APPENDIX Q

DEMAND-SIDE MANAGEMENT AND CONSERVATION

APPENDIX Q
APPLICANT'S DEMAND-SIDE MANAGEMENT AND CONSERVATION

Pursuant to Minn. R. 7849.0290, a Certificate of Need application must provide information related to an applicant's energy conservation and efficiency programs and a quantification of the impact of these conservation and efficiency programs on forecast data. Minnesota Power requested and was granted an exemption from this rule requirement by the Minnesota Public Utilities Commission.[1] In lieu of the information required by Minn. R. 7849.0290, Minnesota Power agreed to provide a summary of the conservation and demand-side management information that was provided as part of Minnesota Power's Integrated Resource Plan and Conservation and Improvement Plan ("CIP") filings.[2]

Minnesota Power filed its 2020 CIP Consolidated Filing with the Commission on April 1, 2021 in Docket No. E015/M-21-199. A copy of the "Summary" section and the "2020 CIP Status Report" section of this filing is provided in this appendix.

Minnesota Power filed its 2021 Integrated Resource Plan ("2021 IRP") with the Commission on February 1, 2021 in Docket No. E015/RP-21-33. Appendix B of the 2021 IRP filing contained information regarding Minnesota Power's planning and strategies for demand-side management, Energy Efficiency, and CIP. A copy of Appendix B of the 2021 IRP filing is provided in this appendix.

Additional information regarding Minnesota Power's conservation and demand-side management programs can be found on Minnesota Power's website at: https://www.mnpower.com/ProgramsRebates/PO1.

[1] IN THE MATTER OF THE APPLICATION OF MINNESOTA POWER FOR A CERTIFICATE OF NEED FOR THE DULUTH LOOP RELIABILITY PROJECT, Docket No. E015/CN-21-140, *Order Approving Notice Plan and Granting Variances and Exemptions* (Feb. 26, 2021).

[2] IN THE MATTER OF THE APPLICATION OF MINNESOTA POWER FOR A CERTIFICATE OF NEED FOR THE DULUTH LOOP RELIABILITY PROJECT, Docket No. E015/CN-21-140, *Exemption Request* (Feb. 26, 2021).

minnesota power

AN ALLETE COMPANY

2020 Consolidated Filing

Conservation Improvement Program

Understanding • Tools and Resources • Informed Choices • Right Fit Options

April 1, 2021

Docket No. E015/M-21-[illegible]; E015/CIP-15-[illegible]

Summary

Minnesota Power
2020 Conservation Improvement Program ("CIP") Consolidated Filing

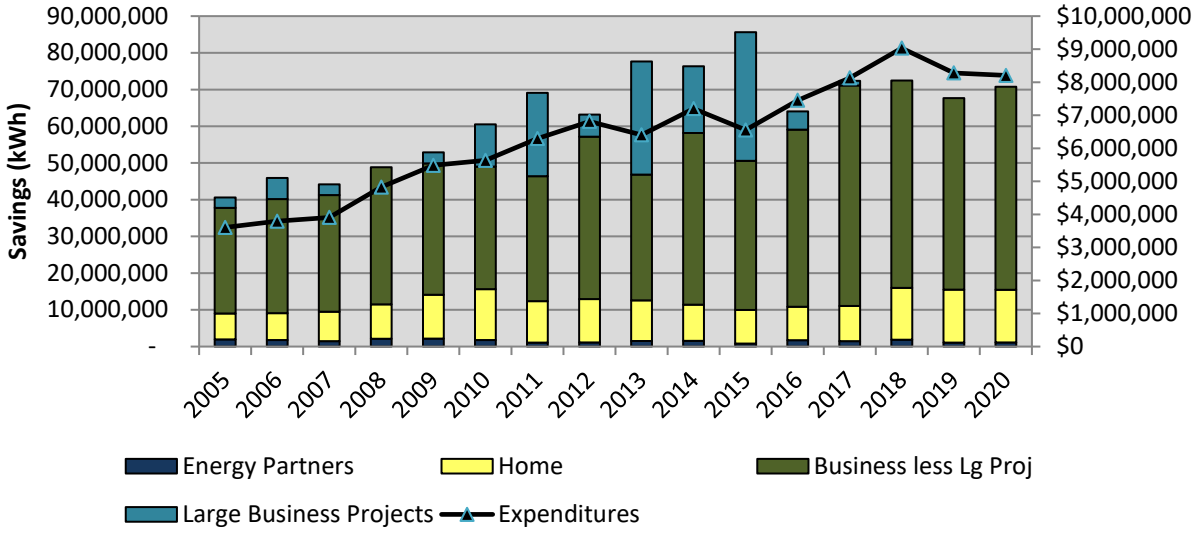
EXECUTIVE SUMMARY

Minnesota Power (or, "the Company") is pleased to report its 2020 energy conservation program results:

- Minnesota Power achieved energy savings of **2.6%** of retail energy sales,[1] well above the state's 1.5% energy-savings goal established in Minn. Stat. § 216B.241.[2]
- The Company achieved energy savings totaling **70,774,076 kWh**, which is **122%** of the approved energy-savings goal for the year. The Company also achieved demand savings of **6,811 kW**, which is **74%** of the approved demand-savings goal. The proposed energy-savings target for 2020 was well above the state 1.5% energy-savings goal for CIP.
- Expenditures totaled **$8,205,771**, which was **78%** of the approved program budget for 2020.

This is the eleventh year in a row that Minnesota Power has met or exceeded Minnesota's 1.5% energy savings goal since 2010, when the goal went into effect. The figure below illustrates historical and recent kWh energy-savings achievements, along with CIP expenditures. As noted in the chart below, large customer projects (one million kWh or greater) have become a much smaller portion of Minnesota Power's overall CIP energy savings, and in 2018, 2019 and 2020 there were no such projects.

Minnesota Power's 2005–2020 CIP Achievements



[1] In accordance with Minnesota Rules part 7690.1200, 2013–2015, weather-normalized average retail energy sales were used to calculate the electric savings goal for Minnesota Power's 2017–2019 Triennial CIP. This equated to 2,939,363,960 kWh, net of CIP exempt customers at the time of the Triennial Filing. Minnesota Power had one newly exempt customer in 2017. Adjusted weather-normalized average retail energy sales excluding this customer is 2,749,752,960 kWh. Savings for 2020 are calculated as a percentage of this adjusted figure.

[2] *In the Matter of Minnesota Power's 2020 Electric CIP Extension Plan*, Docket No. E015/CIP-16-117, November 26, 2019.

Minnesota Power's 2020 CIP Expenditures and Energy Savings

2020	*Expenditures*	*Energy Savings (kWh) at busbar*
Direct Savings Programs:		
Energy Partners (Low Income)	$344,822	1,118,250
Power of One Home (Residential)	$1,749,973	14,344,836
Power of One Business (Business/Commercial/Industrial/Agricultural)	$3,993,144	55,310,990
Indirect Savings Programs:		
Customer Engagement	$577,235	
Energy Analysis	$725,498	
Research & Development	$167,358	
Evaluation & Program Development	$480,877	
Regulatory Charges	$166,864	
Total	**$8,205,771**	**70,774,076**

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of Minnesota Power's 2020 Conservation Improvement Program Consolidated Filing	Reporting on CIP Tracker Account Activity, Financial Incentives Report, Proposed CPA Factors and 2020 Project Evaluations Docket No. E-015/M-21-199 E-015/CIP-16-117.04

SUMMARY OF FILING

Minnesota Power (or, "the Company") hereby files with the Minnesota Public Utilities Commission ("MPUC or Commission") and the Department of Commerce, Division of Energy Resources ("Department") its annual Conservation Improvement Program ("CIP") Consolidated Filing in compliance with Minn. Stat. § 216B.241. Minnesota Power requests approval of the following:

- Recovery of the 2020 CIP Tracker Account activity year-end balance of ($380,310)
- A revised Conservation Program Adjustment ("CPA"), to be first implemented without proration on July 1, 2021, of $0.002015/kWh
- A variance of Minn. Rules 7820.3500 and 7825.2600 to permit the continued combination of the Conservation Program Adjustment with the Fuel and Purchased Power Clause Adjustment on customer bills

Minnesota Power submits its Conservation Improvement Program Consolidated Filing via eFiling with the Department of Commerce, Division of Energy Resources to comply with annual CIP project evaluation filing requirements.


Status
Report

2020 CIP STATUS REPORT

POWER OF ONE CONSERVATION PROGRAM

Minnesota Power's Power of One energy conservation strategy offers a wide variety of program offerings to best serve its diverse customer mix, while continuing to focus on targeted program objectives—quality installations, informed decisions, conservation and safety. The Company exercises a thoughtful, balanced approach in terms of traditional program design versus less established, emerging opportunities, using a combination of "direct savings" and "indirect savings" programs that complement each other and provide for a comprehensive customer experience. Refer to Figures 1 and 2 for a breakdown of spending by direct savings and indirect savings programs.

Figure 1: 2020 Program Spending By Direct and Indirect Savings Programs

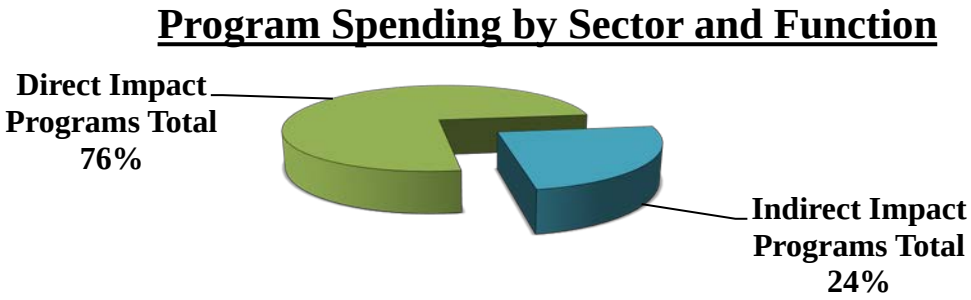
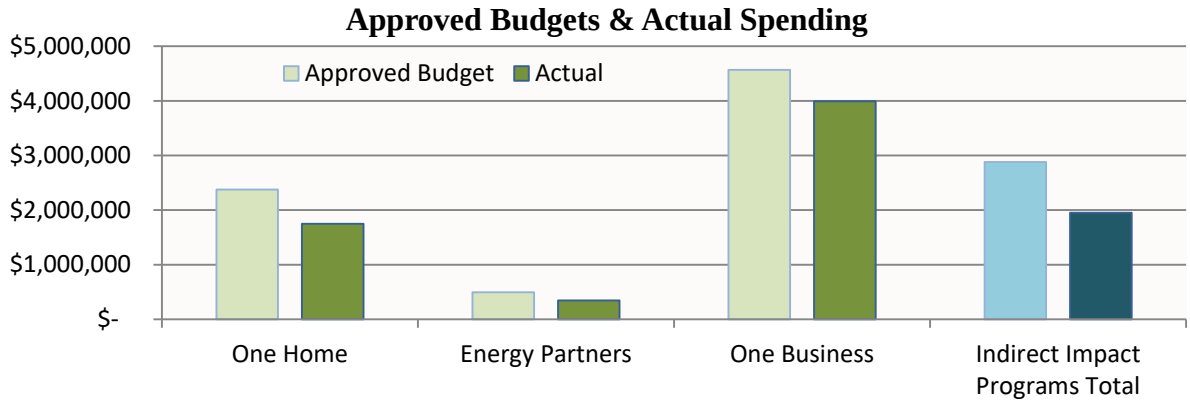


Figure 2: 2020 Approved Budgets & Actual Spending



Investing in a range of programs is essential to keep Minnesota Power's program portfolio strong well into the future. See Figures 3 and 4 for a breakdown of spending by program.

Figure 3: 2020 Direct Savings Program Spending Breakdown

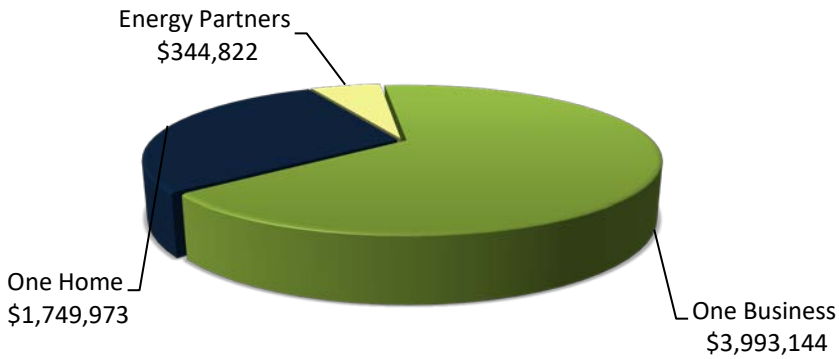
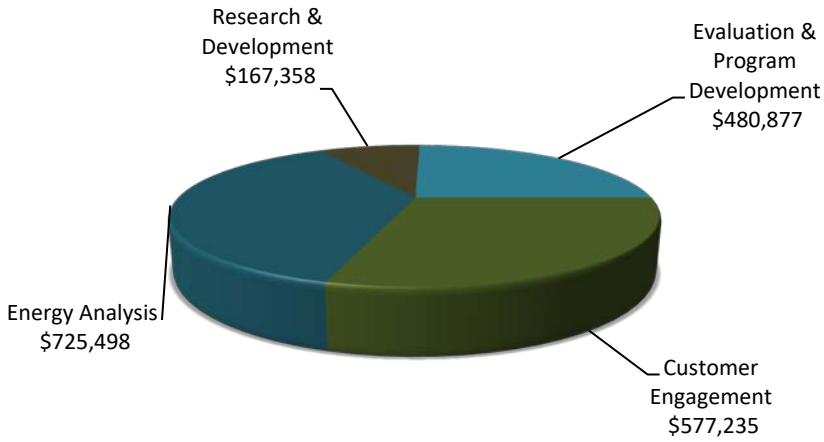
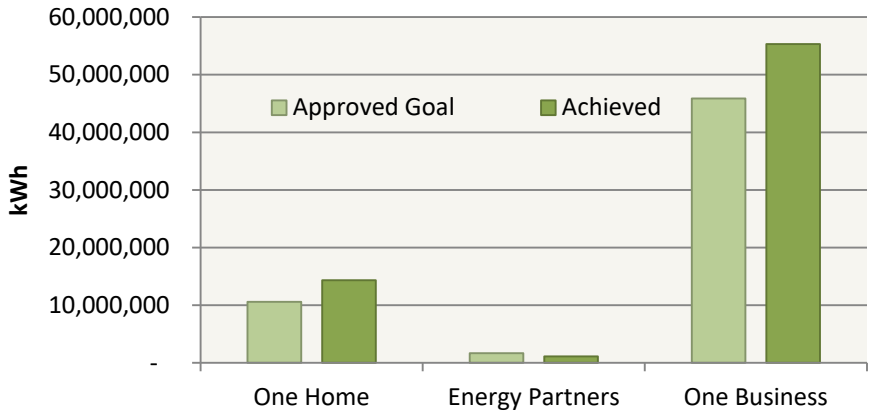


Figure 4: 2020 Indirect Savings Program Spending Breakdown



Power of One Home, Power of One Business and Energy Partners remain the foundational programs that consistently deliver energy savings within the Power of One portfolio—typically through established methods like incentives and direct installation of energy efficiency measures. See Figure 5 for a breakdown of approved savings goals vs. achievements by program.

Figure 5: 2020 Approved Savings Goals & Achievements



While rebates continue to be a large component of influencing customer choices, the value of Power of One program offerings and resources also comes from including a range of services such as education, training, research, performance studies, energy analysis and overall energy awareness. Minnesota Power provides customers with tools and resources they need to make informed choices, delivered through Minnesota Power's cross-market programs—Customer Engagement, Energy Analysis, Research & Development and Evaluation & Planning. These programs support direct savings programs and serve as a pipeline for projects that ultimately deliver on program objectives.

LOOKING FORWARD

The COVID-19 pandemic began in early 2020 and had varying impacts on customers across the region. Health concerns, supply chain disruptions and general uncertainty for residential and commercial customers limited Minnesota Power's ability to deliver programs through traditional channels and required the Company to find creative ways to engage and support customers virtually. Minnesota Power halted in-person audits and limited program communications for much of the 2020 program year, which impacted some programs more extensively than others. The Company anticipates that the effects of the COVID-19 pandemic will continue into 2021 and beyond as customer expectations and comfort levels evolve.

The current energy-efficiency environment is rapidly evolving in ways that will continue to present new challenges and opportunities. As a result of the strong focus on virtual program delivery in 2020, Minnesota Power has a backlog of customer site visits that will need to be performed as COVID-related restrictions are lifted and customers become more comfortable with having energy auditors and contractors on site. This will increase the need for Minnesota Power and its delivery partners to be in the field, completing outstanding projects and proactively engaging with customers that have been negatively impacted by the events of the last year. Minnesota Power, together with stakeholders and delivery partners, will need to understand, which programs can be effectively delivered virtually in the future to meet changing customer needs and expectations.

In addition to challenges related to the COVID-19 pandemic, the Company is working to modify its programs to reflect changes in technology, policy priorities, the regulatory framework in Minnesota, and the industry in general. As described in past filings, Minnesota Power has

historically achieved a significant portion of savings from large-scale commercial projects. Projects of this magnitude have become less available, as indicated by the lack of large projects completed in recent years. Additionally, cost-effective savings opportunities continue to decline due to market saturation and changing baselines, requiring the Company to explore new ways to engage customers.

Minnesota Power has taken steps to prepare for these challenges in recent years including an increased focus on new technologies, exploring new delivery strategies and modifying communication efforts to ensure continued effective outreach. The Company will continue to expand on efforts to engage customers in energy efficiency using new and innovative methods to promote underutilized technologies. While these efforts have been successful thus far, as evidenced by increased participation within the newer heat pump technologies in the heating, ventilation and air conditioning ("HVAC") portion of the One Home program, continuing to achieve this higher level of savings through less cost-effective measures is more time and resource intensive.

