2023 CONSOLIDATED FILING

CONSERVATION IMPROVEMENT PROGRAM

UNDERSTANDING

+

TOOLS AND RESOURCES

+

INFORMED CHOICES

+

RIGHT FIT OPTIONS

minnesota power

AN ALLETE COMPANY

April 1, 2024

Docket Nos. E-015/M-24-48,E-015/CIP-20-476, E,G-999/CI-22-624

24056

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, MN 55802-2093
www.mnpower.com

April 1, 2024

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

Deputy Commissioner Michelle Gransee
Minnesota Department of Commerce
85 Seventh Place East, Suite 500
St. Paul, MN 55101-2198

Re: **2023 Conservation Improvement Program Consolidated Filing**
Docket Nos. E015/M-24-48, E015/CIP-20-476

In the Matter of a Joint Investigation into the Impacts of the Federal Inflation Reduction Act
Docket No. E,G-999/CI-22-624

Dear Mr. Seuffert and Ms. Gransee:

Attached please find via eFiling Minnesota Power's 2023 Conservation Improvement Program ("CIP") Consolidated Filing. This submittal includes a CIP Tracker Activity Report, a Financial Incentives Report, a Proposed Conservation Program Adjustment Factor, 2023 CIP Project Evaluations and a compliance with Department of Commerce ("DOC") orders section. Minnesota Power is filing this information pursuant to Minn. Stat. §§ 216B.241, 216B.16, subd, 6c, 216B.2401, and 216B.2411 and in compliance with Minnesota Public Utilities Commission ("MPUC") and DOC rules and orders relating to annual filings associated with Company-sponsored conservation program activities, including Minn. Rule 7690.0550.

Minnesota Power requests that the MPUC review the filed material and approve Minnesota Power's 2023 CIP Tracker Activity, Financial Incentives, and proposed Conservation Program Adjustment factor. Further, Minnesota Power requests that the DOC review and approve the evaluations of the various CIP projects included herein and the compliance with prior DOC orders. Minnesota Power has electronically filed this document and copies of this Cover Letter along with the Summary of Filing have been served on the parties on the attached service list.

Also included in this filing on page 22 is compliance for Order Point 3 from the September 12, 2023 order in Docket No. E,G-999/CI-22-624, In the Matter of a Joint Investigation into the Impacts of the Federal Inflation Reduction Act.

If you have any questions regarding this filing, please contact me at (218) 591-4870 or avang@mnpower.com.

Sincerely,

Analeisha Vang
Senior Public Policy Advisor

AMV:th
Attach.

Summary

Minnesota Power
2023 Conservation Improvement Program ("CIP") Consolidated Filing

EXECUTIVE SUMMARY

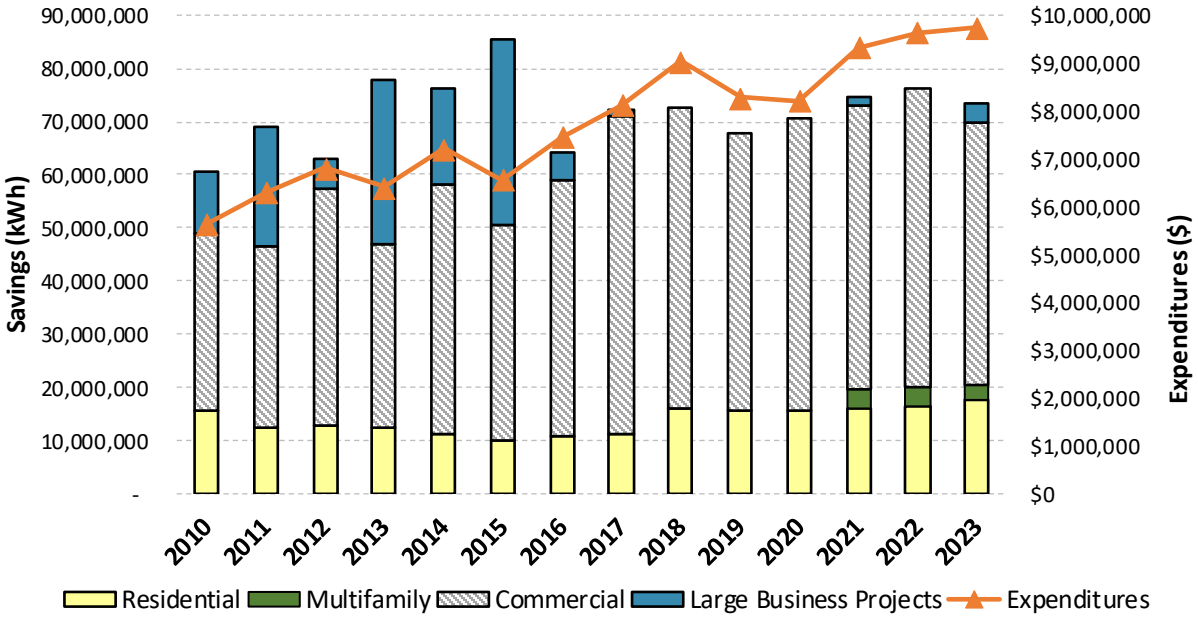
Minnesota Power (or, "the Company") is pleased to report its 2023 energy conservation program results:

- Minnesota Power achieved energy savings of **2.8%** of gross annual retail energy sales,[1] well above the 1.5% energy-savings goal set in the 2021-2023 Triennial Order, and the 1.75% goal in the 2021 Energy Conservation and Optimization Act.[2]
- The Company achieved energy savings totaling **73,589,465 kilowatt hours ("kWh")**, which is **110%** of the approved energy-savings goal for the year. The Company also achieved demand savings of **7,072 kilowatts ("kW")**, which is **70%** of the approved demand-savings goal.
- Expenditures totaled **$9,745,568**, which was **89%** of the approved budget for 2023.

The figure below illustrates historical and recent kWh energy-savings achievements, along with CIP expenditures. While Minnesota Power continues to have a successful track record of exceeding the state energy savings goal, the cost of delivering on these goals continues to increase. The Company anticipates the trend of increasing costs will continue as inflation impacts the cost of both products and labor and more cost-effective measures reach market saturation. While Minnesota Power's CIP portfolio continues to be cost-effective overall, higher cost programs – especially those serving income-qualified customers – are becoming increasingly less cost-effective.

[1] In accordance with Minnesota Rules part 7690.1200, weather-normalized average retail energy sales were used to calculate the electric savings goal for Minnesota Power's 2021–2023 Triennial Plan.
[2] While the Energy Conservation and Optimization Act (ECO Act) passed in 2021 with a higher savings goal, the energy savings goal for the 2023 Consolidated is based on the November 24, 2020 Order in Docket No. 20-476.

Minnesota Power's 2010–2023 CIP Achievements



Minnesota Power's 2023 CIP Expenditures and Energy Savings

2023	*Expenditures*	*Energy Savings (kWh) at busbar*
Direct Savings Programs:		
Residential		
Energy Partners (Income-qualified)	$428,168	1,257,606
Home Efficiency (Residential)	$2,255,434	16,586,289
Multifamily		
Multifamily Direct Install	$150,911	481,916
Custom Multifamily Efficiency	$178,566	2,204,232
Commercial		
Prescriptive Business Efficiency	$51,175	1,059,905
Custom Business Efficiency (Business/Commercial/Industrial/Agricultural)	$4,481,392	51,999,517
Indirect Savings Programs:		
Customer Engagement	$508,117	
Energy Analysis	$644,345	
Research & Development	$118,304	
Evaluation & Program Development	$745,860	
Regulatory Charges	$183,297	
Total	**$9,745,568**	**73,589,465**

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of Minnesota Power's 2023 Conservation Improvement Program Consolidated Filing Reporting on CIP Tracker Account Activity, Financial Incentives Report, Proposed CPA Factors and 2023 Project Evaluations In the Matter of a Joint Investigation into the Impacts of the Federal Inflation Reduction Act	Docket Nos.E-015/M-24-48,E-015/CIP-20-476, E,G-999/CI-22-624

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 2023 CIP Tracker Account activity year-end balance of $477,246.
- A revised Conservation Program Adjustment ("CPA"), to be first implemented without proration on July 1, 2024, of $0.001444/kilowatt hour ("kWh").

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.

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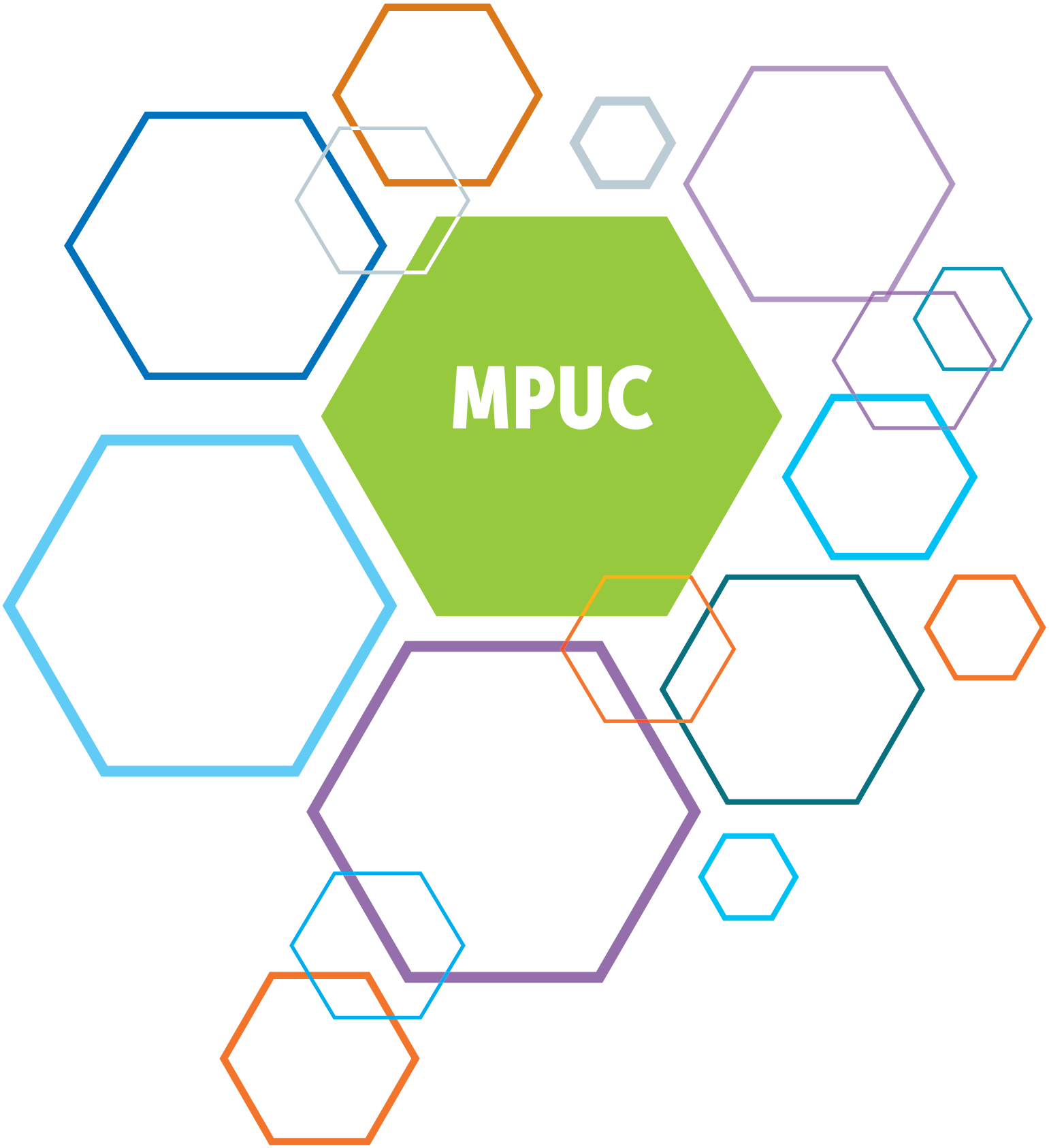
MPUC

2023 CIP MPUC REPORT

Section 1 – Introduction and Background

In its August 4, 1993 Order in Docket No. E015/M-91-458, the Minnesota Public Utilities Commission combined future CIP Tracker reports and Demand Side Management ("DSM") financial incentives reports into a single submittal filed annually. This is the thirty-first annual filing by Minnesota Power in compliance with that Order. In addition, when the Commission established the CPA in Docket No. E015/M-93-996, it required Minnesota Power to file each April 1 for a revised CPA factor. This submittal includes Minnesota Power's proposed revised CPA factor. The filing also includes the Department's requirements that each utility annually file an evaluation of its authorized CIP programs. Since each program evaluation is the basis for the financial incentives to which Minnesota Power is authorized, a separate evaluation section of this filing has been included to fulfill those Department filing requirements. For administrative ease, a separate section has been provided to properly respond to the various requirements established by recent Department orders. While the Energy Conservation and Optimization Act ("ECO") passed in 2021 with a higher savings goal, the energy savings goal for the 2023 Consolidated is based on the November 24, 2020 Order in Docket No. 20-476. The Company surpassed both energy savings goals.

Organization of Filing

Minnesota Power respectfully submits this report on its electric CIP achievements for 2023. This report is organized into several sections. The sections and information addressed are:

1. **Introduction and Background**
2. **CIP Tracker Account Activity Report**, including 2023 expenditures and cost recovery by month.
3. **Financial Incentives Report**
4. **2024–2025 Proposed Conservation Program Adjustment**

   This is the calculation of the CPA factor for the period from July 2024 through June 2025 based on estimated expenditures, cost recovery, and financial incentive.

5. **Compliance**

   This section provides information to satisfy provisions in Minn. Stat. §§ 216B.2401, 216B.241, and 216B.2411, including spending requirements and caps. This section also includes all other ordered compliance requirements, including those required by the November 24, 2020 Decision for the 2021-2023 Triennial Plan.

6. **2023 CIP Status Report**

   This section focuses on overall CIP achievements, participation, expenditures, energy conserved and demand reduced by each segment and program. Minn. Rule 7690.0550 states that this information must be included in a utility's annual program status report.

   Minn. Rule 7690.0550 also requires a utility to provide information on the cost-effectiveness of its programs, as calculated from the utility, participant, ratepayer and societal perspectives. This section includes all cost-effectiveness analyses as well as project information sheets.

7. **Appendices**

Minnesota Power submits the following information:

A. Name, Address and Telephone Number of Utility

(Minn. Rules 7825.3500 (A) and 7829.0400, subp. 3 (A))

Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 722-2641

B. Name, Address and Telephone Number of Utility Attorney

(Minn. Rules 7825.3500 (A) & 7829.0400, subp. 3 (B))

Matthew Brodin
Senior Attorney
Minnesota Power
30 West Superior Street
Duluth, MN 55802
218-355-3152
mbrodin@allete.com

C. Date of Filing and Date Proposed Rates Take Effect

This petition is being filed on April 1, 2024. The revised CPA factor is proposed to take effect without proration on July 1, 2024. Until MPUC approval, the existing CPA factor will remain in effect.

D. Statute Controlling Schedule for Processing the Petition

This petition is made pursuant to Minn. Stat. §§ 216B.241, 216B.16, subd. 6c, 216B.2401 and 216B.2411. These statutes do not contain schedules for processing petitions. Minn. Rule 7690.0550 outlines the schedule and information to be included in a utility's annual status report. Minn. Rule 7825.3200 requires that utilities serve notice to the Commission at least 90 days prior to the proposed effective date of modified rates.

Furthermore, Minnesota Power's request for approval of conservation cost recovery, a revised CPA factor and required reports fall within the definition of a "Miscellaneous Tariff Filing" under Minn. Rules 7829.0100, subp. 11 and 7829.1400, subp. 1 and 4 permitting comments in response to a miscellaneous filing to be filed within 30 days, and reply comments to be filed no later than 10 days thereafter.

E. Utility Employee Responsible for Filing

Analeisha Vang
Senior Public Policy Advisor
Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 591-4870
avang@mnpower.com

F. Official Service List

Pursuant to Minn. Rule 7829.0700, Minnesota Power respectfully requests the following persons to be included on the Commission's official service list for this proceeding:

Analeisha Vang
Senior Public Policy Advisor
Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 591-4870
avang@mnpower.com

Matthew Brodin
Senior Attorney
Minnesota Power
30 West Superior Street
Duluth, MN 55802
218-279-5000
mbrodin@allete.com

Information Request Service List:

Analeisha Vang
Senior Public Policy Advisor
Minnesota Power
30 West Superior Street
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(218) 591-4870
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Matthew Brodin
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30 West Superior Street
Duluth, MN 55802
218-279-5000
mbrodin@allete.com

Minnesota Power Discovery Manager

discoverymanager@mnpower.com

Minnesota Power Regulatory Compliance

MPRegulatoryCompliance@mnpower.com

G. Service on Other Parties

Minnesota Power is eFiling this report and notifying all persons on Minnesota Power's CIP Service List that this report has been filed through eDockets. A copy of the service list is included with the filing along with a certificate of service.

H. Filing Summary

As required by Minn. Rule 7829.1300, subp. 1, Minnesota Power is including a summary of this filing on a separate page.

Summary of Filing Requests

Based on information provided throughout this filing, Minnesota Power requests the following:

From the MPUC:

- Approval of the 2023 CIP Tracker activity, resulting in a year-end 2023 balance of **$477,246**.
- Approval to book CIP Financial Incentives of **$2,190,843** as per Exhibit 2 of this filing to the CIP Tracker.
- Approval to implement Minnesota Power's proposed revised CPA factor of **$0.001444/kWh** without proration for bills rendered on and after July 1, 2024.
- Approval to use a Carrying Charge rate of **0.7292%** for the CIP Tracker as per Exhibit 1 of this filing.

From the Department:

- Approval of the individual 2023 CIP Project Evaluations.
- Approval of Minnesota Power's response to various Department orders as indicated in the "Compliance" section of this filing.

Procedure and Authority

Minnesota Power is submitting this petition in accordance with Minn. Stat. § 216B.2401 and 216B.241 and in compliance with MPUC and Department rules and orders relating to annual filings associated with Minnesota Power sponsored energy conservation improvement activities, including Minn. Rule 7690.0550. The financial incentives section of this petition is submitted in accordance with Minn. Stat. § 216B.16, subd. 6c.

This petition constitutes a Miscellaneous Filing as that term is defined in Minn. Rules 7829.0100, subp. 11 and 7829.1300, which identify the time frame and procedures required to process this petition.

