45 percent of the unique visitor count to the website material. This represents the portion of Company customers that are located in Minnesota.

Web resources are provided online on the company website www.otpco.com. The separate conservingelectricity.com website has been discontinued. It was found to be obsolete because vanity URLs may be used to quickly direct customers to the portion of the company website that pertains to specific rebates, incentives, programs, and technologies.

Home page hero ads placed on www.otpco.com promoted CIP programs including Home Energy Analyzer, heat pump rebates, commercial program rebates, air-conditioning cycling program, appliance recycling program, Be Bright, and home insulation programs. Traffic generated as a click-through to the program details was tracked as participation resulting from these ads.

A YouTube video series continued to be presented to customers focused on home insulation and maintenance topics:

- Weatherization
- Furnace filter change out
- Sealing attic access doors
- Sealing attic bypass
- Insulating and sealing rim joists

Classroom presentations
The Science Museum of Minnesota conducted an interactive lyceum program reaching Minnesota schools over 39 days during October, November, and December 2015. In small community schools, students in fourth through sixth grades are invited to attend. The invitation schedule aims to reach out to all students in the Otter Tail Power Company service territory every other year. The northern service territory was targeted in 2015. Participation is dependent on school administrators requesting the program. During the 2015 tour 27 schools were visited and 2,091 students participated in the lyceums. The program remains popular with the school districts and program material is in line with the Minnesota school curriculum standards.

Additional activities
Energy efficiency and conservation related literature is made available to Minnesota customers upon request and through customer service office locations. These include a booklet of home energy savings tips, new construction resources, and other pieces related to energy efficiency, and energy efficient technologies, and program specific information. Conservation articles were included in the Company's bimonthly newsletter including one issue specially designed for kids.

This Program has been approved for continuation in the 2016 CIP.

2015 A&E Detailed Participation	
Science Museum School Tour	2,091
Web visits tied to advertising spots	3,381
YouTube videos	8,363
Web visits to ConservingElectricity.com	487
Total	14,322

PARTICIPATION AND BUDGET – 2015			
Advertising & Education	**Actual**	**Proposed**	**% of Goal**
Residential Participation	14,322*	10,000	143%
Budget $	$162,564	$150,000	108%

*Web-based ad participation was not included when the original participation goal was established, but was added as an effective means to reach customers. In addition, participation in web visits to Conserving.Electricity.com and www.otpco.com has increased significantly from past years.

Advertising and Education – Commercial

Agricultural Process Efficiency and Commercial Refrigeration

Achieving energy efficiency goals from the Next Generation Energy Act requires a more intensive market segmentation strategy. Past market segmentation efforts have included:

- Focus on savings opportunities in the government and healthcare sectors.
- Educational campaigns on green buildings strategies, including Energy Star, Green Globes and LEED.
- Campaigns to educate customers with large commercial refrigeration loads on efficiency and energy savings opportunities.

For 2015, Otter Tail's segmentation strategy included a focus on customers in the agricultural production and processing sectors and facilities with intense commercial refrigeration loads (convenience stores, retail grocery, liquor, and meats; and refrigerated storage facilities). Otter Tail's strategy provided opportunities for both agricultural processors and producers to make significant investments in all aspects of their business operations, including energy efficiency upgrades. In other market sectors, refrigeration loads greatly add to business' energy intensity values, making businesses operating with significant refrigeration loads excellent targets for investments in technologies to reduce energy consumption.

Otter Tail reached out to the agricultural sector through free on-site energy efficiency assessments for interested agricultural producers and processors. The Company relied on personal contacts from energy management representatives with dairy, poultry, swine, and crop producers as well as agricultural processors in crop storage and fertilizer production. Interested customers received a free on-site assessment from a third party engineering firm along with a follow-up report with details on energy savings opportunities and available incentives from Otter Tail for potential efficiency measures.

In the commercial refrigeration sector, Otter Tail provided refresher training in 2014 for internal program implementation staff on commercial refrigeration fundamentals and energy efficiency opportunities in commercial refrigeration systems. After the training session, Otter Tail staff consulted a list of potential refrigeration segment participants generated from Otter Tail's customer information systems and scheduled on-site, personal assessments with interested customers.

An additional strategy of the Advertising & Education Program for 2015 focused on a proposed redesign of Otter Tail's website, including a complete review of the company's commercial and industrial energy efficiency program web pages. The Company looks forward to building off of the 2015 web strategy by integrating technical information from the E Source Business Energy Advisor tool into Otter Tail's updated website in 2016.

2015 A&E – Commercial Customer Visits			
	Actual	**Goal**	**% of Goal**
Ag sector	17	10	170%
Commercial Refrigeration	37	0	N/A
Total	54	10	540%

Otter Tail was satisfied overall with program participation and results, but the Company did run into participation challenges in the agricultural production sector attributable to the Avian Influenza outbreak across the U.S. in 2015. Otter Tail's outreach campaign launched as news of the outbreak was spreading across Minnesota and the upper Midwest. With poultry producers taking extra precautions, access to poultry operations became nearly impossible. Otter Tail adjusted strategy to focus on other livestock and grain-farming operations.

Assessments completed for customers in the agricultural sector identified 464,981 kWh of energy savings potential. Commercial refrigeration assessments identified 3,341,780 kWh of energy savings potential.

Otter Tail plans to build off of 2015 successes by again reaching out to the agricultural production and processing segments and to customer segments with intense commercial refrigeration loads in 2016. The Company has also tracked energy savings potential for 2015 participants and will reach out to these customers again 2016.

ACTUAL / BUDGET – 2015			
Advertising & Education	**Actual**	**Proposed**	**% of Goal**
Commercial Budget $	$27,429.49	$25,000	110%

COMPRESSED AIR AUDITS - Commercial

The Compressed Air Audits project portion of the program pays up to 80 percent of compressed audit costs, with a maximum of $10,000 per participant. The project relies on industry consultants to provide professional audit services with an unbiased report on saving energy with compressed air system improvements.

This Project has been approved for continuation in the 2016 CIP.

PARTICIPATION AND BUDGET – 2015			
Compressed Air Audits	**Actual**	**Proposed**	**% of Goal**
Participation	3	4	75%
Budget $	$21,977	$20,000	110%

FINANCING – Residential & Commercial
The Customer Financing Program is designed to provide low-interest loans for energy-efficiency improvement projects currently included in the Company's CIP. These improvements include, but are not limited to lighting, motors, variable speed drives, and heat pumps.

The difference between the interest expense at the Company's after-tax cost of capital and the expense at the customer's interest rate is the cost charged to the CIP Tracker Account. The interest rate was 1.9 percent for 2015. Customers are given a choice between rebates and financing except for heat pumps where both are currently offered.

Otter Tail Power Company promotes the low-interest Financing Program in various resources.

- *Taking Care of Business* commercial CIP booklet.
- *Guide to programs and services* available to contractors.
- Program brochures included with materials requests to customers.
- Part of the Company's web site.
- Lobby signs in local Customer Service Centers.

2015 Financing Details by Customer Class			
	Residential	**Commercial**	**Total**
Participation Goal	7	5	12
Participation Actual	6	0	6
% of Goal	86%	0%	50%
Budget Goal	$13,000	$32,000	$45,000
Budget Actual	$12,586	$2,098	$14,684
% of Goal	97%	7%	33%

This Program has been approved for continuation in the 2016 CIP.

IMPLEMENTATION & TRAINING – Residential & Commercial
The Implementation and Training Program provides instruction about energy efficient technologies and DSM trends for the Company's design, implementation, and customer service staff. This program also provides training for customers, electricians, realtors, insulation installers, and other contractors. Several energy efficiency workshops are held at various times through the year in locations in and around the service territory. Otter Tail co-sponsored several of these events with Minnkota Electric Cooperative. Workshops were promoted on our website, in newsletters, and through direct mail pieces.

2015 Implementation & Training Details by Customer Class			
	Residential	**Commercial**	**Total**
Participation Goal	175	250	425
Participation Actual	78	443	521
% of Goal	44%	177%	122%
Budget Goal	$40,000	$60,000	$100,000
Budget Actual	$65,666	$78,398	$144,064
% of Goal	164%	131%	144%

This Program has been approved for continuation in the 2016 CIP.

PROGRAM DEVELOPMENT

The Program Development project includes CIP strategic market planning analysis, CIP-related resource planning work, and CIP-related regulatory coordination. It also includes program development time for research and studying new energy efficient and DSM technologies.

In 2015, Otter Tail hired Navigant Consulting Inc., a global consultant specialized in providing technical expertise to clients in the energy industry, to perform a DSM Potential Study. Otter Tail's last potential study was performed in 2010. With the enormous progress Otter Tail has made in the last several years in energy efficiency penetration, an update to the previous study was necessary for planning the upcoming 2017-2019 CIP triennial plan. A great deal of insight was gained from this study for planning upcoming program offerings. The study will also be used by Otter Tail for resource planning purposes. Otter Tail has included a copy of the potential study in Appendix D, Electric Demand Side Management Market Potential Study. Costs of the study occurred in 2015 and into 2016. The 2016 costs will be reported in the April 1, 2017 Status Report Update.

Otter Tail also used development funding for appropriate development research and information from internal and external sources, including Chartwell and E-Source.

Otter Tail's 2011-2013 CIP plan included researching and developing a system capable of providing the data necessary for reporting, forecasting, tracking, and processing CIP rebates. The 2014-2016 CIP plan continues work on this system, which is now operating as our rebate processing and data tracking tool. Continuing work includes adding new programs, development of management dashboards, and reporting tools for program management.

Program Development activities have been approved for continuation in the 2016 CIP.

BUDGET – 2015			
Program Development	**Actual**	**Proposed**	**% of Goal**
Planning – Regulatory Affairs	$257,238	$300,000	86%
Research & Development	$180,797	$150,000	121%

REGULATORY REQUIREMENTS
PUC ASSESSMENTS / REGULATORY (NGEA) ASSESSMENTS

PUC ASSESSMENTS / REGULATORY (NGEA) ASSESSMENTS			
	Actual	**Proposed**	**% of Goal**
PUC Assessments	$17,331	$20,000	87%
Regulatory Assessments (NGEA)	$105,610	$95,000	111%
Made in Minnesota Solar Energy Assessment	$116,741	$103,909	112%

ASSESSMENTS	
NGEA Assessment – technical assistance	$19,830
NGEA Assessment – R&D grant	$75,319
NGEA Assessment – facilities efficiency	$10,461
NGEA Assessment – Made in Minnesota Solar	$116,741
Total NGEA Assessments	**$220,351**
Direct PUC Assessments	$17,331
Total	**$239,682**

The Made in Minnesota (MiM) Solar Energy Assessment is the only assessment associated with energy savings. One Otter Tail customer received MiM funding in 2015.Otter Tail was allocated 58,827 kWh based on its percentage contribution to the total annual CIP contribution to MiM.

MISCELLANEOUS / INACTIVE PROGRAM COSTS
These are inactive and miscellaneous programs. The associated costs, including closing costs for these programs, were charged to the 2015 CIP tracker account. Each is detailed separately below.

ACCOUNTING ADJUSTMENTS
Four accounting adjustments were required in 2015 totaling $486.63

Three of the adjustments occurred in the Be Bright program: (1) to record the 2015 sale of CFLs given to non-profit organizations for fundraising events in 2014 but not sold in 2014 reflecting a decrease in costs of $15,239.43; (2) to record a true up to the 2014 year end estimated billing from Wisconsin Energy Corporation for the Be Bright program reflecting a decrease in costs of $1,299.94; and (3) to record the CFLs given to non-profit organizations for fundraising events in 2015 but not sold in 2015 reflecting an increase in costs of $12,072.40.

The second was to record a $4,953.60 true up to a 2014 lighting rebate limited to 75 percent of an estimated annual bill amount. The estimated annual billed amount had been understated when the rebate was calculated.

Since 1993, Otter Tail Power Company has implemented an internal process to handle moving

incorrect charges between project work orders. A line item has been added to the CIP Tracker Account to reflect those charges in transition. The Company believes this method allows us to report current year program costs more accurately.

INACTIVE PROGRAMS

TOWN ENERGY CHALLENGE PILOT

The Rothsay High School SC/EC (Student's for Community Energy Challenge) team (7th through 12th grade) promoted conservation at the school and in the community for a 5 year commitment. Although the project is now completed, the students who served on the team were given college scholarships based on the number of years of service to be collected their first year of college. The scholarships will continue through 2017.

OTTER TAIL POWER COMPANY CIP PROJECTS

Total spending in 2015 on Otter Tail projects was minimal at $2,058.84. Most of the expenses consisted of follow-up implementation labor from 2014 facility energy audits. Other expenses included costs associated with air-conditioning control of Otter Tail facilities. These expenses are consistent with previous years.

No energy savings were claimed in 2015 for the program.

CARRYING COSTS

Charges totaled $31,473 for carrying costs on the balance of the CIP Tracker, as shown in Appendix A, Table 1.

The Commission and Otter Tail have agreed that allowing carrying charges to be added to the CIP Tracker Account will compensate the Company for the time value of the money invested in CIP programs.

As set in the MNPUC's September 26, 2015 Order, E017/M-14-201, the monthly carrying charge has been modified on the CIP tracker-account balance to the short-term cost of debt set in the Company's last rate case, E017/GR-10-239.

Otter Tail does not count the carrying costs charges toward the spending requirement (see Appendix A, Table 5 Status Report Recap) but does include the charges in the CIP Tracker for recovery.

Conservation Cost Recovery Adjustment

CONSERVATION COST RECOVERY ADJUSTMENT

This filing constitutes the 22nd Annual Filing to Update the Conservation Improvement Project ("CIP") Rider ("Annual Filing") that Otter Tail Power Company ("Otter Tail", "Company") has made with the Minnesota Public Utilities Commission ("Commission", "PUC") to update the CIP Rider adjustment, more commonly referred to as the Conservation Cost Recovery Adjustment ("CCRA").

The CCRA may be adjusted annually by approval of the Commission. The recoverable CIP tracker balance is determined as described below, starting with the Commission accepted CIP tracker account balance as of the end of the prior year. The following adjustments are made from this starting point:

1. Add financial incentives awarded by the Commission not reflected in the prior year-end CIP tracker balance;
2. Add current year CIP approved spending levels;
3. Subtract current year CIP cost recovery through base rates as estimated based on Company's projected retail sales.

All costs appropriately charged to the CIP tracker account shall be eligible for recovery through this rider and all revenues received from the application of the CCRA shall be credited to the CIP tracker account. Table 1 illustrates the history of the CCRA charge.

Table 1

Year (July 1 - June 30)	CIP Surcharge / CCRA Factor	Previous Year Ending Tracker Balance
1995 / 1996	0.503%	$2,503,100
1996 / 1997	1.25%	$582,920
1997 / 1998	1.75%	$805,804
1998 / 1999	2.75%	$925,213
1999 / 2000	1.50%	$903,925
2000 / 2001	0.75%	$1,117,853
2001 / 2002	0.65%	$739,796
2002 / 2003	0.65%	$1,059,412
2003 / 2004	0.50%	$843,909
2004 / 2005	0.50%	$881,730
2005 / 2006	0.75%	$1,203,180
2006 / 2007	0.75%	$1,063,660
2007 / 2008	0.75%	$1,035,608
2008 / 2009	0.50%	$490,714
2009 / 2010	1.75%	$265,057
2010 / 2011	3.00%	$1,927,314
2011 / 2012	3.00% / 3.80%	$3,721,665
2012 / 2013	3.80% / $0.00142/kWh	$5,188,129
2013 / 2014	$0.00175/kWh	$3,572,621
Oct 2014 / Sep 2015	$0.00263	$4,835,558
Oct 2015 / Sep 2016	$0.00287	$5,731,183
Oct 2016 / Sep 2017	$0.00275	$4,333,061

Otter Tail has included the CIP tracker, Exhibit 1, which uses the Commission approved per-kWh method from October 2016 through September 2017. For October 2016 through September 2017, Otter Tail is proposing to change the surcharge to $0.00275/kWh. Exhibit 2 illustrates the monthly impacts for each of the Company's ten rate classes.

Calculation of CCRA and Conservation Cost Recovery Charge ("CCRC")

During the 21 month period from end of year 2015 through the end of September 2017, Otter Tail plans to reduce the CIP Tracker balance of $4,333,061 to an estimated $0, as illustrated in Table 2 below. In addition, Otter Tail estimates the following impacts to the CIP Tracker balance during the 21 month period:

- $16,119,907 of additional expenses from carrying charges, CIP incentive and CIP program expenses
- $7,780,423 collected from the CCRC
- $12,672,545 collected from the CCRA, of which $7,122,471 will be collected during the 12 months from October 2016 – September 2017

Table 2

	Jan 2016 - Sep 2016	Oct 2016 - Sep 2017
Beginning Balance	**$4,333,060.95**	**$3,241,589.05**
Carrying Charges	$10,847.40	$6,987.66
CIP Program Expenses	$3,517,070.26	$5,999,920.95
CIP Incentive Proposed	$4,257,105.00	$2,327,976.00
CCRC through Base Rates	($3,326,420.49)	($4,454,002.52)
CCRA - CIP Rider	($5,550,074.07)	($7,122,471.13)
Ending Balance	**$3,241,589.05**	**$0.00**
CCRA Method	**$0.00287/ kWh**	**$0.00275/ kWh**

As illustrated in Exhibit 1, the proposed change in the surcharge will decrease the CCRA by approximately four percent. By October 1, 2017 the CIP tracker balance is projected to decrease to $0. Otter Tail is cognizant of customer bill impacts while reducing the CIP tracker to the extent possible.

The amounts on lines 4 and 5 of Exhibit 1 reflect the projected expenditures and financial incentive for 2016 and 2017 through September 2017. Line 6 removes from the CIP tracker the portion of CIP costs that are included in base rates. The current base rate amount from January 2016 through September 2017 is calculated each month as forecasted retail sales multiplied by the approved CCRC in base rates of $0.00172 per kWh. This rate was approved in Otter Tail's last general rate case (Docket No. E017/GR-10-239).

As illustrated in Exhibit 2, all ten rate classes will receive a four percent decrease in the proposed CCRA.

The proposed 2015 CCRA is calculated assuming the rate is approved and is effective October 1, 2016. If implementation of the 2016 CCRA occurs after October 1, 2016, the CCRA may need to be adjusted to recover the approved revenue requirements over the remaining months of the period, through September 2017. This approach would ensure cost recovery and approved eligible costs match. If it is necessary to adjust the CCRA, Otter Tail proposes to calculate the final 2016 CCRA and include it with the corresponding rate schedule pages in a compliance filing in this docket.

The redline and final versions of the CIP rider rate schedules are included immediately following Exhibits 1 and 2. The CIP rider rate schedule included in this filing accommodates the change to the CCRA based on the proposed $0.00275 per-kWh method of recovery. Once the 2016/2017 CCRA is approved, the Otter Tail will file the corresponding rate schedule that complies with the Commission's Order in this docket.

Otter Tail Power Company **Exhibit 1**

CIP TRACKER AND CALCULATION OF PROPOSED CCRA **Page 1 of 1**

-based on projected 2016 sales and 2015 financial incentive

		January 2016	February* 2016	March 2016	April 2016	May 2016	June 2016	July 2016	August 2016	September 2016	Total
1	Beginning of Period Balance	$4,333,061	$3,506,545	$2,978,092	$2,352,653	$1,728,730	$1,120,438	$696,593	$158,339	($397,396)	
2	Carrying Charge Rate	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	
3	Monthly Carrying Charge	$2,853	$2,308	$1,961	$1,549	$1,138	$738	$459	$104	($262)	$10,847
4	CIP Program Charges	$283,507	$605,988	$388,080	$342,659	$252,684	$423,875	$344,170	$465,420	$410,688	$3,517,070
5	CIP Incentive	$0	$0	$0	$0	$0	$0	$0	$0	$4,257,105	$4,257,105
6	Less: CIP Recovery thru Base Rates	($417,105)	($426,044)	($380,528)	($362,785)	($323,058)	($317,941)	($330,840)	($382,694)	($385,425)	($3,326,420)
7	Less: Conservation Adjustment (CIP Revenue)	($695,770)	($710,706)	($634,951)	($605,346)	($539,056)	($530,517)	($552,042)	($638,565)	($643,122)	($5,550,074)
8	End of Period Balance	$3,506,545	$2,978,092	$2,352,653	$1,728,730	$1,120,438	$696,593	$158,339	($397,396)	$3,241,589	
9	**CCRA through September 2016**	**$0.00287**									
10	Projected sales (kWh)	257,840,725	251,939,492	221,237,325	210,921,789	187,824,282	184,849,128	192,349,072	222,496,556	224,084,186	
11	CCRC / kWh	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	

		October 2016	November 2016	December 2016	January 2017	February 2017	March 2017	April 2017	May 2017	June 2017	July 2017	August 2017	September 2017	Total
1	Beginning of Period Balance	$3,241,589	$2,739,823	$2,227,054	$2,592,146	$1,792,614	$1,320,109	$743,626	$167,809	($397,993)	($775,509)	($1,269,551)	($1,767,547)	$10,614,171
2	Carrying Charge Rate	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	
3	Monthly Carrying Charge	$2,134	$1,804	$1,466	$1,707	$1,180	$869	$490	$110	($262)	($511)	($836)	($1,164)	$6,988
4	CIP Program Charges	$410,598	$508,169	$1,458,572	$292,012	$624,168	$399,723	$352,938	$260,264	$436,591	$354,495	$479,382	$423,009	$5,999,921
5	CIP Incentive	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,327,976	$2,327,976
6	Less: CIP Recovery thru Base Rates	($351,849)	($393,496)	($421,276)	($420,624)	($422,395)	($375,926)	($357,524)	($317,868)	($313,124)	($326,275)	($375,721)	($377,926)	($4,454,003)
7	Less: Conservation Adjustment (CIP Revenue)	($562,649)	($629,246)	($673,670)	($672,627)	($675,458)	($601,149)	($571,722)	($508,308)	($500,721)	($521,752)	($600,821)	($604,348)	($7,122,471)
8	End of Period Balance	$2,739,823	$2,227,054	$2,592,146	$1,792,614	$1,320,109	$743,626	$167,809	($397,993)	($775,509)	($1,269,551)	($1,767,547)	$0.00	$7,372,582
9	**CCRA PROPOSED ($ / kWh)**	**$0.00275**												
10	Projected sales (kWh)	204,563,657	228,776,543	244,928,006	244,548,787	245,578,294	218,561,346	207,862,536	184,806,981	182,048,573	189,694,800	218,442,295	219,724,522	2,589,536,339
11	CCRC / kWh	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	$0.00172	

*Actual data was used through February 2016, forecast used thereafter

Otter Tail Power Company **Exhibit 2**
Comparison of Monthly Bill Impacts

CIP Surcharge (CCRA) is based on $0.00275 / kWh

Rate Class	*Average Data		Monthly Impacts		
Residential	825 avg. kWh/bills	**Current**	$2.37	-$0.10	Monthly Bill $ Change
	$86.39 avg. $ / bill before CCRA	**Proposed**	$2.27	-0.11%	Monthly Bill % Change
Farm	2,193 avg. kWh/bills	**Current**	$6.29	-$0.26	Monthly Bill $ Change
	$202.86 avg. $ / bill before CCRA	**Proposed**	$6.03	-0.13%	Monthly Bill % Change
General Service	2,644 avg. kWh/bills	**Current**	$7.59	-$0.32	Monthly Bill $ Change
	$235.45 avg. $ / bill before CCRA	**Proposed**	$7.27	-0.13%	Monthly Bill % Change
Large General Serv.	211,031 avg. kWh/bills	**Current**	$605.66	-$25.22	Monthly Bill $ Change
	$12,588.16 avg. $ / bill before CCRA	**Proposed**	$580.44	-0.19%	Monthly Bill % Change
Irrigation	1,858 avg. kWh/bills	**Current**	$5.33	-$0.22	Monthly Bill $ Change
	$133.04 avg. $ / bill before CCRA	**Proposed**	$5.11	-0.16%	Monthly Bill % Change
Outdoor Lighting	83 avg. kWh/bills	**Current**	$0.24	-$0.01	Monthly Bill $ Change
	$11.89 avg. $ / bill before CCRA	**Proposed**	$0.23	-0.08%	Monthly Bill % Change
Municipal Pumping	3,273 avg. kWh/bills	**Current**	$9.39	-$0.39	Monthly Bill $ Change
	$228.97 avg. $ / bill before CCRA	**Proposed**	$9.00	-0.16%	Monthly Bill % Change
Water Heating, Cntrl	216 avg. kWh/bills	**Current**	$0.62	-$0.03	Monthly Bill $ Change
	$16.31 avg. $ / bill before CCRA	**Proposed**	$0.59	-0.15%	Monthly Bill % Change
Interruptible Load	1,958 avg. kWh/bills	**Current**	$5.62	-$0.23	Monthly Bill $ Change
	$99.06 avg. $ / bill before CCRA	**Proposed**	$5.39	-0.22%	Monthly Bill % Change
Deferred Load	1,857 avg. kWh/bills	**Current**	$5.33	-$0.22	Monthly Bill $ Change
	$98.31 avg. $ / bill before CCRA	**Proposed**	$5.11	-0.21%	Monthly Bill % Change

*All average data comes from Otter Tail's approved rates in Schedule-E that was filed July 22, 2011 in compliance to the MN PUC's Order (Docket no. E017/GR-10-239), then adjusted for projected Rider Revenue.

CONSERVATION IMPROVEMENT PROJECT (CIP) RIDER

DESCRIPTION	RATE CODE
Conservation Surcharge	31-530
CIP Exempt Adjustment Credit	31-532

RULES AND REGULATIONS: Terms and conditions of this electric rate schedule and the General Rules and Regulations govern use of this rider.

APPLICATION OF RIDER: This rider is applicable to any electric service under all of the Company's retail rate schedules, except for Standby Service, Section 11.01 and those customers who have been granted an exemption under a large customer facility. The exemptions are as follows:

"Large Customer Facility" customers that have been exempted from the Company's Conservation Improvement Program charges pursuant to Minn. Stat. 216B.241, Subd. 1a (b) shall receive a monthly exemption from conservation improvement program charges pursuant to Minn. Stat.216B.16, subd. 6b Energy Conservation Improvement. Such monthly exemption will be effective beginning January 1 of the year following the grant of exemption. Upon exemption from conservation program charges, the "Large Customer Facility" customers can no longer participate in the Company's Energy Conservation Improvement Program.

CONSERVATION SURCHARGE AND EXEMPTION ADJUSTMENT: There shall be added to each non-exempt Customer's bill a Conservation Surcharge based on the applicable Conservation Surcharge Factor multiplied by the Customer's monthly energy use. The Conservation Surcharge shall not be applied to Meter(s) on Customer Account(s) granted exemption by the Commissioner of the Minnesota Department of Commerce, Division of Energy Resources (or successor agency) from CIP costs pursuant to Minn. Stat. 216B.241. Meter(s) on Customer Account(s) granted an exemption shall receive a Conservation Cost Recovery Charge (CCRC) Exemption Adjustment Credit.

The Conservation Surcharge Factor is $0.~~00287~~ 00275 per kWh. **C**

DETERMINATION OF CONSERVATION SURCHARGE FACTOR: The Conservation Surcharge shall be the quotient of the Recoverable CIP Tracker Balance, divided by projected Minnesota non-exempt retail energy sales for a designated 12-month recovery period. The Surcharge may be adjusted annually by approval of the Minnesota Public Utilities Commission (MNPUC). The Recoverable CIP Tracker Balance is determined as described below, starting with the MNPUC accepted CIP Tracker account balance as of the end of the prior year. From this starting point:

1. Add financial incentives awarded by the MNPUC not reflected in the prior year-end CIP Tracker balance;

CONSERVATION IMPROVEMENT PROJECT (CIP) RIDER

DESCRIPTION	RATE CODE
Conservation Surcharge	31-530
CIP Exempt Adjustment Credit	31-532

RULES AND REGULATIONS: Terms and conditions of this electric rate schedule and the General Rules and Regulations govern use of this rider.

APPLICATION OF RIDER: This rider is applicable to any electric service under all of the Company's retail rate schedules, except for Standby Service, Section 11.01 and those customers who have been granted an exemption under a large customer facility. The exemptions are as follows:

"Large Customer Facility" customers that have been exempted from the Company's Conservation Improvement Program charges pursuant to Minn. Stat. 216B.241, Subd. 1a (b) shall receive a monthly exemption from conservation improvement program charges pursuant to Minn. Stat.216B.16, subd. 6b Energy Conservation Improvement. Such monthly exemption will be effective beginning January 1 of the year following the grant of exemption. Upon exemption from conservation program charges, the "Large Customer Facility" customers can no longer participate in the Company's Energy Conservation Improvement Program.

CONSERVATION SURCHARGE AND EXEMPTION ADJUSTMENT: There shall be added to each non-exempt Customer's bill a Conservation Surcharge based on the applicable Conservation Surcharge Factor multiplied by the Customer's monthly energy use. The Conservation Surcharge shall not be applied to Meter(s) on Customer Account(s) granted exemption by the Commissioner of the Minnesota Department of Commerce, Division of Energy Resources (or successor agency) from CIP costs pursuant to Minn. Stat. 216B.241. Meter(s) on Customer Account(s) granted an exemption shall receive a Conservation Cost Recovery Charge (CCRC) Exemption Adjustment Credit.

The Conservation Surcharge Factor is $0.00275 per kWh. **C**

DETERMINATION OF CONSERVATION SURCHARGE FACTOR: The Conservation Surcharge shall be the quotient of the Recoverable CIP Tracker Balance, divided by projected Minnesota non-exempt retail energy sales for a designated 12-month recovery period. The Surcharge may be adjusted annually by approval of the Minnesota Public Utilities Commission (MNPUC). The Recoverable CIP Tracker Balance is determined as described below, starting with the MNPUC accepted CIP Tracker account balance as of the end of the prior year. From this starting point:

1. Add financial incentives awarded by the MNPUC not reflected in the prior year-end CIP Tracker balance;

Appendix A- Tables

Table 1

2015 CALCULATION OF CARRYING CHARGE ON CONSERVATION DOLLARS HELD IN CIP TRACKER ACCOUNT

Financial Incentive Project - Conservation Improvement Programs

Otter Tail Power Company

	Capital Expenditures (A)	Operating Expenses (B)	Revenues Received (C)	Dr. 1860.3100 Cr. 4310.4000 Carrying Charge 0.79%* (D)	Balance Account 1860.3000 + 1860.3100 (E)
Balance Dec. 31, 2014	0.00	75,734,431.04	(71,319,793.87)	901,638.63	5,731,182.73
January:					
Carrying Charge	--	--	--	3,773.03	3,773.03
Trf Carrying Charge Bal					0.00
Labor Accrual Adj					0.00
Activity	0.00	277,162.52	(1,018,896.75)	--	(741,734.23)
Deferred Taxes	--	--	--	--	--
Balance January 31, 2015	0.00	76,011,593.56	(72,338,690.62)	905,411.66	4,993,221.53
February:					
Carrying Charge	--	--	--	3,287.20	3,287.20
Labor Accrual Adj					0.00
Activity	0.00	237,949.23	(1,014,347.22)	--	(776,397.99)
Deferred Taxes	--	--	--	--	--
Balance February 28, 2015	0.00	76,249,542.79	(73,353,037.84)	908,698.86	4,220,110.74
March:					
Carrying Charge	--	--	--	2,778.24	2,778.24
Labor Accrual Adj					
Activity	0.00	401,974.62	(933,017.77)	--	(531,043.15)
Deferred Taxes	--	--	--	--	--
Balance March 31, 2015	0.00	76,651,517.41	(74,286,055.61)	911,477.10	3,691,845.83
April:					
Carrying Charge	--	--	--	2,430.47	2,430.47
Labor Accrual Adj					
Activity	0.00	354,926.72	(848,359.20)	--	(493,432.48)
Deferred Taxes	--			--	--
Balance April 30, 2015	0.00	77,006,444.13	(75,134,414.81)	913,907.57	3,200,843.82
May:					
Carrying Charge	--	--	--	2,107.22	2,107.22
Bonus/Incentive					0.00
Labor Accrual Adj					
Activity	0.00	261,730.40	(728,948.41)	--	(467,218.01)
Deferred Taxes	--	--	--	--	--
Balance May 31, 2015	0.00	77,268,174.53	(75,863,363.22)	916,014.79	2,735,733.03
June:					
Carrying Charge	--	--	--	1,801.02	1,801.02
Bonus/Incentive					0.00
Labor Accrual Adj					
Activity	0.00	439,050.61	(741,506.73)	--	(302,456.12)
Deferred Taxes	--	--	--	--	--
Balance June 30, 2015	0.00	77,707,225.14	(76,604,869.95)	917,815.81	2,435,077.93
July:					
Carrying Charge	--	--	--	1,603.09	1,603.09
Bonus/Incentive		2,957,972.00			2,957,972.00
Labor Accrual Adj					
Activity	0.00	356,492.01	(756,828.23)	--	(400,336.22)
Deferred Taxes	--	--	--	--	--
Balance July 31, 2015	0.00	81,021,689.15	(77,361,698.18)	919,418.90	4,994,316.80

Table 1

2015 CALCULATION OF CARRYING CHARGE ON CONSERVATION DOLLARS HELD IN CIP TRACKER ACCOUNT

Financial Incentive Project - Conservation Improvement Programs

Otter Tail Power Company

	Capital Expenditures (A)	Operating Expenses (B)	Revenues Received (C)	Dr. 1860.3100 Cr. 4310.4000 Carrying Charge 0.79%* (D)	Balance Account 1860.3000 + 1860.3100 (E)
August:					
Carrying Charge	--	--		3,287.93	3,287.93
Bonus/Incentive					0.00
Labor Accrual Adj					
Activity	0.00	482,082.97	(888,248.27)	--	(406,165.30)
Deferred Taxes	--	--	--	--	--
Balance August 31, 2015	0.00	81,503,772.12	(78,249,946.45)	922,706.83	4,591,439.43
September:					
Carrying Charge	--	--	--	3,022.70	3,022.70
Lost Margin & Bonus/Incentive					0.00
Labor Accrual Adj					0.00
Activity	0.00	425,392.17	(880,658.99)	--	(455,266.82)
Deferred Taxes	--	--	--	--	--
Balance Sept. 30, 2015	0.00	81,929,164.29	(79,130,605.44)	925,729.53	4,139,195.31
October:					
Carrying Charge	--	--	--	2,724.97	2,724.97
Lost Margin & Bonus/Incentive					0.00
Labor Accrual Adj					
Activity	0.00	425,298.20	(857,313.54)	--	(432,015.34)
Deferred Taxes	--	--	--	--	--
Balance Oct. 31, 2015	0.00	82,354,462.49	(79,987,918.98)	928,454.50	3,709,904.94
November:					
Carrying Charge	--		--	2,442.35	2,442.35
Labor Accrual Adj					
Activity	0.00	526,362.69	(874,990.34)	--	(348,627.65)
Deferred Taxes	--	--	--	--	--
Balance Nov. 30, 2015	0.00	82,880,825.18	(80,862,909.32)	930,896.85	3,363,719.64
December:					
Carrying Charge	--	--	--	2,214.45	2,214.45
Lost Margin & Bonus/Incentive					0.00
Labor Accrual Adj					
Activity	0.00	1,917,022.73	(949,895.87)	--	967,126.86
Deferred Taxes	--	--	--	--	--
Balance Dec. 31, 2015	0.00	84,797,847.91	(81,812,805.19)	933,111.30	4,333,060.95

Table 2 - A
2015 INCENTIVE MECHANISM - PRE-YEAR INCENTIVE CALCULATION FIGURES
Financial Incentive Project
Otter Tail Power Company

3-year Weather-Normalized Sales Average:	2,091,441,263	
1.0% of Sales:	20,914,413	From Utility's Tri/Biennial filing

For CIP Budget, Energy Goal, and Estimated Benefits, include only those modifications that were required by the Commissioner's Order or which the utility notified the OES that it planned to include in the incentive calculation upon approval. Include a summary of the modifications below.

Approved CIP Budget:	$5,559,500	From 2014 - 2016 Amended Compliance Filing from March 14, 2014, assessments removed
Approved CIP Energy Goal:	31,483,317	From 2014 - 2016 Amended Compliance Filing from March 14, 2014
Estimated Net Benefits at Approved Goal:	$22,767,049	From 2014 - 2016 Amended Compliance Filing from March 14, 2014, assessments removed

Modifications:

Budget	None
Energy	None
Net Benefits	None

Include the budget and energy goal changes for each modification included.
A single entry for net benefits reflecting the combined impact of all included modifications is sufficient.

OTP INPUTS INDICATED IN YELLOW

OTTER TAIL POWER COMPANY
for 2015

Inputs:

Average Sales:	2,091,441,263	
1.0% Energy Savings:	20,914,413	
Historic Average Savings:	1.44%	2008-2012, high and low removed
Earning Threshold:	**0.40%**	plus one unit of energy
Earning Threshold in Energy Savings:	8,365,766	
Award zero point:	0.30%	
Award zero point in Energy Savings:	6,274,324	
Steps from zero point to 1.5%	12	
Size of steps in Energy Savings:	2,091,441	

Incentive Calibration:

Average Incentive per unit at 1.5%:	$0.0700	Set by Commission in approval of incentive mechanism & calibration
Incentive Cap:	**$0.0875**	125% of incentive per kwh
Energy savings at 1.5%:	31,371,619	
Targeted incentive at 1.5%:	$2,196,013	
Multiplier:	**0.00807**	**Percent of Net Benefits received for every 0.1% of sales saved**

Table 2 - A
2015 INCENTIVE MECHANISM - PRE-YEAR INCENTIVE CALCULATION FIGURES
Financial Incentive Project
Otter Tail Power Company

Estimated Incentive Levels:

Estimated Incentive Levels:

			NET BENEFITS	INCENTIVE WITH CAP	
Achievement Level (% of sales)	Energy Saved	Benefits Awarded - Linear	Net Benefits - Linear	Incentive Award-Linear Proposal, $0.0875/kWh Cap	Average Incentive per unit Saved
0.00%	**0**	0.000%	$0	**$0**	$0.0000
0.10%	**2,091,441**	0.000%	$1,512,418	**$0**	$0.0000
0.20%	**4,182,883**	0.000%	$3,024,837	**$0**	$0.0000
0.30%	**6,274,324**	0.000%	$4,537,255	**$0**	$0.0000
0.40%	**8,365,765**	0.000%	$6,049,673	**$0**	$0.0000
0.50%	**10,457,206**	1.613%	$7,562,092	**$122,001**	$0.0117
0.60%	**12,548,648**	2.420%	$9,074,510	**$219,601**	$0.0175
0.70%	**14,640,089**	3.227%	$10,586,928	**$341,602**	$0.0233
0.80%	**16,731,530**	4.033%	$12,099,346	**$488,003**	$0.0292
0.90%	**18,822,971**	4.840%	$13,611,765	**$658,804**	$0.0350
1.00%	**20,914,413**	5.647%	$15,124,183	**$854,005**	$0.0408
1.10%	**23,005,854**	6.453%	$16,636,601	**$1,073,607**	$0.0467
1.20%	**25,097,295**	7.260%	$18,149,020	**$1,317,608**	$0.0525
1.30%	**27,188,736**	8.067%	$19,661,438	**$1,586,010**	$0.0583
1.40%	**29,280,178**	8.873%	$21,173,856	**$1,878,811**	$0.0642
1.50%	**31,371,619**	9.680%	$22,686,275	**$2,196,013**	$0.0700
1.60%	**33,463,060**	10.487%	$24,198,693	**$2,537,615**	$0.0758
1.70%	**35,554,501**	11.293%	$25,711,111	**$2,903,618**	$0.0817
1.80%	**37,645,943**	12.100%	$27,223,530	**$3,294,020**	$0.0875
1.90%	**39,737,384**	12.907%	$28,735,948	**$3,477,021**	$0.0875
2.00%	**41,828,825**	13.713%	$30,248,366	**$3,660,022**	$0.0875
2.10%	**43,920,267**	14.520%	$31,760,784	**$3,843,023**	$0.0875
2.20%	**46,011,708**	15.327%	$33,273,203	**$4,026,024**	$0.0875
2.33%	**48,652,628**	16.345%	$38,079,065	**$4,257,105**	$0.0875
2.30%	**48,103,149**	16.133%	$34,785,621	**$4,209,026**	$0.0875
2.40%	**50,194,590**	16.940%	$36,298,039	**$4,392,027**	$0.0875
2.50%	**52,286,032**	17.747%	$37,810,458	**$4,575,028**	$0.0875
2.60%	**54,377,473**	18.553%	$39,322,876	**$4,758,029**	$0.0875
2.70%	**56,468,914**	19.360%	$40,835,294	**$4,941,030**	$0.0875
2.80%	**58,560,355**	20.167%	$42,347,713	**$5,124,031**	$0.0875
2.90%	**60,651,797**	20.973%	$43,860,131	**$5,307,032**	$0.0875
3.00%	**62,743,238**	21.780%	$45,372,549	**$5,490,033**	$0.0875

Table 2 - B
2015 INCENTIVE MECHANISM - POST-YEAR INCENTIVE CALCULATION FIGURES
Financial Incentive Project
Otter Tail Power Company

Actual CIP Results for 2015		
Spending:	$6,105,445	From Utility Status Report
Energy Saved:	48,652,628	From Utility Status Report, excluding MiM kWh
Total Net Benefits Achieved:	$38,079,065	From Utility Status Report
	$0	Exclude negative net benefits in low-income program
	$239,682	Exclude assessments from net benefits
Net Benefits Achieved for Incentive Calculation:	$38,318,747	
	233%	percent of the 1% goal achieved
Resulting Incentive:		
Steps above Zero Point:	20.26273	
Percent of Net Benefits Awarded:	16.345%	Linear
Financial Incentive Award:	$4,257,105	Capped Incentive @ 8.75 cents/kWh
OTP INPUTS INDICATED IN YELLOW		
CALCULATED FINANCIAL INCENTIVE AWARD IN GREEN		

Table 3
2015 PROJECT COSTS, SAVINGS, AND BENEFITS
Financial Incentive Project
Otter Tail Power Company

	2015 PROPOSED SAVINGS, COSTS AND BENEFITS				2015 ACTUAL SAVINGS, COSTS AND BENEFITS			
	ENERGY SAVINGS	TOTAL COSTS	TOTAL BENEFITS	NET BENEFITS	ENERGY SAVINGS	TOTAL COSTS	TOTAL BENEFITS	NET BENEFITS
Residential								
Air Conditioning Control	7,233	$81,000	$296,810	$215,810	7,817	$65,889	$320,558	$254,669
Air Source Heat Pumps	1,301,886	$122,000	$1,142,453	$1,020,453	1,150,790	$172,951	$937,264	$764,312
Appliance Recycling	574,491	$117,000	$325,396	$208,396	425,693	$84,472	$242,402	$157,930
Be Bright	4,033,665	$356,000	$2,390,002	$2,034,002	4,547,734	$249,015	$2,689,448	$2,440,434
EC Motors (New)	93,001	$36,000	$93,150	$57,150	86,973	$20,451	$86,834	$66,383
Energy Feedback Program	2,085,661	$370,600	$445,888	$75,288	2,829,382	$413,946	$604,885	$190,939
Geothermal Heat Pumps	921,413	$144,000	$1,142,851	$998,851	842,842	$174,094	$805,889	$631,796
Home Insulation	184,998	$57,000	$106,944	$49,944	80,749	$27,119	$46,680	$19,561
Home Transformer (New)	203,386	$61,000	$117,266	$56,266	113,358	$21,619	$67,057	$45,438
School Kits (New)	121,629	$25,000	$58,603	$33,603	240,090	$19,684	$107,564	$87,880
Water Heating Control (New)	214,036	$40,000	$391,098	$351,098	401,286	$11,491	$732,017	$720,525
Advertising & Education	0	$150,000	$0	($150,000)	0	$162,564	$0	($162,564)
Financing	0	$13,000	$0	($13,000)	0	$12,586	$0	($12,586)
Implementation & Training	0	$40,000	$0	($40,000)	0	$65,666	$0	($65,666)
Total - Residential	9,741,399	$1,612,600	$6,510,461	$4,897,861	10,726,715	$1,501,548	$6,640,599	$5,139,051
Commercial								
Adjustable Speed Drives	3,810,456	$340,400	$3,573,243	$3,232,843	14,374,741	$736,720	$14,120,770	$13,384,050
Air Conditioning Control - Commercial	1,222	$36,000	$151,056	$115,056	592	$15,482	$36,429	$20,947
Air Source Heat Pumps	696,459	$69,000	$760,762	$691,762	895,049	$145,340	$859,529	$714,189
Commercial Design Assistance	2,419,175	$490,500	$3,343,367	$2,852,867	1,406,516	$344,530	$1,887,905	$1,543,375
Geothermal Heat Pumps	704,911	$122,000	$923,216	$801,216	474,417	$108,507	$551,441	$442,934
Grant	3,476,772	$721,000	$4,804,312	$4,083,312	2,921,337	$422,609	$3,935,632	$3,513,023
Industrial Process Efficiency (New)	714,086	$135,000	$708,269	$573,269	1,596,207	$215,889	$1,217,939	$1,002,050
Lighting	3,400,273	$563,000	$3,856,982	$3,293,982	6,238,971	$1,020,718	$5,982,496	$4,961,778
Lighting - New Construction	2,164,338	$143,000	$1,863,320	$1,720,320	7,599,977	$249,497	$7,205,836	$6,956,339
Motors	140,895	$81,000	$143,111	$62,111	1,261,134	$194,528	$1,207,319	$1,012,791
PC Power Supply (New)	793,399	$67,000	$273,208	$206,208	73,137	$6,081	$25,321	$19,239
Recommissioning	1,937,520	$272,000	$526,628	$254,628	0	$33,390	$0	($33,390)
Refrigeration	1,238,014	$170,000	$725,826	$555,826	830,140	$150,685	$358,547	$207,862
Advertising & Education	0	$25,000	$0	($25,000)	0	$27,429	$0	($27,429)
Compressed Air Audits	0	$20,000	$0	($20,000)	0	$21,977	$0	($21,977)
Financing	0	$32,000	$0	($32,000)	0	$2,098	$0	($2,098)
Implementation & Training	0	$60,000	$0	($60,000)	0	$78,398	$0	($78,398)
Total - Commercial	21,497,519	$3,346,900	$21,653,299	$18,306,399	37,672,218	$3,773,878	$37,389,165	$33,615,287

Table 3
2015 PROJECT COSTS, SAVINGS, AND BENEFITS
Financial Incentive Project
Otter Tail Power Company

	2015 PROPOSED SAVINGS, COSTS AND BENEFITS				2015 ACTUAL SAVINGS, COSTS AND BENEFITS			
	ENERGY SAVINGS	TOTAL COSTS	TOTAL BENEFITS	NET BENEFITS	ENERGY SAVINGS	TOTAL COSTS	TOTAL BENEFITS	NET BENEFITS
Low-Income								
House Therapy	244,399	$150,000	$162,789	$12,789	253,694	$148,992	$154,746	$5,754
Total - Low Income	244,399	$150,000	$162,789	$12,789	253,694	$148,992	$154,746	$5,754
Program Development & Regulatory Requirements								
Planning - Regulatory Affairs	0	$300,000	$0	($300,000)	0	$257,238	$0	($257,238)
Research & Development	0	$150,000	$0	($150,000)	0	$180,797	$0	($180,797)
NGEA - Regulatory Assessments	0	$95,000	$0	($95,000)	0	$105,610	$0	($105,610)
PUC Assessments	0	$20,000	$0	($20,000)	0	$17,331	$0	($17,331)
Made in Minnesota Solar Energy Assesment	0	$103,909	$0	($103,909)	58,827	$116,741	$0	($116,741)
Total - Development & Regulatory Requirements	0	$668,909	$0	($668,909)	58,827	$677,717	$0	($677,717)
Miscellaneous Projects								
Town Energy Challenge - Inactive	0	$0	$0	$0	0	$764	$0	($764)
Company CIP Projects	0	$0	$0	$0	0	$2,059	$0	($2,059)
Accounting Adjustments	0	$0	$0	$0	0	$487	$0	($487)
Total - Miscellaneous	0	$0	$0	$0	0	$3,309	$0	($3,309)
Total - All CIP	31,483,317	$5,778,409	$28,326,549	$22,548,140	48,711,455	$6,105,445	$44,184,510	$38,079,065

All numbers are for a single year - 2015. DSMORE software was used for the analysis, with figures discounted to 2015.

TABLE 4
2015 BENEFIT COST RATIOS - DIRECT IMPACT & TOTAL CIP
Financial Incentive Project
Otter Tail Power Company

	As Filed - 2015 Proposed Benefit/Cost Ratios					Actual - 2015 Benefit/Cost Ratios				
	Utility Test	TRC Test	RIM Test	Societal Test	Participant Test	Utility Test	TRC Test	RIM Test	Societal Test	Participant Test
Residential										
Air Conditioning Control	3.66	5.39	3.40	5.39	inf.	4.87	7.15	4.39	7.15	inf.
Air Source Heat Pumps	9.36	6.36	1.02	6.36	7.17	5.42	4.02	0.87	4.02	5.33
Appliance Recycling	2.78	4.48	0.74	4.48	inf.	2.87	4.67	0.73	4.67	inf.
Be Bright	6.71	9.41	0.83	9.41	23.15	10.80	8.84	0.85	8.84	12.99
EC Motors (New)	2.59	2.89	0.71	2.89	5.68	4.25	3.93	0.78	3.93	5.88
Energy Feedback Program	1.20	1.20	0.51	1.20	inf.	1.46	1.46	0.50	1.46	inf.
Geothermal Heat Pumps	7.94	1.87	1.20	1.87	1.53	4.63	1.63	0.86	1.63	1.84
Home Insulation	1.88	1.23	0.49	1.23	2.70	1.72	1.11	0.47	1.11	2.78
Home Transformer (New)	1.92	3.94	0.58	3.94	18.54	3.10	5.62	0.62	5.62	31.74
School Kits (New)	2.34	4.57	0.63	4.57	inf.	5.46	13.22	0.67	13.22	inf.
Water Heating Control (New)	9.78	9.78	6.83	9.78	inf.	63.70	63.70	16.39	63.70	inf.
Advertising & Education	0.00	0.00	0.00	0.00	inf.	0.00	0.00	0.00	0.00	inf.
Financing	0.00	0.00	0.00	0.00	inf.	0.00	0.00	0.00	0.00	inf.
Implementation & Training	0.00	0.00	0.00	0.00	inf.	0.00	0.00	0.00	0.00	inf.
Total - Residential	4.04	3.41	0.90	3.41	5.86	4.42	3.58	0.88	3.58	6.35
Commercial										
Adjustable Speed Drives	10.50	6.40	1.36	6.40	3.53	19.17	9.07	1.49	9.07	6.11
Air Conditioning Control - Commercial	4.20	7.00	4.09	7.00	inf.	2.35	4.77	2.01	4.77	inf.
Air Source Heat Pumps	11.03	3.49	1.24	3.49	2.25	5.91	3.64	1.04	3.64	3.83
Commercial Design Assistance	6.82	4.86	1.49	4.86	2.21	5.48	3.49	1.36	3.49	2.71
Geothermal Heat Pumps	7.57	1.84	1.22	1.84	1.07	5.08	1.53	1.05	1.53	1.40
Grant	6.66	3.02	1.95	3.02	1.09	9.31	4.40	1.61	4.40	1.87
Industrial Process Efficiency (New)	5.25	2.02	1.28	2.02	1.12	5.64	3.68	1.17	3.68	3.25
Lighting	6.85	3.72	1.59	3.72	1.83	5.86	6.46	1.38	6.46	5.25
Lighting - New Construction	13.03	3.75	1.48	3.75	1.99	28.88	7.80	1.50	7.80	5.26
Motors	1.77	1.82	0.87	1.82	1.77	6.21	8.50	1.26	8.50	7.28
PC Power Supply (New)	4.08	4.15	1.12	4.15	5.57	4.16	3.27	1.11	3.27	4.46
Recommissioning	1.94	1.31	0.68	1.31	1.92	0.00	0.00	0.00	0.00	0.50
Refrigeration	4.27	4.26	1.20	4.26	4.06	2.38	2.46	0.89	2.46	3.58
Advertising & Education	0.00	0.00	0.00	0.00	inf.	0.00	0.00	0.00	0.00	inf.
Compressed Air Audits	0.00	0.00	0.00	0.00	inf.	0.00	0.00	0.00	0.00	0.80
Financing	0.00	0.00	0.00	0.00	inf.	0.00	0.00	0.00	0.00	inf.
Implementation & Training	0.00	0.00	0.00	0.00	inf.	0.00	0.00	0.00	0.00	inf.
Total - Commercial	6.47	3.49	1.45	3.49	1.82	9.91	6.01	1.42	6.01	4.35
Low Income										
House Therapy	1.09	9.54	0.53	9.54	inf.	1.04	10.79	0.48	10.79	inf.
Total - Low-Income	1.09	9.54	0.53	9.54	inf.	1.04	10.79	0.48	10.79	inf.

TABLE 4
2015 BENEFIT COST RATIOS - DIRECT IMPACT & TOTAL CIP
Financial Incentive Project
Otter Tail Power Company

	As Filed - 2015 Proposed Benefit/Cost Ratios					Actual - 2015 Benefit/Cost Ratios				
	Utility Test	TRC Test	RIM Test	Societal Test	Participant Test	Utility Test	TRC Test	RIM Test	Societal Test	Participant Test
Miscellaneous Projects										
Town Energy Challenge - Inactive	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Company CIP Projects	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Accounting Adjustments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total - Miscellaneous	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Program Development And Regulatory Requirements										
Planning - Regulatory Affairs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Research & Development	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NGEA - Regulatory Assessments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PUC Assessments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Made in Minnesota Solar Energy Assesment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total - Development & Regulatory Requirements	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total - All CIP	4.68	3.20	1.17	3.20	2.49	7.24	5.22	1.26	5.22	4.67

All numbers are for a single year - 2015. DSMORE software was used for the analysis, with figures discounted to 2015.