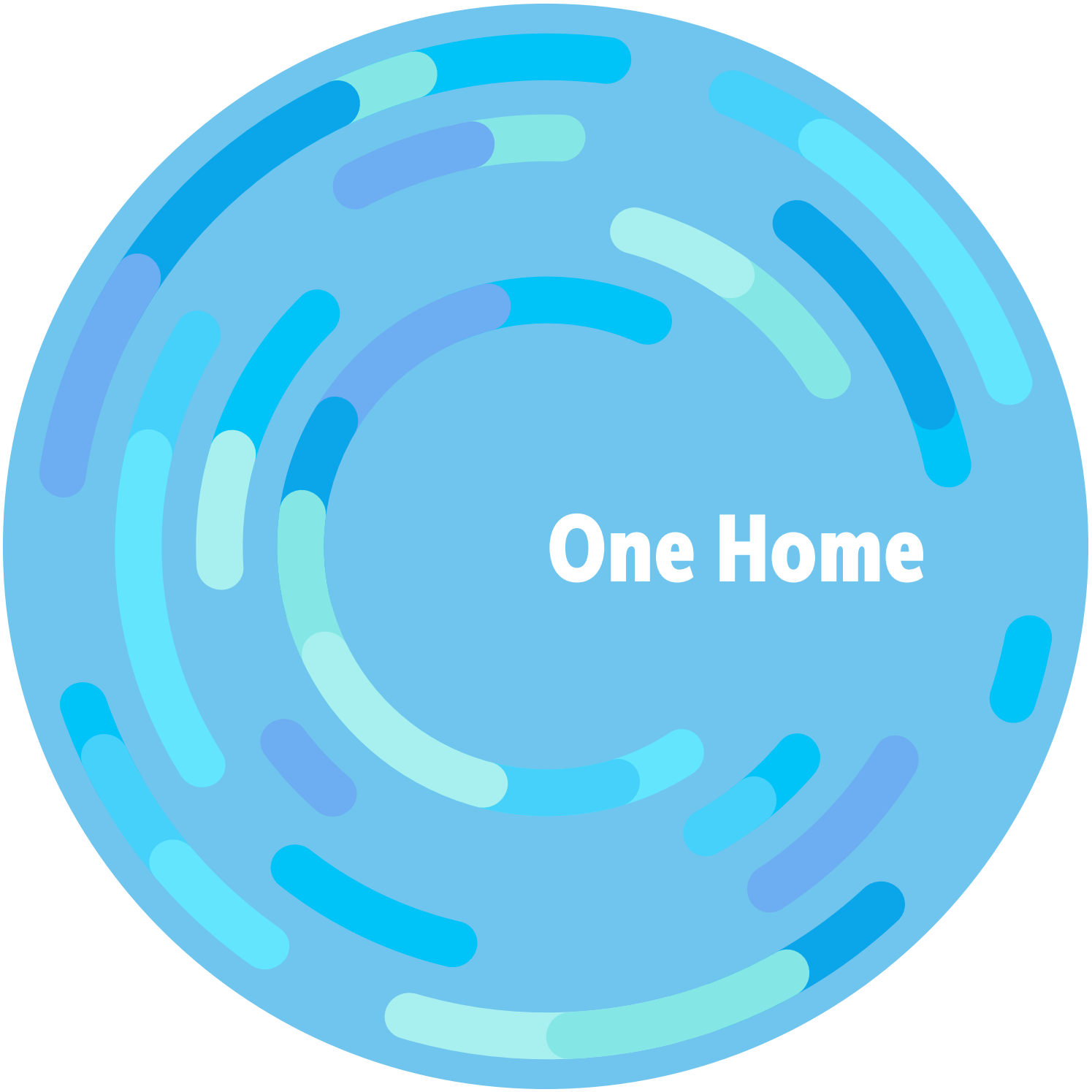
As utilities continue to navigate the changing conservation landscape, regulatory flexibility may be necessary to continue advancing Minnesota's energy policy as well as economic and environmental goals. Minnesota Power will monitor legislative changes, and engage in working groups as discussions around beneficial electrification, fuel switching within CIP, increased focus on equity and engaging underserved communities, and changes to evaluation and performance metrics, among other things, unfold. Minnesota Power remains committed to providing sustainable and cost-effective energy-efficiency programs, with ongoing program development and increased efforts to raise program awareness and participation.

Minnestota Power's 2020 Cip Expenditures & Achievements

2020	*Expenditures*				*Energy Savings (kWh @ Busbar)*				*Demand Savings (kW @ Busbar)*				*Participation*			
Direct Impact Programs	***Filed Budget***	***Approved Budget***	***Actual***	***Percent of Approved***	***Filed Goal***	***Approved Goal***	***Achieved***	***Percent to Goal***	***Filed Goal***	***Approved Goal***	***Achieved***	***Percent to Goal***	***Filed Goal***	***Approved Goal***	***Achieved***	***Percent to Goal***
One Home	$ 2,377,252	$ 2,377,252	$ 1,749,973	74%	10,590,448	10,590,448	14,344,836.3	135%	1,126	1,126	1,744.1	155%	122,841	122,841	217,554	177%
Energy Partners	$ 497,030	$ 497,030	$ 344,822	69%	1,682,164	1,682,164	1,118,249.8	66%	186	186	112.5	60%	19,098	19,098	11,875	62%
One Business	$ 4,565,608	$ 4,565,608	$ 3,993,144	87%	45,863,694	45,863,694	55,310,989.7	121%	7,881	7,881	4,954.4	63%	3,366	3,366	1,485	44%
Direct Impact Programs Total	**$ 7,439,890**	**$ 7,439,890**	**$ 6,087,939**	**82%**	**58,136,306**	**58,136,306**	**70,774,075.8**	**122%**	**9,193**	**9,193**	**6,811.0**	**74%**	**145,305**	**145,305**	**230,914**	**159%**
Indirect Impact Programs																
Customer Engagement	$ 925,025	$ 925,025	$ 577,235	62%									108,000	108,000	93,200	86%
Energy Analysis	$ 963,280	$ 963,280	$ 725,498	75%									5,942	5,942	4,258	72%
Renewable Energy (1)	$ -	$ -	$ -	-			-									
Research & Development	$ 243,800	$ 243,800	$ 167,358	69%												
Evaluation & Program Development	$ 746,775	$ 746,775	$ 480,877	64%												
Indirect Impact Programs Total	**$ 2,878,880**	**$ 2,878,880**	**$ 1,950,968**	**68%**	**-**	**-**	**-**						**113,942**	**113,942**	**97,458**	**86%**
Regulatory Charges	$ 200,000	$ 200,000	$ 166,864	83%												
Total	**$ 10,518,770**	**$ 10,518,770**	**$ 8,205,771**	**78%**	**58,136,306**	**58,136,306**	**70,774,075.8**	**122%**	**9,192.9**	**9,192.9**	**6,811.0**	**74%**	**259,247**	**259,247**	**328,372**	**127%**

(1) As a result of the February 10, 2017, MPUC approval of Minnesota Power's SolarSense program (Docket No. E015/M-16-485), the Company filed a Program Modification request on August 9, 2017, to remove the Customer Renewable Energy (RE) program from the 2017–2019 CIP Triennial Plan (Docket No. E015/CIP-16-117). On November 16, 2017, the Deputy Commissioner approved Minnesota Power's petition. Further, due to the enactment of new legislation in 2017 closing the Made in Minnesota (MIM) program, the MIM assessment will remain in CIP under CIP Regulatory Charges for 2017 and then be discontinued thereafter. The Customer Renewable Energy program section has therefore been removed from --Minnesota Power's Consolidated filing.

EXHIBIT 4


One Home

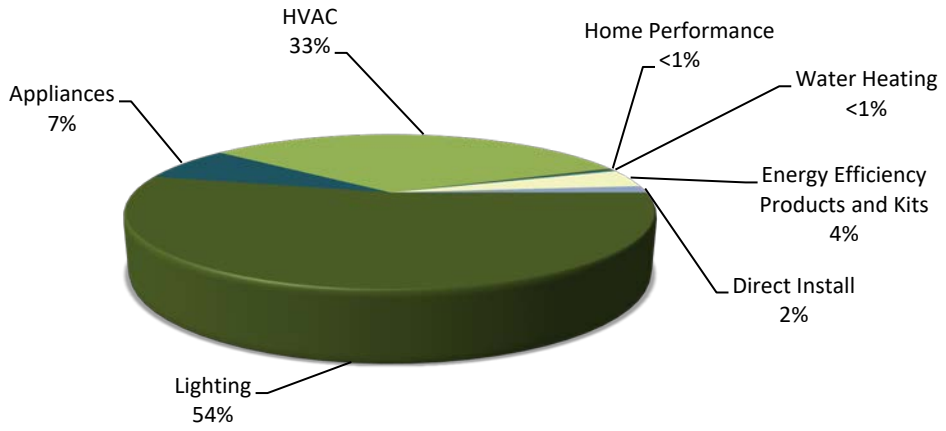
PROGRAM TITLE: POWER OF ONE HOME

PROGRAM DESCRIPTION

Power of One Home is Minnesota Power's portfolio-based residential program designed to help customers make informed decisions about how to save energy in their homes. The program includes rebates on energy-efficient lighting, appliances, heating and cooling, water heating and energy-efficient new construction.

While a variety of technologies are promoted through Power of One Home, lighting continues to be a primary driver of success, accounting for over half of reported savings. Heating and cooling measures represent 33% of the savings while appliances represent 7% of savings. Direct installations, home performance and energy-efficient kits represent a combined 6% of reported savings.

Figure 6: Power of One Home Program – 2020 Savings by Technology (kWh)



RESULTS

The table below details the Power of One Home 2020 approved goals versus actual results.

	Approved Goals		***Actual Results***		***% of Approved Goal***
Total Project Expenditures	$2,377,252		$1,749,973		74%
Total Project Energy Savings (at busbar)	10,590,448	kWh	14,344,836	kWh	135%
Total Project Demand Savings (at busbar)	1,125.5	kW	1,744.1	kW	155%
Participation (measures)	122,841		217,554		177%

EVALUATION METHODOLOGY

This program was evaluated based on the following items:

- Participation levels (number of measures implemented)
- Energy savings (kWh)
- Demand savings (kW)
- Net benefit/cost results (see the benefit/cost summary in the Evaluation section)

Minnesota Power strives to influence residential customers to choose energy efficiency, whether through single end-use technologies or bundling a variety of services and technologies together to optimize further energy savings within their home. Helping customers understand how a house functions and uses energy is a critical step in gaining energy savings. Interactive tools such as MyAccount (an online energy tracking and account management tool) offered by Minnesota Power help accomplish this step, along with experienced and well-versed energy auditors who are the boots on the ground educating homeowners on energy efficiency for their specific situation. These offerings are coupled with strong retailer and HVAC contractor networks that provide resources for customers to attain energy-efficient products and services.

In 2020, Minnesota Power continued its successful Power of One Home program, which relies predominantly on a prescriptive strategy. This strategy makes it easy for customers to participate in the program and streamlines the rebate process. The Company offers a more custom approach when projects require more in-depth analysis into the savings garnered from multiple energy-efficient measures bundled together. This happens, for example, when a customer participates in the Triple E New Construction program. Minnesota Power recognizes that each customer's situation may be unique and knows the importance of offering a variety of paths for them to achieve their goals in energy efficiency.

Many individual components make up the full portfolio known as the Power of One Home program. The following sections provide more information about specific aspects of this program for 2020.

ENERGY STAR® Lighting and Appliances – The challenges of 2020 affected the level of success normally experienced by the ENERGY STAR® lighting and appliance portion of the One Home portfolio. Lighting still accounted for the largest portion of achieved savings thanks to strong existing retailer and manufacturer relationships and consumer demand for LED lighting, though at a level less than previous years. Minnesota Power continues to leverage relationships that include a broad retailer mix of mass merchants, home improvement, warehouse club, independent hardware and drug and specialty stores throughout the service territory to ensure that Minnesota Power customers have access to a variety of LED technology wherever they choose to shop. The demand for LED lighting is driven by consumer awareness of the benefits of this long-lasting, energy-efficient technology. A large part of that educational messaging comes from Minnesota Power's efforts in social media, online advertising, bill inserts, point-of-purchase materials in the stores, and the Company's own website which includes a section devoted to energy efficiency. A strong emphasis is put on ENERGY STAR® options as the superior energy efficiency solution. With the increasing demand for LEDs, and as product lines expand, so does the need for the Company to ensure more rebates and discounts are available for specialty lighting, which was a focus in 2020. The Company anticipates that the growing number of LED products will continue to lead the program for the near future.

In 2020, Minnesota Power offered rebates on ENERGY STAR® refrigerators, freezers and dehumidifiers. Participation in every category was down in 2020 as compared to 2019 in large part due to the consequences of the ongoing COVID-19 pandemic. Most retailers experienced supply shortages of refrigerators and freezers, with many being out of stock for several months of the year. Foot traffic in stores decreased, meaning there were less people viewing point-of-purchase materials that assist in helping sway people to choose the more energy efficient option. Minnesota Power's refrigerator and freezer recycling offering took 837 inefficient refrigerators and 116 freezers off the secondary market in 2020, which is more than 350 units fewer than the previous year, following the trend of lower participation. These numbers are still impressive, as in-home appliance collection was halted starting in March to limit risk for customers and contractors. A quick change in delivery strategy to no contact pick-ups meant that customers were still able to participate in the offering despite pandemic hurdles. Minnesota Power ran an enhanced incentive promotion during the early stages of the stay-at-home orders in an attempt to reach customers who were spending more time at home than ever before. Almost 300 units were collected during the promotion timeframe alone. Although participation was lower in 2020 than in recent years for the appliance category, it is not reflective of the demand that customers have for programs like this.

The Company utilized a lighting and appliance field representative again in 2020 to visit participating retailers throughout the service territory. The field representative conducted in-store visits for the first part of the year but greatly reduced and ultimately suspended visits due to safety reasons around COVID-19 in the latter part of the year. Check-ins were conducted via phone and email when face-to-face meetings were not possible. These meetings are important to the ENERGY STAR® lighting and appliance portion of the One Home program because they allow continuous development of the relationship that Minnesota Power has with lighting and appliance retailers, whether small, family-owned hardware stores or global, big-box chains. The impact COVID-19 had on field outreach went beyond the routine store visits and also resulted in canceled in-store events for 2020. Minnesota Power will continue to explore opportunities for increased engagement with customers and participating retailers in the coming years as well as creative ways to execute these opportunities.

Water Heating – Water heating makes up a significant portion of residential energy use. As such, Minnesota Power offers the following energy-efficient products to help customers reduce electric water heating costs: a water- and energy-saving SmartPak kit, drain water heat recovery ("DWHR") rebates, and heat pump water heater ("HPWH") rebates. DWHR continues to be a part of the overall portfolio but Triple E New Construction presents the best opportunity for this technology as it allows easy access for installation. The demand for this product in Minnesota Power's service territory is minimal, with no participation in 2020. As a result the measure was not included in Minnesota Power's 2021-2023 triennial plan. There was, however, a tenfold increase in heat pump water heater participation over 2019. Minnesota Power continued a promotion started in 2019 that increased the rebate amount to make purchasing a HPWH more appealing based on cost. Additionally, the Company filed a program modification to remove size restrictions that have caused barriers to participation in the past.[24] Opportunities for water heating measures as part of the One Home program are somewhat limited overall, as the main requirement for customers is to use electricity to heat water. The Company is encouraged by the results of 2020 and hopes to see that continue in 2021 and beyond.

[24] Docket No. E015/CIP-16-117, August 20, 2020.

Triple E New Construction – Triple E New Construction is Minnesota Power's systematic approach to energy-efficient housing. Triple E stands for Energy Efficiency, Education and Evaluation and consists of a plan review followed by three on-site visits. The plan review ensures that prescriptive insulation values are being met and that energy-efficient lighting and appliances are being installed. This is followed by a framing visit, which is an opportunity to help the builder identify problem areas for air sealing such as can lights, cantilevers and bonus rooms. The second visit is the pre-sheetrock evaluation. This provides an opportunity to confirm that the insulation values are correct, identify any further air sealing opportunities and check the specifications on the mechanicals. Lastly, the final visit to the home consists of a blower door test, appliance check and light count to determine the home's performance level and eligible rebate amounts. Minnesota Power continues to report average actual savings from Triple E new homes based on modeling of appropriate standard conventional new homes.[25] In 2020, the program experienced half the participation compared to 2019, most likely a result of continued low prices of natural gas and delivered fuels such as propane. The Company recognizes this is one of the best opportunities to educate consumers on energy efficiency as it highlights lighting, appliances, HVAC and thermal integrity. The new construction program was revised in Minnesota Power's 2021-2023 triennial plan to simplify requirements and encourage more participation.

Builders – The Company works with area builders on both a one-on-one basis and through educational outreach such as the annual Energy Design Conference & Expo. This gives Minnesota Power an opportunity to update builders on the Triple E New Construction program standards and encourage them to meet Triple E standards for new homes they build, in addition to providing a vehicle for achieving continuing education requirements.

Direct Installations and Targeted Kit Offers – Direct installation of energy-efficient products during an energy analysis results in meaningful energy savings along with positive customer satisfaction during the time of installation. Minnesota Power offers free direct installation of products to customers participating in the HEA offering in addition to tenants within facilities that participated in the specific multifamily direct installation efforts in 2020. Direct installations were suspended for much of 2020 due to the COVID-19 pandemic. Alternative ways to get energy-efficient products in the hands of eligible Minnesota Power customers were needed and as such, delivery strategies were adjusted through courtesy notifications that were approved by the Department on May 13, 2020 and September 9, 2020. HEA participants were either sent a kit of general energy efficient products or were given a customized bag of products based on the results of an analysis of their home. Tenants in multifamily buildings still received direct installation of needed products, but instead of those being installed by a Minnesota Power contractor, they were installed by the building maintenance staff to reduce the number of third parties present in each unit. The Company will continue to evaluate this offering and work to ensure available products are meeting customer needs into the future.