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

Analeisha Vang
Senior Public Policy Advisor
Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 591-4870
avang@mnpower.com

Matthew Brodin
Senior Attorney
Minnesota Power
30 West Superior Street
Duluth, MN 55802
218-279-5000
mbrodin@allete.com

Respectfully submitted,

Date: April 1, 2024

_____
Analeisha Vang
Senior Public Policy Advisor
Minnesota Power

Section 2 – CIP Tracker Account Activity Report

In Docket No. E015/M-93-996, the Commission ordered Minnesota Power to file an annual CIP Tracker Report April 1 of each year, which would contain information as shown in Exhibit 1. This report is in compliance with this order. Page 1 of Exhibit 1 summarizes the CIP Tracker Account activity for 2022 and 2023 and presents the tracker balance month-by-month throughout each year. Tracker Account activity for 2023 includes the following:

- **$9,745,568** of CIP Expenditures were charged to Tracker 2
- **$9,164,964** was recovered through Base Rates
- **$3,605,327** was booked through the CPA factor
- **($25,660)** in Carrying Charges were booked to Tracker 2
- **$2,206,583** of Financial Incentives were booked to Tracker 2
- **$477,246** was the resulting CIP Tracker Account balance at the end of 2023

In 1994, Minnesota Power was allowed to implement a conservation cost recovery mechanism known as the CPA. This addition to customers' bills was combined with the existing Fuel and Purchased Power Clause Adjustment and presented as a new billing line item known as the "Resource Adjustment," thereby reflecting both demand-side and supply-side costs. However, in Minnesota Power's 2021 rate case, and as detailed in the February 28, 2023 Order, the CPA factor is now presented in a bill line item known as the "Minnesota Policy Adjustment".

The following two CPA factors were in effect during this reporting period:

- **$0.002002/kWh**, effective August 2022, as approved by the MPUC Order dated July 5, 2022, in Docket No. E015/M-22-130 and consistent with the subsequent compliance filing submitted July 15, 2022.
- **$0.000306/kWh**, effective August 2023, as approved by the MPUC Order dated July 21, 2023, in Docket No. E015/M-23-135 and consistent with the subsequent compliance filing submitted July 31, 2023.

Minnesota Power calculates the carrying charge on its CIP Tracker Account using the rate from its multi-year credit facility, which is in accordance with the Commission's Order dated September 16, 2015, in Docket No. E015/M-15-80. There were two carrying charge rates in effect during the 2023 program year. Page 3 of Exhibit 1 reflects the rate that was effective July 2022 through July 2023. Page 4 of Exhibit 1 reflects the rate that was effective beginning August 2023. As part of this filing, Minnesota Power presents the carrying charge rate proposed to be effective on July 1, 2024, or upon approval by the Commission. The proposed carrying charge rate can be found on page 5 of Exhibit 1.

Additionally, during the 1999 Legislative Session, a law was enacted allowing certain large electric and gas customers to be excluded from CIP minimum spending requirements. Several of

Minnesota Power's Large Power customers petitioned the Department for approval to be excluded from CIP minimum spending effective January 1, 2000. As a result, Minnesota Power created a second internal CIP Tracker Account as of January 1, 2000, to segregate cost responsibility. Minnesota Power continued to recover costs from all retail customers through the first CIP Tracker Account balance with the application of CPA and Conservation Cost Recovery Charge ("CCRC") revenues until its balance was zero. CIP expenditures continue to be charged to the second CIP Tracker Account (Tracker 2).

Once the first CIP Tracker balance was eliminated, the customers who had successfully petitioned out of minimum spending requirements no longer had the CPA factor applied. The CCRC revenue from those customers was calculated each month and a credit was applied to their bills (CPA2) equal to the CCRC revenue so that they were not being charged for subsequent CIP costs.

Beginning in 2012, per the MPUC Order dated March 1, 2012, going forward newly exempt customers would not be responsible for any CIP-related charges effective January 1 of the year following their exemption. Cost recovery through both the CCRC and the CPA would therefore cease effective January 1, following the customer's successful exemption request and a new tracker account was not necessary. Minnesota Power's billing processes are in compliance with these orders and as such the cost recovery revenue reflected in the CIP Tracker Account was collected from non-CIP exempt customers only. For additional history and a timeline of exemption activity, refer to the Tracker Account Changes in Minnesota Power's 2020 CIP Consolidated filing.[3]

[3] *Minnesota Power's 2020 Conservation Improvement Program Consolidated Filing*, Docket No. E015/CIP-16-117.04 (Apr. 1, 2021).

MINNESOTA POWER
New CIP Tracker #2 Account
Activity 2000 - 2023

	2022	(a) JAN	(b) FEB	(c) MAR	(d) APR	(e) MAY	(f) JUN	(g) JUL	(h) AUG	(i) SEP	(j) OCT	(k) NOV	(l) DEC	TOTAL (m) YEAR
20	BEGINNING OF PERIOD BALANCE	$3,583,332.88	$2,525,465.96	$1,788,361.48	$1,338,881.35	$737,714.31	$331,208.47	$2,123,673.99	$1,759,921.80	$1,574,077.67	$1,215,962.33	$1,005,429.79	$962,590.93	$3,583,332.88
21	LESS: NON-DEDUCTIBLE BALANCE 3/	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	
22	PLUS: AMORT OF NON-DEDUCT BALANCE 3/	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
23	NET TAX DEDUCTIBLE PERIOD BALANCE	$3,583,332.88	$2,525,465.96	$1,788,361.48	$1,338,881.35	$737,714.31	$331,208.47	$2,123,673.99	$1,759,921.80	$1,574,077.67	$1,215,962.33	$1,005,429.79	$962,590.93	
24	COMPOSITE TAX RATE	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	
25	DEFERRED TAXES ON NET BEGIN BAL 1/	$1,029,921.54	$725,869.43	$514,010.86	$384,821.28	$212,033.85	$95,195.94	$610,386.38	$505,836.72	$452,421.40	$349,491.89	$288,980.63	$276,667.89	
26	NET INVESTMENT (L20 - L25)	$2,553,411.34	$1,799,596.53	$1,274,350.62	$954,060.07	$525,680.46	$236,012.53	$1,513,287.61	$1,254,085.08	$1,121,656.27	$866,470.44	$716,449.16	$685,923.04	
27	MONTHLY CARRYING CHARGE RATE 2/	0.2917%	0.2917%	0.2917%	0.2917%	0.2917%	0.2917%	0.2917%	0.2917%	0.2917%	0.2917%	0.2917%	0.2917%	
28	MONTHLY CARRYING CHARGE 0483 (L26 * L27)	$5,779.00	$5,171.00	$3,671.00	$2,782.00	$1,533.00	$688.00	$4,414.00	$3,658.00	$3,272.00	$2,527.00	$2,090.00	$2,001.00	$37,586.00
29	CIP PROGRAM CHARGES TO DEFERRED DEBIT	$304,316.53	$663,550.41	$797,957.64	$527,320.50	$684,710.53	$856,854.34	$711,159.11	$985,609.88	$771,085.19	$823,786.13	$1,000,298.29	$1,509,081.21	$9,635,729.76
30	FINANCIAL INCENTIVES 4/	$0.00	$0.00	$0.00	$0.00	$0.00	$1,937,003.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,937,003.00
31	Adjust. - Prior Year Rounding correction	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
32	LESS: CIP CARRYING CHARGES RECOVERED 8/		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
33	Adjust.	$19,124.92	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$19,124.92
34	LESS: CIP LOST MARGINS RECOVERED	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
35	LESS: CIP COSTS RECOVERED via CCRC 0482 5/ 7/	($842,080.96)	($874,173.77)	($757,650.14)	($698,708.54)	($689,483.98)	($617,930.04)	($656,677.92)	($734,525.22)	($710,768.37)	($649,242.79)	($644,278.22)	($696,120.60)	($8,571,640.55)
36	LESS: CIP COSTS RECOVERED via CPA 0481 6/	($525,881.49)	($531,652.12)	($493,458.63)	($432,561.00)	($403,265.39)	($384,149.78)	($422,647.38)	($440,586.79)	($421,704.16)	($387,602.88)	($400,948.93)	($456,507.43)	($5,300,965.98)
37	END OF PERIOD BALANCE (L20 + L28 + L29..L36)	$2,525,465.96	$1,788,361.48	$1,338,881.35	$737,714.31	$331,208.47	$2,123,673.99	$1,759,921.80	$1,574,077.67	$1,215,962.33	$1,005,429.79	$962,590.93	$1,321,045.11	$1,321,045.11
38	TOTAL CPA & CCRC REVENUE	$1,367,962.45	$1,405,825.89	$1,251,108.77	$1,131,269.54	$1,092,749.37	$1,002,079.82	$1,079,325.30	$1,175,112.01	$1,132,472.53	$1,036,845.67	$1,045,227.15	$1,152,628.03	$13,872,606.53

	2023	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
20	BEGINNING OF PERIOD BALANCE	$1,321,045.11	$378,948.15	($543,776.93)	($994,895.38)	($1,527,127.44)	($1,850,115.67)	($1,957,383.64)	($418,107.22)	($700,487.48)	($997,810.79)	($585,873.76)	($434,064.92)	$1,321,045.11
21	LESS: NON-DEDUCTIBLE BALANCE 3/	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	
22	PLUS: AMORT OF NON-DEDUCT BALANCE 3/	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
23	NET TAX DEDUCTIBLE PERIOD BALANCE	$1,321,045.11	$378,948.15	($543,776.93)	($994,895.38)	($1,527,127.44)	($1,850,115.67)	($1,957,383.64)	($418,107.22)	($700,487.48)	($997,810.79)	($585,873.76)	($434,064.92)	
24	COMPOSITE TAX RATE	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	28.742%	
25	DEFERRED TAXES ON NET BEGIN BAL 1/	$379,694.79	$108,917.28	($156,292.37)	($285,952.83)	($438,926.97)	($531,760.25)	($562,591.21)	($120,172.38)	($201,334.11)	($286,790.78)	($168,391.84)	($124,758.94)	
26	NET INVESTMENT (L20 - L25)	$941,350.32	$270,030.87	($387,484.56)	($708,942.55)	($1,088,200.47)	($1,318,355.42)	($1,394,792.43)	($297,934.84)	($499,153.37)	($711,020.01)	($417,481.92)	($309,305.98)	
27	MONTHLY CARRYING CHARGE RATE 2/	0.2917%	0.2917%	0.2917%	0.2917%	0.2917%	0.2917%	0.2917%	0.6670%	0.6670%	0.6670%	0.6670%	0.6670%	
28	MONTHLY CARRYING CHARGE 0483 (L26 * L27)	$2,746.00	$788.00	($1,130.00)	($2,068.00)	($3,174.00)	($3,846.00)	($4,069.00)	($1,987.00)	($3,329.00)	($4,743.00)	($2,785.00)	($2,063.00)	($25,660.00)
29	CIP PROGRAM CHARGES TO DEFERRED DEBIT	$390,009.63	$384,656.04	$780,407.87	$699,409.28	$787,840.76	$975,022.42	$499,604.55	$628,649.18	$530,213.51	$1,167,489.84	$1,048,029.43	$1,854,235.83	$9,745,568.34
30	FINANCIAL INCENTIVES 4/	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,206,583.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,206,583.00
31	Adjust. - Prior Year Rounding correction	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
32	LESS: CIP CARRYING CHARGES RECOVERED 8/		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
34	LESS: CIP LOST MARGINS RECOVERED	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
36	LESS: CIP COSTS RECOVERED via CPA 0481 6/	($504,975.52)	($489,808.41)	($474,035.28)	($443,366.97)	($415,077.43)	($420,447.44)	($443,698.52)	($149,495.54)	($68,726.51)	($61,970.06)	($64,776.08)	($68,949.33)	($3,605,327.09)
37	END OF PERIOD BALANCE (L20 + L28 + L29..L36)	$378,948.15	($543,776.93)	($994,895.38)	($1,527,127.44)	($1,850,115.67)	($1,957,383.64)	($418,107.22)	($700,487.48)	($997,810.79)	($585,873.76)	($434,064.92)	$477,245.60	$477,245.60
38	TOTAL CPA & CCRC REVENUE	$1,334,852.59	$1,308,169.12	$1,230,396.32	$1,229,573.34	$1,107,654.99	$1,078,444.39	$1,162,842.13	$909,042.44	$824,207.82	$750,809.81	$893,435.59	$940,862.31	$12,770,290.85

1/ Deferred taxes are determined based on the composite tax rate in effect at the time in question. The effective rate was 41.370% between 1/1/1993 and 12/31/2017. As of 1/1/2018 the effective rate is 28.742%.

2/ Monthly carrying charge rate of 1.0675% is applicable for the period 3/1/94-10/31/2009; 0.9946% is applicable for the period 11/01/2009 - 05/31/2011; 0.9601% is applicable for the period 06/01/2011 - 08/31/2015; 0.2813% is applicable 9/01/2015; 0.3021% is applicable 8/01/2016 - 5/31/2017; 0.3229% is applicable 6/01/2017 through 7/31/2018; 0.4063% effective Sep 2018- June 2019; 0.4792% effective July 2019-July 2020; 0.2917% effective August 2020; 0.6670% effective August 2023

3/ The Large Power Incentive Program is deductible for tax purposes over the life of the contract extension by IRS Ruling. Thus, no tax benefit is realized on the LPIP funds except for the amortized amount.

4/ Financial Incentives approved in Docket No. E015/M-22-130 dated 7/5/22 and in Docket No. E015/M-23-135 dated 7/20/23

5/ Rate of $0.001209033/kWh, effective Nov 2009 through May 2011 as approved in Docket No. E-015/GR-08-415, $0.001466772/kWh, effective June 2011 through Nov 2018 as approved in Docket No. E-015/GR-09-1151, $0.003299105/kWh effective Dec 2018 as approved in Docket No. E-015/GR-16-664, New CCRC rate of $0.003957035 effective October 2023 as approved in Docket No. E015/GR-21-335.

6/ CPA OF 1.08% thru Jul 1996, 1.83% Aug 96, 2.75% Jul 97, 1.62% Jul 01, 1.30% Jul 02, 0.92% Jul 03, 2.02% Jul 04, 0.86% Sep 05, 0.12% Jul 06, 0.36% Dec 07, 1.01% Nov 08, 1.22% Oct 09, $0.001448/kWh Oct 10, $0.003728/kWh Feb 12, $0.004537/kWh Jan 13; $0.004062/kWh Nov 13; $0.003425 Sep 14; $0.000442 Nov 15; $0.002494 Aug 16; $0.005052 Jul 2017; $0.002741 effective Oct 2018; -$0.000137 effective Aug 2019; -$0.000817 effective Sept 2020; $0.002015 effective Oct 2021; $0.002002 effective August 2022; $0.000306 effective August 2023

7/ Includes adjustment to CCRC Revenue of $19,124.92 due to CIP Customer correction.

8/ Effective beginning 2021, CIP tracker will no longer include two offsetting entries of Prior Year Carrying Charges Recovered in the reporting year tracker. Prior year Carrying Charges Recovered were already included in the prior year-end tracker balance which carries forward as the reporting years beginning balance. This change does not impact the tracker balance. Additional details in Minnesota Power's May 12, 2021 Reply Comments in Docket No. M-21-199.

Sources: Hyperion & CIP Tracker

CHARGE #	DESCRIPTION	TOTAL	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Direct Impact Projects														
	CIP: ENERGY PARTNERS (Low Income)	$ 428,167.81	$ 34,055.24	$ 4,442.77	$ 174,811.19	$ 39,873.34	$ 59,896.83	$ 76,302.71	$ 45,720.12	$ 13,838.02	$ 27,370.72	$ 31,499.35	$ 15,105.40	$ (94,747.88)
	CIP: HOME EFFICIENCY(Residential)	$2,255,434.32	$ 202,532.36	$ 103,327.99	$ 219,025.42	$ 152,366.65	$ 35,220.99	$ 444,737.74	$ 206,927.17	$ 175,337.24	$ 159,283.90	$ 236,566.12	$ 142,750.23	$ 177,358.51
	CIP: MULTIFAMILY CUSTOM	$178,566.24	$ 351.65	$ 1,231.48	$ 400.00	$ 61,674.84	$ 1,113.07	$ 2,280.30	$ 447.33	$ 6,188.36	$ 7,078.66	$ 2,120.98	$ 18,103.48	$ 77,576.09
	CIP: MULTIFAMILY DIRECT INSTALL	$150,910.60	$ 586.48	$ 549.42	$ 1,259.70	$ 1,237.63	$ 3,970.25	$ 2,937.64	$ 1,878.44	$ 24,521.44	$ 5,139.95	$ 9,987.06	$ 39,321.17	$ 59,521.42
	CIP: PRESCRIPTIVE BUSINESS (C/I/Ag)	$51,175.41	$ 528.37	$ 3,967.12	$ 14,255.99	$ 1,236.26	$ 5,384.68	$ 260.36	$ 10,096.98	$ 213.34	$ 2,516.34	$ 1,861.66	$ 4,274.81	$ 6,579.50
	CIP: CUSTOM BUSINESS (C/I/Ag)	$4,481,391.75	$ 48,928.50	$ 105,955.35	$ 210,397.07	$ 210,305.02	$ 472,851.77	$ 215,388.67	$ 171,513.12	$ 255,477.91	$ 210,964.48	$ 704,850.50	$ 633,584.82	$ 1,241,174.54
	Total Direct Impact Projects	$7,545,646.13	$286,982.60	$219,474.13	$620,149.37	$466,693.74	$578,437.59	$741,907.42	$436,583.16	$475,576.31	$412,354.05	$986,885.67	$853,139.91	$1,467,462.18
Indirect Impact Projects														
	CIP: CUSTOMER ENGAGEMENT	$508,116.92	$ 43,533.21	$ 55,600.67	$ 19,180.85	$ 70,074.41	$ 27,821.24	$ 38,956.53	$ 27,035.13	$ 30,572.90	$ 19,863.53	$ 30,144.32	$ 54,450.45	$ 90,883.68
	CIP: ENERGY ANALYSIS	$644,344.57	$ 16,905.32	$ 24,955.73	$ 25,538.43	$ 81,773.32	$ 94,762.99	$ 64,809.56	$ 6,691.52	$ 80,885.89	$ 15,776.42	$ 106,600.46	$ 50,634.24	$ 75,010.69
	CIP: EVALUATION & PLANNING	$745,859.82	$ 42,408.30	$ 76,616.94	$ 68,277.37	$ 77,394.93	$ 66,449.48	$ 74,735.77	$ 28,983.16	$ 24,062.96	$ 40,346.07	$ 28,875.15	$ 45,262.73	$ 172,446.96
	CIP: REGULATORY CHARGES	$183,297.14	$ -	$ -	$ 47,261.85	$ -	$ 1,774.17	$ 47,261.85	$ -	$ -	$ 41,873.44	$ 3,252.39	$ -	$ 41,873.44
	CIP: RESEARCH & DEVELOPMENT	$118,303.76	$ 180.20	$ 8,008.57	$ -	$ 3,472.88	$ 18,595.29	$ 7,351.29	$ 311.58	$ 17,551.12	$ -	$ 11,731.85	$ 44,542.10	$ 6,558.88
	Total Indirect Impact Projects	$2,199,922.21	$103,027.03	$165,181.91	$160,258.50	$232,715.54	$209,403.17	$233,115.00	$63,021.39	$153,072.87	$117,859.46	$180,604.17	$194,889.52	$386,773.65
	Total Project Charges	$9,745,568.34	$390,009.63	$384,656.04	$780,407.87	$699,409.28	$787,840.76	$975,022.42	$499,604.55	$628,649.18	$530,213.51	$1,167,489.84	$1,048,029.43	$1,854,235.83
Other CIP Tracker Account Charges														
1864-0484	CIP: FINANCIAL INCENTIVES - TRACKER 2	$2,206,583.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,206,583.00	$0.00	$0.00	$0.00	$0.00	$0.00
1864-0483	CIP: CARRYING CHARGE - TRACKER 2	($25,660.00)	$2,746.00	$788.00	($1,130.00)	($2,068.00)	($3,174.00)	($3,846.00)	($4,069.00)	($1,987.00)	($3,329.00)	($4,743.00)	($2,785.00)	($2,063.00)
	Total Charges to the Deferred Debit	$2,180,923.00	$2,746.00	$788.00	($1,130.00)	($2,068.00)	($3,174.00)	($3,846.00)	$2,202,514.00	($1,987.00)	($3,329.00)	($4,743.00)	($2,785.00)	($2,063.00)
CIP Tracker Account Recovery														
1864-0481	CIP: CPA RECOVERY - TRACKER 2	($3,605,327.09)	($504,975.52)	($489,808.41)	($474,035.28)	($443,366.97)	($415,077.43)	($420,447.44)	($443,698.52)	($149,495.54)	($68,726.51)	($61,970.06)	($64,776.08)	($68,949.33)
1864-0482	CIP: CCRC CLEARANCE - TRACKER 2	($9,164,963.76)	($829,877.07)	($818,360.71)	($756,361.04)	($786,206.37)	($692,577.56)	($657,996.95)	($719,143.61)	($759,546.90)	($755,481.31)	($688,839.75)	($828,659.51)	($871,912.98)
	Adjust.													
	YEAR END CARRYING CHARGE COST RECOVERY	$37,586.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
1864-0483	CIP: CARRYING CHARGE - TRACKER 2 CLOSING	($37,586.00)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Total CIP Tracker Account Recovery	($12,770,290.85)	($1,334,852.59)	($1,308,169.12)	($1,230,396.32)	($1,229,573.34)	($1,107,654.99)	($1,078,444.39)	($1,162,842.13)	($909,042.44)	($824,207.82)	($750,809.81)	($893,435.59)	($940,862.31)

Minnesota Power
CIP Tracker Account
Carrying Charge Rate
Effective July 1, 2022 *

The MPUC's Order to require that Minnesota Power calculate the carrying charge using the rate from its multi-year credit facility—an agreement in place that serves as the Company's vehicle for short-term liquidity.