Table 5
2015 CIP PROGRAM STATUS REPORT / CIP TRACKER RECAP
Financial Incentive Project -- 2015 Conservation Improvement Programs
Otter Tail Power Company

	2015 Expenditures			2015 Participation			2015 Energy Savings - kWh			2015 Coincident Demand Savings - kW		
	Actual	Budget	% Goal	Actual	Budget	% Goal	Actual	Budget	% Goal	Actual	Budget	% Goal
Residential Programs												
Air Conditioning Control	$65,889	$81,000	81%	162	150	108%	7,817	7,233	108%	115.089	106.560	108%
Air Source Heat Pumps	$172,951	$122,000	142%	123	137	90%	1,150,790	1,301,886	88%	9.797	18.230	54%
Appliance Recycling	$84,472	$117,000	72%	409	545	75%	425,693	574,491	74%	60.754	80.960	75%
Be Bright	$249,015	$356,000	70%	129,607	99,000	131%	4,547,734	4,033,665	113%	531.352	478.220	111%
EC Motors (New)	$20,451	$36,000	57%	111	120	93%	86,973	93,001	94%	7.850	8.490	92%
Energy Feedback Program	$413,946	$370,600	112%	38,621	32,810	118%	2,829,382	2,085,661	136%	1,586.428	1,169.430	136%
Geothermal Heat Pumps	$174,094	$144,000	121%	34	43	79%	842,842	921,413	91%	17.567	22.220	79%
Home Insulation	$27,119	$57,000	48%	21	55	38%	80,749	184,998	44%	0.000	0.000	N/A
Home Transformer (New)	$21,619	$61,000	35%	670	1,575	43%	113,358	203,386	56%	6.043	14.290	42%
School Kits (New)	$19,684	$25,000	79%	2,913	1,275	228%	240,090	121,629	197%	13.131	9.600	137%
Water Heating Control (New)	$11,491	$40,000	29%	16,165	8,622	187%	401,286	214,036	187%	3,706.201	1,980.200	187%
Advertising & Education	$162,564	$150,000	108%	14,322	10,000	143%	0	0	N/A	0.000	0.000	N/A
Financing	$12,586	$13,000	97%	6	7	86%	0	0	N/A	0.000	0.000	N/A
Implementation & Training	$65,666	$40,000	164%	78	175	44%	0	0	N/A	0.000	0.000	N/A
Total - Residential	$1,501,548	$1,612,600	93%	203,242	154,514	132%	10,726,715	9,741,399	110%	6,054.212	3,888.200	156%
Commercial Programs												
Adjustable Speed Drives	$736,720	$340,400	216%	365	135	270%	14,374,741	3,810,456	377%	2,135.579	504.200	424%
Air Conditioning Control - Commercial	$15,482	$36,000	43%	6	25	24%	592	1,222	48%	13.140	54.760	24%
Air Source Heat Pumps	$145,340	$69,000	211%	131	131	100%	895,049	696,459	129%	10.435	10.460	100%
Commercial Design Assistance	$344,530	$490,500	70%	8	6	133%	1,406,516	2,419,175	58%	278.720	509.210	55%
Geothermal Heat Pumps	$108,507	$122,000	89%	25	35	71%	474,417	704,911	67%	12.917	18.080	71%
Grant	$422,609	$721,000	59%	41	38	108%	2,921,337	3,476,772	84%	617.348	1,022.580	60%
Industrial Process Efficiency (New)	$215,889	$135,000	160%	2	2	100%	1,596,207	714,086	224%	169.917	108.570	157%
Lighting	$1,020,718	$563,000	181%	548	346	158%	6,238,971	3,400,273	183%	1,599.399	1,091.240	147%
Lighting - New Construction	$249,497	$143,000	174%	277	202	137%	7,599,977	2,164,338	351%	1,080.319	369.520	292%
Motors	$194,528	$81,000	240%	204	71	287%	1,261,134	140,895	895%	175.871	22.650	776%
PC Power Supply (New)	$6,081	$67,000	9%	457	3,562	13%	73,137	793,399	9%	17.052	184.960	9%
Recommissioning	$33,390	$272,000	12%	0	10	0%	0	1,937,520	0%	0.000	36.540	0%
Refrigeration	$150,685	$170,000	89%	103	119	87%	830,140	1,238,014	67%	134.581	241.850	56%
Advertising & Education	$27,429	$25,000	110%	54	10	540%	0	0	N/A	0.000	0.000	N/A
Compressed Air Audits	$21,977	$20,000	110%	3	4	75%	0	0	N/A	0.000	0.000	N/A
Financing	$2,098	$32,000	7%	0	5	0%	0	0	N/A	0.000	0.000	N/A
Implementation & Training	$78,398	$60,000	131%	443	250	177%	0	0	N/A	0.000	0.000	N/A
Total - Commercial	$3,773,878	$3,346,900	113%	2,667	4,951	54%	37,672,218	21,497,519	175%	6,245.277	4,174.620	150%
Low Income												
House Therapy	$148,992	$150,000	99%	145	160	91%	253,694	244,399	104%	24.035	30.490	79%
Total - Low Income	$148,992	$150,000	99%	145	160	91%	253,694	244,399	104%	24.035	30.490	79%
Program Development & Regulatory												
Planning - Regulatory Affairs	$257,238	$300,000	86%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Research & Development	$180,797	$150,000	121%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NGEA - Regulatory Assessments	$105,610	$95,000	111%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PUC Assessments	$17,331	$20,000	87%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Made in Minnesota Solar Energy Assesment	$116,741	$103,909	112%	N/A	N/A	N/A	58,827	0	N/A	0	0	N/A
Total - Development & Regulatory	$677,717	$668,909	101%	N/A	N/A	N/A	58,827	0	N/A	0	0	N/A

Table 5
2015 CIP PROGRAM STATUS REPORT / CIP TRACKER RECAP
Financial Incentive Project -- 2015 Conservation Improvement Programs
Otter Tail Power Company

	2015 Expenditures			2015 Participation			2015 Energy Savings - kWh			2015 Coincident Demand Savings - kW		
	Actual	Budget	% Goal	Actual	Budget	% Goal	Actual	Budget	% Goal	Actual	Budget	% Goal
Miscellaneous Projects												
Town Energy Challenge - Inactive	$764	$0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Company CIP Projects	$2,059	$0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Accounting Adjustments	$487	$0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total - Miscellaneous	$3,309	$0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total - 2015 CIP Project Costs	$6,105,445	$5,778,409	106%	206,054	159,625	129%	48,711,455	31,483,317	155%	12,323.524	8,093.310	152%
CIP Tracker Carrying Costs	$31,473											
Total - 2015 CIP with Carrying Costs & Reg. NGEA	$6,136,918	$5,778,409	106%	206,054	159,625	129%	48,711,455	31,483,317	155%	12,323.524	8,093.310	152%
Incentives - 2014 [Bonus]	$2,957,972											
CIP Recovery Mechanism	($6,401,187)											
Recovered Through Rates (inc cc recovery)	($4,091,825)											
Prior Year Carry Forward Balance	$5,731,183											
Tracker Balance - Year End 2015	$4,333,061											

Check: -

Table 6
2015 CIP PROGRAM STATUS REPORT / CIP TRACKER RECAP - COST PER KW / KWH
Financial Incentive Project -- 2015 Conservation Improvement Programs
Otter Tail Power Company

	2015 Expenditures		2015 Energy Savings - kWh		Cost per kWh		2015 Coincident Demand Savings - kW		Cost per kW	
	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget
Residential Programs - Direct Impact										
Air Conditioning Control	$65,889	$81,000	7,817	7,233	$8.43	$11.20	115.089	106.560	$573	$760
Air Source Heat Pumps	$172,951	$122,000	1,150,790	1,301,886	$0.15	$0.09	9.797	18.230	$17,653	$6,692
Appliance Recycling	$84,472	$117,000	425,693	574,491	$0.20	$0.20	60.754	80.960	$1,390	$1,445
Be Bright	$249,015	$356,000	4,547,734	4,033,665	$0.05	$0.09	531.352	478.220	$469	$744
EC Motors (New)	$20,451	$36,000	86,973	93,001	$0.24	$0.39	7.850	8.490	$2,605	$4,240
Energy Feedback Program	$413,946	$370,600	2,829,382	2,085,661	$0.15	$0.18	1,586.428	1,169.430	$261	$317
Geothermal Heat Pumps	$174,094	$144,000	842,842	921,413	$0.21	$0.16	17.567	22.220	$9,910	$6,481
Home Insulation	$27,119	$57,000	80,749	184,998	$0.34	$0.31	0.000	0.000	$0	$0
Home Transformer (New)	$21,619	$61,000	113,358	203,386	$0.19	$0.30	6.043	14.290	$3,577	$4,269
School Kits (New)	$19,684	$25,000	240,090	121,629	$0.08	$0.21	13.131	9.600	$1,499	$2,604
Water Heating Control (New)	$11,491	$40,000	401,286	214,036	$0.03	$0.19	3,706.201	1,980.200	$3	$20
Total - Residential	$1,260,732	$1,409,600	10,726,715	9,741,399	$0.12	$0.14	6,054.212	3,888.200	$208	$363
Commercial Programs - Direct Impact										
Adjustable Speed Drives	$736,720	$340,400	14,374,741	3,810,456	$0.05	$0.09	2,135.579	504.200	$345	$675
Air Conditioning Control - Commercial	$15,482	$36,000	592	1,222	$26.14	$29.47	13.140	54.760	$1,178	$657
Air Source Heat Pumps	$145,340	$69,000	895,049	696,459	$0.16	$0.10	10.435	10.460	$13,929	$6,597
Commercial Design Assistance	$344,530	$490,500	1,406,516	2,419,175	$0.24	$0.20	278.720	509.210	$1,236	$963
Geothermal Heat Pumps	$108,507	$122,000	474,417	704,911	$0.23	$0.17	12.917	18.080	$8,400	$6,748
Grant	$422,609	$721,000	2,921,337	3,476,772	$0.14	$0.21	617.348	1,022.580	$685	$705
Industrial Process Efficiency (New)	$215,889	$135,000	1,596,207	714,086	$0.14	$0.19	169.917	108.570	$1,271	$1,243
Lighting	$1,020,718	$563,000	6,238,971	3,400,273	$0.16	$0.17	1,599.399	1,091.240	$638	$516
Lighting - New Construction	$249,497	$143,000	7,599,977	2,164,338	$0.03	$0.07	1,080.319	369.520	$231	$387
Motors	$194,528	$81,000	1,261,134	140,895	$0.15	$0.57	175.871	22.650	$1,106	$3,576
PC Power Supply (New)	$6,081	$67,000	73,137	793,399	$0.08	$0.08	17.052	184.960	$357	$362
Recommissioning	$33,390	$272,000	0	1,937,520	$0.00	$0.14	0.000	36.540	$0	$7,444
Refrigeration	$150,685	$170,000	830,140	1,238,014	$0.18	$0.14	134.581	241.850	$1,120	$703
Total - Commercial	$3,643,976	$3,209,900	37,672,218	21,497,519	$0.10	$0.15	6,245.277	4,174.620	$583	$769
Low Income										
House Therapy	$148,992	$150,000	253,694	244,399	$0.59	$0.61	24.035	30.490	$6,199	$4,920
Total - Low Income	$148,992	$150,000	253,694	244,399	$0.59	$0.61	24.035	30.490	$6,199	$4,920
Total - Direct Impact	$5,053,700	$4,769,500	48,652,628	31,483,317	$0.10	$0.15	12,323.524	8,093.310	$410	$589
Miscellaneous										
Town Energy Challenge - Inactive	$764	$0	0	0	$0.00	$0.00	0.000	0.000	$0	$0
Company CIP Projects	$2,059	$0	0	0	$0.00	$0.00	0.000	0.000	$0	$0
Accounting Adjustments	$487	$0	0	0	$0.00	$0.00	0.000	0.000	$0	$0
Total - Miscellaneous	$3,309	$0	0	0	$0.00	$0.00	0.000	0.000	$0	$0
Total - Indirect Impact	$1,048,435	$1,008,909								
Total - 2015 CIP Project Costs	$6,105,445	$5,778,409	48,652,628	31,483,317	$0.13	$0.18	12,323.524	8,093.310	$495	$714

Appendix B- Other Evaluations

- **Integral Analytics Bill Analyzer Analysis**
- **OPOWER 2015 Results Report**

123 E. 4th St, Cincinnati Ohio 45202

Final Memorandum

To: **Otter Tail Power Company**

From: **Ken Skinner, Integral Analytics**

Date: **March 31st, 2016**

RE: **Impact Evaluation Results for the Bill Analyzer Program (Program Year 2015)**

This memo presents the final results from the billing analysis of Otter Tail Power Company's (OTPCo's) Bill Analyzer energy efficiency program. This analysis relied upon a statistical analysis of actual customer billed electricity consumption before and after participation in the program to estimate the impact of the program. Table 1 presents the results of this billing analysis.

Table 1: Average Annual kWh Savings:

Participation Level	Savings (kWh/year)
Overall	664
Used Home Energy Center	441
Used the Bill History or Bill Analysis	372
Used CSR	1093
Level 1	1537
Level 2	1451
Level 3	1248[1]

For this impact evaluation, data are available both across households (i.e., cross-sectional) and over time (i.e., time-series). With this type of data, known as "panel" data, it becomes possible to control,

[1] The saving impact of 432 kWh / year achieved via using level 3 is not statistically significant at a confidence level of 95%, i.e. there is 95% chance that the impact could be anywhere from as low as not saving at all to as high as 1,000+ kWh / year, with 432 kWh/year being in the middle of this range.

simultaneously, for differences across households as well as differences across periods in time through the use of a "fixed-effects" panel model specification. The fixed-effect refers to the model specification aspect that differences across homes that do not vary over the estimation period (such as square footage, heating system, etc.) can be explained, in large part, by customer-specific intercept terms that capture the net change in consumption due to the program, controlling for other factors that do change with time (e.g., the weather).

Because the consumption data in the panel model includes months before and after the installation of measures through the program, the period of program participation (or the participation window) may be defined specifically for each customer. This feature of the panel model allows for the pre-installation months of consumption to effectively act as controls for post-participation months. In addition, this model specification, unlike annual pre/post-participation models such as annual change models, does not require a full year of post-participation data. Per OTP's request in this analysis a control group was used to explicitly control for any bias that might not have been captured in a fixed effect model with only participants.

We know the exact month of participation in the program for each participant, and are able to construct customer specific models that measure the change in usage consumption immediately before and after the date of program participation, controlling for weather and customer characteristics.

The fixed effects model can be viewed as a type of differencing model in which all characteristics of the home, which (1) are independent of time and (2) determine the level of energy consumption, are captured within the customer-specific constant terms. In other words, differences in customer characteristics that cause variation in the level of energy consumption, such as building size and structure, are captured by constant terms representing each unique household.

Algebraically, the fixed-effect panel data model is described as follows:

$$y_{it} = \alpha_i + \beta x_{it} + \varepsilon_{it},$$

where:

- y_{it} = energy consumption for home *i* during month *t*
- α_i = constant term for site *i*
- β = vector of coefficients
- x = vector of variables that represent factors causing changes in energy consumption for home *i* during month *t* (i.e., weather and participation) including a binary variable which tracks months of participation. This binary variable is defined as being 1 for all months since inception of program participation. It is defined as being 0 for all the control group members and for treatment group participants in any month before participation
- ε = error term for home *i* during month *t.*

With this specification, the only information necessary for estimation is those factors that vary month to month for each customer, and that will affect energy use, which effectively are weather conditions and program participation. Other non-measurable factors can be captured through the use of monthly indicator variables (e.g., to capture the effect of potentially seasonal energy loads).

The effect of the program was estimated by including a variable which is equal to one for all months after the customer first logged into the Bill Analyzer website. For those control group members this variable is set to zero in all months. Thus the coefficient on this variable is the savings associated with any general interaction with the website. In order to determine if there is any savings associated with going deeper in the tools available on the website, additional models were estimated that determined the savings from using various features on the site, as well as the highest level achieved by the customer.[2] Finally, in order to account for differences in billing days, billing data was standardized according to calendar months.

Data

The statistical model used to determine the impact of Bill Analyzer incorporates monthly billing data from Jan. 1, 2011 to Dec. 2015 from participants in Minnesota, a control group of non-participating OTPC residential customers also in Minnesota, weather data (average monthly temperate) for the same period, other OTP program participation and information about each participant use of Bill Analyzer (login date and tool used). Table 2 presents the number of households in the participant and non-participant group included in the model.

Table 2: Sample used for estimation.

	Participants	Non-participants
Original Sample size	4,065	3,605
Eliminated due to excessive missing or zero reads or extremely small reads in most months	700	798
Eliminated Dashboard (IBP) only customers[3]	370	0
Estimation Sample	2,995	2,807
Total Sample Size (5278)	5,802 homes	

[2] The features used by the customer and the levels (1, 2, and 3) achieved were defined in the dataset obtained from Otter Tail Power through 2015.

[3] Dashboard viewers (those accounts that participated ONLY in IBP) are removed given they are not considered interactive.

Finally, table 3 presents that average annual kWh usage for both the participants and non-participants for 2011, 2012, 2013, 2014, 2015.

Table 3: Average annual electricity usage (kWh), by year and group.

Year	Participants	Non-participants
2011	17,589	14,158
2012	15,696	12,834
2013	17,459	14,461
2014	18,398	14,309
2015	14,682	11,831

Estimation

The estimated models are presented in Table 4-6.[4]

Table 4: Estimated Overall Savings – dependent variable is daily kWh usage, using usage from Jan. 2011 through Dec. 2015 (savings are negative).

Independent Variable	Coefficient (kWh/d)	t-value
Logged into the Bill Analyzer website	-1.83	-2.16
Sample Size	82,244 obs (5,802 homes of which 2,995 homes are participants, with 2,807 are control group members)	
R-Squared	60%	

[4] The models include weather terms, monthly indicator terms and other OTP program participation in addition to the variables presented in these tables. These variables were not included in order make interpretation clearer. The full models are included in the Appendix.

Table 5: Estimated Savings by Tool Used – dependent variable is daily kWh usage, using usage from Jan. 2011 through Dec. 2015 (savings are negative)

Independent Variable	Coefficient (kWh/d)	t-value
Used Home Energy Center	-1.20	-4.65
Used the Bill History or Bill Analysis	-1.02	-1.13
Used CSR	-2.99	-0.29
Sample Size	82,244 obs (5,802 homes of which 2,995 homes are participants, with 2,807 are control group members)	
R-Squared	60%	

Table 6: Estimated Savings by Achieved Level – dependent variable is daily kWh usage, using usage from Jan. 2011 through Dec. 2015 (savings are negative) of those who actively participated in 2015. (savings are negative).

Independent Variable	Coefficient (kWh/d)	t-value
Reached Level 1	-4.21	-4.71
Reached Level 2	-3.99	-2.57
Reached Level 3[5]	-3.42	1.266
Sample Size	82,244 obs (5,802 homes of which 2,995 homes are participants, with 2,807 are control group members)	
R-Squared	60%	

These estimated models show that the Bill Analyzer program does induce energy conservation by participants, with a statistically significant average annual savings of 664 kWh / year. Customers who used CSR achieved the highest savings level of 1,093 kWh / year. Customer who used the bill history or bill analysis tools achieved some savings of 372 kWh per year.

As one would expect, the higher the level the customer achieves, the higher the resulting savings. Customers who reached level 1 show statistical significant savings of 1,537 kWh per year. Customers reached level 2 in total saved 1,451 kWh per year (the saving estimate is the total saving of level 2). Getting to level 3 results in annual savings not statistically significant, i.e. the saving is not significantly different from zero; also note that level 3 customers achieved no saving in 2015 The saving estimates associated with various levels are consistent with results from last year because they fall within the confidence interval of program year 2015.

[5] The coefficient estimates are total saving of each level. Therefore the total saving of level 1 customers are 1,537 kWh per year (4.21*365). The total saving of level 2 customers are 1,451 kWh per year (3.97*365). Level 3 with t-value = -1.29 which means the saving estimate of 1,248 is not significantly different from 0).

[6] Not significant at 95% confidence level

Conclusion

In summary, these results show that the Bill Analyzer program does induce energy conservation by participants, with a statistically significant average annual savings of 664 kWh. Customers who used CSR achieved the highest savings level of 1,093 kWh. Customer who used the bill history or bill analysis tools achieved some savings (372 kWh). Customers who used Home Analyzer saved 441 kWh.

As one would expect, the higher the level the customer achieves, the higher the resulting savings. Customers who reached level 1 show statistical significant savings of 1,537 kWh per year. Customers reached level 2 in total saved 1,451 kWh per year (the saving estimate is the total saving of level 2).

Based on the estimated results and their statistical significance, the most appropriate savings estimate for the Bill Analyzer program is the overall estimate of 664 kWh / year per participant based on the sample of 2,995 participating accounts.

APPENDIX:

Estimated Overall Model

Dependent Variable: kwhd

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4900	77070822.0	15728.7	23.43	<.0001
Error	77343	51922143.8	671.3		
Corrected Total	82243	128992965.8			

R-Square	Coeff Var	Root MSE	kwhd Mean
0.597481	56.45350	25.90990	45.89601

Source	DF	Type I SS	Mean Square	F Value	Pr > F
ConcatID	483	061930294.28	12822.01	19.10	<.0001
monthly_avg_*monthid	59	15098921.60	255913.93	381.21	<.0001
APPLpt	1	128.87	128.87	0.19	0.6613
INSUpt	1	710.05	710.05	1.06	0.3037
HT94pt	1	2991.58	2991.58	4.46	0.0348
CLRNpt	0	0.00	.	.	.
CLRRpt	1	6059.12	6059.12	9.03	0.0027
CTRLpt	1	3189.88	3189.88	4.75	0.0293
ECMpt	1	1183.53	1183.53	1.76	0.1843
HTRpt	1	9464.35	9464.35	14.10	0.0002
WHSSpt	1	9238.60	9238.60	13.76	0.0002
CECpt	1	24.40	24.40	0.04	0.8488
Opower	1	5494.65	5494.65	8.18	0.0042
overall_BA	1	3121.06	3121.06	4.65	0.0311

Source	DF	Type III SS	Mean Square	F Value	Pr > F
monthly_avg_*monthid	59	14752338.88	250039.64	372.46	<.0001
APPLpt	1	526.34	526.34	0.78	0.3759
INSUpt	1	578.60	578.60	0.86	0.3532
HT94pt	1	2286.13	2286.13	3.41	0.0650
CLRNpt	0	0.00	.	.	.
CLRRpt	1	6645.65	6645.65	9.90	0.0017
CTRLpt	1	3819.51	3819.51	5.69	0.0171
ECMpt	1	1379.54	1379.54	2.05	0.1517
HTRpt	1	9257.35	9257.35	13.79	0.0002
WHSSpt	1	9338.65	9338.65	13.91	0.0002
CECpt	1	23.66	23.66	0.04	0.8511
Opower	1	5820.48	5820.48	8.67	0.0032
overall_BA	1	3121.06	3121.06	4.65	0.0311

Parameter		Estimate		Standard Error	t Value	Pr > |t|
monthly_avg_*monthid	18628	-0.2630915B		0.43294164	-0.61	0.5434
monthly_avg_*monthid	18659	-0.2941067B		0.13312595	-2.21	0.0272
monthly_avg_*monthid	18687	-0.6577014B		0.06774822	-9.71	<.0001
monthly_avg_*monthid	18718	-0.6657528B		0.03584698	-18.57	<.0001

monthly_avg_*monthid	18748	-0.6184493B	0.02720553	-22.73	<.0001
monthly_avg_*monthid	18779	-0.4598295B	0.02238938	-20.54	<.0001
monthly_avg_*monthid	18809	-0.3984218B	0.01855355	-21.47	<.0001
monthly_avg_*monthid	18840	-0.4762443B	0.01958488	-24.32	<.0001
monthly_avg_*monthid	18871	-0.6609152B	0.02391061	-27.64	<.0001
monthly_avg_*monthid	18901	-0.5739616B	0.02749235	-20.88	<.0001
monthly_avg_*monthid	18932	-0.5081155B	0.04313039	-11.78	<.0001
monthly_avg_*monthid	18962	-0.3657595B	0.06057676	-6.04	<.0001
monthly_avg_*monthid	18993	-0.6480481B	0.08125169	-7.98	<.0001
monthly_avg_*monthid	19024	-0.6525082B	0.06783991	-9.62	<.0001
monthly_avg_*monthid	19053	-0.7108259B	0.03375607	-21.06	<.0001
monthly_avg_*monthid	19084	-0.7565155B	0.02967645	-25.49	<.0001
monthly_avg_*monthid	19114	-0.6314384B	0.02298100	-27.48	<.0001
monthly_avg_*monthid	19145	-0.4277404B	0.01989380	-21.50	<.0001
monthly_avg_*monthid	19175	-0.3833112B	0.01790514	-21.41	<.0001
monthly_avg_*monthid	19206	-0.5022745B	0.01988152	-25.26	<.0001
monthly_avg_*monthid	19237	-0.6307252B	0.02353310	-26.80	<.0001
monthly_avg_*monthid	19267	-0.6020101B	0.03137357	-19.19	<.0001
monthly_avg_*monthid	19298	-0.4595496B	0.04557819	-10.08	<.0001
monthly_avg_*monthid	19328	0.7954404B	0.09636950	8.25	<.0001
monthly_avg_*monthid	19359	3.1232176B	0.15026647	20.78	<.0001
monthly_avg_*monthid	19390	1.8559550B	0.11380376	16.31	<.0001
monthly_avg_*monthid	19418	0.9958498B	0.07269998	13.70	<.0001
monthly_avg_*monthid	19449	0.2315356B	0.04073673	5.68	<.0001
monthly_avg_*monthid	19479	-0.0806529B	0.02473182	-3.26	0.0011
monthly_avg_*monthid	19510	-0.0493177B	0.02059594	-2.39	0.0166
monthly_avg_*monthid	19540	-0.0565253B	0.01869119	-3.02	0.0025
monthly_avg_*monthid	19571	-0.0421993B	0.01869149	-2.26	0.0240
monthly_avg_*monthid	19602	-0.1104251B	0.02111013	-5.23	<.0001
monthly_avg_*monthid	19632	0.0351034B	0.02959019	1.19	0.2355
monthly_avg_*monthid	19663	0.7140293B	0.04827193	14.79	<.0001
monthly_avg_*monthid	19693	6.8541579B	0.46937782	14.60	<.0001
monthly_avg_*monthid	19724	4.9702766B	1.30208352	3.82	0.0001
monthly_avg_*monthid	19755	-1.0070012B	0.78164788	-1.29	0.1976
monthly_avg_*monthid	19783	-0.8443074B	0.08431857	-10.01	<.0001
monthly_avg_*monthid	19814	-0.7207124B	0.04475599	-16.10	<.0001
monthly_avg_*monthid	19844	-0.6049901B	0.03094389	-19.55	<.0001
monthly_avg_*monthid	19875	-0.4579028B	0.02633498	-17.39	<.0001
monthly_avg_*monthid	19905	-0.4654726B	0.02529015	-18.41	<.0001
monthly_avg_*monthid	19936	-0.4923646B	0.02503007	-19.67	<.0001
monthly_avg_*monthid	19967	-0.5800694B	0.02934960	-19.76	<.0001
monthly_avg_*monthid	19997	-0.5032265B	0.03663760	-13.74	<.0001
monthly_avg_*monthid	20028	-0.2856491B	0.08319589	-3.43	0.0006
monthly_avg_*monthid	20058	-0.0782003B	0.07758095	-1.01	0.3135
monthly_avg_*monthid	20089	-0.5145435B	0.09961652	-5.17	<.0001
monthly_avg_*monthid	20120	-0.3010822B	0.26290424	-1.15	0.2521

monthly_avg_*monthid 20148	-0.4401759B	0.04585886	-9.60	<.0001
monthly_avg_*monthid 20179	-0.6565566B	0.03147802	-20.86	<.0001
monthly_avg_*monthid 20209	-0.6707594B	0.02633294	-25.47	<.0001
monthly_avg_*monthid 20240	-0.5185667B	0.02160239	-24.01	<.0001
monthly_avg_*monthid 20270	-0.4307930B	0.01996605	-21.58	<.0001
monthly_avg_*monthid 20301	-0.4696722B	0.02123007	-22.12	<.0001
monthly_avg_*monthid 20332	-0.5457443B	0.02229778	-24.48	<.0001
monthly_avg_*monthid 20362	-0.7315763B	0.03021091	-24.22	<.0001
monthly_avg_*monthid 20393	-0.6639035B	0.04063231	-16.34	<.0001
APPLpt	3.6561314	4.12907359	0.89	0.3759
INSUpt	-9.8680398	10.62939301	-0.93	0.3532
HT94pt	-7.7351498	4.19163693	-1.85	0.0650
CLRRpt	-17.9109194	5.69265663	-3.15	0.0017
CTRLpt	-7.4792537	3.13559658	-2.39	0.0171
ECMpt	16.5123261	11.51877679	1.43	0.1517
HTRpt	100.5811107	27.08562908	3.71	0.0002
WHSSpt	-2.6895947	0.72112491	-3.73	0.0002
CECpt	3.5952237	19.15217681	0.19	0.8511
Opower	1.5354548	0.52146299	2.94	0.0032
overall_BA	-1.8290356	0.84827558	-2.16	0.0311

Dependent Variable: kwhd

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4902	77086622.1	15725.5	23.43	<.0001
Error	77341	51906343.7	671.1		
Corrected Total	82243	128992965.8			

R-Square	Coeff Var	Root MSE	kwhd Mean
0.597603	56.44564	25.90630	45.89601

Source	DF	Type I SS	Mean Square	F Value	Pr > F
ConcatID	483	061930294.28	12822.01	19.10	<.0001
monthly_avg_*monthid	59	15098921.60	255913.93	381.31	<.0001
APPLpt	1	128.87	128.87	0.19	0.6612
INSUpt	1	710.05	710.05	1.06	0.3037
HT94pt	1	2991.58	2991.58	4.46	0.0348
CLRNpt	0	0.00	.	.	.
CLRRpt	1	6059.12	6059.12	9.03	0.0027
CTRLpt	1	3189.88	3189.88	4.75	0.0293
ECMpt	1	1183.53	1183.53	1.76	0.1842
HTRpt	1	9464.35	9464.35	14.10	0.0002
WHSSpt	1	9238.60	9238.60	13.77	0.0002
CECpt	1	24.40	24.40	0.04	0.8488
Opower	1	5494.65	5494.65	8.19	0.0042
Used_Home_Analyzer	1	18004.33	18004.33	26.83	<.0001
used_BA	1	859.41	859.41	1.28	0.2578
used_CSR	1	57.43	57.43	0.09	0.7699

Source	DF	Type III SS	Mean Square	F Value	Pr > F
monthly_avg_*monthid	59	14751247.24	250021.14	372.53	<.0001
APPLpt	1	590.83	590.83	0.88	0.3481
INSUpt	1	590.53	590.53	0.88	0.3482
HT94pt	1	2400.16	2400.16	3.58	0.0586
CLRNpt	0	0.00	.	.	.
CLRRpt	1	7042.88	7042.88	10.49	0.0012
CTRLpt	1	4222.11	4222.11	6.29	0.0121
ECMpt	1	1366.28	1366.28	2.04	0.1536
HTRpt	1	9192.94	9192.94	13.70	0.0002
WHSSpt	1	9149.26	9149.26	13.63	0.0002
CECpt	1	21.16	21.16	0.03	0.8591
Opower	1	6015.11	6015.11	8.96	0.0028
Used_Home_Analyzer	1	14539.05	14539.05	21.66	<.0001
used_BA	1	858.59	858.59	1.28	0.2580
used_CSR	1	57.43	57.43	0.09	0.7699

Parameter	Estimate	Standard Error	t Value	Pr > |t|
monthly_avg_*monthid 18628	-0.4457672B	0.43427024	-1.03	0.3047
monthly_avg_*monthid 18659	-0.3475287B	0.13348575	-2.60	0.0092

monthly_avg_*monthid 18687	-0.6847549B	0.06793040	-10.08	<.0001
monthly_avg_*monthid 18718	-0.6799848B	0.03593955	-18.92	<.0001
monthly_avg_*monthid 18748	-0.6293183B	0.02727981	-23.07	<.0001
monthly_avg_*monthid 18779	-0.4687137B	0.02245139	-20.88	<.0001
monthly_avg_*monthid 18809	-0.4062502B	0.01860696	-21.83	<.0001
monthly_avg_*monthid 18840	-0.4845388B	0.01963963	-24.67	<.0001
monthly_avg_*monthid 18871	-0.6708923B	0.02397609	-27.98	<.0001
monthly_avg_*monthid 18901	-0.5853375B	0.02756415	-21.24	<.0001
monthly_avg_*monthid 18932	-0.5260568B	0.04324509	-12.16	<.0001
monthly_avg_*monthid 18962	-0.3909093B	0.06074580	-6.44	<.0001
monthly_avg_*monthid 18993	-0.6818902B	0.08148106	-8.37	<.0001
monthly_avg_*monthid 19024	-0.6798537B	0.06802015	-9.99	<.0001
monthly_avg_*monthid 19053	-0.7244101B	0.03384558	-21.40	<.0001
monthly_avg_*monthid 19084	-0.7683636B	0.02975376	-25.82	<.0001
monthly_avg_*monthid 19114	-0.6407231B	0.02304238	-27.81	<.0001
monthly_avg_*monthid 19145	-0.4357831B	0.01994670	-21.85	<.0001
monthly_avg_*monthid 19175	-0.3904680B	0.01795076	-21.75	<.0001
monthly_avg_*monthid 19206	-0.5103025B	0.01993390	-25.60	<.0001
monthly_avg_*monthid 19237	-0.6399963B	0.02359140	-27.13	<.0001
monthly_avg_*monthid 19267	-0.6146417B	0.03145503	-19.54	<.0001
monthly_avg_*monthid 19298	-0.4773011B	0.04568305	-10.45	<.0001
monthly_avg_*monthid 19328	0.7655270B	0.09647575	7.93	<.0001
monthly_avg_*monthid 19359	3.0793303B	0.15038430	20.48	<.0001
monthly_avg_*monthid 19390	1.8239774B	0.11387326	16.02	<.0001
monthly_avg_*monthid 19418	0.9755690B	0.07274437	13.41	<.0001
monthly_avg_*monthid 19449	0.2203903B	0.04075938	5.41	<.0001
monthly_avg_*monthid 19479	-0.0875692B	0.02474748	-3.54	0.0004
monthly_avg_*monthid 19510	-0.0548137B	0.02060691	-2.66	0.0078
monthly_avg_*monthid 19540	-0.0617338B	0.01870098	-3.30	0.0010
monthly_avg_*monthid 19571	-0.0473943B	0.01870205	-2.53	0.0113
monthly_avg_*monthid 19602	-0.1161042B	0.02112069	-5.50	<.0001
monthly_avg_*monthid 19632	0.0269626B	0.02960614	0.91	0.3625
monthly_avg_*monthid 19663	0.7008636B	0.04829705	14.51	<.0001
monthly_avg_*monthid 19693	6.7237976B	0.46970406	14.31	<.0001
monthly_avg_*monthid 19724	4.9036759B	1.30188768	3.77	0.0002
monthly_avg_*monthid 19755	-1.0462754B	0.78153011	-1.34	0.1807
monthly_avg_*monthid 19783	-0.8482613B	0.08430588	-10.06	<.0001
monthly_avg_*monthid 19814	-0.7228224B	0.04474923	-16.15	<.0001
monthly_avg_*monthid 19844	-0.6063930B	0.03093922	-19.60	<.0001
monthly_avg_*monthid 19875	-0.4590926B	0.02633096	-17.44	<.0001
monthly_avg_*monthid 19905	-0.4665172B	0.02528624	-18.45	<.0001
monthly_avg_*monthid 19936	-0.4935858B	0.02502650	-19.72	<.0001
monthly_avg_*monthid 19967	-0.5815384B	0.02934542	-19.82	<.0001
monthly_avg_*monthid 19997	-0.5050122B	0.03663231	-13.79	<.0001
monthly_avg_*monthid 20028	-0.2897076B	0.08318393	-3.48	0.0005
monthly_avg_*monthid 20058	-0.0827678B	0.07757154	-1.07	0.2860

monthly_avg_*monthid 20089	-0.5211125B	0.09958766	-5.23	<.0001
monthly_avg_*monthid 20120	-0.3138780B	0.26282972	-1.19	0.2324
monthly_avg_*monthid 20148	-0.4419329B	0.04584637	-9.64	<.0001
monthly_avg_*monthid 20179	-0.6572164B	0.03147226	-20.88	<.0001
monthly_avg_*monthid 20209	-0.6709246B	0.02632920	-25.48	<.0001
monthly_avg_*monthid 20240	-0.5188105B	0.02160008	-24.02	<.0001
monthly_avg_*monthid 20270	-0.4307597B	0.01996409	-21.58	<.0001
monthly_avg_*monthid 20301	-0.4693571B	0.02122785	-22.11	<.0001
monthly_avg_*monthid 20332	-0.5454385B	0.02229584	-24.46	<.0001
monthly_avg_*monthid 20362	-0.7305259B	0.03020847	-24.18	<.0001
monthly_avg_*monthid 20393	-0.6618882B	0.04062712	-16.29	<.0001
monthly_avg_*monthid 20423	0.0000000B	.	.	.
APPLpt	3.8738867	4.12878335	0.94	0.3481
INSUpt	-9.9693394	10.62794639	-0.94	0.3482
HT94pt	-7.9260577	4.19123702	-1.89	0.0586
CLRNpt	0.0000000B	.	.	.
CLRRpt	-18.4425326	5.69312405	-3.24	0.0012
CTRLpt	-7.8660374	3.13614773	-2.51	0.0121
ECMpt	16.4328965	11.51727860	1.43	0.1536
HTRpt	100.2307566	27.08190024	3.70	0.0002
WHSSpt	-2.6646363	0.72168946	-3.69	0.0002
CECpt	3.4001892	19.14956013	0.18	0.8591
Opower	1.5608475	0.52136774	2.99	0.0028
Used_Home_Analyzer	-1.2081145	1.05021621	-4.65	<.0001
used_BA	-1.0202421	0.90201681	-1.13	0.2580
used_CSR	-2.9948008	3.40072080	0.29	0.7699

Dependent Variable: kwhd

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4902	77088493.8	15725.9	23.43	<.0001
Error	77341	51904471.9	671.1		
Corrected Total	82243	128992965.8			

R-Square	Coeff Var	Root MSE	kwhd Mean
0.597618	56.44462	25.90583	45.89601

Source	DF	Type I SS	Mean Square	F Value	Pr > F
ConcatID	483	061930294.28	12822.01	19.11	<.0001
monthly_avg_*monthid	59	15098921.60	255913.93	381.33	<.0001
APPLpt	1	128.87	128.87	0.19	0.6612
INSUpt	1	710.05	710.05	1.06	0.3037
HT94pt	1	2991.58	2991.58	4.46	0.0347
CLRNpt	0	0.00	.	.	.
CLRRpt	1	6059.12	6059.12	9.03	0.0027
CTRLpt	1	3189.88	3189.88	4.75	0.0292
ECMpt	1	1183.53	1183.53	1.76	0.1842
HTRpt	1	9464.35	9464.35	14.10	0.0002
WHSSpt	1	9238.60	9238.60	13.77	0.0002
CECpt	1	24.40	24.40	0.04	0.8488
Opower	1	5494.65	5494.65	8.19	0.0042
l1	1	12899.06	12899.06	19.22	<.0001
l2	1	6821.56	6821.56	10.16	0.0014
l3	1	1072.26	1072.26	1.60	0.2062

Source	DF	Type III SS	Mean Square	F Value	Pr > F
monthly_avg_*monthid	59	14687817.14	248946.05	370.95	<.0001
APPLpt	1	577.42	577.42	0.86	0.3536
INSUpt	1	586.10	586.10	0.87	0.3500
HT94pt	1	2341.93	2341.93	3.49	0.0618
CLRNpt	0	0.00	.	.	.
CLRRpt	1	6719.48	6719.48	10.01	0.0016
CTRLpt	1	4021.17	4021.17	5.99	0.0144
ECMpt	1	1364.24	1364.24	2.03	0.1539
HTRpt	1	9183.08	9183.08	13.68	0.0002
WHSSpt	1	9586.35	9586.35	14.28	0.0002
CECpt	1	21.63	21.63	0.03	0.8575
Opower	1	6302.08	6302.08	9.39	0.0022
l1	1	14865.70	14865.70	22.15	<.0001
l2	1	4419.37	4419.37	6.59	0.0103
l3	1	1072.26	1072.26	1.60	0.2062

Parameter	Estimate	Standard Error	t Value	Pr > |t|
monthly_avg_*monthid 18628	-0.3778387B	0.43296296	-0.87	0.3828
monthly_avg_*monthid 18659	-0.3287179B	0.13316750	-2.47	0.0136

monthly_avg_*monthid 18687	-0.6760509B	0.06778726	-9.97	<.0001
monthly_avg_*monthid 18718	-0.6753867B	0.03586548	-18.83	<.0001
monthly_avg_*monthid 18748	-0.6257632B	0.02722464	-22.99	<.0001
monthly_avg_*monthid 18779	-0.4659177B	0.02240372	-20.80	<.0001
monthly_avg_*monthid 18809	-0.4043707B	0.01856402	-21.78	<.0001
monthly_avg_*monthid 18840	-0.4827416B	0.01959942	-24.63	<.0001
monthly_avg_*monthid 18871	-0.6686170B	0.02392854	-27.94	<.0001
monthly_avg_*monthid 18901	-0.5828662B	0.02751552	-21.18	<.0001
monthly_avg_*monthid 18932	-0.5222934B	0.04316839	-12.10	<.0001
monthly_avg_*monthid 18962	-0.3858258B	0.06063394	-6.36	<.0001
monthly_avg_*monthid 18993	-0.6749631B	0.08134354	-8.30	<.0001
monthly_avg_*monthid 19024	-0.6745010B	0.06790509	-9.93	<.0001
monthly_avg_*monthid 19053	-0.7219984B	0.03378862	-21.37	<.0001
monthly_avg_*monthid 19084	-0.7663769B	0.02970567	-25.80	<.0001
monthly_avg_*monthid 19114	-0.6390692B	0.02300282	-27.78	<.0001
monthly_avg_*monthid 19145	-0.4343741B	0.01991282	-21.81	<.0001
monthly_avg_*monthid 19175	-0.3892476B	0.01792073	-21.72	<.0001
monthly_avg_*monthid 19206	-0.5089386B	0.01989938	-25.58	<.0001
monthly_avg_*monthid 19237	-0.6383796B	0.02355213	-27.10	<.0001
monthly_avg_*monthid 19267	-0.6123976B	0.03140018	-19.50	<.0001
monthly_avg_*monthid 19298	-0.4742273B	0.04561216	-10.40	<.0001
monthly_avg_*monthid 19328	0.7668246B	0.09644354	7.95	<.0001
monthly_avg_*monthid 19359	3.0741832B	0.15045219	20.43	<.0001
monthly_avg_*monthid 19390	1.8195073B	0.11394017	15.97	<.0001
monthly_avg_*monthid 19418	0.9727418B	0.07278946	13.36	<.0001
monthly_avg_*monthid 19449	0.2186598B	0.04078828	5.36	<.0001
monthly_avg_*monthid 19479	-0.0885030B	0.02476448	-3.57	0.0004
monthly_avg_*monthid 19510	-0.0557795B	0.02062294	-2.70	0.0068
monthly_avg_*monthid 19540	-0.0625708B	0.01871686	-3.34	0.0008
monthly_avg_*monthid 19571	-0.0482360B	0.01871687	-2.58	0.0100
monthly_avg_*monthid 19602	-0.1171361B	0.02113835	-5.54	<.0001
monthly_avg_*monthid 19632	0.0256599B	0.02962809	0.87	0.3865
monthly_avg_*monthid 19663	0.6987490B	0.04833167	14.46	<.0001
monthly_avg_*monthid 19693	6.7194473B	0.46971212	14.31	<.0001
monthly_avg_*monthid 19724	4.8768685B	1.30205977	3.75	0.0002
monthly_avg_*monthid 19755	-1.0623610B	0.78163347	-1.36	0.1741
monthly_avg_*monthid 19783	-0.8495801B	0.08431514	-10.08	<.0001
monthly_avg_*monthid 19814	-0.7235233B	0.04475423	-16.17	<.0001
monthly_avg_*monthid 19844	-0.6068734B	0.03094231	-19.61	<.0001
monthly_avg_*monthid 19875	-0.4594905B	0.02633351	-17.45	<.0001
monthly_avg_*monthid 19905	-0.4669387B	0.02528900	-18.46	<.0001
monthly_avg_*monthid 19936	-0.4935894B	0.02502698	-19.72	<.0001
monthly_avg_*monthid 19967	-0.5815683B	0.02934600	-19.82	<.0001
monthly_avg_*monthid 19997	-0.5050646B	0.03663322	-13.79	<.0001
monthly_avg_*monthid 20028	-0.2898209B	0.08318586	-3.48	0.0005
monthly_avg_*monthid 20058	-0.0827911B	0.07757431	-1.07	0.2859

monthly_avg_*monthid 20089	-0.5245924B	0.09961984	-5.27	<.0001
monthly_avg_*monthid 20120	-0.3239970B	0.26289743	-1.23	0.2178
monthly_avg_*monthid 20148	-0.4432362B	0.04585644	-9.67	<.0001
monthly_avg_*monthid 20179	-0.6576988B	0.03147722	-20.89	<.0001
monthly_avg_*monthid 20209	-0.6710877B	0.02633194	-25.49	<.0001
monthly_avg_*monthid 20240	-0.5185902B	0.02160134	-24.01	<.0001
monthly_avg_*monthid 20270	-0.4305903B	0.01996519	-21.57	<.0001
monthly_avg_*monthid 20301	-0.4694935B	0.02122925	-22.12	<.0001
monthly_avg_*monthid 20332	-0.5451899B	0.02229656	-24.45	<.0001
monthly_avg_*monthid 20362	-0.7308347B	0.03020836	-24.19	<.0001
monthly_avg_*monthid 20393	-0.6615557B	0.04063064	-16.28	<.0001
monthly_avg_*monthid 20423	0.0000000B	.	.	.
APPLpt	3.8295244	4.12855431	0.93	0.3536
INSUpt	-9.9318846	10.62776026	-0.93	0.3500
HT94pt	-7.8291574	4.19107657	-1.87	0.0618
CLRNpt	0.0000000B	.	.	.
CLRRpt	-18.0817562	5.71439418	-3.16	0.0016
CTRLpt	-7.6754783	3.13564332	-2.45	0.0144
ECMpt	16.4207860	11.51717046	1.43	0.1539
HTRpt	100.1771283	27.08145487	3.70	0.0002
WHSSpt	-2.7279856	0.72179349	-3.78	0.0002
CECpt	3.4374857	19.14921974	0.18	0.8575
Opower	1.5975857	0.52133822	3.06	0.0022
l1	-4.2114342	0.89481817	-4.71	<.0001
l2	-3.9761390	1.54945544	-2.57	0.0103
l3	-3.4207578	2.70625988	-1.26	0.2062

Otter Tail Home Energy Reports Program:
2015 Results Report

1) Program Overview

In June 2011, Otter Tail Power Company and Opower launched the Home Energy Reports (HER) pilot, a behavioral program designed to boost customer engagement and reduce residential energy consumption. Households selected for the program received a series of personalized Home Energy Reports designed to motivate and educate recipients to take actions to improve the energy efficiency of their homes.

- 30,000 residential customers were originally selected to receive reports at varying frequencies as part of the treatment population, of which 28,841 received reports. Targeted households were all located within Otter Tail's Minnesota service territory. These participants began receiving reports in June 2011 and are referred to as the June 2011 wave in this document.
    - A statistically equivalent group of approximately 5,000 households was randomly assigned to serve as a control population; these households did not receive reports.
    - Both samples were randomly selected from the same population to ensure unbiased measurement and verification of program results. The average annual electricity usage of the treatment and control populations was alike between 12,000-13,000 kWh.
    - As a part of the territory-wide expansion in August 2015, mentioned below in this section, the control group associated with the June 2011 wave was disbanded. Customers originally preserved for the control group became eligible for conversion to the treatment group. Savings measurement methodology is described in greater detail in Section 2.

- In October 2012, approximately 6,000 additional residential customers in Otter Tail's Minnesota service territory were added to the program as a refill to offset attrition (primarily from utility account turnover) and return the program to its original size. Of these, 5,692 participants received reports and 5,257 remained active at the end of 2012 for carryover into 2013.
    - Because the size of the refill group was too small to maintain an independent control group, the program impact was measured utilizing the Modeled Savings Protocol, which was approved by the Minnesota Department of Energy Resources (formerly Office of Energy Security) in 2010. This method is discussed in more detail in Section 2.

- In July 2013, approximately 4,800 additional residential customers in Otter Tail's Minnesota service territory were added to the program as another refill to offset attrition, of which 4,702 participants received reports. At the end of 2013, 4,029 participants remained active for carryover into 2014.
    - As with the group added to the program in November 2012, the impact of these additional customers was measured using the Modeled Savings Protocol, described in more detail in Section 2.

- In July 2014, approximately 3,300 additional residential customers in Otter Tail's Minnesota service territory were added to the program as a refill to offset attrition. Of these, 1,994 participants received reports. At the end of 2014, 3,171 customers remained active for carryover into 2015.
    - As with the groups added to the program in November 2012 and July 2013, the impact of these additional customers was measured using the Modeled Savings Protocol, described in more detail in Section 2.

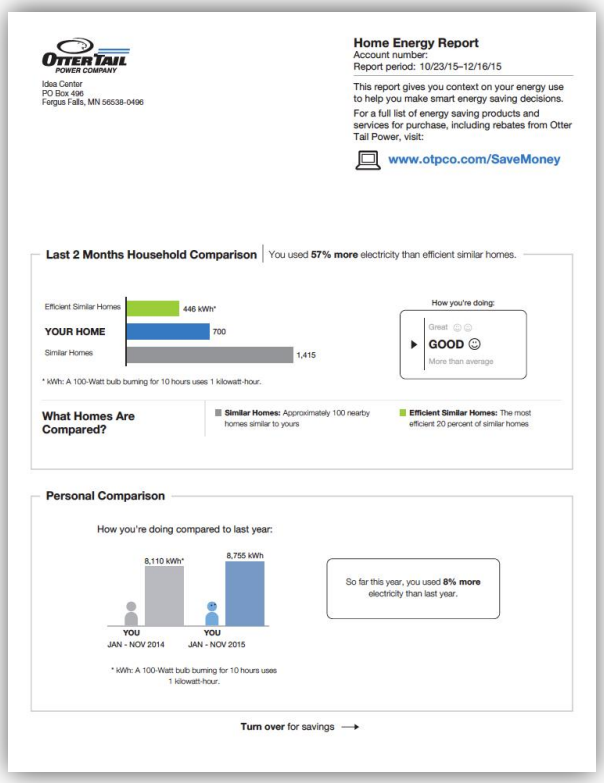
- In August 2015, approximately 9,500 additional residential customers in Otter Tail's Minnesota service territory, including customers from the 2011 wave control group, were added to the program as an expansion to as many eligible customers as possible. Of that group 9,423 participants received reports. At the end of 2015, 8,613 customers remained active within the wave for carryover into 2016.
    - As with the deployment waves added to the program in November 2012, July 2013, and July 2014, the impact of these additional customers was measured using the Modeled Savings Protocol, described in more detail in Section 2.

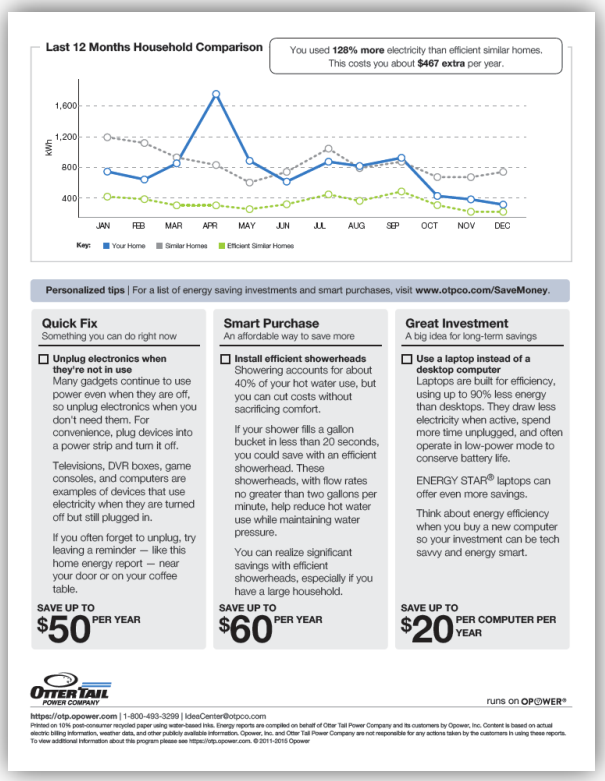
Home Energy Reports, pictured below in Figure 1, contain various personalized components designed to motivate and educate customers on energy efficiency actions. Components include:

- Comparisons of recent energy use to a group of comparable 'similar homes'; this section includes both normative and injunctive messages designed to motivate action.
- Comparison of recent energy use to historical energy use, tracking household improvement over time.
- Targeted energy efficiency advice; specific tips are selected based on the home's energy use pattern, housing characteristics, and household demographics.

In 2015, Home Energy Reports were upgraded to include energy efficiency promotional information, specifically around Otter Tail's refrigerator recycling and CoolSavings programs. These promotional efforts are described in more detail in Section 4.

Figure 1: Example of Otter Tail Home Energy Report (Front & Back)





In 2015, a total of 35,627 customers received reports. 33,585 customers remained active at the end of 2015. Of these recipients, 18,217 were in the original 2011 pilot wave, 2,888 in the 2012 wave, 2,546 in the 2013 wave, 1,292 in the 2014 wave, and 8,642 in the 2015 wave.

Cumulatively, 30 customers chose to opt out of the program in 2015, which corresponds to an opt-out rate of 0.1% for the year. The 2015 opt-out rate is extremely low in comparison to other years for Otter Tail, and compares favorably to opt-out rates between 1-3% at other Minnesota utilities. In the same timeframe, 3,553 participants closed their electric accounts with Otter Tail, effectively removing them from the program. Depending on when these events occurred, these customers may have received fewer than six reports in 2015 but are included as participants.

OPOWER

Figure 2: June 2011 Wave Monthly Account Closures & Opt-Outs

Month	Account Closures	Opt-Outs
January 2015	76	1
February 2015	67	0
March 2015	84	1
April 2015	119	1
May 2015	154	2
June 2015	158	1
July 2015	126	2
August 2015	174	3
September 2015	167	1
October 2015	139	3
November 2015	123	2
December 2015	87	1
2015 Total	**1,474**	**18**

Figure 3: October 2012 Wave Monthly Account Closures & Opt-Outs

Month	Account Closures	Opt-Outs
January 2015	26	1
February 2015	30	0
March 2015	28	0
April 2015	37	2
May 2015	44	0
June 2015	51	1
July 2015	39	0
August 2015	36	0
September 2015	33	0
October 2015	31	1
November 2015	33	0
December 2015	24	0
2015 Total	**412**	**5**

OPOWER

Figure 4: July 2013 Wave Monthly Account Closures & Opt-Outs

Month	Account Closures	Opt-Outs
January 2015	29	0
February 2015	27	0
March 2015	37	1
April 2015	35	0
May 2015	58	0
June 2015	61	0
July 2015	40	0
August 2015	54	0
September 2015	43	1
October 2015	43	0
November 2015	36	0
December 2015	28	0
2015 Total	**491**	**2**

Figure 5: July 2014 Wave Monthly Account Closures & Opt-Outs

Month	Account Closures	Opt-Outs
January 2015	30	0
February 2015	28	0
March 2015	37	0
April 2015	39	0
May 2015	55	0
June 2015	53	0
July 2015	36	0
August 2015	33	0
September 2015	28	0
October 2015	24	0
November 2015	20	0
December 2015	17	0
2015 Total	**400**	**0**

Figure 6: August 2015 Wave Monthly Account Closures & Opt-Outs

Month	Account Closures	Opt-Outs
August 2015	59	0
September 2015	193	2
October 2015	200	1
November 2015	202	1
December 2015	122	1
2015 Total	**776**	**5**

2) Savings Calculation Methodology

This section describes the criteria used to define the population eligible to receive Home Energy Reports, the methodology originally used to assign homes to treatment and control groups, the methodology for assigning homes to certain customer segments, and measurement and verification techniques used to derive program savings.

Opower integrates data from a variety of sources in order to ensure that the Home Energy Reports are personalized, accurate, and meaningful for all recipients. These data integration efforts also allow for detailed analysis of energy savings results that enable the optimization of feature design and targeting of specific energy efficiency messages. The data used for the various analyses presented herein were collected from three primary sources:

1. *Consumption data:* Otter Tail Power Company provides Opower with weekly updates of monthly consumption data for all households in the program, including historical consumption information.

2. *Parcel data:* Opower received, to the extent available from a third-party vendor, data about household parcels, including home size, age and value, heating and cooling type, as well as pool and hot tub data. These data elements are static with the exception of square footage, heating and cooling type, and pool and hot tub data, which may be updated at the customer's request.

3. *Demographic data:* Opower received, to the extent available from a third-party vendor, demographic data about participants, including household income, number of occupants, age of occupant(s), and an owner/renter indicator. These fields were used to recommend customized energy efficiency tips to customers, by using relevant demographic targeting. Household size may be updated at the customer's request.

The primary measure of success for the Home Energy Reports program is the difference between the average energy consumption of homes in the treatment group and homes in the control group. Because of the statistical

homogeneity of these two groups, any difference in their respective energy consumption from June 2011 (program start) to August 2015 (end of RCT) can be attributed to the Home Energy Reports.

The analysis of the Home Energy Reports program relies upon a fixed-effects regression model. The rationale for using a regression model to interpret the results of the 2011 wave are threefold: 1) the model eliminates variability due to other factors and allows for tighter error bars around the estimate of report impact; 2) in order to isolate the impact of the Home Energy Reports on energy use, it is appropriate to control for slight differences in the housing and demographic characteristics present in the treatment and control population; and 3) the model makes the search for population segments with better or worse than average impact much more manageable. This statistical methodology is standard procedure for the analysis of controlled experiments and is a well-accepted practice within the energy efficiency program measurement and verification community. This was the statistical methodology used to measure results for the initial wave of 30,000 households up until the expansion to territory-wide deployment in August 2015.

2.1 Modeled Savings Methodology

Without the benefit of a control group, Opower and Otter Tail opted to measure the impact of the HER program in the 2012, 2013, and 2014 waves via the Modeled Savings Protocol, which was approved by the Minnesota Department of Energy Resources (formerly the OES) in October 2010. This protocol aims to leverage Opower expertise from ongoing programs in Minnesota with treatment and control populations, thus offering better safeguards to control for weather and other conditions specific to the state. With the Otter Tail program specifically, savings associated with Otter Tail's 2012, 2013, 2014, and 2015 waves have been modeled using RCT-measured results from Otter Tail's own 2011 wave.

2.2 Territory-Wide Deployment

As of August 2015, the control group associated with the 2011 pilot wave was converted to recipient status, and began receiving reports as participants in the program. Measuring savings for the 2011 wave via a randomized controlled trial became no longer possible. Therefore, Opower began reporting all savings for the program under the Modeled Savings Protocol. The Modeled Savings Protocol states that:

> "Larger utilities in Minnesota (greater than 15,000 customers) could also have the option of deploying the OPOWER platform to the entire service territory. Should this case arise, OPOWER proposes that this protocol also be extended to larger utilities that have a minimum of two years of experimental data from a program administered by OPOWER. In this case, the model should be based only on results for that particular client, not a sampling of clients across the state."

As of August 2015, Otter Tail's Opower program had over four years of measured savings, meeting the approved threshold. Therefore, consistent with the recommendations of the Modeled Savings Protocol, Opower will rely on Otter Tail's own results to inform the model for calculating savings going forward.

This methodology for measuring savings in territory-wide deployments, described in more detail below, has also been used successfully at Rochester Public Utilities in Minnesota and Fort Collins Utilities in Colorado.

Figure 7: Summary of Measurement Methodology Changes for Otter Tail Program

Deployment Wave	Previous Methodology	New Methodology
June 2011	Randomized controlled trial	Scored savings methodology
October 2012	Scored savings methodology	Scored savings methodology
July 2013	Scored savings methodology	Scored savings methodology
July 2014	Scored savings methodology	Scored savings methodology
August 2015	N/A	Scored savings methodology

2.2.1 Regression Model & Scored Savings Methodology

In the territory-wide scenario, the regression model of program results includes regressors for heating and cooling degree days, baseline usage, home square footage, age of the home, and a treatment variable interacted with an indicator of whether the billing period is pre-treatment or post-treatment. Opower then scores the model based on the coefficients for treatment times post-deployment, baseline usage, home square footage, and age of the home.

Output is a function that describes energy savings as a function of observable household or customer characteristics. The final form of the model is determined based on the statistical significance of the candidate variables. A simplified equation using square footage and age of the customer's home, the number of occupants, the baseline usage in the pre-treatment period, and an indicator of whether the customer owns or rents their home is given below:

$$Savings = b0 + b1(sqft) + b2(age) + b3(\#\ of\ occupants) + b\ 4(baseline\ usage) + b5(owner)$$

Model output is the result of a similar equation, depending on the statistically significant variables.

The average of the 'scored' savings is the predicted per household savings for each customer in the utility. Multiplying this score by the number of customers yields the total savings over the time period in question.

Opower recognizes that because this methodology does not employ experimental design, it may be prudent to adjust the savings percentage accordingly. The resolved solution is to cap the savings calculated through this protocol at the maximum measured savings across the experimentally designed programs in Minnesota.

OPOWER

3) Program Energy Savings

The Home Energy Reports program demonstrated a clear and significant reduction in residential energy consumption. Total savings for the program in 2015 amounted to 5,897 MWh. Over the course of 2015, participants saved at a rate of 1.6%. A month-by-month breakdown of savings by deployment wave is shown below in Figure 8.

Cumulative savings for the program now stands at 25,581 MWh since the pilot launch in 2011. That corresponds to an overall percentage savings figure of 1.5%.

Figure 8: Monthly Electric Savings Impact Broken Down by Deployment Wave

Month	2011 Wave Savings (MWh)	2012 Wave Savings (MWh)	2013 Wave Savings (MWh)	2014 Wave Savings (MWh)	2015 Wave Savings (MWh)
January 2015	688	44	50	44	
February 2015	613	39	44	39	
March 2015	473	44	49	43	
April 2015	329	42	47	41	
May 2015	199	43	48	42	
June 2015	52	41	46	40	
July 2015	118	42	47	40	
August 2015	168	42	47	39	36
September 2015	213	41	45	37	52
October 2015	302	42	46	38	64
November 2015	384	40	45	36	66
December 2015	531	41	46	36	71
2015 Total	**4,070**	**503**	**560**	**475**	**289**

Opower Home Energy Report programs increase customer participation in other utility energy efficiency programs. The evidence for this comes from Opower's randomized controlled trials. Treatment customers who receive reports participate in utility energy efficiency programs at higher rates than do control customers. The most recent Opower meta-analyses of the impact on program participation show a 15% lift across all utility energy efficiency programs. The increase in participation impacts savings for the reports program in the form of jointly attributable savings. Otter Tail will remove these jointly attributable savings, so not to 'double-count' them.

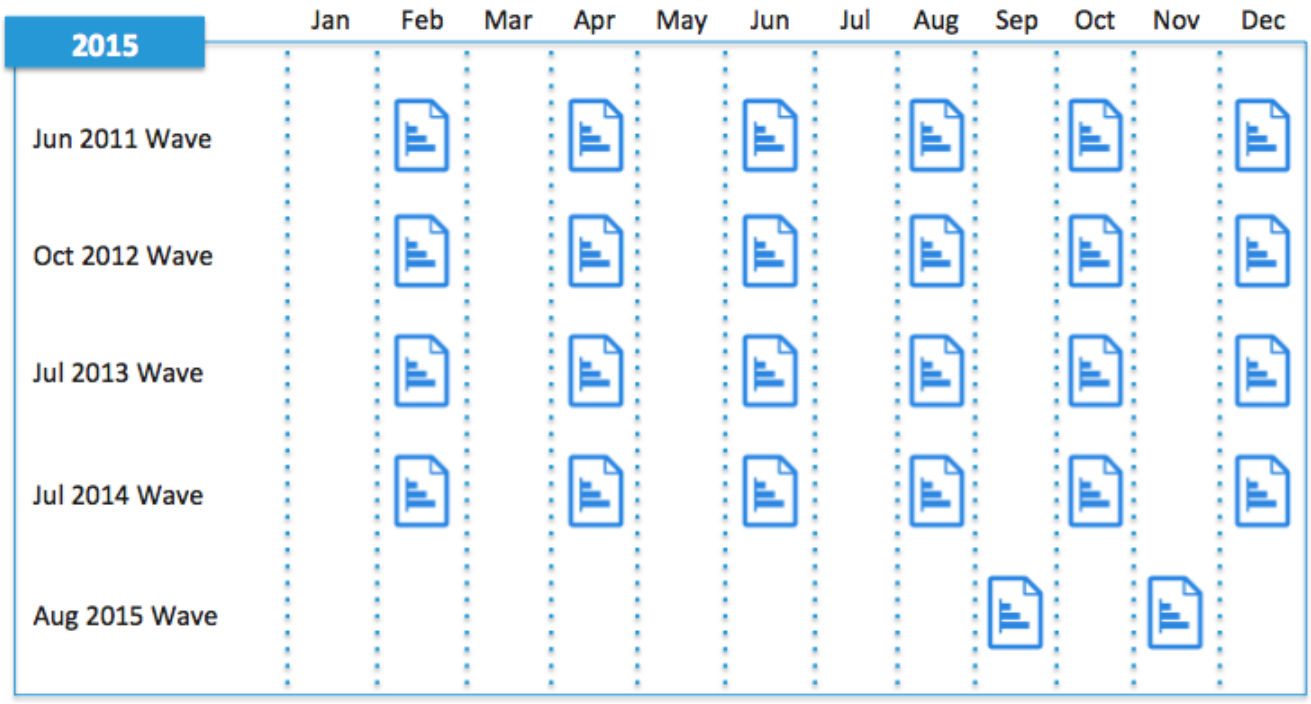
With a control group no longer available for program participation measurement, Opower has applied a value measured by Xcel Energy in its Minnesota program evaluation, entitled *Verification of Savings from Xcel Energy Minnesota's Print Energy Feedback Pilot Project* from March 2014, performed by the Center for Energy and

Environment. The value is an average of the jointly attributable percentage savings from 2010-2012, which equates to 1.4% of program annual savings. Savings in 2015 will be reduced by 83 MWh to account for these jointly attributable savings. Annual savings for the program in 2015 is therefore adjusted to 5,814 MWh, which is equal to an average of 163.2 kilowatt-hours in energy savings per participant household.