Energy efficient product kits have been available to Minnesota Power customers for several years. The SmartPak Kit (which includes an energy-saving showerhead, faucet aerators, shower timer and water temperature card) and the Starter Kit (including three LEDs, refrigerator thermometer, shower timer and plug load information) were provided to customers upon request or by participation in various promotions and remote HEA offerings. Minnesota Power claimed full savings for kits delivered through the remote HEA offering, as approved by the Department in the May and September courtesy notifications referenced above. Energy-efficient kits are a good way

[25] Minnesota Power's 2011-2013 Triennial CIP, Docket No. E015/CIP-10-526.

to promote first steps in energy conservation and help generate interest in other program offerings. Minnesota Power promoted SmartPaks and Starter Kits through various methods such as its website, bill inserts and social media. In 2020, the Company recognized October as Energy Awareness Month by promoting the SmartPak to customers with an all-electric rate designation. Postcards sent to targeted customers as well as digital advertising through social media, digital ads and emails resulted in 582 households participating in this promotion. Not only do kits provide the customer with immediate energy savings opportunities with free products, but they are also given additional tools and resources to allow them to continue participating in energy conservation programs for years to come.

Heating, Cooling and Air Conditioning – The HVAC component of the Power of One Home program is an integral and growing part of the overall residential portfolio. In 2020, the program saw a 57% increase over 2019 in kWh savings in HVAC measures including air source heat pumps, ground source heat pumps, electronically commutated motors ("ECM") and circulators. Contributing to this success is an increased effort to engage more consistently with participating contractors, local distributers and HVAC manufacturers on a regular basis throughout the program year. The Company held an air source heat pump ("ASHP") training in February that focused on the advancements of this technology and its capabilities. These outreach efforts, combined with a 20% spring promotion on cold climate air source heat pumps, led to a 177% overall increase in the number of total air source heat pump rebates when compared to 2019. Cold climate rated systems were a main driver of increased participation with a total of 187 units (a 179% increase over 2019). The company also filed a program modification to rebate ductless air source heat pumps in non-electrically heated homes in 2020.[26] This was achieved by only rebating and claiming savings on cooling load. This modification enabled the company to rebate 95 systems that would not have been eligible previously. The increase in heat pump rebates demonstrates that the Company's efforts to move the market to more energy-efficient heating and cooling options are making an impact.

Joint ECM Furnace/Boiler Program with the City of Duluth/ComfortSystems – Minnesota Power and ComfortSystems (the City of Duluth natural gas utility) continued a partnership to offer a joint rebate program on high efficiency furnaces and boilers with ECMs to Duluth residents in 2020. This is the fifth year of this partnership meant to serve shared customers with natural gas and electric incentives with one joint application. This successful partnership is proof that both customers and contractors appreciate the streamlined process. A partnership with ComfortSystems will continue in 2021 in an effort to continually look for ways to enhance the experience for shared customers in the City of Duluth.

Contractor Network –Minnesota Power's contractor network grew by more than 29% as a result of targeted efforts to recruit new contractors. Due to pandemic related policies, in-person visits were limited in 2020. The Company instead leveraged phone calls and email to share information about Minnesota Power's programs in 2020 and will continue to do so in 2021. Minnesota Power conducts a survey of customers who participate in the HVAC program to better understand the customer experience. Gathering feedback on the equipment selection, installation process, equipment performance and overall satisfaction with contractor experience in terms of expertise and quality of service provides valuable insight to Minnesota Power's program offerings. In 2020, Minnesota Power again offered complimentary registration to all participating HVAC contractors to attend the 30th annual Energy Design Conference. This conference offers sessions on a variety of building science and technology topics focused around energy efficiency. The Company feels it is critical to ensure participating contractors are offered continuous education,

[26] Docket No. E015/CIP-16-117, February 7, 2020.

tools and resources on energy efficiency, as they are a trusted resource to customers for information on high efficiency equipment when making energy-related decisions.

Retailer Engagement Network – Minnesota Power strives to keep retailers engaged in lighting and appliance promotions through personal store visits, phone calls, emails, direct mailings, featured stories in newsletters and on its website. Minnesota Power encourages retailers to promote energy-efficient products to customers and provides point-of-purchase and informational materials to use for promotional purposes. The Company has participated in specific event and in-store promotions with key retailers in strategic situations. For example, the Company is a long-time exhibitor featured at the Arrowhead Home and Builders Show in Duluth, and has implemented special offers for customers attending that event in the past. While this wasn't a possibility in 2020 due to the COVID-19 pandemic, partnerships like these enhance utility/retailer relationships and the Company looks forward to continuing to strengthen these partnerships in the future. Also, the continuation of a lighting and appliance field representative to visit participating stores will grow relationships with the stores and help increase participation.

Third-Party Implementation Contractors – Minnesota Power works with several third-party implementation contractors as a fundamental part of its programs. Through these services, Minnesota Power helps customers understand energy efficiency and deliver savings. By tracking customer participation across these programs, Minnesota Power is able to help customers and the utility reap the program benefits, including cumulative impact, while leveraging the economies of scale these contractors can offer.

SUMMARY

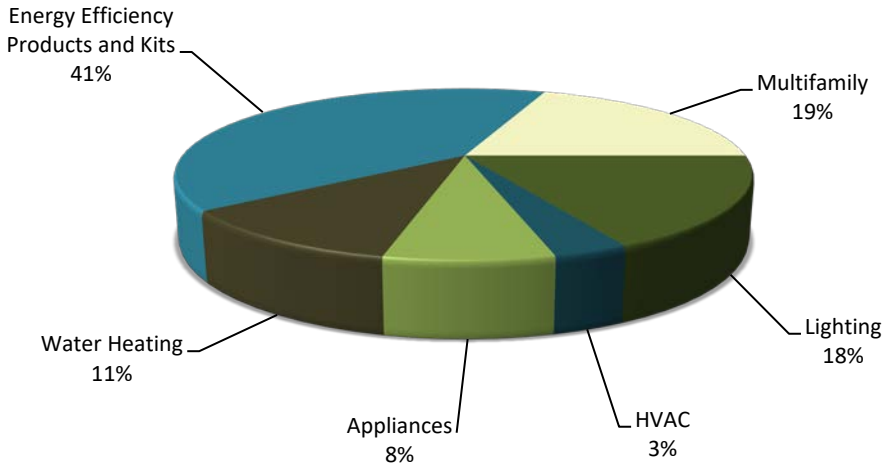
The Power of One Home program had a strong performance in 2020 despite the challenges it faced with the COVID-19 pandemic. The bulk of energy savings was achieved again this year by a successful lighting program, followed closely by a record-breaking year in HVAC savings. This, combined with a balanced portfolio of energy-efficient products and services tailored to customers' specific needs, resulted in a successful program that offers options for customers in different phases of their energy conservation journey. Increased efforts were made to grow the HVAC portion of the residential portfolio in 2020 to accommodate the technology advancements seen in heat pump technologies. Minnesota Power will continue to encourage cost-effective measures like energy-efficient lighting while also continuing to focus on promoting HVAC technologies and redesigning the residential new construction program in 2021.

PROGRAM TITLE: ENERGY PARTNERS LOW INCOME

PROGRAM DESCRIPTION

The Energy Partners Low Income program is designed to provide income-eligible customers with educational resources, HEA and direct installation of energy-efficient products and appliances to help them use energy more effectively for the long term. Program delivery is accomplished primarily through local Community Action agencies throughout Minnesota Power's service territory in conjunction with weatherization services, where possible. The Energy Partners program relies heavily on connecting with customers' in-person, either through HEA or events, which was significantly disrupted in 2020 due to the ongoing COVID-19 pandemic. While Minnesota Power took several steps to engage customers virtually, the pandemic impacted the success of the Energy Partners program in 2020 in several ways. These impacts are described in more detail in the following sections.

Figure 7: Energy Partners Programs – 2020 Savings by Technology (kWh)



RESULTS

The following chart summarizes and compares the results of the Energy Partners program with goals established at the time of program approval. As part of the 2020 extension filing[27], Minnesota Power proposed and received approval to increase the energy savings goal by nearly 80% in 2020 compared to the originally filed goal for Energy Partners in the 2017-2019 Triennial Plan. While the Company was able to achieve higher savings in 2020 than in 2019, unforeseen challenges directly related to the pandemic in 2020 prevented Minnesota Power from reaching these significantly increased goals. Additionally, to address the challenges in 2020, the Department approved a Minnesota Power courtesy notification on November 10, 2020 to allow increased distribution of kits.

	Approved Goals	***Actual Results***	***% of Approved Goal***
Total Project Expenditures	$497,030	$344,822	69%
Total Project Energy Savings (at busbar)	1,682,164 kWh	1,118,250 kWh	66%
Total Project Demand Savings (at busbar)	186.4 kW	112.5 kW	60%
Participants (measures)	19,098	11,875	62%
Energy Analysis - Multifamily Units *(1)*	185	490	265%
Energy Analysis - Single Family Homes *(1)*	900	390 *(2)*	43%

(1) The Energy Analysis figures reflected here are also included in the Energy Analysis section but are included here to indicate the number of individual households that participated in the Energy Partners program.

(2) Of the 390 single family homes that received an audit through the Energy Partners program, less than 5% also received weatherization through the Weatherization Assistance Program.

Minnesota Power provides the following table to summarize 2020 Energy Partners participation and average rebate costs by measure.

[27] Docket No. E015/CIP-16-117, July 1, 2019.

Measure Type	Quantity	Average Cost Per Measure
Lighting	**5,168**	**$7.50**
LED Bulb	4,854	$4.42
LED Torchiere	314	$55.20
HVAC	**19**	**$2,340.53**
Dehumidifier	10	$265.00
Furnace - Delivered Fuels	9	$4,646.67
Appliances	**113**	**$369.16**
Refrigerator Replacement	44	$779.71
Freezer Replacement	4	$328.28
Refrigerator Turn-In	55	$90.00
Freezer Turn-In	5	$90.00
Microwave Oven	5	$139.00
Water Heating	**606**	**$8.24**
Showerhead	153	$21.07
Aerator	271	$4.17
Pipe Insulation	34	$0.70
Shower Timer	140	$3.70
Water Heater Temperature Set-Back	8	$12.00
Energy Efficiency Products and Kits	**2,164**	**$30.56**
Energy Expo Kits	900	$33.53
High User Kits	730	$42.85
Refrigerator Thermometer	406	$3.10
Power Strip - Tier 1	128	$26.71
Multifamily	**3,805**	**$7.69**
LED Bulb	2,973	$5.93
Refrigerator Thermometer	431	$4.09
Refrigerator Replacement	9	$729.05
Refrigerator Turn-In	9	$90.00
Power Strip - Tier 1	20	$26.76
Showerhead	40	$17.94
Aerator – Bathroom	116	$4.75
Aerator – Kitchen	50	$5.43
Pipe Insulation	86	$1.50
Shower Timer	71	$4.16
Grand Total	**11,875**	**$18.98**

EVALUATION METHODOLOGY

This program was evaluated based on the following items:

- Participation levels (number of measures implemented)
- Energy savings (kWh)
- Demand savings (kW)
- Net benefit/cost results (see the benefit/cost summary in the Evaluation section)

As a result of strong historical performance in the Energy Partners program, Minnesota Power requested a significant increase to the 2020 Energy Partners savings goal through the CIP Triennial Plan extension filing submitted on July 1, 2019.[28] In this filing, the Company increased its targeted energy analysis of single family homes by more than double from 350 to 900, resulting in an increase to the energy savings goal for the program of nearly 80%. While Minnesota Power continues to have ambitious targets for the Energy Partners program, the unforeseen challenges associated with the COVID-19 pandemic prevented the Company from reaching these goals in 2020.

Minnesota Power halted in-home energy audit programs in March 2020 to protect the health and safety of customers and contractors. While other programs within Minnesota Power's CIP portfolio were able to continue through other channels including retail markdowns and rebates for energy-efficient technologies, the Energy Partners program relies almost solely on energy savings achieved through in-home energy audits. The Company adapted to these unexpected challenges by adding a virtual option to the Energy Partners program in June 2020. However, the interest from customers was minimal. Several customers spoke with one of Minnesota Power's auditors regarding a virtual energy analysis but ultimately the vast majority elected to postpone participation in the program until an in-home option was available.

In-home audits resumed in September 2020 with strict safety protocols and procedures in place. However, the Community Action agencies that deliver the majority of Minnesota Power's Energy Partners program were experiencing significant backlog associated with delivery of the Weatherization Assistance Program. Minnesota Power did recruit an independent auditor, not associated with the Community Action agencies, to assist with delivery of the Energy Partners program in the fall of 2020 and will continue to do so, at least until the pandemic-related backlog subsides. Supply chain interruptions from the COVID-19 pandemic have also impacted the ability for auditors to effectively serve income-qualified customers. Availability of refrigerators and freezers was limited for much of the year in 2020 and retailers that participate in the Energy Partners program have cautioned that delays are expected to continue into 2021. While Minnesota Power was able to replace over 50 refrigerators/freezers through the Energy Partners program in 2020, this is less than half of the refrigerators/freezers replaced in 2019. Additionally, there were over 50 refrigerator/freezer orders from 2020 that Minnesota Power was not able to fulfill during the program year due to inventory issues. Those orders will be fulfilled as appliances become available.

The 17th Annual Energy Awareness Expo was also impacted by the COVID-19 pandemic in 2020. The event, offered in partnership with ComfortSystems and AEOA, typically provides a warm meal for income-qualified customers in the Duluth area, access to information about energy assistance and a free energy-savings kit. Due to the inability to host large gatherings, Minnesota Power elected to host a virtual Energy Awareness Expo in October 2020. A webpage

[28] Docket No. E015/CIP-16-117.

was created with tools and information designed to connect customers to energy affordability resources including the Energy Assistance Program, utility bill information, energy saving tips and information about other available affordability programs. Eligible customers were sent an invitation to attend the virtual event with an offer for a free energy saving kit. Because the event was virtual, Minnesota Power was able to expand the event and include more customers than would typically be invited to the Energy Awareness Expo. Eligible customers in Duluth were sent an energy saving kit with electric and gas measures in partnership with ComfortSystems. Income-qualified customers with high usage (over 1,000 kWh per year) outside of Duluth were sent an energy saving kit with electric measures. In total, 1,630 kits were delivered to income-qualified customers through the event.

Minnesota Power also partnered with the Clean Energy Resource Team ("CERTs") to identify food shelves throughout its service territory to provide information about affordability programs. Customers received a flyer with information about the Energy Partners program, the Customer Affordability of Residential Electricity ("CARE") discount rate, COVID-19 protections and an offer for a free energy saving kit.

Further impacting participation in the Energy Partners program was a general sense of skepticism of free products and services that many customers expressed. The ongoing presidential election resulted in an influx of direct mailings through much of the year and the COVID-19 pandemic created an opportunity for increased scams. While Minnesota Power promoted options to participate remotely in the Energy Partners program including virtual energy audits, energy saving kit promotions and the virtual Energy Awareness Expo, the skepticism from customers paired with a lack of familiarity with technology made it difficult to engage with customers through remote avenues.

Minnesota Power recognizes that many customers need assistance now more than ever and as such, the Company is actively identifying opportunities to overcome the obstacles customers began facing in 2020 and continue to face today. Minnesota Power has contracted with additional vendors to supplement the limited availability of refrigerators and freezers to northern Minnesota and to provide support to Community Action agencies in performing energy audits. Minnesota Power will also continue to cross-promote the Energy Partners program with other available assistance programs, including the CARE discount rate, with a specific focus on customers with high electric usage.

SUMMARY

Energy Partners continues to be an important part of Minnesota Power's overall conservation program and is beneficial to the community at large. Despite the hurdles presented by the COVID-19 pandemic, the Company was able to deliver a successful program in 2020, achieving higher energy savings than the previous program year. Although the increased energy savings were not enough to meet the ambitious targets set by the Company prior to the unexpected challenges of 2020, Minnesota Power is confident that the modified delivery strategies implemented in 2020 will ensure a successful program in 2021. By working and collaborating with provider networks and communities, Minnesota Power has delivered an impactful program while connecting people with essential services and resources during a time of significant need. The Company will continue to find opportunities to meet customer needs through this important program.


One
Business

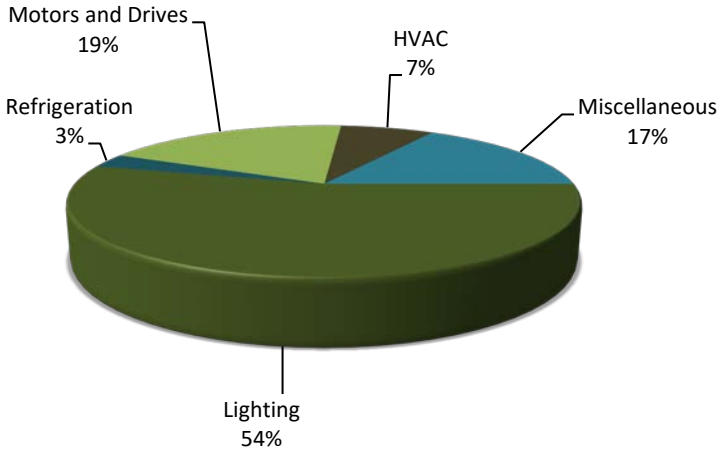
PROGRAM TITLE: POWER OF ONE BUSINESS

PROGRAM DESCRIPTION

The Power of One Business program serves as the primary forum for reaching and serving business, industrial, agricultural and public sector customers. Minnesota Power recognizes that customers have different priorities and objectives when it comes to investment decisions and this program provides the flexibility required to serve the unique circumstances of various business types. By utilizing a wide variety of resources, including rebates, incentives, tools, and expertise, Minnesota Power is able to respond to a dynamic mix of priorities, technical opportunities and specific economic factors.