Schedule 1 $400 Million Credit Agreement

Status	Pricing Level I	Pricing Level II	Pricing Level III	Pricing Level IV	Pricing Level V
Senior Debt Rating	≥ A+/ A+/ A1	≥ A/ A/ A2	≥ A-/ A-/A3	≥ BBB+/ BBB+/ Baa1	< BBB+/ BBB+/ Baa1
Applicable Margin for Eurodollar Rate loans and Letter of Credit participation fees	0.800%	0.900%	1.00%	1.075%	1.275%
Applicable for facility fees	0.075%	0.100%	0.125%	0.175%	0.225%
Applicable Margin for ABR loans	0%	0%	0%	0.075%	0.275%

"Alternate Base Rate" means, for any day, a rate per annum equal to the greatest of (a) the Prime Rate in effect on such day, (b) the NYFRB Rate in effect on such day plus ½ of 1% and (c) the Adjusted LIBO Rate for a one month Interest Period on such day (or if such day is not a Business Day, the immediately preceding Business Day) plus 1%; provided that for the purpose of this definition, the Adjusted LIBO Rate for any day shall be based on the LIBO Screen Rate (or if the LIBO Screen Rate is not available for such one month Interest Period, the Interpolated Rate) at approximately 11:00 a.m. London time on such day. Any change in the Alternate Base Rate due to a change in the Prime Rate, the NYFRB Rate or the Adjusted LIBO Rate shall be effective from and including the effective date of such change in the Prime Rate, the NYFRB Rate or the Adjusted LIBO Rate, respectively. If the Alternate Base Rate is being used as an alternate rate of interest pursuant to Section 3.4, then the Alternate Base Rate shall be the greater of clauses (a) and (b) above and shall be determined without reference to clause (c) above. For the avoidance of doubt, if the Alternate Base Rate as determined pursuant to the foregoing would be less than 1.00%, such rate shall be deemed to be 1.00% for purposes of this Agreement.

*This rate was effective for Minnesota Power from March 16, 2020 to March 16, 2022

The monthly Carrying Charge equivalent to the alternate base rate loan and facility fees from the multi-year credit facility is **0.2917%.**

= (Prime Rate + Prime Rate Margin + Facility Fees) *(1 Month/12 Months)

= (3.25%+.075%+0.175%)*(1/12)

Minnesota Power
CIP Tracker Account
Carrying Charge Rate
Effective August 1, 2023*

The MPUC's Order to require that Minnesota Power calculate the carrying charge using the rate from its multi-year credit facility—an agreement in place that serves as the Company's vehicle for short-term liquidity.

Schedule 1 $400 Million Credit Agreement

Status	Pricing Level I	Pricing Level II	Pricing Level III	Pricing Level IV	Pricing Level V
Senior Debt Rating	≥ A+/ A+/ A1	≥ A/ A/ A2	≥ A-/ A-/A3	≥ BBB+/ BBB+/ Baa1	< BBB+/ BBB+/ Baa1
Applicable Margin for Eurodollar Rate loans and Letter of Credit participation fees	0.800%	0.900%	1.00%	1.075%	1.275%
Applicable for facility fees	0.075%	0.100%	0.125%	0.175%	0.225%
Applicable Margin for ABR loans	0%	0%	0%	0.075%	0.275%

"Alternate Base Rate" means, for any day, a rate per annum equal to the greatest of (a) the Prime Rate in effect on such day, (b) the NYFRB Rate in effect on such day plus ½ of 1% and (c) the Adjusted LIBO Rate for a one month Interest Period on such day (or if such day is not a Business Day, the immediately preceding Business Day) plus 1%; provided that for the purpose of this definition, the Adjusted LIBO Rate for any day shall be based on the LIBO Screen Rate (or if the LIBO Screen Rate is not available for such one month Interest Period, the Interpolated Rate) at approximately 11:00 a.m. London time on such day. Any change in the Alternate Base Rate due to a change in the Prime Rate, the NYFRB Rate or the Adjusted LIBO Rate shall be effective from and including the effective date of such change in the Prime Rate, the NYFRB Rate or the Adjusted LIBO Rate, respectively. If the Alternate Base Rate is being used as an alternate rate of interest pursuant to Section 3.4, then the Alternate Base Rate shall be the greater of clauses (a) and (b) above and shall be determined without reference to clause (c) above. For the avoidance of doubt, if the Alternate Base Rate as determined pursuant to the foregoing would be less than 1.00%, such rate shall be deemed to be 1.00% for purposes of this Agreement.

*This rate was effective for Minnesota Power since February 2, 2023.

The monthly Carrying Charge equivalent to the alternate base rate loan and facility fees from the multi-year credit facility is **0. 6667%.**

= (Prime Rate + Prime Rate Margin + Facility Fees) *(1 Month/12 Months)

= (7.75%+.075%+0.175%)*(1/12)

Minnesota Power
CIP Tracker Account
Carrying Charge Rate
Proposed to be effective July 1, 2024*

The MPUC's Order to require that Minnesota Power calculate the carrying charge using the rate from its multi-year credit facility—an agreement in place that serves as the Company's vehicle for short-term liquidity.

Schedule 1 $400 Million Credit Agreement

Status	Pricing Level I	Pricing Level II	Pricing Level III	Pricing Level IV	Pricing Level V
Senior Debt Rating	≥ A+/ A+/ A1	≥ A/ A/ A2	≥ A-/ A-/A3	≥ BBB+/ BBB+/ Baa1	< BBB+/ BBB+/ Baa1
Applicable Margin for Eurodollar Rate loans and Letter of Credit participation fees	0.800%	0.900%	1.00%	1.075%	1.275%
Applicable for facility fees	0.075%	0.100%	0.125%	0.175%	0.225%
Applicable Margin for ABR loans	0%	0%	0%	0.075%	0.275%

"Alternate Base Rate" means, for any day, a rate per annum equal to the greatest of (a) the Prime Rate in effect on such day, (b) the NYFRB Rate in effect on such day plus ½ of 1% and (c) the Adjusted LIBO Rate for a one month Interest Period on such day (or if such day is not a Business Day, the immediately preceding Business Day) plus 1%; provided that for the purpose of this definition, the Adjusted LIBO Rate for any day shall be based on the LIBO Screen Rate (or if the LIBO Screen Rate is not available for such one month Interest Period, the Interpolated Rate) at approximately 11:00 a.m. London time on such day. Any change in the Alternate Base Rate due to a change in the Prime Rate, the NYFRB Rate or the Adjusted LIBO Rate shall be effective from and including the effective date of such change in the Prime Rate, the NYFRB Rate or the Adjusted LIBO Rate, respectively. If the Alternate Base Rate is being used as an alternate rate of interest pursuant to Section 3.4, then the Alternate Base Rate shall be the greater of clauses (a) and (b) above and shall be determined without reference to clause (c) above. For the avoidance of doubt, if the Alternate Base Rate as determined pursuant to the foregoing would be less than 1.00%, such rate shall be deemed to be 1.00% for purposes of this Agreement.

*This rate was effective for Minnesota Power since July 27, 2023.

The monthly Carrying Charge equivalent to the alternate base rate loan and facility fees from the multi-year credit facility is **0. 7292%.**

= (Prime Rate + Prime Rate Margin + Facility Fees) *(1 Month/12 Months)

= (8.50%+.075%+0.175%)*(1/12)

Section 3 – Financial Incentives Report

As shown in Exhibit 2, Minnesota Power has calculated its financial incentives for 2023 performance consistent with the outcome of the procedures as set forth in Docket No. E,G-999/CI-08-133.

Background

2007 Minnesota Laws Chapter 136, Article 2, (also known as the Next Generation Energy Act) enacted changes to state energy conservation goals and programs, including establishing an annual energy-savings goal for each utility of 1.5% of annual retail energy sales. This law included the following addition to Minn. Stat. § 216B.241 Subd. 2c.: "By December 31, 2008, the Commission shall review an incentive plan for energy conservation improvement it has approved under section 216B.16, subdivision 6c, and adjust the utility performance incentives to recognize making progress toward and meeting the energy-savings goals established in subdivision 1c."

In its January 27, 2010 order in Docket No. E,G-999/CI-08-133, the MPUC approved a new shared savings model for 2010 and indicated the new shared savings performance incentive shall be in operation for the length of each utility's triennial CIP plan.

On August 5, 2016, the Commission approved modifications based on the Department's January 19 and February 19, 2016 proposal to modify the Shared Savings DSM Financial Incentive mechanism. Additionally, on February 20, 2020 the Commission approved the Shared Savings DSM Financial Incentive mechanism for 2020 with the same parameters as 2019. The approved mechanism awarded a percentage of the net benefits created by a utility's energy conservation program, beginning once the utility surpassed an earnings threshold. A set range of percentage of net benefits based on the savings achievements as a percent of sales was established such that the net benefits awarded increased as the achievements increased, up to a cap of percent of net benefits awarded and a cap of total expenditures. The caps (and therefore potential financial incentive awards) decreased in each year of the 2017-2019 Triennial Plan. The 2020 caps were set at the same levels as 2019.

Financial Incentives

The Commission's December 9, 2020, order in Docket E,G-999/CI-08-133 approved the Shared Savings DSM Financial Incentive mechanism for 2021-2023. The approved mechanism uses the same structure as the 2019 and 2020 financial incentive calculation and includes the following provisions:

For electric utilities:

1) Net benefits are calculated using the individual CIP Utility Discount Rates approved by the Deputy Commissioner in Docket No. E999/CIP-18-783 on February 11, 2020.
2) For a utility that achieves energy savings of at least 1.0 percent of the utility's retail sales, the utility is allowed to collect a financial incentive.
3) For a utility that achieves energy savings equal to 1.0 percent of retail sales, the utility is awarded a share of the net benefits as set forth in Attachment A.
4) For each additional 0.1 percent of energy savings the utility achieves, the net benefits awarded to the utility is increased by an additional 0.75 percent until the utility achieves savings of 1.7 percent of retail sales.
5) For savings levels of 1.7 percent and higher, the utility is awarded a share of the net benefits equal to the Net Benefits Cap.

The Net Benefits Cap is 10 percent for 2021-2023, and the Expenditure Cap is set at 30 percent. Additionally, the Commission approved that electric utilities may exceed the 30 percent CIP Expenditures Cap, up to a maximum of 35 percent, if the utility met or exceeded energy savings equaling two percent of retail sales.

Orders dated December 9, 2020 and December 29, 2021 in Docket E,G-999/CI-08-133 requested that the Department continue stakeholder processes to evaluate the development of a low income shared-savings mechanism and to evaluate ways of improving the shared-savings mechanisms for potential adoption in the 2024–2026 triennial. Minn. Stat. § 216B.241, subd. 7, states that the costs and benefits associated with any approved low income gas or electric conservation improvement program that is not cost-effective when considering the costs and benefits to the public utility may, at the discretion of the utility, be excluded from the calculation of net economic benefits for purposes of calculating the financial incentive to the public utility. The Order for the financial incentive in the upcoming 2024-2026 Triennial was published on January 25, 2024.

2023 **EXHIBIT 2**

UTILITY

Minnesota Power - 2023 Program Performance

Inputs		Location:
2017 Weather-Normalized Sales (kWh)	2,687,273,744	
2018 Weather-Normalized Sales (kWh)	2,641,294,410	
2019 Weather-Normalized Sales (kWh)	2,611,994,921	
3-year Weather-Normalized Sales Average (kWh)	2,646,854,358	
1.0% Energy Savings	26,468,544	
Increase Energy Savings per 0.1% Increase in Achievement Level	2,646,854	
Approved CIP Budget	$10,717,971	From Commissioner's Order approving CIP Filing of the 2021-23 Triennial with Modifications
Approved CIP Energy Savings Goal (kWh)	66,926,284	From Commissioner's Order approving CIP Filing of the 2021-23 Triennial with Modifications
Estimated Net Benefits at Energy Savings Goal	$16,839,395	From Commissioner's Order approving CIP Filing of the 2021-23 Triennial
Energy savings at 1.5% (kWh)	39,702,815	
Incentive Calibration		
Max Percent of Net Benefits Awarded	10.0%	maximum net benefits awarded
Max Percent Expenditures Awarded	30.0%	
Earning Threshold	1.0%	
Achievement Level Where Net Benefits Cap Begins	1.7%	
Increase in Net Benefits Awarded Per 0.1% Increase in Achievement Level	7.5	% Points

Actual 2023 Achievements	
Expenditures	$ 9,560,194.37
Energy Saved (first year kWh saved)	73,549,385
Net Benefits Achieved-without MP Projects	$21,908,433
Shared Savings Incentive Results	
Achievement Level	2.78%
Percent of Net Benefits Awarded	10.00%
Financial Incentive Award	**$2,190,843**
Incentive/First Year kWh Saved $	$0.0298
Incentive/Net Benefits	10.00%
Incentive/CIP Expenditures	22.92%

Estimated Incentive Levels by Achievement Level

Achievement Level (% of sales)	Energy Saved	Percent of Net Benefits Awarded	Estimated Net Benefits Achieved	Incentive Award	Average Incentive per unit Saved	Incremental Incentive Units Saved
0.0%	0	0.00%	$0	**$0**	$0.000	-
0.1%	2,646,854	0.00%	$665,978	**$0**	$0.000	$0.000
0.2%	5,293,709	0.00%	$1,331,956	**$0**	$0.000	$0.000
0.3%	7,940,563	0.00%	$1,997,934	**$0**	$0.000	$0.000
0.4%	10,587,417	0.00%	$2,663,912	**$0**	$0.000	$0.000
0.5%	13,234,272	0.00%	$3,329,889	**$0**	$0.000	$0.000
0.6%	15,881,126	0.00%	$3,995,867	**$0**	$0.000	$0.000
0.7%	18,527,981	0.00%	$4,661,845	**$0**	$0.000	$0.000
0.8%	21,174,835	0.00%	$5,327,823	**$0**	$0.000	$0.000
0.9%	23,821,689	0.00%	$5,993,801	**$0**	$0.000	$0.000
1.0%	26,468,544	4.75%	$6,659,779	**$316,339**	$0.012	$0.120
1.1%	29,115,398	5.50%	$7,325,757	**$402,917**	$0.014	$0.033
1.2%	31,762,252	6.25%	$7,991,735	**$499,483**	$0.016	$0.036
1.3%	34,409,107	7.00%	$8,657,713	**$606,040**	$0.018	$0.040
1.4%	37,055,961	7.75%	$9,323,690	**$722,586**	$0.019	$0.044
1.5%	39,702,815	8.50%	$9,989,668	**$849,122**	$0.021	$0.048
1.6%	42,349,670	9.25%	$10,655,646	**$985,647**	$0.023	$0.052
1.7%	44,996,524	10.00%	$11,321,624	**$1,132,162**	$0.025	$0.055
1.8%	47,643,378	10.00%	$11,987,602	**$1,198,760**	$0.025	$0.025
1.9%	50,290,233	10.00%	$12,653,580	**$1,265,358**	$0.025	$0.025
2.0%	52,937,087	10.00%	$13,319,558	**$1,331,956**	$0.025	$0.025
2.1%	55,583,942	10.00%	$13,985,536	**$1,398,554**	$0.025	$0.025
2.2%	58,230,796	10.00%	$14,651,513	**$1,465,151**	$0.025	$0.025
2.3%	60,877,650	10.00%	$15,317,491	**$1,531,749**	$0.025	$0.025
2.4%	63,524,505	10.00%	$15,983,469	**$1,598,347**	$0.025	$0.025
2.5%	66,171,359	10.00%	$16,649,447	**$1,664,945**	$0.025	$0.025
2.6%	68,818,213	10.00%	$17,315,425	**$1,731,543**	$0.025	$0.025
2.7%	71,465,068	10.00%	$17,981,403	**$1,798,140**	$0.025	$0.025
2.8%	74,111,922	10.00%	$18,647,381	**$1,864,738**	$0.025	$0.025
2.9%	76,758,776	10.00%	$19,313,359	**$1,931,336**	$0.025	$0.025
3.0%	79,405,631	10.00%	$19,979,337	**$1,997,934**	$0.025	$0.025

Section 4 – Proposed Conservation Program Adjustment

CIP costs are recovered by utilities through base rates via the CCRC and through an annual CIP adjustment factor called the Conservation Program Adjustment or CPA. Minnesota Power files a recalculation of its CPA each April as part of its CIP Consolidated Filing. In accordance with the Commission Order dated September 16, 2015, Docket No. E015/M-15-80, Minnesota Power calculated the proposed CPA for the 2024-2025 period using a fiscal year approach.