4) Program Design

Figure 9 displays the frequency with which Home Energy Reports were sent to program participants in 2015. Participants received, on average, six reports per year on a bi-monthly cadence. Customers in the June 2011 wave, October 2012 wave, July 2013 wave, and July 2014 wave generally received reports in February, April, June, August, October, and December. Customers in the newly added August 2015 wave generally received reports in September and November.

Figure 9: Program Design for 2015



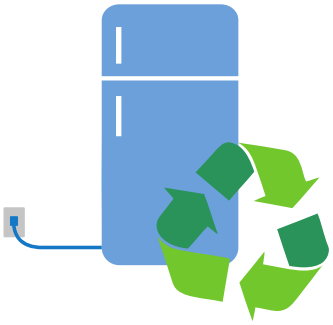
In 2015, a report module related to rebate and credits available through an OTP refrigerator recycling and air conditioning cycling program were included on the reports sent to customers. Figure 10 was included in the June reports sent to all program participants. Figure 11 was included in the August report.

Figure 10: Refrigerator Recycling Module Included in June Report

Recycle your fridge and save

Your old fridge and freezer could be wasting up to $200 a year in electricity costs.

Recycle your working unit with us and receive a $50 rebate.



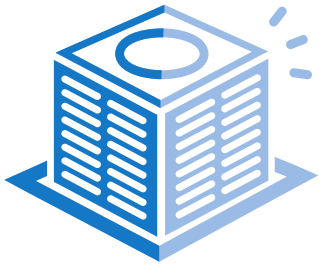
Schedule your free pick-up today. otpco.com/fridge 877-838-1131

Figure 11: CoolSavings Module Included in August Report

You could be eligible for bill credits this summer

Receive a credit on your electric bill from June through September with the CoolSavings program.

The program allows us to cycle your AC during times of high energy use. It has minimal impact on your home's temperature and saves energy when it counts the most.



Don't miss your first credit. Call **1-800-493-3299** or visit **otpco.com/TryCoolSavings**.

Appendix C- Project Information Sheets

Total - Otter Tail Power

Spending & Savings	2014 Actual	2015 Plan	2015 Actual	2016 Plan
Total CIP Expenditures	$5,188,931	$5,778,409	$6,105,074	$5,894,409
% Total CIP Expenditures / Adjusted GOR	3.3%	3.7%	3.9%	3.8%
Conservation Expenditures	$5,127,767	$5,661,409	$6,023,703	$5,774,409
% Conservation Exp / Minimum Total CIP Exp	219.6%	242.5%	258.0%	247.3%
Total Low Income Expenditures	$526,144	$645,106	$614,357	$648,516
% Low Income Exp / Res Gross Operating Revenue	1.1%	1.3%	1.3%	1.3%
Electric Utility Infrastructure Expenditures	$0	$0	$0	$0
Non-electric Equivalent Savings (kWh)	0	0	0	0
Electric Utility Infrastructure Savings (kWh)	0	0	0	0
Demand-side Savings At Generator (kWh)	33,805,393	31,483,317	48,652,627	32,197,405
Total Credited Savings (kWh)	33,805,393	31,483,317	48,652,627	32,197,405
% Total Credited Savings / Annual Energy Sales	1.6%	1.5%	2.3%	1.5%

Sales Info	2014			2015		
Category	Cust#	kWh Sales	GOR ($)	Cust#	kWh Sales	GOR ($)
Residential	48,580	599,034,000	55,018,000	0	0	0
Commercial	11,031	329,159,000	29,648,000	0	0	0
Industrial	783	1,356,602,000	88,105,000	0	0	0
Farm	0	0	0	0	0	0
Other	368	31,809,000	3,212,000	0	0	0
Total	**60,762**	**2,316,604,000**	**175,983,000**	**0**	**0**	**0**

Program			2014 Actual						2015 Plan					
Program Name	Program Design Manager	Spend/kW Savings @ Generator	Spend ($)	Annual Credited Savings (kWh)	kW Savings @ Generator	Spend/Annual Credited Savings (kWh)	Spend/Lifetime Credited Savings	Spend/kW Savings @ Generator	Spend ($)	Annual Credited Savings (kWh)	kW Savings @ Generator	Spend/Annual Credited Savings (kWh)	Spend/Lifetime Credited Savings	Spend/kW Savings @ Generator
Accounting Adjustments	Otter Tail Power	0.000	13,052	0	0	0.000	0.000	0.000	0	0	0	0.000	0.000	0.000
Adj. Speed Drives	Otter Tail Power	457.868	435,839	5,647,504	899	0.077	0.005	484.560	340,400	3,810,456	504	0.089	0.006	675.126
Advertising & Ed - Commercial	Otter Tail Power	0.000	30,683	0	0	0.000	0.000	0.000	25,000	0	0	0.000	0.000	0.000
Advertising & Ed - Residential	Otter Tail Power	0.000	116,647	0	0	0.000	0.000	0.000	150,000	0	0	0.000	0.000	0.000
Air Conditioning Control - C/I	Otter Tail Power	1,594.753	10,068	2,110	95	4.771	0.954	106.443	36,000	1,221	55	29.477	5.895	657.419
Air Conditioning Control - Res	Otter Tail Power	566.030	49,219	3,474	51	14.166	0.944	962.233	81,000	7,234	107	11.198	0.747	760.134
Air Source Heat Pump - C/I	Otter Tail Power	417.559	38,739	409,884	4	0.095	0.008	8,819.171	69,000	696,458	10	0.099	0.008	6,595.095
Air Source Heat Pump - RES	Otter Tail Power	752.084	67,881	849,068	13	0.080	0.007	5,205.026	122,000	1,301,886	18	0.094	0.008	6,692.356
Appliance Recycling	Otter Tail Power	1,998.562	91,078	475,932	67	0.191	0.026	1,365.585	117,000	574,491	81	0.204	0.027	1,445.151
Be Bright - Change A Light	Otter Tail Power	312.581	244,783	4,389,009	515	0.056	0.006	475.336	356,000	4,033,665	478	0.088	0.010	744.427
Business Education	Otter Tail Power	240.682	996	0	0	0.000	0.000	0.000	0	0	0	0.000	0.000	0.000
CIP Development-Planning-Evaluation	Otter Tail Power	0.000	292,626	0	0	0.000	0.000	0.000	450,000	0	0	0.000	0.000	0.000
Commercial Design Assistance	Otter Tail Power	967.858	214,451	361,875	102	0.593	0.085	2,096.260	490,500	2,419,175	509	0.203	0.029	963.258
Company CIP Projects	Otter Tail Power	0.000	40,274	0	0	0.000	0.000	0.000	0	0	0	0.000	0.000	0.000
Compressed Air Audits - C/I	Otter Tail Power	0.000	22,503	0	0	0.000	0.000	0.000	20,000	0	0	0.000	0.000	0.000
Electronically Commutated Motors	Otter Tail Power	0.000	9,091	31,327	3	0.290	0.019	3,213.471	36,000	93,001	8	0.387	0.026	4,240.480
Energy Feedback Program	Otter Tail Power	244.934	323,243	2,532,552	1,420	0.128	0.026	227.637	370,600	2,085,660	1,169	0.178	0.036	316.906
Financing - C/I	Otter Tail Power	0.000	5,408	0	0	0.000	0.000	0.000	32,000	0	0	0.000	0.000	0.000
Financing - Res	Otter Tail Power	0.000	5,408	0	0	0.000	0.000	0.000	13,000	0	0	0.000	0.000	0.000
Geothermal Heat Pump - C/I	Otter Tail Power	877.432	62,871	125,318	2	0.502	0.042	30,417.791	122,000	704,911	18	0.173	0.014	6,746.450
Geothermal Heat Pump -RES	Otter Tail Power	274.651	153,490	883,557	21	0.174	0.014	7,220.678	144,000	921,413	22	0.156	0.013	6,480.772
Grants	Otter Tail Power	504.788	340,395	2,037,200	466	0.167	0.011	729.822	721,000	3,476,772	1,023	0.207	0.014	705.079
Home Insulation	Otter Tail Power	2,222.853	30,476	181,640	0	0.168	0.008	0.000	57,000	184,998	0	0.308	0.015	0.000
Home Transformer	Otter Tail Power	0.000	52,218	88,635	5	0.589	0.039	10,667.658	61,000	203,386	14	0.300	0.020	4,267.505
House Therapy	Otter Tail Power	2,635.005	142,588	204,930	21	0.696	0.046	6,661.005	150,000	244,399	30	0.614	0.041	4,919.570
Implementation & Training - C/I	Otter Tail Power	0.000	55,352	0	0	0.000	0.000	0.000	60,000	0	0	0.000	0.000	0.000
Implementation & Training - RES	Otter Tail Power	0.000	48,166	0	0	0.000	0.000	0.000	40,000	0	0	0.000	0.000	0.000
Industrial Focused Efficiency	Otter Tail Power	0.000	248,292	2,516,836	661	0.099	0.007	375.820	135,000	714,086	109	0.189	0.013	1,243.441
Lighting - C/I	Otter Tail Power	796.894	1,252,180	8,090,987	2,009	0.155	0.013	623.275	563,000	3,400,273	1,091	0.166	0.014	515.927
Lighting New Construction -C/I	Otter Tail Power	327.644	125,698	2,170,324	495	0.058	0.005	253.865	143,000	2,164,337	370	0.066	0.006	386.986
Made in Minnesota Solar Energy Assessment	Otter Tail Power	0.000	103,909	0	0	0.000	0.000	0.000	103,909	0	0	0.000	0.000	0.000
Motors	Otter Tail Power	1,578.894	165,384	607,146	155	0.272	0.018	1,066.374	81,000	140,895	23	0.575	0.038	3,576.080
PC Power Supply	Otter Tail Power	0.000	16,268	184,989	43	0.088	0.015	377.184	67,000	793,400	185	0.084	0.014	362.241
Plan Review - C/I	Otter Tail Power	0.000	0	0	0	0.000	0.000	0.000	0	0	0	0.000	0.000	0.000
PUC Assessments	Otter Tail Power	0.000	17,020	0	0	0.000	0.000	0.000	20,000	0	0	0.000	0.000	0.000
Recommissioning/Retrocommissioning	Otter Tail Power	0.000	26,210	0	0	0.000	0.000	0.000	272,000	1,937,519	37	0.140	0.009	7,443.973
Refrigeration	Otter Tail Power	708.096	189,112	1,240,938	215	0.152	0.015	877.824	170,000	1,238,014	242	0.137	0.014	702.914
Regulatory Assessments	Otter Tail Power	0.000	99,858	0	0	0.000	0.000	0.000	95,000	0	0	0.000	0.000	0.000
Residential Demand Control	Otter Tail Power	0.000	1,877	599	1	3.134	0.209	2,400.580	0	0	0	0.000	0.000	0.000
School Kits	Otter Tail Power	0.000	25,460	337,657	25	0.075	0.005	1,035.862	25,000	121,629	10	0.206	0.014	2,603.450
Town Energy Challenge Pilot	Otter Tail Power	215.039	10,850	83,714	59	0.130	0.009	183.217	0	0	0	0.000	0.000	0.000
Water Heater Store and Save	Otter Tail Power	0.000	9,264	348,186	3,216	0.027	0.003	2.881	40,000	214,035	1,980	0.187	0.019	20.200
Total		**681.356**	**5,188,927**	**33,805,391**	**10,563**	**0.153**	**0.013**	**491.236**	**5,778,409**	**31,483,314**	**8,093**	**0.184**	**0.016**	**714.001**

Program	2015 Actual						2016 Plan					
Program Name	Spend ($)	Annual Credited Savings (kWh)	kW Savings @ Generator	Spend/Annual Credited Savings (kWh)	Spend/Lifetime Credited Savings	Spend/kW Savings @ Generator	Spend ($)	Annual Credited Savings (kWh)	kW Savings @ Generator	Spend/Annual Credited Savings (kWh)	Spend/Lifetime Credited Savings	Spend/kW Savings @ Generator
Accounting Adjustments	487	0	0	0.000	0.000	0.000	0	0	0	0.000	0.000	0.000
Adj. Speed Drives	736,720	14,374,741	2,136	0.051	0.003	344.974	340,400	3,810,456	504	0.089	0.006	675.129
Advertising & Ed - Commercial	27,429	0	0	0.000	0.000	0.000	25,000	0	0	0.000	0.000	0.000
Advertising & Ed - Residential	162,564	0	0	0.000	0.000	0.000	150,000	0	0	0.000	0.000	0.000
Air Conditioning Control - C/I	15,482	592	13	26.140	5.228	1,178.212	38,000	1,221	55	31.114	6.223	693.942
Air Conditioning Control - Res	65,889	7,817	115	8.429	0.562	572.506	82,000	7,234	107	11.336	0.756	769.518
Air Source Heat Pump - C/I	145,340	895,049	10	0.162	0.014	13,929.218	70,000	696,458	10	0.101	0.008	6,690.676
Air Source Heat Pump - RES	172,951	1,150,790	10	0.150	0.013	17,652.528	123,000	1,301,886	18	0.094	0.008	6,747.211
Appliance Recycling	84,472	425,693	61	0.198	0.026	1,390.384	119,000	574,491	81	0.207	0.028	1,469.855
Be Bright - Change A Light	249,015	4,547,734	531	0.055	0.006	468.643	358,000	4,033,665	478	0.089	0.010	748.609
Business Education	0	0	0	0.000	0.000	0.000	0	0	0	0.000	0.000	0.000
CIP Development-Planning-Evaluation	438,035	0	0	0.000	0.000	0.000	450,000	0	0	0.000	0.000	0.000
Commercial Design Assistance	344,530	1,406,516	279	0.245	0.035	1,236.114	490,500	2,419,175	509	0.203	0.029	963.258
Company CIP Projects	2,059	0	0	0.000	0.000	0.000	0	0	0	0.000	0.000	0.000
Compressed Air Audits - C/I	21,977	0	0	0.000	0.000	0.000	20,000	0	0	0.000	0.000	0.000
Electronically Commutated Motors	20,451	86,973	8	0.235	0.016	2,605.310	37,000	93,001	8	0.398	0.027	4,358.271
Energy Feedback Program	413,575	2,829,382	1,586	0.146	0.029	260.696	370,600	2,085,662	1,169	0.178	0.036	316.906
Financing - C/I	2,098	0	0	0.000	0.000	0.000	32,000	0	0	0.000	0.000	0.000
Financing - Res	12,586	0	0	0.000	0.000	0.000	13,000	0	0	0.000	0.000	0.000
Geothermal Heat Pump - C/I	108,507	474,416	13	0.229	0.019	8,400.409	124,000	704,911	18	0.176	0.015	6,857.047
Geothermal Heat Pump -RES	174,094	842,842	18	0.207	0.017	9,910.202	145,000	921,413	22	0.157	0.013	6,525.777
Grants	422,609	2,921,337	617	0.145	0.010	684.555	721,000	3,476,772	1,023	0.207	0.014	705.079
Home Insulation	27,119	80,749	0	0.336	0.017	0.000	58,000	184,998	0	0.314	0.016	0.000
Home Transformer	21,619	113,359	6	0.191	0.013	3,577.130	62,000	203,386	14	0.305	0.020	4,337.464
House Therapy	148,992	253,694	24	0.587	0.039	6,199.180	150,000	244,399	30	0.614	0.041	4,919.570
Implementation & Training - C/I	78,398	0	0	0.000	0.000	0.000	60,000	0	0	0.000	0.000	0.000
Implementation & Training - RES	65,666	0	0	0.000	0.000	0.000	40,000	0	0	0.000	0.000	0.000
Industrial Focused Efficiency	215,889	1,596,206	170	0.135	0.009	1,270.551	235,000	1,428,172	217	0.165	0.011	1,082.302
Lighting - C/I	1,020,718	6,238,971	1,599	0.164	0.014	638.189	563,000	3,400,273	1,091	0.166	0.014	515.927
Lighting New Construction -C/I	249,497	7,599,977	1,080	0.033	0.003	230.948	143,000	2,164,337	370	0.066	0.006	386.986
Made in Minnesota Solar Energy Assessment	116,741	0	0	0.000	0.000	0.000	103,909	0	0	0.000	0.000	0.000
Motors	194,528	1,261,134	176	0.154	0.010	1,106.079	81,000	140,895	23	0.575	0.038	3,576.080
PC Power Supply	6,081	73,137	17	0.083	0.014	356.639	67,000	793,400	185	0.084	0.014	362.241
Plan Review - C/I	0	0	0	0.000	0.000	0.000	0	0	0	0.000	0.000	0.000
PUC Assessments	17,331	0	0	0.000	0.000	0.000	20,000	0	0	0.000	0.000	0.000
Recommissioning/Retrocommissioning	33,390	0	0	0.000	0.000	0.000	272,000	1,937,519	37	0.140	0.009	7,443.973
Refrigeration	150,685	830,141	135	0.182	0.018	1,119.660	170,000	1,238,014	242	0.137	0.014	702.914
Regulatory Assessments	105,610	0	0	0.000	0.000	0.000	95,000	0	0	0.000	0.000	0.000
Residential Demand Control	0	0	0	0.000	0.000	0.000	0	0	0	0.000	0.000	0.000
School Kits	19,684	240,090	13	0.082	0.005	1,499.025	26,000	121,629	10	0.214	0.014	2,707.588
Town Energy Challenge Pilot	764	0	0	0.000	0.000	0.000	0	0	0	0.000	0.000	0.000
Water Heater Store and Save	11,491	401,286	3,706	0.029	0.003	3.101	40,000	214,035	1,980	0.187	0.019	20.200
Total	**6,105,073**	**48,652,626**	**12,323**	**0.125**	**0.010**	**495.421**	**5,894,409**	**32,197,402**	**8,201**	**0.183**	**0.016**	**718.743**

Category		2014 Actual						2015 Plan						2015 Actual						2016 Plan						2017 Plan
Category Name		Spend ($)	Annual Credited Savings (kWh)	kW Savings @ Generator	Spend/Annual Credited Savings (kWh)	Spend/Lifetime Credited Savings	Spend/kW Savings @ Generator	Spend ($)	Annual Credited Savings (kWh)	kW Savings @ Generator	Spend/Annual Credited Savings (kWh)	Spend/Lifetime Credited Savings	Spend/kW Savings @ Generator	Spend ($)	Annual Credited Savings (kWh)	kW Savings @ Generator	Spend/Annual Credited Savings (kWh)	Spend/Lifetime Credited Savings	Spend/kW Savings @ Generator	Spend ($)	Annual Credited Savings (kWh)	kW Savings @ Generator	Spend/Annual Credited Savings (kWh)	Spend/Lifetime Credited Savings	Spend/kW Savings @ Generator	Spend ($)
Appliance Harvesting		91,078	475,932	67	0.191	0.026	1,365.585	117,000	574,491	81	0.204	0.027	1,445.151	84,472	425,693	61	0.198	0.026	1,390.384	119,000	574,491	81	0.207	0.028	1,469.855	0
Compressed Air		22,503	0	0	0.000	0.000	0.000	20,000	0	0	0.000	0.000	0.000	21,977	0	0	0.000	0.000	0.000	20,000	0	0	0.000	0.000	0.000	0
Internal Training		55,352	0	0	0.000	0.000	0.000	60,000	0	0	0.000	0.000	0.000	78,398	0	0	0.000	0.000	0.000	60,000	0	0	0.000	0.000	0.000	0
Low Income Weatherization		142,588	204,930	21	0.696	0.046	6,661.005	150,000	244,399	30	0.614	0.041	4,919.570	148,992	253,694	24	0.587	0.039	6,199.180	150,000	244,399	30	0.614	0.041	4,919.570	0
Market Research and Product Development		292,626	0	0	0.000	0.000	0.000	450,000	0	0	0.000	0.000	0.000	438,035	0	0	0.000	0.000	0.000	450,000	0	0	0.000	0.000	0.000	0
Motors & Drives		601,223	6,254,650	1,055	0.096	0.006	570.126	421,400	3,951,351	527	0.107	0.007	799.844	931,248	15,635,875	2,311	0.060	0.004	402.885	421,400	3,951,351	527	0.107	0.007	799.848	0
Non-Residential Computer Efficiency and Plug Loads		16,268	184,989	43	0.088	0.015	377.184	67,000	793,400	185	0.084	0.014	362.241	6,081	73,137	17	0.083	0.014	356.639	67,000	793,400	185	0.084	0.014	362.241	0
Non-Residential Custom Efficiency		614,897	4,554,036	1,127	0.135	0.009	545.568	1,128,000	6,128,378	1,168	0.184	0.012	966.010	671,888	4,517,543	787	0.149	0.010	853.445	1,228,000	6,842,464	1,276	0.179	0.012	962.194	0
Non-Residential Heat Pumps		101,610	535,202	6	0.190	0.016	15,730.295	191,000	1,401,370	29	0.136	0.011	6,690.977	253,847	1,369,465	23	0.185	0.015	10,870.903	194,000	1,401,370	29	0.138	0.012	6,796.071	0
Non-Residential Lighting		1,377,879	10,261,311	2,504	0.134	0.011	550.233	706,000	5,564,610	1,461	0.127	0.011	483.309	1,270,216	13,838,949	2,680	0.092	0.008	474.011	706,000	5,564,610	1,461	0.127	0.011	483.309	0
Non-Residential Load Management		10,068	2,110	95	4.771	0.954	106.443	36,000	1,221	55	29.477	5.895	657.419	15,482	592	13	26.140	5.228	1,178.212	38,000	1,221	55	31.114	6.223	693.942	0
Non-Residential Refrigeration		189,112	1,240,938	215	0.152	0.015	877.824	170,000	1,238,014	242	0.137	0.014	702.914	150,685	830,141	135	0.182	0.018	1,119.660	170,000	1,238,014	242	0.137	0.014	702.914	0
Non-Residential Whole Building - Non-Process Related		214,451	361,875	102	0.593	0.085	2,096.260	490,500	2,419,175	509	0.203	0.029	963.258	344,530	1,406,516	279	0.245	0.035	1,236.114	490,500	2,419,175	509	0.203	0.029	963.258	0
Other - Direct		11,846	83,714	59	0.142	0.009	200.037	0	0	0	0.000	0.000	0.000	764	0	0	0.000	0.000	0.000	0	0	0	0.000	0.000	0.000	0
Other - Indirect		259,638	0	0	0.000	0.000	0.000	260,000	0	0	0.000	0.000	0.000	272,889	0	0	0.000	0.000	0.000	260,000	0	0	0.000	0.000	0.000	0
Regulatory Charges		220,787	0	0	0.000	0.000	0.000	218,909	0	0	0.000	0.000	0.000	239,682	0	0	0.000	0.000	0.000	218,909	0	0	0.000	0.000	0.000	0
Residential Behavioral Change		323,243	2,532,552	1,420	0.128	0.026	227.637	370,600	2,085,660	1,169	0.178	0.036	316.906	413,575	2,829,382	1,586	0.146	0.029	260.696	370,600	2,085,662	1,169	0.178	0.036	316.906	0
Residential Building Envelope		30,476	181,640	0	0.168	0.008	0.000	57,000	184,998	0	0.308	0.015	0.000	27,119	80,749	0	0.336	0.017	0.000	58,000	184,998	0	0.314	0.016	0.000	0
Residential Domestic Hot Water		9,264	348,186	3,216	0.027	0.003	2.881	40,000	214,035	1,980	0.187	0.019	20.200	11,491	401,286	3,706	0.029	0.003	3.101	40,000	214,035	1,980	0.187	0.019	20.200	0
Residential Heat Pumps		221,371	1,732,625	34	0.128	0.011	6,454.262	266,000	2,223,299	40	0.120	0.010	6,576.129	347,045	1,993,633	27	0.174	0.015	12,682.233	268,000	2,223,299	40	0.121	0.010	6,625.573	0
Residential Lighting		244,783	4,389,009	515	0.056	0.006	475.336	356,000	4,033,665	478	0.088	0.010	744.427	249,015	4,547,734	531	0.055	0.006	468.643	358,000	4,033,665	478	0.089	0.010	748.609	0
Residential Load Management		51,096	4,073	52	12.544	0.836	983.884	81,000	7,234	107	11.198	0.747	760.134	65,889	7,817	115	8.429	0.562	572.506	82,000	7,234	107	11.336	0.756	769.518	0
Residential Space Heating (non-Heat Pumps)		9,091	31,327	3	0.290	0.019	3,213.471	36,000	93,001	8	0.387	0.026	4,240.480	20,451	86,973	8	0.235	0.016	2,605.310	37,000	93,001	8	0.398	0.027	4,358.271	0
Whole House		77,678	426,292	29	0.182	0.012	2,635.501	86,000	325,015	24	0.265	0.018	3,598.822	41,303	353,448	19	0.117	0.008	2,154.021	88,000	325,015	24	0.271	0.018	3,682.516	0
Total		**5,188,927**	**33,805,391**	**10,563**	**0.153**	**0.013**	**491.236**	**5,778,409**	**31,483,314**	**8,093**	**0.184**	**0.016**	**714.001**	**6,105,073**	**48,652,626**	**12,323**	**0.125**	**0.010**	**495.421**	**5,894,409**	**32,197,402**	**8,201**	**0.183**	**0.016**	**718.743**	**0**

Exemptions - Otter Tail Power

2017		
Year	kWh Sales	GOR ($)
2013		
2014		
2015		
2017 Adjustment	0	0

2016		
Year	kWh Sales	GOR ($)
2010		
2011		
2012		
2016 Adjustment	0	0

2015		
Year	kWh Sales	GOR ($)
2010	0	
2011	0	
2012	0	0
2015 Adjustment	0	0

2014		
Year	kWh Sales	GOR ($)
2010	0	
2011	0	
2012	0	0
2014 Adjustment	0	0

2013		
Year	kWh Sales	GOR ($)
2007	0	
2008	0	
2009	0	0
2013 Adjustment	0	0

2012		
Year	kWh Sales	GOR ($)
2007	0	
2008	0	
2009	0	0
2012 Adjustment	0	0

2011		
Year	kWh Sales	GOR ($)
2007	0	
2008	0	
2009	0	0
2011 Adjustment	0	0

2010		
Year	kWh Sales	GOR ($)
2005	0	
2006	0	
2007	0	0
2010 Adjustment	0	0

2009		
Year	kWh Sales	GOR ($)
2005	0	
2006	0	
2007	0	0
2009 Adjustment	0	0

2008		
Year	kWh Sales	GOR ($)
2004	0	0
2005	0	
2006	0	
2008 Adjustment	0	0

Program Name: Accounting Adjustments
Program Design Manager: Otter Tail Power
Category: Other - Indirect

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%		7.640%	7.640%
kW Line Loss Factor	7.640%		7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$0.00		$0.00	$0.00
Administration (2011-present)	$0.00		$0.00	$0.00
Evaluation, Measurement & Verification	$0.00		$0.00	$0.00
Advertising & Promotion	$0.00		$0.00	$0.00
Incentives	$0.00		$0.00	$0.00
Other	$13,052.16		$486.63	$0.00
Total Utility Costs	**$13,052.16**	**$0.00**	**$486.63**	**$0.00**
Program Participants				
Total Participants	0		0	0
% of Spending by Customer Segments				
Residential	0%		0%	0%
Commerical	0%		0%	0%
Industrial	0%		0%	0%
Farm	0%		0%	0%
Other	100%		100%	100%
Total % of Spending	**100%**	**0%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%		0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%		0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00		0.00	0.00
Utility NPV	$13,052		$487	$0
Ratepayer Ratio	0.00		0.00	0.00
Ratepayer NPV	$0		$0	$0
Participant Ratio	0.00		0.00	0.00
Participant NPV	$0		$0	$0
Societal Ratio	0.00		0.00	0.00
Societal NPV	$0		$0	$0
Narrative				

Program Name: Adj. Speed Drives
Program Design Manager: Otter Tail Power
Category: Motors & Drives

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$29,138.09	$45,000.00	$43,440.08	$45,000.00
Administration (2011-present)	$7,516.98	$20,000.00	$6,087.07	$20,000.00
Evaluation, Measurement & Verification	$106.29	$4,000.00	$573.38	$4,000.00
Advertising & Promotion	$4,859.98	$5,600.00	$4,639.69	$5,600.00
Incentives	$394,217.57	$265,800.00	$681,979.67	$265,800.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$435,838.91**	**$340,400.00**	**$736,719.89**	**$340,400.00**
Program Participants				
Total Participants	150	135	365	135
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	30%	30%	30%	30%
Industrial	70%	70%	70%	70%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	5,216,035	3,519,337	13,276,511	3,519,337
Annual kWh Savings @ Generator	5,647,504	3,810,456	14,374,741	3,810,456
Cost per Annual kWh Saved @ Generator	$0.0772	$0.0893	$0.0513	$0.0893
Peak kW Savings @ Meter	830.735	465.681	1,972.421	465.679
Peak kW Savings @ Generator	899.453	504.202	2,135.579	504.200
Cost per Peak kW Saved @ Generator	$484.56	$675.13	$344.97	$675.13
Benefit/Cost Ratios				
Utility Ratio	12.26	10.50	19.17	11.19
Utility NPV	$4,905,411	$3,232,843	$13,384,050	$3,469,813
Ratepayer Ratio	1.43	1.36	1.49	1.41
Ratepayer NPV	$1,599,157	$940,436	$4,637,423	$1,115,131
Participant Ratio	4.42	3.53	6.11	3.62
Participant NPV	$2,984,828	$1,911,321	$11,550,078	$1,976,531
Societal Ratio	8.76	6.40	9.07	6.76
Societal NPV	$7,087,502	$4,479,197	$18,655,547	$4,779,018
Narrative				

Program Name: Advertising & Ed - Commercial
Program Design Manager: Otter Tail Power
Category: Other - Indirect

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	0.000%	7.640%
kW Line Loss Factor	7.640%	7.640%	0.000%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$12,951.13	$25,000.00	$25,249.47	$25,000.00
Administration (2011-present)	$5,046.55	$0.00	$1,762.76	$0.00
Evaluation, Measurement & Verification	$47.98	$0.00	$35.26	$0.00
Advertising & Promotion	$12,637.39	$0.00	$382.00	$0.00
Incentives	$0.00	$0.00	$0.00	$0.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$30,683.05**	**$25,000.00**	**$27,429.49**	**$25,000.00**
Program Participants				
Total Participants	39	10	54	10
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	100%	100%	100%	100%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00	0.00	0.00	0.00
Utility NPV	($30,683)	($25,000)	($27,429)	($25,000)
Ratepayer Ratio	0.00	0.00	0.00	0.00
Ratepayer NPV	($30,683)	($25,000)	($27,429)	($25,000)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$0	$0	$0	$0
Societal Ratio	0.00	0.00	0.00	0.00
Societal NPV	($30,683)	($25,000)	($27,429)	($25,000)
Narrative				

Program Name: Advertising & Ed - Residential
Program Design Manager: Otter Tail Power
Category: Other - Indirect

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	0.000%	7.640%
kW Line Loss Factor	7.640%	7.640%	0.000%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$29,947.48	$135,000.00	$72,071.27	$135,000.00
Administration (2011-present)	$6,262.70	$6,000.00	$2,921.53	$6,000.00
Evaluation, Measurement & Verification	$191.94	$4,000.00	$141.06	$4,000.00
Advertising & Promotion	$80,244.48	$0.00	$87,429.81	$0.00
Incentives	$0.00	$0.00	$0.00	$0.00
Other	$0.00	$5,000.00	$0.00	$5,000.00
Total Utility Costs	**$116,646.60**	**$150,000.00**	**$162,563.67**	**$150,000.00**
Program Participants				
Total Participants	49,807	10,000	14,322	10,000
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00	0.00	0.00	0.00
Utility NPV	($116,647)	($150,000)	($162,564)	($150,000)
Ratepayer Ratio	0.00	0.00	0.00	0.00
Ratepayer NPV	($116,647)	($150,000)	($162,564)	($150,000)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$0	$0	$0	$0
Societal Ratio	0.00	0.00	0.00	0.00
Societal NPV	($116,647)	($150,000)	($162,564)	($150,000)
Narrative				

Program Name: Air Conditioning Control - C/I
Program Design Manager: Otter Tail Power
Category: Non-Residential Load Management

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$4,630.50	$17,500.00	$5,893.64	$17,500.00
Administration (2011-present)	$3,820.44	$6,350.00	$5,007.81	$6,350.00
Evaluation, Measurement & Verification	$0.00	$2,000.00	$286.96	$2,000.00
Advertising & Promotion	$0.00	$5,860.00	$33.16	$6,210.00
Incentives	$1,617.50	$4,290.00	$4,260.00	$5,940.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$10,068.44**	**$36,000.00**	**$15,481.57**	**$38,000.00**
Program Participants				
Total Participants	39	25	6	25
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	100%	100%	100%	100%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	1,949	1,128	547	1,128
Annual kWh Savings @ Generator	2,110	1,221	592	1,221
Cost per Annual kWh Saved @ Generator	$4.7713	$29.4766	$26.1404	$31.1142
Peak kW Savings @ Meter	87.363	50.576	12.136	50.576
Peak kW Savings @ Generator	94.590	54.760	13.140	54.760
Cost per Peak kW Saved @ Generator	$106.44	$657.42	$1,178.21	$693.94
Benefit/Cost Ratios				
Utility Ratio	24.45	4.20	2.35	4.19
Utility NPV	$236,111	$115,056	$20,947	$121,246
Ratepayer Ratio	21.16	4.09	2.01	4.09
Ratepayer NPV	$234,543	$114,121	$18,334	$120,285
Participant Ratio	0.00	0.00	#NULL!	0.00
Participant NPV	$3,260	$5,269	$8,181	$6,946
Societal Ratio	43.21	7.00	4.77	7.23
Societal NPV	$356,691	$190,254	$42,312	$199,738
Narrative				

Program Name: Air Conditioning Control - Res
Program Design Manager: Otter Tail Power
Category: Residential Load Management

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$27,764.60	$45,000.00	$36,752.40	$45,000.00
Administration (2011-present)	$10,826.33	$14,450.00	$14,491.40	$14,450.00
Evaluation, Measurement & Verification	$642.67	$2,000.00	$1,226.39	$2,000.00
Advertising & Promotion	$9,985.50	$18,050.00	$13,391.90	$19,050.00
Incentives	$0.00	$0.00	$26.95	$0.00
Other	$0.00	$1,500.00	$0.00	$1,500.00
Total Utility Costs	**$49,219.10**	**$81,000.00**	**$65,889.04**	**$82,000.00**
Program Participants				
Total Participants	72	150	162	150
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	3,209	6,681	7,220	6,681
Annual kWh Savings @ Generator	3,474	7,234	7,817	7,234
Cost per Annual kWh Saved @ Generator	$14.1660	$11.1977	$8.4287	$11.3359
Peak kW Savings @ Meter	47.243	98.419	106.296	98.419
Peak kW Savings @ Generator	51.151	106.560	115.089	106.560
Cost per Peak kW Saved @ Generator	$962.23	$760.13	$572.51	$769.52
Benefit/Cost Ratios				
Utility Ratio	2.73	3.66	4.87	3.82
Utility NPV	$85,183	$215,810	$254,669	$230,959
Ratepayer Ratio	2.58	3.40	4.39	3.53
Ratepayer NPV	$82,214	$209,444	$247,610	$224,420
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$4,473	$9,554	$10,621	$9,777
Societal Ratio	4.05	5.39	7.15	5.56
Societal NPV	$150,164	$355,214	$405,253	$373,624
Narrative				

Program Name: Air Source Heat Pump - C/I
Program Design Manager: Otter Tail Power
Category: Non-Residential Heat Pumps

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$9,269.93	$13,000.00	$40,694.84	$13,000.00
Administration (2011-present)	$557.17	$4,000.00	$4,422.14	$5,000.00
Evaluation, Measurement & Verification	$675.86	$2,340.00	$325.34	$2,340.00
Advertising & Promotion	$456.08	$1,500.00	$1,170.32	$1,500.00
Incentives	$27,780.00	$47,160.00	$98,727.20	$47,160.00
Other	$0.00	$1,000.00	$0.00	$1,000.00
Total Utility Costs	**$38,739.04**	**$69,000.00**	**$145,339.84**	**$70,000.00**
Program Participants				
Total Participants	55	131	131	131
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	90%	90%	90%	90%
Industrial	10%	10%	10%	10%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	378,569	643,249	826,667	643,249
Annual kWh Savings @ Generator	409,884	696,458	895,049	696,458
Cost per Annual kWh Saved @ Generator	$0.0945	$0.0991	$0.1624	$0.1005
Peak kW Savings @ Meter	4.057	9.663	9.637	9.663
Peak kW Savings @ Generator	4.393	10.462	10.434	10.462
Cost per Peak kW Saved @ Generator	$8,819.17	$6,595.09	$13,929.22	$6,690.68
Benefit/Cost Ratios				
Utility Ratio	9.19	11.03	5.91	11.48
Utility NPV	$317,438	$691,762	$714,189	$733,816
Ratepayer Ratio	1.07	1.24	1.04	1.27
Ratepayer NPV	$23,548	$145,773	$33,154	$171,593
Participant Ratio	2.90	2.25	3.83	2.31
Participant NPV	$220,024	$343,786	$777,559	$360,786
Societal Ratio	3.86	3.49	3.64	3.66
Societal NPV	$361,178	$738,370	$850,072	$791,925
Narrative				

Program Name: Air Source Heat Pump - RES
Program Design Manager: Otter Tail Power
Category: Residential Heat Pumps

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$10,776.91	$31,000.00	$52,322.53	$31,000.00
Administration (2011-present)	$647.75	$4,000.00	$5,685.67	$5,000.00
Evaluation, Measurement & Verification	$785.74	$2,300.00	$418.29	$2,300.00
Advertising & Promotion	$530.22	$1,500.00	$1,504.71	$1,500.00
Incentives	$55,140.00	$82,200.00	$113,020.00	$82,200.00
Other	$0.00	$1,000.00	$0.00	$1,000.00
Total Utility Costs	**$67,880.62**	**$122,000.00**	**$172,951.20**	**$123,000.00**
Program Participants				
Total Participants	198	137	123	137
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	784,199	1,202,422	1,062,870	1,202,422
Annual kWh Savings @ Generator	849,068	1,301,886	1,150,790	1,301,886
Cost per Annual kWh Saved @ Generator	$0.0799	$0.0937	$0.1503	$0.0945
Peak kW Savings @ Meter	12.045	16.837	9.049	16.837
Peak kW Savings @ Generator	13.041	18.230	9.798	18.230
Cost per Peak kW Saved @ Generator	$5,205.03	$6,692.36	$17,652.53	$6,747.21
Benefit/Cost Ratios				
Utility Ratio	10.79	9.36	5.42	9.86
Utility NPV	$664,453	$1,020,453	$764,312	$1,089,279
Ratepayer Ratio	1.05	1.02	0.87	1.06
Ratepayer NPV	$36,979	$26,668	($137,108)	$65,944
Participant Ratio	6.37	7.17	5.33	7.35
Participant NPV	$789,853	$1,268,704	$1,117,348	$1,305,587
Societal Ratio	6.27	6.36	4.02	6.69
Societal NPV	$842,485	$1,313,611	$961,927	$1,400,575
Narrative				

Program Name: Appliance Recycling
Program Design Manager: Otter Tail Power
Category: Appliance Harvesting

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$48,536.45	$57,500.00	$43,955.14	$58,500.00
Administration (2011-present)	$8,430.79	$14,000.00	$9,161.45	$15,000.00
Evaluation, Measurement & Verification	$359.82	$2,500.00	$118.61	$2,500.00
Advertising & Promotion	$11,301.38	$15,750.00	$10,787.08	$15,750.00
Incentives	$22,450.00	$27,250.00	$20,450.00	$27,250.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$91,078.44**	**$117,000.00**	**$84,472.28**	**$119,000.00**
Program Participants				
Total Participants	449	545	409	545
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	439,571	530,600	393,170	530,600
Annual kWh Savings @ Generator	475,932	574,491	425,693	574,491
Cost per Annual kWh Saved @ Generator	$0.1914	$0.2037	$0.1984	$0.2071
Peak kW Savings @ Meter	61.600	74.775	56.113	74.775
Peak kW Savings @ Generator	66.696	80.960	60.755	80.960
Cost per Peak kW Saved @ Generator	$1,365.59	$1,445.15	$1,390.38	$1,469.85
Benefit/Cost Ratios				
Utility Ratio	2.68	2.78	2.87	3.00
Utility NPV	$152,924	$208,396	$157,930	$237,809
Ratepayer Ratio	0.70	0.74	0.73	0.78
Ratepayer NPV	($106,189)	($117,236)	($89,674)	($99,737)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$351,832	$440,536	$334,704	$454,806
Societal Ratio	4.41	4.48	4.67	4.78
Societal NPV	$233,729	$311,944	$235,219	$346,597
Narrative				

Program Name: Be Bright - Change A Light
Program Design Manager: Otter Tail Power
Category: Residential Lighting

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$56,801.76	$126,775.00	$49,913.04	$128,775.00
Administration (2011-present)	$18,407.48	$22,000.00	$20,479.73	$22,000.00
Evaluation, Measurement & Verification	$2,433.03	$6,000.00	$149.02	$6,000.00
Advertising & Promotion	$9,712.97	$19,000.00	$11,717.81	$19,000.00
Incentives	$157,427.76	$182,225.00	$166,755.03	$182,225.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$244,783.00**	**$356,000.00**	**$249,014.63**	**$358,000.00**
Program Participants				
Total Participants	111,329	99,000	129,607	99,000
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	4,053,689	3,725,493	4,200,287	3,725,493
Annual kWh Savings @ Generator	4,389,009	4,033,665	4,547,734	4,033,665
Cost per Annual kWh Saved @ Generator	$0.0558	$0.0883	$0.0548	$0.0888
Peak kW Savings @ Meter	475.625	441.684	490.757	441.684
Peak kW Savings @ Generator	514.969	478.220	531.352	478.220
Cost per Peak kW Saved @ Generator	$475.34	$744.43	$468.64	$748.61
Benefit/Cost Ratios				
Utility Ratio	9.64	6.71	10.80	7.27
Utility NPV	$2,115,440	$2,034,002	$2,440,434	$2,243,438
Ratepayer Ratio	0.82	0.83	0.85	0.88
Ratepayer NPV	($511,732)	($472,957)	($468,324)	($349,380)
Participant Ratio	15.59	23.15	12.99	23.84
Participant NPV	$3,354,929	$3,297,132	$3,652,671	$3,400,943
Societal Ratio	9.49	9.41	8.84	10.12
Societal NPV	$2,693,629	$2,712,959	$3,032,778	$2,959,190
Narrative				

Program Name: Business Education
Program Design Manager: Otter Tail Power
Category: Other - Direct

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Inactive	Inactive	Active
Utility Metrics				
kWh Line Loss Factor	7.640%			7.640%
kW Line Loss Factor	7.640%			7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$12.37			$0.00
Administration (2011-present)	$563.89			$0.00
Evaluation, Measurement & Verification	$419.80			$0.00
Advertising & Promotion	$0.00			$0.00
Incentives	$0.00			$0.00
Other	$0.00			$0.00
Total Utility Costs	**$996.06**	**$0.00**	**$0.00**	**$0.00**
Program Participants				
Total Participants	0			0
% of Spending by Customer Segments				
Residential	0%			0%
Commerical	90%			90%
Industrial	10%			10%
Farm	0%			0%
Other	0%			0%
Total % of Spending	**100%**	**0%**	**0%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%			0.0%
Budget % (% of Total Utility Costs)	0.0%			0.0%
Energy Savings				
Annual kWh Savings @ Meter	0			0
Annual kWh Savings @ Generator	0			0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000			0.000
Peak kW Savings @ Generator	0.000			0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00			0.00
Utility NPV	($996)			$0
Ratepayer Ratio	0.00			0.00
Ratepayer NPV	($996)			$0
Participant Ratio	0.00			0.00
Participant NPV	$0			$0
Societal Ratio	0.00			0.00
Societal NPV	($996)			$0
Narrative				

Program Name: CIP Development-Planning-Evaluation
Program Design Manager: Otter Tail Power
Category: Market Research and Product Development

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$65,041.77	$0.00	$0.00	$0.00
Administration (2011-present)	$175,983.84	$0.00	$0.00	$0.00
Evaluation, Measurement & Verification	$38,471.87	$0.00	$0.00	$0.00
Advertising & Promotion	$13,128.75	$0.00	$0.00	$0.00
Incentives	$0.00	$0.00	$0.00	$0.00
Other	$0.00	$450,000.00	$438,034.88	$450,000.00
Total Utility Costs	**$292,626.23**	**$450,000.00**	**$438,034.88**	**$450,000.00**
Program Participants				
Total Participants	0	0	0	0
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	100%	100%	100%	100%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00	0.00	0.00	0.00
Utility NPV	($292,626)	($450,000)	($438,035)	($450,000)
Ratepayer Ratio	0.00	0.00	0.00	0.00
Ratepayer NPV	($292,626)	($450,000)	($438,035)	($450,000)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$0	$0	$0	$0
Societal Ratio	0.00	0.00	0.00	0.00
Societal NPV	($292,626)	($450,000)	($438,035)	($450,000)
Narrative				

Program Name: Commercial Design Assistance
Program Design Manager: Otter Tail Power
Category: Non-Residential Whole Building - Non-Process Related

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$169,821.35	$138,927.00	$200,938.48	$138,927.00
Administration (2011-present)	$6,643.33	$20,000.00	$7,680.45	$20,000.00
Evaluation, Measurement & Verification	$495.50	$5,000.00	$493.70	$5,000.00
Advertising & Promotion	$8,091.12	$11,585.00	$5,268.35	$11,585.00
Incentives	$29,400.00	$314,988.00	$130,149.00	$314,988.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$214,451.30**	**$490,500.00**	**$344,529.98**	**$490,500.00**
Program Participants				
Total Participants	2	6	8	6
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	100%	100%	100%	100%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	334,228	2,234,350	1,299,058	2,234,350
Annual kWh Savings @ Generator	361,875	2,419,175	1,406,516	2,419,175
Cost per Annual kWh Saved @ Generator	$0.5926	$0.2028	$0.2450	$0.2028
Peak kW Savings @ Meter	94.486	470.306	257.426	470.306
Peak kW Savings @ Generator	102.302	509.210	278.720	509.210
Cost per Peak kW Saved @ Generator	$2,096.26	$963.26	$1,236.11	$963.26
Benefit/Cost Ratios				
Utility Ratio	2.58	6.82	5.48	7.20
Utility NPV	$337,856	$2,852,867	$1,543,375	$3,040,695
Ratepayer Ratio	1.14	1.49	1.36	1.55
Ratepayer NPV	$66,652	$1,106,533	$501,967	$1,251,119
Participant Ratio	0.97	2.21	2.71	2.25
Participant NPV	($10,213)	$1,172,838	$1,180,424	$1,218,119
Societal Ratio	1.82	4.86	3.49	5.08
Societal NPV	$419,582	$4,424,037	$2,244,350	$4,672,167
Narrative				

Program Name: Company CIP Projects
Program Design Manager: Otter Tail Power
Category: Other - Indirect

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%		7.640%	7.640%
kW Line Loss Factor	7.640%		7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$31,254.73		$1,382.02	$0.00
Administration (2011-present)	$7,253.36		($33.18)	$0.00
Evaluation, Measurement & Verification	$1,055.51		$0.00	$0.00
Advertising & Promotion	$0.00		$0.00	$0.00
Incentives	$710.00		$710.00	$0.00
Other	$0.00		$0.00	$0.00
Total Utility Costs	**$40,273.60**	**$0.00**	**$2,058.84**	**$0.00**
Program Participants				
Total Participants	0		0	0
% of Spending by Customer Segments				
Residential	0%		0%	0%
Commerical	0%		0%	0%
Industrial	0%		0%	0%
Farm	0%		0%	0%
Other	100%		100%	100%
Total % of Spending	**100%**	**0%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%		0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%		0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00		0.00	0.00
Utility NPV	($40,274)		($2,059)	$0
Ratepayer Ratio	0.00		0.00	0.00
Ratepayer NPV	($40,274)		($2,059)	$0
Participant Ratio	0.00		0.00	0.00
Participant NPV	$0		$0	$0
Societal Ratio	0.00		0.00	0.00
Societal NPV	($40,274)		($2,059)	$0
Narrative				

Program Name: Compressed Air Audits - C/I
Program Design Manager: Otter Tail Power
Category: Compressed Air

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$5,084.91	$3,000.00	$5,301.99	$3,000.00
Administration (2011-present)	$0.00	$500.00	$908.34	$500.00
Evaluation, Measurement & Verification	$0.00	$500.00	$0.00	$500.00
Advertising & Promotion	$1,412.16	$1,000.00	$1,606.73	$1,000.00
Incentives	$16,006.25	$0.00	$14,160.00	$0.00
Other	$0.00	$15,000.00	$0.00	$15,000.00
Total Utility Costs	**$22,503.32**	**$20,000.00**	**$21,977.06**	**$20,000.00**
Program Participants				
Total Participants	3	4	3	4
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	10%	10%	10%	10%
Industrial	90%	90%	90%	90%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00	0.00	0.00	0.00
Utility NPV	($22,503)	($20,000)	($21,977)	($20,000)
Ratepayer Ratio	0.00	0.00	0.00	0.00
Ratepayer NPV	($22,503)	($20,000)	($21,977)	($20,000)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$0	$0	$0	$0
Societal Ratio	0.00	0.00	0.00	0.00
Societal NPV	($22,503)	($20,000)	($21,977)	($20,000)
Narrative				

Program Name: Electronically Commutated Motors
Program Design Manager: Otter Tail Power
Category: Residential Space Heating (non-Heat Pumps)

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$1,059.99	$8,500.00	$3,543.20	$9,000.00
Administration (2011-present)	$3,595.95	$5,500.00	$4,100.58	$6,000.00
Evaluation, Measurement & Verification	$361.57	$2,000.00	$231.67	$2,000.00
Advertising & Promotion	$73.87	$8,000.00	$1,475.50	$8,000.00
Incentives	$4,000.00	$12,000.00	$11,100.00	$12,000.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$9,091.38**	**$36,000.00**	**$20,450.95**	**$37,000.00**
Program Participants				
Total Participants	40	120	111	120
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	28,934	85,896	80,328	85,896
Annual kWh Savings @ Generator	31,327	93,001	86,973	93,001
Cost per Annual kWh Saved @ Generator	$0.2902	$0.3871	$0.2351	$0.3978
Peak kW Savings @ Meter	2.613	7.841	7.250	7.841
Peak kW Savings @ Generator	2.829	8.490	7.850	8.490
Cost per Peak kW Saved @ Generator	$3,213.47	$4,240.48	$2,605.31	$4,358.27
Benefit/Cost Ratios				
Utility Ratio	3.24	2.59	1.35	2.67
Utility NPV	$20,334	$57,150	$143,003	$61,751
Ratepayer Ratio	0.73	0.71	0.53	0.74
Ratepayer NPV	($10,807)	($37,795)	($502,844)	($35,546)
Participant Ratio	5.62	5.68	#NULL!	5.79
Participant NPV	$46,235	$140,517	$676,293	$143,743
Societal Ratio	3.31	2.89	1.35	2.98
Societal NPV	$34,834	$102,309	$143,003	$108,908
Narrative				

Program Name: Energy Feedback Program
Program Design Manager: Otter Tail Power
Category: Residential Behavioral Change

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$303,906.08	$335,600.00	$396,087.16	$335,600.00
Administration (2011-present)	$1,366.99	$8,000.00	$419.69	$8,000.00
Evaluation, Measurement & Verification	$6,030.02	$22,000.00	$7,308.90	$22,000.00
Advertising & Promotion	$11,940.02	$5,000.00	$9,758.98	$5,000.00
Incentives	$0.00	$0.00	$0.00	$0.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$323,243.11**	**$370,600.00**	**$413,574.73**	**$370,600.00**
Program Participants				
Total Participants	34,254	32,810	38,621	32,810
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	2,339,065	1,926,316	2,613,217	1,926,317
Annual kWh Savings @ Generator	2,532,552	2,085,660	2,829,382	2,085,662
Cost per Annual kWh Saved @ Generator	$0.1276	$0.1777	$0.1462	$0.1777
Peak kW Savings @ Meter	1,311.508	1,080.086	1,465.224	1,080.086
Peak kW Savings @ Generator	1,419.996	1,169.430	1,586.427	1,169.430
Cost per Peak kW Saved @ Generator	$227.64	$316.91	$260.70	$316.91
Benefit/Cost Ratios				
Utility Ratio	1.53	1.20	1.46	1.23
Utility NPV	$170,083	$75,288	$190,939	$84,609
Ratepayer Ratio	0.54	0.51	0.50	0.51
Ratepayer NPV	($412,622)	($428,588)	($596,087)	($444,460)
Participant Ratio	0.00	0.00	#NULL!	0.00
Participant NPV	$610,173	$527,628	$824,095	$554,009
Societal Ratio	1.53	1.20	1.46	1.23
Societal NPV	$170,083	$75,288	$190,939	$84,609
Narrative				

Program Name: Financing - C/I
Program Design Manager: Otter Tail Power
Category: Other - Indirect

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	0.000%	7.640%
kW Line Loss Factor	7.640%	7.640%	0.000%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$468.82	$10,500.00	$187.85	$10,500.00
Administration (2011-present)	$1,245.55	$3,500.00	$394.70	$3,500.00
Evaluation, Measurement & Verification	$216.13	$1,000.00	$7.39	$1,000.00
Advertising & Promotion	$1,681.66	$8,000.00	$7.31	$8,000.00
Incentives	$216.12	$0.00	$1,500.73	$0.00
Other	$1,580.07	$9,000.00	$0.00	$9,000.00
Total Utility Costs	**$5,408.35**	**$32,000.00**	**$2,097.98**	**$32,000.00**
Program Participants				
Total Participants	0	5	0	5
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	90%	90%	90%	90%
Industrial	10%	10%	10%	10%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00	0.00	0.00	0.00
Utility NPV	($5,408)	($32,000)	($2,098)	($32,000)
Ratepayer Ratio	0.00	0.00	0.00	0.00
Ratepayer NPV	($5,408)	($32,000)	($2,098)	($32,000)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$0	$0	$0	$0
Societal Ratio	0.00	0.00	0.00	0.00
Societal NPV	($5,408)	($32,000)	($2,098)	($32,000)
Narrative				

Program Name: Financing - Res
Program Design Manager: Otter Tail Power
Category: Other - Indirect

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	0.000%	0.000%	0.000%	0.000%
kW Line Loss Factor	0.000%	0.000%	0.000%	0.000%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$468.82	$5,000.00	$3,569.16	$5,000.00
Administration (2011-present)	$1,245.55	$1,500.00	$7,499.29	$1,500.00
Evaluation, Measurement & Verification	$216.13	$500.00	$140.49	$500.00
Advertising & Promotion	$1,681.66	$2,000.00	$138.98	$2,000.00
Incentives	$216.12	$0.00	$1,238.45	$0.00
Other	$1,580.07	$4,000.00	$0.00	$4,000.00
Total Utility Costs	**$5,408.35**	**$13,000.00**	**$12,586.37**	**$13,000.00**
Program Participants				
Total Participants	0	7	6	7
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00	0.00	0.00	0.00
Utility NPV	($5,408)	($13,000)	($12,586)	($13,000)
Ratepayer Ratio	0.00	0.00	0.00	0.00
Ratepayer NPV	($5,408)	($13,000)	($12,586)	($13,000)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$216	$0	$0	$0
Societal Ratio	0.00	0.00	0.00	0.00
Societal NPV	($5,192)	($13,000)	($12,586)	($13,000)
Narrative				

Program Name: Geothermal Heat Pump - C/I
Program Design Manager: Otter Tail Power
Category: Non-Residential Heat Pumps

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$38,970.00	$19,000.00	$21,570.11	$21,000.00
Administration (2011-present)	$2,342.30	$3,500.00	$2,343.93	$3,500.00
Evaluation, Measurement & Verification	$2,841.27	$2,000.00	$172.44	$2,000.00
Advertising & Promotion	$1,917.33	$2,000.00	$620.32	$2,000.00
Incentives	$16,800.00	$94,500.00	$83,800.00	$94,500.00
Other	$0.00	$1,000.00	$0.00	$1,000.00
Total Utility Costs	**$62,870.90**	**$122,000.00**	**$108,506.80**	**$124,000.00**
Program Participants				
Total Participants	4	35	25	35
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	90%	90%	90%	90%
Industrial	10%	10%	10%	10%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	115,744	651,056	438,171	651,056
Annual kWh Savings @ Generator	125,318	704,911	474,416	704,911
Cost per Annual kWh Saved @ Generator	$0.5017	$0.1731	$0.2287	$0.1759
Peak kW Savings @ Meter	1.909	16.702	11.930	16.702
Peak kW Savings @ Generator	2.067	18.084	12.917	18.084
Cost per Peak kW Saved @ Generator	$30,417.79	$6,746.45	$8,400.41	$6,857.05
Benefit/Cost Ratios				
Utility Ratio	1.99	7.57	5.08	7.83
Utility NPV	$62,252	$801,216	$442,934	$847,276
Ratepayer Ratio	0.75	1.22	1.05	1.25
Ratepayer NPV	($41,356)	$165,708	$27,924	$194,504
Participant Ratio	1.55	1.07	1.40	1.10
Participant NPV	$44,292	$51,215	$200,374	$69,293
Societal Ratio	1.46	1.84	1.53	1.93
Societal NPV	$58,548	$621,618	$281,778	$683,229
Narrative				

Program Name: Geothermal Heat Pump -RES
Program Design Manager: Otter Tail Power
Category: Residential Heat Pumps

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$26,805.82	$19,000.00	$38,321.18	$19,000.00
Administration (2011-present)	$1,611.17	$4,000.00	$4,164.20	$5,000.00
Evaluation, Measurement & Verification	$1,954.39	$2,400.00	$306.36	$2,400.00
Advertising & Promotion	$1,318.85	$1,500.00	$1,102.06	$1,500.00
Incentives	$121,800.00	$116,100.00	$130,200.00	$116,100.00
Other	$0.00	$1,000.00	$0.00	$1,000.00
Total Utility Costs	**$153,490.23**	**$144,000.00**	**$174,093.80**	**$145,000.00**
Program Participants				
Total Participants	41	43	34	43
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	816,053	851,017	778,449	851,017
Annual kWh Savings @ Generator	883,557	921,413	842,842	921,413
Cost per Annual kWh Saved @ Generator	$0.1737	$0.1563	$0.2066	$0.1574
Peak kW Savings @ Meter	19.633	20.522	16.225	20.522
Peak kW Savings @ Generator	21.257	22.220	17.567	22.220
Cost per Peak kW Saved @ Generator	$7,220.68	$6,480.77	$9,910.20	$6,525.78
Benefit/Cost Ratios				
Utility Ratio	6.75	7.94	4.63	8.29
Utility NPV	$882,794	$998,851	$631,796	$1,057,528
Ratepayer Ratio	1.14	1.20	0.86	1.23
Ratepayer NPV	$129,879	$190,218	($127,227)	$226,928
Participant Ratio	1.51	1.53	1.84	1.56
Participant NPV	$425,882	$458,899	$580,797	$487,286
Societal Ratio	1.78	1.87	1.63	1.96
Societal NPV	$669,003	$782,467	$458,580	$860,437
Narrative				

Program Name: Grants
Program Design Manager: Otter Tail Power
Category: Non-Residential Custom Efficiency