The challenges caused by the COVID-19 pandemic in 2020 temporarily altered how Minnesota Power and its partners delivered the successful Power of One Business program. Minnesota Power halted in-person audits for much of the year to protect the safety of customers, contractors and employees. The Company identified opportunities to work with customers virtually to perform energy analysis, process rebates and provide technical guidance. While Minnesota Power was successful in meeting its energy savings goals in 2020, the virtual delivery channel has impacted the Company's ability to proactively identify projects in the field. In-person work with customers is a critical component to the success of the Power of One Business program and will be necessary to continue meeting aggressive energy-savings goals in the future.

Figure 8: Power of One Business Program—2020 Savings by Technology (kWh)



RESULTS

The table below details Power of One Business 2020 goal accomplishments.

	Approved Goals	*Actual Results*	*% of Approved Goal*
Total Project Expenditures	$4,565,608	$3,993,144	87%
Total Project Energy Savings (at busbar)	45,863,694 kWh	55,310,990 kWh	121%
Total Project Demand Savings (at busbar)	7,881.0 kW	4,954.4 kW	63%
Participation (measures)	3,366	1,485	44%

2020 Power of One Business Projects Overview by Customer Class

	Total $ Rebated	*Number of Measures*	*Total Estimated kWh Saved (meter)*
Agricultural	$ 12,413	29	359,149
Commercial	$1,983,300	1,263	35,206,751
Industrial	$584,262	193	14,491,876

EVALUATION METHODOLOGY

Minnesota Power evaluated energy and demand savings based on manufacturer end-use data, proven engineering methods, the Minnesota Technical Reference Manual and/or site-specific engineering studies. A component of all project savings and demand reduction estimates involves end-use calculations. In 2020, Minnesota Power continued its expanded emphasis on pre- and post-project analysis.

When considering energy-savings opportunities, Minnesota Power reviews projects with consideration toward not only energy savings, but also operating costs, effective design and technology utilization, unit output and overall productivity. By following a well-grounded model, energy conservation can become an integral part of sound investment decisions, supporting the customer's overall asset planning and informed resource considerations, and garnering buy-in from operations employees. This model leads to identification of effective short-term projects while also providing a path toward long-term effective use of energy resources by capturing the growing number of customers that have projects spanning across multiple years as opposed to a "one-and-done" approach. Awareness of how systems work together is critical and attention to "systems thinking" with regard to processes pertaining to energy usage is important in providing solutions to customers' energy challenges.

Through this program, both new and established technologies and process improvements are promoted and delivered. Other tools may include cost sharing for design assistance on a proposed new building, a compressed air study at an existing manufacturing facility, and/or monitoring facilities to identify "hot spots" to pinpoint the greatest opportunities for improvement. Power of One Business also reinforces the importance of the commissioning process when projects are implemented, both during initial start-up and during periodic tune-up periods. The Power of One Business delivery strategy is to influence customer choices through relationships and ongoing interactions. Minnesota

Power also works with manufacturers, distributers and contractors to assist in the delivery of conservation technologies. The program offers a wide range of services including education, training, research, performance studies, energy analysis and overall energy awareness, providing customers with tools and resources they need to make informed choices.

The Company's customer-driven marketing strategy ensures that customers' operational needs are addressed while retaining flexibility in program delivery. Customers with less complex projects are better suited to use prescriptive type rebates and delivery methods, while customers with larger or more complex processes are encouraged to potentially reach a greater level of energy savings through in-depth analysis of their facilities. In any case, customers are provided a simple pre-application to get the process started. They are assigned a field representative who can help them tap into the Power of One Business program and identify delivery methods at the appropriate level to fulfill their needs.

END-USE CATEGORIES & ENGAGEMENT

Lighting & Controls – Lighting continues to be one of the main contributors to the Power of One Business program. As recently as 2017, lighting accounted for 65% of the One Business kWh savings, while in 2020, lighting savings dropped to 54% of the One Business kWh savings. This is primarily due to Minnesota Power's effort to promote other energy savings technologies such as compressed air and process improvement. Minnesota Power continues to offer custom incentives for new and retrofit LED lighting projects. With LED technology, controls are also becoming a much more popular and cost-effective way to implement lighting savings. Although controls represent a smaller portion of the overall CIP savings, they are still an important part of the One Business program results.

Refrigeration – Minnesota Power offered incentives for new and retrofit refrigeration projects, which include refrigeration equipment, controls, appliances and evaporative fan motor retrofits.

Motors/Pumps – Minnesota Power offered incentives for new or replacement equipment such as premium efficient motors, variable frequency drives ("VFD") and electronically commutated motors ("ECM").

HVAC & Controls – Minnesota Power offered incentives for new or replacement commercial and industrial heating, ventilation and cooling equipment including roof top units, chillers, heat pumps and controls.

Miscellaneous – Minnesota Power offered incentives for new or retrofit projects with technologies including compressed air upgrades, commissioning, appliances, IT equipment or process improvements.

In 2020, Minnesota Power implemented the following engagement strategies as part of the One Business program.

Direct Installations – In 2020, Minnesota Power representatives visited two communities (Pine River/Backus and Park Rapids) and provided on-site analyses at local businesses with the direct installation of energy-saving products. By providing these measures, customers gained an increased awareness of products available, leading to conversations about

future projects. These visits also allowed Minnesota Power to gain valuable information about technologies used, helping the Company to identify additional energy-savings opportunities.

Multifamily Initiatives – Minnesota Power continued to work with multifamily facilities as part of the One Business custom commercial program, completing custom projects at 32 multifamily properties in the 2020 program year. Additionally, in 2020 Minnesota Power continued to explore direct installation options not only for in-unit applications but common area applications as well. For more information on Minnesota Power's Multifamily offerings see the Multifamily Summary included after the Energy Analysis program.

Lighting Enhanced Rebate Offering– In 2020, Minnesota Power provided an extra incentive for high bay lighting fixtures, exterior lighting fixtures, can light replacements, as well as extra incentives for dimming controls per fixture. These promotions allowed commercial and industrial customers with large indoor space and high ceilings to enter the LED market at a much lower cost. Emphasis was focused on energy savings, quality of light, safety for workers and the public, as well as lower maintenance costs. Personal contacts with businesses were made to assist these customers with understanding of the incentives and help in working through the projects.

Benchmarking – Minnesota Power uses benchmarking with facilities to help identify energy-savings opportunities when making facility upgrades and to identify maintenance improvements. In addition, Minnesota Power continues to share information with those responsible for facility management and serve as a resource for information on new technologies and application techniques.

Bonus Incentives – To further enhance participation in the Power of One Business program and make energy-saving resources a priority in business planning, Minnesota Power offers a bonus incentive to customers that agree to place the incentives they receive in a revolving account. Customers that agree to the terms of this program receive a 10% premium on top of their standard rebate as a reward to establish and maintain an account designated exclusively toward future energy-savings activities. These accounts have proven useful in funding smaller day-to-day projects as well as providing seed money for taking the next step towards even greater efficiencies.

ELECTRIC UTILITY INFRASTRUCTURE PROJECTS

In 2020, Minnesota Power did not claim savings from any EUI projects. However, CIP professionals worked closely with Minnesota Power's facility managers to identify energy-savings opportunities within its facilities and is working on a project to be completed in 2021.

SUMMARY

In 2020, Minnesota Power far exceeded its energy-savings goal for the Power of One Business program, achieving 121%. Though the actual participation numbers (listed as measures) are lower than the approved goals, this is more indicative of the types of projects than it is of actual participation.

The Power of One Business program is designed to empower customers to make informed and effective energy choices by asking the right questions early in projects and reinforcing that energy efficiency is a multi-step process that begins with design and goes well beyond any single isolated project. Through program tools and resources, customers can develop an energy management plan that will add value to their businesses for the long term.


One
Community

PROGRAM TITLE: CUSTOMER ENGAGEMENT

PROGRAM DESCRIPTION

The Customer Engagement program is an integral part of raising awareness about Minnesota Power's residential, commercial and community-based energy conservation programs to a wide variety of customers. Through this program, Minnesota Power connects with customers on multiple levels, creating relationships and engaging customers through events, training and education. Educational outreach and collaboration with local energy-conscious organizations continues to be the foundation for delivering Customer Engagement programs. Connecting with these civic organizations, businesses, schools, churches and a variety of community agencies increases awareness about programs and creates a more energy-conscious community. Educational outreach via interactive online tools, specialized trainings, advertising, literature and participation in community events gives customers a trusted ongoing resource for their questions and a sounding board for their ideas.

The COVID-19 pandemic impacted Minnesota Power's Customer Engagement program in several ways in 2020. The majority of planned community outreach events were cancelled and, due to stay at home orders, Minnesota Power was unable to conduct in-store promotions and several other planned outreach activities and special events. Additionally, several direct mail communications and promotions were postponed in order for Minnesota Power to focus on COVID-19-related customer support messaging. Although it was challenging navigating the pandemic, the Customer Engagement program worked to maintain relationships with customers and the community by adapting one of the Company's most impactful community events to a virtual platform and by pivoting to focus on online digital engagement channels whenever possible, ensuring that the programs offered remained meaningful, useful and relevant to evolving customer needs during an unprecedented time.

RESULTS

The following chart summarizes and compares the results of the 2020 Customer Engagement program with goals established in the Triennial Filing.

	Approved Goals	***Actual Results***	***% of Approved Goal***
Total Project Expenditures	$925,025	$577,235	62%
Utilization of the online energy tools and materials (visitors)	100,000	88,256	88%
Participation in community energy events	8,000	4,944	62%
Number of seminars, demonstrations and conferences	35	10	29%
Customer profiles or newsletters completed	15	16	107%

EVALUATION METHODOLOGY

Minnesota Power tracked the number of visitors (hits) who used online energy tools and program information via the Minnesota Power website, the number of participants at community events, the number of seminars and demonstrations presented or co-sponsored, and the number of customer profiles or newsletters published.

UNDERSTANDING

Collaboration

Collaboration is a key component in delivering meaningful programs to a wide variety of customers. Minnesota Power collaborates with HVAC contractors, business owners, area utilities, community agencies and energy-conscious organizations to expand outreach and availability of program involvement. The following sections provide examples of how Minnesota Power connected with various stakeholders to promote energy conservation in 2020.

HVAC Contractor Engagement – Minnesota Power continued to build on its existing relationships with participating HVAC contractors in 2020, while also encouraging new HVAC contractors to join the program. In addition to regular communications via email blasts distributed to participating contractors, information was provided on program offerings, rebate submittal requirements, special promotions and educational elements. Email blasts were also sent to HVAC contractors in the service territory who were not currently participating in programs to inform them of the benefits to both them and their customers. Minnesota Power's participating contractor list grew by 29% in 2020.

Lighting and Appliance Retailers – Minnesota Power works closely with lighting and appliance retailers. In 2020, the Company continued with a lighting and appliance field representative to increase outreach to retailers. The field representative adapted to the pandemic and conducted meetings remotely by phone and email when in-person visits were not possible. Between 40 and 100 contacts were made to ENERGY STAR® retailers each month in 2020. During these check-ins, the representative made sure the retailers had all the appropriate point-of-purchase materials available and gave retailers a chance to share any feedback they had about the program. Minnesota Power also shared resources with participating retailers around COVID relief and emergency loan opportunities available locally.

Community Action Agencies – Minnesota Power collaborates with community agencies to deliver the Energy Partners low income program through HEA, the direct installation of energy-saving measures, and the replacement of inefficient appliances. In an effort to keep the communication lines open with agencies, quarterly calls were held to give program updates and collaborate on ways to best reach customers. Minnesota Power continued to host an annual Listening Session with agencies in January 2020 to provide program updates and gather insights for continuing the success of this program. A close relationship with the agencies was even more critical in 2020 as auditors worked to balance safety and the need for assistance in both the Energy Partners and Energy Assistance/Weatherization Assistance programs.

Building Operator Certification Training – In 2020, Minnesota Power continued to sponsor and promote Building Operator Certification training by hosting one BOC I class that was held virtually due to the COVID-19 pandemic. This nationally recognized certification program provides education focused on building systems and energy efficiency in facilities. It also presents

an opportunity to tie course learning directly to energy savings by providing tuition reimbursement to attendees for completing the course and identifying a CIP-eligible project.

Utility Partnerships – Building relationships with neighboring utilities in an effort to provide the most comprehensive energy conservation services possible to shared customers is an important part of Minnesota Power's energy conservation delivery strategy. A long-standing relationship with Duluth's natural gas utility, ComfortSystems, has resulted in years of collaboration on several different programs including HEA, joint rebates and benchmarking commercial facilities. Minnesota Power partnered with Minnesota Energy Resources Corporation in 2020, to deliver energy analysis and direct installation of energy-efficient technologies to commercial and multifamily buildings as well as virtual home energy analyses. The Company will continue to look for ways to collaborate with other utilities who share the same customer base to streamline the customer experience.

Stakeholder Partnerships – Minnesota Power appreciates the integral role stakeholders have in creating successful conservation programs. Minnesota Power has a long-standing history of partnering with local and regional stakeholders to advance energy efficiency for all customer segments. In 2020, these partnerships included work with the Center for Energy and Environment ("CEE") on research specific to air source heat pumps for customers in Minnesota, continuation of the work that was started in previous years with the Minnesota Multifamily Affordable Housing Energy Network ("MMAHEN") on energy efficiency in multifamily facilities, and work with the CERTs on opportunities to engage with income-qualified customers through the Energy Partners program.

Community Blitz – Minnesota Power continued delivering community-based energy education in 2020 through a joint small business and residential strategy. In 2020, Minnesota Power representatives visited two communities (Pine River/Backus and Park Rapids) to provide a mix of on-site and virtual analysis along with either direct installation of energy-saving products or delivery of customized energy efficient product kits. Minnesota Power continues to partner with gas utilities to install both electric and gas measures, when applicable. By providing these products, customers gained an increased awareness of available technologies and conversations were spurred regarding future projects. While visiting both market segments, Minnesota Power gained valuable information about technologies used and identified additional energy-savings opportunities unique to these areas.

Educational Outreach Events

Through educational outreach events, Minnesota Power is able to expand on its information sharing, raise awareness about program offers, build relationships and seek valuable input from customers, trade allies and community members; however, nearly all of the planned community outreach events were cancelled in 2020 due to the COVID-19 pandemic.

Energy Design Conference – Minnesota Power hosted the 30th annual Energy Design Conference & Expo, in person, in February 2020, in Duluth, Minn. This two-day conference focused on energy-efficient building and sustainable design. With nearly 40 educational sessions, an exhibit hall filled with the best in the building business and an abundance of networking activities, this event is a staple in northern Minnesota for those interested in energy efficiency, high performance homes and responsible building choices. The Energy Design Conference was one of the only in-person events held in 2020.

17th Annual Energy Awareness Expo – The annual Energy Awareness Expo continues to be a worthwhile and meaningful educational outreach event designed to engage and empower income-qualified customers. The event typically brings together a variety of community outreach organizations, Community Action agencies and energy providers and gives attendees the opportunity to share ideas, learn ways to get the most for their energy dollars and receive energy-saving products. Due to the COVID-19 pandemic, this event was not able to take place in person in 2020, but Minnesota Power staff pivoted to create a virtual Energy Awareness Expo experience for customers, complete with personal invitations and custom online resources. Minnesota Power sent kits including energy saving technologies and resource materials directly to customer homes and, given the virtual nature of the event, the Company was able to include customers outside of the Duluth area for the first time. The virtual kits and remote audits were approved by the Department on May 13, 2020 and an updated courtesy notification that was approved on September 9, 2020.

Tenant Education Events – Minnesota Power offered an educational tenant event through its multifamily program again in 2020, with a goal of providing tenants the opportunity to learn about energy efficiency. One tenant event took place before COVID-19 restrictions were put into place with over 20 tenants in attendance. Tenants were provided information about the direct installation measures included in the program and were given an opportunity to ask questions about the technology, program and energy conservation in general. This is a valuable tool and educational opportunity for multifamily tenants and Minnesota Power will continue promoting events like this when in-person gatherings are available.

Tools and Resources

Power of One Internal Communications – In an ongoing effort to increase internal understanding and awareness of Power of One programs, Minnesota Power uses digital posters throughout company facilities to share current programs. The featured promotions and campaigns are integrated into a loop of company updates on screens throughout Minnesota Power's corporate office building and are also available on the internal company webpage. These efforts spurred additional interest and inquiries about Minnesota Power's conservation programs by employees of the Company. Though with much of Minnesota Power's workforce in a work-from-home circumstance since March, office building promotion decreased for much of 2020.

Energy-Efficient Kits – The SmartPak Kit (which includes an energy-saving showerhead, faucet aerators, shower timer and water temperature card) and the Starter Kit (includes three LEDs, refrigerator thermometer, shower timer and plug load information) were provided to customers upon request or by participation in various promotions and offers.

Power of One Education-Based Literature – In an ongoing effort to provide up-to-date and relevant information to customers, Minnesota Power developed a variety of literature, brochures and fact sheets focused on energy-efficient technologies and conservation programs. These items were distributed through direct mail, bill inserts, home energy analyses, tenant events and community events. A selection of literature was also provided online for downloading or mail distribution via an online order form.

The *Duluthian* – In an effort to raise awareness about the Power of One Business program, particularly for small- to mid-sized businesses, commercial-oriented ads were placed in the bi-monthly Duluth Chamber of Commerce publication, the *Duluthian.* Minnesota Power promoted

the Power of One Business pre-application (available online) and area businesses who have participated in the Power of One Business program and made energy-efficient changes within their businesses and facilities.