2024-2025 CPA Development

The CIP Tracker Account balance at year-end 2023 reflects the results of prior activity in Tracker 2, as indicated on page 1 of Exhibit 1. However, for CPA purposes, the 2023 year-end balance requires adjustments to properly calculate the proposed CPA factor. Using the fiscal year approach, these factors include actual and anticipated expenditures and cost recovery through base rates (CCRC) and the current CPA rate for the remainder of the current CPA period (January 2024–June 2024) as well as anticipated financial incentives, anticipated CIP expenditures and anticipated cost recovery through base rates for the new CPA period (July 2024–June 2025). The fiscal year approach is designed to achieve a zero Tracker balance at the end of the CPA period (fiscal year) rather than at the end of the calendar year. Minnesota Power notes that actual program performance, expenditures and sales will lead to tracker balance fluctuation.

Minnesota Power requests Commission approval of a proposed CPA factor of $0.001444 per kWh to be effective without proration with bills rendered on or after July 1, 2024. Minnesota Power is filing for CPA modification on April 1, 2024, making the anticipated effective period for this request July 1, 2024 through June 30, 2025. Until subsequent MPUC approval, the existing CPA factor will remain in effect. The CPA factor is included in the Minnesota Policy Adjustment line on the bill.

MINNESOTA POWER
Conservation Program Adjustment
Proposed for July 2024 - June 2025

Conservation Program Adjustment:

			Jan 2024 - Jun 2024		Jul 2024 - Jun 2025
1	CIP Tracker 2 Account Balance at the end of 2023	1/	$ 477,246	$	(255,852)
2	Financial Incentives claimed per Exhibit 2	2/	N/A		2,190,843
3	CIP current year expenditures (actuals)	3/	$ 759,397	N/A	
	CIP expenditures approved or budgeted		$ 4,177,228	$	12,639,182.03
4	CIP Cost Recovered through Base Rates (actuals)	4/	$ (1,917,944)	N/A	
	CIP Cost Recovered through Base Rates (estimated)		$ (3,348,566)	$	(10,678,099)
5	CIP Cost Recovery through current CPA (actuals)	5/	$ (145,653)	N/A	
	CIP Cost Recovery through current CPA (estimated)		$ (258,947)	N/A	
6	Carrying Charges	6/	$ 1,386	N/A	
7	**Recoverable Tracker Balance**	7/	**$ (255,852)**	**$**	**3,896,074**

8	kWh sales subject to CIP	8/	**2,698,510,000**	
	monthly		224,875,833	

CCRC effective August 2023	9/ $	0.003957035	**new CCRC
Current CPA	$	0.000306	

Conservation Program Adjustment (per kWh methodology) Line 7/Line 8	**$**	**0.001444**

1/ The prior year-end CIP Tracker Account Balance is per Exhibit 1, Page 1, line 37.

2/ Financial Incentives per Exhibit 2 reflecting the originally approved CIP projects.

3/ Actual CIP expenditures included for Jan-Feb 2024; Estimated expenditures for Mar-Jun 2024 and July 2024-Jun 2025 based on the 2024 and 2025 budget as approved by the Deputy Commissioner on December 1, 2023, in the Company's 2024-2026 Triennial CIP Filing in Docket No. E015/CIP-23-93.

4/ Actual CIP Cost Recovery through Base Rates included for Jan-Feb 2024; Estimates for Mar-Jun 2024 based on the Company's approved conservation cost recovery charge (CCRC) [rate] applied to budgeted Mar-Jun 2024 sales subject to CIP*; Estimates for July 2024- Jun 2025 based on approved CCRC applied to 2024 budgeted sales subject to CIP*.

5/ Actual CIP Cost Recovery through current CPA included for Jan-Feb 2024; Estimates for Mar-Jun 2024 based on the current CPA applied to 2024 budgeted sales subject to CIP*.

6/ Actual Carrying Charges included for Jan-Feb 2024

8/ *Total budget sales less competitive rate, economy, opt-out, community solar & unbilled sales.

9/ CCRC rate effective October 2023 as approved in Docket No. E015/GR-21-335.


Compliance

COMPLIANCE REPORTING

Prior to the ECO Act passing, Minnesota Rules 7690 contained the requirements and procedures for CIP filings. Minn. Stat. §§ 216B.2401, 216B.241 and 216B.2411 contained provisions the Company must meet in its CIP Compliance points, which are addressed in this section. Statutory requirements in this section are based on the then-current requirements and this section will be updated in the 2024 Consolidated to reflect goals and requirements established under the revised statutory provisions.

Statutory Requirements

2023 Minimum Spending Requirement

Minn. Stat. § 216B.241 required that 1.5% of Minnesota Power's Retail Revenues (net of exempt customers) be spent on CIP.[4] The following table shows 2023 spending in relation to the approved minimum spending requirement.

Minimum Spending Requirement	*Approved Spending (1)*	*Actual Spending*	*Variance of Actual to Minimum Spending*
$3,846,000	$10,917,971	$9,745,568	$5,899,568

(1) Updated to reflect approved modifications as filed in Docket No. E015/CIP-20-476.

2023 Achievements as a Percentage of Sales

The Next Generation Energy Act of 2007 and the 2021-2023 Triennial Order established an energy-savings goal of 1.5% of Gross Annual Retail Energy Sales (net of exempt customers).[5] The table below shows Minnesota Power's achievements as a percent of 2017–2019 weather-normalized retail sales.

[4] The Energy Conservation and Optimization Act (ECO Act), which was passed in 2021, removed the statutory minimum spending percentage. The spending goals for Minnesota Power set forth in the 2021-2023 Triennial Order, November 24, 2020 Decision in Docket No. E-015/CIP-20-476, reflect the prior 1.5% statutory goal.
[5] The ECO Act increased the energy savings goals from 1.5% to 1.75%. Minnesota Power filed its first Triennial under that requirement in 2023. Minnesota Power significantly exceeded both the updated 1.75% statutory energy savings goal and the 1.5% 2021-2023 Triennial Order savings goal.

Year	*Energy Savings Achieved (kWh)*	*Total Adjusted Sales (kWh)*	*Savings as % of Retail Sales*
2023	73,589,465	2,646,854,358	2.78%

2023 Low Income Spending Requirement

Minn. Stat. § 216B.241, subd. 7, requires utilities to spend 0.4%[6] of residential electric Gross Operating Revenue ("GOR") on low income electric programs in 2023, unless otherwise approved by the Commissioner. In its 2013 Decision,[7] the Department of Commerce approved Staff's proposal to use a three-year average for electric revenues under the low income requirement on a prospective basis, beginning in 2015 for investor-owned utilities.

Minimum Spending Requirement using Three-year Average	*Approved Spending (1)*	*Actual Spending(2)*	*Variance of Actual to Minimum Spending Requirement using Three-year Average*
$446,785	$788,698	$715,179	$268,394

1) *Updated to reflect approved modification to Multifamily Direct Installation program budget as filed on August 3, 2022 in Docket No. E015/CIP-20-476.*

2) *Includes spending associated with dedicated income-qualified offerings/activity in the following programs: Energy Partners, Multifamily Direct Installation, Custom Multifamily Efficiency, Customer Engagement and Energy Analysis.*

2023 Research & Development 10% Maximum Spending

Minnesota Power complied with Minn. Stat. § 216B.241, subd. 2(e), which limits spending for Research & Development to 10% of the minimum spending requirement.[8]

[6] This requirement was updated as part of the ECO Act, to be in effect in 2022.
[7] *In the Matter of Minnesota Power's 2013 Conservation Improvement Program Status Report*, Docket No. E015/CIP-10-526.03 (Jan. 9, 2015).
[8] The R&D spending cap for Minnesota Power set forth in the 2021-2023 Triennial Order, November 24, 2020 Decision in Docket No. E-015/CIP-20-476, reflects the prior 10% of the minimum spending requirement. The R&D maximum spending requirement was updated in the ECO Act to be 10% of the expenditures.

Annual Spending Cap	*Approved Spending*	*Actual Spending*	*Variance of Actual to Cap*
$384,600	$384,600	$118,304	($266,296)

Lighting Use and Recycling Programs

Minn. Stat. § 216B.241 requires utilities to invest in projects that encourage the use of light-emitting diode ("LED") lamps and proper management of spent lamps. Public utilities with 200,000 or fewer customers may establish a collection system as part of conservation improvement activities. Minnesota Power promotes energy-efficient lighting measures to all customer classes. The Company also facilitates proper management of spent lamps by partnering with hardware stores in its service area to provide free compact fluorescent light ("CFL") recycling and discounted fluorescent tube and lamp recycling.

Triennial Decision Requirements

Minnesota Power has complied with the 2021-2023 Triennial Plan decision[9] requirements as summarized below.

Budget Flexibility

Utilities are allowed to exceed annual budget, savings, and participation goals for all direct impact segments so long as the additional spending does not result in the segment becoming non-cost effective from the Societal perspective. Utilities are required to notify the Department via a courtesy notification of circumstances where the utility expects to exceed any segment budget goals by 25 percent. In 2023, Minnesota Power did not exceed budget by 25 percent for any segment.

Segment (Programs)	Budget	Spending	Percent of Budget
Residential (Home Efficiency, Energy Partners)	$ 2,337,856	$ 2,683,602	115%
Multifamily (Multifamily Direct Install, Custom Multifamily Efficiency)	$ 490,930	$ 329,477	67%
Commercial (Prescriptive Business Efficiency, Custom Business Efficiency)	$ 4,851,912	$ 4,532,567	93%
Indirect Impact (Customer Engagement, Energy Analysis, Evaluation & Program Development, Research & Development)	$ 3,037,273	$ 2,016,625	66%

Courtesy Notifications and Program Modifications

The Deputy Commissioner requires that utilities include in their annual status report a description of courtesy notifications and changes not requiring Deputy Commissioner approval in order to keep the Department and other interested parties informed of their activities and follow the instructions in Minnesota Rules part 7690.1400 and 7690.1430 for plan modifications. 2023 Courtesy Notifications and Program Modifications are detailed in the table below.

[9] Minnesota Power's 2021–2023 Triennial Conservation Improvement Program, Docket No. E015/CIP-20-476.

Modification Date	Program Modified	Summary of Changes	Applicable Program Years	Date Acknowledged/ Approved
April 2022 Courtesy Notification (Sent: 4/19/2022)	Home Efficiency & Energy Partners	**Remote HEAs:** • Remote HEA options for those who request HEA through HE or EP programs; kits will be provided by mail or dropped off with DI products, requested full savings on kit products.	2022 & 2023	5/3/2022
August 2022 Courtesy Notification (Sent: 8/4/2022)	Energy Partners	**New Construction:** Added new construction measure from res to EP with enhanced rebates for 2022 and 2023.	2022 & 2023	8/9/2022
		Kits: • Continue verification process to claim > 50% on kits based on survey response. • Expand distribution beyond LIHEAP to customers who have been identified as highly likely to be income-qualified through demographic data.	2022 & 2023	
March 2023 Courtesy Notification (Sent: 3/21/2023)	Energy Partners	**ASHP in EP for 2023:** • Continue including Home Efficiency ASHP measure in Energy Partners program in 2023.	2023	3/23/2023
December 2020 Formal Program Modification	Home Efficiency	**Heat Pump Water Heater:** • Expand eligibility of Heat Pump Water Heaters measure to include those over 55 gallons in size using an electric resistance water heater as the baseline.	2021-2023	2/12/2021
February 2022 Formal Program Modification	Prescriptive Business	**Updated Measures:** Added: refrigerator/freezer recycling, dishwashers, lighting fixtures, ASHP Tune-up Removed: Refrigeration ECM Modified Goal & Budget	2022 & 2023	4/15/2022
August 2022 Formal	Multifamily Custom	Increase Goal & Budget for 2022 & 2023	2022 & 2023	10/3/2022

Program Modification	Multifamily Direct Installation	• Reduce number of measures/unit to better reflect actual opportunity • Add fluorescent fixture replacement measure • Add leave behind bulbs for tenant owned lamps when tenant is not home to give permission to change the bulbs out Decrease Goal & Budget for 2022 & 2023		

Investments in Low Income and Under-Resourced Communities

Due to ongoing interest by the Department and interested parties in understanding utility investments to support low income customers and under-resourced communities, the Deputy Commissioner required that utilities clearly report various low income and multifamily specific metrics in their annual status reports.

Residential Low Income ("LI") and Renter Participation

Differing levels of participation data is collected for various residential program offerings. Some programs require customers to complete rebate applications where account information and other details such as home ownership status is requested. Other offerings are intended to be as easy as possible for customers to participate in, such as markdown programs where discounts on energy efficiency products are built into the retail price. For these offerings, no specific information is known about the participants. In the table below, actual participant data is used where available and estimates based on the available data are used where it is not.

Estimated LI & Renter Participation in Residential Programs	LI Participants *(3)* # Participants	Renter Participants # Renters
Home Efficiency *(1)*	22,512*(4)*	2,955*(5)*
Energy Partners *(1)*	16,484	1,383*(5)*
Energy Analysis *(2)*	1,200	863

(1) For Home Efficiency and Energy Partners "participant" refers to the number of measures.
(2) For Energy Analysis "participant" refers to the number of single family homes or multifamily units served.
(3) Low Income is defined as LIHEAP-qualified or in accordance with the Departments LI MF guidance for the purpose of determining LI participation.
(4) Includes 4,242 participants based on available data and assumes similar participation levels for LED lighting markdown measures where participant data is not available. Lighting markdowns account for 81% of Home Efficiency program participation.
(5) Reflects number of participants who indicated on an application that they rent their home. No assumption was made about renter participation where data is not available.

Multifamily Participation

Multifamily customers can participate in energy efficiency offerings through a variety of CIP programs in the 2021-2023 Triennial Plan. Information related to the number of market rate and affordable housing buildings and units served in 2023 can be found in the program sections specific to Multifamily Direct Installation, Custom Multifamily Efficiency, and Energy Analysis.

Low Income and Multifamily Spending & Savings

Minnesota Power includes low income offerings in several CIP programs including Energy Partners, a dedicated low income program, the Multifamily Direct Installation and Custom Multifamily Efficiency programs, which serve both market rate and affordable housing, and Energy Analysis which has specific offerings for both single family and multifamily low income customers. Additionally, low income customers can participate in the Home Efficiency residential program. The table below reflects the planned (where available) and actual (or estimated) low income spending and savings for each of these program.

	LI Spending		**LI Savings (kWh Bus)**	
	Planned	**Actual**	**Planned**	**Actual**
Home Efficiency	NA	*$70,952	NA	*960,901
Energy Partners	$369,660	$428,168	1,246,050	1,257,606
Energy Analysis	$145,840	$142,552	NA	NA
Multifamily Direct Installation	$116,771	$110,291	415,835	357,518
Custom Multifamily Efficiency	NA	$28,976	NA	532,498

** Estimated based on data collected through applications where available and based on participation estimates where participant data is not available.*

Additional details regarding spending, savings, and incentives for affordable housing and market rate multifamily achievements can be found in the Multifamily program sections.

Measurement & Verification

On July 23, 2008, the Deputy Commissioner approved the Measurement & Verification Protocols for Large Custom CIP Projects, as part of Docket No. E,G999/CIP-06-1591. The Protocols apply to custom projects that have savings greater than 1 gigawatt hour ("GWh") or 20,000 decatherms ("Dth"). One custom project met this criteria in 2023. The project was approved by the Department on December 4, 2023.

Other Regulatory Requirements

Average Savings Method

On April 26, 2012, in Docket Nos. E,G999/CI-08-133 and E017/CIP-10-356, the Deputy Commissioner of the Department of Commerce made a decision about how to count energy savings from behavioral projects in CIP programs and the Shared Savings Demand-Side Management Financial Incentive calculations. The Commissioner ordered the Average Savings Method ("ASM") proposed by Staff be used with a three-year minimum lifetime, effective with the 2014 program year. Minnesota Power utilized the method from the Deputy Commissioner's decision to calculate the energy savings reported for the residential behavioral measure in the Home Efficiency program. Details related to the calculation of the behavioral savings and the application of the ASM can be found in Appendix B.

Employee Expenses

In its August 13, 2010, Comments in the Matter of Minnesota Power's 2009 CIP Consolidated Filing (Docket No. E015/M-10-266), the Department provided guidelines regarding employee expenses in the categories of travel, meals, entertainment, and employee awards. Minnesota Power provides the following summary in response to those guidelines.

Minnesota Power summarizes the 2023 expenses that fall within the categories outlined by the Department as follows:

Category	2023 Amount	Description
Meals	$18,590	This includes meals for refreshments at CIP-related meetings, working lunches and dinners and meals while traveling for training, conferences, offsite meetings with regulators and/or workgroups and customer site visits. These are an essential part of promoting and delivering CIP.
Travel	$35,420	This includes travel expenses such as mileage, rental vehicles, taxi services, and air travel for offsite meetings, customer site visits across Minnesota Power's 26,000 square mile service territory, and travel to training/conferences. These are directly related to CIP program design and delivery.
Employee Awards	$4,850	This includes awards tied to the successful delivery of conservation program energy-savings goals and outreach objectives.
TOTAL	$58,860	This represents 0.6% of the total annual CIP expenditures, with 100% of employee expenses related to meals and travel as part of promoting and delivering CIP.

Minnesota Power's total employee expenses exceeded the Department's recommended guideline of 0.5% of total CIP expenditures. Minnesota Power believes its CIP expenses are still within reason and represent a proportionately small share of overall spending. Prior to 2020, Minnesota Power had regularly exceeded the Department's guideline because of frequent travel to stakeholder meetings, Commission hearings and customer site visits across its 26,000 square-mile service territory. The shift from in-person to virtual meetings, trainings, and conferences during the COVID-19 pandemic decreased total employee expenses between 2020 and 2022. These costs have since increased as Minnesota Power staff are conducting more in-person meetings and attending more in-person trainings to continue to develop and promote CIP. Minnesota Power respectfully requests that the Department continue to consider these circumstances when reviewing its employee expenses. The Company recognizes remote participation options for meetings and

hearings are more readily available following the COVID-19 pandemic and weighs the cost and benefit of in-person participation for these events on a case-by-case basis.

Inflation Reduction Act Docket

On August 16, 2022, the federal Inflation Reduction Act[10] ("IRA") was signed into law. On December 14, 2022, in Docket No. E,G-999/CI-22-624, the Commission and the Department initiated a joint investigation into energy issues related to the IRA. An order was published in the docket on September 12, 2023, including Order Point 3:

> The utilities shall report in this docket, on an annual basis, the status of how the implementation of Energy Conservation and Optimization Act and Natural Gas Innovation Act plans are supporting the Inflation Reduction Act. These reports should include data showing the number of projects, the types of projects, and the amount of funding provided through ECO and NGIA that also receives IRA incentives.