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$112,286.41	$196,000.00	$116,165.15	$196,000.00
Administration (2011-present)	$10,134.02	$30,000.00	$2,698.32	$30,000.00
Evaluation, Measurement & Verification	$14,854.60	$34,000.00	$9,944.64	$34,000.00
Advertising & Promotion	$8,200.13	$8,800.00	$5,209.59	$8,800.00
Incentives	$194,920.00	$452,200.00	$288,591.00	$452,200.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$340,395.16**	**$721,000.00**	**$422,608.70**	**$721,000.00**
Program Participants				
Total Participants	37	38	41	38
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	10%	10%	10%	10%
Industrial	90%	90%	90%	90%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	1,881,558	3,211,147	2,698,147	3,211,147
Annual kWh Savings @ Generator	2,037,200	3,476,772	2,921,337	3,476,772
Cost per Annual kWh Saved @ Generator	$0.1671	$0.2074	$0.1447	$0.2074
Peak kW Savings @ Meter	430.775	944.455	570.183	944.455
Peak kW Savings @ Generator	466.409	1,022.580	617.348	1,022.580
Cost per Peak kW Saved @ Generator	$729.82	$705.08	$684.55	$705.08
Benefit/Cost Ratios				
Utility Ratio	7.91	6.66	9.31	7.08
Utility NPV	$2,352,396	$4,083,312	$3,513,023	$4,383,084
Ratepayer Ratio	1.73	1.95	1.61	2.03
Ratepayer NPV	$1,133,726	$2,341,944	$1,498,612	$2,594,411
Participant Ratio	1.34	1.09	1.87	1.11
Participant NPV	$376,182	$185,656	$1,143,028	$235,191
Societal Ratio	3.57	3.02	4.40	3.17
Societal NPV	$3,191,921	$4,753,598	$4,901,994	$5,127,440
Narrative				

Program Name: Home Insulation
Program Design Manager: Otter Tail Power
Category: Residential Building Envelope

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$1,786.30	$4,500.00	$3,402.37	$5,000.00
Administration (2011-present)	$3,692.03	$8,300.00	$5,231.41	$8,800.00
Evaluation, Measurement & Verification	$119.94	$2,000.00	$181.90	$2,000.00
Advertising & Promotion	$16,047.50	$15,700.00	$13,319.78	$15,700.00
Incentives	$8,830.23	$26,500.00	$4,983.89	$26,500.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$30,476.00**	**$57,000.00**	**$27,119.35**	**$58,000.00**
Program Participants				
Total Participants	31	55	21	55
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	167,763	170,864	74,580	170,864
Annual kWh Savings @ Generator	181,640	184,998	80,749	184,998
Cost per Annual kWh Saved @ Generator	$0.1678	$0.3081	$0.3358	$0.3135
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	3.20	1.88	1.72	1.98
Utility NPV	$66,984	$49,944	$19,561	$56,862
Ratepayer Ratio	0.33	0.49	0.47	0.51
Ratepayer NPV	($198,565)	($112,473)	($53,188)	($109,968)
Participant Ratio	6.82	2.70	2.78	2.76
Participant NPV	$348,903	$170,247	$73,160	$175,949
Societal Ratio	1.80	1.23	1.11	1.29
Societal NPV	$65,454	$29,496	$6,701	$38,751
Narrative				

Program Name: Home Transformer
Program Design Manager: Otter Tail Power
Category: Whole House

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$23,208.02	$16,500.00	$3,770.94	$17,000.00
Administration (2011-present)	$16,459.79	$3,805.00	$6,840.19	$4,305.00
Evaluation, Measurement & Verification	$178.33	$2,000.00	$0.00	$2,000.00
Advertising & Promotion	$5,498.98	$6,000.00	$1,908.12	$6,000.00
Incentives	$6,857.37	$32,695.00	$9,100.00	$32,695.00
Other	$15.44	$0.00	$0.00	$0.00
Total Utility Costs	**$52,217.93**	**$61,000.00**	**$21,619.25**	**$62,000.00**
Program Participants				
Total Participants	240	1,575	670	1,575
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	81,863	187,847	104,698	187,847
Annual kWh Savings @ Generator	88,635	203,386	113,359	203,386
Cost per Annual kWh Saved @ Generator	$0.5891	$0.2999	$0.1907	$0.3048
Peak kW Savings @ Meter	4.521	13.202	5.582	13.202
Peak kW Savings @ Generator	4.895	14.294	6.044	14.294
Cost per Peak kW Saved @ Generator	$10,667.66	$4,267.50	$3,577.13	$4,337.46
Benefit/Cost Ratios				
Utility Ratio	0.93	1.92	3.10	2.04
Utility NPV	($3,470)	$56,266	$45,438	$64,780
Ratepayer Ratio	0.42	0.58	0.62	0.61
Ratepayer NPV	($67,336)	($85,824)	($41,599)	($81,709)
Participant Ratio	28.87	18.54	31.74	18.98
Participant NPV	$94,750	$219,269	$129,093	$224,741
Societal Ratio	1.41	3.94	5.62	4.12
Societal NPV	$20,042	$120,007	$77,321	$130,593
Narrative				

Program Name: House Therapy
Program Design Manager: Otter Tail Power
Category: Low Income Weatherization

	2014 Actual	2015 Plan	2015 Actual	2016 Plan	
	Active	Active	Active	Active	
Utility Metrics					
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%	
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%	
Utility Cost Components					
Delivery and Administration (2008-2010)					
Delivery (2011-present)	$10,087.05	$129,000.00	$131,685.42	$129,000.00	
Administration (2011-present)	$12,273.93	$13,000.00	$8,937.05	$13,000.00	
Evaluation, Measurement & Verification	$1,955.10	$2,500.00	$233.24	$2,500.00	
Advertising & Promotion	$3,281.20	$3,000.00	$995.64	$3,000.00	
Incentives	$114,942.80	$0.00	$7,141.08	$0.00	
Other	$48.41	$2,500.00	$0.00	$2,500.00	
Total Utility Costs	**$142,588.49**	**$150,000.00**	**$148,992.43**	**$150,000.00**	
Program Participants					
Total Participants	100	160	145	160	
% of Spending by Customer Segments					
Residential	100%	100%	100%	100%	
Commerical	0%	0%	0%	0%	
Industrial	0%	0%	0%	0%	
Farm	0%	0%	0%	0%	
Other	0%	0%	0%	0%	
Total % of Spending	**100%**	**100%**	**100%**	**100%**	
Low-Income Participation					
Participant % (% of Total Participants)	100.0%	100.0%	100.0%	100.0%	
Budget % (% of Total Utility Costs)	100.0%	100.0%	100.0%	100.0%	
Energy Savings					
Annual kWh Savings @ Meter	189,273	225,727	234,312	225,727	
Annual kWh Savings @ Generator	204,930	244,399	253,694	244,399	
Cost per Annual kWh Saved @ Generator	$0.6958	$0.6138	$0.5873	$0.6138	
Peak kW Savings @ Meter	19.771	28.161	22.198	28.161	
Peak kW Savings @ Generator	21.406	30.490	24.034	30.490	
Cost per Peak kW Saved @ Generator	$6,661.00	$4,919.57	$6,199.18	$4,919.57	
Delivered Fuel Savings					
Gallons of #2 Fuel Oil	0	0	0	0	
Gallons of LPG	0	0	0	0	
Dekatherms Natural Gas	0.0	0.0	0.0	0.0	
Total Savings (Derived)	0.0	**0.0**	0.0	**0.0**	
Total Energy Savings	**204,929.6**	**244,399.1**	**253,694.2**	**244,399.1**	
Benefit/Cost Ratios					
Utility Ratio	0.86	1.09	1.04	1.17	
Utility NPV	($19,557)	$12,789	$5,754	$25,679	
Ratepayer Ratio	0.40	0.53	0.48	0.58	
Ratepayer NPV	($153,659)	($144,528)	($166,622)	($136,800)	
Participant Ratio					0.00
Participant NPV					$312,528
Societal Ratio					9.79
Societal NPV					$270,269
Narrative					

0.00	0.00	#NULL!	0.00	
$300,507	$340,727	$364,577	$347,060	
6.11	9.54	10.79	10.20	
$141,313	$196,476	$188,559	$211,891	

Program Name: Implementation & Training - C/I
Program Design Manager: Otter Tail Power
Category: Internal Training

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$48,444.47	$13,000.00	$67,783.91	$13,000.00
Administration (2011-present)	$3,083.82	$2,000.00	$3,906.17	$2,000.00
Evaluation, Measurement & Verification	$1,257.55	$2,000.00	$5,283.92	$2,000.00
Advertising & Promotion	$2,544.33	$2,000.00	$1,423.57	$2,000.00
Incentives	$0.00	$0.00	$0.00	$0.00
Other	$22.10	$41,000.00	$0.00	$41,000.00
Total Utility Costs	**$55,352.27**	**$60,000.00**	**$78,397.57**	**$60,000.00**
Program Participants				
Total Participants	408	250	443	250
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	90%	90%	90%	90%
Industrial	10%	10%	10%	10%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00	0.00	0.00	0.00
Utility NPV	($55,352)	($60,000)	($78,398)	($60,000)
Ratepayer Ratio	0.00	0.00	0.00	0.00
Ratepayer NPV	($55,352)	($60,000)	($78,398)	($60,000)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$0	$0	$0	$0
Societal Ratio	0.00	0.00	0.00	0.00
Societal NPV	($55,352)	($60,000)	($78,398)	($60,000)
Narrative				

Program Name: Implementation & Training - RES
Program Design Manager: Otter Tail Power
Category: Other - Indirect

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$42,155.16	$12,400.00	$56,776.11	$12,400.00
Administration (2011-present)	$2,683.47	$1,200.00	$3,271.82	$1,200.00
Evaluation, Measurement & Verification	$1,094.29	$1,200.00	$4,425.83	$1,200.00
Advertising & Promotion	$2,214.02	$0.00	$1,192.39	$0.00
Incentives	$0.00	$0.00	$0.00	$0.00
Other	$19.23	$25,200.00	$0.00	$25,200.00
Total Utility Costs	**$48,166.17**	**$40,000.00**	**$65,666.15**	**$40,000.00**
Program Participants				
Total Participants	74	175	78	175
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00	0.00	0.00	0.00
Utility NPV	($48,166)	($40,000)	($65,666)	($40,000)
Ratepayer Ratio	0.00	0.00	0.00	0.00
Ratepayer NPV	($48,166)	($40,000)	($65,666)	($40,000)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$0	$0	$0	$0
Societal Ratio	0.00	0.00	0.00	0.00
Societal NPV	($48,166)	($40,000)	($65,666)	($40,000)
Narrative				

Program Name: Industrial Focused Efficiency
Program Design Manager: Otter Tail Power
Category: Non-Residential Custom Efficiency

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$22,648.66	$48,000.00	$68,193.82	$85,500.00
Administration (2011-present)	$10,782.37	$19,000.00	$13,180.25	$21,500.00
Evaluation, Measurement & Verification	$1,201.82	$2,000.00	$4,277.28	$2,000.00
Advertising & Promotion	$1,478.11	$6,000.00	$1,068.55	$6,000.00
Incentives	$212,181.50	$60,000.00	$129,169.21	$120,000.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$248,292.46**	**$135,000.00**	**$215,889.11**	**$235,000.00**
Program Participants				
Total Participants	1	2	2	4
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	0%	0%	0%	0%
Industrial	100%	100%	100%	100%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	2,324,550	659,530	1,474,256	1,319,060
Annual kWh Savings @ Generator	2,516,836	714,086	1,596,206	1,428,172
Cost per Annual kWh Saved @ Generator	$0.0987	$0.1891	$0.1353	$0.1645
Peak kW Savings @ Meter	610.193	100.275	156.936	200.541
Peak kW Savings @ Generator	660.668	108.570	169.918	217.130
Cost per Peak kW Saved @ Generator	$375.82	$1,243.44	$1,270.55	$1,082.30
Benefit/Cost Ratios				
Utility Ratio	13.35	5.25	5.64	6.42
Utility NPV	$3,066,083	$573,269	$1,002,050	$1,274,536
Ratepayer Ratio	2.06	1.28	1.17	1.38
Ratepayer NPV	$1,707,144	$153,759	$177,482	$412,725
Participant Ratio	2.56	1.12	3.25	0.57
Participant NPV	$996,307	$52,842	$910,063	($763,336)
Societal Ratio	7.82	2.02	3.68	1.17
Societal NPV	$4,603,125	$530,193	$1,314,933	$319,893
Narrative				

Program Name: Lighting - C/I
Program Design Manager: Otter Tail Power
Category: Non-Residential Lighting

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$155,234.53	$98,000.00	$233,907.23	$98,000.00
Administration (2011-present)	$11,301.60	$21,973.00	$7,655.89	$21,973.00
Evaluation, Measurement & Verification	$3,034.08	$7,000.00	$1,892.61	$7,000.00
Advertising & Promotion	$6,083.13	$6,000.00	$4,388.82	$6,000.00
Incentives	$1,076,526.97	$430,027.00	$772,873.57	$430,027.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$1,252,180.31**	**$563,000.00**	**$1,020,718.12**	**$563,000.00**
Program Participants				
Total Participants	582	346	548	346
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	70%	70%	70%	70%
Industrial	30%	30%	30%	30%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	7,472,836	3,140,492	5,762,314	3,140,492
Annual kWh Savings @ Generator	8,090,987	3,400,273	6,238,971	3,400,273
Cost per Annual kWh Saved @ Generator	$0.1548	$0.1656	$0.1636	$0.1656
Peak kW Savings @ Meter	1,855.544	1,007.869	1,477.205	1,007.869
Peak kW Savings @ Generator	2,009.034	1,091.240	1,599.399	1,091.240
Cost per Peak kW Saved @ Generator	$623.27	$515.93	$638.19	$515.93
Benefit/Cost Ratios				
Utility Ratio	7.12	6.85	5.86	7.35
Utility NPV	$7,664,934	$3,293,982	$4,961,778	$357,609
Ratepayer Ratio	1.48	1.59	1.38	1.66
Ratepayer NPV	$2,883,378	$1,424,024	$1,653,016	$1,645,331
Participant Ratio	1.53	1.83	5.25	1.87
Participant NPV	$2,107,834	$1,080,676	$4,376,545	$1,141,744
Societal Ratio	3.13	3.72	6.46	3.95
Societal NPV	$8,850,300	$3,917,081	$6,964,308	$4,253,096
Narrative				

Program Name: Lighting New Construction -C/I
Program Design Manager: Otter Tail Power
Category: Non-Residential Lighting

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$11,914.48	$17,250.00	$19,041.23	$17,250.00
Administration (2011-present)	$4,006.21	$19,000.00	$1,956.61	$19,000.00
Evaluation, Measurement & Verification	$659.33	$2,000.00	$374.86	$2,000.00
Advertising & Promotion	$6,919.55	$7,000.00	$4,785.84	$7,000.00
Incentives	$102,198.74	$97,750.00	$223,338.92	$97,750.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$125,698.31**	**$143,000.00**	**$249,497.46**	**$143,000.00**
Program Participants				
Total Participants	128	202	277	202
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	70%	70%	70%	70%
Industrial	30%	30%	30%	30%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	2,004,511	1,998,982	7,019,339	1,998,982
Annual kWh Savings @ Generator	2,170,324	2,164,337	7,599,977	2,164,337
Cost per Annual kWh Saved @ Generator	$0.0579	$0.0661	$0.0328	$0.0661
Peak kW Savings @ Meter	457.309	341.291	997.783	341.291
Peak kW Savings @ Generator	495.138	369.523	1,080.319	369.523
Cost per Peak kW Saved @ Generator	$253.87	$386.99	$230.95	$386.99
Benefit/Cost Ratios				
Utility Ratio	17.51	13.03	28.88	13.99
Utility NPV	$2,074,918	$1,720,320	$6,956,339	$1,857,088
Ratepayer Ratio	1.62	1.48	1.50	1.55
Ratepayer NPV	$844,088	$606,925	$2,395,937	$710,122
Participant Ratio	0.99	1.99	5.26	2.04
Participant NPV	($15,030)	$627,828	$5,699,809	$662,981
Societal Ratio	2.21	3.75	7.80	4.00
Societal NPV	$1,729,739	$1,874,035	$9,279,615	$2,039,776
Narrative				

Program Name: Made in Minnesota Solar Energy Assessment
Program Design Manager: Otter Tail Power
Category: Regulatory Charges

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$0.00	$0.00	$0.00	$0.00
Administration (2011-present)	$0.00	$0.00	$0.00	$0.00
Evaluation, Measurement & Verification	$0.00	$0.00	$0.00	$0.00
Advertising & Promotion	$0.00	$0.00	$0.00	$0.00
Incentives	$0.00	$0.00	$0.00	$0.00
Other	$103,909.00	$103,909.00	$116,741.00	$103,909.00
Total Utility Costs	**$103,909.00**	**$103,909.00**	**$116,741.00**	**$103,909.00**
Program Participants				
Total Participants	0	0	3	0
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	100%	100%	100%	100%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00	0.00	0.00	0.00
Utility NPV	($103,909)	($103,909)	($116,741)	($103,909)
Ratepayer Ratio	0.00	0.00	0.00	0.00
Ratepayer NPV	($103,909)	($103,909)	($116,741)	($103,909)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$0	$0	$0	$0
Societal Ratio	0.00	0.00	0.00	0.00
Societal NPV	($103,909)	($103,909)	($116,741)	($103,909)
Narrative				

Program Name: Motors
Program Design Manager: Otter Tail Power
Category: Motors & Drives

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$21,632.94	$36,000.00	$25,296.41	$36,000.00
Administration (2011-present)	$6,257.26	$8,000.00	$3,052.46	$8,000.00
Evaluation, Measurement & Verification	$929.23	$2,000.00	$233.27	$2,000.00
Advertising & Promotion	$3,984.41	$3,275.00	$2,990.81	$3,275.00
Incentives	$132,580.00	$31,725.00	$162,955.00	$31,725.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$165,383.84**	**$81,000.00**	**$194,527.95**	**$81,000.00**
Program Participants				
Total Participants	161	71	204	71
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	30%	30%	30%	30%
Industrial	70%	70%	70%	70%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	560,760	130,131	1,164,783	130,131
Annual kWh Savings @ Generator	607,146	140,895	1,261,134	140,895
Cost per Annual kWh Saved @ Generator	$0.2724	$0.5749	$0.1542	$0.5749
Peak kW Savings @ Meter	143.241	20.920	162.435	20.920
Peak kW Savings @ Generator	155.090	22.650	175.872	22.650
Cost per Peak kW Saved @ Generator	$1,066.37	$3,576.08	$1,106.08	$3,576.08
Benefit/Cost Ratios				
Utility Ratio	4.39	1.77	6.21	1.88
Utility NPV	$560,067	$62,111	$1,012,791	$71,468
Ratepayer Ratio	1.33	0.87	1.26	0.91
Ratepayer NPV	$178,996	($21,360)	$251,973	($14,270)
Participant Ratio	3.74	1.77	7.28	1.81
Participant NPV	$389,538	$51,944	$1,125,409	$54,318
Societal Ratio	6.20	1.82	8.50	1.93
Societal NPV	$909,531	$95,978	$1,582,389	$107,777
Narrative				

Program Name: PC Power Supply
Program Design Manager: Otter Tail Power
Category: Non-Residential Computer Efficiency and Plug Loads

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$4,553.99	$19,783.00	$2,733.10	$19,783.00
Administration (2011-present)	$3,218.40	$8,500.00	$822.51	$8,500.00
Evaluation, Measurement & Verification	$0.00	$2,000.00	$118.61	$2,000.00
Advertising & Promotion	$1,150.00	$2,500.00	$22.10	$2,500.00
Incentives	$7,346.00	$34,217.00	$2,385.00	$34,217.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$16,268.39**	**$67,000.00**	**$6,081.32**	**$67,000.00**
Program Participants				
Total Participants	1,148	3,562	457	3,562
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	90%	90%	90%	90%
Industrial	10%	10%	10%	10%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	170,856	732,784	67,549	732,784
Annual kWh Savings @ Generator	184,989	793,400	73,137	793,400
Cost per Annual kWh Saved @ Generator	$0.0879	$0.0844	$0.0832	$0.0844
Peak kW Savings @ Meter	39.836	170.829	15.749	170.829
Peak kW Savings @ Generator	43.131	184.960	17.052	184.960
Cost per Peak kW Saved @ Generator	$377.18	$362.24	$356.64	$362.24
Benefit/Cost Ratios				
Utility Ratio	3.33	4.08	4.16	4.69
Utility NPV	$37,971	$206,208	$19,239	$247,505
Ratepayer Ratio	0.98	1.12	1.11	1.25
Ratepayer NPV	($994)	$29,638	$2,477	$62,107
Participant Ratio	4.17	5.57	4.46	5.81
Participant NPV	$36,588	$180,924	$16,662	$190,238
Societal Ratio	2.89	4.15	3.27	4.77
Societal NPV	$38,701	$227,558	$19,287	$273,042
Narrative				

Program Name: Plan Review - C/I
Program Design Manager: Otter Tail Power
Category: Non-Residential Whole Building - Non-Process Related

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Inactive	Inactive	Inactive	Inactive
Utility Metrics				
kWh Line Loss Factor				
kW Line Loss Factor				
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)				
Administration (2011-present)				
Evaluation, Measurement & Verification				
Advertising & Promotion				
Incentives				
Other				
Total Utility Costs	**$0.00**	**$0.00**	**$0.00**	**$0.00**
Program Participants				
Total Participants				
% of Spending by Customer Segments				
Residential				
Commerical				
Industrial				
Farm				
Other				
Total % of Spending	**0%**	**0%**	**0%**	**0%**
Low-Income Participation				
Participant % (% of Total Participants)		0.0%	0.0%	
Budget % (% of Total Utility Costs)		0.0%	0.0%	
Energy Savings				
Annual kWh Savings @ Meter				
Annual kWh Savings @ Generator				
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter				
Peak kW Savings @ Generator				
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio				
Utility NPV				
Ratepayer Ratio				
Ratepayer NPV				
Participant Ratio				
Participant NPV				
Societal Ratio				
Societal NPV				
Narrative				

Program Name: PUC Assessments
Program Design Manager: Otter Tail Power
Category: Regulatory Charges

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$0.00	$0.00	$0.00	$0.00
Administration (2011-present)	$0.00	$0.00	$0.00	$0.00
Evaluation, Measurement & Verification	$0.00	$0.00	$0.00	$0.00
Advertising & Promotion	$0.00	$0.00	$0.00	$0.00
Incentives	$0.00	$0.00	$0.00	$0.00
Other	$17,020.02	$20,000.00	$17,331.05	$20,000.00
Total Utility Costs	**$17,020.02**	**$20,000.00**	**$17,331.05**	**$20,000.00**
Program Participants				
Total Participants	0	0	0	0
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	100%	100%	100%	100%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00	0.00	0.00	0.00
Utility NPV	($17,020)	($20,000)	($17,331)	($20,000)
Ratepayer Ratio	0.00	0.00	0.00	0.00
Ratepayer NPV	($17,020)	($20,000)	($17,331)	($20,000)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$0	($20,000)	$0	$0
Societal Ratio	0.00	0.00	0.00	0.00
Societal NPV	($17,020)	($20,000)	($17,331)	($20,000)
Narrative				

Program Name: Recommissioning/Retrocommissioning
Program Design Manager: Otter Tail Power
Category: Non-Residential Custom Efficiency

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$13,847.38	$67,000.00	$12,343.75	$67,000.00
Administration (2011-present)	$5,170.58	$35,000.00	$6,325.34	$35,000.00
Evaluation, Measurement & Verification	$59.98	$4,000.00	$241.95	$4,000.00
Advertising & Promotion	$7,131.88	$10,000.00	$4,329.33	$10,000.00
Incentives	$0.00	$156,000.00	$10,150.00	$156,000.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$26,209.82**	**$272,000.00**	**$33,390.37**	**$272,000.00**
Program Participants				
Total Participants	0	10	0	10
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	90%	90%	90%	90%
Industrial	10%	10%	10%	10%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	0	1,789,493	0	1,789,493
Annual kWh Savings @ Generator	0	1,937,519	0	1,937,519
Cost per Annual kWh Saved @ Generator	$0.0000	$0.1404	$0.0000	$0.1404
Peak kW Savings @ Meter	0.000	33.748	0.000	33.748
Peak kW Savings @ Generator	0.000	36.540	0.000	36.540
Cost per Peak kW Saved @ Generator	$0.00	$7,443.97	$0.00	$7,443.97
Benefit/Cost Ratios				
Utility Ratio	0.00	1.94	0.00	2.15
Utility NPV	($26,210)	$254,628	($33,390)	$313,531
Ratepayer Ratio	0.00	0.68	0.00	0.73
Ratepayer NPV	($26,210)	($249,900)	($33,390)	($213,057)
Participant Ratio	0.00	1.92	0.00	1.99
Participant NPV	$0	$328,311	$0	$351,412
Societal Ratio	0.00	1.31	0.00	1.45
Societal NPV	($26,210)	$145,395	($43,540)	$211,373
Narrative				

Program Name: Refrigeration
Program Design Manager: Otter Tail Power
Category: Non-Residential Refrigeration

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$88,443.55	$57,000.00	$71,003.13	$57,000.00
Administration (2011-present)	$8,226.08	$15,500.00	$5,477.33	$15,500.00
Evaluation, Measurement & Verification	$606.28	$3,000.00	$118.61	$3,000.00
Advertising & Promotion	$7,054.65	$9,705.00	$5,287.65	$9,705.00
Incentives	$84,755.99	$84,795.00	$68,798.25	$84,795.00
Other	$25.73	$0.00	$0.00	$0.00
Total Utility Costs	**$189,112.28**	**$170,000.00**	**$150,684.97**	**$170,000.00**
Program Participants				
Total Participants	89	119	103	119
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	90%	90%	90%	90%
Industrial	10%	10%	10%	10%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	1,146,130	1,143,430	766,718	1,143,430
Annual kWh Savings @ Generator	1,240,938	1,238,014	830,141	1,238,014
Cost per Annual kWh Saved @ Generator	$0.1524	$0.1373	$0.1815	$0.1373
Peak kW Savings @ Meter	198.974	223.373	124.299	223.373
Peak kW Savings @ Generator	215.433	241.850	134.581	241.850
Cost per Peak kW Saved @ Generator	$877.82	$702.91	$1,119.66	$702.91
Benefit/Cost Ratios				
Utility Ratio	3.43	4.27	2.38	4.63
Utility NPV	$459,949	$555,826	$207,862	$616,802
Ratepayer Ratio	1.06	1.20	0.89	1.27
Ratepayer NPV	$34,685	$121,073	($42,587)	$167,168
Participant Ratio	3.48	4.06	3.58	4.17
Participant NPV	$382,427	$406,933	$289,635	$422,516
Societal Ratio	3.33	4.26	2.46	4.59
Societal NPV	$586,373	$712,699	$268,951	$783,856
Narrative				

Program Name: Regulatory Assessments
Program Design Manager: Otter Tail Power
Category: Regulatory Charges

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$0.00	$0.00	$0.00	$0.00
Administration (2011-present)	$0.00	$0.00	$0.00	$0.00
Evaluation, Measurement & Verification	$0.00	$0.00	$0.00	$0.00
Advertising & Promotion	$0.00	$0.00	$0.00	$0.00
Incentives	$0.00	$0.00	$0.00	$0.00
Other	$99,857.65	$95,000.00	$105,609.85	$95,000.00
Total Utility Costs	**$99,857.65**	**$95,000.00**	**$105,609.85**	**$95,000.00**
Program Participants				
Total Participants	0	0	0	0
% of Spending by Customer Segments				
Residential	0%	0%	0%	0%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	100%	100%	100%	100%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%	0.0%	0.0%	0.0%
Budget % (% of Total Utility Costs)	0.0%	0.0%	0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	0	0	0	0
Annual kWh Savings @ Generator	0	0	0	0
Cost per Annual kWh Saved @ Generator	$0.0000	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.000	0.000	0.000	0.000
Peak kW Savings @ Generator	0.000	0.000	0.000	0.000
Cost per Peak kW Saved @ Generator	$0.00	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	0.00	0.00	0.00	0.00
Utility NPV	($99,858)	($95,000)	($105,610)	($95,000)
Ratepayer Ratio	0.00	0.00	0.00	0.00
Ratepayer NPV	($99,858)	($95,000)	($105,610)	($95,000)
Participant Ratio	0.00	0.00	0.00	0.00
Participant NPV	$0	$0	$0	$0
Societal Ratio	0.00	0.00	0.00	0.00
Societal NPV	($99,858)	($95,000)	($105,610)	($95,000)
Narrative				

Program Name: Residential Demand Control
Program Design Manager: Otter Tail Power
Category: Residential Load Management

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Inactive	Inactive	Active
Utility Metrics				
kWh Line Loss Factor	7.640%			7.640%
kW Line Loss Factor	7.640%			7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$1,309.09			$0.00
Administration (2011-present)	$77.65			$0.00
Evaluation, Measurement & Verification	$119.94			$0.00
Advertising & Promotion	$69.91			$0.00
Incentives	$300.00			$0.00
Other	$0.00			$0.00
Total Utility Costs	**$1,876.59**	**$0.00**	**$0.00**	**$0.00**
Program Participants				
Total Participants	1			0
% of Spending by Customer Segments				
Residential	100%			100%
Commerical	0%			0%
Industrial	0%			0%
Farm	0%			0%
Other	0%			0%
Total % of Spending	**100%**	**0%**	**0%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	0.0%			0.0%
Budget % (% of Total Utility Costs)	0.0%			0.0%
Energy Savings				
Annual kWh Savings @ Meter	553			0
Annual kWh Savings @ Generator	599			0
Cost per Annual kWh Saved @ Generator	$3.1342	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	0.722			0.000
Peak kW Savings @ Generator	0.782			0.000
Cost per Peak kW Saved @ Generator	$2,400.58	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	5.55			0.00
Utility NPV	$8,545			$0
Ratepayer Ratio	4.41			0.00
Ratepayer NPV	$8,057			$0
Participant Ratio	0.00			0.00
Participant NPV	$1,035			$0
Societal Ratio	9.62			0.00
Societal NPV	$13,596			$0
Narrative				

Program Name: School Kits
Program Design Manager: Otter Tail Power
Category: Whole House

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$3,004.46	$3,500.00	$2,327.18	$4,000.00
Administration (2011-present)	$3,548.47	$4,725.00	$7,547.54	$5,225.00
Evaluation, Measurement & Verification	$0.00	$2,000.00	$444.16	$2,000.00
Advertising & Promotion	$0.00	$5,000.00	$22.10	$5,000.00
Incentives	$18,907.35	$8,775.00	$9,343.05	$8,775.00
Other	$0.00	$1,000.00	$0.00	$1,000.00
Total Utility Costs	**$25,460.28**	**$25,000.00**	**$19,684.03**	**$26,000.00**
Program Participants				
Total Participants	1,252	1,275	2,913	1,275
% of Spending by Customer Segments				
Residential	100%	100%	100%	100%
Commerical	0%	0%	0%	0%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	31.0%	31.0%	31.0%
Budget % (% of Total Utility Costs)	31.0%	31.0%	31.0%	31.0%
Energy Savings				
Annual kWh Savings @ Meter	311,860	112,337	221,747	112,337
Annual kWh Savings @ Generator	337,657	121,629	240,090	121,629
Cost per Annual kWh Saved @ Generator	$0.0754	$0.2055	$0.0820	$0.2138
Peak kW Savings @ Meter	22.701	8.869	12.128	8.869
Peak kW Savings @ Generator	24.579	9.603	13.131	9.603
Cost per Peak kW Saved @ Generator	$1,035.86	$2,603.45	$1,499.02	$2,707.59
Benefit/Cost Ratios				
Utility Ratio	5.71	2.34	5.46	2.46
Utility NPV	$119,862	$33,603	$87,880	$37,872
Ratepayer Ratio	0.70	0.63	0.67	0.66
Ratepayer NPV	($62,392)	($34,094)	($53,842)	($32,334)
Participant Ratio	0.00	0.00	#NULL!	0.00
Participant NPV	$253,967	$95,726	$192,848	$98,741
Societal Ratio	28.21	4.57	13.22	4.66
Societal NPV	$178,305	$57,851	$126,320	$62,968
Narrative				

Program Name: Town Energy Challenge Pilot
Program Design Manager: Otter Tail Power
Category: Other - Direct

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%		7.640%	7.640%
kW Line Loss Factor	7.640%		7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$9,750.00		$0.00	$0.00
Administration (2011-present)	$0.00		$0.00	$0.00
Evaluation, Measurement & Verification	$0.00		$0.00	$0.00
Advertising & Promotion	$0.00		$0.00	$0.00
Incentives	$0.00		$0.00	$0.00
Other	$1,100.00		$763.84	$0.00
Total Utility Costs	**$10,850.00**	**$0.00**	**$763.84**	**$0.00**
Program Participants				
Total Participants	273		0	0
% of Spending by Customer Segments				
Residential	79%		50%	50%
Commerical	21%		50%	50%
Industrial	0%		0%	0%
Farm	0%		0%	0%
Other	0%		0%	0%
Total % of Spending	**100%**	**0%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%		0.0%	0.0%
Budget % (% of Total Utility Costs)	31.0%		0.0%	0.0%
Energy Savings				
Annual kWh Savings @ Meter	77,318		0	0
Annual kWh Savings @ Generator	83,714		0	0
Cost per Annual kWh Saved @ Generator	$0.1296	$0.0000	$0.0000	$0.0000
Peak kW Savings @ Meter	54.695		0.000	0.000
Peak kW Savings @ Generator	59.219		0.000	0.000
Cost per Peak kW Saved @ Generator	$183.22	$0.00	$0.00	$0.00
Benefit/Cost Ratios				
Utility Ratio	1.72		0.00	0.00
Utility NPV	$7,813		($764)	$0
Ratepayer Ratio	0.63		0.00	0.00
Ratepayer NPV	($11,152)		($764)	$0
Participant Ratio	0.00		#NULL!	0.00
Participant NPV	$19,859		$0	$0
Societal Ratio	1.72		0.00	0.00
Societal NPV	$7,813		($764)	$0
Narrative				

Program Name: Water Heater Store and Save
Program Design Manager: Otter Tail Power
Category: Residential Domestic Hot Water

	2014 Actual	2015 Plan	2015 Actual	2016 Plan
	Active	Active	Active	Active
Utility Metrics				
kWh Line Loss Factor	7.640%	7.640%	7.640%	7.640%
kW Line Loss Factor	7.640%	7.640%	7.640%	7.640%
Utility Cost Components				
Delivery and Administration (2008-2010)				
Delivery (2011-present)	$2,257.45	$20,000.00	$10,724.40	$20,000.00
Administration (2011-present)	$1,431.89	$15,000.00	$461.72	$15,000.00
Evaluation, Measurement & Verification	$505.96	$5,000.00	$176.32	$5,000.00
Advertising & Promotion	$5,068.38	$0.00	$129.00	$0.00
Incentives	$0.00	$0.00	$0.00	$0.00
Other	$0.00	$0.00	$0.00	$0.00
Total Utility Costs	**$9,263.68**	**$40,000.00**	**$11,491.44**	**$40,000.00**
Program Participants				
Total Participants	14,026	8,622	16,165	8,622
% of Spending by Customer Segments				
Residential	93%	60%	94%	60%
Commerical	7%	40%	6%	40%
Industrial	0%	0%	0%	0%
Farm	0%	0%	0%	0%
Other	0%	0%	0%	0%
Total % of Spending	**100%**	**100%**	**100%**	**100%**
Low-Income Participation				
Participant % (% of Total Participants)	31.0%	19.0%	31.0%	19.0%
Budget % (% of Total Utility Costs)	31.0%	19.0%	31.0%	19.0%
Energy Savings				
Annual kWh Savings @ Meter	321,585	197,683	370,628	197,683
Annual kWh Savings @ Generator	348,186	214,035	401,286	214,035
Cost per Annual kWh Saved @ Generator	$0.0266	$0.1869	$0.0286	$0.1869
Peak kW Savings @ Meter	2,970.100	1,828.913	3,423.048	1,828.913
Peak kW Savings @ Generator	3,215.786	1,980.200	3,706.202	1,980.200
Cost per Peak kW Saved @ Generator	$2.88	$20.20	$3.10	$20.20
Benefit/Cost Ratios				
Utility Ratio	62.19	9.78	63.70	9.34
Utility NPV	$566,798	$351,098	$720,525	$333,574
Ratepayer Ratio	16.02	6.83	16.39	6.43
Ratepayer NPV	$540,094	$333,862	$687,364	$315,476
Participant Ratio	0.00	0.00	#NULL!	0.00
Participant NPV	$27,963	$18,049	$192,848	$18,951
Societal Ratio	62.19	9.78	63.70	9.34
Societal NPV	$566,798	$351,098	$720,525	$333,574
Narrative				

Appendix D- Navigant
DSM Market Potential Study

NAVIGANT

Electric Demand Side Management (DSM) Market Potential Study

Prepared for:
Otter Tail Power Company

Final Report

Submitted by:
Navigant Consulting, Inc.
1001 Officers Row
Vancouver, WA 98661

360-828-4000
www.navigant.com
March 15, 2016

NAVIGANT

Table of Contents

NAVIGANT

1. Executive Summary

This report presents the results of a 2015 study of the energy efficiency potential for Otter Tail Power Company's Minnesota service area. The goal of the project was to estimate both energy efficiency market potential and also the potential for direct load control measures, in support of Otter Tail Power's (OTP's) strategic resource and Conservation Improvement Program (CIP) planning. The study approach to estimating energy conservation potential relied on four key data inputs:

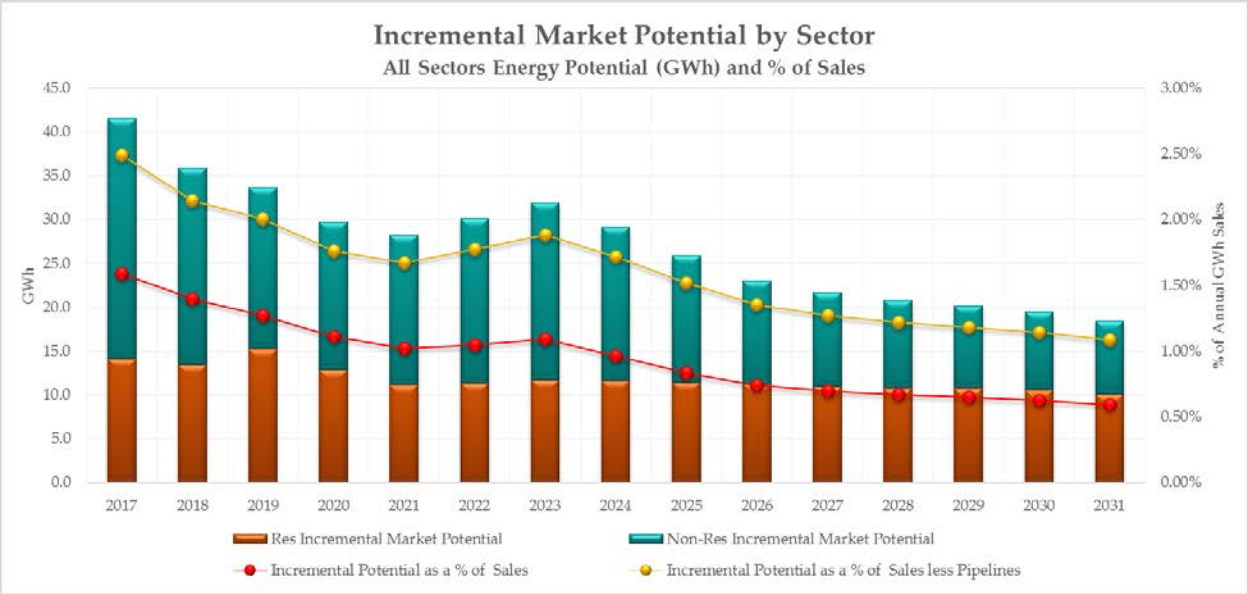
1. The current saturations of electric energy efficiency measures in statistically representative samples of OTP's residential and commercial/industrial facilities
2. Energy efficiency measures' energy and demand savings, costs and lifetimes, from the Minnesota Statewide Technical Reference Manual (TRM), plus additional measures provided in OTP's TRM
3. The actual energy savings achieved by best practice energy efficiency programs in the Midwest and across North America
4. The actual energy savings achieved by existing OTP energy efficiency programs in Minnesota

The Electricity Resource Assessment Model (ELRAM), developed by Navigant Consulting, Inc. (Navigant), utilized these inputs to prepare the following types of DSM potential results: technical and economic electric energy efficiency potential, and market-achievable DSM potential for an expected base case, and six scenarios. These additional six scenarios reach DSM goals of 1.5% to 2.0% of utility sales in 0.1% increments.

1.1 DSM Potentials Results

Navigant began with a base case model run showing the results of "business as usual," where the modeling team made no adjustments to current incentive levels or program administrative costs. The left axis of Figure E–1 illustrates the base scenario incremental market potential (GWh) and the right axis presents the base scenario incremental market energy potential expressed as a percent of total OTP forecasted sales. There are two representations of the percent of sales values in this figure. The first is a percent of all sales and the second percent of all sales less pipeline sales. The two representations illustrate the effect of the large share of pipeline sales to total sales for OTP. Over the forecast period, pipeline sales represent between 35-45% of total sales, depending on the year. However, the pipeline companies have informed OTP the pumps currently used by the pipelines are already high performance pumps and offer no current DSM potential. When considering goals expressed as percent of sales, Navigant suggests that it may be more appropriate for OTP to express their DSM goals as percent of sales less pipeline sales.

Figure E–1. Base Case Incremental Market Energy Potential by Sector (GWh) and Percent of Sales



Source: Navigant 2015

Table E–1 provides the values represented in Figure E–1. For the base case, energy potential as expressed as a percent of total sales is 1.59% in 2017 and falls to 0.59% by 2031. When expressed as a percent of sales less pipeline sales, the values are 2.49% in 2017 falling to 1.08% by 2031. However in the latter scenarios, the incremental market potential as expressed as a percent of sales remains at or above the 1.5% goal though 2031.

Incremental market potential decreases each year in the base case scenario due to incentive levels remaining constant, the impacts of codes and standards reducing programmatic opportunities, and certain measures beginning to reach saturation levels by the end of the forecast period. At the sector level, the residential share of incremental market potential in 2017 is about 34% of the total incremental market potential. By 2031, the residential share increases to about 55%.

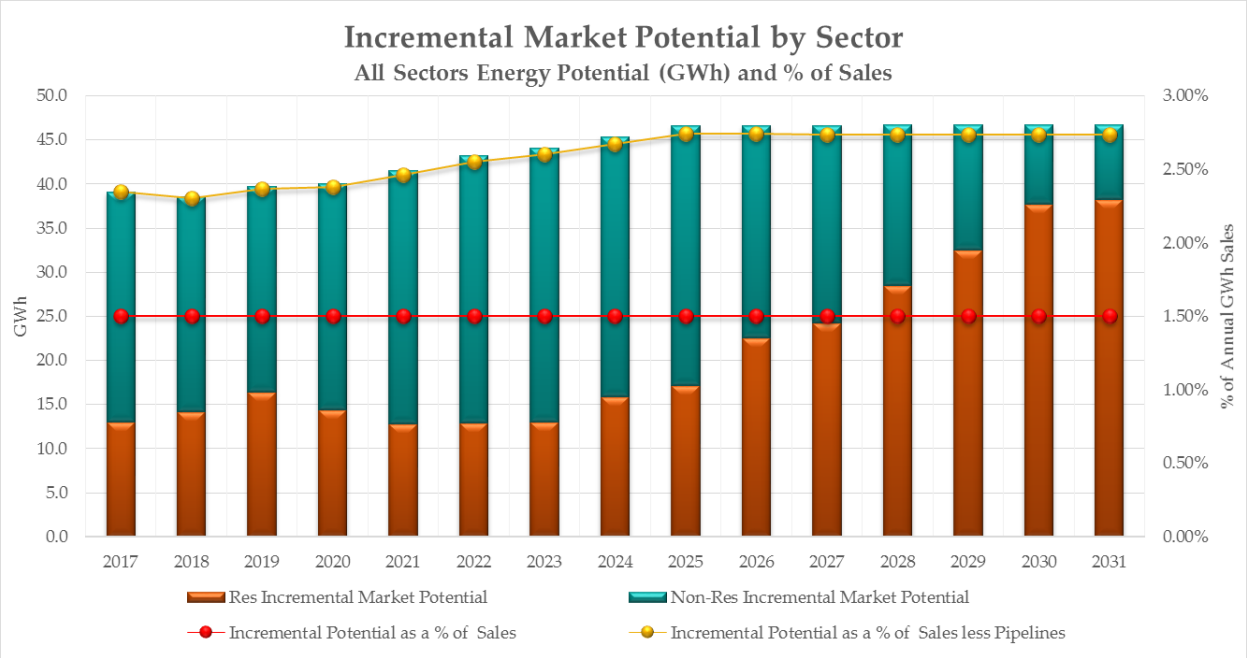
Table E–1. Base Case Incremental Market Energy Potential by Sector (GWh) and Percent of Sales

All Sectors (GWh)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Total Incremental Market Potential	41.5	35.9	33.6	29.7	28.2	30.1	32.0	29.2	25.9	23.0	21.7	20.8	20.2	19.5	18.5
Res Incremental Market Potential	14.1	13.5	15.3	12.9	11.1	11.3	11.7	11.6	11.4	11.2	11.0	10.8	10.7	10.6	10.1
Non-Res Incremental Market Potential	27.4	22.4	18.4	16.8	17.1	18.8	20.3	17.5	14.4	11.8	10.7	10.0	9.4	8.9	8.4
Incremental Potential as % of Sales	1.59%	1.40%	1.27%	1.11%	1.02%	1.04%	1.09%	0.97%	0.83%	0.74%	0.70%	0.67%	0.65%	0.63%	0.59%
Incremental Potential as % of Sales less Pipeline	2.49%	2.14%	2.00%	1.76%	1.67%	1.78%	1.89%	1.72%	1.52%	1.35%	1.27%	1.22%	1.18%	1.14%	1.08%

Source: Navigant 2015

OTP's currently DSM goal is 1.5% percent of *total* sales. Navigant modeled the 1.5% scenario to meet this goal through 2031, by increasing incentive and administrative costs, and enlarging program budgets. Figure E–2 shows the results of the 1.5% scenario. The flat red line illustrates OTP meeting the 1.5% goal each year of the forecast. The yellow line represents what the percentage would be if calculated against total sales less pipeline sales. On average, the yellow line is nearly a full percentage point higher.

Figure E–2. 1.5% Scenario Incremental Market Energy Potential by Sector (GWh) and % of Sales



Source: Navigant 2015

Table E–2 provides the values represented in Figure E–2. The modeling team increased incentive, administrative, and budget levels each year to meet the 1.5% goal. When expressed as a percent of sales less pipeline sales, the values are 2.35% in 2017 increasing to 2.74% by 2031.

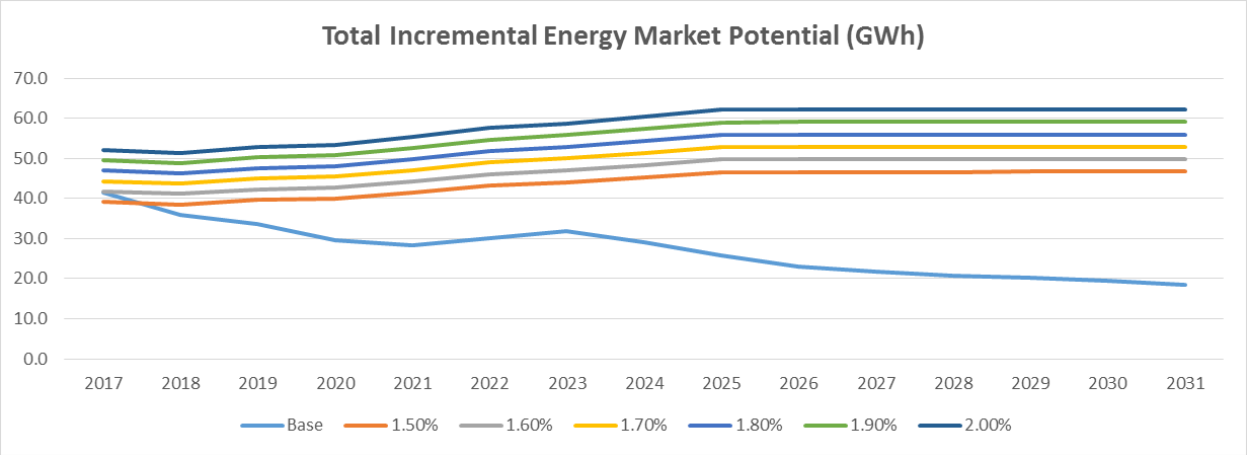
Table E–2. 1.5% Scenario Incremental Market Energy Potential by Sector (GWh) and % of Sales

All Sectors (GWh)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Total Incremental Market Potential	39.1	38.6	39.7	40.1	41.5	43.2	44.1	45.4	46.6	46.6	46.7	46.7	46.7	46.7	46.7
Res Incremental Market Potential	13.0	14.1	16.4	14.4	12.8	12.9	13.0	15.9	17.1	22.5	24.3	28.5	32.5	37.7	38.3
Non-Res Incremental Market Potential	26.1	24.4	23.3	25.7	28.7	30.3	31.1	29.5	29.5	24.1	22.4	18.1	14.2	9.0	8.4
Incremental Potential as a % of Sales	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
Incremental Potential as a % of Sales less Pipelines	2.35%	2.31%	2.37%	2.38%	2.46%	2.55%	2.60%	2.67%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%

Source: Navigant 2015

OTP also requested modeling scenarios stepping up to 2.0% of sales, in 0.1% increments. The following figures and tables summarize the potential savings and administrator costs for each of these incremental scenarios.

Figure E–3. Incremental Market Potential by Scenario (GWh)



Source: Navigant 2015

Table E–3. Incremental Market Potential by Scenario (GWh)

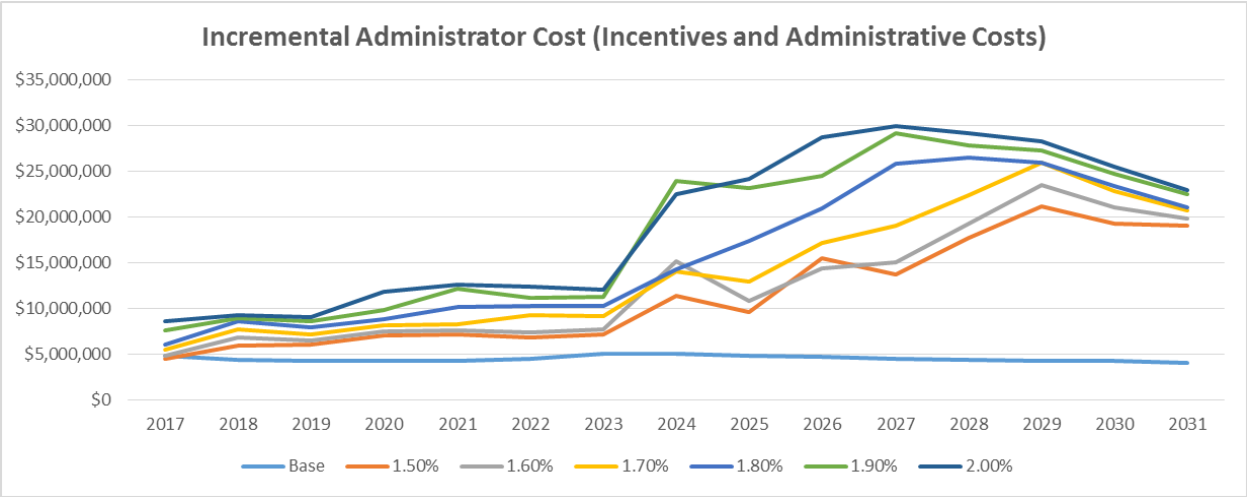
All Sectors (GWh)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Base	41.5	35.9	33.6	29.7	28.2	30.1	32.0	29.2	25.9	23.0	21.7	20.8	20.2	19.5	18.5
1.50%	39.1	38.6	39.7	40.1	41.5	43.2	44.1	45.4	46.6	46.6	46.7	46.7	46.7	46.7	46.7
1.60%	41.7	41.1	42.3	42.7	44.3	46.1	47.0	48.4	49.7	49.7	49.8	49.8	49.8	49.8	49.8
1.70%	44.3	43.7	45.0	45.4	47.1	49.0	50.0	51.4	52.8	52.9	52.9	52.9	52.9	52.9	52.9
1.80%	46.9	46.3	47.6	48.1	49.9	51.8	52.9	54.4	55.9	56.0	56.0	56.0	56.0	56.0	56.0
1.90%	49.5	48.8	50.3	50.8	52.7	54.7	55.9	57.5	59.0	59.1	59.1	59.1	59.1	59.1	59.2
2.00%	52.2	51.4	52.9	53.4	55.4	57.6	58.8	60.5	62.1	62.2	62.2	62.2	62.2	62.2	62.2

Source: Navigant 2015

Figure E–4 illustrates what the incremental cost impacts would be to achieve each of these incremental scenarios. Figure E–5 illustrates the cumulative administrator cost by scenario over the 2017 through 2031 time period. The administrator cost is the sum of administrative cost and incentive cost. The base scenario

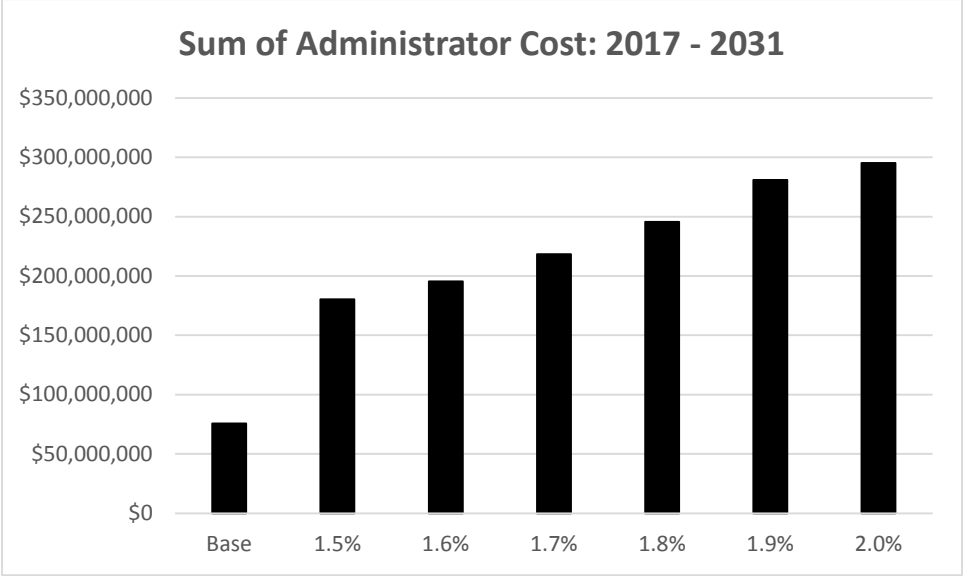
is the "business as usual" scenario where incentives and administrator costs remain as they are currently. All costs are expressed in 2015 real $s.

Figure E–4. Incremental Administrator Cost by Scenario



Source: Navigant 2015

Figure E–5. Cumulative Administrator Cost by Scenario (2017-2031)



Source: Navigant 2015

Table E-4 displays the values illustrated in Figure E–4 and Figure E–5. The 2.0% of sales scenario proves to be especially costly over the entire forecast horizon. The cumulative administrator cost over the period 2017 through 2031 for the 2.0% scenario is 164% greater than the 1.5% scenario and 390% greater than the base scenario. In contrast, the cumulative of incremental energy savings over this time frame for the 2% scenario is 130% greater than the 1.5% scenario and 197% of the base scenario. The cost/kWh is $0.156 for the base case; rises rapidly to $0.246 for the 1.5% scenario and increases with each succeeding scenario to $0.310 for the 2% scenario.

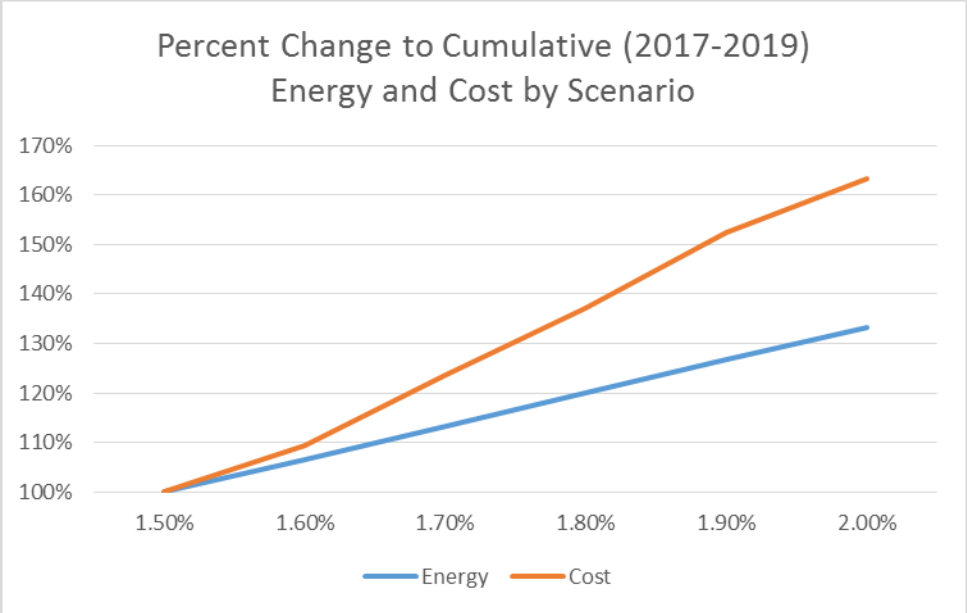
Table E–4. Incremental and Total Administrator Cost by Scenario ($ and $/kWh)

Scenario	2017	2018	2019	2020	2021	2022	2023	ta2024	2025	2026	2027	2028	2029	2030	2031	Sum 2017 - 2031	Cost/kWh
Base	$4,761,274	$4,374,874	$4,278,151	$4,285,840	$4,268,492	$4,442,193	$5,057,158	$5,024,716	$4,840,897	$4,629,534	$4,478,431	$4,321,669	$4,289,326	$4,194,358	$4,036,577	$75,739,689	$0.156
1.50%	$4,499,070	$5,917,208	$6,003,134	$7,047,286	$7,140,769	$6,849,860	$7,184,140	$11,380,896	$9,571,697	$15,496,337	$13,662,661	$17,719,670	$21,175,541	$19,314,517	$19,000,258	$180,419,244	$0.246
1.60%	$4,787,637	$6,757,604	$6,427,051	$7,467,927	$7,534,130	$7,309,285	$7,637,643	$15,194,437	$10,775,775	$14,346,252	$15,084,705	$19,305,333	$23,518,666	$21,024,096	$19,800,893	$195,427,633	$0.252
1.70%	$5,492,949	$7,632,083	$7,180,661	$8,107,110	$8,214,340	$9,259,974	$9,182,642	$14,084,478	$12,870,299	$17,124,692	$19,085,695	$22,377,074	$25,947,081	$22,781,601	$20,690,322	$218,487,202	$0.266
1.80%	$6,024,611	$8,604,338	$7,869,206	$8,846,779	$10,156,474	$10,218,799	$10,242,819	$14,218,632	$17,352,883	$20,905,403	$25,835,194	$26,507,041	$25,934,898	$23,342,555	$21,026,731	$245,542,564	$0.284
1.90%	$7,534,509	$8,889,266	$8,600,915	$9,852,154	$12,092,584	$11,144,072	$11,278,568	$23,925,301	$23,113,305	$24,464,693	$29,194,405	$27,892,936	$27,252,619	$24,674,495	$22,550,404	$280,916,423	$0.309
2.00%	$8,538,390	$9,241,626	$9,051,460	$11,837,981	$12,568,061	$12,362,158	$12,035,624	$22,457,681	$24,141,109	$28,756,101	$29,909,055	$29,227,766	$28,265,068	$25,505,330	$22,957,481	$295,311,092	$0.310

Source: Navigant 2015

Focusing on the near term (2017-2019), Figure E–6 illustrates the percentage change in cumulative energy savings potential and cost by scenario. The cumulative additional administrator cost over the three years of the 2.0% scenario is $10.4 million more than the 1.5% scenario and $13.4 million more than the base "business as usual" scenario.

Figure E–6. Percent Change to Cumulative (2017-2019) Energy and Cost by Scenario



Source: Navigant 2015

1.2 Direct Load Control Results

OTP has a number of direct load control programs. Some designed to reduce summer peak demand, others winter peak demand, and there are strategies within programs designed to reduce both summer and winter peak demand or provide load shifting. The primary incentive to participate in these programs are special controlled service rates that are about 30-50 percent less than OTP standard rates. The following are programs and strategies offered through OTP. Several of the programs provide both summer and winter load control. Those that provide both summer and winter control (such as heat pumps) are included in the separate summer and winter categories.