Power of One Section of Minnesota Power's Website – The Power of One is prominently featured on Minnesota Power's website and is a widely-used destination for energy education and information. Through interactive tools, energy and appliance calculators, rebate and incentive information and up-to-date program information, customers are able to learn how they use energy and develop an action plan based on this knowledge. The website also serves as a valuable resource for Minnesota Power Call Center Representatives and front line employees when answering customer questions about energy conservation programs. MyAccount continues to be a valuable tool in helping customers understand how they use energy and learn ways to take charge of energy costs. This secure online portal shows current and historical energy usage and offers energy markers to track energy-saving purchases, online bill payments, access to bill history and actions that may affect customer usage.

Promotion – A multi-faceted approach was taken to promote Minnesota Power's energy conservation programs for residential customers, commercial customers and the community at large. Ads were placed in newspapers, magazines and online to promote energy conservation, the Power of One programs, and community expos and events. Programs were also promoted via social media and through email blasts to opt-in members of the Power of One energy team. Facebook, Twitter and Instagram posts prove to be an effective method of communicating with customers, with a large amount of interaction through Likes, Shares and Comments. For the first time in 2020, Minnesota Power also utilized Google search ads to promote energy conservation programs.

SUMMARY

Through active participation within the community, an interactive website, internal and external promotions and specialized trainings, the Customer Engagement program serves as the communications vehicle for all of Minnesota Power's Power of One programs. The Customer Engagement program adapted to the COVID-19 pandemic and, wherever possible, continued to focus on key drivers to empower customers to make effective energy choices. Spending in the Customer Engagement program was under budget in 2020 due to the cancellation of several events and planned promotions as a result of the pandemic. Minnesota Power continues to believe that communication with customers strengthens conservation program offerings and serves as a foundation for an energy-conscious community. Minnesota Power anticipates that the Customer Engagement program will become an even more critical component of program success as savings goals increase.

PROGRAM TITLE: ENERGY ANALYSIS

PROGRAM DESCRIPTION

Energy Analysis is a cross-market program that provides a pipeline for energy efficiency projects through direct-savings programs. The goal of the Energy Analysis program is to help residential, commercial/industrial and agricultural customers develop a core understanding of how they use energy. With this knowledge, customers are able to make informed choices about their investment in energy-saving products and services. Energy Analysis focuses on working with customers to develop an action plan that translates recommendations into measurable, achievable steps. Participants are connected with a multitude of program resources such as online calculators, baseline energy consumption data, incentives, product training, technology specifications and online information. Where applicable, direct installation of products may be included during a customer visit.

Energy Analysis for residential customers consists of HEA and/or Home Performance. For commercial customers, it consists of three major categories: informational analysis (Level I), end-use analysis (Level II) and facility analysis (Level III). In addition, Minnesota Power offers design assistance. The focus of Energy Analysis is on identifying, evaluating and delivering the benefits of total energy savings, which includes reduced operating and maintenance costs, increased productivity and comfort and greater control over energy usage. Energy Analysis considers the unique needs of each customer and facility. Ultimately, the customer decides what their energy-savings objectives are and Minnesota Power helps them identify products and services to meet those requirements.

Energy auditors and third-party contractors are an integral part of Minnesota Power's Energy Analysis delivery network. Auditors and/or energy analysts are uniquely qualified and have the proper tools and training to better connect their services with conservation program opportunities and incentives. A major focus in 2020 was ensuring the safety of Minnesota Power's customers, employees and third-party contractors in light of the COVID-19 pandemic. As such, Energy Analysis was delivered virtually where possible.

EVALUATION METHODOLOGY

Minnesota Power documents the number and type of energy analysis activities delivered.

RESULTS

The following chart summarizes and compares the results of the Energy Analysis program with goals established at the time of program approval.

	Approved Goals	***Actual Results***	***% of Approved Goal***
Total Project Expenditures	$ 963,280	$725,498	75%
HEA *(1)*	565	307	54%
Home Performance *(2)*	616	259	42%
Energy Analysis – Low Income Multifamily (renters)	185	490	265%
Energy Analysis – Low Income Single Family Homes	900	390	43%
Business Energy Analysis *(3)*	3,211	2620	82%
Business Facility Performance *(4)*	465	192	41%
Total Participants	5,942	4,258	72%

(1) This includes remote and in-person audits
(2) This includes proper installation of CAC/ASHP and end-use analyses on ground source heat pumps, Triple E plan reviews and HEA with Building Diagnostics
(3) The analysis categories include: Level I; Level II; Level III & agricultural assistance.
(4) This includes engineering/design assistance (including plan reviews and lighting design) and benchmarking.

HEA – Energy Analysis for the residential sector includes HEA, excluding low income (as determined by Low Income Home Energy Assistance Program approval ("LIHEAP")). An HEA can help the customer determine how much energy is being used and what can be done to get the most for their energy dollars. Professional auditors help identify ways to save energy in homes and provide energy-saving direct installation products.

Minnesota Power's HEA offering looked very different in 2020 as compared to previous years. The Company suspended in-person HEAs in March of 2020 to reduce the risk of exposure to COVID-19. Less than two months after, Minnesota Power went live with a brand new remote HEA option, as approved by the Department in a courtesy notification approved by the Department on May 13, 2020 and an updated courtesy notification that was approved on September 9, 2020. The Company began allowing in-person visits in late 2020, but only in special circumstances. Overall, 144 customers participated in the remote HEA option, which encouraged customers to utilize a virtual platform to allow an experienced energy auditor to tour the customer's home, help identify energy-saving opportunities, and leave the customer with recommendations on what steps they can take to save energy and save money. This mimicked the standard in-person HEA in almost all areas except for the free direct installation of energy efficient products. To address this, Minnesota Power provided kits to customers that included general energy conservation products that they could install themselves with virtual assistance from an energy auditor, if needed. Minnesota Power further developed this offering to include customized kits with products hand-picked by the auditor based on the virtual walk-through analysis.

Minnesota Power continued using a targeted community approach in 2020, performing Community Blitzes in Pine River/Backus and Park Rapids. Postcards were sent to residential customers, door hangers were left at homes and phone calls were made to residents in each of these locations to promote the HEA program and to encourage interested customers to sign up. Other promotional efforts such as referral drawings, radio and newspaper advertisements and social media posts were utilized to help market this program, focusing on the new virtual delivery strategy. A

partnership with the gas utility Minnesota Energy Resources Corporation allowed the customer a comprehensive look at both their electric and gas energy usage. These targeted initiatives to promote the HEA program in 2020 increased awareness of the virtual offering to customers.

Home Performance – This category includes those services which take into account system performance along with building science best practices. It includes offerings such as HEA with Building Diagnostics ("HEA w/BD"), Triple E New Construction and Central Air Conditioner ("CAC") and Air Source Heat Pump ("ASHP") Design Assistance.

An HEA w/BD takes a traditional HEA to the next level and includes blower door testing and infrared thermal scanning. This is beneficial for homes that experience cold drafts or sweaty windows in the winter, uneven temperatures between rooms, heating or cooling systems that do not keep the home comfortable, or ice dams. Participation through March of 2020 was tracking steady with historical trends at around 30. Due to the COVID-19 pandemic, HEA w/BD has been suspended since mid-March 2020.

The Triple E program maintained the higher "Level 2" standards from 2012, which included increased values for both prescriptive (i.e., thermal efficiency, moisture control, air quality, heating and domestic hot water) and performance (i.e., heating and air tightness) measures.

CAC and ASHP Design Assistance is a service provided to customers through participating trained HVAC contractors. The contractor focuses on ensuring proper sizing, air flow and refrigerant charge of installed cooling equipment. Minnesota Power continued to promote the importance of these services to its customers.

Low Income Energy Analysis – The Low Income Energy Analysis program consists of single family and multifamily (renters) HEA. This program is delivered through partnerships with local Community Action agencies and various delivery vendors. Active agencies in 2020 included the Arrowhead Economic Opportunity Agency ("AEOA"), Mahube-Otwa Community Action Partnership, Lakes and Pines Community Action Council, KOOTASCA Community Action and Tri-County Community Action Partnership. Minnesota Power also partnered with local energy auditors to supplement the work of the Community Action agencies for both single family and multifamily Energy Analysis in 2020. Minnesota Power was not able to achieve its aggressive goals for single family Energy Analysis in 2020 due to unforeseen challenges of the pandemic. The Company was able to perform Energy Analysis on 390 single family homes as compared to its 2020 goal of 900. While energy analysis in single family homes was heavily impacted by the COVID-19 pandemic and related health concerns, Minnesota Power was able to reach hundreds of residents in multifamily buildings by partnering with property managers to install energy-saving products and limit the risk of exposure. In 2020, 15 low income multifamily properties were analyzed and 490 units were impacted through direct installation of energy efficiency products.

Business Energy Analysis – The Business Energy Analysis program continues to utilize analysis as a tool for educating and encouraging customers to make informed energy decisions. Business Energy Analysis involves preliminary energy use analysis and benchmarking. It includes a high-level business and facility interview, billing analysis, ENERGY STAR® Portfolio Manager analysis and/or Energy Use Index ("EUI"). The levels used are Level I (high-level site visit and walk-through analysis); Level II (energy survey and engineering analysis plus end-use analysis); and Level III (detailed analysis of capital-intensive modifications). For 2020, MP also tracked customer contacts. These were customer interactions that didn't reach Level I Analysis but

involved developing potential energy conservation projects. In 2020, there were 2,250 customer contacts.

In 2020, Minnesota Power collaborated with local gas utilities where shared program delivery resulted in implementing energy conservation into a successful project design. Since a majority of energy savings in new construction and commissioning/recommissioning are thermal, this joint cooperation with the natural gas utility fosters a more uniform approach to delivering energy-saving measures in collaboration.

Business Facility Performance

Design Assistance – Minnesota Power provides customers the tools needed to evaluate their facilities in order to make informed choices with their energy-savings options. By providing plan reviews for remodel or new construction projects, or a lighting design study when moving to new LED technology, Minnesota Power is able to provide the resources needed for customers to make informed choices. In 2020, Minnesota Power performed 170 design assistance projects.

Certification Evaluations – In 2020, Minnesota Power was involved with 22 benchmarking efforts, providing customers with assistance in developing B3, ENERGY STAR® and EUI scores. Through the use of benchmarking scores, customers with multiple facilities are able to target candidates to best utilize limited energy funding in order to make the greatest impact.

SUMMARY

Energy Analysis is often the first step in connecting with a customer. The wide range of Energy Analysis activities enables Minnesota Power and its third-party contractors to deliver accurate and timely information for the customer's decision-making process, from awareness to interest and from action to follow-up. It helps Minnesota Power introduce new technologies, increase the saturation of existing energy-efficient products, and build relationships that enhance ongoing dialogue with customers and their provider networks.

While the Energy Analysis program continues to be an important component of Minnesota Power's conservation programs, participation levels have fluctuated over the years for a variety of reasons, with the main driver being resource availability. Minnesota Power continuously explores opportunities to improve program offerings to ensure customers find value in the information being provided. Energy Analysis is one of the most direct ways to encourage customers to take the next step toward energy efficiency, empowering them to make effective energy choices.

MULTIFAMILY SUMMARY

While Minnesota Power did not have a separately filed program for multifamily initiatives in 2020, the Company incorporated a variety of multifamily specific activities within the other existing programs. The following information is not provided for the purposes of regulatory compliance, but rather the Company wishes to provide a unified and clearer view of these efforts for stakeholders focused on multifamily. Savings, spending and participation related to these activities are officially accounted for in the One Home, Energy Partners, One Business and Energy Analysis program reporting numbers. This section serves to informally summarize and report on all the 2020 multifamily efforts. The activities mentioned here include efforts that Minnesota Power has offered for many years through the custom commercial program, and new offerings that have been developed and piloted over the last several years.

The table below summarizes the multifamily kWh savings that were achieved as part of the One Home, Energy Partners and One Business programs. The Column titled "Program" indicates which program the measures are officially included in for reporting purposes.

2020 Multi-family Savings		
	kWh – Meter	**Program**
Non Low Income Multifamily	**14,640**	**One Home**
Refrigerator Turn-in(1)	14,640	
Low Income Multifamily	**196,956**	**Energy Partners**
LED Bulb	96,302	
Refrigerator Replacement	3,298	
Refrigerator Turn-in	8,235	
Refrigerator Thermometer	40,945	
Power Strip - Tier 1	2,120	
Showerhead	14,144	
Aerator - Bathroom	10,208	
Aerator - Kitchen	4,400	
Pipe Insulation	3,956	
Shower Timer	13,348	
Common Area Direct Install	**69,471**	**One Business**
LED Bulb	69,471	
MF Commercial Custom Project	**1,808,513**	**One Business**
HVAC	373,974	
Lighting	1,151,399	
Miscellaneous	151,734	
Motors and Drives	131,406	
Grand Total	**2,089,580**	

(1) While there were no direct installation projects in market rate multifamily buildings, a property manager requested to participate in refrigerator recycling for multiple units.

The table below summarizes the participation in the various offerings. The "Standard Residential" and "Low Income" sections of the table reflect the number of facilities and individual units that received energy analysis and direct installation measures. The number of units reflects the number of unique customer participants. Additionally, the "Commercial Custom" portion of the table reflects the number of completed One Business projects that were associated with a multifamily facility in 2020.

Non Low Income Multifamily	
# Facilities Received Analysis*	2
# Facilities Received DI	0
Number of Units Received DI	0
Low Income Multifamily	
# Facilities Received Analysis*	15
# Facilities Received DI	13
Number of Units Received DI	490
MF Commercial Custom Project	
# of Facilities with Completed Projects	32

***Facilities Received Analysis includes facilities that received full building audits and comprehensive recommendation reports but either did not have enough opportunity for direct installation measures or had to postpone multiple times due to the COVID-19 pandemic.*

Developing Relationships – As an additional step towards exploring options in the multifamily sector, Minnesota Power continues to work with Minnesota Multifamily Affordable Housing Energy Network ("MMAHEN") to partner with organizations whose goal is to increase energy efficiency and conservation in multifamily buildings. Minnesota Power has attended in-person meetings and conference calls with like-minded organizations through this network, resulting in creative collaboration opportunities and gaining a wealth of resources for further exploration in this sector.

Joint Multifamily Direct Installation Program – In 2020, Minnesota Power continued to focus on a program that would provide an all-encompassing residential/commercial hybrid approach to multifamily facilities. Minnesota Power collaborated with gas utilities when possible, using a joint implementation contractor to provide full on-site inspections, install energy conservation measures in units, provide educational events for tenants and deliver comprehensive reports inclusive of recommendations for both electric and gas measures to building owners. This gave customers an all-inclusive overview of their building's energy use. Minnesota Power worked with Minnesota Energy Resources Corporation to visit five multifamily customers throughout shared service territories, including income-qualified multifamily buildings. For facilities where gas partnerships were not possible, Minnesota Power provided the same deliverables except for the inclusion of the gas measures. In all, almost 500 apartment units benefited from direct installation of over 3,805 energy conservation measures. Having an approach that addresses the needs of both the facility operators as well as the tenants is critical to the Company's efforts in the multifamily sector. Utility collaboration will continue into 2021 and beyond to provide more all-inclusive multifamily energy audits.

Multifamily Tenant Events – In 2020, Minnesota Power offered educational events as part its multifamily program, providing tenants an opportunity to learn about energy efficiency. One event took place before COVID-19 restrictions were put into place with over 20 tenants attending the event. Tenants were provided information about the direct installation measures included in the program and were given an opportunity to ask questions about the technology, program and energy conservation in general.

Custom Multifamily Projects – Minnesota Power encouraged property owners and managers who were building new multifamily facilities or performing complete remodels in 2020 to make energy-efficient choices in their lighting, appliances and HVAC systems. These projects were followed throughout the planning and design phases, and rebates were processed through Minnesota Power's One Business energy conservation program. Minnesota Power processed over $165,000 in rebates to multifamily facilities and captured over 1.8 million kWh savings (at the meter).

APPENDIX B: DEMAND SIDE MANAGEMENT

This Appendix of the 2021 Integrated Resource Plan ("2021 IRP") contains information regarding Minnesota Power's planning and strategies for demand side management ("DSM"), Energy Efficiency ("EE") and Conservation Improvement Programs ("CIP"). Minnesota Power's performance and planning outlooks for DSM, EE and CIP are broken into two parts in this Appendix:

1. Minnesota Power's Energy Efficiency Resource Alternatives and Conservation Program Strategy; and
2. Order Point 14 Considerations, Potential energy-efficiency competitive-bidding process.

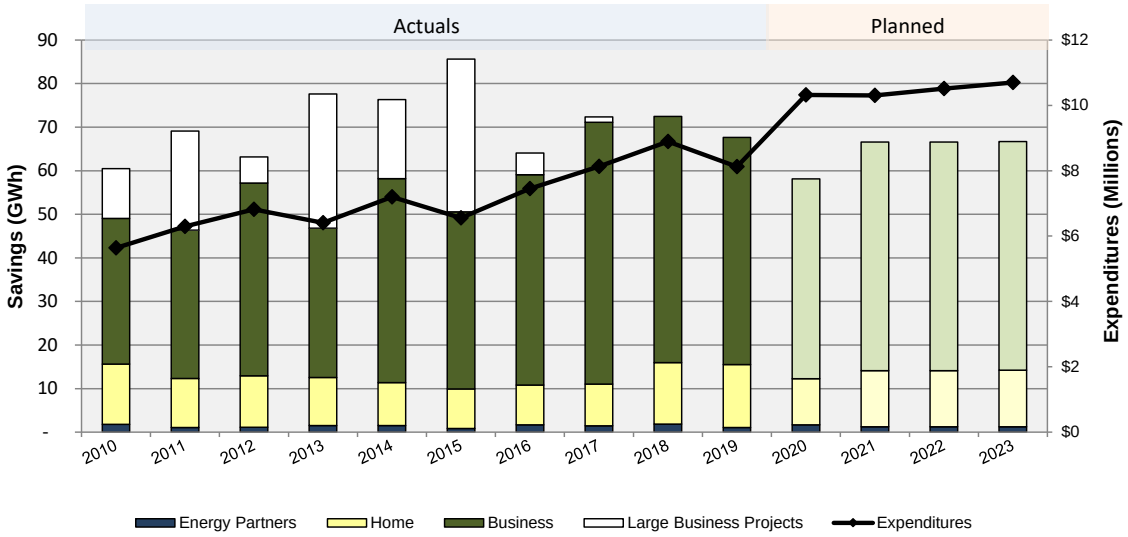
Part 1: Minnesota Power's Energy Efficiency Resource Alternatives and Conservation Program Strategy

Minnesota Power (or the "Company") is committed to providing sustainable energy-efficiency programs, as demonstrated by its strong historical CIP achievements. Since the Minnesota Next Generation Energy Act of 2007 ("NGEA"), Minnesota Power has been refining and expanding upon its proven conservation program platform to deliver cost-effective savings and customer value. The Company remains dedicated to continuous program improvement and views ongoing CIP initiatives as part of its broader *Energy**Forward*** resource strategy; a strategy designed to provide a safe, reliable and affordable power supply while identifying sustainable solutions for reducing carbon emissions further. Part 1 discusses the development of the Company's energy conservation targets included in the 2021-2023 CIP Triennial Plan filing[1] and the 2021 IRP baseline assumptions, as well as two increased EE alternative resource scenarios.