Minnesota Power has added questions on 2024 rebate applications to collect this information, to the best of its ability, and plans to provide a summary of findings in the 2024 Consolidated to be filed by April 1, 2025, as well as in the specific IRA docket referenced above.

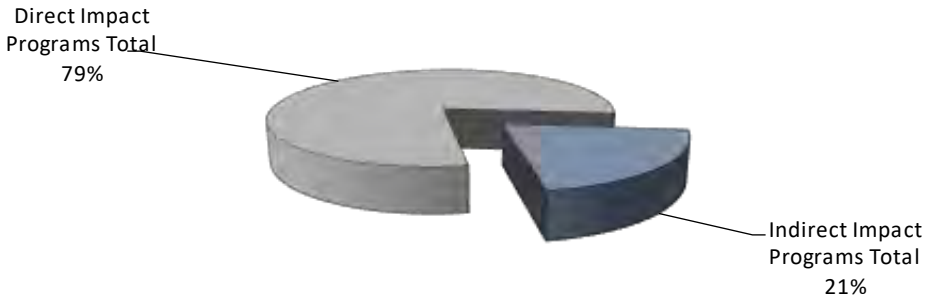
[10] Pub. L. No. 117-169, 136 Stat. 1818 (2022).

Status Report

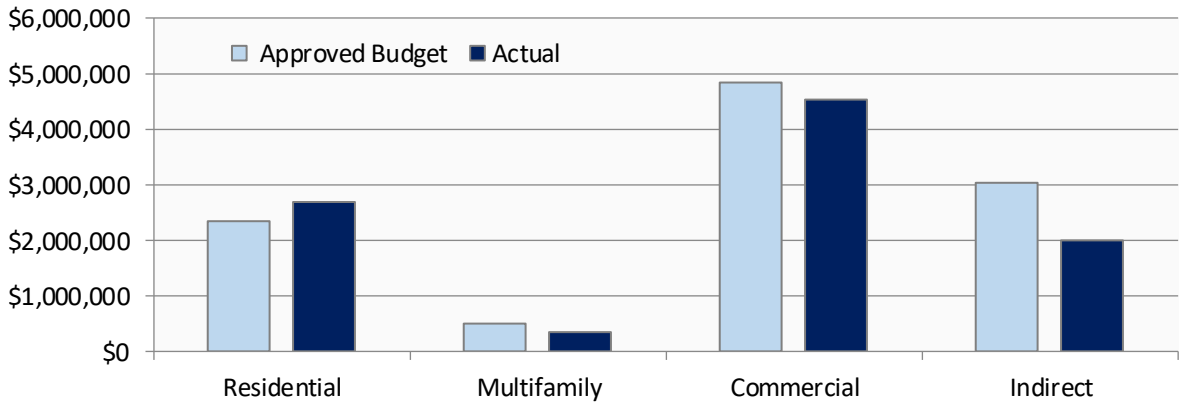
2023 CIP STATUS REPORT

Minnesota Power's energy conservation strategy provides a wide variety of program offerings to best serve its diverse customer mix. Each customer is unique in both their motivations for pursuing energy efficiency opportunities and their ability to engage in different offerings. With this knowledge, Minnesota Power provides a combination of traditional programs and innovative delivery strategies designed to address the needs and barriers of each customer segment including residential, multifamily and business. Minnesota Power's CIP portfolio includes a combination of "direct savings" and "indirect savings" programs that complement each other and provide for a balanced and meaningful customer experience.

2023 Program Spending By Direct and Indirect Savings Programs

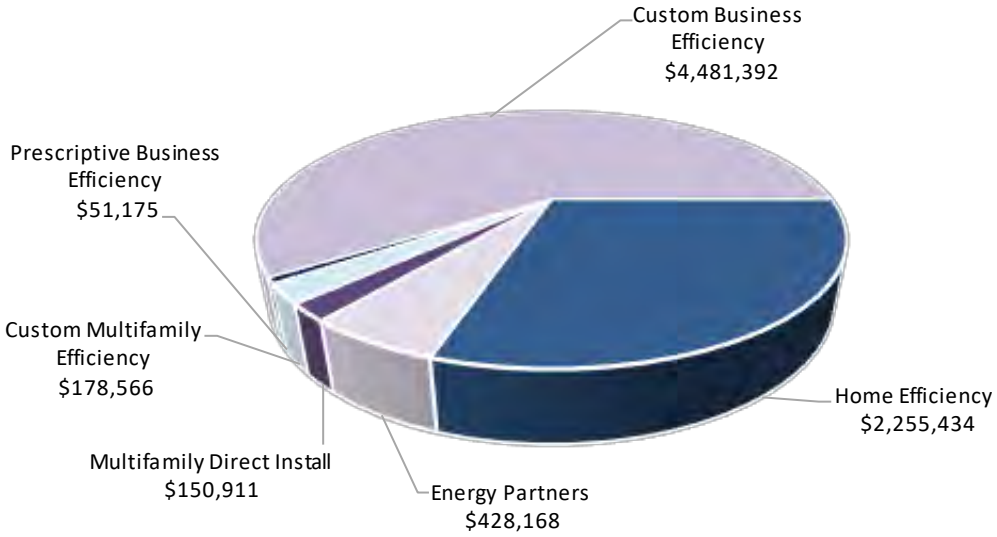


2023 Approved Budgets & Actual Spending Per Segment

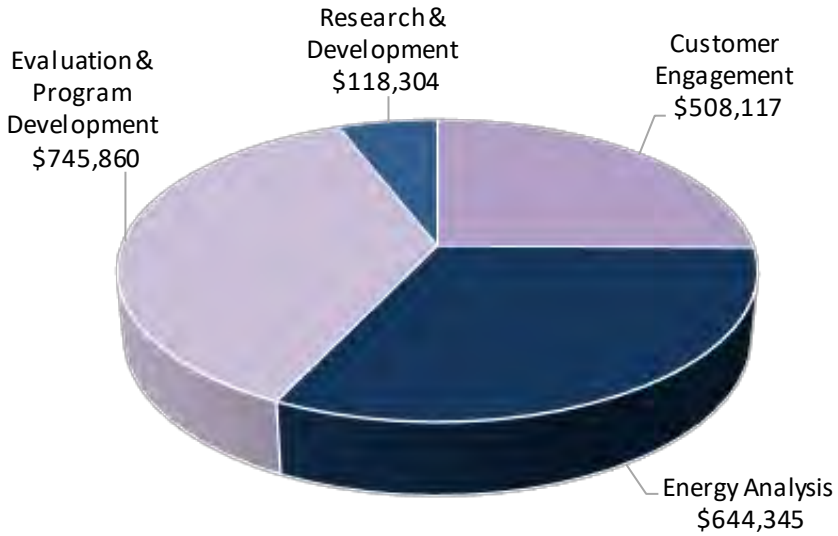


Investing in a range of programs is essential to keep Minnesota Power's program portfolio strong well into the future. Minnesota Power added three new programs to its CIP portfolio in the 2021-2023 Triennial Plan to better serve all customer segments. See the figures below for a breakdown of spending by program.

2023 Direct Programs Spending Breakdown

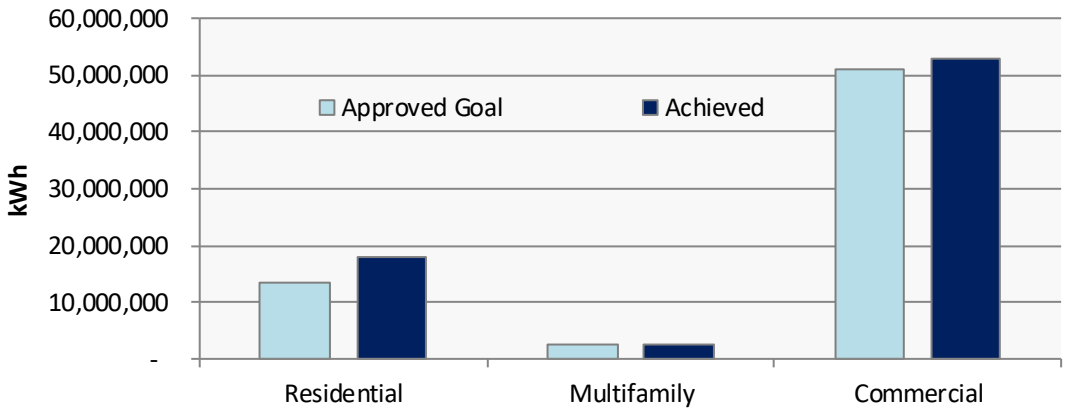


2023 Indirect Programs Spending Breakdown



Minnesota Power met or exceeded the energy savings goal in each segment of its CIP portfolio, as shown in the chart below.

2023 Approved Savings Goals & Achievements per Segment



For further context regarding Minnesota Power's energy conservation programs and the impact they have on customers, see the Successes section of this filing. These case studies highlight people, businesses and communities taking ownership of their energy usage and demonstrate how Minnesota Power connects with customers through conservation.

Looking Forward

There are many factors influencing the energy efficiency environment in Minnesota, including rising delivery costs, evolving state and federal policy, and changes in cost effectiveness. Minnesota Power has worked closely with customers, contractors, stakeholders, and regulators to ensure that programs are flexible and responsive to the evolving industry and has taken steps to modify programs as needed. However, additional actions will be required to ensure Minnesota Power's ECO portfolio continues to meet customer needs and encourages equitable access to customer programs as the environment continues to evolve.

Program delivery costs have increased significantly in recent years. The combination of inflation, supply chain disruptions, and economic uncertainty have impacted customers' ability to make capital improvements to their homes and businesses. Additionally, attracting and retaining talent in northern Minnesota has continued to create challenges for customers, delivery partners, and the Company. Encouraging customers to make energy-efficient investments has required higher incentives, more costly equipment and more resources than have historically been required.

In addition, the Company anticipates that recent federal and state policy changes will have a significant impact on Minnesota Power's ECO portfolio in the coming years. The ECO Act, passed by the Minnesota legislature in 2021, enables utilities to explore efficient fuel switching and load

management activities. While guidance was provided in 2022, further adjustments to the ECO statute are being explored through the 2024 legislative session. Meanwhile, the IRA, which has introduced a significant amount of federal funding for energy efficiency projects, coupled with new state energy programs, present an opportunity for coordination. It will be critical for utilities and the Department to coordinate on the design and implementation of these programs to ensure that customers are able to maximize the benefits of ECO, IRA, and state programs. While effective coordination and implementation of these funds could help address the rising costs of utility conservation programs, there is significant uncertainty around actual impacts.

Meanwhile, as the result of a robust series of Department-led working group efforts which included utilities, stakeholders, and industry experts, significant changes to the ECO evaluation framework and calculations have been made. Changes include the addition of a new primary screening test designed to reflect the State's energy policy goals and objectives referred to as the Minnesota Cost Test ("MCT"), inclusion of new utility system and non-utility system impacts within the tests, and potential standardization of various existing impacts that historically have been utility specific. In addition to these changes to the evaluation framework, cost effectiveness of efficiency programs overall will be heavily impacted by the changes to lighting with the enforcement of the Energy Independence and Security Act ("EISA"), which increased the efficiency standards of general service lighting. These changes, along with rising delivery costs and the new IRA programs described above, will make it difficult to predict the overall cost-effectiveness of ECO portfolios going forward. Flexibility to update and modify programs and portfolios will be more critical than ever going into the next Triennial.

Minnesota Power will continue to work with customers, stakeholders, and regulators to ensure that programs are well-positioned to address challenges and opportunities associated with the rapidly evolving energy efficiency and optimization landscape into the future. Minnesota Power remains committed to providing sustainable, inclusive, and cost-effective energy efficiency programs, with ongoing program development and increased efforts to raise program awareness and participation.

Minnestota Power's 2023 CIP Expenditures & Achievements

2023	*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***
Home Efficiency	$ 1,968,196	$ 1,968,196	$ 2,255,434.32	115%	12,156,789	12,156,789	16,586,289	136%	1,345	1,345	1,800.1	134%	230,559	230,559	356,542	155%
Energy Partners	$ 369,660	$ 369,660	$ 428,167.81	116%	1,246,050	1,246,050	1,257,606	101%	132	132	171.4	130%	14,126	14,126	16,484	117%
Multifamily Direct Install	$ 321,299	$ 180,202	$ 150,910.60	84%	1,363,919	739,761	481,916	65%	150	81	51.2	64%	16,381	7,955	4,859	61%
Custom Multifamily Efficiency	$ 143,673	$ 310,728	$ 178,566.24	57%	1,092,769	1,912,346	2,204,232	115%	184	350	380.8	109%	45	68	104	153%
Prescriptive Business Efficiency	$ 125,036	$ 121,134	$ 51,175.41	42%	1,102,604	603,964	1,059,905	175%	123	88	153.6	175%	1,178	1,015	7,097	699%
Custom Business Efficiency	$ 4,730,778	$ 4,730,778	$ 4,481,391.75	95%	50,267,374	50,267,374	51,999,517	103%	8,101	8,101	4,514.7	56%	1,365	1,365	1,019	75%
Direct Impact Programs Total	**$ 7,658,642**	**$ 7,680,698**	**$ 7,545,646**	**98%**	**67,229,505**	**66,926,284**	**73,589,464.9**	**110%**	**10,034.8**	**10,095.6**	**7,071.7**	**70%**	**263,654**	**255,088**	**386,105**	**151%**
Indirect Impact Programs																
Customer Engagement	$ 851,642	$ 851,642	$ 508,117	60%									100,750	100,750	95,670	95%
Energy Analysis	$ 1,056,405	$ 1,056,405	$ 644,345	61%									6,330	6,330	4,490	71%
Evaluation & Program Development	$ 744,626	$ 744,626	$ 745,860	100%												
Research & Development	$ 384,600	$ 384,600	$ 118,304	31%												
Indirect Impact Programs Total	**$ 3,037,273**	**$ 3,037,273**	**$ 2,016,625**	**66%**	**-**	**-**	**-**						**107,080**	**107,080**	**100,160**	**94%**
Regulatory Charges	$ 200,000	$ 200,000	$ 183,297	92%												
Total	**$ 10,895,915**	**$ 10,917,971**	**$ 9,745,568**	**89%**	**67,229,505**	**66,926,284**	**73,589,465**	**110%**	**10,034.8**	**10,095.6**	**7,071.7**	**70%**	**370,734**	**362,168**	**486,265**	**134%**

EXHIBIT 4

Residential Direct Impact Programs

Residential Direct Impact Programs

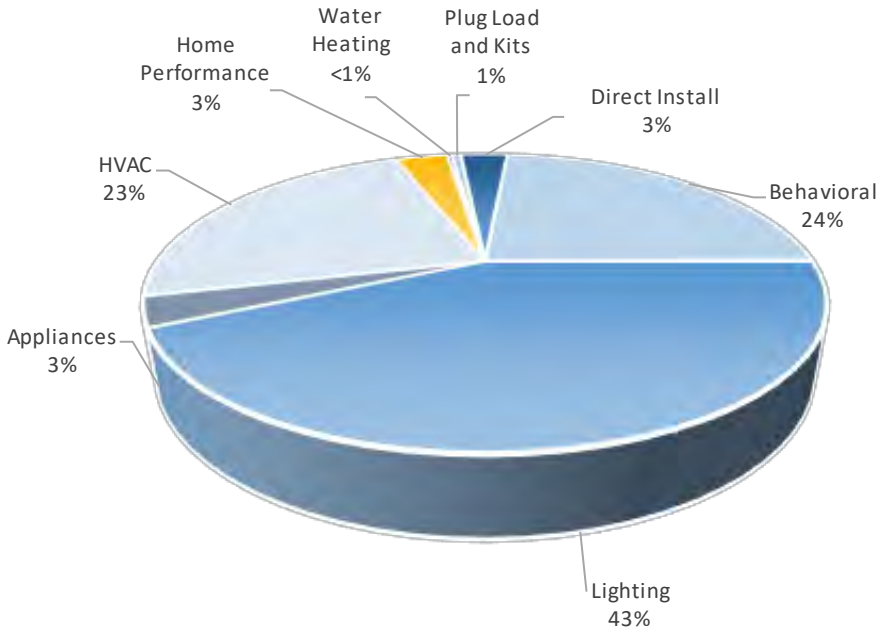
Home Efficiency

Program Description

The Home Efficiency program is a comprehensive, portfolio-based residential sector program designed to help customers make informed choices about how they use energy in their homes. Minnesota Power promotes a variety of energy-efficient products, technologies, and services to help customers achieve energy savings primarily through a streamlined prescriptive rebate process. Additionally, customers needing more customized support can get in-depth analysis of their homes for a greater level of energy savings based on their specific needs.

Energy savings in the residential segment has been primarily driven by energy-efficient lighting for more than a decade. The Company continued this focus on LED lighting through the Home Efficiency program in 2023. As a result, lighting accounted for 43% of the Home Efficiency program savings. Participation in the residential Heating, Ventilation and Air Conditioning ("HVAC") offerings made up 23% of the overall Home Efficiency program savings.

Home Efficiency Program - 2023 Savings by Technology (kWh)



Results

The table below details the Home Efficiency 2023 approved goals versus actual results.

	Approved Goals		***Actual Results***		***% of Approved Goal***
Total Project Expenditures	$1,968,196		$2,255,434		115%
Total Project Energy Savings (at busbar)	12,156,789	kWh	16,586,289	kWh	136%
Total Project Demand Savings (at busbar)	1,344.6	kW	1,800.1	kW	134%
Participation (measures)	230,559		356,542		155%

Evaluation Methodology

This program was evaluated based on the following items:

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

Summary

ENERGY STAR® Lighting and Appliances

Lighting and appliances have consistently made up a significant portion of the Home Efficiency savings throughout the history of the program. Lighting participation was 15% higher in 2023 than in 2022 likely due to increased focus the Company gave to the benefits of LED lighting, prior to baseline changes reflected in the Company 2024-2026 Triennial. Coinciding with increased marketing of LEDs were aggressive rebates that also helped guide the slight surge in participation. Overall appliance participation stayed consistent with 2022 as market trends relating to inflation persisted into 2023. Participation in lower price-point product purchases like line voltage thermostats saw a significant increase of more than 65% due in large part to strong marketing and education around the benefits of the technology in partnership with a smart thermostat manufacturer providing point-of-sale rebates for Minnesota Power customers. Minnesota Power continues to leverage strong manufacturer and retailer relationships like this to deliver the Home Efficiency program across the region. A broad retailer network including mass merchants, home improvement, warehouse club, independent hardware and drug and specialty stores, enhanced by knowledgeable field representatives, helps to ensure that Minnesota Power customers have access to a variety of energy-efficient technologies wherever they choose to shop. With the

implementation of EISA standards in 2023, LED lighting will no longer be a part the Home Efficiency rebate program moving forward. Appliances will continue to be the backbone of retailer-led participation of the Home Efficiency program in 2024.