- Summer Load - Air Conditioning Control - Res
- Summer Load - Air Conditioning Control - Com
- Summer Load - Water Heat Control - Com
- Summer Load - Water Heat Control - Res
- Summer Load - Residential Demand Control
- Winter Load - Residential Demand Control
- Winter Load - Deferred Load - Res

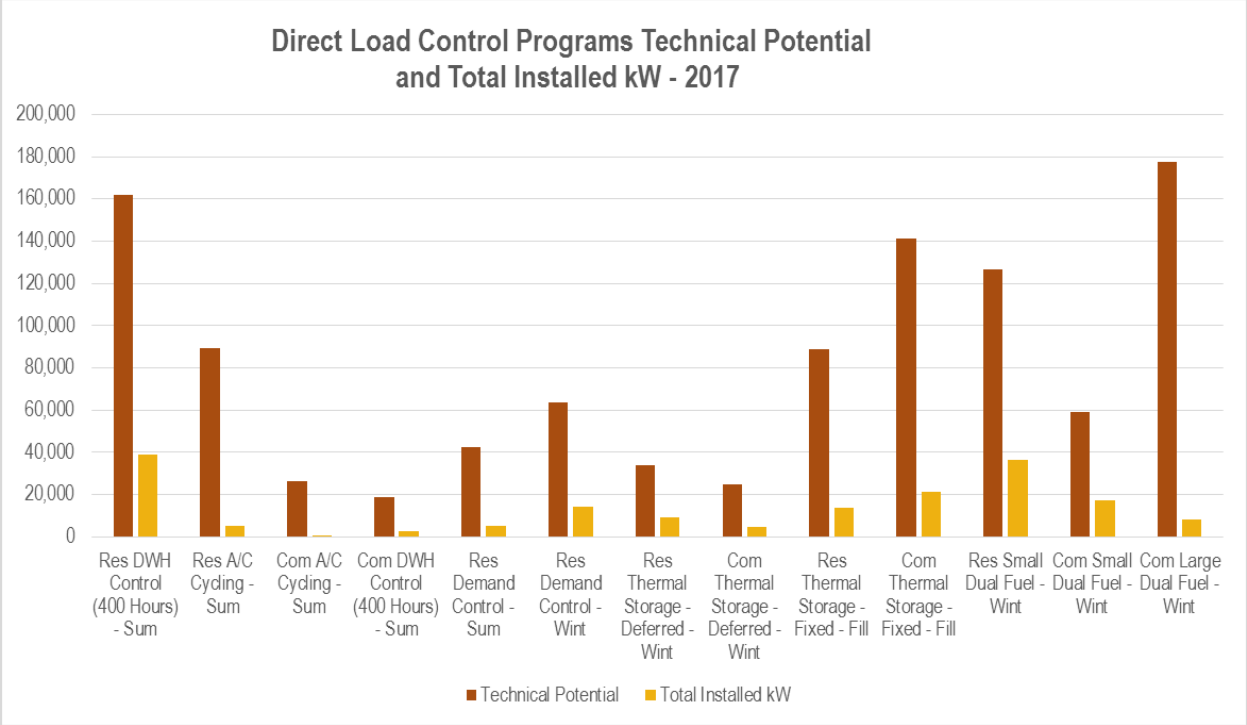
- Winter Load - Deferred Load - Com
- Winter Load - Fixed Time of Delivery - Res
- Winter Load - Fixed Time of Delivery - Com
- Winter Load - Small Dual Fuel - Res
- Winter Load - Small Dual Fuel – Com
- Winter Load - Large Dual Fuel – Com

1.2.1 Technical and Economic Potential

Technical and economic potential are the same size as all of the load control programs have a TRC of at least 1.0. Figure E-7 illustrates the technical/economic potential and total installed kW for controlled loads by program in 2017. On average, the OTP direct load control programs installed kW is about 17% of technical potential. The highest percentage at 29% of technical potential is the commercial sector small dual fuel program. The lowest percentage at 2% of technical potential is the commercial sector A/C cycling program.

The commercial sector large dual fuel program provides the most technical/economic potential at 177.7 MW but control of residential water heaters provides the greatest amount of installed kW at 38.9 MW by 2017. The smallest amount of technical/economic potential at 18.6 MW is provided by the control of commercial sector water heaters and the smallest amount of installed kW at 0.5 MW is from the commercial sector A/C cycling program in 2017.

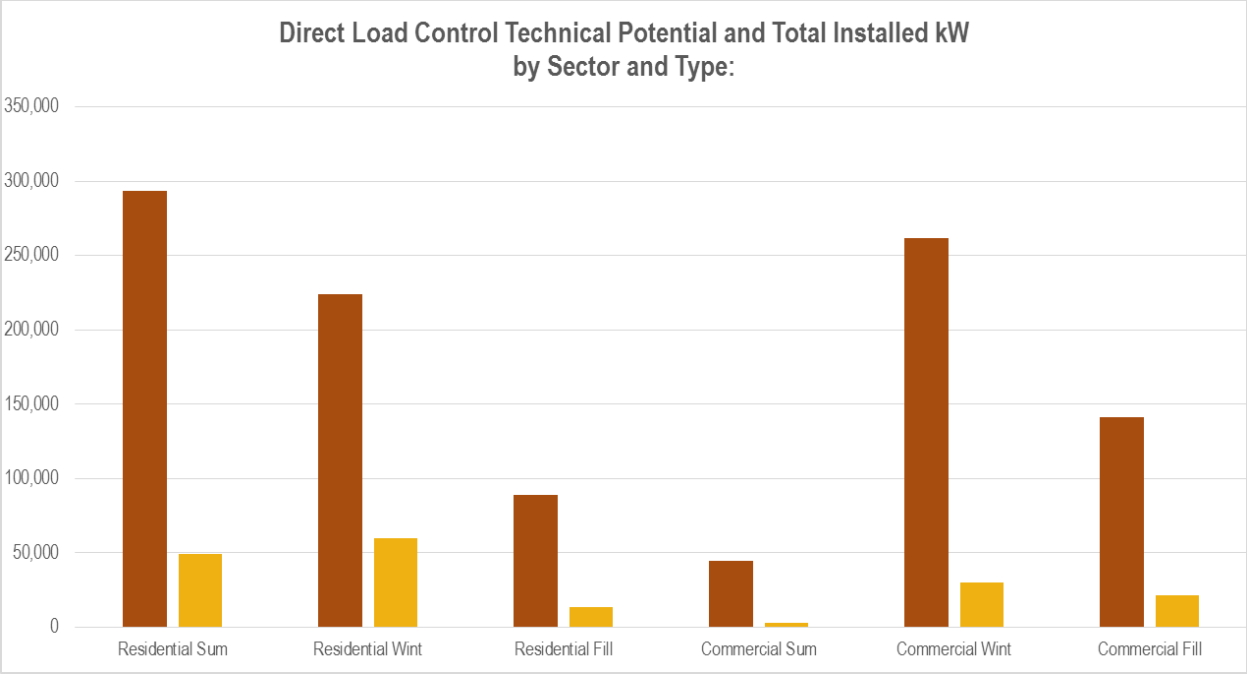
Figure E–7. Installed kW and Technical/Economic Potential for Direct Load Control Programs in 2017



Source: Navigant 2015

Figure E-8 illustrates the 2017 technical/economic and total installed kW for controlled loads by type of program in 2017. The greatest technical/economic potential is from residential summer controlled loads. The largest amount of installed kW is from residential winter controlled loads.

Figure E–8. Installed kW Technical/Economic Potential for Direct Load Control Programs by Sector and Type in 2017



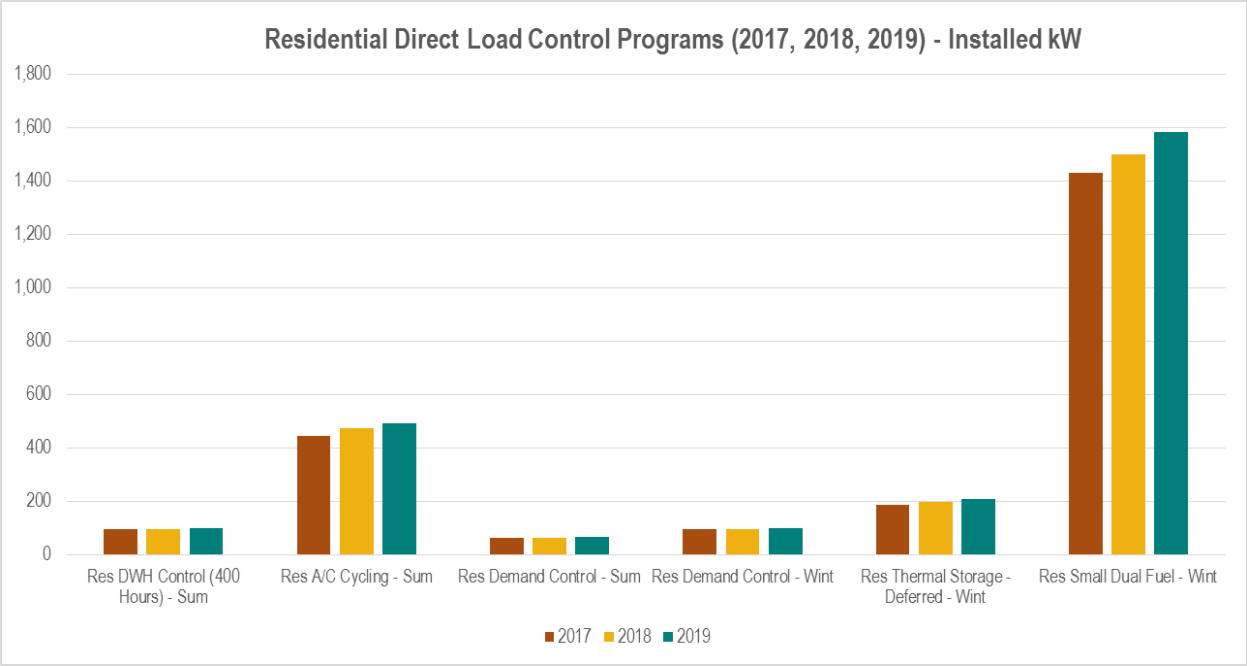
Source: Navigant 2015

1.2.2 Controlled Load Base Results

Figure E-9 illustrates the projected incremental load reduction installed capacity in the years 2017, 2018, and 2019 from residential sector direct load control programs. Included in the figure are projected load reductions for summer load reduction and winter load reduction. Each bar represents an incremental addition to the installed kW by program. For example, for residential A/C cycling, in 2017, the incremental addition to installed kW is 443 kW, followed in 2018 by an additional 472 kW, and in 2019 494 kW. The residential dual fuel program, which provides winter load reduction, provides the largest amount of load reduction installed capacity. A/C cycling provides the second largest amount of load reduction installed capacity with its capacity available in the summer.

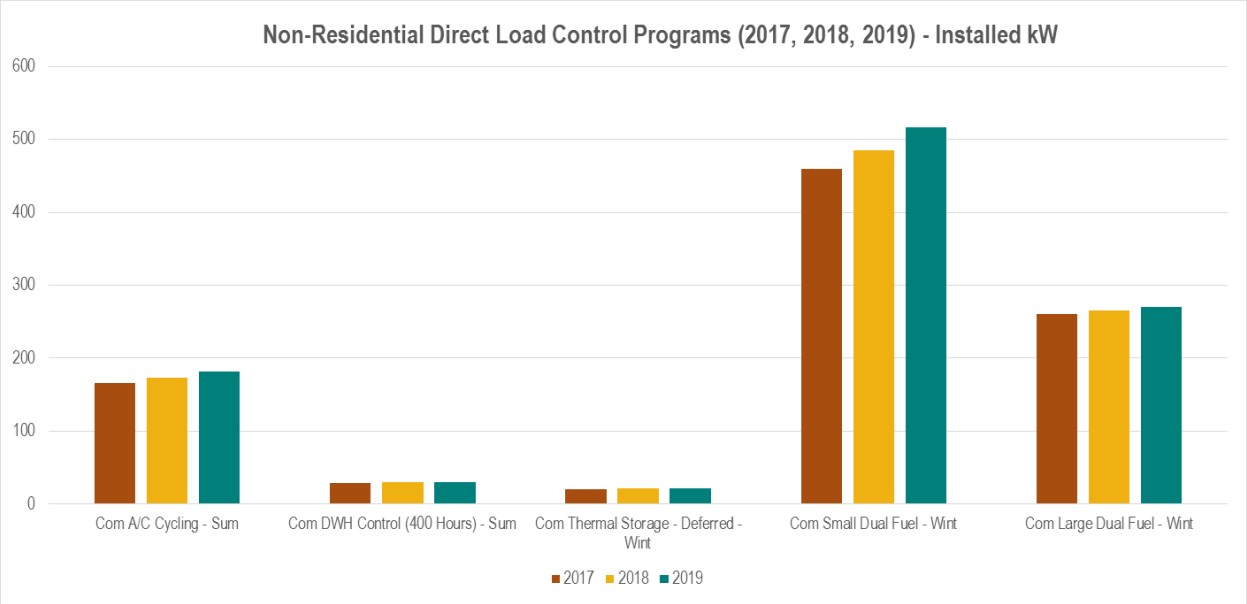
Figure E-10 illustrates the projected incremental load reduction installed capacity in the years 2017, 2018, and 2019 from non-residential sector direct load control programs. The non-residential large and small dual fuel programs provide the largest amount of load reduction installed capacity. Each of these programs provides winter peak load reduction potential. A/C cycling provides the largest summer load reduction installed capacity potential.

Figure E–9. Residential Direct Load Control Programs (kW Installed)



Source: Navigant 2015

Figure E–10. Non-Residential Direct Load Control Programs (kW Installed)



Source: Navigant 2015

1.2.3 Controlled Load Scenario Results for a 5% Increase and a 10% Increase in Controlled Loads

In addition to the base case, which models the market potential for controlled loads in a "business as usual" condition, Navigant also developed two additional scenarios; one for achieving 5% more and the other 10% more incremental installed controlled load market potential compared to the base scenario. The primary purpose of this exercise is to estimate the additional costs for achieving these high levels of controlled loads. To achieve these goals, the modeling team increased incentives, administrative costs, and program budgets.

The administrator cost (combined administrative and incentive cost) for each scenario is provided in Figure E-11. Table E-5 provides the data illustrated in the Figure. On average, the cost for the 5% scenario is 6.5% greater than the base scenario and for the 10% scenario, 14.1% more than the base scenario. These costs are relatively close to the incremental increases in installed capacity.

Figure E–11. Administrator (Administrative & Incentive) Cost by Scenario

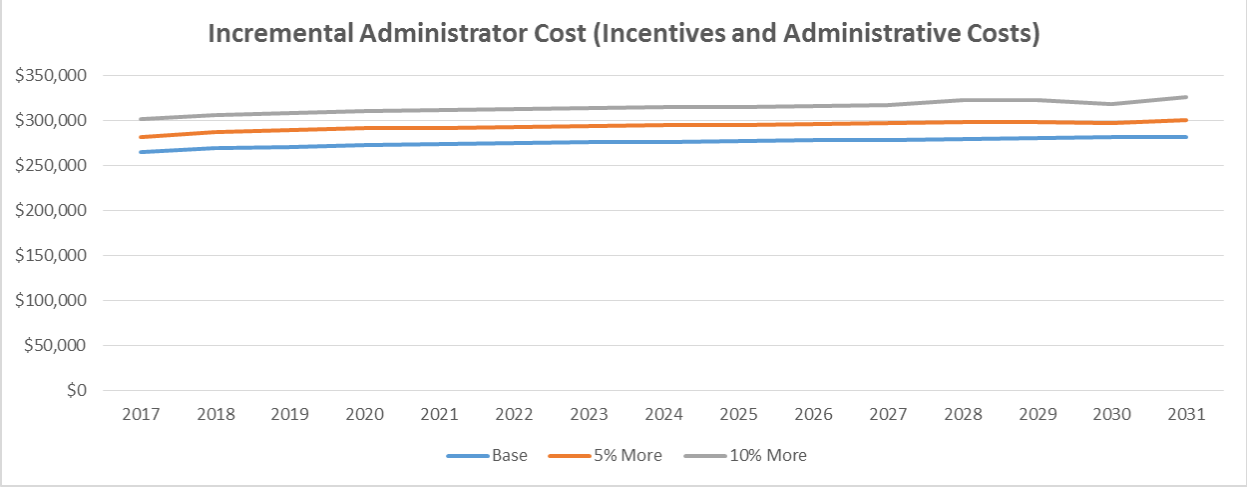


Table E–5. Administrator (Administrative & Incentive) Cost by Scenario

Cost	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Base	$264,566	$269,001	$271,126	$272,984	$273,944	$275,121	$275,818	$276,769	$277,443	$278,311	$279,000	$279,829	$280,546	$281,359	$282,102
5% More	$281,941	$287,092	$289,588	$291,291	$292,042	$293,302	$293,948	$294,960	$295,631	$296,592	$297,285	$298,209	$298,936	$296,863	$300,999
10% More	$302,093	$306,208	$308,673	$310,589	$311,687	$313,040	$313,777	$314,950	$315,622	$316,727	$317,400	$323,090	$323,391	$318,529	$326,418
Cost Increase	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
5% More	6.6%	6.7%	6.8%	6.7%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	5.5%	6.7%
10% More	14.2%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	15.5%	15.3%	13.2%	15.7%

1.3 Findings and Recommendations

This study was conducted to assist Otter Tail Power Company to comply with a 2015 Minnesota Public Utilities Commission order to investigate whether exceeding the 1.5% energy savings requirements in Minnesota would be cost effective. This section summarizes the most important findings and recommendations from this study.

1.3.1 DSM Program Benchmarking

Finding 1. Navigant conducted a DSM benchmarking study which compares Otter Tail's 2013 program results to a group of 14 primarily Midwestern utilities, including the three other electric investor owned utilities (IOUs) in Minnesota. For this group of utilities, Otter Tail's normalized energy savings were the highest, at 1.6% of baseline sales.

Finding 2. Otter Tail's normalized DSM spending was the second largest for this group of utilities at 3.3% of the overall revenues. Otter Tail's normalized costs of conserved energy was 14 cents per first year kWh saved, the median for this group of utilities in 2013.

Finding 3. Navigant found that there were a small number of programs that some of the high performing utilities were conducting that Otter Tail Power was not currently conducting. These included a program targeted towards small business customers that offer larger rebates than the regular commercial EE programs. These programs tend to get most of their energy savings from lighting EE measures.

Recommendation 1. Navigant recommends that Otter Tail conduct DSM benchmarking analyses periodically so that they are aware of how their program savings and costs compare to other Midwestern utilities, and to keep abreast of the latest program offerings.

1.3.2 Baseline Study

Finding 4. Navigant conducted on-site surveys with random samples of 36 residential and 36 commercial and industrial customers. For residential customers, Navigant found that the two most prevalent metrics for customers to make decisions about installing EE measures were lowest first costs, which was reported by 44% of the customers surveyed, and simple payback, which was reported by 33% of the customers surveyed.

Finding 5. For commercial and industrial customers, Navigant found that the two most prevalent metrics for customers to make decisions about installing EE measures were lowest first costs, which was reported by 42% of the customers surveyed, and simple payback, which was reported by 39% of the customers surveyed.

Finding 6. Navigant found that customer awareness of most Otter Tail DSM programs was less than 50%, although customer interest in several Otter Tail DSM program was greater than 50%.

Recommendation 2. Navigant recommends that Otter Tail conduct telephone and/or online surveys with larger samples of residential, commercial, and industrial customers to determine which market segments are most and least aware of and interested in Otter Tail's DSM programs. This information would be useful to help guide Otter Tail's DSM program marketing efforts.

1.3.3 DSM Potential Results

Finding 7. Over the 15 year forecast period (2017-2031), the base case or business as usual energy efficiency (EE) scenario continues Otter Tail's historical spending of about $5 million per year on average in real dollars. Energy savings from this base case scenario decrease from about 40 GWh (about 1.6% of baseline sales) per year in 2017 to about 20 GWh per year (about 0.6% of baseline sales) in 2031, primarily due to increased energy efficiency codes and standards, and the increasing saturations of EE measures over time. This scenario costs about 15.6 cents per first year kWh saved.

Finding 8. Over the 15 year forecast period (2017-2031), the scenario that conserves 1.5% of baseline sales per year is projected to cost about $180 million in real dollars, about 2.4 times the cost of the base case scenario. This amounts to about 24.6 cents per first year kWh saved.

Finding 9. Navigant developed five additional scenarios that conserve between 1.6% of baseline sales and 2.0% of baseline sales. These scenarios cost between $195 million and $295 million in real dollars over the forecast period, which amounts to between 25.2 cents per kWh saved and 31 cents per kWh saved.

Recommendation 3. The optimal DSM scenario from an economic perspective should be determined based on Otter Tail's integrated resource planning (IRP) analysis. The scenario that produces the lowest present value of revenue requirements including environmental externalities should be selected based on Otter Tail's IRP analysis.

NAVIGANT

2. Introduction

Demand Side Management (DSM) is the planning and implementation of programs and services that help and encourage customers to use electricity as efficiently as possible. DSM represents an important resource for Otter Tail Power as fuel and commodity prices become more volatile and greenhouse gas regulation evolves. Estimates of DSM potential are a key input to the integrated resource planning process, which considers the load forecast and both supply- and demand-side resources, and also the Conservation Improvement Program (CIP) process. This study presents the results of an analysis of the DSM potential in Otter Tail Power's Minnesota service area, conducted by Navigant Consulting, Inc.

2.1 Overview of Otter Tail Power's Electricity Market

Otter Tail Power (OTP) is a mid-sized utility in Minnesota, with about 50,000 residential/farm customers and over 10,000 commercial and industrial customers. Total peak demand in 2015, including pipelines, is about 1,050 MW. Overall, the forecasted demand including pipelines in Minnesota exceeds 1,400 MW by 2031. Annual energy sales in Minnesota, including pipelines, in 2015 are 2,445 GWh/year including losses. Projected energy sales including pipelines reach 3,112 GWh/year by 2031.

In 2014, Otter Tail Power spent about $4.7 million on CIP programs to achieve total annual electricity savings of about 34 GWh.

2.2 Study Goals and Approach

The overall goals of this DSM potential study are to assess the technical, economic, and achievable potential for the residential and commercial/industrial sectors for the timeframe of 2017-2031. Navigant also identifies OTP's costs under a base case model run, and six additional scenarios cases designed to reach DSM goals of 1.5% to 2.0% of utility sales in 0.1% increments.

OTP tasked Navigant with estimating the DSM potential across the Minnesota service territory by:

- Conducting primary field data collection from a representative sample of OTP customers, both residential and C&I
- Conducting a DSM benchmarking and best practices analysis to guide the potentials estimation
- Utilizing targeted electric energy efficiency measures from the Minnesota TRM, supplemented by additional measures in which OTP is interested in assessing
- Conducting benefit-cost analysis of the selected measures
- Estimating electricity DSM potentials
- Assessing direct load control measures

2.3 Organization of Report

Chapter 3 summarizes the study methodology. Chapter 4 discusses the sampling methods used to select the sampled sites for the on-site survey. Chapter 5 reviews the measures utilized in the study. Chapter 6 provides discussion of benchmarking and best practice results. Chapter 7 presents the DSM potential analysis methodology and results.

3. Methodology

The study method combined primary data collection with best-practice benchmarking to analyze a selected set of key energy efficiency and direct load control measures from the 2014 Minnesota Statewide Technical Reference Manual (MN TRM), plus a supplemental set of measures from OTP's own TRM. [1]

The modeling team utilized the Electric Resource Assessment Model (ELRAM) developed by Navigant Consulting to estimate the DSM Potential estimates. The model is a stock/flow Excel spreadsheet model based on the integration of energy efficiency measure impacts and costs, utility customer characteristics, utility load forecasts, and utility avoided costs and rate schedules. ELRAM utilizes Excel as the modeling platform due to the transparency in the DSM potential estimation process, and because of the ubiquitous knowledge of the platform in general. Excel also allows the team to customize ELRAM to accommodate the client's unique set of input characteristics and utility data.

The model utilizes a "bottom-up" approach, beginning with study area building stocks, equipment saturation estimates, forecasts of building stock decay and new construction, energy efficiency technology data, past energy efficiency program accomplishments, and decision maker variables that influence the program scenarios. The study approach to estimating OTP energy conservation potential relied on four key data inputs:

1. The current saturations of electric energy efficiency measures in statistically representative samples of OTP residential and commercial/industrial facilities
2. Information on energy efficiency measures' energy and demand savings, costs and lifetimes, from the MN TRM, along with a supplemental set of measures from OTP's TRM
3. Information from OTP on the characteristics of their direct load control strategies
4. Actual energy savings achieved by OTP programs in 2014 for use in calibrating market potential results

The model utilizes these inputs to develop estimates of technical, economic, and market potential. Figure 1 illustrates these types of energy conservation potential, as defined below:

Technical Potential. ELRAM calculates technical potential as the product of a measure's savings per unit, the quantity of applicable units in each facility, and the number of facilities in a utility's service area. This potential savings assessment includes measures that may not be cost-effective, and therefore provides an upper bound of efficiency potential regardless of cost or market penetration. For measures considered to replace inefficient measures on burnout (ROB), the quantity of applicable units per year is limited to the number that need to be replaced, which is determined by measure life. As time passes, this potential population grows until meeting the full measure life. For non-ROB measures all baseline units are available.

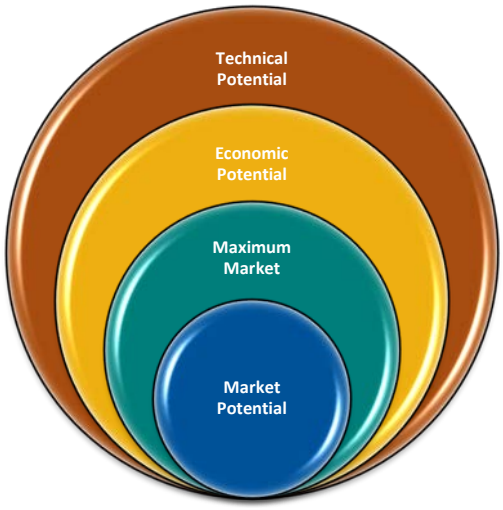
[1] Navigant used the 2014 MN TRM as the 2015 version was incomplete at the time of this potential study.

Economic Potential. ELRAM estimates economic potential as the amount of technical potential that is cost-effective, as defined in this case by the results of the Total Resource Cost (TRC) test. The TRC test is a cost-benefit analysis of relevant energy efficiency measures, excluding market barriers such as lack of consumer knowledge. Benefits include the avoided costs of generation, transmission and distribution investments, avoided fuel costs, and other benefits that may accrue to participants and/or to the utility. Costs vary by economic test but may include incremental technology cost, incentives, administrative costs, and/or lost revenue. The economic screen is set to 1.0 to determine Economic Potential. ELRAM treats ROB measures the same as with technical potential

Maximum Market Potential. ELRAM screens the amount of economic potential that utility programs *could* capture over the forecast period. The measure level economic screening value for maximum market potential can be set to less than 1.0, but results at the program level must have an overall economic screen of 1.0 or better. This allows the program to include a mix of measures above and below the 1.0 screening threshold. For OTP, the economic screen for market potential is set to 0.75. This adjustment factor can vary by program. In addition to the economic screening value, maximum market potential includes the effects of decision maker awareness of each measure and if aware, their willingness to install the measure.

Market Potential. ELRAM uses a fourth step for calculating achievable energy savings at the market level using simple payback elasticity. The achievable market potential uses the remaining maximum market potential at the measure level available each year and applies a decision maker simple payback elasticity coefficient to identify yearly savings available in the marketplace. The model calculates this payback elasticity based on historical program achievements and the identified incentive levels by measure. This step provides realistic forecasts of market potential given incentive and program budget levels, which can change over the forecast period.

Figure 1. Diagram of Types of Energy Efficiency Potential



Source: Navigant 2015

Navigant calculated seven market potential scenarios: one base case scenario and six goal scenarios ranging from 1.5% of sales to 2.0% of utility sales in 0.1% increments. The modeling team achieved each of these market potential estimates by adjusting both incentive levels and overall program budgets.

3.1 Approach to Estimating DSM Potential

ELRAM utilizes "Measure Payback Response Curves" to calculate market potential by year. The method for creating these curves comes from the methodology used for the Bass Diffusion Model developed by Dr. Frank Bass. The Bass Diffusion Model describes the process of the adoption of products as an interaction between users and potential users.

The decision maker function estimates a measure's elasticity response to first cost measure payback calculated in the base calibration year. This base year uses measure-level utility program achievements and first cost measure payback. First cost measure payback does not include any savings from extended measure life of changes in maintenance costs. Utilizing this elasticity based decision process allows the model to create scenario options based on changes to measure level incentives. In addition, ELRAM includes other input variable flexibilities to allow for a number of different scenario considerations including program budget levels and program promotion costs.

3.2 Model Structure and Flow

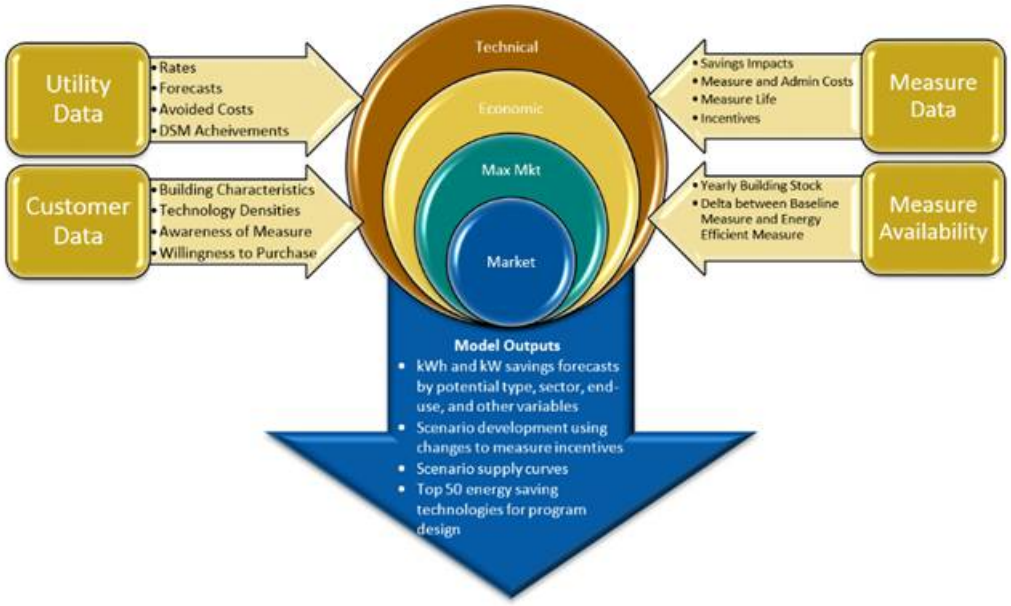
ELRAM includes nearly 40 distinct worksheets including input, calculation, and output pages, as well as a Scenario Dashboard that offers modelers a quick way to interact with the model and produce different scenario runs. The variables available on the dashboard include:

- Economic test screens
- Beyond first measure life considerations
- Fiscal variables including:
    - Incentive level
    - Administrative costs
    - Program budget limitations

There is also an "output viewer" connected to the results of the model which allows OTP to view potential savings estimates in a variety of ways. Navigant will provide these tools to OTP at the conclusion of the study.

Figure 2 provides a general overview of the data flow through the ELRAM model. The model structure can vary from client to client depending on available data and output needs.

Figure 2. ELRAM Data Flow Overview



Successful potential savings forecasts rely on high quality and accurate data inputs into ELRAM. These inputs fall into four categories including:

- **Utility Data.** Navigant worked closely with OTP to gather all utility specific data such as avoided costs, energy (kWh) and demand (kW) forecast estimates, past program savings achievements for use in calibrating ELRAM, customer rate classes, and discount rates.
- **Customer Data.** Navigant conducted onsite audits of a sample of residential and non-residential buildings across OTP's service territory.[2] These audits provided data on end-use saturations and technology densities, as well as customer awareness and willingness values.
- **Measure Data.** The Navigant modeling team reviewed the MN TRM, and OTP's supplemental TRM to characterize the measures included in this study. These characteristics include costs, energy and demand use impacts, and measure life for both baseline and energy efficient technologies.[3]
- **Measure Availability.** ELRAM uses building stock inputs along with the availability of technology density each year to estimate potential energy savings throughout the forecast period.

The outputs from ELRAM accomplish multiple objectives, including:

[2] See the Baseline Building Characteristics section for more on the onsite audit methodology.
[3] See the DSM Measure Characteristics section for more on measure level variables used in ELRAM.

- Determining the total technical, economic, and market potential of energy savings available over the forecast period, both annually and cumulatively; the model calculates these potential estimates at the sector, building type, program type, and end-use classification levels
- Providing guidance for a utility's next energy efficiency goals at an aggregate level, as well as at the measure category level, where appropriate; ELRAM calibrates calculations to past utility achievement levels to ensure continuity with past utility efforts
- Identifying cost-effectiveness using multiple cost effectiveness tests
- Identifying specific costs and benefits, including administrative, incentive, and technology costs, along with avoided cost and reductions in other resource requirement benefits (such as water use reduction)

The DSM Potentials Results section provides the full set of ELRAM outputs OTP requested for this potential study.

4. Baseline Building Characteristics

Navigant conducted onsite-visits of a targeted representative sample of OTP's Conservation Improvement Program (CIP)-eligible residential and non-residential customers in an effort to collect building characteristic data for input into ELRAM. The model uses a number of key inputs including—among others—saturations of electric versus gas space heat and water heat, the density of inefficient technologies, and the density of existing energy efficient technologies. To obtain these building characteristics and create the model "baseline," Navigant performed on-site surveys for a statistically significant number of OTP residential (36), and non-residential sectors (36) at a confidence of 90 percent and +/- 15 percent margin of error for each sector. This section provides the steps Navigant took to create a representative sample of OTP buildings, gather the building characteristic data onsite, and ensure all onsite data flowing into ELRAM was quality controlled and accurate.

4.1 Stratified Ratio Estimation

Navigant used a "stratified ratio estimation" method—which combines a stratified sample design with a ratio estimator—to achieve a sample of residential and non-residential buildings at a 90/15 confidence and precision (CP). Both the stratification and the ratio estimation steps take advantage of supporting information available for each project in the population. For OTP customer accounts, the supporting information Navigant used is energy use per account.

The customer population data provided by OTP contains a large number of accounts with low energy use and a small number of accounts with high energy use. This disproportion causes simple random sampling methods impractical or inaccurate. Navigant mitigates this issue by using the energy use per account as a stratification variable. Stratifying by the energy use generally reduces the coefficient of variation of actual savings in each stratum thereby improving the statistical precision. The sampling fraction also varies from stratum to stratum to further improve the statistical precision. In particular, accounts with small energy use represent a relatively small sample of their total accounts, but the sample will include a higher proportion of the projects with larger levels of energy use. For OTP, a large percentage of the very highest energy using customers are included in the sample.

4.2 Treatment of Customer Dataset

Navigant utilized the OTP customer dataset to create a master population dataset drawing the final samples taking the following steps:

- Segmenting the dataset into residential and non-residential accounts
- Removing all "0" and negative value accounts
- Identifying all unique "DIV-ACCTNO" numbers
- Aggregating—when appropriate—all meters associated with each "DIV-ACCTNO"

4.3 Residential Sample Draw

There were 51,427 non-zero residential meters within the original OTP customer dataset. Of these, there were 38,536 unique meters split into two revenue classes. These 38,536 unique meters were rank ordered by kWh sales and Navigant employed the stratified ratio sampling technique utilizing three sales-based strata. Setting the statistical validity at 90% confidence and +/- 15% precision, the final sample consisted of 36 homes; 12 from each stratum. In addition to including 12 homes from each stratum, consideration was also made to maintain the split of the two revenue classes (class 1 = electric space heat and class 2 = non-electric space heat) within each stratum. This split varied by stratum:

- Stratum 1 (high energy users) – 30% Class 1
- Stratum 2 (medium energy users) – 19% Class 1
- Stratum 3 (lower energy users) – 9% Class 1

4.4 Non-Residential Sample Draw

Navigant further defined the non-residential population master dataset by:

- Translating the NAICS to commercial building types and industrial classifications
- Removing Pipeline, Mining, and Utility Generation & Transmission from the population
- Identifying the commercial building types with the most sales
- Identifying four commercial sector sampling segments based on sales and one industrial segment
- Placing all of the accounts into one of these five sampling segments, including:
    - COM-Education
    - COM-Health
    - COM-Grocery
    - COM-Other
    - IND
- Aggregating all the meters associated with each "DIV-ACCTNO"
- Ranking all C&I accounts by annual kWh within each sampling segment
- Setting the statistical validity at 90% confidence and +/- 15% precision for the entire non-residential sector
- Setting the statistical validity at 80% confidence and +/- 25% precision within each of the five building type segments
- Applying an annual kWh sales stratification variable with two stratum per segment

Based on these steps and assumptions, the final sample draw was seven per stratum for a total of 35 sites in the non-residential sector, however the team actually visited 36 sites.

4.5 Fieldwork Activities

Navigant used the sample of representative residential and non-residential customers to conduct field visits and complete the Building Energy Characteristics Onsite Survey Form (onsite survey) at each visited site. This onsite survey characterizes all of the energy using technologies at a site for use in the ELRAM model. The field survey work comprised of recruiting and scheduling customers, conducting the onsite surveys, uploading the surveys to the quality control team, and delivering a gift card incentive to participating customers. Navigant performed these tasks from May through August, 2015, with the residential on-site surveys performed from mid-June through early July and the non-residential surveys performed in July. The fieldwork team comprised of two primary surveyors, a qualified recruiter, and an assistant available for data enumeration for many of the larger surveys.

The activities began with sector-specific recruiting letters sent to the pool of prospective residential and non-residential candidates under OTP letterhead and signed by OTP's project manager. The study offered a $100 gift card as a participation incentive. The team sent the residential letter in two geo-sorted waves to help minimize surveyor travel, as this sector has a greater "spread" across the OTP service area than the non-residential sector. A couple of days after sending the recruitment letter, Navigant staff followed up with a direct telephone call to prospects in the survey pool, to gauge participation interest and to schedule the onsite visits. Scheduling visits typically took only one or two contact phone calls. Many OTP customers took it upon themselves to contact Navigant and volunteer participation. Overall, the study achieved a high response rate—more than 90% of those contacted, participated (see Table 1 and Table 2).[4] Navigant's recruiting/scheduling staff tracked progress each day to manage stratum quotas and ensure timely delivery of the incentive gift cards. This study's recruiting and scheduling process proved to be one of the most successful efforts Navigant has undertaken to date.

Table 1. Residential Survey Sample Results

Scheduled Quotas									
Stratum Type - Revenue Class	Total Available	Maximum Needed	Scheduled	Visit Done	Remaining Needed	Passed	In Progress	Never Called	Scheduled or Visit Done
Strata #1 - 1	21	3	0	3	0	2	4	12	3
Strata #2 - 1	13	1	0	1	0	0	0	12	1
Strata #3 - 1	26	1	0	1	0	4	11	10	1
Strata #1 - 2	49	9	0	9	0	2	24	14	9
Strata #2 - 2	56	11	0	11	0	13	32	0	11
Strata #3 - 2	63	11	0	11	0	6	32	14	11
Totals	228	36	0	36	0	27	103	62	36

Source: Navigant 2015

[4] The C&I sample achieved one more site visit than the sample quota called for due to the project policy of surveying all customers scheduled. This stratum ended up with one more site scheduled than required.

Table 2. Commercial & Industrial Survey Sample Results

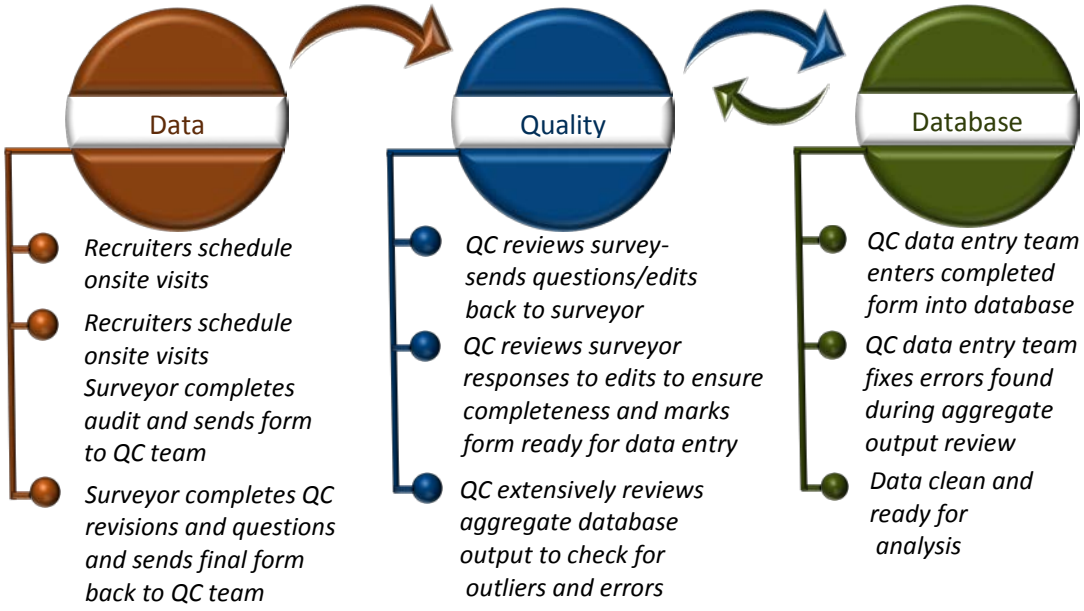
Scheduled Quotas									
Stratum Type	Total Available	Maximum Needed	Scheduled	Visit Done	Remaining Needed	Passed	In Progress	Never Called	Scheduled or Visit Done
Strata #1 - Education	28	4	0	4	0	0	5	19	4
Strata #2 - Education	31	3	0	4	-1	0	5	22	4
Strata #1 - Grocery	28	3	0	3	0	1	1	23	3
Strata #2 - Grocery	28	4	0	4	0	0	3	21	4
Strata #1 - Health	29	4	0	4	0	1	2	22	4
Strata #2 - Health	29	3	0	3	0	1	6	19	3
Strata #1 - Industrial	29	3	0	3	0	1	6	19	3
Strata #2 - Industrial	29	4	0	4	0	1	11	13	4
Strata #1 - Other	29	4	0	4	0	0	0	25	4
Strata #2 - Other	31	3	0	3	0	1	1	26	3
Totals	291	35	0	36	-1	6	40	209	36

Source: Navigant 2015

The time to complete residential surveys was typically about 2 hours, while non-residential surveys varied from 2 hours to a full day. The largest sites required both surveyors onsite to complete the onsite survey in a single day. Each surveyor displayed clear badge identification and carried credentials to validate identity with OTP and the project. Only one customer complained that the survey took longer to complete than expected. At the end of each survey, the customer received a "FAQ" sheet regarding the project and included contact information should they wish to discuss any aspects of the study with OTP or Navigant. The field staff also sent out the gift cards typically one business day after completion of the survey.

The field staff then uploaded the completed onsite surveys onto Navigant's data storage site and alerted the quality control (QC) team. The QC team reviewed the onsite surveys for quality and engaged in back-and-forth communication with field staff to answer any questions. Figure 3 shows the entire onsite data gathering process flow and QC check.

Figure 3. Data Collection and Quality Control Process Flow



Source: Navigant 2015

4.6 Building Characteristic Data Analysis

Navigant utilized the data collected onsite to develop density values for each measure included in ELRAM, as well as for saturation estimates of baseline and efficient measures. A "density value" includes the number of measures or technology units per a common scaling metric. The residential common scaling metric is per home, while the typical non-residential common scaling metric is per 1,000 square feet of building floor area. The model requires three relevant density values, all derived from the onsite surveys: the baseline density, efficient density, and the total maximum density. The total maximum density is the total number of units installed within a home or per 1,000 square feet of non-residential floor space. For example, in the context of residential lighting, the total number of light bulb sockets in a home would be the total maximum density for screw-in lighting measures such as CFLs and LEDs. The baseline and efficient densities are the saturation of the baseline and efficient technologies.[5] Continuing the residential lighting example, the base density for a CFL lighting measure would be the average number of incandescent bulbs per home and the efficient density would be the number of efficient bulbs already installed.

[5] See the DSM Measure Characteristics section for more on the baseline and efficient technologies included in this study.

Table 3 provides the specific variables included in the onsite survey used to inform the densities for each of the technologies included in this study.

Table 3. Residential On-Site Survey Variables Used in Measure Characterization

Residential End-Use	Survey Variables
All End-Uses	% of homes with electric space heat % of homes with electric hot water
Appliances and Plug Loads	Clothes Washer Count and % Energy Star Dishwasher Count and % Energy Star Refrigerator Count and % Energy Star Freezer Count and % Energy Star
Domestic Hot Water	Electric Water Heater Count Heat Pump Water Heater Count % of WH with low Set Point (<120F) % of WH with Jacket Insulation % of WH with Pipe Insulation Faucet Count and % with Aerators Showerhead Count and % Low Flow
HVAC	Total Cooling Capacity in Tons by SEER Level *(Central AC, ASHP, and Room AC)* Geothermal Heat Pump Count Furnace Count and % with ECM motor Dehumidifier Count and % Energy Star Ceiling Fan Count and % Energy Star % of Homes reporting HVAC Tune-ups % of Homes Participating in AC Cycling Program
Envelope	% of Homes with Electric Space Heat % of Homes with Wall Insulation % of Homes with Roof Insulation % of Homes with Poor Weather Stripping
Lighting	Total Screw-in Sockets per Home *% Incandescent, CFL and LED* Total Hardwired Fixtures per Home *% Incandescent, CFL and LED* Torchiere Count per home

Source: Navigant 2015

Table 4. C&I On-Site Survey Variables Used in Measure Characterization

C&I End-Use	Survey Variables
All End-Uses	% of floor area with electric space heat % of floor area with electric hot water
Plug Loads	Desktop Computer and Server Counts and % High Efficiency Vending Machine Count and % with Auto Shutoff
Cooking	Combination Oven (Elec) Count Convection Oven (Elec) Count Electric Griddle Count Oven and Range (Elec) Count Electric Steamer Count
Domestic Hot Water	Electric Water Heater Count and % HE Heat Pump Water Heater Count Faucet Count and % with Aerators Pre-Rinse Sprayers Count and % Low Flow
HVAC	Average Cooling Capacity in Tons by SEER Level per 1,000 sq. ft. *(Broken out by Central AC, ASHP and PTAC)* Geothermal Heat Pump Count % of AC Units with Economizer Count of HVAC Fans Average Chiller Tonnage % of Floor Area Participating in AC Cycling Program
Motors	Average Total HP of All Motors % with VSD
Lighting	Total Screw-in Sockets per 1,000 sq. ft. *% Incandescent, CFL and LED (Indoor and Outdoor)* Total Hardwired Fixtures per 1,000 sq. ft. *% Incandescent, CFL and LED (Indoor)* Total Linear Fluorescent Fixtures per 1,000 sq. ft. *% T12, T8, Low Wattage T8, T5, and LED (Indoor)* Total HID Fixtures per 1,000 sq. ft. *(Indoor and Outdoor)* Total Outdoor LED Fixtures per 1,000 sq. ft. % of Lighting Load Connected to Occupancy Sensors Total Exit Signs per 1,000 sq. ft. *% Incandescent, CFL and LED/LEC*
Refrigeration	Walk-in Cooler Count and % with ECM Display Case Count and % with ECM Display Case Number of Doors and % with ASH Controls Refrigerator and Freezer Counts and % with Glass Doors Display Case Lighting Lamp Total and % LED
Compressed Air	Air Compressor Count Air Compressor Total HP per 1,000 sq. ft. % of HP with VSD

Source: Navigant 2015

4.7 Decision Maker Surveys

Navigant also conducted a decision maker survey as part of the onsite survey effort. The decision maker survey probed customer understanding regarding:

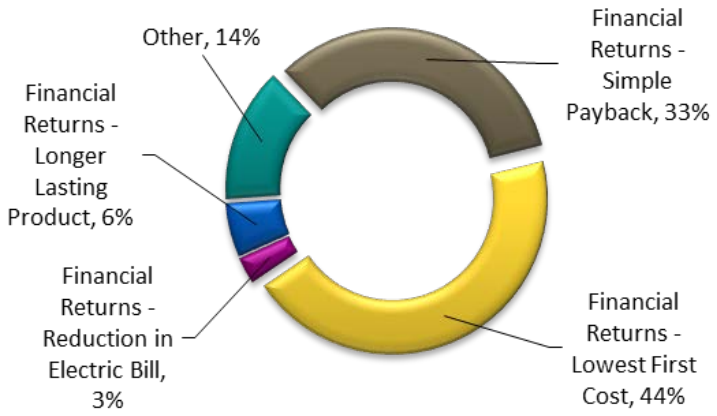
- Decisions about purchasing energy efficient technologies including, awareness of the efficient technology, barriers to installing the efficient technology, and motivations for purchasing the efficient technologies
- Awareness of OTP offered incentive programs and their willingness to participate in these programs

The following sections provide the results of the decision maker surveys for the residential and non-residential sectors.

4.7.1 Residential Results

Figure 4 shows the results of the residential purchasing decisions regarding energy efficient technologies. As illustrated, 86 percent of customers have financial considerations in mind when choosing efficient technologies. The "other" 14 percent of participants mentioned such things as being resistant to change, having a lack of interest in energy efficiency, and valuing comfort over efficiency.

Figure 4: Residential Purchasing Decisions around Energy Efficiency

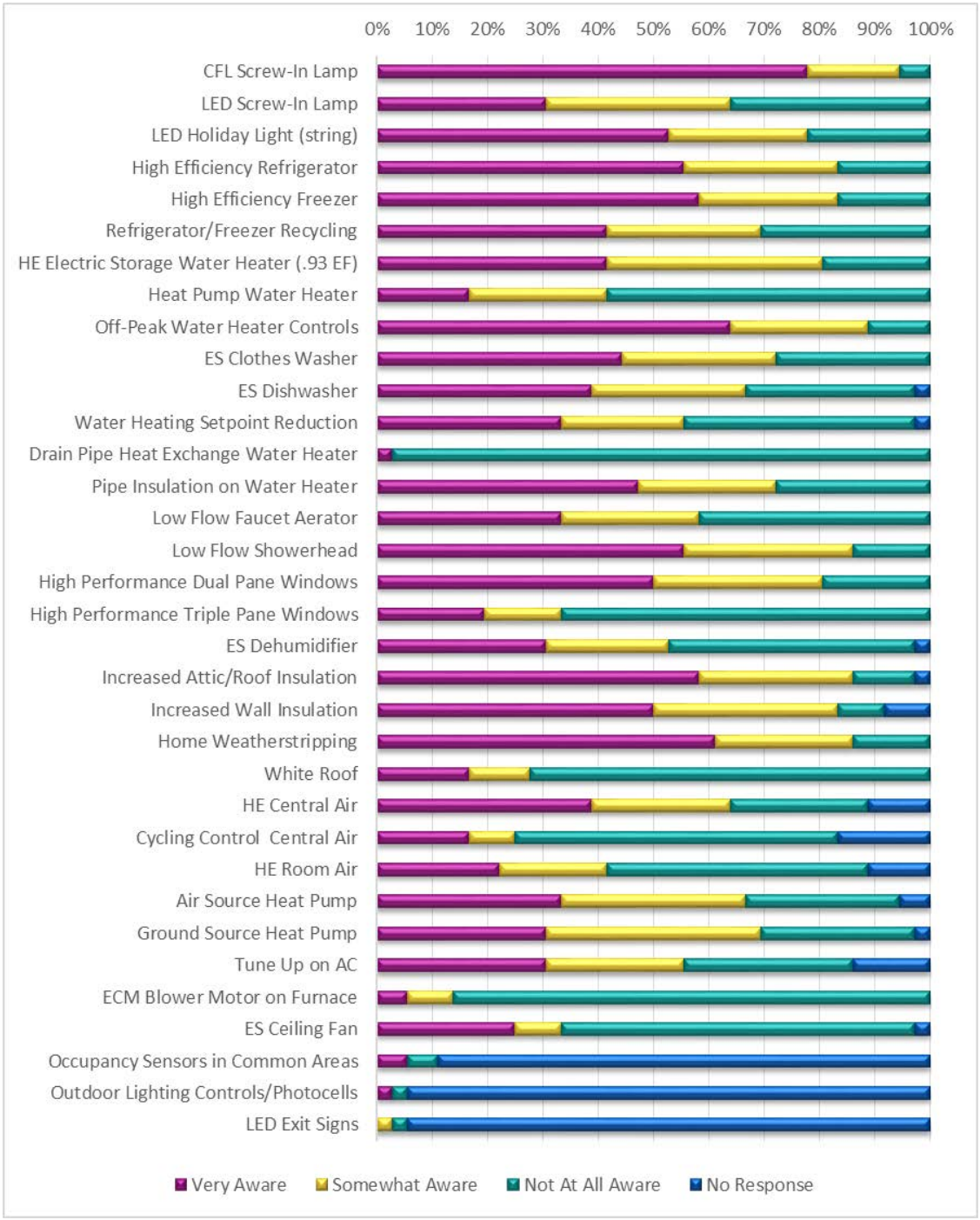


Source: Navigant 2015

Navigant also asked customers about their awareness in general of many energy efficient technologies. Obviously, a major barrier to improving energy efficiency is ensuring customers are aware that a better option exists.

Figure 5 shows the results of customer awareness as a percentage of the 36 participants. The responses ranged from Very Aware of a technology, to Not At All Aware.

Figure 5: Customer Awareness of Energy Efficient Measures – Residential



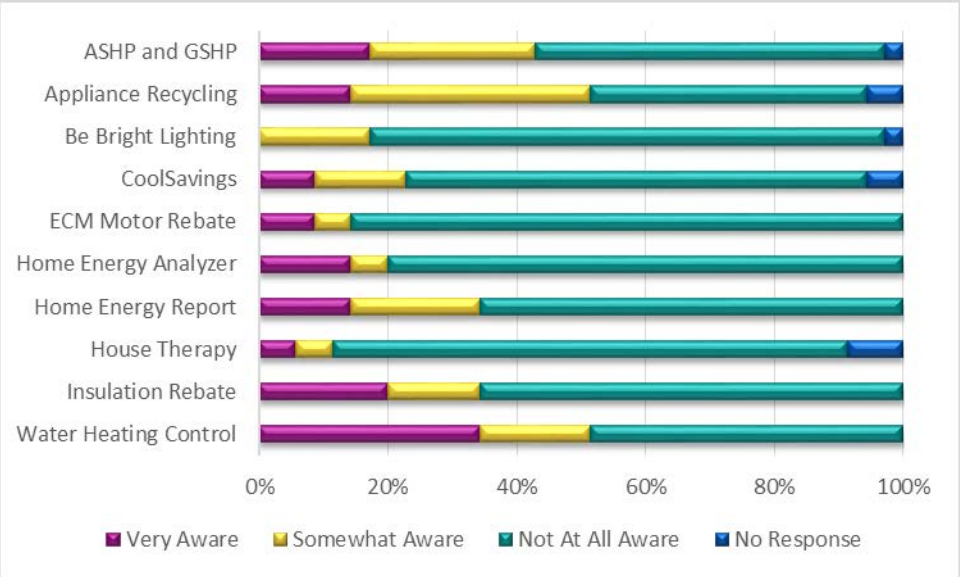
Source: Navigant 2015

The decision maker survey also included questions probing customer *awareness of* and *interest in* OTP's portfolio of efficiency programs. The program offerings at the time of the survey included:

- Air Source Heat Pump Upgrades
- Appliance Recycling
- Be Bright Lighting
- CoolSavings
- ECM Motor Rebate
- Home Energy Analyzer
- Home Energy Report
- House Therapy
- Insulation Rebate
- Water Heating Control

Figure 6 shows the customer awareness of each program as a percentage of the 36 surveyed customers.

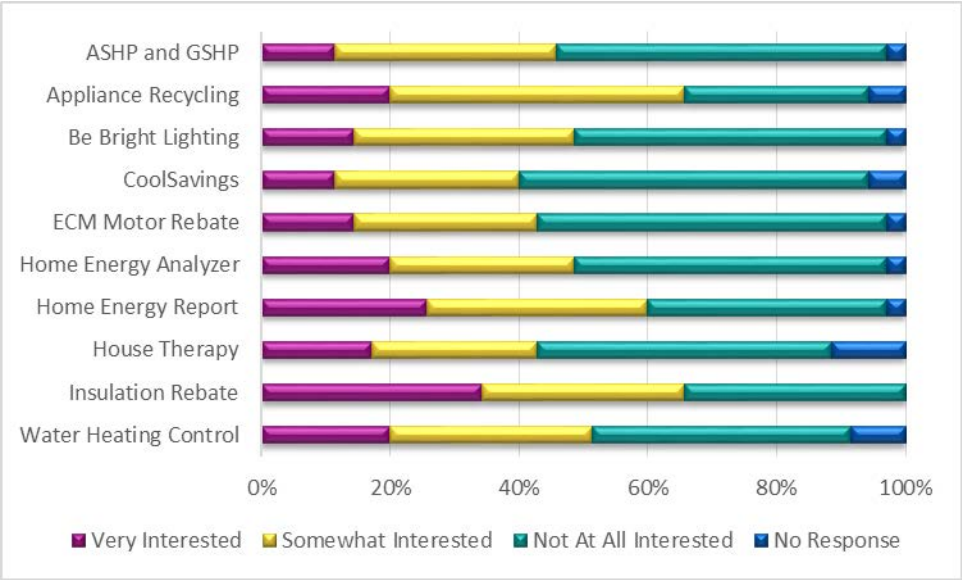
Figure 6: Customer Awareness of OTP Programs – Residential



Source: Navigant 2015

Navigant also asked customers if they had any interest in participating in OTP efficiency programs going forward. Figure 7 shows these results as a percent of the 36 surveyed customers.

Figure 7: Customer Interest in OTP Programs – Residential

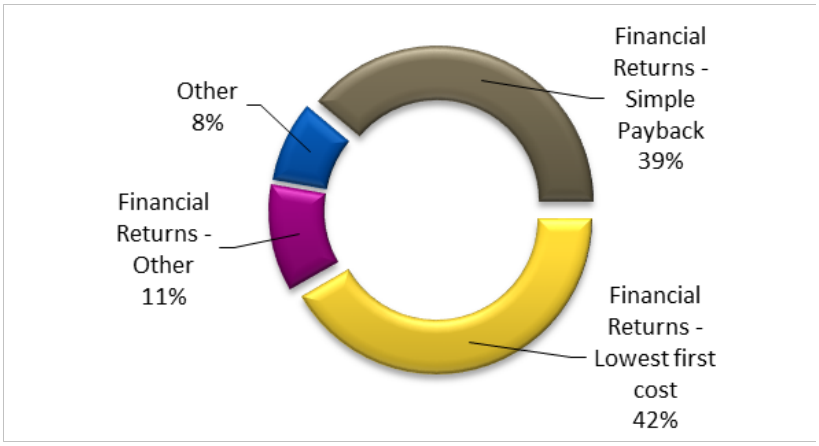


Source: Navigant 2015

4.7.2 Non-Residential Results

Figure 8 provides the purchasing decision results for the non-residential sector. Similar to the residential sector, the vast majority of respondents (92%) mentioned financial considerations as the primary driver for purchasing efficient technologies. The "other" 8 percent said that efficiency and conservation alone were enough to convince them to pursue energy efficiency.