Figure 1 below reflects historical (first year) savings achievements and the proposed savings goals for 2021-2023, as filed in the 2021-2023 CIP Triennial Plan. Minnesota Power, together with its customers, community stakeholders and trade allies, has achieved success through its energy conservation programs, delivering energy savings at or above the state's 1.5 percent energy-savings goal since 2010 when the goal went into effect, all while maintaining focus on targeted program objectives – quality installations, informed decisions, EE and safety. The proposed goal for 2021-2023 and the assumed EE in the baseline forecast reflect the Company's intent to continue achieving savings of 2.5 percent which is well above the state's 1.5 percent goal.

[1] Docket No. E015/CIP-20-476.

Figure 1: Minnesota Power Historical CIP Achievements and 2021-2023 Goal



2021 IRP Baseline Assumptions and the 2021-2023 CIP Triennial

For purposes of both CIP Triennial planning and 2021 IRP modeling, Minnesota Power started with the 2020-2029 Minnesota State Demand Side Management Potential Study ("Potential Study") funded by the Department of Commerce and led by the Center for Energy and Environment ("CEE")[2]. The energy savings goals filed in the 2021-2023 CIP Triennial Plan are largely aligned with the Potential Study "Program", which will be referred to as the Baseline scenario (adjustments were made and discussed below and in Appendix A). Additionally, to align resource planning EE assumptions and modeling with CIP planning, the Company used the adjusted Baseline scenario that informed the CIP Triennial goals as the baseline EE assumption built into the custom demand forecast. These savings targets are well above the State of Minnesota's 1.5 percent energy-savings goal for CIP,[3] which equates to roughly 40 GWh on Minnesota Power's system. The adjusted Baseline scenario assumes roughly 65 GWH in 2021-2023 and ranges from 73 GWh in 2024 to 80 GWh by 2029. The average annual savings in the period after the current CIP Triennial (2024-2029) is roughly 77 GWh. This is in line with the Minnesota Public Utilities Commission's Order Point 12 from the Company's integrated resource plan ("IRP") filed in 2015,[4] which directed the Company to assume a planning goal of 76.5 GWh of EE. The savings goals in the CIP Triennial Plan and the efficiency levels assumed in the baseline assumptions for the IRP are aggressive, but the Company believes these are achievable. However, it is important to note that the significant impact of the COVID-19 pandemic, including a disruption in program services in the EE industry and potential long-term impacts, was not known or accounted for in the Baseline or alternative energy savings

[2] https://mn.gov/commerce-stat/pdfs/mn-energy-efficiency-potential-study.pdf
[3] Minn. Stat. § 216B.241, subd. 1c(b) ("Each individual utility and association shall have an annual energy-savings goal equivalent to 1.5 percent of gross annual retail energy sales unless modified by the commissioner under paragraph (d). The savings goals must be calculated based on the most recent three-year weather-normalized average.").
[4] Order Approving Resource Plan with Modifications, Docket No. E015/RP-15-690 (July 18, 2016) ("Minnesota Power's average annual energy savings goal is set at 76.5 GWh.").

scenarios. Therefore, it is important to take a reasonable approach to long-term EE assumptions to minimize risk and uncertainty.

Summary of Alternative Energy Efficiency Scenarios

Based on the aforementioned Potential Study, current CIP strategy, and analysis of historic performance and future opportunities, Minnesota Power provided two alternative EE scenarios with additional energy and capacity savings above the Baseline scenario (built into the base/expected 2020 Annual Electric Utility Forecast Report ("AFR2020") forecast). The Company further developed cost projections consistent with each outlook. The two alternative energy efficiency scenarios evaluated in the IRP analysis are:

1. "High" Scenario: modeled to reflect the midpoint between "Very High" and "Baseline" scenario (Program scenario from the Potential Study) scenarios, and
2. "Very High" Scenario: modeled after the adjusted Potential Study "Max Achievable" scenario.

Minnesota Power worked closely with CEE to update the original assumptions used in the Potential Study for the Minnesota Power-specific projections, in order to accurately capture the Company's specific territory, customer base, system, and historical experience with CIP.

The process of updating the CEE potential projections and method used to incorporate them into the load forecast are documented in the Company's AFR2020, included as Appendix A. These scenarios were incorporated in the EnCompass modeling process as supply side alternatives in the capacity expansion plan analysis.

The alternative efficiency scenarios ("High" and "Very High") considered in the IRP analysis begin in year 2024. These alternatives were not modeled as an option for 2021-2023 in light of currently-approved levels and due to limited ability to significantly increase EE above the approved 2021-2023 CIP Triennial Plan in the short-term. The potential study projected energy savings for the years 2021-2029. All three EE scenarios therefore assume new program implementation (and new savings) each year through 2029, after which no new saving programs were assumed. For the purposes of modeling the alternative scenarios in the 2021 IRP, only the additional costs and additional first year GWh/GW savings above the baseline are included. A high-level summary of the baseline EE (assumed in the forecast) and the increased efficiency scenarios modeled in the resource plan are shown in Table 1 and includes the following:

- % of Sales: Represents the level of 2024 savings under each scenario as a percentage of average weather normalized 2017-2019, non-CIP exempt retail sales—the baseline for the 2021-2023 CIP Triennial Plan.[5]
- Energy: Total estimated first year energy savings associated with each scenario for the year 2024.
- Energy Above Base: The additional GWh associated with each scenario in terms of first year savings as compared to the baseline plan (EE assumed in forecast).
- Summer Peak: Estimated first year GW demand savings coincident with Midcontinent Independent System Operator ("MISO") summer peak for the year 2024.

[5] In accordance with Minnesota Rules part 7690.1200, 2017-2019 weather-normalized average retail energy sales were used to calculate the electric savings goal for Minnesota Power's 2021-2023 Triennial CIP. This equated to 2,646,854,358 kWh, net of CIP exempt customers at the time of the Triennial Filing. Savings as a percent of sales in Table 1 were calculated using this figure.

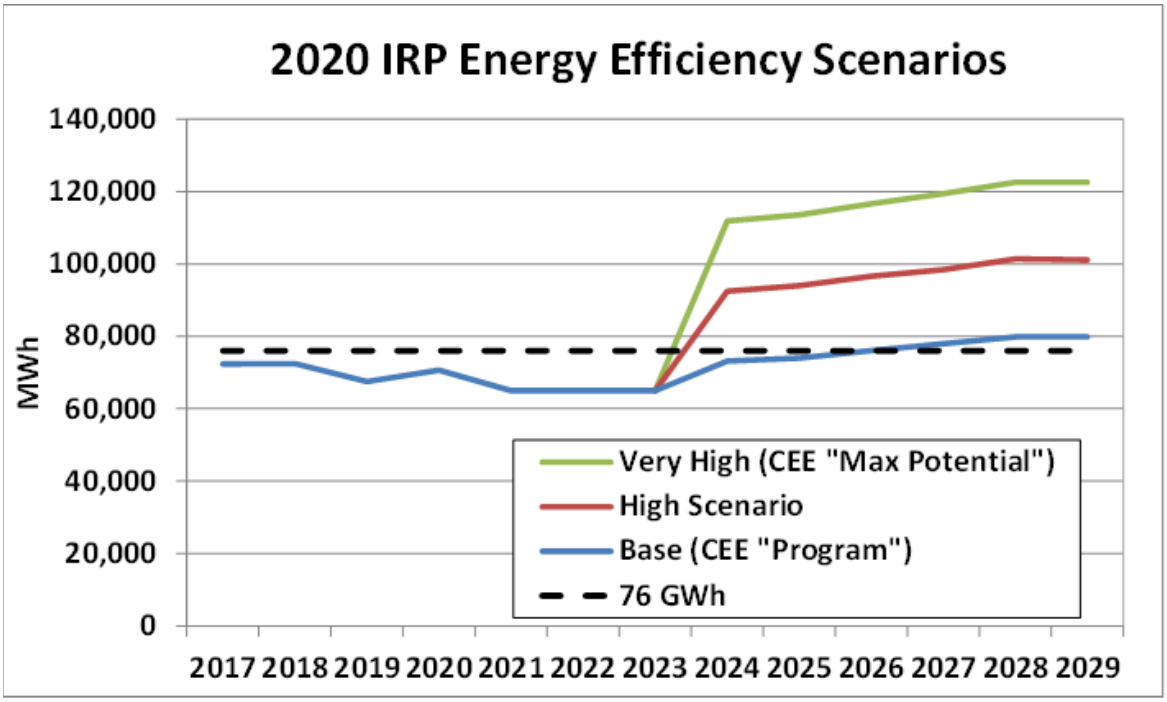
- Summer Peak Reduction Above Base: The additional first year GW demand savings associated with the scenario as compared to the baseline plan.
- Incentives: Rebates to incentivize customers to install/complete an efficiency measure.
- Non-Incentives: All other costs incurred by the Company to implement the 2024 EE plan.
- Total Cost: The estimated total program costs assumed to achieve the level of savings associated with each scenario in the year 2024.
- Total Cost Above Base: The estimated additional spending needed to achieve the incremental savings as compared with the existing plan for the year 2024.

Table 1: Summary of Energy Efficiency Scenarios

Scenarios		*First Year Annual Savings at the Generator (Energy: GWh/ Peak: MW)				First Year Program Costs (Million $)			
Plan	% of Sales** (Rounded)	Energy	Energy Above Base	MP Summer Peak	Summer Peak Reduction Above Base	Incentives	Non-Incentive	Total	Total Cost Above Base
Adjusted Base (CEE "Program")	2.76%	73.2	–	6.4	–	$10.42	$5.41	$15.81	$0
High	3.49%	92.5	19.3	8.1	1.7	$17.16	$6.86	$24.02	$8.19
Adjusted Very High (CEE "Max Achievable")	4.22%	111.8	38.7	9.7	3.3	$31.97	$8.31	$40.28	$24.45

Figure 2 below reflects the first year EE savings (measured at the generator) assumed in each year through 2029 for each of the three scenarios.

Figure 2: 2020 IRP Energy Efficiency Scenarios



Energy Efficiency Scenario Development and Assumptions

As previously noted, the Minnesota statewide Potential Study was the starting point for developing the baseline and alternative EE scenarios. As part of the Potential Study, CEE developed and defined two "achievable" potential scenarios. The following excerpt from the Final Report defines these two scenarios:

> *"In addition to total economic potential (i.e., the total potential if all possible measures were installed that meet cost-effectiveness criteria), two program scenarios were calculated:*
>
> - *Maximum achievable potential: This is the subset of economic potential that is achievable considering market barriers, given the most aggressive program scenario possible. This study assumed financial incentives would cover 100 percent of the incremental cost of each measure, along with very aggressive marketing and program designs to achieve maximum market penetration of the measures.*
> - *Program potential: The program potential is a subset of the maximum achievable, given constraints in implementation. This study assumed that financial incentive levels are dropped to 50 percent of the incremental cost of each measure, which is a typical scenario used for planning purposes in Minnesota, and a good benchmark for aggressive programs nationally. The project team still assumed aggressive marketing and program designs for this scenario."*

Savings Targets and Contributions

The goal of the Potential Study was to produce a statewide EE potential report, and while some regional and investor-owned utility ("IOU"-specific) inputs were used in the methodology, other major inputs were developed at the statewide level. CEE leveraged the load forecast file in

the Company's most recent prior IRP (2015), which was a 2014 vintage and fairly optimistic in its outlook for customer demand growth. The Company recognized this likely resulted in an inflated estimate of kWh savings potential relative to its current, more moderate outlook, and conferred with CEE on reasonable methods for updating the potential savings estimates. The Company worked with CEE to update its model with the most current customer outlook and CIP exemptions to produce a more accurate estimate of Minnesota Power's potential savings. Once the savings potential was updated for the Baseline and Very High (Max Potential) scenarios, a third scenario was created (High scenario) with a target savings level at the mid-point between the adjusted Baseline (Program) and Very High levels.

Additionally, the Minnesota Power-specific savings contributions by class and technology included in the original Potential Study were evaluated and ultimately modified to better reflect Minnesota Power's history and anticipated opportunities based on experience and internal analysis. As a result of this process, for 2021-2023, these contributions were modified to reflect historical patterns, accounting for changes that impact measure and savings opportunities, including market penetration and updates to approved measures and savings calculations as defined in the Technical Reference Manual ("TRM").[6] Updated avoided costs and net benefit estimates were also taken into account to evaluate changes in cost-effectiveness for various technologies compared to in the past. The most significant change to the assumed measure contributions for 2021-2023 was an increase in lighting measures. The Potential Study originally assumed changes to lighting standards would significantly impact savings opportunity from lighting in CIP portfolios as early as 2022. However, the TRM used for the 2021-2023 CIP Triennial Plan was not updated to reflect changes in the calculation of lighting savings, allowing for utilities to maintaining higher levels of planned savings through lighting measures.

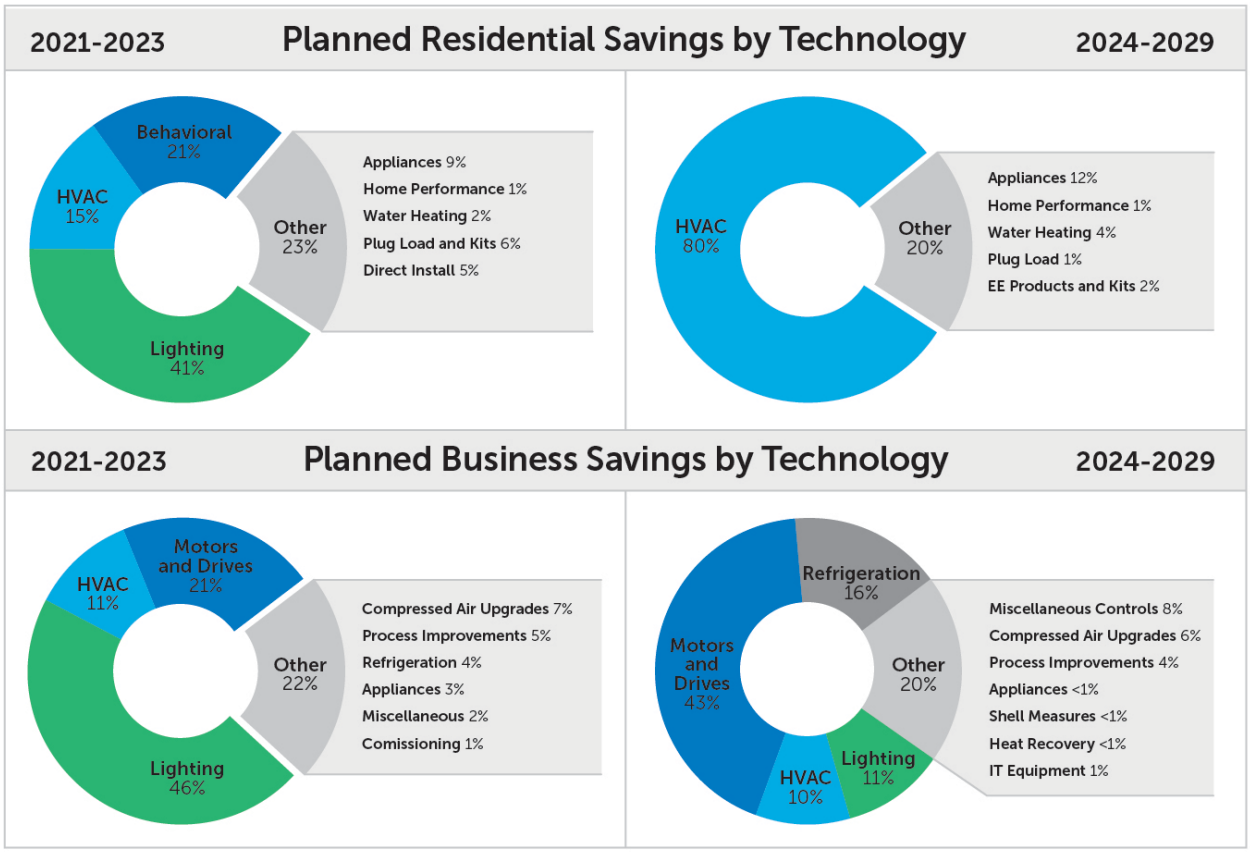
Beyond 2023, in the Baseline scenario, Minnesota Power updated the savings contributions by technology in each class to reflect anticipated reductions in lighting savings opportunity, which for both residential and commercial/industrial ("C/I") classes have historically accounted for the majority of the savings achievements. For residential, this resulted in a significant shift to Heating Ventilation & Air Conditioning ("HVAC") savings and for C/I this resulted in a noticeable shift away from lighting into other evolving technologies such as motors and Heating Ventilation Air Conditioning & Refrigeration ("HVACR").