Heating, Ventilation and Air Conditioning

HVAC measures continued to be an important factor in the success of the Home Efficiency program. Minnesota Power observed increased participation in most HVAC measures in 2023, one of them being the cold climate ducted air source heat pump ("ASHP") rebate with a 66% overall increase over 2022. Minnesota Power believes this increase can be attributed to greater availability of retrofit options with ducted systems and contractor education. Cold climate ductless ASHP also showed growth with an 8% increase in 2023. Ground source heat pumps ("GSHP") participation also continued to grow with a 29% increase compared to 2022. The Company observed that most installations were replacement systems as legacy GSHP are nearing end of life. The majority of GSHP rebates received were submitted by Minnesota Geothermal Heat Pump Association Master Installers. As a result, customers received enhanced rebates and quality installations by regionally certified contractors. To further improve the success of HVAC measures, Minnesota Power will continue to partner with trade allies on delivery of HVAC measures by providing support in the form of trainings, marketing materials and outreach assistance.

New Construction Energy Efficiency

Minnesota Power's New Construction Energy Efficiency Program experienced its highest participation yet in 2023.The goal of the program is to increase accessibility to incentives and services to help future homeowners build the most energy-efficient home possible. The program supports builders, homeowners, and nonprofit housing organizations during three phases in the construction process. The first phase includes a plan review with a Home Energy Rating System ("HERS") rater. This provides an opportunity to identify design updates that can increase the efficiency of the home. The second phase is a mid-construction site visit that can include a blower door test which helps identify air sealing issues before drywall is put up. The final site visit includes a blower door test and thermal imaging scan. The final site visit is used to determine the home's performance level and eligible rebate amounts. There were 36 standard residential homes that participated in the New Construction Energy Efficiency Program in 2023 which was a 300% increase compared to 2022. In addition to the 36 homes, the Company also supported 9 affordable housing projects in 2023. This was a recognizable increase when compared to the 1 affordable housing project rebated in 2022. Minnesota Power took steps to increase customer and builder awareness of the program with a mailing to customers, a new webpage, and outreach to Minnesota Power's participating contractor network promoting

the program. Minnesota Power anticipates similar participation for 2024 as awareness of the program expands.

Appliance Recycling

An unforeseen disruption in the recycling industry greatly impacted Minnesota Power's appliance recycling efforts in 2023. Though interest from customers remained similar to years past, the Company was forced to close the program for the latter half of the year due to the loss of an implementor to complete the work. Marketing of the program offering was put on hold, both by Minnesota Power directly but also through retailers who partner on promoting this offering. Despite this unexpected situation, the Company was able to assist approximately 300 customers in 2023 with recycling old, inefficient appliances. After several months, Minnesota Power was able to fulfill all outstanding recycling requests before the end of 2023 and is looking forward to officially restarting the program in 2024.

Energy Efficiency Products & Kits

Energy-efficient products and kits allow Minnesota Power to promote energy conservation and help generate interest in other program offerings. Minnesota Power offers free energy-efficient products in the form of kits with a goal of helping customers reduce the electric usage in their homes. Kit options include those focused on customers with electric water heaters and those with general energy efficiency products. A total of 307 kits were delivered in 2023. The number of energy efficient products directly installed in customer homes through the Home Energy Analysis ("HEA") offering bounced back to pre-pandemic numbers as in-person programs were no longer impacted by pandemic-related precautions. The Company will continue to evaluate the product and kit offerings and work to ensure available products are meeting customer needs along with program goals into the future.

Energy Engagement Behavioral Savings

In 2023, Minnesota Power leveraged online engagement and two-way communication with residential customers to drive measurable behavioral energy savings through Minnesota Power's customer portal, MyAccount. By providing energy usage information through interactive charts, heat maps and various levels of interval data, customers become engaged in their usage trends and are driven to make behavioral changes to impact their daily usage patterns and overall monthly bills. In 2023, roughly 56,000 residential customers were registered users of the MyAccount portal. An impact evaluation involving statistical analysis of user billing data indicated that access to the portal led to participants (registered users) decreasing their annual consumption by roughly 1.98%. Details regarding the analysis and savings are included in Appendix B.

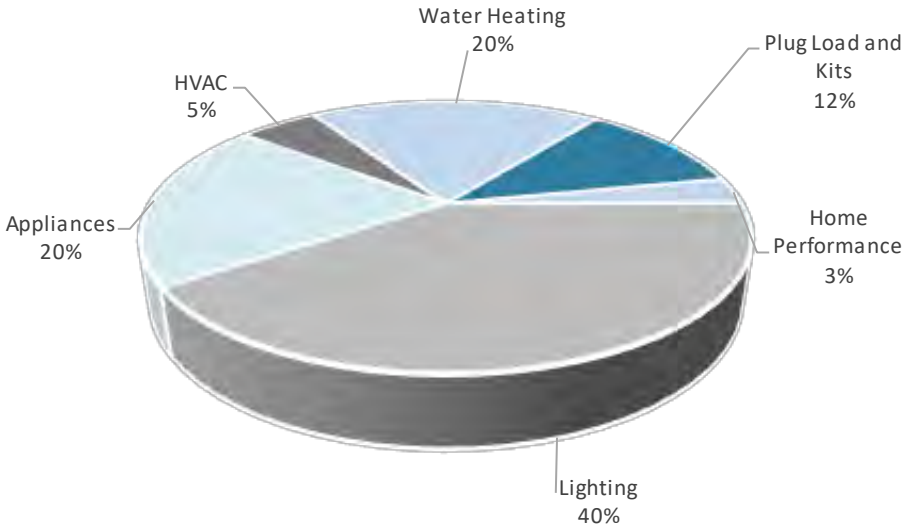
Energy Partners

Program Description

The Energy Partners income-qualified program is designed to provide income-eligible customers with educational resources, home energy analysis and direct installation of energy-efficient products and appliances to help them use energy more effectively for the long term. Participants in the Energy Partners program are also connected with other available assistance programs, including the Customer Affordability of Residential Electricity ("CARE") bill discount. 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 continues to be impacted by external factors in a variety of ways, including limited Community Action agency capacity to perform energy analysis and supply chain disruptions, making success in this program challenging. As a result, Minnesota Power has continued to explore alternative delivery strategies and eligible measures. Additionally, Minnesota Power has expanded its focus on providing more impactful measures in eligible homes including the installation of cold climate air source heat pumps, heat pump water heaters, and programmable line voltage thermostats, all at no charge to income-qualified customers.

Energy Partners Program - 2023 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.

	Approved Goals		***Actual Results***		***% of Approved Goal***
Total Project Expenditures	$369,660		$428,168		116%
Total Project Energy Savings (at busbar)	1,246,050	kWh	1,257,606	kWh	101%
Total Project Demand Savings (at busbar)	132.1	kW	171.4	kW	130%
Participation (measures)	14,126		16,484		117%
Energy Analysis - Income-qualified Single Family Homes	800		703		88%

Minnesota Power provides the following table to summarize 2023 Energy Partners participation and average rebate costs by measure.

Measures	Sum of Participants (No Admin)	Average Cost Per Measure
Lighting	**12,993**	**$7.54**
LED Bulb	12,400	$4.34
LED Torchiere	593	$74.50
Appliances	**300**	**$462.99**
Refrigerator Replacement	99	$1,144.37
Freezer Replacement	14	$643.05
Refrigerator Turn-In	99	$47.27
Freezer Turn-In	14	$25.71
Dehumidifier Turn-In	18	$20.00
Microwave Oven	56	$200.02
HVAC	**148**	**$175.34**
Dehumidifier	98	$238.22
Program Thermostat	47	$15.00
Programmable Thermostat - High Voltage	1	$20.00
Heat Shrink Window Insulation	1	$5.50
Air Sealing and Insulation	1	$1,874.00
Home Performance	**9**	**$1,641.67**
Home Performance Project	9	$1,641.67
Water Heating	**1,478**	**$44.26**
Aerator	307	$4.16
Showerhead	217	$24.43
Thermostatic Restriction Valve	1	$24.28
Shower Timer	346	$3.95
Pipe Insulation	592	$1.09
Water Heater Temperature Set-Back	3	$15.00
Water Heater Insulation	1	$25.00
Heat Pump Water Heater	11	$5,156.95
Plug Load and Kits	**1,556**	**$14.87**
Energy Expo Kit	300	$19.98
Refrigerator Thermometer	617	$3.21
Power Strip - Tier 1	638	$23.75
Enable Power Management	1	$15.00
Grand Total	**16,484**	**$22.21**

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)

Summary

Home energy audits are the primary driver of savings within the Energy Partners program, providing installation of free energy-efficient technologies, appliance replacements and education about energy usage in customer homes. Minnesota Power partners closely with Community Action agencies to deliver Energy Partners home visits and, in 2023, these agencies continued to experience significant backlog associated with delivery of the Weatherization Assistance Program ("WAP"), as well as consistent staff shortages, impacting participation in Energy Partners. Recognizing that this is a recurring challenge, Minnesota Power co-hosted a WAP training, in partnership with some of these agencies and the Department of Commerce, supporting workforce development by fostering a deeper understanding of building science along with exploring possible improvements for new program auditors. Minnesota Power has also supplemented these shortages with an independent auditor not associated with Community Action agencies to assist with delivery of the program.

Supply chain interruptions have also impacted the ability for auditors to effectively serve income-qualified customers. Availability of refrigerators used for replacements in customer homes is limited. Minnesota Power was able to replace 113 refrigerators/freezers through the Energy Partners program in 2023 but continues to grow the waitlist of eligible customers which is now over 200. Alternative models and brands that are more readily available are now being used along with additional suppliers being brought in to ensure all outstanding requests are fulfilled.

A newer path for savings in income-qualified homes is through new construction opportunities, where greater rebates were provided to new income-qualified properties. This is often accomplished in partnership with local housing programs such as the Minnesota Assistance Council for Veterans, Housing and Redevelopment Authority, and other non-profits historically committed to increasing not just affordable housing, but housing specifically for those community members with the most restricted incomes. Minnesota Power contributed additional funds to 9 such projects in 2023.

Kits are most often used to not only provide energy-saving measures to customers, but to educate and cross-promote other company programs customers may not know about. Kits are handed out

in person at customer events, most frequently via local food shelves, all the way from Duluth to more rural areas at the furthest reaches of Minnesota Power's service area. A total of 300 kits were distributed in 2023.

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 delivery challenges described in this section, the Company was able to deliver a successful program in 2023, achieving 101% of the energy savings goal. By 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. More can be found in the Energy Analysis and Customer Engagement sections of this report.

Multifamily Direct Impact Programs

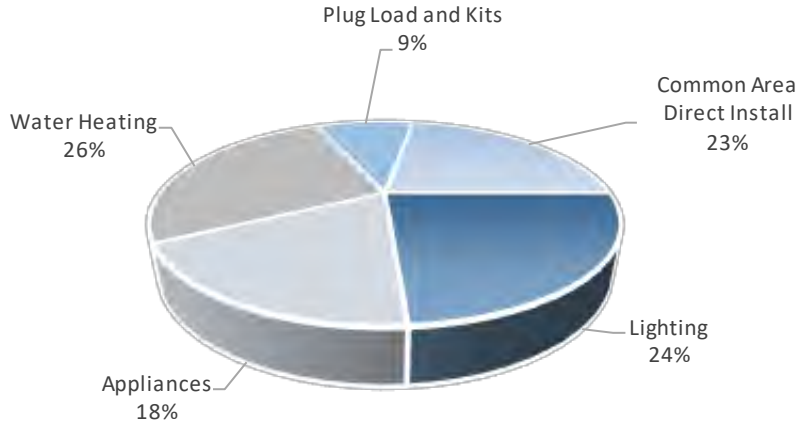
Multifamily Direct Impact Programs

Multifamily Direct Installation

Program Description

The Multifamily Direct Installation program provides a comprehensive approach to energy efficiency in multifamily buildings. The program provides education to tenants and building operators, immediate savings through direct installation of low-cost improvements, appliance replacements for income-qualified customers and the potential for additional savings through a detailed report and enhanced incentives.

Multifamily Direct Installation Program - 2023 Savings by Technology (kWh)



Results

	Approved Goals		*Actual Results*		*% of Approved Goal*
Total Project Expenditures	$180,202		$150,911		84%
Total Project Energy Savings (at busbar)	739,761	kWh	481,916	kWh	65%
Total Project Demand Savings (at busbar)	80.5	kW	51.2	kW	64%
Participation (measures)	7,955		4,859		61%

Evaluation Methodology

This program was evaluated based on the following items:

- Participation levels (number of measures implemented)
- Energy savings (kWh)
- Demand savings (kW)
- Program costs

Summary

While Minnesota Power has worked with customers to promote energy conservation in multifamily buildings for several years on a pilot basis, 2023 was the third year of delivering the Multifamily Direct Installation program. Minnesota Power performed direct installations for 765 units (497 income-qualified and 268 market rate) throughout 20 facilities (16 income-qualified and 4 market rate), exceeding the original goal of 700 units and achieved 65% of the approved savings goal.

Although Minnesota Power served more customers than originally expected through this program, the savings achieved did not meet the energy savings goal for a variety of reasons. There continued to be a lack of opportunity for LED bulbs, as there was a lack of screw-in type lighting overall. While much of the lighting found was eligible for replacement, quantities remained lower than anticipated. Actual replacement potential in the field was less than 50% of what was originally expected. Externally, supply chain delays impacted the ability to procure refrigerators for replacement in income-qualified facilities. Due to these delays, more than 50 refrigerators eligible for replacement and ordered in 2023 could not be delivered in the 2023 program year, but have been delivered in 2024.

Minnesota Power saw positive participation in the fluorescent fixture reimbursement offering. This offering allows customers to get up to 100% reimbursement for LED lighting that replaces old, inefficient fluorescent fixtures. Five facilities participated in 2023, replacing over 580 fluorescent fixtures with new energy efficient LED alternatives.

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 a complete overview of their building's energy use. Minnesota Power worked with Minnesota Energy Resources Corporation to visit six multifamily facilities throughout shared service territories, three of which were income-qualified multifamily buildings. Minnesota Power partnered with Greater Minnesota Gas for the first time in 2023 to deliver this impactful program to shared customers as well. Additionally, Minnesota Power partnered with ComfortSystems in

four buildings in 2023. For facilities where gas partnerships were not possible, Minnesota Power provided the same deliverables, except for the inclusion of gas measures.

The Multifamily Direct Installation program offers many opportunities that facilities can take advantage of. One such opportunity is hosting an educational event inviting residents to learn about what is happening at their facility and in their units during the project. In 2023, four multifamily facilities elected to participate in the educational event. Following each event, Minnesota Power representatives meet with building operators and decision-makers to review the project. A comprehensive report is provided, which reviews the direct installation measures, any safety issues noted, energy consumption and usage patterns, and additional recommendations for opportunities to save energy. Rebate program information is provided to help encourage implementation of recommendations. Additionally, a 10% bonus rebate is offered through the Custom Multifamily Efficiency program when customers complete any recommended projects within one year of the report. In 2023, one facility took advantage of this bonus.

Minnesota Power strives to build effective relationships with partners and implementers by collaborating with communities and networks and by seeking feedback from customers. The insights gained from stakeholders, interactions with customers, and experiences gleaned while offering the Multifamily Direct Installation program will be leveraged as Minnesota Power continues to refine and modify this offering.

Summary of Market Rate & Affordable Housing Savings & Incentives

Minnesota Power provides the following table to summarize 2023 Multifamily Direct Installation program savings and incentives by measure type for market rate and affordable housing.

Market Rate

Measure Type	kWh Meter	kWh Busbar	Total Incentives ($)	Number of Incentives
Lighting	22,202	24,262	$3,568	653
Water Heating	66,054	72,182	$3,631	432
Plug Load and Kits	12,870	14,064	$888	234
Common Area Direct Install	12,711	13,890	$1,181	51
Total	**113,837**	**124,398**	**$9,268**	**1,370**

Affordable Housing

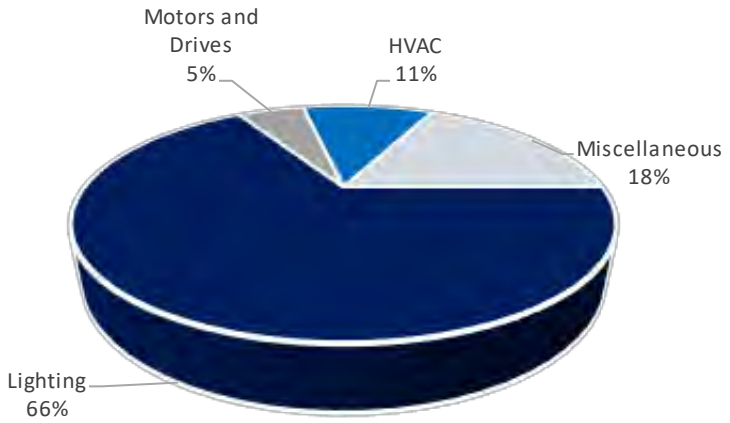
Measure Type	kWh Meter	kWh Busbar	Total Incentives ($)	Number of Incentives
Lighting	83,022	90,724	$28,978	2,116
Appliances	81,108	88,632	$47,608	108
Water Heating	50,406	55,082	$2,186	285
Plug Load and Kits	26,440	28,893	$5,834	424
Common Area Direct Install	86,191	94,187	$25,685	556
Total	**327,167**	**357,518**	**$110,291**	**3,489**

Custom Multifamily Efficiency

Program Description

Minnesota Power has a long history of providing custom rebates for multifamily facilities through the Custom Business Efficiency program. Starting in 2021, Minnesota Power began to offer a separately filed program for multifamily initiatives. The Custom Multifamily Efficiency program provides incentives for whole-building energy efficiency improvements in multifamily dwellings. Similar to the Custom Business Efficiency program, Minnesota Power works with building owners and operators to provide custom energy saving calculations, energy analysis, design assistance and incentives that meet the unique needs of that building, delivered through a well-developed individual calculation method. This flexible delivery strategy allows Minnesota Power to help customers identify opportunities for increased efficiency in multifamily building remodels and new construction.

Custom Multifamily Efficiency Program - 2023 Savings by Technology (kWh)



Results

	Approved Goals		*Actual Results*		*% of Approved Goal*
Total Project Expenditures	$310,728		$178,566		57%
Total Project Energy Savings (at busbar)	1,912,346	kWh	2,204,232	kWh	115%
Total Project Demand Savings (at busbar)	350.1	kW	380.8	kW	109%
Participation (projects)	68		104		153%

Evaluation Methodology

This program was evaluated based on the following items:

- Participation levels (number of projects implemented)
- Energy savings (kWh)
- Demand savings (kW)
- Program costs

Summary

In 2023, Minnesota Power again exceeded its energy-savings goal for the Custom Multifamily Efficiency program, achieving 115% of goal. Minnesota Power encouraged property owners and managers who were building new multifamily facilities or performing complete remodels to make energy-efficient choices in their lighting, appliances and HVAC systems. These projects were followed throughout the planning and design phases as Minnesota Power representatives worked closely with building owners and contractors to make recommendations designed to meet the needs of each individual project.