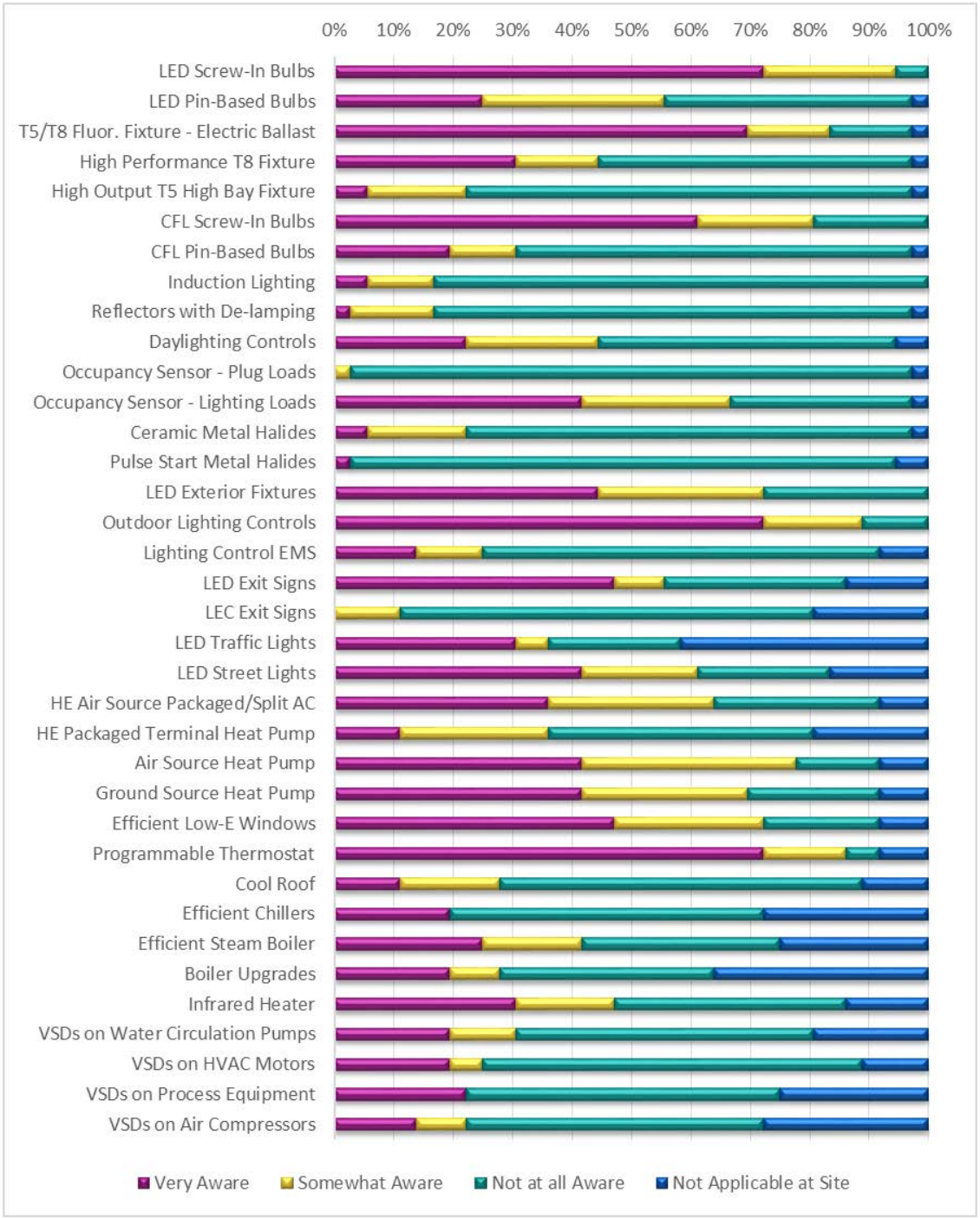
Figure 8: Non-Residential Purchasing Decisions around Energy Efficiency



Source: Navigant 2015

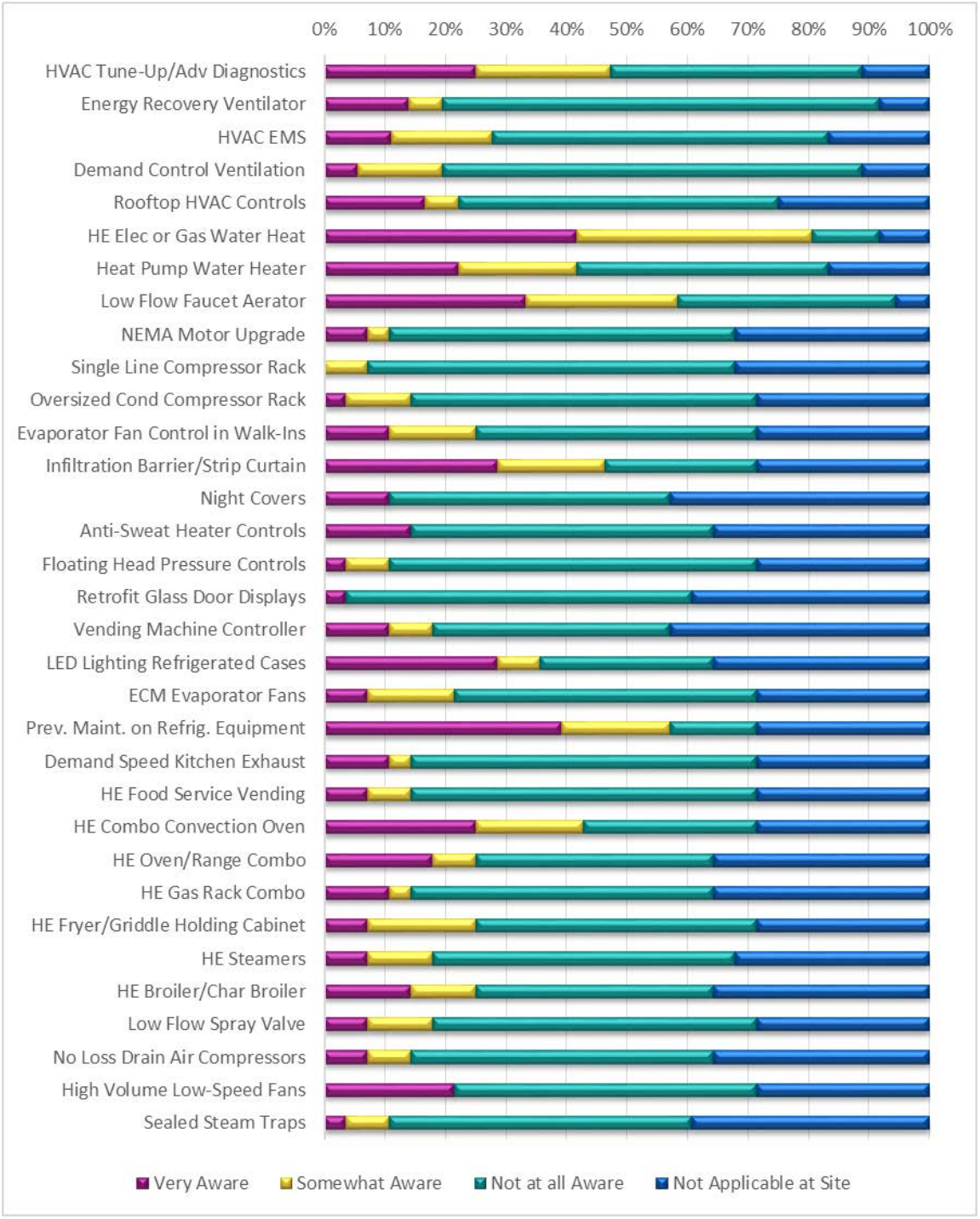
Figure 9 and Figure 10 show the customer awareness results for a list of technologies installed in the non-residential sector. The scale ranges from "very aware" to "not at all aware".

Figure 9: Customer Awareness of Energy Efficient Measures – Non-Residential (1)



Source: Navigant 2015

Figure 10: Customer Awareness of Energy Efficient Measures – Non-Residential (2)



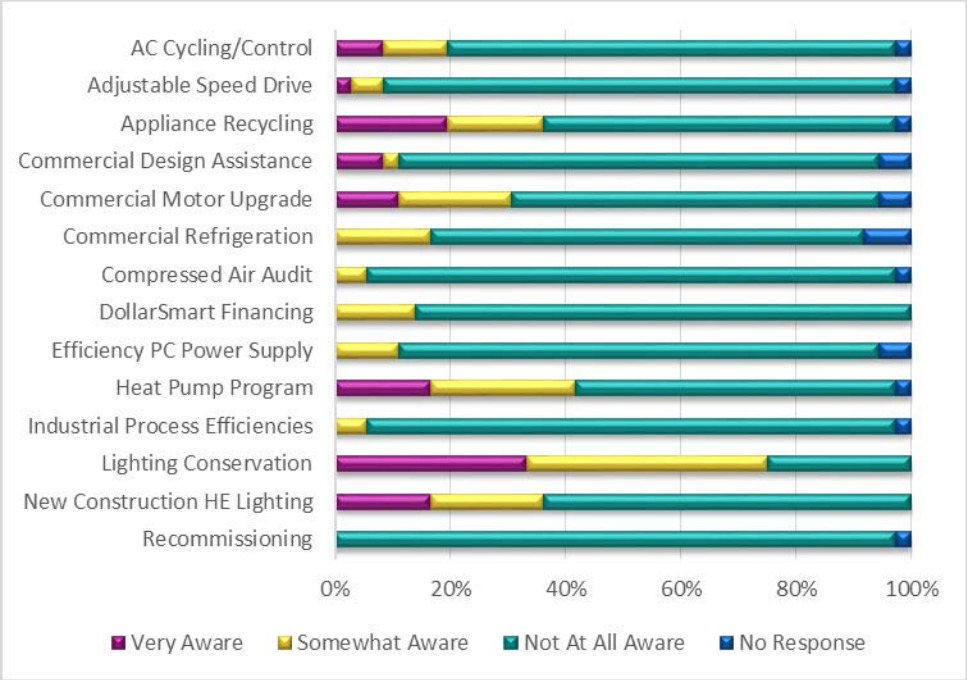
Source: Navigant 2015

Navigant also probed participants as to their awareness and interest in OTP's portfolio of non-residential programs. The programs offered at the time of the survey included:

- AC Cycling and Control
- Adjustable Speed Drive
- Appliance Recycling
- Commercial Design Assistance
- Commercial Motor Upgrade
- Commercial Refrigeration
- Compressed Air Audit
- DollarSmart Financing
- Efficiency PC Power Supply
- Heat Pump Program
- Industrial Process Efficiencies
- Lighting Conservation
- New Construction HE Lighting
- Recommissioning

Figure 11 shows the customer awareness levels for each program as a percentage of the 36 surveyed non-residential customers.

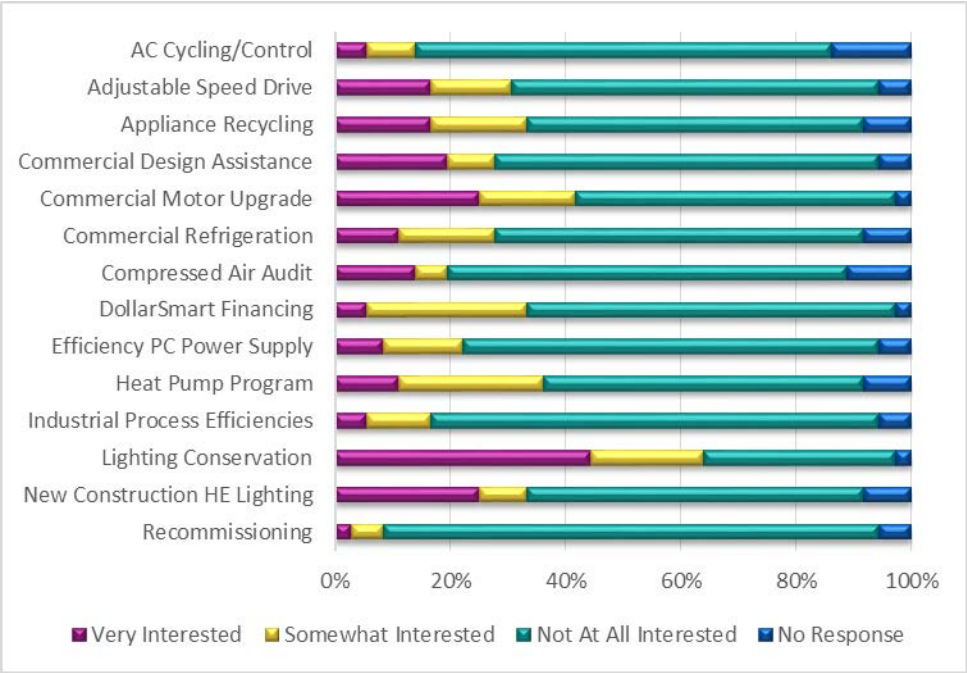
Figure 11: Customer Awareness of OTP Programs – Non-Residential



Source: Navigant 2015

Navigant also asked customers if they had any interest in participating in OTP efficiency programs going forward. Figure 12 shows these results as a percent of the 36 surveyed non-residential customers.

Figure 12: Customer Interest in OTP Programs – Non-Residential



Source: Navigant 2015

5. DSM Measure Characteristics

Navigant's ELRAM model calculates potential energy savings at the measure level and is therefore heavily reliant on high quality and detailed measure characteristics. The modeling team created the Measure Input Characterization Sheet (MICS) including measure costs, savings impacts, measure life, incentive levels, and a host of other variables. The team characterized all of the variables included in the MICS for list of measures assembled by both Navigant and OTP.

5.1 DSM Measure List

Navigant relied on the 2014 Minnesota statewide Technical Reference Manual (TRM) and OTP's supplemental TRM for the list of measures to include in the 2015 study. The team did not use the 2015 MN TRM as it was not complete at the time of this study. Navigant collaborated with OTP during the creation of the measure list to ensure it included all measures that were of interest to OTP, including direct load control measures which informed that portion of the study. As with other statewide TRMs which include deemed savings values, the Minnesota TRM includes measure detail for several different building types and climate zones. This provides program planners with consistent savings information and aids in program design.

5.2 Measure Characteristics

The Navigant modeling team again relied on the MN TRM and OTP TRM to characterize the energy savings and costs for the measures included in the DSM measure list. ELRAM requires over 80 specific characteristics per measure including, energy savings impacts and costs for the baseline, code minimum, and efficient technologies, incentive amounts, measure life, associated program types, densities, willingness and awareness, and externality impacts. The team used existing sources—compiled over past potential and other studies—to complete all of these characteristics and created the MICS workbook to flow directly into the ELRAM model.

6. Benchmarking and Best Practice

Navigant conducted a benchmarking assessment of utilities in the Midwest and neighboring states to ensure that 1) the DSM potential estimates developed for this study are reasonable and appropriate, and 2) to identify the best practices regarding DSM programs used by utilities other than OTP. The benchmarking analysis compares detailed program results by customer sector in these states utilizing 2013 DSM program results, to identify common best practices of top program performers. Navigant provided the results from this benchmarking effort to OTP in August, 2015 as a PowerPoint presentation.

6.1 Organizations Reviewed

Navigant collected data on DSM program results for 15 investor-owned utilities (IOUs) in the Midwest or neighboring states (Table 5), chosen for their geographic proximity to OTP's service territory.

Table 5. Benchmarked Utilities

State	Organization
MN	Otter Tail Power
	Interstate Power & Light
	MN Power
	Xcel Energy
CO	Black Hills
IA	Interstate Power & Light
	MidAmerican
IL	Ameren IL
	ComEd IL
MI	Consumers Energy
	DTE Energy
MT	Northwestern Energy
OH	AEP Ohio
	Dayton P&L
SD	Black Hills

Source: Navigant 2015

6.2 Methodology

The team gathered and prepared the benchmarking data for each organization as follows:

- Review of utility annual reports—collected through E Source and supplemented by targeted email—for DSM program spending and savings results
- Collection of baseline sales and revenue from FERC Form 861 www.eia.doe.gov
- Retail revenue data for utilities in IL and OH specify EIA statistics for both energy and delivery. However, utilities did not report all delivery revenue so Navigant calculated a ratio using the provided energy $/kWh revenue data (revenue ÷ retail kWh sales), and applied it to the delivery's retail kWh sales volume to estimate the missing delivery revenue.
- Normalization of DSM savings and spending for same program year, baseline sales, and baseline revenue
- Inclusion of OTP (MN)'s large C&I customers' retail kWh sales and revenue as they are not technically opt out customers

Benchmarking comparisons can identify best practice programs and common best practice techniques among the top performers. However, Navigant stresses several caveats when reviewing benchmarking results, including:

- Variations in program offerings and reporting practices across DSM portfolios precludes a strict apples-to-apples comparison of all programs
- Accounting differences between program administrators including variations in aggregating and allocating costs

Benchmarking is useful however, for identifying organizations and programs to analyze more closely; as close analysis provides better understanding of program practices and informs cost-effective program design. Benchmarking is not a substitute for a process evaluation—it shows what utilities are achieving in terms of energy and demand savings and what they're spending on programs to achieve these savings, but does not attempt to derive meanings or conclusions from this data.

6.3 Residential Benchmarking Results

Table 6 provides overall results for OTP residential programs compared to the benchmark utilities. OTP's residential DSM spending (as a percentage of residential revenue) is above the median of the group while their residential energy savings (as a percentage of residential sales) is below the median of the group.

Table 6. Residential Benchmarking Results

	Spending as % of Revenue	Energy Savings as % of Sales	Summer Peak Demand Savings as % of Peak Demand	Cost of First Year Savings	
				$/kWh	$/kW
All Benchmarked Median	2.3%	1.6%	1.2%	$0.14	$864
OTP (MN)	2.4%	1.1%	1.1%	$0.18	$532

Source: Navigant 2015

Navigant interviewed program evaluators for the following residential programs to better understand the 2013 residential program performance:

- Residential ENERGY STAR Lighting Program – ComEd
- Home Energy Reports – ComEd
- Efficient Products Program – AEP OH
- Home Energy Reports – AEP OH

6.3.1 ComEd (IL)'s Residential ENERGY STAR Lighting Program

The ComEd program achieved 421 GWh savings (1.53% of residential sales) at $0.05/kWh in 2013. OTP's lighting program achieved 0.39% residential energy savings as % of sales at $0.04/kWh. The majority of the program's savings (82%) were from standard CFLs.

- Key Best Practices
  - The program offers large incentives for standard and specialized CFLs in 2013
  - The implementer maintains a good relationship with retail trade allies by continuing an active presence in participating stores
- Supporting Practices
  - The utility maintains a good relationship with the implementer through biweekly status calls to keep program on track
- Future Practices
  - Program plans to incentivize LEDs moving forward
  - Program plans to discontinue incentives for specialty CFLs
- Favorable Conditions

- Upstream program had 17 retailers (1,250 retail outlets) participate in 2013
- Program has massive reach (around 12 million bulbs sold a year)

6.3.2 ComEd (IL)'s Home Energy Reports (HERs) Program

The ComEd HERs program achieved 129.1 GWh savings (0.47% of sales) at $0.01/kWh in 2013. OTP (MN)'s Behavioral program achieved 0.40% residential energy savings as % of residential sales at $0.15/kWh.

- Key Best Practices
  - The program developed marketing methods targeted at specific customer segments
  - The program added more customer waves—the addition of a sixth wave in June 2013 targeting 100,000 customers, increased program participation to about 447,000 customers
  - The utility holds bi-weekly status calls with the implementation contractor to stay on target
- Supporting Practices
  - Opower has implemented this program for the past five years
  - ComEd has recently started taking a more active role in the HER program
- Favorable Conditions
  - Longevity of program and ComEd's large customer base help production and ability to achieve participation targets

6.3.3 AEP Ohio's Residential Efficient Products Program

This AEP Ohio program achieved 203 GWh savings (1.40% of residential sales) at $0.06/kWh in 2013. This included both lighting and appliance measures. Lighting measures accounted for 96% of the program's total savings. OTP's lighting program achieved 0.39% residential energy savings as % of sales at $0.04/kWh. This is an upstream program with the majority of the program's lighting savings (96%) were from CFLs (about 2% came from LEDs).

- Key Best Practices
  - The implementation contractor maintains strong relationships with manufacturers and retailers by:
    - Handling all marketing materials and promotional activities, training retail staff, and visiting stores regularly to confirm proper labeling and marketing of qualified products
    - Maintaining an overall active presence in participating stores
  - The utility holds bi-weekly status calls with the implementation contractor to stay on target
- Supporting Practices

- The program added the Dollar Store as a participating retailer
- The program offers both markdown and coupon components for lighting measures
- The program provides CFL giveaways through food banks and to customers who submit an appliance rebate
- The program expanded the selection of general purpose LEDs in 2013

- Future Practices
  - The Ohio TRM plans to improve savings calculation methods which may generate better CFL savings

6.3.4 AEP Ohio's Home Energy Reports (HERs) Program

The AEP Ohio HERs program achieved 62 GWh savings (0.43% of residential sales) at $0.04/kWh in 2013. OTP (MN)'s Behavioral program achieved 0.40% residential energy savings as % of residential sales at $0.15/kWh.

- Supporting Practices
  - Opower has implemented this program for the past three years
  - The utility holds bi-weekly status calls with the implementation contractor to stay on target
  - The program added around 125,000 participants in the spring of 2013 bringing the total to about 307,000 participants
- Future Practices
  - The utility looks to increase activity and involvement with the Opower run program
  - The program plans to use bill inserts as a means to find more participants
  - The program may update the format of the reports to help keep existing customers engaged

6.4 Commercial & Industrial Benchmarking Results

Table 7 provides overall results for OTP commercial & industrial (C&I) programs compared to the benchmark utilities. OTP's C&I DSM spending (as a percentage of C&I revenue) is the second highest among the group while their C&I energy savings (as a percentage of C&I sales) is the highest among the group.

Table 7. Commercial & Industrial Benchmarking Results

	Spending as % of Revenue	Energy Savings as % of Sales	Summer Peak Demand Savings as % of Peak Demand	Cost of First Year Savings	
				$/kWh	$/kW
All Benchmarked Median	1.8%	1.0%	0.9%	$0.14	$761
OTP (MN)	3.8%	1.8%	0.9%	$0.14	$745

Source: Navigant 2015

To better understand the 2013 C&I performance of the utilities, Navigant completed interviews with the evaluation staff responsible for evaluating the following C&I programs:

- Business Instant Lighting Discount Program – ComEd
- Small Business Direct Install Program – Consumers Energy

6.4.1 Consumers Energy's Small Business Direct Install (SBDI) Program

The Consumers Energy SBDI program achieved about 91 GWh savings (0.38% of C&I sales) at $0.11/kWh in 2013. OTP did not offer a SBDI program in 2013.

- Key Best Practices
    - The utility offers a Small Business Solutions Core program along with multiple targeted initiatives:
        - The Small Business Solutions Core program is designed to promote energy savings through the installation of common lighting and refrigeration measures. Lighting measures (such as conversion of incandescent and standard T12 fluorescent to T8 or T5 fluorescent lighting, CFLs, high-bay fluorescent lighting, occupancy sensors, LEDs, and LED exit sign retrofit kits) were responsible for more than 75% of program savings with the remaining savings attributed to refrigeration measures (anti-sweat heater controls and ECM motors).
        - Targeted initiatives include 1) Thermostat Initiative (targeting small businesses specifically to install thermostats and other low cost measures), 2) Hospitality Initiative (designed to introduce energy efficiency to hospitality segment – modeled after the thermostat initiative but provided LEDs to this segment) and 3) Nonprofit Initiative (new in 2013 and offered LEDs, faucet aerators, pre-rinse sprayers, programmable thermostats and vending misers to the nonprofit sector).

        - CFL Drop Initiative where the program's implementation contractor delivers boxes of CFLs to small businesses located in the utilities' electric and combination territories.

- Supporting Practices
    - To encourage participation, the utility set measure incentives to up to 100% of installed measure cost, with a cap of $7,500 per participating customer
    - Customers who participated in the one of the other initiatives received free direct installation of measures
    - Designed as a "lever program," administrators can scale back or ramped up the program depending on overall portfolio performance

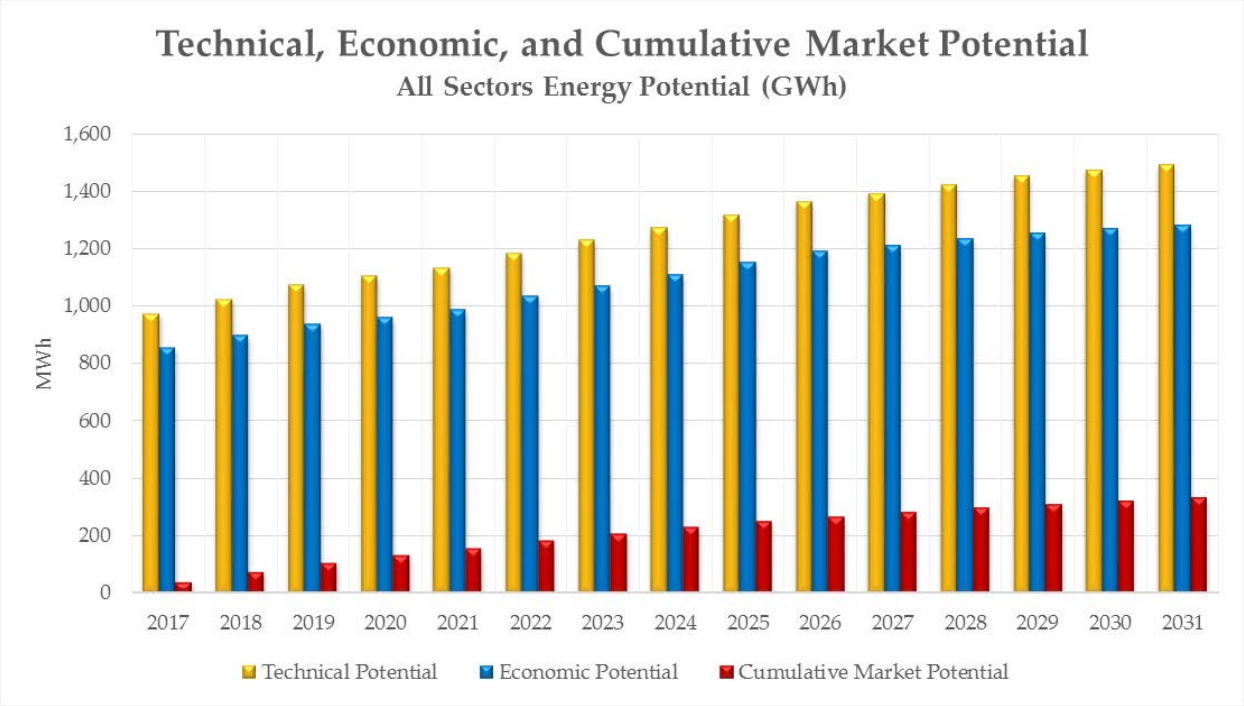
7. DSM Potentials Results

Navigant used the ELRAM potential model to estimate a total of seven market potential scenarios: a base case and six additional scenarios designed to reach DSM goals of 1.5% to 2.0% of utility sales in 0.1% increments. The base case models potential energy savings estimates using a "business as usual" approach, with no changes to current incentive levels or program administrative costs. The additional scenarios with specific savings goals in mind, do adjust incentive levels, administrative costs, and program budgets.

7.1 Base Case Potential

Figure 13 presents the technical, economic, and cumulative energy potential and Figure 14 the demand potential for the base, "business as usual" case. Table 8 and Table 9 provide this same information in tabular form and also include this data by sector. Cumulative market potential looks small and is somewhat ambiguous in comparison to technical and economic potential because cumulative market potential does not start cumulating until 2017 It does not include any of the OTP DSM program achievements from earlier years.

Figure 13. Base Case Technical, Economic, and Cumulative Market Energy Potential (GWh)



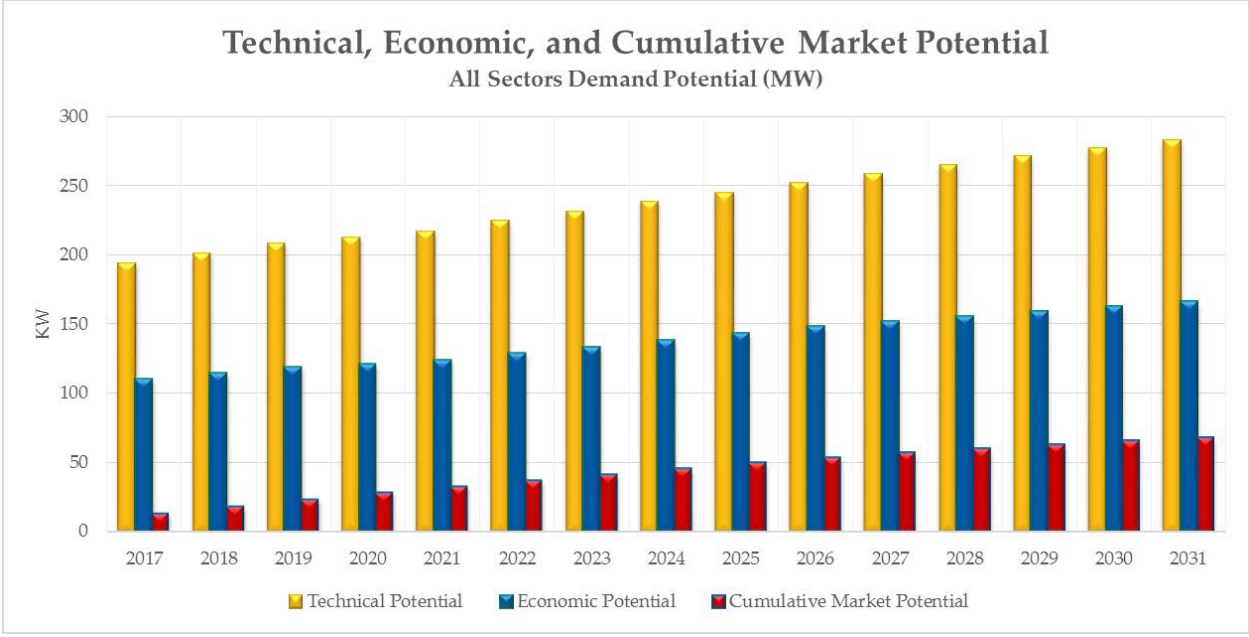
Source: Navigant 2015

Both technical and economic potential grow over the forecast period because of utility growth but more importantly because of the treatment of replace on burnout (ROB) measures. The technical and economic potential from ROB measures is not included until after measure life is achieved. For example, a ROB

measure with a 10 year measure life would be included 1/10th summed at a time until the model reaches a full 10 years. Technical potential grows from 975 GWh and 194 MW in 2017 to 1,494 GWh and 283 MW by 2031. Economic potential is about 90% of technical potential. Cumulative market potential cumulates from the 2017 incremental savings value of 41 GWh and 12 MW in 2017 to 332 GWh and 67 MW by 2031.

In the beginning of the forecast period, about 65% of cumulative market potential energy and 50% of cumulative demand potential comes from the non-residential sector. By 2031, these shares stay about the same.

Figure 14. Base Case Technical, Economic, and Cumulative Market Demand Potential (MW)



Source: Navigant 2015

Cumulative potential does not represent the running sum of incremental potential. The accumulation, persistence, and decay of cumulative potential is a four step process.

- *Step 1 - Accumulation*: A running summation of the Incremental Potential for the duration of measure life.
- *Step 2 - End of Life Savings Adjustment:* Once a measure reaches the end of its useful life, remove savings from the initial measure lifetime.
- *Step 3 - Re-Engagement:* A share of the population is assumed to "re-engage" and continue with the equivalent or better energy efficiency measure to replace the measure that has reached "end of life" (decayed savings). The savings associated with this continued engagement is added back to cumulative potential until the end of its next measure life.
- *Step 4 - Adjust for Dual Baseline Measures:* For early retirement (dual baseline) measures, once the remaining life of the baseline technology is reached, energy savings decrease. This step adjusts cumulative potential for this decrease.

Table 8. Base Case Technical, Economic, and Cumulative Market Energy Potential by Sector (GWh)

All Sectors (GWh)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Technical Potential	975	1,027	1,076	1,108	1,137	1,187	1,231	1,277	1,320	1,366	1,395	1,426	1,454	1,475	1,494
Economic Potential	859	901	940	964	981	1,036	1,073	1,112	1,155	1,192	1,214	1,237	1,259	1,272	1,283
Cumulative Market Potential	41	75	106	133	159	183	210	232	252	268	284	298	311	322	332
Residential (GWh)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Technical Potential	447	487	525	550	572	611	649	688	725	766	792	819	845	863	879
Economic Potential	344	376	404	421	433	466	496	528	566	598	617	636	655	665	674
Cumulative Market Potential	14	25	38	49	58	63	70	77	86	93	101	106	112	116	121
Non- Residential (GWh)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Technical Potential	528	539	551	558	565	575	582	589	595	600	603	606	610	613	615
Economic Potential	515	525	535	543	549	570	577	584	590	594	598	601	604	607	610
Cumulative Market Potential	27	50	68	84	101	120	140	154	166	175	183	191	199	205	212

Source: Navigant 2015

Table 9. Base Case Technical, Economic, and Cumulative Market Demand Potential by Sector (MW)

ALL Sectors (MW)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Technical Potential	194	201	208	213	217	224	231	239	245	252	258	265	271	277	283
Economic Potential	109	114	118	121	122	128	133	138	143	147	151	155	159	162	166
Cumulative Market Potential	12	18	23	28	32	36	41	45	49	53	56	59	62	65	67
Res (MW)															
Technical Potential	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Economic Potential	111	117	122	126	129	135	140	146	151	157	162	168	174	179	184
Cumulative Market Potential	40	43	46	47	48	51	54	58	62	65	68	71	74	77	80
Non-Res (MW)	6	8	11	12	14	15	16	17	19	20	22	23	24	25	25
Technical Potential															
Economic Potential	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Cumulative Market Potential	82	84	86	87	88	90	91	93	94	95	96	97	98	98	99

Source: Navigant 2015

7.1.1 Base Case Incremental Market Potential

Navigant began with a base case model run showing the results of "business as usual," where the modeling team made no adjustments to current incentive levels or program administrative costs. The left axis of Figure 15 illustrates the base scenario incremental market potential (GWh) and the right axis presents the base scenario incremental market energy potential expressed as a percent of total OTP forecasted sales. There are two representations of the percent of sales values in this figure. The first is a

percent of all sales and the second percent of all sales less pipeline sales. The two representations illustrate the effect of the large share of pipeline sales to total sales for OTP. Over the forecast period, pipeline sales represent between 35-45% of total sales, depending on the year. However, the pipeline companies have informed OTP the pumps currently used by the pipelines are already high performance pumps and offer no current DSM potential. When considering goals expressed as percent of sales, Navigant suggests that it may be more appropriate for OTP to express their DSM goals as percent of sales less pipeline sales.

Figure 15. Base Case Incremental Market Energy Potential by Sector (GWh) and Percent of Sales

Source: Navigant 2015

Table 10 provides the values represented in Figure 15. For the base case, energy potential as expressed as a percent of total sales is 1.59% in 2017 and falls to 0.59% by 2031. When expressed as a percent of sales less pipeline sales, the values are 2.49% in 2017 falling to 1.08% by 2031. However in the latter scenarios, the incremental market potential as expressed as a percent of sales remains at or above the 1.5% goal through 2031.

Incremental market potential decreases each year in the base case scenario due to incentive levels remaining constant, the impacts of codes and standards reducing programmatic opportunities, and certain measures beginning to reach saturation levels by the end of the forecast period. At the sector level, the residential share of incremental market potential in 2017 is about 34% of the total incremental market potential. By 2031, the residential share increases to about 55%.

Table 10. Base Case Incremental Market Energy Potential by Sector (GWh) and Percent of Sales

All Sectors (GWh)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Total Incremental Market Potential	41.5	35.9	33.6	29.7	28.2	30.1	32.0	29.2	25.9	23.0	21.7	20.8	20.2	19.5	18.5
Res Incremental Market Potential	14.1	13.5	15.3	12.9	11.1	11.3	11.7	11.6	11.4	11.2	11.0	10.8	10.7	10.6	10.1
Non-Res Incremental Market Potential	27.4	22.4	18.4	16.8	17.1	18.8	20.3	17.5	14.4	11.8	10.7	10.0	9.4	8.9	8.4
Incremental Potential as % of Sales	1.59%	1.40%	1.27%	1.11%	1.02%	1.04%	1.09%	0.97%	0.83%	0.74%	0.70%	0.67%	0.65%	0.63%	0.59%
Incremental Potential as % of Sales less Pipeline	2.49%	2.14%	2.00%	1.76%	1.67%	1.78%	1.89%	1.72%	1.52%	1.35%	1.27%	1.22%	1.18%	1.14%	1.08%

Source: Navigant 2015

7.1.2 Base Case Conservation Supply Curves and Top Fifty Measures

Figure 16 illustrates the 2017 energy DSM potential supply curve. The curve is expressed in terms of levelized cost per kWh saved. The levelized cost formula is:

Levelized cost = capital recovery factor * incremental measure cost / annual kWh savings

Where:
Capital Recovery Factor = utility discount rate / (1-(1+utility discount rate)^-measure life

The distribution of savings by percentage category groups include:

- 25% of potential savings cost a levelized 1.1 cents/kWh or less
- 50% of potential 2.7 cents/kWh or less
- 75% of potential 4.7 cents/kWh or less
- 90% of the potential costs 7.7 cents/kWh or less

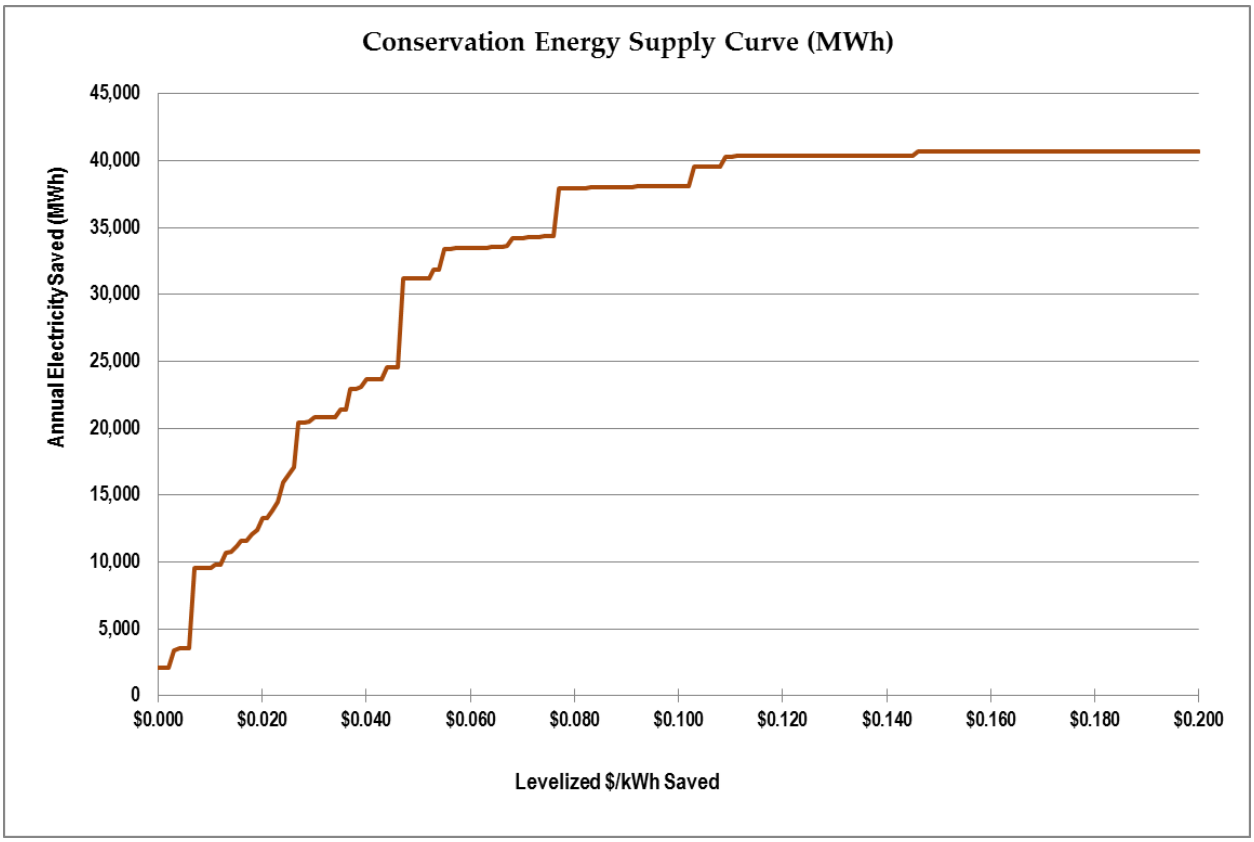
Table 11 lists the top 50 measures in terms of potential energy savings for the year 2017. VSDs on non-HVAC motors in the commercial sector provides the most savings, representing 12.9% of the total potential savings in 2017. Measures with the designation "New Measure" at the beginning of the measure name are measures currently not in the OTP portfolio.

The top six measures account for nearly 50% of the total 2017 potential savings. These top six measures are:

- Commercial - VSD on Non HVAC Motors
- Commercial - Occupancy Sensors
- Commercial - Custom
- Res-Exist - CFL Screw-In Lamp - Low (13w average)

- Res-Exist - Residential Behavior Programs
- Res-Exist - LED Screw-In Lamp - Low (9w avg)

Figure 16. Base Case DSM Energy Supply Curve for 2017



Source: Navigant 2015

Table 11. Base Case Top Fifty Measures in Terms of Energy Savings in 2017

Rank	Top Fifty Measures - 2017	2017 - Energy Savings (MWh)	2017 - Demand Savings (KW)	Energy % of Total	Demand % of Total
1	Commercial - VSD on Non HVAC Motors	5,572	1,078.3	13.4%	10.4%
2	Commercial - Occupancy Sensors	4,908	187.4	11.8%	1.8%
3	Commercial - Custom	3,515	1,033.9	8.5%	10.0%
4	Res-Exist - CFL Screw-In Lamp - Low (13w avg)	2,893	441.9	7.0%	4.3%
5	Res-Exist - Residential Behavior Programs	2,086	1,169.4	5.0%	11.3%
6	Res-Exist - LED Screw-In Lamp - Low (9w avg)	1,500	222.3	3.6%	2.1%
7	Commercial - Commercial Design Assistance (COM NC)	1,495	314.7	3.6%	3.0%
8	Res-Exist - Geothermal Heat Pump	1,399	33.8	3.4%	0.3%
9	Commercial - T8 Delamping	1,315	153.8	3.2%	1.5%
10	Industrial - VSD on Non HVAC Motors	756	146.3	1.8%	1.4%

Rank	Top Fifty Measures - 2017	2017 - Energy Savings (MWh)	2017 - Demand Savings (KW)	Energy % of Total	Demand % of Total
11	New Measure - Res-Exist - ENERGY STAR Clothes Washer (2.07 MEF)	706	89.7	1.7%	0.9%
12	Res-Exist - CFL Screw-In Lamp - High (23w avg)	690	105.3	1.7%	1.0%
13	Industrial - Occupancy Sensors	668	25.5	1.6%	0.2%
14	Res-Exist - High Efficiency ASHP SEER 18	617	188.0	1.5%	1.8%
15	Res-Exist - ENERGY STAR Ceiling Fan/Light	595	45.8	1.4%	0.4%
16	Commercial - ASHP SEER 18	595	24.4	1.4%	0.2%
17	Commercial - NEMA Premium Efficiency Motors	576	111.5	1.4%	1.1%
18	New Measure - Res-Exist - Drainpipe Heat Exchanger on Electric Storage Water Heater	560	63.9	1.4%	0.6%
19	Res-Exist - High Efficiency ASHP SEER 15	548	167.0	1.3%	1.6%
20	Industrial - Custom	544	82.7	1.3%	0.8%
21	Commercial - Geothermal HP (replacing Elec Res Heat)	543	14.0	1.3%	0.1%
22	Commercial - ASHP SEER 15	516	13.6	1.2%	0.1%
23	Commercial - T8 4-Ft Fixture	480	39.9	1.2%	0.4%
24	Commercial - LED Screw-In Lamp (14W Avg)	468	63.9	1.1%	0.6%
25	Commercial - Retrocomissioning	458	7.9	1.1%	0.1%
26	Commercial - T8 Standard Lamp to Low Wattage Retrofit	347	7.7	0.8%	0.1%
27	Res-Exist - Freezer Recycling	336	40.8	0.8%	0.4%
28	Res-Exist - LED Screw-In Lamp - High (18w avg)	317	47.3	0.8%	0.5%
29	Commercial - Exterior Screw-In LED (14 W)	307	62.7	0.7%	0.6%
30	Res-Exist - Home Transformer Package (multi-water measures, 2 CFLs, 2 LEDs, block heater)	243	7.2	0.6%	0.1%
31	Res-Exist - Refrigerator Recycling	236	35.5	0.6%	0.3%
32	Commercial - VSD on HVAC Pumps <=10 HP	236	26.9	0.6%	0.3%
33	Commercial - Anti-Sweat Heat (ASH) Controls	227	12.7	0.5%	0.1%
34	Commercial - High Evaporator Temp Cases	222	6.8	0.5%	0.1%
35	Commercial - Preventative Refrigeration Maintenance (all store size)	200	41.8	0.5%	0.4%
36	Commercial - Exterior Canopy/Area Lights Retrofit with LEDs	195	39.7	0.5%	0.4%
37	Commercial - Outdoor Air Cooling (Natural Air)	187	5.5	0.5%	0.1%
38	Commercial - Parallel Rack Compressor Retrofit	187	23.3	0.4%	0.2%
39	Industrial - T8 Delamping	178	20.9	0.4%	0.2%
40	Commercial - VSD on HVAC Fans <=10 HP	165	18.9	0.4%	0.2%
41	Commercial - LED Display Case Lighting	163	32.4	0.4%	0.3%
42	Res-Low Income - Home Therapy (Low Income)	142	17.7	0.3%	0.2%
43	Res-Exist - Wall insulation	141	0.0	0.3%	0.0%
44	Commercial - LED Linear Replacement Lamp	135	1.0	0.3%	0.0%
45	Res-Exist - School Kit	133	9.7	0.3%	0.1%
46	Res-Exist - DWH Control (400 Hours)	132	3,111.0	0.3%	30.0%

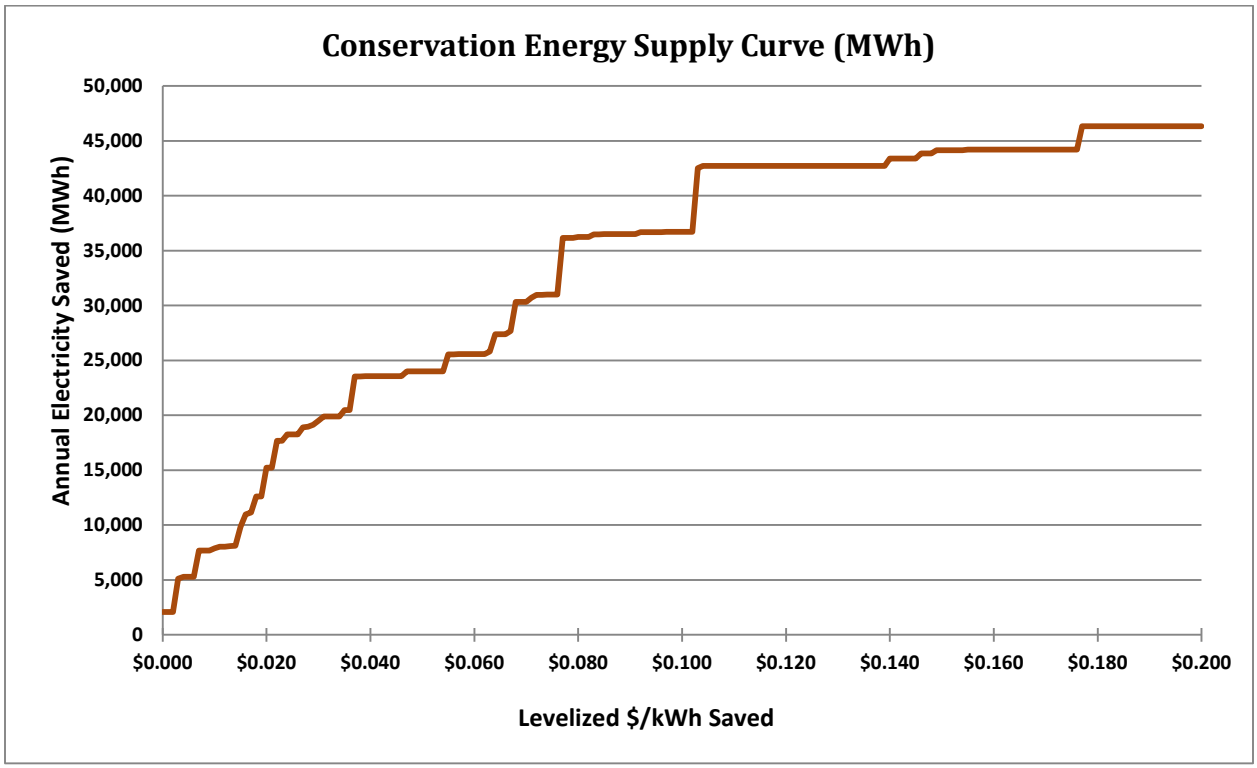
Rank	Top Fifty Measures - 2017	2017 - Energy Savings (MWh)	2017 - Demand Savings (KW)	Energy % of Total	Demand % of Total
47	Res-Exist - High Efficiency ASHP (replacing Elec Resis Heat)	129	1.8	0.3%	0.0%
48	Res-Exist - ECM Blower Motor	120	11.0	0.3%	0.1%
49	Commercial - CFL Screw-In Lamp (23W Avg)	118	15.2	0.3%	0.1%
50	Commercial - Solid State Controller	118	14.7	0.3%	0.1%

Source: Navigant 2015

As shown in Figure 17, the shape of the supply curve flattens somewhat in 2031 with the potential savings becoming more costly. The distribution of savings by percentage category groups changed from 2017 to 2031 as follows:

- 25% of potential savings cost a levelized 1.1 cents/kWh or less in 2017 and 1.8 cents/kWh in 2031
- 50% of potential 2.7 cents/kWh or less in 2017 and 3.7 cents/kWh in 2031
- 75% of potential 4.7 cents/kWh or less in 2017 and 7.7 cents/kWh in 2031
- 90% of the potential costs 7.7 cents/kWh or less in 2017 and 10.3 cents/kWh in 2031

Figure 17. Base Case DSM Energy Supply Curve for 2031



Source: Navigant 2015

Table 12 lists the top 50 measures in terms of potential energy savings for the year 2031. The geothermal heat pump measure in the residential sector is now the new measure that provides the most savings, representing 12.4% of the total potential savings in 2031. Measures with the designation "New Measure" at the beginning of the measure name are measures currently not in the OTP portfolio.

The top six measures now account for 60.9% of the total 2031 potential. The 2031 top six measures are:

- Commercial - Custom
- Res-Exist - Geothermal Heat Pump
- Res-Exist - Residential Behavior Programs
- Commercial - Commercial Design Assistance (COM NC)
- Commercial - Retrocomissioning
- New Measure - Res-Exist - Drainpipe Heat Exchanger on Electric Storage Water Heater

Table 12. Base Case Top Fifty Measures in Terms of Energy Savings in 2031

Rank	Top Fifty Measures - 2031	2031 - Energy Savings (MWh)	2031 - Demand Savings (KW)	Energy % of Total	Demand % of Total
1	Commercial - Custom	4,194	1,233.4	22.7%	14.4%
2	Res-Exist - Geothermal Heat Pump	2,429	58.8	13.2%	0.7%
3	Res-Exist - Residential Behavior Programs	2,086	1,169.4	11.3%	13.7%
4	Commercial - Commercial Design Assistance (COM NC)	1,301	273.9	7.1%	3.2%
5	Commercial - Retrocomissioning	631	10.9	3.4%	0.1%
6	New Measure - Res-Exist - Drainpipe Heat Exchanger on Electric Storage Water Heater	598	68.2	3.2%	0.8%
7	Res-Exist - High Efficiency ASHP SEER 18	585	178.3	3.2%	2.1%
8	New Measure - Res-Exist - ENERGY STAR Clothes Washer (2.07 MEF)	576	73.2	3.1%	0.9%
9	Commercial - Geothermal HP (replacing Elec Res Heat)	528	13.6	2.9%	0.2%
10	New Measure - Res-Exist - Solar Space Heating (Displacing Electricity)	525	59.9	2.8%	0.7%
11	Res-Exist - High Efficiency ASHP SEER 15	516	157.4	2.8%	1.8%
12	Commercial - T8 Standard Lamp to Low Wattage Retrofit	403	9.0	2.2%	0.1%
13	Res-Exist - Home Transformer Package (multi-water measures, 2 CFLs, 2 LEDs, block heater)	287	8.5	1.6%	0.1%
14	Res-New - High Efficiency ASHP SEER 18 - NC	226	68.8	1.2%	0.8%
15	Res-Exist - Wall insulation	186	0.0	1.0%	0.0%
16	Res-Exist - High Efficiency ASHP (replacing Elec Resis Heat)	184	2.6	1.0%	0.0%
17	Res-Exist - DWH Control (400 Hours)	174	4,104.9	0.9%	48.0%
18	New Measure - Res-Exist - HE Electric Storage Water Heater (.95 EF)	174	19.8	0.9%	0.2%
19	Commercial - Exterior Canopy/Area Lights Retrofit with LEDs	172	35.1	0.9%	0.4%
20	Res-Exist - ECM Blower Motor	166	15.2	0.9%	0.2%

Rank	Top Fifty Measures - 2031	2031 - Energy Savings (MWh)	2031 - Demand Savings (KW)	Energy % of Total	Demand % of Total
21	Industrial - Custom	161	24.5	0.9%	0.3%
22	Res-Exist - Freezer Recycling	155	18.8	0.8%	0.2%
23	Commercial - LED Linear Replacement Lamp	155	1.1	0.8%	0.0%
24	Res-Exist - LED Screw-In Lamp - Low (9w avg)	142	21.0	0.8%	0.2%
25	Res-Low Income - Home Therapy (Low Income)	142	17.7	0.8%	0.2%
26	Res-Exist - Refrigerator Recycling	108	16.2	0.6%	0.2%
27	Res-Exist - School Kit	103	7.5	0.6%	0.1%
28	New Measure - Commercial - Large High Volume Low Speed Ventilation Fans	83	16.8	0.4%	0.2%
29	New Measure - Res-Exist - High Efficiency Central AC System SEER 21	70	164.3	0.4%	1.9%
30	Res-New - High Efficiency ASHP SEER 15 - NC	68	20.6	0.4%	0.2%
31	New Measure - Res-New - Solar Space Heating (Displacing Electricity)	67	7.7	0.4%	0.1%
32	Commercial - Occupancy Sensors - NC	66	1.1	0.4%	0.0%
33	Commercial - ENERGY STAR Freezer w/ Glass Door	58	6.0	0.3%	0.1%
34	Industrial - Retrocomissioning	56	1.1	0.3%	0.0%
35	New Measure - Res-Exist - High Efficiency Central AC System SEER 18	55	128.5	0.3%	1.5%
36	Industrial - T8 Standard Lamp to Low Wattage Retrofit	55	1.2	0.3%	0.0%
37	Res-Exist - Attic insulation	54	0.0	0.3%	0.0%
38	Commercial - Exterior Wall Pack Retrofit with LEDs	49	10.1	0.3%	0.1%
39	New Measure - Res-Exist - LED Holiday Lights	47	0.0	0.3%	0.0%
40	Res-New - ENERGY STAR CFL Torchiere - NC	47	4.2	0.3%	0.0%
41	Res-Exist - LED Screw-In Lamp - High (18w avg)	45	6.7	0.2%	0.1%
42	New Measure - Res-Exist - High Efficiency Room AC (1 Ton; 11 EER Avg)	44	101.1	0.2%	1.2%
43	Res-Exist - LED Screw-In Lamp - CFL Base - Low (9w avg)	33	3.3	0.2%	0.0%
44	Res-New - LED Screw-In Lamp - CFL Base - Low (9w avg) - NC	31	3.1	0.2%	0.0%
45	New Measure - Commercial - Vending Machine Automatic Shutoff Control	29	0.9	0.2%	0.0%
46	Commercial - Desktop: ES 5 + 20%	27	6.4	0.1%	0.1%
47	Res-Exist - ENERGY STAR CFL Torchiere	27	2.5	0.1%	0.0%
48	Industrial - NEMA Premium Efficiency Motors	26	5.0	0.1%	0.1%
49	Res-Exist - LED Screw-In Lamp - CFL Base - High (18w avg)	26	2.6	0.1%	0.0%
50	Industrial - Exterior Canopy/Area Lights Retrofit with LEDs	23	4.8	0.1%	0.1%

Source: Navigant 2015

7.1.3 Base Case Program Costs

Table 13 provides a summary of base case model results for the planning years of 2017, 2018, and 2019. Included in the table is year by year information for the residential, non-residential and sector totals on:

- Incremental and cumulative energy and demand potential savings
- Incremental energy savings as a percent of sales; both with and without pipeline sales
- Incremental administrative and incentive costs
- Other program related costs (based on 2015 values)

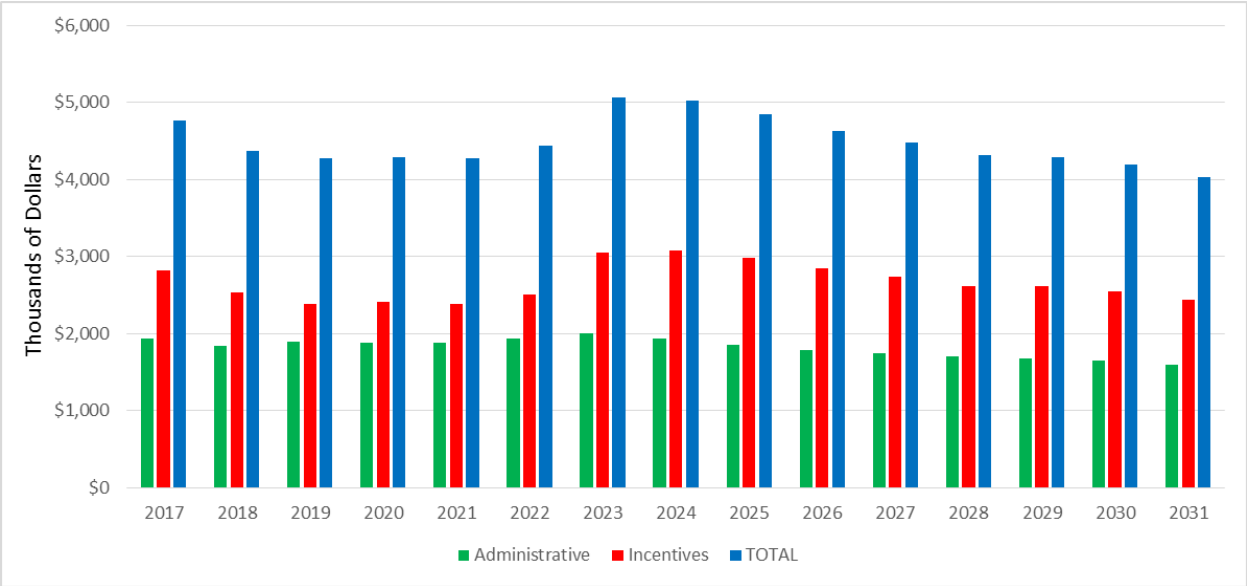
Table 13. Base Case Total DSM Savings and Costs for 2017, 2018, and 2019

Year	Total DSM Savings and Costs (Net at Meter) - All Sectors										
	Energy Savings (GWh)		Peak Demand Savings (MW)		Energy Savings As a % of Sales		Program Administrator Costs (million $)				
	Incremental	Cumulative	Incremental	Cumulative	Incremental Potential as % of Sales	Incremental Potential as % of Sales Less Pipeline	Incremental Admin Costs	Incremental Incentive Cost	Other Sector Based (based on 2015)	Other Non-Sector Based (based on 2015)	Total
2017	41.5	41.5	12.4	12.4	1.59%	2.49%	$1.9	$2.8	$0.4	$0.8	$5.1
2018	35.9	75.1	11.8	17.8	1.40%	2.14%	$1.9	$2.5	$0.4	$0.8	$4.8
2019	33.6	106.3	11.8	22.9	1.27%	2.00%	$1.9	$2.4	$0.4	$0.8	$4.7
Total DSM Savings and Costs (Net at Meter) - Residential Sector (Includes Low Income)											
2017	14.1	14.1	6.3	6.3			$1.0	$1.0	$0.2		$2.2
2018	13.5	25.3	6.3	8.3			$1.0	$1.0	$0.2		$2.2
2019	15.3	38.4	6.6	10.5			$1.0	$1.2	$0.2		$2.4
Total DSM Savings and Costs (Net at Meter) - Commercial / Industrial Sector											
2017	27.4	27.4	6.1	6.1			$1.0	$1.9	$0.1		$3.0
2018	22.4	49.8	5.5	9.4			$0.9	$1.5	$0.1		$2.5
2019	18.4	67.9	5.1	12.4			$0.9	$1.2	$0.1		$2.2

Source: Navigant 2015

Figure 18 and Table 14 provide estimates of administrative and incentive costs by year over the forecast horizon of 2017 through 2031. All costs are expressed in 2015 real $s.