For the alternative savings scenarios (High and Very High) – all measures in the Baseline scenario were scaled by the same percentage to achieve the targeted levels for each.

The graphs in Figure 3 below reflect Baseline savings contributions by technology for the 2021-2023 period and for 2024 and beyond:

[6] State of Minnesota Technical Reference Manual for Energy Conservation Improvement Programs (Jan. 20, 2020), https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId={D0CDC86F-0000-C832-A29A-F7752BF4A0D9}&documentTitle=20201-159365-02.

Figure 3: Planned Savings by Technology



Scenario Cost Development

Cost assumptions were developed for each scenario for 2024 through 2029. For use in the 2021 IRP analysis, the costs associated with the High and Very High scenarios are incremental to the Baseline scenario. All costs were estimated for the year 2024 and escalated each year proportional to the change in energy savings.

Baseline Scenario

2024 cost assumptions for the Baseline scenario were developed to serve as the baseline costs against which the costs for the two higher scenarios would be compared. These costs were developed using the assumptions defined in the potential study and therefore reflect:

- Customer incentives (rebates) equal to 50 percent of the measures incremental cost where incremental cost is the difference between the cost of the standard efficiency product or action, or sometimes purchasing nothing/taking no action, compared to the cost of the efficient product or action.
- Aggressive program design and marketing. Non-incentive costs increase linearly with savings.

High Scenario

There is no equivalent scenario from the statewide Potential Study for this scenario, as it represents the midpoint between the adjusted Baseline scenario and the adjusted Very High (max achievable) scenario. The Company assumed:

- Customer incentives (rebates) would be set at 65 percent of incremental measure costs. This is roughly halfway between recent historical rebate levels and the max scenario (100 percent).
- Aggressive program design and marketing. Non-incentive costs increase linearly with savings.

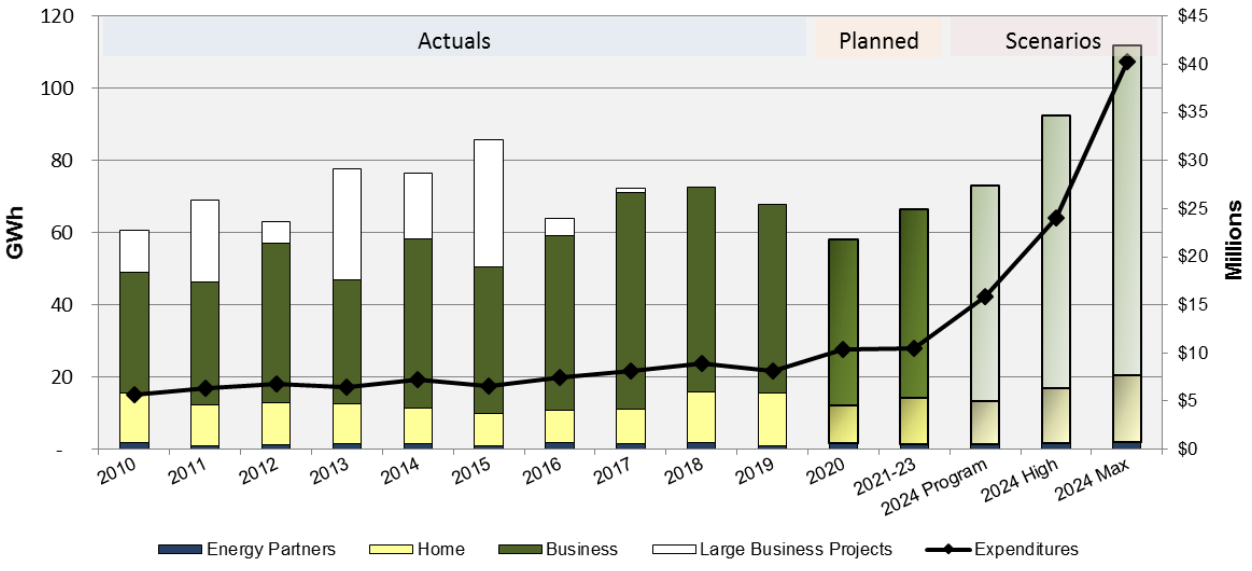
Very High (Max Achievable) Scenario

Like the Baseline scenario, Minnesota Power based incentive costs for the Very High scenario on the potential study scenario description:

- Customer incentives (rebates) are assumed at 100 percent of incremental measure costs.
- Aggressive program design and marketing. Non-incentive costs scale linearly with savings.

Figure 4 below expands on the Minnesota Power Historical CIP Performance graph (Figure 1) to include the planned costs and savings for 2020 and 2021-2023 (as filed in the respective triennial plans), and 2024 costs and savings as modeled for the Baseline and two alternative scenarios used in the 2021 IRP analysis:

Figure 4: Historical, Planned, and Modeled CIP Energy Savings (First Year) and Costs

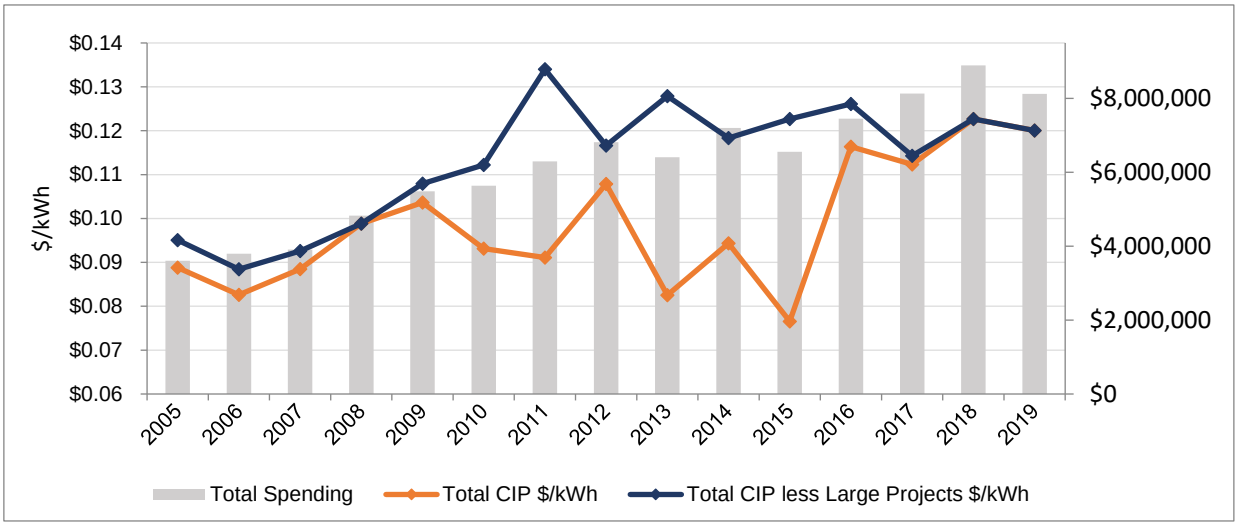


Discussion of Increasing Costs

Minnesota Power largely drew from the Potential Study assumptions to determine scenario costs for the 2021 IRP. The Company's own analysis of historical and anticipated cost trends indicates strong alignment with and support of the Potential Study assumptions. Specifically, stronger incentive levels and more aggressive program development and marketing will be critical to deliver at the levels discussed in the 2021 IRP.

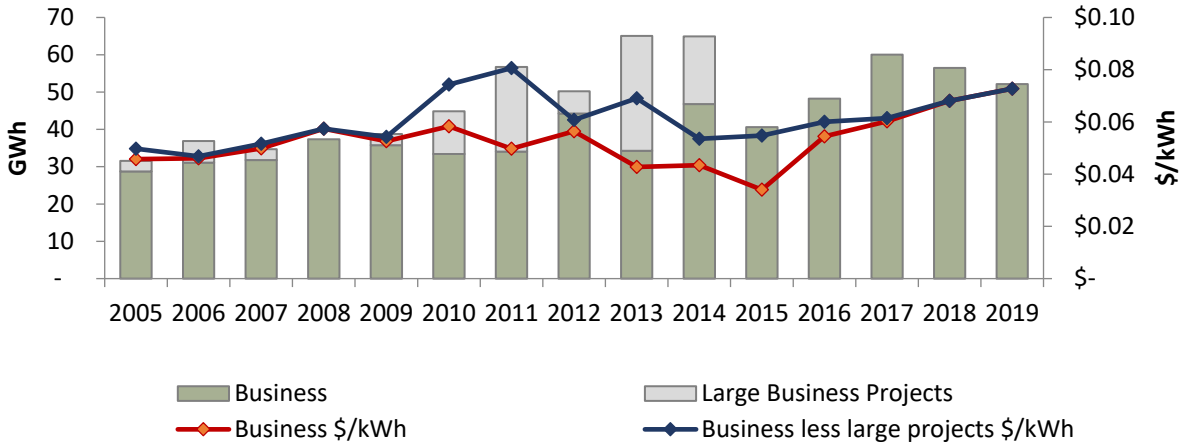
Further, costs have been increasing steadily over the past several years, in part due to the loss of large project opportunities. Between 2010 and 2015, such opportunities accounted for about 30 percent of total savings and only 4 percent of total spending. Figure 5 below reflects the (first year) cost per kWh saved trend between 2005 and 2019. Between 2010 and 2015, where significant large project savings were realized, the average cost per kWh saved was $0.09/kWh – compared to an average of $0.12/kWh between 2016 and 2019 when opportunities for these types of projects were no longer available.

Figure 5: Total Spending and Cost per kWh Trending



C/I savings have historically comprised the vast majority of the Company's savings achievements. Between 2005 and 2019, C/I savings accounted for approximately 80 percent of CIP savings – ranging from 73 percent to 88 percent in any given year. Similarly, C/I costs are a significant driver of overall costs. Figure 6 below shows how C/I costs per kWh have trended over time. Over the last three years, C/I costs per kWh saved have steadily increased even as savings have decreased. This suggests that in order to achieve higher savings goals, the cost per kWh saved will not only continue to trend up, it will increase more significantly with higher levels of EE. This increase will likely be further compounded as the opportunity for cost-effective lighting projects decreases.

Figure 6: Commercial and Industrial Cost per kWh (First-year Savings)



With the absence of large C/I projects, costs have increased over the last several years. However, cost-effective, efficient lighting products and projects across all customer sectors made their way to the forefront of Minnesota Power's CIP programs. Lighting measures became an obvious and easy energy saving option for customers to identify and adopt, especially as they also became increasingly cost-effective for consumers. Customer awareness and acceptance increased as LEDs became the primary option on the market. These factors, in combination with strategic program design, resulted in lighting making up the majority (over 50 percent) of savings over the last several years, helping to keep program costs lower despite the loss of large C/I projects.

However, with changing codes and standards impacting lighting measure baselines and significant market saturation of commercial efficient lighting, beginning in 2024 the majority of additional lighting opportunity is expected to go away. The Company will need to find ways to replace the most cost-effective and prevalent measure in its existing portfolio, which in 2019 accounted for nearly 37 GWh in savings (54 percent of total 2019 savings). The types of technologies that will need to replace those savings will be more costly measures that customers may not be as ready (or financially able) to adopt without significant education and incentives to do so. Increased education and outreach, along with higher rebate levels drive the increase in costs assumed in the 2024 Baseline scenario as compared to the 2021-2023 (filed) budgets.

Scenario Details

The following tables include the plan parameters for each scenario (savings, costs, participation for Baseline, High, and Very High scenarios).

Table 2: Year 2024 Energy and Demand Savings (MISO Summer Peak)

	Program	High	Very High	Program	High	Very High
	kWh - Generator	kWh - Generator	kWh - Generator	kW - Generator	kW - Generator	kW - Generator
Residential	12,019,394	15,202,866	18,423,077	1,377.1	1,742.9	2,111.2
HVAC	9,653,139	12,212,160	14,794,019	1,133.8	1,434.8	1,737.9
Home Performance	85,203	99,404	127,805	3.4	4.0	5.2
Energy Efficiency Products and Kits	272,032	344,568	417,620	23.8	30.1	36.5
Water Heating	449,076	569,730	690,423	37.2	47.2	57.2
Appliances	1,491,432	1,890,102	2,288,021	171.1	216.8	262.5
Plug Load	68,512	86,901	105,188	7.8	9.9	12.0
Admin Costs	0	0	0	0.0	0.0	0.0
Low Income	1,319,275	1,666,899	2,031,465	139.0	176.3	213.4
HVAC	50,927	58,157	83,974	13.4	16.9	20.4
Water Heating	535,470	678,921	822,080	44.4	56.3	68.2
Appliances	360,715	457,940	553,927	40.3	51.2	61.9
Energy Efficiency Products and Kits	372,162	471,881	571,483	40.9	51.9	62.9
Admin Costs	0	0	0	0.0	0.0	0.0
Business	59,826,687	75,624,419	91,373,241	4,866.8	6,143.8	7,395.2
Lighting	6,617,469	8,241,744	9,995,622	883.8	1,103.5	1,340.2
Refrigeration	9,621,879	12,232,833	14,838,140	655.2	829.3	1,002.9
Motors and Drives	25,946,629	32,872,342	39,949,432	946.9	1,195.5	1,443.4
HVAC	6,075,527	7,642,025	9,208,522	1,468.1	1,850.3	2,232.6
Compressed Air Upgrades	3,679,508	4,785,381	5,660,022	158.1	204.7	242.0
Process Improvements	2,253,887	2,575,871	3,219,838	163.2	186.6	233.2
Appliances	207,143	263,613	313,837	48.3	61.3	73.1
Shell Measures	269,540	394,856	402,419	1.7	2.0	2.4
Heat Recovery	170,483	230,992	250,778	86.8	130.3	130.3
Miscellaneous Controls	4,525,664	5,715,246	6,827,273	368.5	462.7	554.1
IT Equipment	458,959	669,518	707,358	86.2	117.6	140.9
Admin Costs	0	0	0	0.0	0.0	0.0
Indirect Impact	0	0	0	0.0	0.0	0.0
Grand Total	**73,165,356**	**92,494,183**	**111,827,783**	**6,383.0**	**8,062.9**	**9,719.8**

Table 3: Year 2024 Participation

	Program	High	Very High
	Participants	Participants	Participants
Residential (Measures)	9,439	11,962	14,489
HVAC	2,328	2,949	3,572
Home Performance	6	7	9
Energy Efficiency Products and Kits	698	884	1,071
Water Heating	3,006	3,812	4,617
Appliances	2,845	3,605	4,366
Plug Load	556	705	854
Admin Costs	0	0	0
Low Income (Measures)	6,409	8,125	9,840
HVAC	94	118	144
Water Heating	2,707	3,431	4,155
Appliances	622	790	956
Energy Efficiency Products and Kits	2,986	3,786	4,585
Admin Costs	0	0	0
Business (Projects)	968	1,226	1,482
Lighting	121	152	185
Refrigeration	78	100	121
Motors and Drives	366	465	564
HVAC	264	333	402
Compressed Air Upgrades	29	38	45
Process Improvements	7	8	10
Appliances	37	47	56
Shell Measures	9	11	13
Heat Recovery	9	11	13
Miscellaneous Controls	45	57	68
IT Equipment	3	4	5
Admin Costs	0	0	0
Indirect Impact	0	0	0
Grand Total	**16,816**	**21,313**	**25,811**

Table 4: Year 2024 Costs

	Program	High	Very High
Residential	$2,559,353.02	$3,883,875.36	$6,511,717.62
HVAC	$1,553,904.76	$2,560,462.35	$4,770,536.21
Home Performance	$25,410.89	$41,871.06	$78,012.24
Energy Efficiency Products and Kits	$5,865.83	$9,665.49	$18,008.30
Water Heating	$15,358.79	$25,307.62	$47,151.97
Appliances	$76,151.80	$125,479.92	$233,788.43
Plug Load	$6,072.98	$10,006.81	$18,644.23
Admin Costs	$876,587.97	$1,111,082.11	$1,345,576.24
Low Income	$291,046.68	$425,437.51	$674,977.75
HVAC	$17,026.96	$28,056.36	$52,273.33
Water Heating	$8,953.71	$14,753.57	$27,488.19
Appliances	$100,274.73	$165,228.71	$307,846.55
Energy Efficiency Products and Kits	$22,418.33	$36,940.04	$68,824.98
Admin Costs	$142,372.95	$180,458.83	$218,544.70
Business	$10,130,018.60	$16,103,811.76	$28,725,696.97
Lighting	$841,029.45	$1,385,814.80	$2,581,986.70
Refrigeration	$1,816,645.37	$2,993,395.86	$5,577,158.07
Motors and Drives	$2,523,251.68	$4,157,713.61	$7,746,461.57
HVAC	$1,405,354.45	$2,315,687.09	$4,314,482.13
Compressed Air Upgrades	$261,445.31	$430,799.16	$802,645.28
Process Improvements	$479,785.07	$790,570.73	$1,472,955.18
Appliances	$32,908.50	$54,225.33	$101,030.14
Shell Measures	$28,227.85	$46,512.74	$86,660.40
Heat Recovery	$152,354.21	$251,043.21	$467,732.22
Miscellaneous Controls	$959,192.95	$1,580,519.94	$2,944,752.36
IT Equipment	$83,405.00	$137,431.42	$256,055.94
Admin Costs	$1,546,418.76	$1,960,097.87	$2,373,776.98
Indirect Impact	$2,845,049.47	$3,606,122.45	$4,367,195.43
Grand Total	**$15,825,467.77**	**$24,019,247.08**	**$40,279,587.77**