The Custom Multifamily Efficiency program included a combination of major retrofit projects and new construction in 2023. There was strong participation from both market rate and income-qualified facilities. Of the 27 multifamily facilities that received rebates through this program, 11 were income-qualified facilities and 16 were market rate. The demand for housing in northern Minnesota drives performance in the Custom Multifamily Efficiency program and the Company is hopeful demand continues in the coming years.

Minnesota Power's delivery strategy is to influence customer choices through relationships and ongoing interactions. Minnesota Power works with developers and facility owners in conjunction with manufacturers, distributors, 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 Custom Multifamily Efficiency program is cross-promoted with other CIP programs, such as the Multifamily Direct Installation program which provides an enhanced incentive when building owners and operators complete efficiency recommendations within one year of participating in the program.

The Custom Multifamily Efficiency 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 for the long term. By continuing efforts to help multifamily

customers make energy efficient choices, and the continuation of new multifamily housing being constructed, Minnesota Power is predicting another strong year ahead.

Summary of Market Rate & Affordable Housing Savings & Incentives

Minnesota Power provides the following table to summarize 2023 Custom Efficiency program savings and incentives by measure type for market rate and affordable housing.

Market Rate

Measure Type	kWh - Meter	kWh - Busbar	Total Incentives ($)	Number of Incentives
Lighting	919,054	1,004,314	$56,246	31
Motors and Drives	96,627	105,591	$9,589	12
HVAC	201,226	219,894	$47,533	9
Miscellaneous	312,908	341,936	$21,193	19
Total	**1,529,815**	**1,671,734**	**$134,562**	**71**

Affordable Housing

Measure Type	kWh - Meter	kWh - Busbar	Total Incentives ($)	Number of Incentives
Lighting	421,155	460,225	$23,331	22
Motors and Drives	9,895	10,813	$359	3
HVAC	10,127	11,066	$3,088	4
Miscellaneous	46,115	50,393	$2,198	4
Total	**487,292**	**532,498**	**$28,976**	**33**

Business Direct Impact Programs

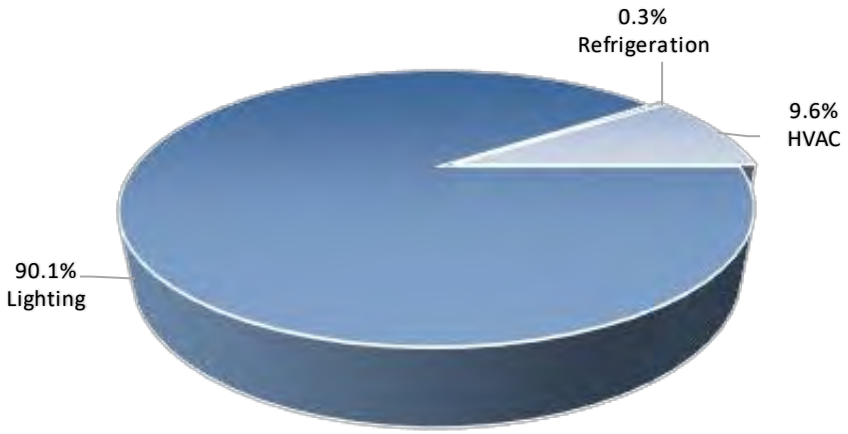
Business Direct Impact Programs

Prescriptive Business Efficiency

Program Description

The Prescriptive Business Efficiency program was added to Minnesota Power's CIP portfolio in the 2021-2023 Triennial Plan. This self-service rebate option lets customers apply for rebates online without the need for an on-site visit. Although customers of any size are welcome to participate, this straightforward prescriptive program is geared towards small- to mid-sized business customers, who likely have fewer resources and staff to focus on efficiency opportunities. This is especially important as businesses are impacted by inflation, supply-chain challenges, and a strained workforce.

Prescriptive Business Efficiency Program - 2023 Savings by Technology (kWh)



Results

	Approved Goals		*Actual Results*		*% of Approved Goal*
Total Project Expenditures	$121,134		$51,175		42%
Total Project Energy Savings (at busbar)	603,964	kWh	1,059,905	kWh	175%
Total Project Demand Savings (at busbar)	87.5	kW	153.6	kW	175%
Participation (measures)	1,015		7,097		699%

Evaluation Methodology

This program was evaluated based on the following items:

- Participation levels (number of measures implemented)

- Energy savings (kWh)
- Demand savings (kW)
- Program costs

Summary

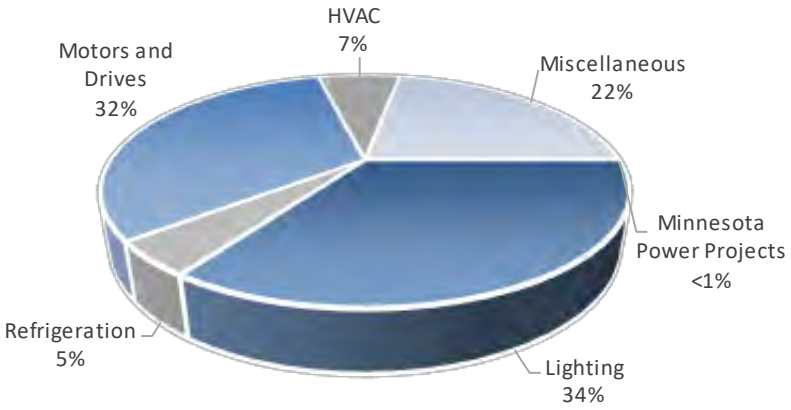
Overall, there were 41 prescriptive business rebates provided to 35 unique customers in 2023. The Company achieved 175% of the approved modified savings goal. This self-service program further diversifies the accessibility of programs that Minnesota Power offers, encouraging business customers of all sizes to make energy-efficient choices following a simplified path. Minnesota Power will continue this offering in the 2024-2026 Triennial with expanded measure opportunities for business customers.

Custom Business Efficiency

Program Description

The Custom Business Efficiency 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.

Custom Business Efficiency Program - 2023 Savings by Technology (kWh)



Results

	Approved Goals	*Actual Results*	*% of Approved Goal*
Total Project Expenditures	$4,730,778	$4,481,392	95%
Total Project Energy Savings (at busbar)	50,267,374 kWh	51,999,517 kWh	103%
Total Project Demand Savings (at busbar)	8,100.8 kW	4,514.7 kW	56%
Participation (projects)	1,365	1,019	75%

2023 Custom Business Efficiency Projects Overview by Customer Class

	Total $ Rebated	*Number of Measures*	*Total Estimated kWh Saved (meter)*
Agricultural	$58,625	32	1,591,759
Commercial	$1,673,668	838	26,371,247
Industrial	$844,037	149	19,622,089

Evaluation Methodology

This program was evaluated based on the following items:

- Participation levels (number of projects implemented)
- Energy savings (kWh)
- Demand savings (kW)
- Program costs

Summary

In 2023, Minnesota Power exceeded its energy-savings goal for the Custom Business Efficiency program, achieving 103%. Minnesota Power continued to focus heavily on in-person site visits with a goal of promoting the program and strengthening relationships with customers to make up for lingering pandemic-related disruptions.

Many business customers have continued to face external and internal challenges including inflation, supply chain issues, and workforce shortages, all of which impact facility managers' ability to devote time to navigating energy efficiency and rebate opportunities on their own. As the energy landscape evolves and new and improved technologies enter the picture, the Company is putting increasing effort into education around these technologies and what it could mean for each facility's circumstances. There is a continued need for an in-person presence in order to best serve customers where they are. Investing in relationships is critical to the success of the Custom Business Efficiency program and ensure continued participation as many customers have projects that span multiple years as opposed to "one-and-done" rebates.

Although the value of an in-person approach is evident, the Company realizes that one size does not fit all. Recognizing that small- and mid- sized businesses have their own unique needs and challenges, Minnesota Power introduced a virtual recommissioning program in 2021. Through this program, Minnesota Power seeks to proactively identify and engage targeted commercial customers to help them generate energy savings and demand reduction at their facilities through operational changes. In 2023, 18 facilities participated in and saw savings from the program. After meeting virtually with energy advisors, customers completed the recommended changes and saved a combined total of 616,112 kWh. Not only does this option provide a low- or no-cost way to save energy, it helps customers gain a better understanding of their usage.

In 2023, Minnesota Power did not complete or claim any Electric Utility Infrastructure ("EUI") projects; however, the team worked closely with Minnesota Power's facility managers to identify energy saving opportunities within company-owned facilities. As a result, an energy efficiency project at a Minnesota Power facility was completed in 2023. This project is filed under the Custom Business Efficiency program and includes interior and exterior lighting, resulting in a reduction of

4.1 kW and 40,079 kWh savings; these savings are excluded from the financial incentive calculation.

The Custom Business Efficiency 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 often 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.

Indirect Impact Customer Programs

Indirect Impact Customer Programs

Customer Engagement Program

Program Description

Minnesota Power's Customer Engagement program is an outreach program designed to encourage customers to save energy and take advantage of Minnesota Power's energy conservation programs and services. In 2023, this program provided valuable content to educate customers in meaningful and impactful ways.

The Customer Engagement program is an integral part of raising awareness about Minnesota Power's residential, multifamily, and business energy conservation programs to a wide variety of customers. Through this program, Minnesota Power connects with customers on multiple levels, building relationships and engaging customers through four primary channels: Strategic Partnerships, Educational Tools & Trainings, Advertising & Promotions, and Community Events & Outreach.

Results

The following chart summarizes and compares the results of the 2023 Customer Engagement program with goals established in the 2021-2023 Triennial Plan.

	Approved Goals	***Actual Results***	***% of Approved Goal***
Total Project Expenditures	$851,642	$508,117	60%
Number of Customers Reached	100,000	94,275	94%
Number of Trade Allies Engaged	750	1,395	186%

Evaluation Methodology

Minnesota Power tracked the number of people who used online energy tools and visited Minnesota Power's energy conservation web page as a result of program promotions. The Company also tracked trade ally engagement through communications, trainings and site visits.

Summary

The Customer Engagement program serves as the communications vehicle for all of Minnesota Power's energy conservation programs. In 2023, the Customer Engagement program continued to connect with customers through digital, print and social media as well as through direct mail and community outreach events to share tools helping empower customers to make effective energy choices.

Minnesota Power's Customer Engagement program consists of four categories: *Strategic Partnerships, Educational Tools & Trainings, Advertising & Promotions, and Community Events & Outreach*. Below is a summary of 2023 highlights for each component of the Customer Engagement program:

Strategic Partnerships

Collaboration is a key component in delivering meaningful programs to a wide variety of customers. In 2023 Minnesota Power continued to invest in strategic partnerships with trade allies, area utilities, energy conscious organizations and energy professionals.

Trade Ally Engagement: Minnesota Power has a long history of building relationships with manufacturers and retailers to facilitate lighting and appliance rebates. For more than a decade, Minnesota Power has engaged with manufacturers and retailers of lighting products to provide meaningful savings to customers through instant discounts on ENERGY STAR®-qualified products. Instant markdowns provided an easy option for customers to choose energy-efficient products in 2023. Additionally, Minnesota Power has built relationships with a wide variety of participating retail stores throughout the region that provide point-of-purchase educational materials and information on available rebates. Keeping manufacturers and retailers engaged in Minnesota Power's programs is key to a successful program.

HVAC Contractor Network: Minnesota Power continued to build relationships with the network of HVAC contractors in 2023. This relationship helps support the HVAC contractors and increases awareness of Minnesota Power's HVAC incentives. Minnesota Power builds these relationships through newsletters, emails, and direct outreach. Contractors receive information on program offerings, rebate submittal requirements, and special promotions. They also receive training opportunities and have access to an exclusive online portal that contains resources to help promote efficient electric heating and cooling technologies.

Utility Partnerships: Building relationships with neighboring utilities to provide the most comprehensive energy conservation services 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, Multifamily Direct Installation, joint rebates, income-qualified events and benchmarking commercial facilities. Minnesota Power also partnered with Minnesota Energy Resources Corporation and Greater Minnesota Gas in 2023, delivering energy analysis and direct installation of energy-efficient technologies to multifamily buildings. Partnerships with neighboring utilities are just as important when it comes to customer engagement as it is with delivery of programs. Minnesota Power collaborated with Lake Country Power, Cooperative Light and Power, and Great River Energy to create an expanded Energy Tent experience at the Lake Superior

Harvest Festival in the Fall of 2023. 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 Engagement: Minnesota Power appreciates the integral role stakeholders and energy conscious organizations 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 2023, Minnesota Power continued to participate in several ongoing strategic initiatives including a statewide Air Source Heat Pump Collaborative and partnership with the Clean Energy Resource Teams ("CERTs") to identify opportunities for income-qualified customers. Minnesota Power also collaborated with stakeholders from energy-related organizations who served on the advisory board for the Energy Design Conference.

Minnesota Power partners closely with Community Action agencies throughout its service territory. Through in-person office visits, shadowing of Energy Partners home visits, and hosting quarterly and annual meetings to promote discussions regarding program processes and customer needs, Minnesota Power maintains close relationships with agency staff. The Company often sponsors or participates in Energy Assistance Program ("EAP") and WAP events to become more familiar with those programs and make all efforts to ensure Minnesota Power programs (energy conservation-related and otherwise) work with them as smoothly as possible, and thereby serve joint customers optimally.

Educational Tools & Trainings

In 2023, Minnesota Power provided a variety of educational tools and training opportunities to help individuals, business owners and operators, contractors, students and communities make informed choices when it comes to energy conservation.

Online tools: Online customer engagement tools such as Minnesota Power's customer portal, MyAccount, and interactive energy calculators give customers insight into their own energy usage patterns. MyAccount allows customers to set energy markers and usage thresholds to identify how energy efficiency projects impact their overall usage. Auditors performing Home Energy Analyses started utilizing MyAccount in 2022 to give customers an even better understanding of their daily usage patterns, showing them how to use the tool and helping them to understand how their behaviors affect their energy use. Interactive energy tools allow customers to conduct virtual energy audits and see customized recommendations for energy efficiency. In 2023, there were 939 virtual energy audits conducted through the online tool. In addition to the virtual energy audit, interactive appliance and fuel comparison calculators allowed customers to view the average energy use of typical home appliances as well as compare their current heating with other options. Energy calculators were utilized by 1,210 customers in 2023.

HVAC Contractor Training: In 2023, Minnesota Power partnered with the Center for Energy and Environment to hold a training for contractors participating in Minnesota Power's HVAC network. The event provided updates on Minnesota Power's programs and rebates. The training event also featured presentations on current market trends and getting the most out of cold climate air source heat pumps in our region.

Advertising & Promotions

In 2023, Minnesota Power's Customer Engagement program provided valuable content to customers through many channels including digital, streaming, print and social media platforms to connect directly with customers through their preferred medium. Whenever possible, this program utilized targeted and segmented outreach methods to reach the right audience and to provide information about programs that may meet their needs and interests. Specific examples of program promotions utilized in 2023 include digital advertising on streaming services and mobile devices, print advertisements, sponsored social media marketing, as well as collaboration with digital marketers to highlight rebate information to online audiences throughout Minnesota Power's service territory.

Community Events and Outreach

Interacting with customers directly through community-based events and community outreach initiatives is an important part of Minnesota Power's Customer Engagement program.

2023 Energy Design Conference: Minnesota Power hosted the 33rd annual Energy Design Conference in person at the Duluth Entertainment Convention Center in 2023. The event featured 26 presenters from across the country and highlighted best practices in energy-efficient building and sustainable design. 280 attendees registered for the two-day event.

20th Annual Energy Awareness Expo: 2023 marked a milestone 20th anniversary of the Energy Awareness Expo. The annual Energy Awareness Expo continued to be a meaningful outreach event designed to engage and empower income-qualified customers in Duluth. The event was hosted in partnership with ComfortSystems and the Arrowhead Economic Opportunity Agency ("AEOA") and focused on giving attendees the opportunity to share ideas, learn ways to get the most for their energy dollars and receive energy-saving kits. The event also connected over 300 income-qualified customers with resources in the community. Minnesota Power plans to extend the reach of events like this to other parts of its service area in the future.

In-store Events: In 2023 Minnesota Power held three in-store events, two in Duluth, MN and one in International Falls, MN. These in-store events provided an opportunity to

engage directly with customers and share information about rebates available in the stores, as well as answer questions about other energy conservation programs available for customers to participate in.

Other Community Events: Minnesota Power participated in several in-person events in 2023 including Sidewalk Days, Little Falls Dam Festival, Youth in Action Making a Difference Conference, Harvest Festival, Iron Range Earth Day, Duluth EcoFest, Lake Superior College Earth Fair, UMD's Life After the Dorms event, the Arrowhead Home and Builder's Show and Camp Ripley's bicentennial celebration. Energy conservation staff members also volunteered at area food shelves in Minnesota Power's service territory to volunteer and share information about energy conservation programs and to hand out energy-saving products. Each event provided an opportunity for Minnesota Power to connect with customers and promote energy efficiency in an impactful and meaningful way.

Energy Analysis Program

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, multifamily, small-to-large 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. The Energy Analysis program consists of energy analysis, design assistance, and end-use analysis. The focus of Energy Analysis is on identifying, evaluating and delivering the benefits of total energy savings, which includes reduced operation 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-saving objectives are, and Minnesota Power helps them identify options, products and services to meet those objectives.

Evaluation Methodology

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

Results

	Approved Goals	***Actual Results***	***% of Approved Goal***
Total Project Expenditures	$1,056,405	$644,345	61%
Home Energy Analysis	550	462	84%
Home Performance	80	84	105%
Energy Analysis - Income-qualified Single Family Homes	800	703	88%
Energy Analysis - Income-qualified Multifamily Units	420	497	118%
Energy Analysis – Market Rate Multifamily Units	280	268	96%
Custom Facility Energy Analysis *(1)*	3,870	2,307	60%
Business Facility Performance	330	169	51%
Total Participants	6,330	4,490	71%

(1) The Custom Facility Energy Analysis category includes energy analysis performed on commercial, industrial, multifamily and agricultural facilities through the Custom Business Efficiency and Custom Multifamily Efficiency programs.

Summary

Energy auditors and third-party contractors are an integral part of Minnesota Power's CIP delivery network, offering in-depth energy analysis to help customers better understand their energy usage and opportunities to save.

Residential Energy Analysis

This category includes Home Energy Analysis, Income-qualified Single Family Analysis and Home Performance. Where applicable, Minnesota Power will work with the local gas utility or community agency to deliver a comprehensive energy analysis.

Home Energy Analysis: The HEA program provides an assessment of a dwelling's electric usage including HVAC, lighting, water heating and appliances with a goal of showing customers how their everyday choices impact energy usage and providing information about programs and rebates. In total, Minnesota Power performed 462 in-person HEAs in 2023. Participation decreased slightly from 2022 as the Company continues to see more customers opting for the advanced energy analysis that includes blower door testing. These advanced energy analyses are categorized under the Home Performance line in the table above.