Figure 18. Base Case DSM Program Incentive and Administrative Costs (Dollars)



Source: Navigant 2015

Total expenditures decline over the forecast period, but not as rapidly as the decline in program savings, as shown in Table 14. Administrative costs are about 40-45% of total program costs.

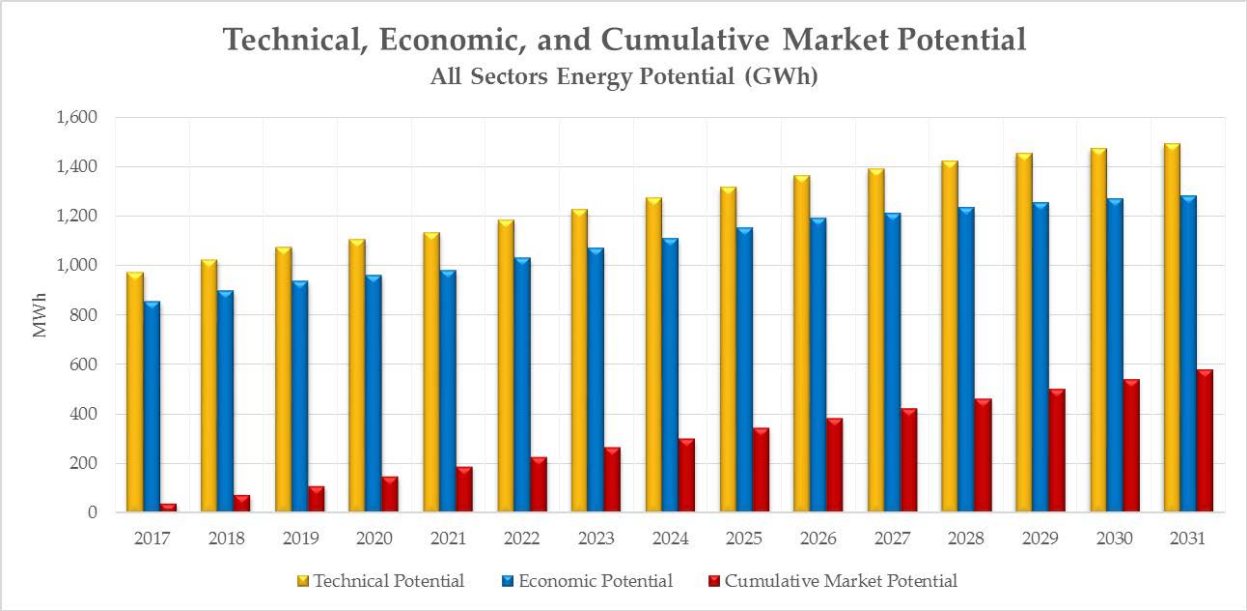
Table 14. Base Case Program Incentive and Administrative Costs (Thousands $) Source: Navigant 2015

Cost Category	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Administrative	$1,938	$1,846	$1,891	$1,878	$1,878	$1,938	$2,006	$1,940	$1,856	$1,782	$1,745	$1,706	$1,679	$1,645	$1,594
Incentives	$2,823	$2,529	$2,387	$2,408	$2,391	$2,505	$3,052	$3,085	$2,985	$2,848	$2,734	$2,615	$2,611	$2,550	$2,442
TOTAL	$4,761	$4,375	$4,278	$4,286	$4,268	$4,442	$5,057	$5,025	$4,841	$4,630	$4,478	$4,322	$4,289	$4,194	$4,037

7.2 Scenario 1.5% of Sales

The 1.5% scenario includes pipeline sales over the entire forecast period of 2017 through 2031. To achieve these goals, the modeling team increased incentive and administrative costs and enlarged budgets. Figure 19 presents the technical, economic, and cumulative energy potential and Figure 20 the demand potential for the 1.5% of sales scenario. Table 15 and Table 16 provide a breakdown of this same information in tabular form as well as by sector. As noted in the base case discussion, cumulative market potential looks small in comparison to technical and economic potential because cumulative market potential does not start cumulating until 2017. It does not include any of the OTP DSM program achievements from earlier years.

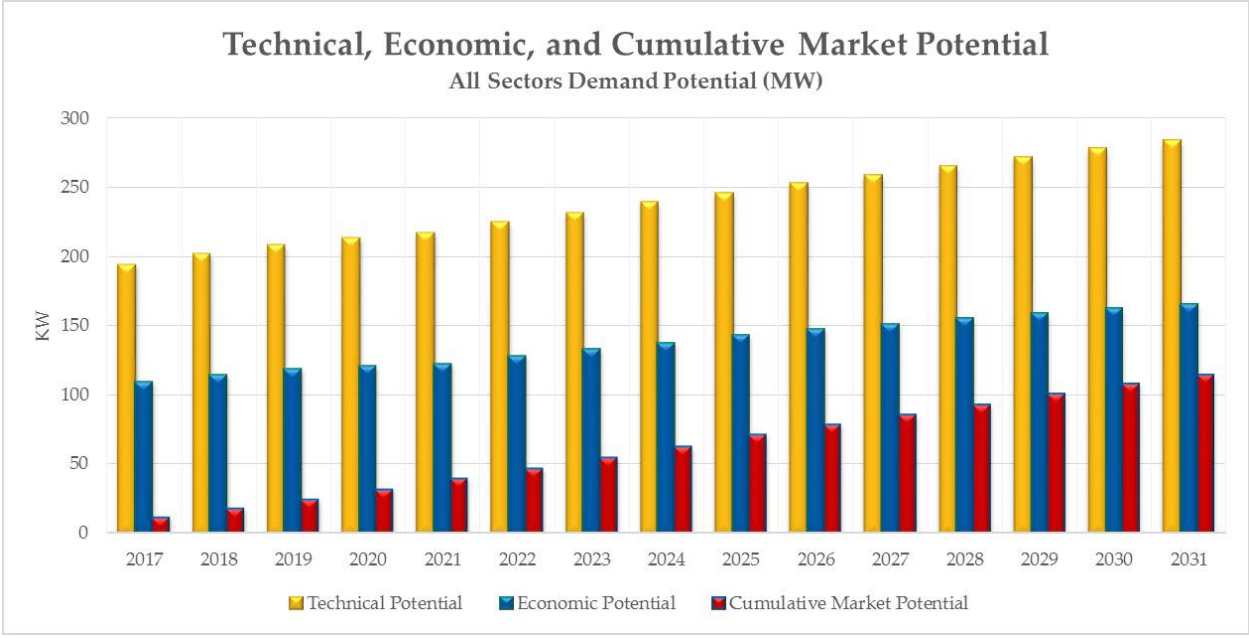
Figure 19. 1.5% Scenario Technical, Economic, and Cumulative Market Energy Potential (GWh)



Source: Navigant 2015

Under this 1.5% of sales scenario, cumulative market potential cumulates from the 2017 incremental savings value of 39 GWh and 12 MW in 2017 to 579 GWh and 115 MW by 2031. Similar to the base scenario, about 67% of cumulative market potential energy and 50% of cumulative demand potential in 2017 comes from the non-residential sector. By 2031, the share for non-residential energy falls to 55% (same as the base scenario) and the share of demand is 51% (50% for the base scenario). The lower energy and demand 2031 shares from the non-residential sector in this scenario is from a change of available measures by 2031 between the two scenarios. Several measures, such as the "Custom" measure are approaching measure saturation by 2031 due to the higher incentives and increased budgets.

Figure 20. 1.5% Scenario Technical, Economic, and Cumulative Market Demand Potential (MW)



Source: Navigant 2015

Table 15. 1.5% Scenario Technical, Economic, and Cumulative Market Energy Potential by Sector (GWh)

All Sectors (GWh)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Technical Potential	975	1,027	1,076	1,108	1,137	1,187	1,231	1,277	1,320	1,366	1,395	1,426	1,454	1,475	1,494
Economic Potential	859	901	940	964	981	1,036	1,073	1,112	1,155	1,192	1,214	1,237	1,259	1,272	1,283
Cumulative Market Potential	39	75	113	150	189	227	266	303	344	384	424	464	503	541	579
Residential (GWh)	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Technical Potential	447	487	525	550	572	611	649	688	725	766	792	819	845	863	879
Economic Potential	344	376	404	421	433	466	496	528	566	598	617	636	655	665	674
Cumulative Market Potential	13	25	39	51	62	69	77	88	102	121	142	166	193	224	257
Non- Residential (GWh)	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Technical Potential	528	539	551	558	565	575	582	589	595	600	603	606	610	613	615
Economic Potential	515	525	535	543	549	570	577	584	590	594	598	601	604	607	610
Cumulative Market Potential	26	51	74	99	127	158	189	215	242	262	282	298	310	316	322

Source: Navigant 2015

Table 16. 1.5% Scenario Technical, Economic, and Cumulative Market Demand Potential by Sector (MW)

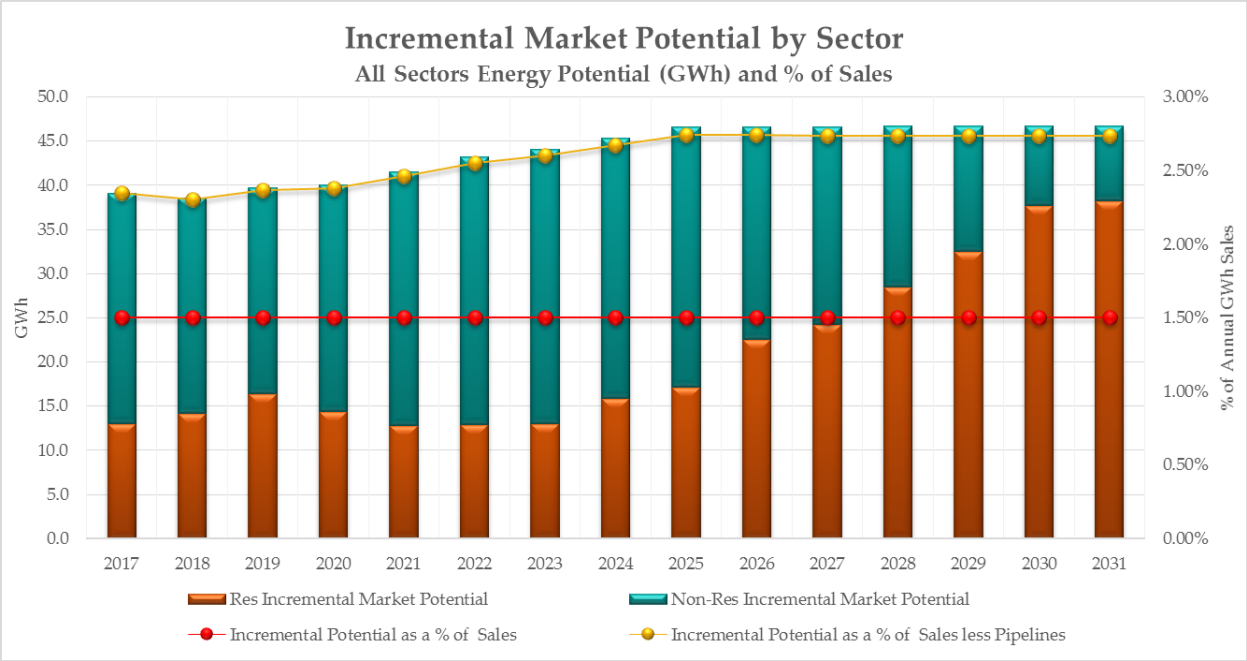
ALL Sectors (MW)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Technical Potential	194	201	208	213	217	224	231	239	245	252	258	265	271	277	283
Economic Potential	109	114	118	121	122	128	133	138	143	147	151	155	159	162	166
Cumulative Market Potential	12	18	24	32	39	47	55	63	71	79	86	93	101	108	115
Res (MW)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Technical Potential	111	117	122	126	129	135	140	146	151	157	162	168	174	179	184
Economic Potential	40	43	46	47	48	51	54	58	62	65	68	71	74	77	80
Cumulative Market Potential	6	8	11	13	15	16	18	20	23	28	32	38	44	51	56
Non-Res (MW)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Technical Potential	82	84	86	87	88	90	91	93	94	95	96	97	98	98	99
Economic Potential	69	71	73	74	75	77	79	80	81	82	83	84	85	85	86
Cumulative Market Potential	6	10	14	19	24	31	37	42	48	51	53	55	56	57	58

Source: Navigant 2015

7.2.1 Scenario 1.5% of Sales Incremental Market Potential

Figure 21 shows the results of the incremental market potential, with the left axis as incremental market potential (GWh) and the right axis as the incremental market potential expressed as a percent of sales. There are two representations of the percent of sales values. The first is a percent of all sales and the second percent of all sales less pipeline sales. Navigant provided the two representations the large share of pipeline sales to total sales ratio in OTP's territory. When considering goals expressed as percent of sales, it may be more appropriate for OTP to have these goals expressed as percent of sales less pipeline sales. The flat red line in Figure 21 illustrates OTP meeting the 1.5% goal each year of the forecast. The yellow line represents what the percentage would be if calculated against total sales less pipeline sales. On average, the yellow line is nearly a full percentage point higher.

Figure 21. 1.5% Scenario Incremental Market Energy Potential by Sector (GWh) and Percent of Sales



Source: Navigant 2015

Table 17 provides the values represented in Figure 21. The modeling team increased incentive, administrative, and budget levels to meet the 1.5% of total sales goal for each year of the forecast. When expressed as a percent of sales less pipeline sales, the values are 2.35% in 2017 increasing to 2.74% by 2031.

At the sector level, the residential share of incremental market potential in 2017 is about 33% of the total incremental market potential. By 2031, the residential share increases to about 82%. This is a higher residential share than found in the base scenario.

Table 17. 1.5% Scenario Incremental Market Energy Potential by Sector (GWh) and Percent of Sales

All Sectors (GWh)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Total Incremental Market Potential	39.1	38.6	39.7	40.1	41.5	43.2	44.1	45.4	46.6	46.6	46.7	46.7	46.7	46.7	46.7
Res Incremental Market Potential	13.0	14.1	16.4	14.4	12.8	12.9	13.0	15.9	17.1	22.5	24.3	28.5	32.5	37.7	38.3
Non-Res Incremental Market Potential	26.1	24.4	23.3	25.7	28.7	30.3	31.1	29.5	29.5	24.1	22.4	18.1	14.2	9.0	8.4
Incremental Potential as a % of Sales	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
Incremental Potential as a % of Sales less Pipelines	2.35%	2.31%	2.37%	2.38%	2.46%	2.55%	2.60%	2.67%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%

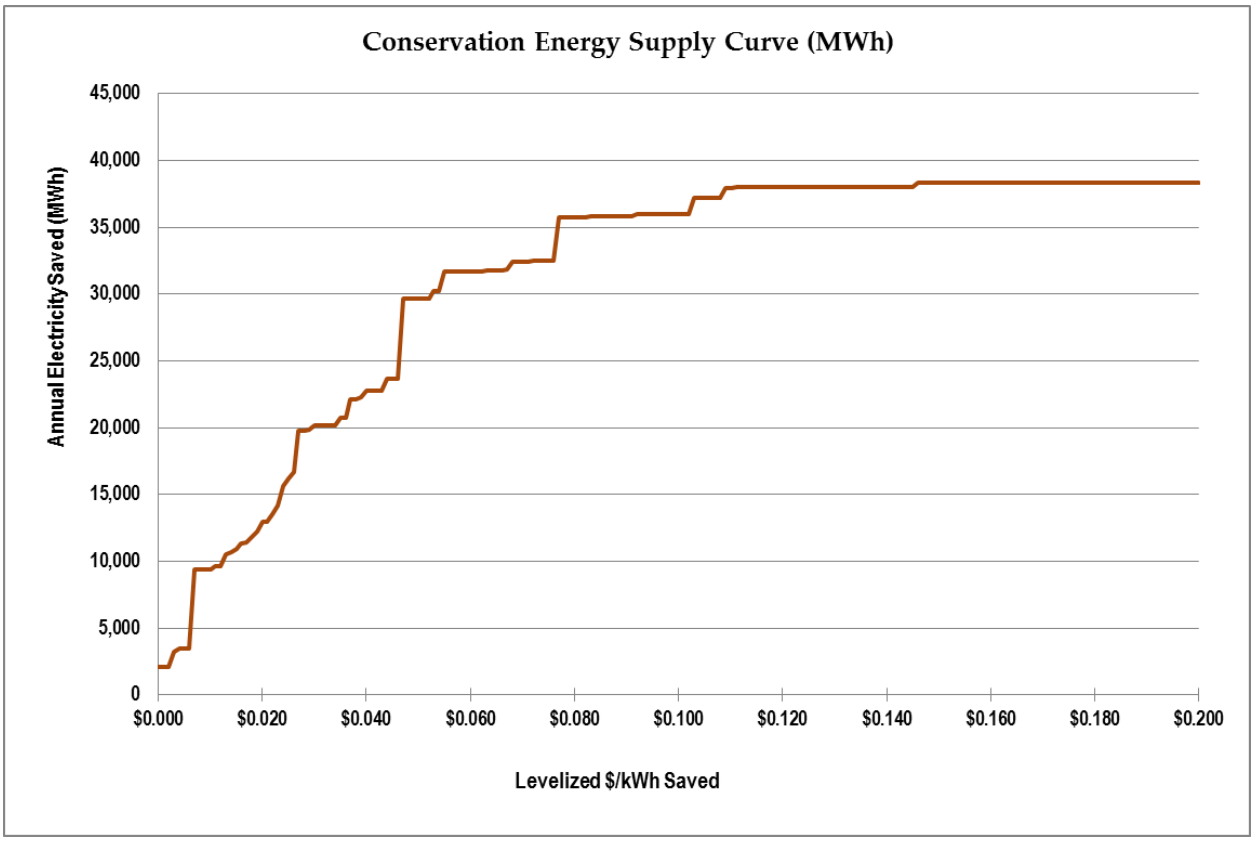
Source: Navigant 2015

7.2.2 Scenario 1.5% of Sales Conservation Supply Curves and Top Fifty Measures

Figure 22 illustrates the 2017 energy DSM potential supply curve. The distribution of savings by percentage category groups include:

- 25% of potential savings cost a levelized 1.1 cents/kWh or less
- 50% of potential 2.7 cents/kWh or less
- 75% of potential 4.7 cents/kWh or less
- 90% of the potential costs 7.7 cents/kWh or less

Figure 22. 1.5% Scenario DSM Energy Supply Curve for 2017



Source: Navigant 2015

Table 18 lists the top 50 measures in terms of potential energy savings for the year 2017. VSDs on non HVAC motors in the commercial sector provides the most savings, representing 12.9% of the total potential savings in 2017. Measures with the designation "New Measure" at the beginning of the measure name are measures currently not in the OTP portfolio.

The top six measures account for 49% of the total 2017 potential savings and include:

- Commercial - VSD on Non HVAC Motors

- Commercial - Occupancy Sensors
- Commercial - Custom
- Res-Exist - CFL Screw-In Lamp - Low (13w avg)
- Res-Exist - Residential Behavior Programs
- Res-Exist - LED Screw-In Lamp - Low (9w avg)

Table 18. 1.5% Scenario Top Fifty Measures in Terms of Energy Savings in 2017

Rank	Top Fifty Measures - 2017	2017 - Energy Savings (MWh)	2017 - Demand Savings (KW)	Energy % of Total	Demand % of Total
1	Commercial - VSD on Non HVAC Motors	5,042	975.6	12.9%	9.8%
2	Commercial - Occupancy Sensors	4,908	187.4	12.5%	1.9%
3	Commercial - Custom	3,180	935.4	8.1%	9.4%
4	Res-Exist - CFL Screw-In Lamp - Low (13w avg)	2,617	399.8	6.7%	4.0%
5	Res-Exist - Residential Behavior Programs	2,086	1,169.4	5.3%	11.8%
6	Res-Exist - LED Screw-In Lamp - Low (9w avg)	1,357	201.1	3.5%	2.0%
7	Commercial - Commercial Design Assistance (COM NC)	1,353	284.7	3.5%	2.9%
8	Commercial - T8 Delamping	1,315	153.8	3.4%	1.5%
9	Res-Exist - Geothermal Heat Pump	1,265	30.6	3.2%	0.3%
10	Industrial - VSD on Non HVAC Motors	684	132.3	1.7%	1.3%
11	Industrial - Occupancy Sensors	668	25.5	1.7%	0.3%
12	New Measure - Res-Exist - ENERGY STAR Clothes Washer (2.07 MEF)	639	81.2	1.6%	0.8%
13	Res-Exist - CFL Screw-In Lamp - High (23w avg)	624	95.3	1.6%	1.0%
14	Commercial - ASHP SEER 18	595	24.4	1.5%	0.2%
15	Commercial - NEMA Premium Efficiency Motors	576	111.5	1.5%	1.1%
16	Res-Exist - High Efficiency ASHP SEER 18	558	170.1	1.4%	1.7%
17	Res-Exist - ENERGY STAR Ceiling Fan/Light	538	41.4	1.4%	0.4%
18	Commercial - ASHP SEER 15	516	13.6	1.3%	0.1%
19	New Measure - Res-Exist - Drainpipe Heat Exchanger on Electric Storage Water Heater	507	57.8	1.3%	0.6%
20	Res-Exist - High Efficiency ASHP SEER 15	495	151.0	1.3%	1.5%
21	Industrial - Custom	492	74.8	1.3%	0.8%
22	Commercial - Geothermal HP (replacing Elec Res Heat)	491	12.6	1.3%	0.1%
23	Commercial - T8 4-Ft Fixture	480	39.9	1.2%	0.4%
24	Commercial - LED Screw-In Lamp (14W Avg)	468	63.9	1.2%	0.6%
25	Commercial - Retrocomissioning	458	7.9	1.2%	0.1%
26	Commercial - T8 Standard Lamp to Low Wattage Retrofit	347	7.7	0.9%	0.1%
27	Commercial - Exterior Screw-In LED (14 W)	307	62.7	0.8%	0.6%
28	Res-Exist - Freezer Recycling	304	36.9	0.8%	0.4%

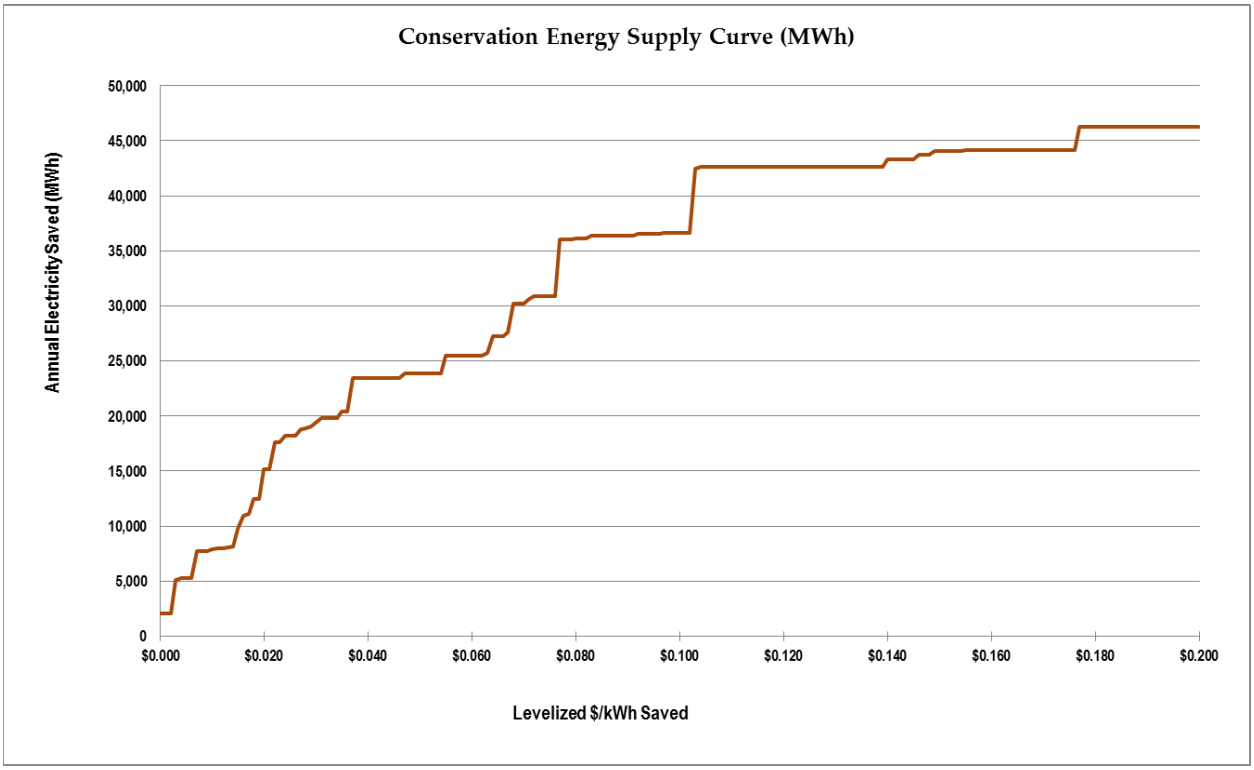
Rank	Top Fifty Measures - 2017	2017 - Energy Savings (MWh)	2017 - Demand Savings (KW)	Energy % of Total	Demand % of Total
29	Res-Exist - LED Screw-In Lamp - High (18w avg)	287	42.8	0.7%	0.4%
30	Commercial - Anti-Sweat Heat (ASH) Controls	227	12.7	0.6%	0.1%
31	Commercial - High Evaporator Temp Cases	222	6.8	0.6%	0.1%
32	Res-Exist - Home Transformer Package (multi-water measures, 2 CFLs, 2 LEDs, block heater)	220	6.5	0.6%	0.1%
33	Res-Exist - Refrigerator Recycling	214	32.2	0.5%	0.3%
34	Commercial - VSD on HVAC Pumps <=10 HP	213	24.3	0.5%	0.2%
35	Commercial - Preventative Refrigeration Maintenance (all store size)	200	41.8	0.5%	0.4%
36	Commercial - Exterior Canopy/Area Lights Retrofit with LEDs	195	39.7	0.5%	0.4%
37	Commercial - Outdoor Air Cooling (Natural Air)	187	5.5	0.5%	0.1%
38	Commercial - Parallel Rack Compressor Retrofit	187	23.3	0.5%	0.2%
39	Industrial - T8 Delamping	178	20.9	0.5%	0.2%
40	Commercial - LED Display Case Lighting	163	32.4	0.4%	0.3%
41	Commercial - VSD on HVAC Fans <=10 HP	150	17.1	0.4%	0.2%
42	Res-Low Income - Home Therapy (Low Income)	142	17.7	0.4%	0.2%
43	Commercial - LED Linear Replacement Lamp	135	1.0	0.3%	0.0%
44	Res-Exist - DWH Control (400 Hours)	132	3,111.0	0.3%	31.3%
45	Res-Exist - Wall insulation	127	0.0	0.3%	0.0%
46	Res-Exist - School Kit	120	8.7	0.3%	0.1%
47	Commercial - CFL Screw-In Lamp (23W Avg)	118	15.2	0.3%	0.2%
48	Commercial - Solid State Controller	118	14.7	0.3%	0.1%
49	Res-Exist - High Efficiency ASHP (replacing Elec Resis Heat)	116	1.6	0.3%	0.0%
50	Commercial - Exit Sign Retrofit with LED	116	13.2	0.3%	0.1%

Source: Navigant 2015

Figure 23 shows the shape of the supply curve flattening out somewhat in 2031 with the potential savings becoming more costly. The distribution of savings by percentage category groups changed from 2017 to 2031 as follows:

- 25% of potential savings cost a levelized 1.1 cents/kWh or less in 2017 and 1.8 cents/kWh in 2031
- 50% of potential 2.7 cents/kWh or less in 2017 and 3.7 cents/kWh in 2031
- 75% of potential 4.7 cents/kWh or less in 2017 and 7.7 cents/kWh in 2031
- 90% of the potential costs 7.7 cents/kWh or less in 2017 and 10.3 cents/kWh in 2031

Figure 23. 1.5% Scenario DSM Energy Supply Curve for 2031



Source: Navigant 2015

Table 19 lists the top 50 measures in terms of potential energy savings for the year 2031. The top six list changed from both the 2017 list as well as the 2031 list from the base scenario. Several measures are near measure saturation by 2031 due to the higher incentives and increased budgets. The residential geothermal heat pump measure is now the measure that provides the most savings, representing 12.5% of the total potential savings in 2031. Measures with the designation "New Measure" at the beginning of the measure name are measures currently not in the OTP portfolio.

The top six measures now account for 47.8% of the total 2031 potential savings, and include:

- Res-Exist - Geothermal Heat Pump
- Res-New - High Efficiency ASHP SEER 18 - NC
- Commercial - Commercial Design Assistance (COM NC)
- Res-Exist - ENERGY STAR Clothes Washer (2.07 MEF)
- Res-Exist - High Efficiency ASHP (replacing Elec Resist Heat)
- Res-Exist - Drainpipe Heat Exchanger on Electric Storage Water Heater

Table 19. 1.5% Scenario Top Fifty Measures in Terms of Energy Savings in 2031

Rank	Top Fifty Measures - 2031	2031 - Energy Savings (MWh)	2031 - Demand Savings (KW)	Energy % of Total	Demand % of Total
1	Res-Exist - Geothermal Heat Pump	5,812	140.6	12.5%	1.1%
2	Res-New - High Efficiency ASHP SEER 18 - NC	5,162	1,573.6	11.1%	12.2%
3	Commercial - Commercial Design Assistance (COM NC)	3,061	644.3	6.6%	5.0%
4	New Measure - Res-Exist - ENERGY STAR Clothes Washer (2.07 MEF)	3,034	385.6	6.5%	3.0%
5	Res-Exist - High Efficiency ASHP (replacing Elec Resis Heat)	2,633	36.9	5.6%	0.3%
6	New Measure - Res-Exist - Drainpipe Heat Exchanger on Electric Storage Water Heater	2,625	299.4	5.6%	2.3%
7	Res-Exist - Home Transformer Package (multi-water measures, 2 CFLs, 2 LEDs, block heater)	2,382	70.3	5.1%	0.5%
8	New Measure - Res-Exist - Solar Space Heating (Displacing Electricity)	2,111	240.9	4.5%	1.9%
9	Res-Exist - Residential Behavior Progams	2,086	1,169.4	4.5%	9.0%
10	Res-Exist - Freezer Recycling	1,594	193.3	3.4%	1.5%
11	Res-New - High Efficiency ASHP SEER 15 - NC	1,549	472.1	3.3%	3.6%
12	Res-Exist - LED Screw-In Lamp - Low (9w avg)	1,533	227.3	3.3%	1.8%
13	Res-Exist - Refrigerator Recycling	1,362	204.7	2.9%	1.6%
14	Res-Exist - Wall insulation	1,315	0.0	2.8%	0.0%
15	Commercial - T8 Standard Lamp to Low Wattage Retrofit	987	22.0	2.1%	0.2%
16	Res-Exist - School Kit	807	58.8	1.7%	0.5%
17	New Measure - Res-Exist - HE Electric Storage Water Heater (.95 EF)	676	77.1	1.4%	0.6%
18	Commercial - Retrocomissioning	571	9.9	1.2%	0.1%
19	Commercial - Exterior Canopy/Area Lights Retrofit with LEDs	426	86.9	0.9%	0.7%
20	Res-Exist - LED Screw-In Lamp - High (18w avg)	417	62.2	0.9%	0.5%
21	Res-Exist - ECM Blower Motor	401	36.6	0.9%	0.3%
22	New Measure - Commercial - Large High Volume Low Speed Ventilation Fans	395	80.1	0.8%	0.6%
23	Commercial - LED Linear Replacement Lamp	394	2.8	0.8%	0.0%
24	Res-Exist - Attic insulation	380	0.0	0.8%	0.0%
25	New Measure - Res-Exist - High Efficiency Central AC System SEER 21	310	725.6	0.7%	5.6%
26	New Measure - Res-New - Solar Space Heating (Displacing Electricity)	297	33.9	0.6%	0.3%
27	New Measure - Res-Exist - High Efficiency Central AC System SEER 18	242	567.9	0.5%	4.4%
28	New Measure - Res-Exist - LED Holiday Lights	225	0.0	0.5%	0.0%
29	New Measure - Res-Exist - High Efficiency Room AC (1 Ton; 11 EER Avg)	196	452.2	0.4%	3.5%

Rank	Top Fifty Measures - 2031	2031 - Energy Savings (MWh)	2031 - Demand Savings (KW)	Energy % of Total	Demand % of Total
30	Res-Exist - DWH Control (400 Hours)	174	4,104.9	0.4%	31.7%
31	Commercial - GSHP Units (open loop) EER 20.1	164	9.0	0.4%	0.1%
32	Commercial - GSHP Units (closed loop) EER 17.1	163	10.1	0.4%	0.1%
33	Commercial - Desktop: ES 5 + 20%	161	37.6	0.3%	0.3%
34	New Measure - Commercial - Vending Machine Automatic Shutoff Control	159	4.9	0.3%	0.0%
35	Commercial - Occupancy Sensors - NC	155	2.6	0.3%	0.0%
36	Res-Low Income - Home Therapy (Low Income)	142	17.7	0.3%	0.1%
37	Commercial - ENERGY STAR Freezer w/ Glass Door	139	14.3	0.3%	0.1%
38	Industrial - T8 Standard Lamp to Low Wattage Retrofit	134	3.0	0.3%	0.0%
39	Commercial - Exterior Wall Pack Retrofit with LEDs	122	24.9	0.3%	0.2%
40	Commercial - Desktop: ES 5 (w/ 80 Plus)	118	27.6	0.3%	0.2%
41	Res-New - ENERGY STAR CFL Torchiere - NC	110	10.0	0.2%	0.1%
42	Industrial - Server ES 1	108	25.1	0.2%	0.2%
43	New Measure - Res-Exist - High Efficiency Central AC System SEER 15	100	234.8	0.2%	1.8%
44	New Measure - Commercial - HVAC System with Economizer	100	11.4	0.2%	0.1%
45	Commercial - Desktop: ES 5	99	23.0	0.2%	0.2%
46	New Measure - Res-Exist - High Efficiency Refrigerator	96	11.0	0.2%	0.1%
47	Res-Exist - LED Screw-In Lamp - CFL Base - Low (9w avg)	88	8.9	0.2%	0.1%
48	New Measure - Res-New - High Efficiency Refrigerator - NC	87	9.9	0.2%	0.1%
49	Res-New - LED Screw-In Lamp - CFL Base - Low (9w avg) - NC	73	7.4	0.2%	0.1%
50	Res-Exist - LED Screw-In Lamp - CFL Base - High (18w avg)	69	7.0	0.1%	0.1%

Source: Navigant 2015

7.2.3 Scenario 1.5% of Sales Program Costs

Table 20 provides a summary of base case model results for the planning years of 2017, 2018, and 2019. Included in the table is year by year information for the residential, non-residential and sector totals on:

- Incremental and cumulative energy and demand potential savings
- Incremental energy savings as a percent of sales; both with and without pipeline sales
- Incremental administrative and incentive costs
- Other program related costs (based on 2015 values)

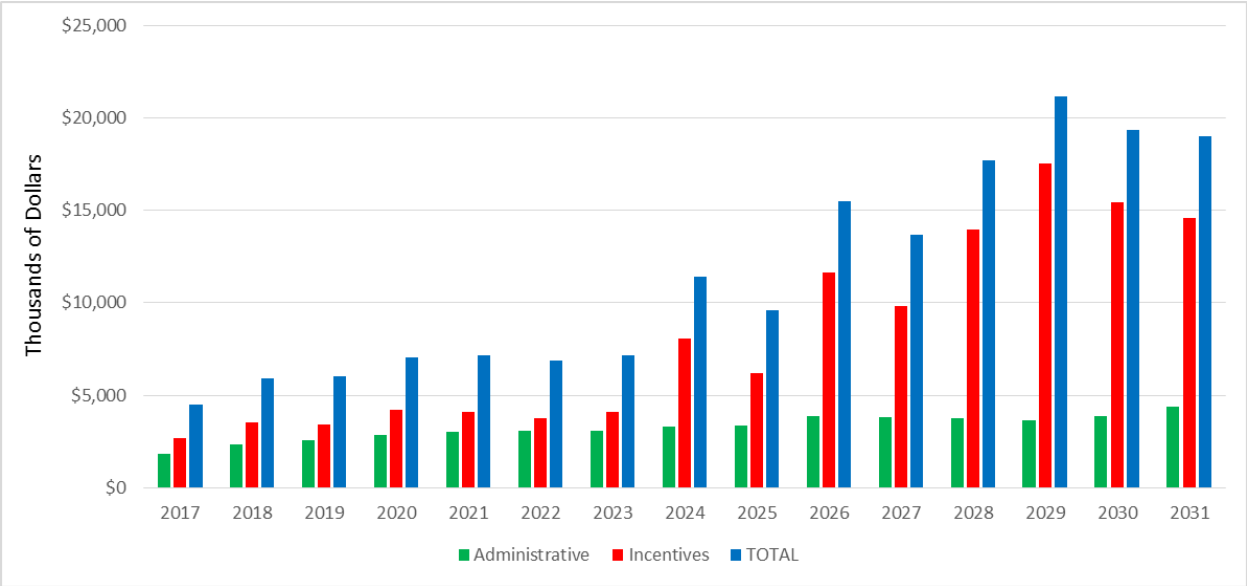
Table 20. 1.5% Scenario Total DSM Savings and Costs for 2017, 2018, and 2019

Year	Total DSM Savings and Costs (Net at Meter) - All Sectors										
	Energy Savings (GWh)		Peak Demand Savings (MW)		Energy Savings As a % of Sales		Program Administrator Costs (million $)				
	Incremental	Cumulative	Incremental	Cumulative	Incremental Potential as % of Sales	Incremental Potential as % of Sales Less Pipeline	Incremental Admin Costs	Incremental Incentive Cost	Other Sector Based (based on 2015)	Other Non-Sector Based (based on 2015)	Total
2017	39.1	39.1	11.9	11.9	1.50%	2.35%	$1.8	$2.7	$0.4	$0.8	$4.9
2018	38.6	75.5	12.4	17.9	1.50%	2.31%	$2.4	$3.5	$0.4	$0.8	$6.3
2019	39.7	112.7	13.1	24.4	1.50%	2.37%	$2.6	$3.4	$0.4	$0.8	$6.4
Total DSM Savings and Costs (Net at Meter) - Residential Sector (Includes Low Income)											
2017	13.0	13.0	6.1	6.1			$0.9	$0.9	$0.2		$2.1
2018	14.1	24.9	6.4	8.2			$1.2	$1.4	$0.2		$2.8
2019	16.4	39.1	6.9	10.7			$1.3	$1.5	$0.2		$3.0
Total DSM Savings and Costs (Net at Meter) - Commercial / Industrial Sector											
2017	26.1	26.1	5.8	5.8			$0.9	$1.8	$0.1		$2.8
2018	24.4	50.6	6.0	9.7			$1.2	$2.2	$0.1		$3.5
2019	23.3	73.6	6.2	13.7			$1.3	$1.9	$0.1		$3.4

Source: Navigant 2015

Figure 24 and Table 21 provide estimates of administrative and incentive costs by year over the forecast horizon of 2017 through 2031. All costs are expressed in 2015 real $s.

Figure 24. 1.5% Scenario DSM Program Incentive and Administrative Costs (Thousands of Dollars)



Source: Navigant 2015

Total expenditures increase over the forecast period, reflecting the additional program budgets needed to meet the 1.5% of sales goals. The growth in costs is more rapid than the energy savings, as shown in Figure 24. Administrative costs are about 20-45% of total program costs, depending on the year.

Table 21. 1.5% Scenario Program Incentive and Administrative Costs ($ Thousands)

Cost Type	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Administrative	$1,835	$2,368	$2,571	$2,832	$3,016	$3,065	$3,073	$3,331	$3,359	$3,881	$3,831	$3,758	$3,665	$3,871	$4,403
Incentives	$2,664	$3,549	$3,432	$4,216	$4,124	$3,785	$4,111	$8,050	$6,212	$11,615	$9,832	$13,961	$17,510	$15,443	$14,597
TOTAL	$4,499	$5,917	$6,003	$7,047	$7,141	$6,850	$7,184	$11,381	$9,572	$15,496	$13,663	$17,720	$21,176	$19,315	$19,000

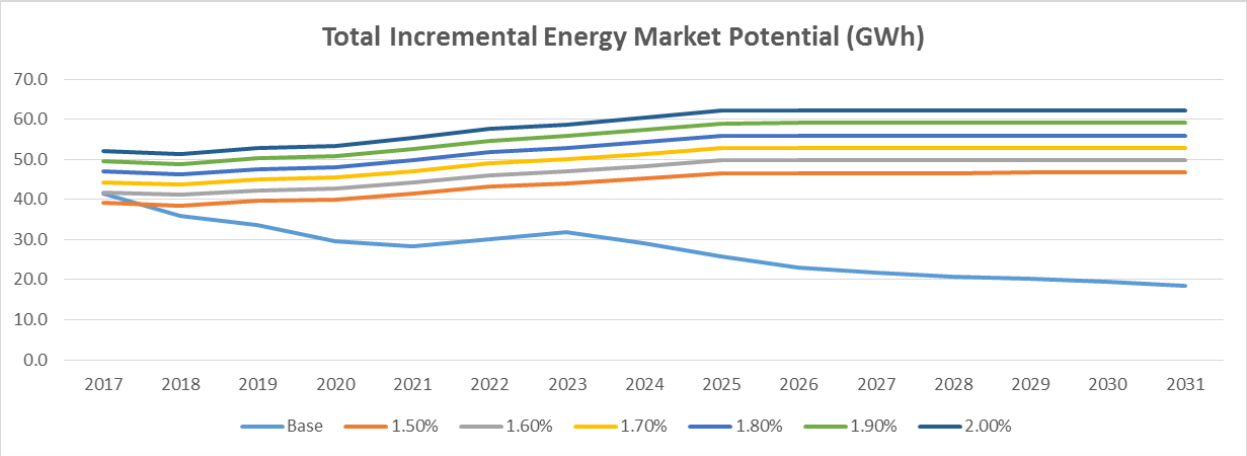
Source: Navigant 2015

7.3 Total Potential – Remaining Scenarios up to 2% of Sales

OTP requested modeling scenarios beyond the 1.5% of sales goal to understand if such were achievable, and at what cost. Navigant created scenarios at 0.1% increments starting at 1.6% up through 2.0% over the forecast period. The modeling team increased incentives, administrative costs, and program budgets to meet each scenario goal.

Figure 25 illustrates the annual incremental market potential by scenario and year. Table 22 provides the values illustrated in Figure 25. All the scenarios diverge quickly from the base "business as usual" scenario indicating that OTP would need to rapidly increase funds to achieve the higher scenario levels.

Figure 25. Incremental Market Potential by Scenario (GWh)



Source: Navigant 2015

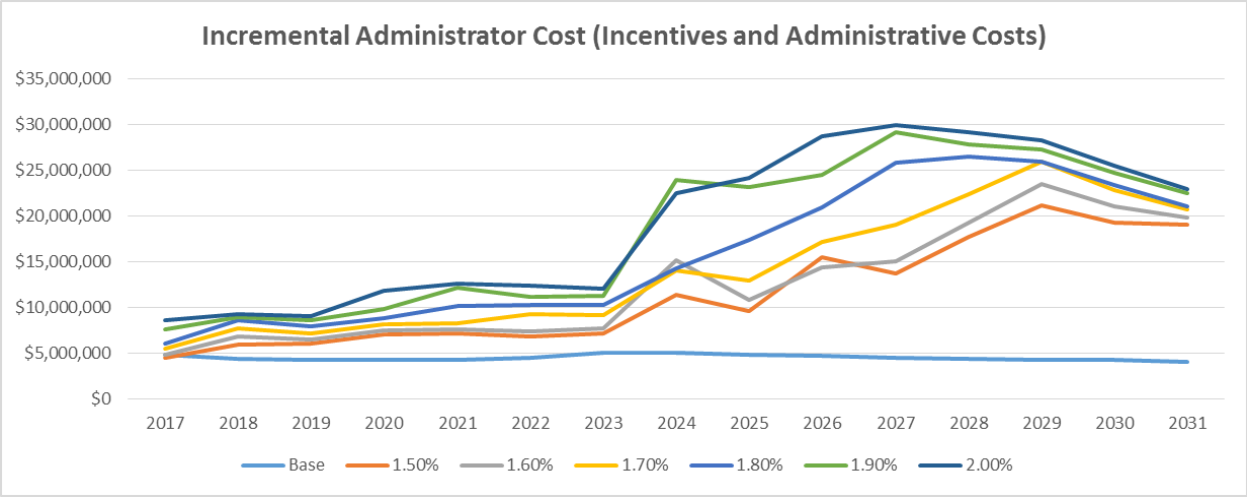
Table 22. Incremental Market Potential by Scenario (GWh)

All Sectors (GWh)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Base	41.5	35.9	33.6	29.7	28.2	30.1	32.0	29.2	25.9	23.0	21.7	20.8	20.2	19.5	18.5
1.50%	39.1	38.6	39.7	40.1	41.5	43.2	44.1	45.4	46.6	46.6	46.7	46.7	46.7	46.7	46.7
1.60%	41.7	41.1	42.3	42.7	44.3	46.1	47.0	48.4	49.7	49.7	49.8	49.8	49.8	49.8	49.8
1.70%	44.3	43.7	45.0	45.4	47.1	49.0	50.0	51.4	52.8	52.9	52.9	52.9	52.9	52.9	52.9
1.80%	46.9	46.3	47.6	48.1	49.9	51.8	52.9	54.4	55.9	56.0	56.0	56.0	56.0	56.0	56.0
1.90%	49.5	48.8	50.3	50.8	52.7	54.7	55.9	57.5	59.0	59.1	59.1	59.1	59.1	59.1	59.2
2.00%	52.2	51.4	52.9	53.4	55.4	57.6	58.8	60.5	62.1	62.2	62.2	62.2	62.2	62.2	62.2

Source: Navigant 2015

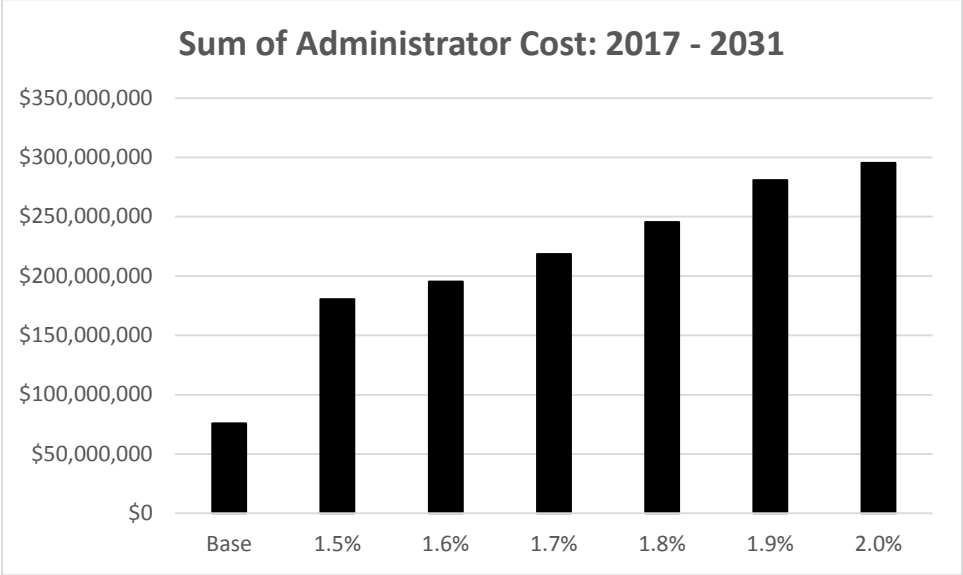
Figure 26 illustrates what the incremental cost impacts would be to achieve each of the scenario levels. Figure 27 5 illustrates the cumulative administrator cost by scenario over the 2017 through 2031 time period. The administrator cost is the sum of administrative cost and incentive cost. The base scenario is the "business as usual" scenario where incentives and administrator costs remain as they are currently. All costs are expressed in 2015 real $s.

Figure 26. Incremental Administrator Cost by Scenario



Source: Navigant 2015

Figure 27. Cumulative Administrator Cost by Scenario (2017-2031)



Source: Navigant 2015

Table 23 displays the values illustrated in Figure 26 and Figure 27. The 2.0% of sales scenario proves to be especially costly over the entire forecast horizon. The cumulative administrator cost over the period 2017 through 2031 for the 2.0% scenario is 164% greater than the 1.5% scenario and 390% greater than the base scenario. In contrast, the cumulative of incremental energy savings over this time frame for the 2% scenario is 130% greater than the 1.5% scenario and 197% of the base scenario. The cost/kWh is $0.156 for the base case; rises rapidly to $0.246 for the 1.5% scenario and increases with each succeeding scenario to $0.310 for the 2% scenario.

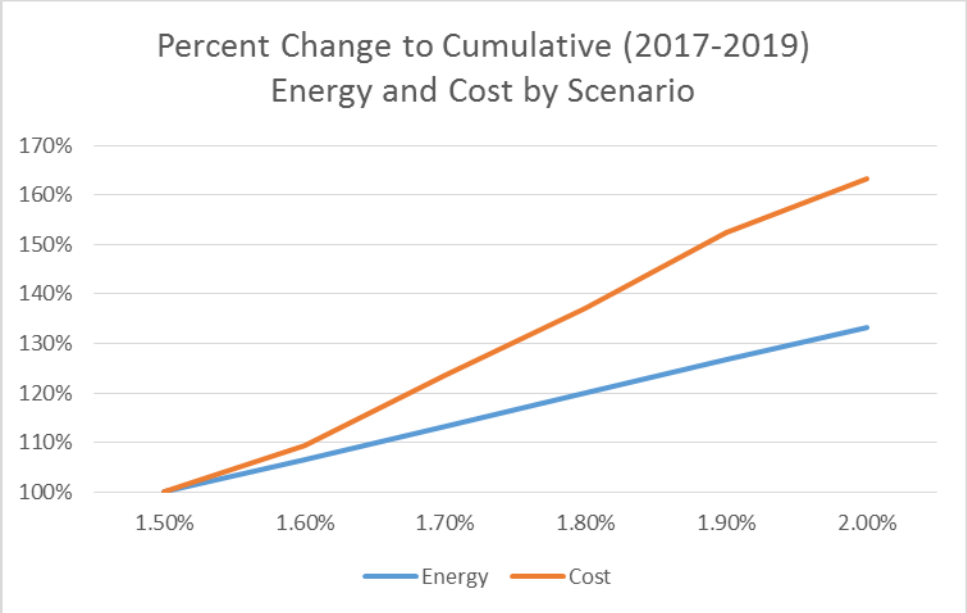
Table 23. Incremental and Total Administrator Cost by Scenario ($ and $/kWh)

Scenario	2017	2018	2019	2020	2021	2022	2023	ta2024	2025	2026	2027	2028	2029	2030	2031	Sum 2017 - 2031	Cost/kWh
Base	$4,761,274	$4,374,874	$4,278,151	$4,285,840	$4,268,492	$4,442,193	$5,057,158	$5,024,716	$4,840,897	$4,629,534	$4,478,431	$4,321,669	$4,289,326	$4,194,358	$4,036,577	$75,739,689	$0.156
1.50%	$4,499,070	$5,917,208	$6,003,134	$7,047,286	$7,140,769	$6,849,860	$7,184,140	$11,380,896	$9,571,697	$15,496,337	$13,662,661	$17,719,670	$21,175,541	$19,314,517	$19,000,258	$180,419,244	$0.246
1.60%	$4,787,637	$6,757,604	$6,427,051	$7,467,927	$7,534,130	$7,309,285	$7,637,643	$15,194,437	$10,775,775	$14,346,252	$15,084,705	$19,305,333	$23,518,666	$21,024,096	$19,800,893	$195,427,633	$0.252
1.70%	$5,492,949	$7,632,083	$7,180,661	$8,107,110	$8,214,340	$9,259,974	$9,182,642	$14,084,478	$12,870,299	$17,124,692	$19,085,695	$22,377,074	$25,947,081	$22,781,601	$20,690,322	$218,487,202	$0.266
1.80%	$6,024,611	$8,604,338	$7,869,206	$8,846,779	$10,156,474	$10,218,799	$10,242,819	$14,218,632	$17,352,883	$20,905,403	$25,835,194	$26,507,041	$25,934,898	$23,342,555	$21,026,731	$245,542,564	$0.284
1.90%	$7,534,509	$8,889,266	$8,600,915	$9,852,154	$12,092,584	$11,144,072	$11,278,568	$23,925,301	$23,113,305	$24,464,693	$29,194,405	$27,892,936	$27,252,619	$24,674,495	$22,550,404	$280,916,423	$0.309
2.00%	$8,538,390	$9,241,626	$9,051,460	$11,837,981	$12,568,061	$12,362,158	$12,035,624	$22,457,681	$24,141,109	$28,756,101	$29,909,055	$29,227,766	$28,265,068	$25,505,330	$22,957,481	$295,311,092	$0.310

Source: Navigant 2015

Focusing on the near term (2017-2019), Figure 28 illustrates the percentage change in cumulative energy savings potential and cost by scenario. The cumulative additional administrator cost over the three years of the 2.0% scenario is $10.4 million more than the 1.5% scenario and $13.4 million more than the base "business as usual" scenario.

Figure 28. Percent Change to Cumulative (2017-2019) Energy and Cost by Scenario



Source: Navigant 2015

7.4 Direct Load Control

OTP has a number of direct load control programs. Some designed to reduce summer peak demand, others winter peak demand, and there are strategies within programs designed to reduce both summer and winter peak demand or provide load shifting. The primary incentive to participate in these programs are special controlled service rates that are about 30-50 percent less than OTP standard rates. The following are programs and strategies offered through OTP. Several of the programs provide both summer and winter load control. Those that provide both summer and winter control (such as heat pumps) are included in the separate summer and winter categories.

- Summer Load - Air Conditioning Control - Res
- Summer Load - Air Conditioning Control - Com
- Summer Load - Water Heat Control - Com
- Summer Load - Water Heat Control - Res
- Summer Load - Residential Demand Control
- Winter Load - Residential Demand Control

- Winter Load - Deferred Load - Res
- Winter Load - Deferred Load - Com
- Winter Load - Fixed Time of Delivery - Res
- Winter Load - Fixed Time of Delivery - Com
- Winter Load - Small Dual Fuel - Res
- Winter Load - Small Dual Fuel - Com
- Winter Load - Large Dual Fuel - Com

7.4.1 Program Descriptions

7.4.1.1 CoolSavings Air Conditioning Control

This program is open to all customers with central air conditioning. In this program, OTP cycles the participant's air conditioner on and off every 15 minutes during summer peak conditions. Participants receive a $7 credit on their electric bill each month from June through September. There is no cost to participate. OTP installs a radio receiver, allowing them to cycle the cooling system. Commercial customers in MN may qualify to receive a $5 per ton credit on their electric bill each month from June through September.

7.4.1.2 Residential Demand Control

Residential demand control (RDC) provides participants a rate that's about 25 percent lower than the standard electricity rates. Customers who have RDC units installed in their homes typically save about $300 a year on their energy costs. RDC works best if a participant uses electricity for all or part of their home-heating needs or if the participant has higher-than-average electricity use. Under the program, OTP will on occasional control operation of certain appliances. To participate, all electric load in the home is available for control down to the demand limit preset by the customer. Load is available for control during the winter season only. Water heating loads are controlled throughout the year.

7.4.1.3 Deferred Load

The Deferred Load rate saves participants up to 30 percent when compared to the standard electric rates. This special rate is open to both residential and non-residential customers. It works with thermal-storage technologies, including:

- Underfloor heating
- Central-storage furnaces
- Room units
- Thermal-storage cooling

These technologies charge during off-peak hours to keep the building warm (or cool) during energy control periods. Radio signals control service during peak and emergency conditions.

Additionally, cycled energy control is available during the summer season (June through September). That means that an air-source heat pump installed on this rate are available for cycling 15 minutes on, 15 minutes off, during peak periods.

7.4.1.4 Fixed Time of Delivery (TOD)

With the Fixed Time of Delivery Rate, OTP delivers electricity between 10 p.m. and 6 a.m. when demand on the system is low, to recharge thermal-storage heating or cooling systems. The energy stored at night is released throughout the day to keep the home or business warm or cool. This rate is less than half the standard price for electricity.

Thermal-storage heating systems include:

- Underfloor heat storage
- Central storage furnaces
- Room-sized units

Thermal-storage cooling system technologies can be installed in buildings to meet summer cooling needs.

7.4.1.5 Small and Large Dual Fuel

In a dual-fuel system electricity is the primary heating fuel during normal off-peak conditions. A non-electric backup system supplies heat during energy control. OTP sends radio signals to switch from one fuel to the other automatically. OTP supplies and installs the necessary meter and radio controls. Dual fuel options include:

- Plenum heaters - installed where the existing furnace and the ductwork system meet. Air warms as it flows over heating elements inside the plenum.
- Air-source heat pumps - under the dual fuel rates, the units are cycled on and off in 15-minute increments, but only during peak summer control periods.
- Fossil fuel/electric boilers - heats water distributed to radiators, hydronic baseboards, or in-floor hydronic heating system.
- For areas that aren't well heated, supplemental electric heat installed as part of a dual-fuel system can help keep every room comfortable.
    - Electric baseboard – units are installed near the floor
    - Cove heat - radiant heaters are installed near the ceiling.
    - Ceiling panels - radiant panels embedded with heating cables installed in the ceiling.

7.4.1.6 Water Heater Control

This program is open to all customers with electric water heaters. The Controlled Service Water Heating rate is about 25 percent less than our standard price for electricity. Water heater control can also occur under a number of different programs when the customer also has a heating system that is subject to control such as:

- Deferred Load
- RDC
- Dual Fuel

7.4.2 Methodology

The method used to estimate future load reduction installed capacity for the load control programs utilized the same decision maker logic used for the DSM programs. What is forecast by ELRAM are the new additions to the load control programs and their cost.

The decision maker logic is based on payback diffusion curves. However, the payback diffusion curve logic is modeled using energy and not demand capacity. This required that the load control capacities be tied to an artificial energy savings value. The demand capacity per application utilized the model's energy/demand ratios. The ratios were set so that each application provides all of the kW capacity expected, but only 1 kWh of savings.

7.4.3 Technical and Economic Potential

Technical and economic potential are the same amount as all of the load control programs have a TRC of at least 1.0. Figure 29 illustrates the technical/economic potential and total installed kW for controlled loads by program in 2017. On average, the OTP direct load control programs installed kW is about 17% of technical potential. The highest percentage at 29% of technical potential is the commercial sector small dual fuel program. The lowest percentage at 2% of technical potential is the commercial sector A/C cycling program.

The commercial sector large dual fuel program provides the most technical/economic potential at 177.7 MW but control of residential water heaters provides the greatest amount of installed kW at 38.9 MW by 2017. The smallest amount of technical/economic potential at 18.6 MW is provided by the control of commercial sector water heaters and the smallest amount of installed kW at 0.5 MW is from the commercial sector A/C cycling program in 2017.

Table 24 provides the technical/economic program potential data by year. Table 25 provides the total installed kW by program by year.