Table 5: Baseline Scenario Cumulative Effects

year	Administration	Incentives	Total	kW	Summer Coin kW	Winter Coin kW	kWh	kW	Summer Coin kW	Winter Coin kW	kWh
2024	$5,410,429.15	$10,415,038.65	$15,825,467.80	12,939	6,383	6,180	73,165,356	12,939	6,383	6,180	73,165,356
2025	$5,512,787.14	$10,612,077.08	$16,124,864.22	13,083	6,433	6,238	73,992,182	26,021	12,816	12,418	147,157,537
2026	$5,643,574.95	$10,863,842.70	$16,507,417.65	13,432	6,607	6,391	76,103,887	39,450	19,422	18,806	223,248,792
2027	$5,776,670.66	$11,120,051.03	$16,896,721.69	13,783	6,772	6,556	77,977,293	53,141	26,145	25,284	300,733,290
2028	$5,944,155.48	$11,442,458.15	$17,386,613.64	14,143	6,953	6,720	79,906,922	67,190	33,048	31,924	380,137,737
2029	$5,941,977.80	$11,438,266.12	$17,380,243.91	14,142	6,953	6,720	79,905,018	81,235	39,950	38,562	459,528,328
2030	$0.00	$0.00	$0.00	0	0	0	0	81,137	39,898	38,478	459,001,824
2031	$0.00	$0.00	$0.00	0	0	0	0	80,995	39,826	38,360	458,245,514
2032	$0.00	$0.00	$0.00	0	0	0	0	80,529	39,550	37,949	455,706,460
2033	$0.00	$0.00	$0.00	0	0	0	0	80,152	39,321	37,615	453,650,748
2034	$0.00	$0.00	$0.00	0	0	0	0	79,301	38,782	36,921	448,165,605
2035	$0.00	$0.00	$0.00	0	0	0	0	78,435	38,234	36,213	442,598,403
2036	$0.00	$0.00	$0.00	0	0	0	0	76,566	36,685	34,622	430,246,558
2037	$0.00	$0.00	$0.00	0	0	0	0	74,684	35,126	33,024	417,837,180
2038	$0.00	$0.00	$0.00	0	0	0	0	73,092	33,733	31,689	406,972,381
2039	$0.00	$0.00	$0.00	0	0	0	0	63,276	28,593	28,172	345,400,838
2040	$0.00	$0.00	$0.00	0	0	0	0	53,836	23,720	24,993	286,577,308
2041	$0.00	$0.00	$0.00	0	0	0	0	44,160	18,746	21,759	226,194,881
2042	$0.00	$0.00	$0.00	0	0	0	0	33,069	13,997	17,361	163,447,735
2043	$0.00	$0.00	$0.00	0	0	0	0	21,746	9,142	12,899	99,380,815
2044	$0.00	$0.00	$0.00	0	0	0	0	9,908	3,991	8,127	33,904,849
2045	$0.00	$0.00	$0.00	0	0	0	0	7,014	2,898	5,669	23,777,119
2046	$0.00	$0.00	$0.00	0	0	0	0	4,047	1,779	3,150	13,393,670
2047	$0.00	$0.00	$0.00	0	0	0	0	1,063	650	619	2,958,141
2048	$0.00	$0.00	$0.00	0	0	0	0	531	325	309	1,478,688

Table 6: High Scenario Cumulative Effects

year	Administration	Incentives	Total	kW	Summer Coin kW	Winter Coin kW	kWh	kW	Summer Coin kW	Winter Coin kW	kWh
2024	$6,857,761.25	$17,161,485.81	$24,019,247.06	16,362	8,063	7,813	92,494,183	16,362	8,063	7,813	92,494,183
2025	$6,976,564.68	$17,458,790.31	$24,435,354.99	16,629	8,196	7,953	94,059,438	32,991	16,259	15,766	186,553,621
2026	$7,139,531.26	$17,866,612.72	$25,006,143.98	17,074	8,412	8,150	96,619,127	50,062	24,669	23,914	283,156,772
2027	$7,302,400.68	$18,274,191.98	$25,576,592.67	17,395	8,583	8,323	98,410,169	67,340	33,190	32,137	380,942,274
2028	$7,513,916.18	$18,803,507.62	$26,317,423.80	17,917	8,831	8,556	101,428,868	85,138	41,958	40,592	481,735,556
2029	$7,507,429.90	$18,787,275.74	$26,294,705.64	17,879	8,827	8,547	101,174,504	102,894	50,720	49,036	582,259,545
2030	$0.00	$0.00	$0.00	0	0	0	0	102,770	50,654	48,930	581,593,691
2031	$0.00	$0.00	$0.00	0	0	0	0	102,591	50,563	48,780	580,636,908
2032	$0.00	$0.00	$0.00	0	0	0	0	102,000	50,214	48,260	577,420,840
2033	$0.00	$0.00	$0.00	0	0	0	0	101,524	49,924	47,838	574,820,361
2034	$0.00	$0.00	$0.00	0	0	0	0	100,469	49,253	46,970	568,065,110
2035	$0.00	$0.00	$0.00	0	0	0	0	99,356	48,549	46,063	560,889,411
2036	$0.00	$0.00	$0.00	0	0	0	0	96,992	46,592	44,049	545,258,616
2037	$0.00	$0.00	$0.00	0	0	0	0	94,612	44,601	41,997	529,515,369
2038	$0.00	$0.00	$0.00	0	0	0	0	92,598	42,820	40,276	515,722,358
2039	$0.00	$0.00	$0.00	0	0	0	0	80,140	36,281	35,781	437,534,740
2040	$0.00	$0.00	$0.00	0	0	0	0	68,135	30,061	31,706	362,741,808
2041	$0.00	$0.00	$0.00	0	0	0	0	55,822	23,715	27,553	286,063,076
2042	$0.00	$0.00	$0.00	0	0	0	0	41,838	17,713	21,987	206,958,437
2043	$0.00	$0.00	$0.00	0	0	0	0	27,499	11,568	16,332	125,712,436
2044	$0.00	$0.00	$0.00	0	0	0	0	12,551	5,050	10,297	42,955,125
2045	$0.00	$0.00	$0.00	0	0	0	0	8,891	3,668	7,190	30,146,320
2046	$0.00	$0.00	$0.00	0	0	0	0	5,134	2,250	4,000	16,998,416
2047	$0.00	$0.00	$0.00	0	0	0	0	1,358	823	796	3,793,798
2048	$0.00	$0.00	$0.00	0	0	0	0	679	412	398	1,896,517

Table 7: Very High Scenario Cumulative Effects

year	Administration	Incentives	Total	kW	Summer Coin kW	Winter Coin kW	kWh	kW	Summer Coin kW	Winter Coin kW	kWh
2024	$8,305,093.35	$31,974,494.41	$40,279,587.76	19,758	9,720	9,439	111,827,783	19,758	9,720	9,439	111,827,783
2025	$8,440,342.21	$32,495,200.64	$40,935,542.86	20,088	9,899	9,595	113,621,147	39,846	19,619	19,034	225,448,930
2026	$8,635,487.58	$33,246,507.59	$41,881,995.17	20,618	10,176	9,882	116,648,550	60,460	29,793	28,913	342,077,974
2027	$8,828,130.71	$33,988,180.97	$42,816,311.68	21,099	10,422	10,099	119,397,418	81,417	40,140	38,891	460,718,885
2028	$9,083,676.88	$34,972,030.22	$44,055,707.10	21,675	10,682	10,356	122,595,685	102,948	50,746	49,124	582,545,801
2029	$9,072,882.00	$34,930,470.05	$44,003,352.05	21,668	10,680	10,350	122,571,522	124,468	61,347	59,349	704,330,413
2030	$0.00	$0.00	$0.00	0	0	0	0	124,317	61,267	59,221	703,526,200
2031	$0.00	$0.00	$0.00	0	0	0	0	124,101	61,157	59,040	702,368,931
2032	$0.00	$0.00	$0.00	0	0	0	0	123,386	60,735	58,411	698,477,555
2033	$0.00	$0.00	$0.00	0	0	0	0	122,809	60,384	57,900	695,330,534
2034	$0.00	$0.00	$0.00	0	0	0	0	121,535	59,566	56,844	687,158,206
2035	$0.00	$0.00	$0.00	0	0	0	0	120,238	58,736	55,769	678,866,523
2036	$0.00	$0.00	$0.00	0	0	0	0	117,359	56,331	53,286	659,790,040
2037	$0.00	$0.00	$0.00	0	0	0	0	114,449	53,887	50,774	640,488,029
2038	$0.00	$0.00	$0.00	0	0	0	0	112,014	51,738	48,690	623,796,477
2039	$0.00	$0.00	$0.00	0	0	0	0	96,964	43,854	43,268	529,097,753
2040	$0.00	$0.00	$0.00	0	0	0	0	82,443	36,361	38,371	438,583,478
2041	$0.00	$0.00	$0.00	0	0	0	0	67,604	28,713	33,365	346,171,372
2042	$0.00	$0.00	$0.00	0	0	0	0	50,640	21,432	26,612	250,315,647
2043	$0.00	$0.00	$0.00	0	0	0	0	33,293	13,993	19,761	152,169,633
2044	$0.00	$0.00	$0.00	0	0	0	0	15,163	6,103	12,439	51,891,028
2045	$0.00	$0.00	$0.00	0	0	0	0	10,739	4,434	8,683	36,410,539
2046	$0.00	$0.00	$0.00	0	0	0	0	6,190	2,718	4,820	20,490,213
2047	$0.00	$0.00	$0.00	0	0	0	0	1,636	996	957	4,563,879
2048	$0.00	$0.00	$0.00	0	0	0	0	818	498	478	2,281,557

Summary of Findings

Minnesota Power has a proven track record of successful CIP performance and anticipates continuing this trend into the future, as indicated by the aggressive goals set forth in the 2021-2023 Triennial Plan and assumed in the 2021 IRP baseline forecast. However, the Company acknowledges that the current EE environment is rapidly evolving in ways that will continue to present new challenges. Changing baselines, uncertain economic conditions (whether related to the current pandemic in the near term, or resulting from other, unknown events that may occur over the longer term), and decreased avoided costs will all contribute to Minnesota Power's ability to offer cost-effective, meaningful programs to customers. While Minnesota Power continues to build on the successes of its existing programs and adapting to challenges through unique and innovative program offerings and delivery strategies, achieving this higher level of savings through less cost-effective measures will be more resource intensive. Additionally, long-term EE savings require customers to take specific actions year after year, which introduces uncertainty regarding whether or not these savings will materialize. For these reasons, among others, it is important to take a reasonable approach to long-term EE assumptions to minimize risk and uncertainty. The Company has done so, while also testing what could be achieved by including alternative scenarios in its IRP analysis.

Part 2: Order Point 14, Potential Energy-Efficiency Competitive Bidding Process

In the Order approving Minnesota Power's 2015 Integrated Resource Plan ("2015 Plan"),[1] the Minnesota Public Utilities Commission (or "Commission") required that for its next resource plan, the Company must "investigate the potential for an energy-efficiency competitive-bidding process to supplement its existing conservation improvement program, open to both CIP-exempt and non-CIP-exempt customers, and shall summarize its investigation and findings in its next resource plan." This portion of Appendix B addresses this Commission requirement.

Specifically, Minnesota Power investigated the potential for an energy-efficiency competitive-bidding process to supplement its existing conservation-improvement program by researching best practices and examining how large customers who are exempt from CIP focus on conservation efforts within their operations. The Company's research and analysis, discussed below, indicated that many of the bidding programs available for review had the following characteristics that set the programs up for success: a dedicated funding source, bidding platform, and a process for customer communications. Conversely, the Company was not able to identify specific direction in either Minnesota policy or statutes that provided direction on how the Company might recover costs of a competitive-bidding process from either CIP-exempt or non-CIP exempt customers. The lack of explicit cost recovery authorization presents an important barrier to all potential stakeholders. Additionally, the Company has already demonstrated an outstanding CIP achievement record for non-exempt customers, along with aggressive future goals. For these reasons the Company does not feel that a competitive-bidding process would add value at this time. Nevertheless, the Company summarizes here its investigation and findings.

The first section below provides details on the Company's investigative research that has been completed with respect to energy-efficiency competitive-bidding processes. The second section focuses on energy-efficiency efforts of CIP-exempt customers, along with additional considerations.

Energy-Efficiency Competitive-Bidding Process Research

Minnesota Power identified the following competitive-bidding programs to assess best practices, potential outcomes, and possible barriers to success for any program Minnesota Power might initiate. Each program is discussed in turn, and includes a combination of deregulated, regulated and a statewide efficiency program not run by the individual utilities.

Energize Missouri Industries program, is an initiative of the Missouri Department of Natural Resources ("Missouri DNR"). Between 2010 and 2011, the Missouri DNR provided grants to energy efficiency ("EE") companies that competitively bid for EE incentives through a reverse auction. The overall goal of the online reverse auction was to provide industries and commercial entities with an opportunity to realize measurable energy savings that would result in reduced energy costs and increased market competitiveness. The online reverse auction allowed pre-qualified providers to bid on $3 million in incentives on a $/kWh saved basis for expected EE projects. Available incentive dollars were allocated based on a lowest-price obtained, thus increasing the cost-effectiveness of the program and allowing the Missouri DNR to spread the dollars further. The program was funded by a $3 million grant from the American Recovery and Reinvestment Act of 2009 ("ARRA").

[1] Order Approving Resource Plan with Modifications, Docket No. E015/RP-15-690 (July 18, 2016).

Focus on Energy is a company that partners with Wisconsin utilities on an efficiency bidding program. Bids are submitted through an online auction where business incentive program customers and/or trade allies bid for additional financial incentives above current prescriptive and custom levels. Customers who qualify for the business incentive program include commercial and industrial ("C/I") businesses who average less than 1,000 kW per month. Typical businesses include, but are not limited to, banks, hotels, grocery stores, breweries, food processing, and manufacturing. Customers and trade allies can submit bids, using an online auction platform, which identifies the unit price needed to deliver the estimated kWh or therms savings from the EE project.

The Focus on Energy efficiency auction is a type of reverse auction in which the role of the buyer and seller are reversed. The pre-qualified bidders compete by offering rates on a price per annual kWh or a price per therms reduced basis until no pre-qualified bidder is willing to make a lower bid. During the live auction, pre-qualified bidders will be logged into an online platform and will actively submit bids to compete for the EE incentives. The auctions will start at an established bid ceiling price and pre-qualified bidders will bid down on this price at predefined increments. Pre-qualified bidders will be able to see live results and their position for an auction. At the end of the auction, the bidders with the lowest price per annual kWh or therms reduced bids are considered the winners of the auction and are then tasked with implementing their energy-saving project(s). The winning bidder is provided a financial incentive, which is limited to $200,000 per project and $400,000 per customer per calendar year for all Focus on Energy Incentives. The funding comes from Focus on Energy partnership with 107 utilities throughout Wisconsin. Each participating utility pays in either a portion of their revenue or a set amount by meter. Focus on Energy then uses that funding to provide cost-effective programs that support EE projects.

Bid4Efficiency is a reverse auction program run by American Electric Power Ohio. In the reverse auction program, interested customers (nonresidential customers that use more than 200,000 kWh per year) respond to a request for qualifications ("RFQ"). As part of the pre-qualification process customers or service providers are required to attend training and mock auctions. After customers respond to the RFQ, these large C/I customers are eligible to become prequalified bidders. The bidders then send in bids to an online live auction platform in the form of price per annual kWh or watts reduced for energy-efficiency projects such as process-improvement initiatives or compressed-air systems costing more than $25,000. C/I customers as well as trade allies can bid for planned and unplanned projects. Starting at the bid ceiling price, prequalified bidders compete with one another to determine who can submit the lowest $/kWh saved for their specific project. The bidder with the lowest price per annual kWh (or price per watts reduced) is granted an award from $25,000 to $500,000 to complete their project. Additional details of the reverse auction include: bidders can only win one auction, non-winning bidders are offered a default incentive rate 10-20 percent lower than the lowest winning bid, and winners that achieve 80 percent or more of the total awarded auction incentive amount receive a $0.005 per kWh bonus.

Kansas City Power and Light (now Evergy) historically offered a block bidding program, which featured separate auctions for C/I customers and for trade allies. The auctions consisted of two blocks: one for projects in excess of $100,000 and one for those exceeding $400,000. To participate in the program, potential bidders responded to the request for quotation for the auction and attend a webinar to learn how the auction process would work. If the request for quotation was approved for the customer's project, that customer was then allowed to participate in the online auction. Projects that were eligible to receive the program incentives

were required to save more than 1 million kWh annually and have a minimum payback of at least two years.

Energy-Efficiency Competitive-Bidding for CIP-Exempt Customers

Minnesota Power's CIP-exempt group is comprised of large industrial customers that have identified through a state legislative designation to be considered "exempt" from the conservation program established in Minnesota. CIP exceptions are defined by Minnesota Statutes § 216B.241, subd. 1a(b), which states in part: "The owner of a large customer facility may petition the commissioner to exempt both electric and gas utilities serving the large customer facility from the investment and expenditure requirements [of CIP]" and "[t]he filing must include a discussion of the competitive or economic pressures facing the owner of the facility and the efforts taken by the owner to identify, evaluate, and implement energy conservation and efficiency improvements." Under this statute, customers seeking an exemption are required to file with the commissioner of the Minnesota Department of Commerce and must prove that they are implementing energy conservation and efficiency improvements. They also must show there is no need for additional incentives to manage, complete, and address EE measures. Exempt customers must provide a filing every five years to the commissioner explaining measures that they are already taking to be efficient. However, a large customer facility that is, under an order from the commissioner, exempt from the investment and expenditure requirements as of December 31, 2010, is not required to submit a report to retain its exempt status, except with respect to ownership changes.

There are approximately 14 Minnesota Power customers at the time of this filing that fall under the CIP-exempt classification, most of whom have submitted multiple reports to the Department of Commerce detailing efforts to implement EE and energy conservation strategies. These CIP-exempt customers compete in global markets and in industries that have an advantage because of other nations' favorable tax policies, trade laws, health care costs, environmental compliance or other subsidies. CIP-exempt customers are naturally incentivized to pursue all efficiency improvements to keep their product costs as low as possible, including any and all economically viable efficiency improvements related to energy.