Figure 29. Installed kW and Technical/Economic Potential for Direct Load Control Programs in 2017

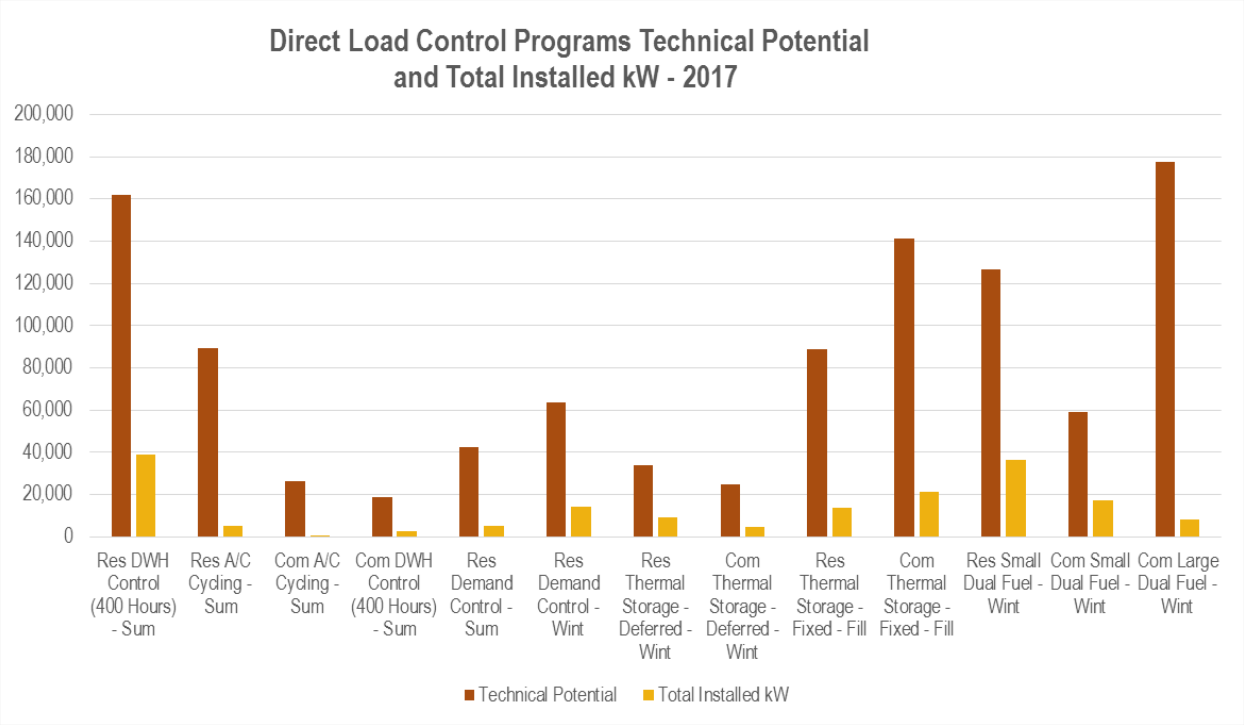


Table 24. Installed kW Technical/Economic Potential for Direct Load Control Programs

Program	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Res DWH Control (400 Hours) - Sum	162,104	162,885	163,576	164,226	164,808	165,150	165,324	165,391	165,391	165,391	165,391	165,391	165,391	165,391	165,391
Res A/C Cycling - Sum	89,216	89,645	90,026	90,384	90,704	90,892	90,988	91,025	91,025	91,025	91,025	91,025	91,025	91,025	91,025
Com A/C Cycling - Sum	26,103	26,184	26,261	26,337	26,411	26,475	26,532	26,586	26,636	26,683	26,727	26,770	26,808	26,842	26,874
Com DWH Control (400 Hours) - Sum	18,563	18,620	18,675	18,729	18,781	18,827	18,868	18,906	18,941	18,975	19,007	19,037	19,064	19,088	19,111
Res Demand Control - Sum	42,245	42,203	42,160	42,118	42,076	42,034	41,992	41,950	41,908	41,866	41,824	41,783	41,741	41,699	41,657
Res Demand Control - Wint	63,367	63,304	63,241	63,177	63,114	63,051	62,988	62,925	62,862	62,799	62,737	62,674	62,611	62,549	62,486
Res Thermal Storage - Deferred - Wint	33,928	33,894	33,860	33,826	33,792	33,759	33,725	33,691	33,657	33,624	33,590	33,557	33,523	33,490	33,456
Com Thermal Storage - Deferred - Wint	24,685	24,761	24,834	24,906	24,975	25,036	25,090	25,141	25,188	25,232	25,275	25,315	25,351	25,383	25,413
Res Thermal Storage - Fixed - Fill	88,714	88,626	88,537	88,448	88,360	88,272	88,183	88,095	88,007	87,919	87,831	87,743	87,656	87,568	87,480
Com Thermal Storage - Fixed - Fill	140,957	141,392	141,809	142,220	142,618	142,964	143,275	143,562	143,832	144,086	144,328	144,555	144,761	144,949	145,120
Res Small Dual Fuel - Wint	126,735	126,608	126,481	126,355	126,229	126,102	125,976	125,850	125,724	125,599	125,473	125,348	125,222	125,097	124,972
Com Small Dual Fuel - Wint	59,243	59,425	59,601	59,774	59,941	60,086	60,217	60,338	60,451	60,558	60,659	60,755	60,842	60,920	60,992
Com Large Dual Fuel - Wint	177,728	178,276	178,802	179,321	179,822	180,259	180,650	181,013	181,354	181,673	181,978	182,265	182,525	182,761	182,977

Table 25. Total Installed kW Forecast by Program and Year

Program	Total Installed kW 2017	Total Installed kW 2018	Total Installed kW 2019	Total Installed kW 2020	Total Installed kW 2021	Total Installed kW 2022	Total Installed kW 2023	Total Installed kW 2024	Total Installed kW 2025	Total Installed kW 2026	Total Installed kW 2027	Total Installed kW 2028	Total Installed kW 2029	Total Installed kW 2030	Total Installed kW 2031
Res DWH Control (400 Hours) - Sum	38,935	39,030	39,128	39,227	39,329	39,432	39,537	39,645	39,755	39,867	39,981	40,097	40,216	40,337	40,461
Res A/C Cycling - Sum	5,288	5,759	6,253	6,744	7,239	7,733	8,228	8,724	9,219	9,714	10,210	10,705	11,201	11,696	12,191
Com A/C Cycling - Sum	532	705	887	1,068	1,250	1,432	1,615	1,798	1,982	2,165	2,350	2,534	2,719	2,903	3,089
Com DWH Control (400 Hours) - Sum	2,389	2,419	2,450	2,481	2,513	2,545	2,578	2,612	2,646	2,681	2,717	2,753	2,791	2,829	2,867
Res Demand Control - Sum	5,004	5,067	5,132	5,198	5,266	5,335	5,405	5,477	5,550	5,625	5,701	5,778	5,858	5,938	6,021
Res Demand Control - Wint	14,345	14,441	14,538	14,638	14,739	14,842	14,948	15,055	15,165	15,277	15,391	15,508	15,626	15,748	15,871
Res Thermal Storage - Deferred - Wint	9,023	9,219	9,428	9,638	9,848	10,058	10,267	10,476	10,685	10,893	11,102	11,309	11,517	11,724	11,931
Com Thermal Storage - Deferred - Wint	4,701	4,722	4,744	4,766	4,789	4,812	4,835	4,859	4,883	4,908	4,934	4,959	4,986	5,013	5,040
Res Thermal Storage - Fixed - Fill	13,668	14,006	14,345	14,687	15,026	15,366	15,704	16,044	16,381	16,720	17,057	17,394	17,730	18,067	18,402
Com Thermal Storage - Fixed - Fill	21,445	21,999	22,560	23,127	23,692	24,262	24,831	25,403	25,975	26,549	27,123	27,699	28,276	28,853	29,432
Res Small Dual Fuel - Wint	36,240	37,739	39,321	40,954	42,615	44,291	45,973	47,658	49,344	51,029	52,712	54,394	56,073	57,750	59,425
Com Small Dual Fuel - Wint	16,995	17,479	17,995	18,527	19,066	19,609	20,153	20,700	21,249	21,798	22,350	22,902	23,456	24,010	24,566
Com Large Dual Fuel - Wint	8,365	8,630	8,901	9,177	9,459	9,746	10,039	10,337	10,642	10,953	11,270	11,593	11,923	12,260	12,603

Figure 30 illustrates the 2017 technical/economic and total installed kW for controlled loads by type of program in 2017. The greatest technical/economic potential is from residential summer controlled loads. The largest amount of installed kW is from residential winter controlled loads. Table 26 provides the data for this figure as well as for the years through 2031.

Figure 30. Installed kW Technical/Economic Potential for Direct Load Control Programs by Sector and Type in 2017

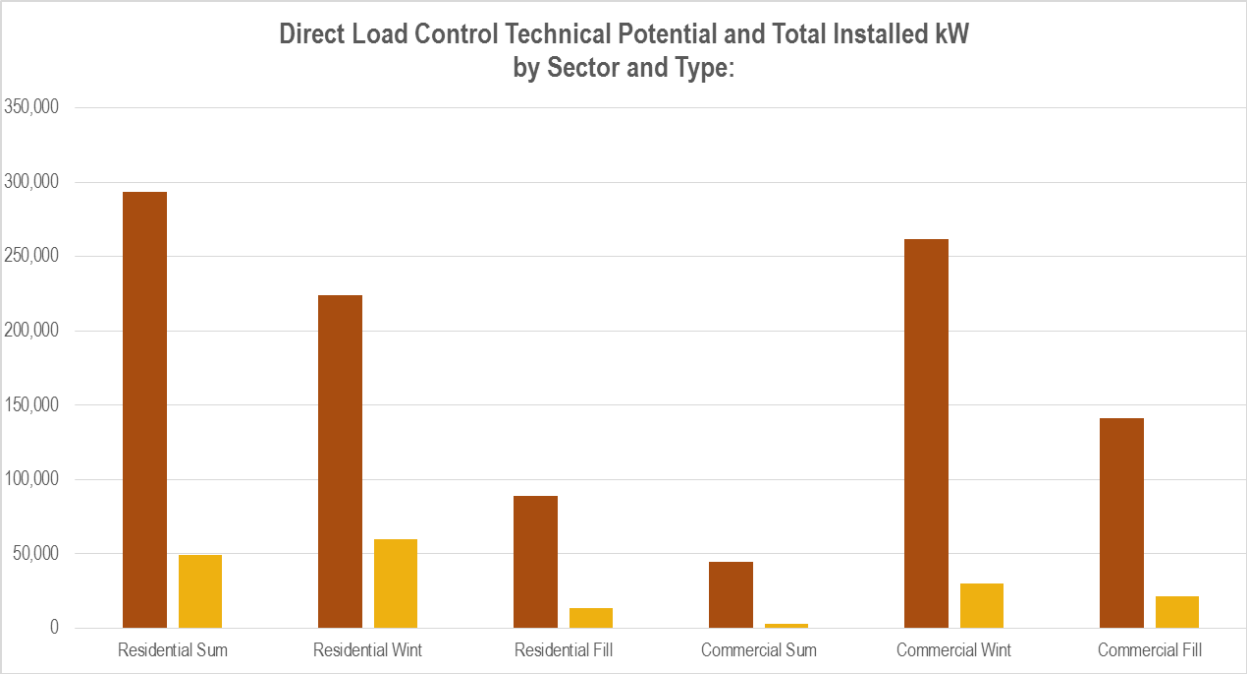


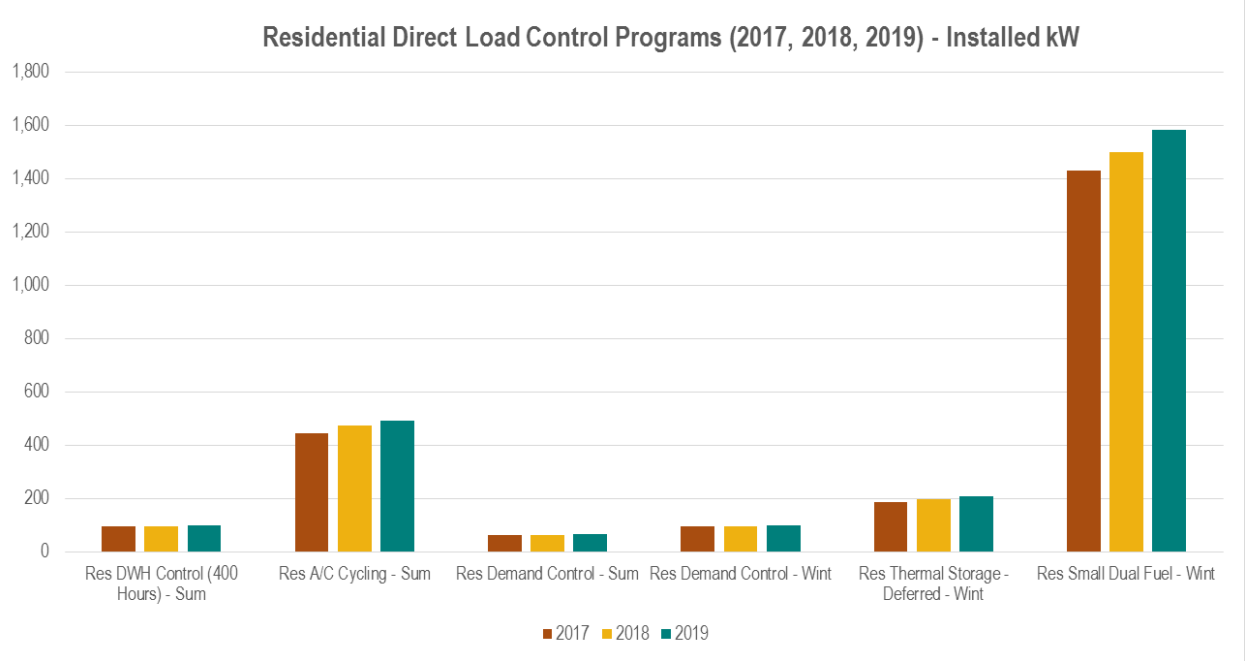
Table 26. Installed kW Technical/Economic Potential for Direct Load Control Programs by Sector and Type

Technical Potential	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Residential Sum	293,564	294,733	295,762	296,729	297,588	298,077	298,305	298,367	298,325	298,283	298,241	298,199	298,157	298,116	298,074
Residential Wint	224,030	223,806	223,582	223,359	223,135	222,912	222,689	222,466	222,244	222,022	221,800	221,578	221,356	221,135	220,914
Residential Fill	88,714	88,626	88,537	88,448	88,360	88,272	88,183	88,095	88,007	87,919	87,831	87,743	87,656	87,568	87,480
Commercial Sum	44,666	44,804	44,936	45,066	45,192	45,302	45,400	45,491	45,577	45,657	45,734	45,806	45,871	45,931	45,985
Commercial Wint	261,656	262,462	263,237	264,000	264,739	265,381	265,957	266,491	266,993	267,464	267,912	268,335	268,717	269,065	269,382
Commercial Fill	140,957	141,392	141,809	142,220	142,618	142,964	143,275	143,562	143,832	144,086	144,328	144,555	144,761	144,949	145,120
Total	1,053,588	1,055,821	1,057,863	1,059,822	1,061,632	1,062,908	1,063,810	1,064,473	1,064,978	1,065,431	1,065,845	1,066,217	1,066,519	1,066,762	1,066,955
Installed kW	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Residential Sum	49,226	49,857	50,513	51,169	51,833	52,500	53,171	53,846	54,524	55,206	55,891	56,581	57,274	57,971	58,673
Residential Wint	59,609	61,399	63,287	65,230	67,202	69,191	71,188	73,190	75,194	77,199	79,205	81,211	83,217	85,222	87,228
Residential Fill	13,668	14,006	14,345	14,687	15,026	15,366	15,704	16,044	16,381	16,720	17,057	17,394	17,730	18,067	18,402
Commercial Sum	2,922	3,124	3,336	3,549	3,763	3,977	4,193	4,410	4,628	4,847	5,067	5,287	5,509	5,732	5,956
Commercial Wint	30,061	30,832	31,640	32,470	33,313	34,166	35,027	35,897	36,774	37,660	38,553	39,455	40,365	41,283	42,210
Commercial Fill	21,445	21,999	22,560	23,127	23,692	24,262	24,831	25,403	25,975	26,549	27,123	27,699	28,276	28,853	29,432
Total	**176,930**	**181,218**	**185,682**	**190,232**	**194,829**	**199,462**	**204,115**	**208,788**	**213,476**	**218,180**	**222,896**	**227,627**	**232,371**	**237,129**	**241,900**

7.4.4 Controlled Load Base Results

Figure 31 illustrates the projected incremental load reduction installed capacity in the years 2017, 2018, and 2019 from residential sector direct load control programs. Included in the figure are projected load reductions for summer load reduction and winter load reduction. Each bar represents an incremental addition to the installed kW by program. For example, for residential A/C cycling, in 2017, the incremental addition to installed kW is 443 kW, followed in 2018 by an additional 472 kW, and in 2019 494 kW. The residential dual fuel program, which provides winter load reduction, provides the largest amount of load reduction installed capacity. A/C cycling provides the second largest amount of load reduction installed capacity with its capacity available in the summer. The data for this figure is included in Table 27.

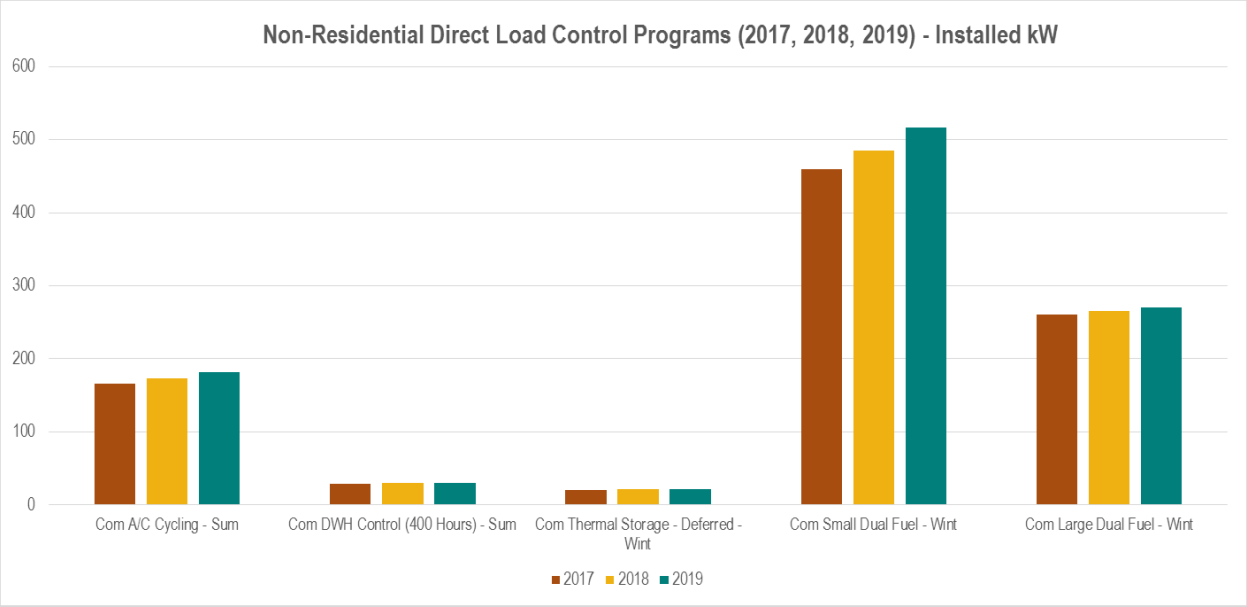
Figure 31. Residential Direct Load Control Programs (kW Installed)



Source: Navigant 2015

Figure 32 illustrates the projected incremental load reduction installed capacity in the years 2017, 2018, and 2019 from non-residential sector direct load control programs. The non-residential large and small dual fuel programs provide the largest amount of load reduction installed capacity. Each of these programs provides winter peak load reduction potential. A/C cycling provides the largest summer load reduction installed capacity potential.

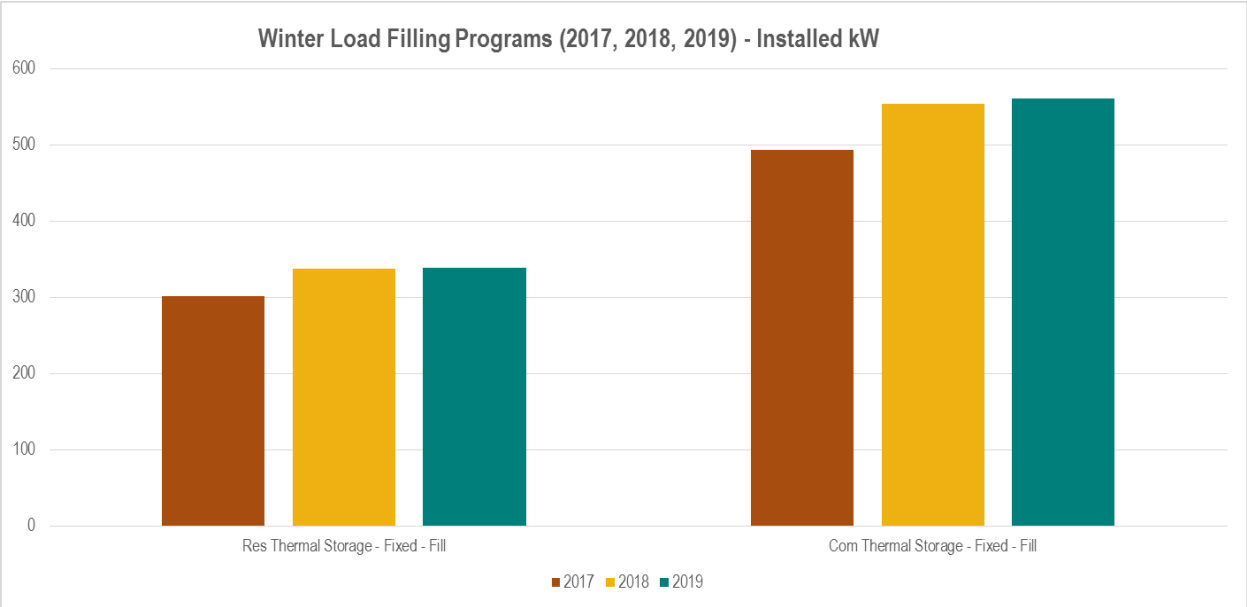
Figure 32. Non-Residential Direct Load Control Programs (kW Installed)



Source: Navigant 2015

Figure 33 illustrates the projected incremental load reduction installed capacity amounts in the years 2017, 2018, and 2019 from the residential and commercial winter load filling programs.

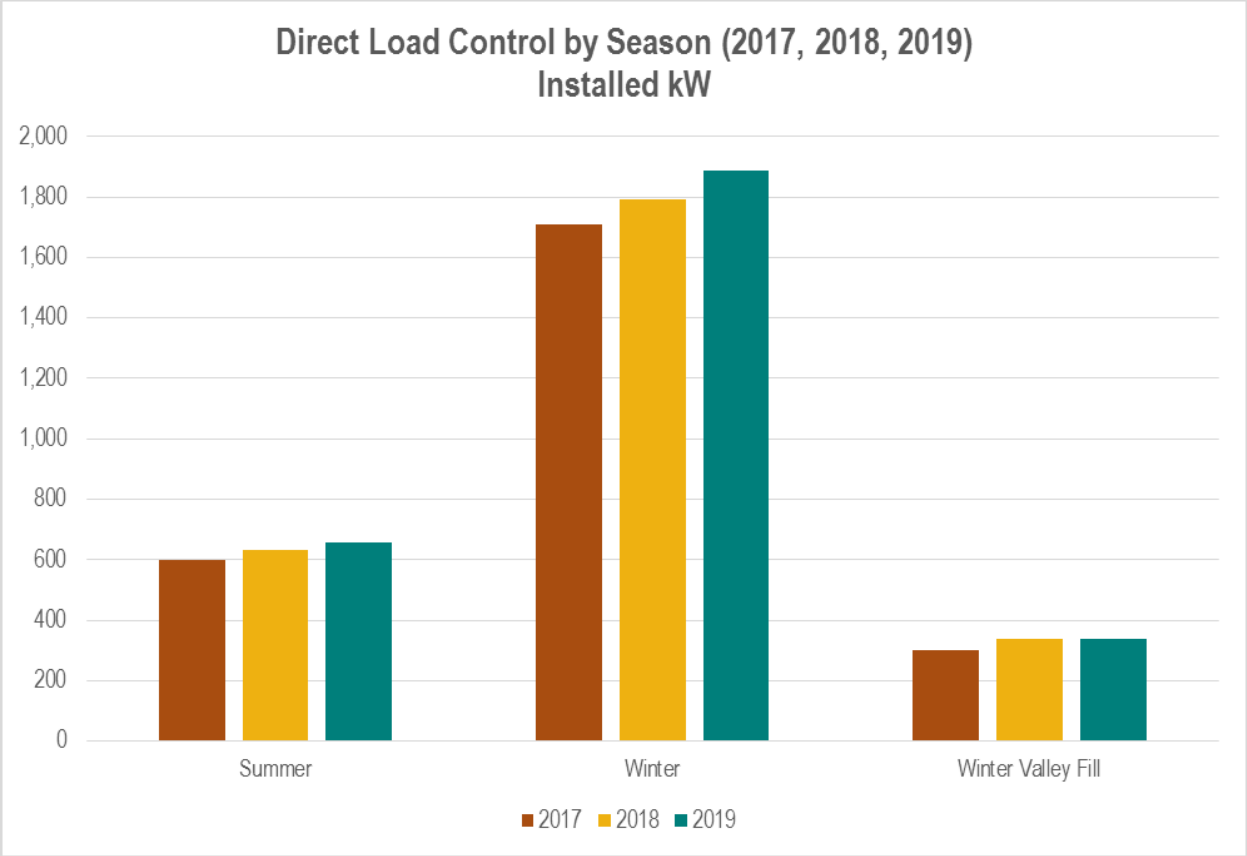
Figure 33. Winter Load Filling Programs (kW Installed)



Source: Navigant 2015

Figure 34 illustrates the projected incremental load reduction installed capacity amounts in the years 2017, 2018, and 2019 by season and type from the load reduction or valley filling programs. The winter load reduction installed capacity is just over three times larger than the summer load reduction installed capacity.

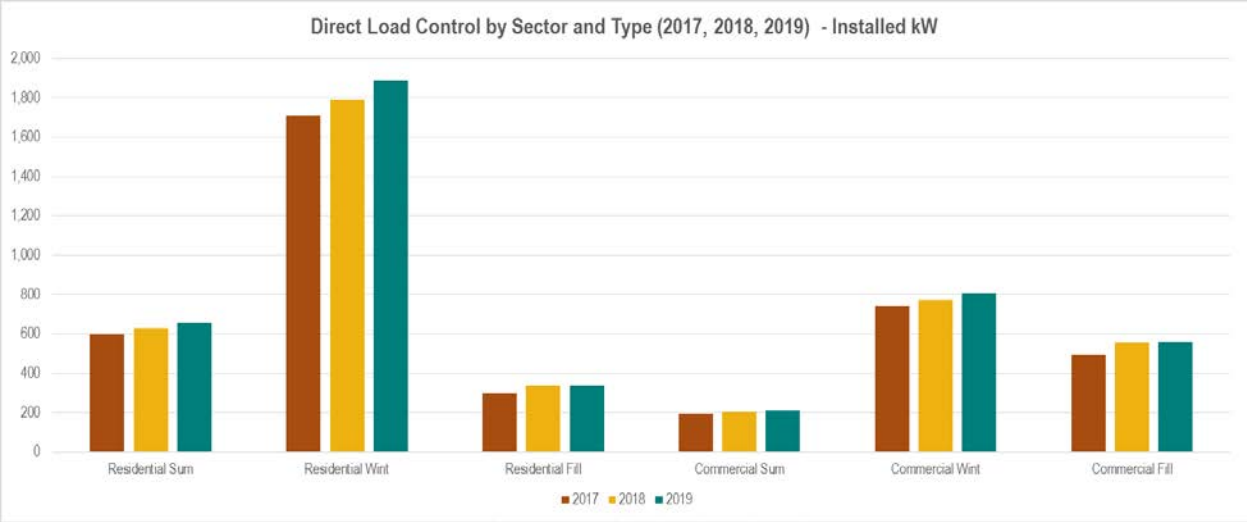
Figure 34. Direct Load Control Programs by Season (kW Installed)



Source: Navigant 2015

Figure 35 illustrates the projected incremental total kW load reduction installed capacity in the years 2017, 2018, and 2019 by sector from the load reduction and valley filling programs. The residential sector winter load reduction programs offer the greatest amount of installed capacity potential.

Figure 35. Direct Load Control Programs by Sector and Type (kW Installed)



Source: Navigant 2015

Table 27 provides the values illustrated in Figures 29 -33. In addition, the table provides the estimates of installed capacity load reduction or shift by program through the year 2031.

Table 27. Direct Load Control Programs (kW Installed)

Program	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Res DWH Control (400 Hours) - Sum	94	96	97	99	101	103	105	108	110	112	114	116	119	121	124
Res A/C Cycling - Sum	443	472	494	491	495	494	495	495	495	495	495	495	495	495	495
Com A/C Cycling - Sum	166	173	181	181	182	182	183	183	183	184	184	184	185	185	185
Com DWH Control (400 Hours) - Sum	29	30	31	31	32	32	33	34	34	35	36	36	37	38	39
Res Demand Control - Sum	62	64	65	66	68	69	70	72	73	75	76	78	79	81	82
Res Demand Control - Wint	94	96	97	99	101	103	105	108	110	112	114	116	119	121	124
Res Thermal Storage - Deferred - Wint	187	196	208	210	210	210	209	209	209	208	208	208	208	207	207
Com Thermal Storage - Deferred - Wint	21	21	22	22	23	23	23	24	24	25	25	26	26	27	27
Res Thermal Storage - Fixed - Fill	302	338	339	342	339	340	338	339	338	338	337	337	336	336	336
Com Thermal Storage - Fixed - Fill	494	554	561	567	566	569	569	572	572	574	574	576	577	578	578
Res Small Dual Fuel - Wint	1,430	1,499	1,582	1,633	1,661	1,675	1,682	1,685	1,686	1,685	1,683	1,681	1,679	1,677	1,675
Com Small Dual Fuel - Wint	459	485	516	532	539	542	545	547	548	550	551	552	554	555	556
Com Large Dual Fuel - Wint	260	265	271	276	282	287	293	299	305	311	317	323	330	336	343

Source: Navigant 2015

Table 28 provides the estimates of incremental cost by program for each forecasting year.

Table 28. Direct Load Control Program Costs ($)

Program	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Res DWH Control (400 Hours) - Sum	$7,607	$7,760	$7,915	$8,073	$8,234	$8,399	$8,567	$8,739	$8,913	$9,092	$9,273	$9,459	$9,648	$9,841	$10,038
Res A/C Cycling - Sum	$23,645	$25,182	$26,340	$26,193	$26,409	$26,391	$26,443	$26,434	$26,439	$26,437	$26,438	$26,437	$26,437	$26,437	$26,437
Com A/C Cycling - Sum	$8,898	$9,263	$9,720	$9,722	$9,755	$9,776	$9,798	$9,817	$9,835	$9,852	$9,869	$9,884	$9,898	$9,911	$9,922
Com DWH Control (400 Hours) - Sum	$2,383	$2,431	$2,480	$2,529	$2,580	$2,631	$2,684	$2,738	$2,793	$2,848	$2,905	$2,963	$3,023	$3,083	$3,145
Res Demand Control - Sum	$4,528	$4,619	$4,711	$4,805	$4,902	$5,000	$5,100	$5,202	$5,306	$5,412	$5,520	$5,630	$5,743	$5,858	$5,975
Res Demand Control - Wint	$6,792	$6,928	$7,066	$7,208	$7,352	$7,499	$7,649	$7,802	$7,958	$8,117	$8,279	$8,445	$8,614	$8,786	$8,962
Res Thermal Storage - Deferred - Wint	$31,803	$33,261	$35,341	$35,664	$35,627	$35,576	$35,526	$35,475	$35,425	$35,375	$35,324	$35,274	$35,224	$35,174	$35,124
Com Thermal Storage - Deferred - Wint	$3,530	$3,601	$3,673	$3,747	$3,822	$3,898	$3,976	$4,055	$4,137	$4,219	$4,304	$4,390	$4,478	$4,567	$4,658
Res Thermal Storage - Fixed - Fill	$22,452	$25,133	$25,223	$25,432	$25,202	$25,337	$25,169	$25,254	$25,127	$25,177	$25,080	$25,105	$25,029	$25,037	$24,975
Com Thermal Storage - Fixed - Fill	$36,748	$41,261	$41,762	$42,171	$42,101	$42,375	$42,355	$42,552	$42,568	$42,716	$42,752	$42,868	$42,907	$42,995	$43,034
Res Small Dual Fuel - Wint	$63,043	$66,080	$69,740	$72,018	$73,240	$73,873	$74,178	$74,301	$74,322	$74,287	$74,221	$74,136	$74,042	$73,943	$73,841
Com Small Dual Fuel - Wint	$20,257	$21,364	$22,762	$23,452	$23,757	$23,918	$24,023	$24,105	$24,177	$24,242	$24,303	$24,360	$24,412	$24,460	$24,504
Com Large Dual Fuel - Wint	$7,527	$7,678	$7,831	$7,988	$8,148	$8,311	$8,477	$8,646	$8,819	$8,996	$9,176	$9,359	$9,546	$9,737	$9,932

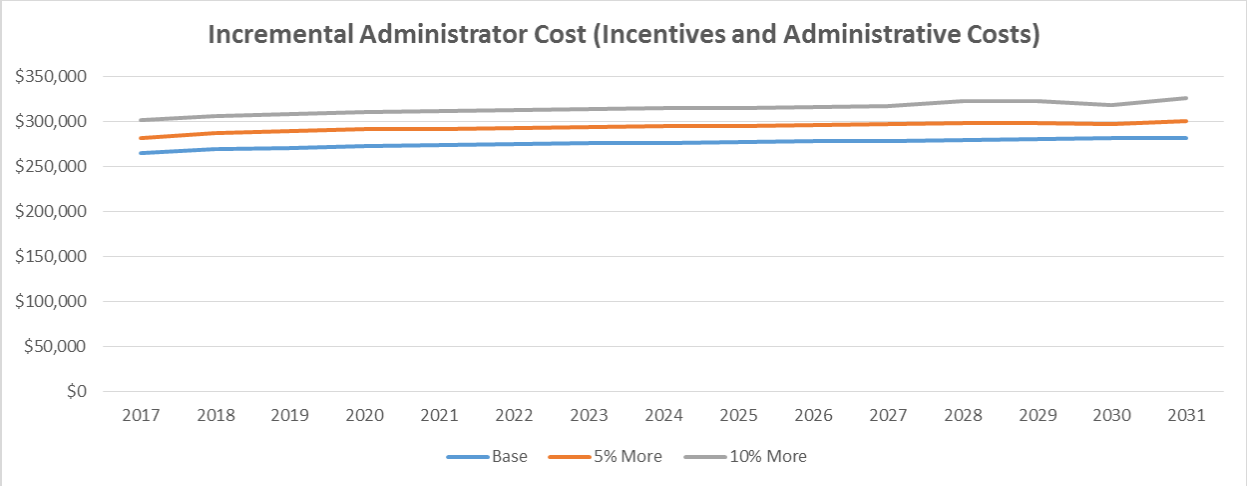
Source: Navigant 2015

7.4.5 Controlled Load Scenario Results for a 5% Increase and a 10% Increase in Controlled Loads

In addition to the base case, which models the market potential for controlled loads in a "business as usual" condition, Navigant also developed two additional scenarios; one for achieving 5% more and the other 10% more incremental installed controlled load market potential compared to the base scenario. The primary purpose of this exercise is to estimate the additional costs for achieving these high levels of controlled loads. To achieve these goals, the modeling team increased incentives, administrative costs, and program budgets.

The administrator cost (combined administrative and incentive cost) for each scenario is provided in Figure 36. Table 29 provides the data illustrated in the Figure. On average, the cost for the 5% scenario is 6.5% greater than the base scenario and for the 10% scenario, 14.1% more than the base scenario. These costs are relatively close to the incremental increases in installed capacity.

Figure 36. Administrator (Administrative & Incentive) Cost by Scenario



Source: Navigant 2015

Table 29. Administrator (Administrative & Incentive) Cost by Scenario

Cost	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Base	$264,566	$269,001	$271,126	$272,984	$273,944	$275,121	$275,818	$276,769	$277,443	$278,311	$279,000	$279,829	$280,546	$281,359	$282,102
5% More	$281,941	$287,092	$289,588	$291,291	$292,042	$293,302	$293,948	$294,960	$295,631	$296,592	$297,285	$298,209	$298,936	$296,863	$300,999
10% More	$302,093	$306,208	$308,673	$310,589	$311,687	$313,040	$313,777	$314,950	$315,622	$316,727	$317,400	$323,090	$323,391	$318,529	$326,418
Cost Increase	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
5% More	6.6%	6.7%	6.8%	6.7%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	5.5%	6.7%
10% More	14.2%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	15.5%	15.3%	13.2%	15.7%

Source: Navigant 2015

CERTIFICATE OF SERVICE

RE: In the Matter of Otter Tail Power Company's 2015 Demand Side Management Financial Incentive Project, Annual Filing to Update the Conservation Improvement Project Rider, and 2015 CIP Status Report
Docket Nos. E017/M-16-___, E017/CIP-13-277.02

I, Jana Hrdlicka, hereby certify that I have this day served a copy of the following, or a summary thereof, on Daniel P. Wolf and Sharon Ferguson by e-filing, and to all other persons on the attached service list by electronic service or by First Class mail.

Otter Tail Power Company
Compliance Filing

Dated this **1st** day of **April**, **2016**

/s/ JANA HRDLICKA
Jana Hrdlicka
Regulatory Filing Coordinator
Otter Tail Power Company
215 South Cascade Street
Fergus Falls MN 56537
(218) 739-8879

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Michael	Ahern	ahern.michael@dorsey.com	Dorsey & Whitney, LLP	50 S 6th St Ste 1500 Minneapolis, MN 554021498	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
William A.	Blazar	bblazar@mnchamber.com	Minnesota Chamber Of Commerce	Suite 1500 400 Robert Street North St. Paul, MN 55101	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Ray	Choquette	rchoquette@agp.com	Ag Processing Inc.	12700 West Dodge Road PO Box 2047 Omaha, NE 68103-2047	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Gary	Connett	gconnett@grenergy.com	Great River Energy	12300 Elm Creek Blvd N Maple Grove, MN 553694718	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Jeffrey A.	Daugherty	jeffrey.daugherty@centerpointenergy.com	CenterPoint Energy	800 LaSalle Ave Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Executive	Director	N/A	Sustainable Resources Center	1081 10th Ave SE Minneapolis, MN 55414	Paper Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Chris	Duffrin	chrisd@thenec.org	Neighborhood Energy Connection	624 Selby Avenue St. Paul, MN 55104	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500 Saint Paul, MN 551012198	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Edward	Garvey	garveyed@aol.com	Residence	32 Lawton St Saint Paul, MN 55102	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Lara V	Greden	N/A	The Weidt Group	5800 Baker Rd Minnetonka, MN 55345	Paper Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Jason	Grenier	jgrenier@otpco.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Stephan	Gunn	sgunn@appliedenergygroup.com	Applied Energy Group	1941 Pike Ln De Pere, WI 54115	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
J Drake	Hamilton	hamilton@fresh-energy.org	Fresh Energy	408 St Peter St Saint Paul, MN 55101	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Tom	Holt	tholt@eastriver.coop	East River Electric Power Coop., Inc.	PO Box 227 Madison, SD 57042	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Jim	Horan	Jim@MREA.org	Minnesota Rural Electric Association	11640 73rd Ave N Maple Grove, MN 55369	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Jim	Jarvis	N/A	ReDirect Energy, LLC	44 7th Avenue NE Minneapolis, MN 55413	Paper Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Tina	Koecher	tkoecher@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
John	Lindell	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Nick	Mark	nick.mark@centerpointenergy.com	CenterPoint Energy	800 LaSalle Ave Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Craig	Metz	N/A	EnSave Energy Performance	65 Millet St, Suite 105 Richmond, VT 05477	Paper Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Andrew	Moratzka	apmoratzka@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Carl	Nelson	cnelson@mncee.org	Center for Energy and Environment	212 3rd Ave N Ste 560 Minneapolis, MN 55401	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Gary	Oetken	goetken@agp.com	Ag Processing, Inc.	12700 West Dodge Road P.O. Box 2047 Omaha, NE 681032047	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Paul	Ohlson	N/A	EnSave Energy Performance	65 Millet Street, Suite 105 Richmond, VT 05477	Paper Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Larry	Oswald		Honeywell, Inc.	1335 2nd Ave N Ste B Fargo, ND 58103	Paper Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Lisa	Pickard	lpickard@minnkota.com	Minnkota Power Cooperative	1822 Mill Rd PO Box 13200 Grand Forks, ND 582083200	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Michael	Reinertson	michael.reinertson@avantenergy.com	Avant Energy	220 S. Sixth St. Ste 1300 Minneapolis, Minnesota 55402	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Christopher	Schoenherr	cp.schoenherr@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Leo	Steidel	N/A	The Weidt Group	5800 Baker Rd Minnetonka, MN 55345	Paper Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
SaGonna	Thompson	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Roger	Warehime	warehimer@owatonnautilities.com	Owatonna Public Utilities	208 South WalnutPO Box 800 Owatonna, MN 55060	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_GEN_SL_Otter Tail Power Company_CIP

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Michael	Ahern	ahern.michael@dorsey.com	Dorsey & Whitney, LLP	50 S 6th St Ste 1500 Minneapolis, MN 554021498	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	Yes	OFF_SL_13-277_CIP-13-277
John	Bailey	bailey@ilsr.org	Institute For Local Self-Reliance	1313 5th St SE Ste 303 Minneapolis, MN 55414	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Tom	Balster	tombalster@alliantenergy.com	Interstate Power & Light Company	PO Box 351 200 1st St SE Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_13-277_CIP-13-277
William	Black	bblack@mmua.org	MMUA	Suite 400 3025 Harbor Lane North Plymouth, MN 554475142	Electronic Service	No	OFF_SL_13-277_CIP-13-277
William A.	Blazar	bblazar@mnchamber.com	Minnesota Chamber Of Commerce	Suite 1500 400 Robert Street North St. Paul, MN 55101	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Charlie	Buck	charlie.buck@opower.com	Opower	760 Market Street, Fourth Floor San Francisco, California 94102	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Richard G	Burud	rburud@noblesce.com	Nobles Cooperative Electric	22636 US HIGHWAY 59 PO Box 788 Worthington, MN 56187	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Ray	Choquette	rchoquette@agp.com	Ag Processing Inc.	12700 West Dodge Road PO Box 2047 Omaha, NE 68103-2047	Electronic Service	No	OFF_SL_13-277_CIP-13-277

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Gary	Connett	gconnett@grenergy.com	Great River Energy	12300 Elm Creek Blvd N Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_13-277_CIP-13-277
George	Crocker	gwillc@nawo.org	North American Water Office	PO Box 174 Lake Elmo, MN 55042	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Jill	Curran	jcurran@mnchamber.com	Minnesota Waste Wise	400 Robert Street North Suite 1500 St. Paul, Minnesota 55101	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Jeffrey A.	Daugherty	jeffrey.daugherty@centerpointenergy.com	CenterPoint Energy	800 LaSalle Ave Minneapolis, MN 55402	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Executive	Director	N/A	Sustainable Resources Center	1081 10th Ave SE Minneapolis, MN 55414	Paper Service	No	OFF_SL_13-277_CIP-13-277
Steve	Downer	sdowner@mmua.org	MMUA	3025 Harbor Ln N Ste 400 Plymouth, MN 554475142	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Charles	Drayton	charles.drayton@enbridge.com	Enbridge Energy Company, Inc.	7701 France Ave S Ste 600 Edina, MN 55435	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Chris	Duffrin	chrisd@thenec.org	Neighborhood Energy Connection	624 Selby Avenue St. Paul, MN 55104	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Jim	Erchul	jerchul@dbnhs.org	Daytons Bluff Neighborhood Housing Sv.	823 E 7th St St. Paul, MN 55106	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Greg	Ernst	gaernst@q.com	G. A. Ernst & Associates, Inc.	2377 Union Lake Trl Northfield, MN 55057	Electronic Service	No	OFF_SL_13-277_CIP-13-277

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Emma	Fazio	emma.fazio@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Melissa S	Feine	melissa.feine@semcac.org	SEMCAC	PO Box 549 204 S Elm St Rushford, MN 55971	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Edward	Garvey	garveyed@aol.com	Residence	32 Lawton St Saint Paul, MN 55102	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Angela E.	Gordon	angela.e.gordon@lmco.com	Lockheed Martin	1000 Clark Ave. St. Louis, MO 63102	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Lara V	Greden	N/A	The Weidt Group	5800 Baker Rd Minnetonka, MN 55345	Paper Service	No	OFF_SL_13-277_CIP-13-277
Pat	Green	N/A	N Energy Dev	City Hall 401 E 21st St Hibbing, MN 55746	Paper Service	No	OFF_SL_13-277_CIP-13-277
Jason	Grenier	jgrenier@otpco.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Stephan	Gunn	sgunn@appliedenergygroup.com	Applied Energy Group	1941 Pike Ln De Pere, WI 54115	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Jeffrey	Haase	jhaase@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_13-277_CIP-13-277

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Tony	Hainault	anthony.hainault@co.hennepin.mn.us	Hennepin County DES	701 4th Ave S Ste 700 Minneapolis, MN 55415-1842	Electronic Service	No	OFF_SL_13-277_CIP-13-277
J Drake	Hamilton	hamilton@fresh-energy.org	Fresh Energy	408 St Peter St Saint Paul, MN 55101	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Patty	Hanson	phanson@rpu.org	Rochester Public Utilities	4000 E River Rd NE Rochester, MN 55906	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Norm	Harold	N/A	NKS Consulting	5591 E 180th St Prior Lake, MN 55372	Paper Service	No	OFF_SL_13-277_CIP-13-277
Karolanne	Hoffman	kmh@dairynet.com	Dairyland Power Cooperative	PO Box 817 La Crosse, WI 54602-0817	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Randy	Hoffman	rhoffman@eastriver.coop	East River Electric Power Coop	121 SE 1st St PO Box 227 Madison, SD 57042	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Tom	Holt	tholt@eastriver.coop	East River Electric Power Coop., Inc.	PO Box 227 Madison, SD 57042	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Jim	Horan	Jim@MREA.org	Minnesota Rural Electric Association	11640 73rd Ave N Maple Grove, MN 55369	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Anne	Hunt	anne.hunt@ci.stpaul.mn.us	City of St. Paul	390 City Hall 15 West Kellogg Boulevard Saint Paul, MN 55102	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Jim	Jarvis	N/A	ReDirect Energy, LLC	44 7th Avenue NE Minneapolis, MN 55413	Paper Service	No	OFF_SL_13-277_CIP-13-277

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Dave	Johnson	dave.johnson@aeoa.org	Arrowhead Economic Opportunity Agency	702 3rd Ave S Virginia, MN 55792	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Joel W.	Kanvik	joel.kanvik@enbridge.com	Enbridge Energy Company, Inc.	4628 Mike Colalillo Dr Duluth, MN 55807	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Tina	Koecher	tkoecher@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Kelly	Lady	kellyl@austinutilities.com	Austin Utilities	400 4th St NE Austin, MN 55912	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Martin	Lepak	Martin.Lepak@aeoa.org	Arrowhead Economic Opportunity	702 S 3rd Ave Virginia, MN 55792	Electronic Service	No	OFF_SL_13-277_CIP-13-277
John	Lindell	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes	OFF_SL_13-277_CIP-13-277
Nick	Mark	nick.mark@centerpointenergy.com	CenterPoint Energy	800 LaSalle Ave Minneapolis, MN 55402	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Samuel	Mason	smason@beltramielectric.com	Beltrami Electric Cooperative, Inc.	4111 Technology Dr. NW PO Box 488 Bemidji, MN 56619-0488	Electronic Service	No	OFF_SL_13-277_CIP-13-277

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Scot	McClure	scotmcclure@alliantenergy.com	Interstate Power And Light Company	4902 N Biltmore Ln PO Box 77007 Madison, WI 537071007	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Tom	McDougall	N/A	The Weidt Group	5800 Baker Rd Minnetonka, MN 55345	Paper Service	No	OFF_SL_13-277_CIP-13-277
John	McWilliams	jmm@dairynet.com	Dairyland Power Cooperative	3200 East Ave SPO Box 817 La Crosse, WI 54601-7227	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Brian	Meloy	brian.meloy@stinson.com	Stinson,Leonard, Street LLP	150 S 5th St Ste 2300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Craig	Metz	N/A	EnSave Energy Performance	65 Millet St, Suite 105 Richmond, VT 05477	Paper Service	No	OFF_SL_13-277_CIP-13-277
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Andrew	Moratzka	apmoratzka@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Gary	Myers	garym@hpuc.com	Hibbing Public Utilities	1902 E 6th Ave Hibbing, MN 55746	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Susan K	Nathan	snathan@appliedenergygroup.com	Applied Energy Group	2215 NE 107th Ter Kansas City, MO 64155-8513	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Carl	Nelson	cnelson@mncee.org	Center for Energy and Environment	212 3rd Ave N Ste 560 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_13-277_CIP-13-277

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Gary	Oetken	goetken@agp.com	Ag Processing, Inc.	12700 West Dodge Road P.O. Box 2047 Omaha, NE 681032047	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Paul	Ohlson	N/A	EnSave Energy Performance	65 Millet Street, Suite 105 Richmond, VT 05477	Paper Service	No	OFF_SL_13-277_CIP-13-277
Larry	Oswald		Honeywell, Inc.	1335 2nd Ave N Ste B Fargo, ND 58103	Paper Service	No	OFF_SL_13-277_CIP-13-277
Audrey	Partridge	audrey.peer@centerpointenergy.com	CenterPoint Energy	800 Lasalle Avenue - 14th Floor Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Lisa	Pickard	lpickard@minnkota.com	Minnkota Power Cooperative	1822 Mill Rd PO Box 13200 Grand Forks, ND 582083200	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Bill	Poppert		Technology North	2433 Highwood Ave St. Paul, MN 55119	Paper Service	No	OFF_SL_13-277_CIP-13-277
Michael	Reinertson	michael.reinertson@avantenergy.com	Avant Energy	220 S. Sixth St. Ste 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Dave	Reinke	dreinke@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024-9583	Electronic Service	No	OFF_SL_13-277_CIP-13-277

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Richard	Savelkoul	rsavelkoul@martinsquires.com	Martin & Squires, P.A.	332 Minnesota Street Ste W2750 St. Paul, MN 55101	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Bruce	Sayler	bruces@connexusenergy.com	Connexus Energy	14601 Ramsey Boulevard Ransey, MN 55303	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Christopher	Schoenherr	cp.schoenherr@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Cindy	Schweitzer Rott	cindy.schweitzer@clearesult.com	CLEAResult's	S12637A Merrilee Rd. Spring Green, WI 53588	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.	76 W Kellogg Blvd St. Paul, MN 55102	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Grey	Staples	gstaples@mendotagroup.com	The Mendota Group LLC	1830 Fargo Lane Mendota Heights, MN 55118	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Leo	Steidel	N/A	The Weidt Group	5800 Baker Rd Minnetonka, MN 55345	Paper Service	No	OFF_SL_13-277_CIP-13-277
Leo	Steidel	lsteidel@energyplatforms.com	Energy Platforms	8170 Old Carriage Court N Ste 200 Shakopee, MN 55379	Paper Service	No	OFF_SL_13-277_CIP-13-277
Richard	Szydlowski	rszydlowski@mncee.org	Center for Energy & Environment	212 3rd Ave N Ste 560 Minneapolis, MN 55401-1459	Electronic Service	No	OFF_SL_13-277_CIP-13-277
SaGonna	Thompson	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_13-277_CIP-13-277

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Steve	Tomac	stomac@bepc.com	Basin Electric Power Cooperative	1717 E Interstate Ave Bismarck, ND 58501	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Robert	Walsh	bwalsh@mnvalleyrec.com	Minnesota Valley Coop Light and Power	PO Box 248 501 S 1st St Montevideo, MN 56265	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Sharon N.	Walsh	swalsh@shakopeeutilities.com	Shakopee Public Utilties	255 Sarazin St Shakopee, MN 55379	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Roger	Warehime	warehimer@owatonnautilities.com	Owatonna Public Utilities	208 South WalnutPO Box 800 Owatonna, MN 55060	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Cam	Winton	cwinton@mnchamber.com	Minnesota Chamber of Commerce	400 Robert Street North Suite 1500 St. Paul, Minnesota 55101	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_13-277_CIP-13-277
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	Yes	OFF_SL_13-277_CIP-13-277

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Tom	Balster	tombalster@alliantenergy.com	Interstate Power & Light Company	PO Box 351 200 1st St SE Cedar Rapids, IA 524060351	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Lisa	Beckner	lbeckner@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Mathias	Bell	mathias.bell@opower.com	Opower	1515 N Courthouse Rd Arlington, VA 22201	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
William	Black	bblack@mmua.org	MMUA	Suite 400 3025 Harbor Lane North Plymouth, MN 554475142	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Ray	Choquette	rchoquette@agp.com	Ag Processing Inc.	12700 West Dodge Road PO Box 2047 Omaha, NE 68103-2047	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Gary	Connett	gconnett@grenergy.com	Great River Energy	12300 Elm Creek Blvd N Maple Grove, MN 553694718	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
George	Crocker	gwillc@nawo.org	North American Water Office	PO Box 174 Lake Elmo, MN 55042	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Jill	Curran	jcurran@mnchamber.com	Minnesota Waste Wise	400 Robert Street North Suite 1500 St. Paul, Minnesota 55101	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Leigh	Currie	lcurrie@mncenter.org	Minnesota Center for Environmental Advocacy	26 E. Exchange St., Suite 206 St. Paul, Minnesota 55101	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Jeffrey A.	Daugherty	jeffrey.daugherty@centerpointenergy.com	CenterPoint Energy	800 LaSalle Ave Minneapolis, MN 55402	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Steve	Downer	sdowner@mmua.org	MMUA	3025 Harbor Ln N Ste 400 Plymouth, MN 554475142	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Charles	Drayton	charles.drayton@enbridge.com	Enbridge Energy Company, Inc.	7701 France Ave S Ste 600 Edina, MN 55435	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Chris	Duffrin	chrisd@thenec.org	Neighborhood Energy Connection	624 Selby Avenue St. Paul, MN 55104	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Jim	Erchul	jerchul@dbnhs.org	Daytons Bluff Neighborhood Housing Sv.	823 E 7th St St. Paul, MN 55106	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Greg	Ernst	gaernst@q.com	G. A. Ernst & Associates, Inc.	2377 Union Lake Trl Northfield, MN 55057	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Emma	Fazio	emma.fazio@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Melissa S	Feine	melissa.feine@semcac.org	SEMCAC	PO Box 549 204 S Elm St Rushford, MN 55971	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500 Saint Paul, MN 551012198	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kelsey	Genung	kelsey.genung@xcelenergy.com	Xcel Energy	414 Nicollet Mall, Fl. 6 Minneapolis, MN 55401	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Angela E.	Gordon	angela.e.gordon@lmco.com	Lockheed Martin	1000 Clark Ave. St. Louis, MO 63102	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Pat	Green	N/A	N Energy Dev	City Hall 401 E 21st St Hibbing, MN 55746	Paper Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Jason	Grenier	jgrenier@otpco.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Stephan	Gunn	sgunn@appliedenergygroup.com	Applied Energy Group	1941 Pike Ln De Pere, WI 54115	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Tony	Hainault	anthony.hainault@co.hennepin.mn.us	Hennepin County DES	701 4th Ave S Ste 700 Minneapolis, MN 55415-1842	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Patty	Hanson	phanson@rpu.org	Rochester Public Utilities	4000 E River Rd NE Rochester, MN 55906	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Norm	Harold	N/A	NKS Consulting	5591 E 180th St Prior Lake, MN 55372	Paper Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Jared	Hendricks	hendricksj@owatonnautilities.com	Owatonna Public Utilities	PO Box 800 208 S Walnut Ave Owatonna, MN 55060-2940	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Holly	Hinman	holly.r.hinman@xcelenergy.com	Xcel Energy	414 Nicollet Mall, 7th Floor Minneapolis, MN 55401	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Randy	Hoffman	rhoffman@eastriver.coop	East River Electric Power Coop	121 SE 1st St PO Box 227 Madison, SD 57042	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Karolanne	Hoffman	kmh@dairynet.com	Dairyland Power Cooperative	PO Box 817 La Crosse, WI 54602-0817	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Tom	Holt	tholt@eastriver.coop	East River Electric Power Coop., Inc.	PO Box 227 Madison, SD 57042	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Jim	Horan	Jim@MREA.org	Minnesota Rural Electric Association	11640 73rd Ave N Maple Grove, MN 55369	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Anne	Hunt	anne.hunt@ci.stpaul.mn.us	City of St. Paul	390 City Hall 15 West Kellogg Boulevard Saint Paul, MN 55102	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Dave	Johnson	dave.johnson@aeoa.org	Arrowhead Economic Opportunity Agency	702 3rd Ave S Virginia, MN 55792	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Joel W.	Kanvik	joel.kanvik@enbridge.com	Enbridge Energy Company, Inc.	4628 Mike Colalillo Dr Duluth, MN 55807	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Deborah	Knoll	dknoll@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Tina	Koecher	tkoecher@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Kelly	Lady	kellyl@austinutilities.com	Austin Utilities	400 4th St NE Austin, MN 55912	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Martin	Lepak	Martin.Lepak@aeoa.org	Arrowhead Economic Opportunity	702 S 3rd Ave Virginia, MN 55792	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
John	Lindell	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Nick	Mark	nick.mark@centerpointenergy.com	CenterPoint Energy	800 LaSalle Ave Minneapolis, MN 55402	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Scot	McClure	scotmcclure@alliantenergy.com	Interstate Power And Light Company	4902 N Biltmore Ln PO Box 77007 Madison, WI 537071007	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
John	McWilliams	jmm@dairynet.com	Dairyland Power Cooperative	3200 East Ave SPO Box 817 La Crosse, WI 54601-7227	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Brian	Meloy	brian.meloy@stinson.com	Stinson,Leonard, Street LLP	150 S 5th St Ste 2300 Minneapolis, MN 55402	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Andrew	Moratzka	apmoratzka@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Gary	Myers	garym@hpuc.com	Hibbing Public Utilities	1902 E 6th Ave Hibbing, MN 55746	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Susan K	Nathan	snathan@appliedenergygroup.com	Applied Energy Group	2215 NE 107th Ter Kansas City, MO 64155-8513	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Carl	Nelson	cnelson@mncee.org	Center for Energy and Environment	212 3rd Ave N Ste 560 Minneapolis, MN 55401	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Gary	Oetken	goetken@agp.com	Ag Processing, Inc.	12700 West Dodge Road P.O. Box 2047 Omaha, NE 681032047	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Audrey	Partridge	audrey.peer@centerpointenergy.com	CenterPoint Energy	800 Lasalle Avenue - 14th Floor Minneapolis, Minnesota 55402	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Lisa	Pickard	lpickard@minnkota.com	Minnkota Power Cooperative	1822 Mill Rd PO Box 13200 Grand Forks, ND 582083200	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Bill	Poppert		Technology North	2433 Highwood Ave St. Paul, MN 55119	Paper Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Dave	Reinke	dreinke@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024-9583	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Christopher	Schoenherr	cp.schoenherr@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Cindy	Schweitzer Rott	cindy.schweitzer@clearesult.com	CLEAResult's	S12637A Merrilee Rd. Spring Green, WI 53588	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Anna	Sherman	anna.sherman@centerpointenergy.com	CenterPoint Energy	505 Nicollet Mall PO Box 59038 Minneapolis, MN 55459	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.	76 W Kellogg Blvd St. Paul, MN 55102	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Leo	Steidel	N/A	The Weidt Group	5800 Baker Rd Minnetonka, MN 55345	Paper Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Richard	Szydlowski	rszydlowski@mncee.org	Center for Energy & Environment	212 3rd Ave N Ste 560 Minneapolis, MN 55401-1459	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
SaGonna	Thompson	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Steve	Tomac	stomac@bepc.com	Basin Electric Power Cooperative	1717 E Interstate Ave Bismarck, ND 58501	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Sharon N.	Walsh	swalsh@shakopeeutilities.com	Shakopee Public Utilties	255 Sarazin St Shakopee, MN 55379	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	SPL_SL__CIP SPECIAL SERVICE LIST