Energy Partners Home Energy Analysis (Income-qualified HEA): The Energy Partners Home Energy Analysis program serves single family income-qualified households. Participants receive an electric bill analysis, a survey of major electric appliances and an assessment of customer actions that influence energy usage. The result is a plan to reduce electric energy usage for income-qualified customers. The Company completed HEAs on over 700 income-qualified single family homes. Minnesota Power partners closely with Community Action agencies to deliver Energy Partners home visits alongside audits for WAP, a best practice in the state of Minnesota to co-deliver both CIP and WAP programming for customer convenience. Looking forward, Minnesota Power will focus on providing larger savings opportunities in fewer homes, as recommended by various stakeholders and customer advocates.

Home Performance

The home performance category includes more in-depth analysis of homes and takes into account system performance along with building science best practices. It includes the offerings of Advanced Home Energy Analysis and the New Construction Energy Efficiency program.

Advanced Home Energy Analysis: Customers looking for a more robust and detailed analysis can take advantage of the Advanced Home Energy Analysis with building

diagnostics offering. This service takes a traditional Home Energy Analysis to the next level by adding blower door testing and an infrared thermal scan to identify air leaks and reduced insulation levels. Interest in this offering is growing with close to 40 customers participating in this rebate offering in 2023. The Company anticipates continued growth as homeowners look to participate in IRA programs incentivizing building shell improvements. The Company hopes to add additional auditors able to fulfill these requests in the coming years as there are currently workforce challenges related to this offering.

New Construction: As described in the Home Efficiency and Energy Partners program descriptions, the New Construction Energy Efficiency program encourages customers to build energy-efficient, electrically heated homes. By participating, the builder will receive a plan review and two free site visits including a code-compliance blower door test. There was a total of 45 new construction projects (36 market rate and 9 affordable housing) in this program in 2023. By offering in-depth analysis of the home throughout the design and construction process, builders are able to make real-time changes to ensure energy efficiency opportunities are maximized.

Multifamily

In 2023, Minnesota Power surpassed its energy analysis goal of 700 units, completing analysis for 765 multifamily units at 20 facilities through the Multifamily Direct Installation program. This comprehensive service provides an assessment of multifamily buildings, including both the in-unit and common areas for market rate and income-qualified multifamily facilities.

Minnesota Power also works with multifamily building owners and operators to identify opportunities for whole building energy efficiency improvements, primarily in new construction and retrofit applications. Energy analysis was performed for 90 multifamily buildings through the Custom Multifamily Efficiency program and are included in the Custom Facility Energy Analysis category.

Custom Facility Energy Analysis

Through Custom Facility Energy Analysis, Minnesota Power works with commercial, industrial, multifamily and agricultural customers to identify opportunities specific to the needs at each individual facility. Whether the initial contact is a high-level inquiry or a well-defined objective, a variety of analysis options are available to address the customer's unique situation in order to ensure an effective outcome that leads to an actionable result.

Minnesota Power coordinated 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 streamlined experience for Minnesota Power customers.

Business Facility Performance

Minnesota Power participated in 169 Business Facility Performance projects in 2023. During the year, Minnesota Power focused much of the Facility Performance activity on fewer, larger customers, developing recommissioning projects that fit the specific needs of these facilities, such as hospitals and schools. There are a variety of design assistance options available to business customers such as lighting designs to help ensure the customer is lighting their facility to the use for which it is intended and engineering assistance to explore the savings potential for a specific technology. One such project began in 2022 and continued through 2023, through a partnership with Minnesota Energy Resources Corporation ("MERC"), to provide energy design assistance for the recommissioning of an income-qualified multifamily building in International Falls. Additionally, the Company helped with certification evaluations, energy use index scores, and benchmarking. These strategies help prioritize projects for customers.

Research & Development

Research and Development

Program Description

The Research and Development ("R&D") program continues to be an effective program to help identify and implement new products and underutilized energy-saving technologies. As customers determine where to allocate their limited resources, the R&D program helps shoulder the risk of implementing innovative and emerging technologies by identifying solutions that are the right fit for customers. The R&D program provides information on the feasibility, market acceptance and economic justification of new products and energy-saving strategies. These efforts enhance Minnesota Power's CIP portfolio by identifying new initiatives.

Evaluation Methodology

Although each project has its own set of deliverables, the overall R&D function should be evaluated in terms of ability to identify new energy-efficient technologies, markets and delivery strategies that enhance existing CIP initiatives in multiple sectors. This helps create dynamic CIP projects that deliver the valued outcomes of energy efficiency—successful customers and communities, sustainable energy savings and long-term market transformation—to benefit communities, the region and Minnesota as a whole.

Potential projects are evaluated through a defined set of criteria that evaluates each of the projects for its potential for overall energy savings, the number of customers that could be impacted by the measure, delivery strategy and the technology type.

Results

	Approved Goals	***Actual Results***	***% of Approved Goal***
Total Project Expenditures	$384,600	$118,304	31%

The R&D program is designed to take advantage of a broad base of technologies across customer classes – residential, income-qualified, multifamily, commercial, public, agricultural and industrial – to ensure that each customer class benefits from participation in technology development, application and market-based research.

The results of 2023 R&D projects are detailed below.

COMMERCIAL COMMISIONING - $47,800

Existing building commissioning is an effective way to identify energy saving opportunities. There are two goals for commercial commissioning: the first is to ensure that all existing building equipment and controls are operating according to the building operators and occupants comfort levels and the second is to reduce energy consumption, operation, and maintenance costs. The operation of a building can change over time with building operator turnover and changes in building occupancy. Minnesota Power believes that further energy savings can be achieved with a more focused commercial commissioning program.

2023 Commercial Commissioning Summary

Minnesota Power worked with multiple customers in 2023 to explore opportunities for energy savings through a commercial commissioning study. In partnership with several schools, the Company identified low/no-cost savings opportunities for customers that were unable to have a full recommissioning study. Minnesota Power interviewed building operators on site and reviewed the Energy Management Systems ("EMS"). Through this, the Company identified inefficiencies in the system settings and mechanical issues that were preventing the systems from operating as intended. Some of the findings included failed sensors and stuck dampers. The Company compiled the findings into a straightforward report that clearly detailed the findings and savings potential.

Minnesota Power is also working with a customer to quantify the performance of several HVAC technologies including packaged roof top units and dedicated outdoor air systems. The Company installed a monitoring system on several HVAC units with detailed instrumentation to measure performance. Some of the items being monitored include energy use, capacity and efficiency over a 12-month period. The monitoring system includes cellular communication to continuously collect data at short intervals and automatically send it back for analysis. The data will then be discussed with the building operators to optimize their operations as the customer's ventilation requirements have changed.

COMPRESSED AIR - $1,553

Compressed air continues to be an emerging opportunity in the commercial segment. Minnesota Power has partnered closely with manufacturers, distributors and contractors to identify emerging technologies, innovative configurations and testing procedures to expand the role of compressed air projects.

Large Commercial Compressed Air Study with Innovative Monitoring

A large commercial customer suspected that their existing air compressor was oversized for current needs. Minnesota Power installed innovative monitoring equipment that allowed for accurate data logging without integrating sensors within existing infrastructure. This new approach reduces risks of damage during the monitoring process. Data collection

is still ongoing and findings will help inform proper air compressor sizing and general infrastructure health.

INNOVATIVE TECHNOLOGIES - $58,532

Heating, ventilation, air conditioning, and refrigeration ("HVACR") is an important sector in Minnesota Power's programs. With the decreased opportunity for lighting measures in the future it is important that the Company continues to pace with emerging technology in this space. Research within this category of technology ensures Minnesota Power will have programs and the expertise to support this evolving market.

Air Source Heat Pump Load Voltage Control Study

Air source heat pumps are innovative systems that provide efficient heating and cooling, even in northern regions. This same advanced technology makes ASHP less compatible with traditional utility demand response programs. Shutting down condensers during critical system functions can damage equipment. Ideally utilities could communicate directly to the ASHP to shut down properly. To date, there has not been standardized controls available to utilities that are compatible with existing demand response platforms. Minnesota Power, in partnership with National Rural Electric Cooperative Association and several heat pump manufacturers, will explore utilizing low voltage controls for controlling ASHPs. Heat Pump manufacturers have provided devices that can be retrofitted on select models for this study. Minnesota Power will install compatible low voltage devices that communicate over the Company's existing advanced metering infrastructure. The data collection period will be for one year to verify the effectiveness of demand response events.

Commercial Air Source Heat Pump Delivery Demonstration Project

Air source heat pumps can deliver efficient heating and cooling through many different means. This flexibility allows contractors to install ASHPs that can keep occupants comfortable while accommodating building restrictions and customer aesthetic preferences. There is limited awareness of the different delivery options and as a result, ASHP installations are generally restricted to ducted or wall-mounted ductless systems. A commercial customer was identified as a possible candidate for demonstrating multiple ASHP delivery methods. The business also presented a challenge where simultaneous heating and cooling was needed. Working with a local HVAC contractor, two ASHP systems were installed to serve the entire building. One of the outdoor units was connected to indoor heads representing three different options: wall-mounted ductless (both high and low) and compact-ducted. The second outdoor unit was connected to a ceiling cassette that served a kitchen area. Separating these systems allowed occupants to cool the kitchen area while heating common spaces. This approach provided material savings compared to alternative systems that provide simultaneous heating and cooling with one outdoor unit. Minnesota Power will collect feedback from the customer on overall satisfaction through

heating and cooling seasons. The business will also be leveraged as a demonstration for customers and contractors interested in alternative installation methods.

Ducted Air Source Heat Pump in Commercial Historical Building

Installing or upgrading HVAC systems in older commercial buildings can be challenging. Adapting modern mechanical systems to older facilities takes careful consideration and planning, both in terms of mechanicals that can fit into existing mechanical rooms and that are compatible with current equipment. In this project, a customer wanted to diversify their heating to become more efficient and add air conditioning and dehumidification to help protect delicate items within the facility. Working with local HVAC contractors, an ASHP manufacturer was identified that could provide efficient heating and air conditioning. This unit is capable of being used with existing equipment such as single or two stage air handlers or a dual fuel type coil that can be hooked up to existing furnaces. This ASHP can be paired with many types of systems because the condenser is variable speed. Another advantage is that the indoor coil can be installed in both vertical and horizontal positions, making it even more compatible for installation. Minnesota Power is currently monitoring the unit for performance.

Innovative Ductless Air Source Heat Pump Controls

Managing a building's heating and cooling system is a crucial part of providing comfort as well as controlling the energy use of those systems. Limitations can exist when trying to manage multi-zoned ductless systems. Challenges also exist for older ductless models where internet connectivity was not built into the unit. New low-cost ASHP controls have emerged that enable management of each indoor unit with the addition of wi-fi capabilities to accommodate this recognized need for control anytime, anywhere. Minnesota Power acquired several samples that were provided to commercial customers within the service territory. The Company will collect customer input along with the product model information to gauge effectiveness. This technology provides a low-cost, do-it-yourself approach for customers to modernize their ductless ASHP equipment.

INNOVATIVE LIGHTING - $190

Lighting will play a smaller role in Minnesota Power's energy conservation programs in the future. With the limited opportunities, the Company will have a reduced focus on innovative lighting research. However, not all customers are familiar with LED technology and the benefits. The Company will continue to provide LED lighting samples to customers when the need is there.

2023 Lighting Sample Summary

There were limited opportunities in 2023 to assist customers in making informed decisions in the constantly changing LED market. Minnesota Power acquired LED tube lighting samples from distributors, manufacturers and suppliers for the purpose of providing them to customers for trial use. Customer input was recorded along with the product model information. This no obligation approach allows customers to trial lighting technologies that they may be unfamiliar with.


Evaluation
& Planning

CIP Evaluation and Planning

Program Description

The Evaluation and Planning program provides the resources for Minnesota Power to plan and evaluate the 2021-2023 Triennial Plan, complete the evaluation of current conservation programs, prepare the annual Consolidated Filing, including the CIP Tracker and Shared Savings incentive reports, respond to data requests from the Department of Commerce, third parties and alternative providers, and evaluate proposed modifications to existing programs or for the development of new programs. The Evaluation and Planning program is essential to maintaining an effective portfolio of conservation programs and addressing regulatory matters associated with CIP. The core functions of this indirect program include the following:

- Planning the strategic direction for Minnesota Power's overall Conservation Improvement Program initiative
- Ensuring CIP-related regulatory compliance and facilitating CIP regulatory filings
- Providing benefit/cost analysis for current and future conservation programs and measures
- Tracking energy conservation improvements and preparing cost recovery reports
- Other ad-hoc activities such as participation in various stakeholder groups, supporting the development of Integrated Resource Plan ("IRP") scenarios and analysis, general support for program implementation and delivery.

Evaluation Methodology

Because this program involved the evaluation of other projects, no formal evaluation plan was proposed for this project.

Results

	Approved Goals	***Actual Results***	***% of Approved Goal***
Total Project Expenditures	$744,626	$745,860	100 %

Summary

In recent years, Minnesota Power has experienced higher levels of required engagement in regulatory activities, including various stakeholder working groups and an increasing number of information requests related to the Company's CIP programs, both within CIP dockets and in other regulatory proceedings such as the Integrated Resource Plan that have a direct tie to CIP programs. Additionally, as the industry continues to mature and evolve, better and more detailed evaluation

and analytics are becoming critical to designing and maintaining effective conservation programs that will allow for continued success of the CIP portfolio well into the future. These efforts are increasing both in terms of program and measure evolution as well as policy evolution, both of which have direct implications on the design, development and cost-effectiveness of CIP programs. The passage of the ECO Act is one the most relevant examples of policy change requiring increased evaluation and planning activities.

Program spending activities in 2023 entailed measuring and evaluating the effectiveness of direct-impact conservation projects, reporting results, ongoing program monitoring, evaluation and development activities related to the implementation of brand new programs in the new triennial, conservation program strategy, technical assumption documentation, participation in various stakeholder groups and a multitude of collaborative efforts, updating the cost-effectiveness framework, and implementing market transformation efforts.

A portion of spending activities relating to program strategy and implementation in 2023 went directly to funding a temporary solution to the appliance replacement backlog in the Energy Partners program. A long-standing vendor the Company used historically for appliance recycling was onboarded to fulfill appliance replacement requests. The vendor was intended to be supplemental to existing suppliers in an effort to decrease the time customers would need to wait for replacement. As referenced in an email to the Department on August 24, 2023, concerning business practices were recognized mid-way through 2023. The refrigerator orders that were contracted to be fulfilled in 2023 have yet to be fulfilled by this vendor. Minnesota Power's previously existing suppliers now have these orders back in their queues to fulfill as new product becomes available. The Company is in ongoing talks with the vendor to determine next steps.

The Company views the 2021-2023 triennial years as a period of transition. Much of the evaluation and planning efforts in 2023 included monitoring program activity, identifying areas that were effective and those that needed changes, and working with program managers to modify, where needed. This iterative monitoring, evaluating, and modifying led to a few program modifications (both informal and formal) that will improve the 2021-2023 program offerings and better position Minnesota Power's CIP portfolio for future success. Given all the recent and on-going legislative and policy changes including ECO and IRA, critical changes to lighting baselines, and the significant updates to the CIP evaluation framework, Minnesota Power expects these evaluation efforts to increase as the 2024-2026 Triennial gets underway.

Given the importance of evaluation and program design, in addition to that of participation in stakeholder and regulatory processes, Minnesota Power believes this program continues to serve an important role in the ongoing success of CIP programs.

Benefit/Cost Evaluations

Methodology

The 2023 project benefit/cost evaluations were performed using Integral Analytics DSMore. This same software was used to evaluate CIP projects in the 2021-2023 CIP Triennial. The following projects were evaluated:

- Home Efficiency
- Energy Partners
- Multifamily Direct Installation
- Custom Multifamily
- Prescriptive Business Efficiency
- Custom Business Efficiency

The purpose of these evaluations is to determine the cost-effectiveness of the measures actually installed through CIP under the original assumptions. Thus, the starting point is the evaluation performed for the 2021-2023 CIP Triennial, filed in July 2020.[11] Actual rebate and administrative cost data are used in the present evaluations. In addition, data representative of the actual measures implemented are also used, where available. Such information includes kWh and kW saved, incremental measure cost and measure life. The projects are evaluated over the life of each major end-use group and aggregated into the primary projects listed above. The evaluations are discounted to 2021, the year of plan implementation.

Evaluations of indirect impact project costs are only required for the Utility Test for use in the Shared Savings DSM Financial Incentive calculation. However, the costs associated with indirect impact projects were added to evaluations of the entire plan for the other tests to illustrate the small impact that these costs would have on overall cost-effectiveness. The Regulatory Charges were not included in the indirect impact project costs, as those costs were not under the direct control of Minnesota Power.

Results

The net benefits and benefit/cost ratios are listed below for the following tests:

- Utility Test
- Societal Test
- Participant Test
- Ratepayer Impact Measure Test ("RIM")

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

Results of Project Benefit/Cost Evaluations

Project	Utility Test		Societal Test		Participant Test		RIM Test	
	Net Benefits	B/C Ratio	Net Benefits	B/C Ratio	Net Benefits	B/C Ratio	Net Benefits	B/C Ratio
Home Efficiency	$6,043,887	3.68	$10,656,561	3.12	$29,596,892	8.28	($15,687,653)	0.34
Energy Partners	$176,712	1.41	$703,278	3.01	$2,324,747	9.09	($1,393,663)	0.29
Multifamily Direct Install	$53,179	1.35	$78,599	1.31	$652,493	3.91	($498,905)	0.28
Multifamily Custom	$942,289	6.28	$162,549	1.17	$1,806,227	2.58	($1,663,908)	0.39
Prescriptive Business	$398,185	8.78	$302,409	2.33	$1,033,204	5.75	($774,208)	0.36
Custom Business	$16,324,571	4.64	$8,611,039	1.53	$39,926,589	3.79	($33,763,848)	0.37
Total Plan (with indirect impact projects)	$21,922,198	3.29	$18,497,810	1.73	$75,340,151	4.72	($55,708,399)	0.35
Total Plan (w/o indirect impact projects)	$23,938,823	4.17	$20,514,435	1.88	$75,340,151	4.72	($53,782,185)	0.36

In compliance with Order Points 1 & 2 from the July 16, 2013 Order Determining Ratemaking Treatment of Utility CIP Project Costs (Docket No. E,G-999/DI-12-1342), net benefits and energy savings resulting from MP facilities projects are excluded for the purpose of the financial incentive calculation. Utility Test Net Benefits for Total Plan and Custom Business used in the financial incentive calculation were ($21,908,433) and ($16,310,806).

For the following four benefit cost tests, a project is considered to be cost-effective if the net benefits are positive and the benefit/cost ratio is greater than 1.0.

The Utility Test, or the Revenue Requirements Test, as it is also called, measures the change in the direct costs of the utility. Utility Test net benefits are used in the Shared Savings DSM Financial Incentive calculation. A project with positive net benefits and a benefit/cost ratio greater than 1.0 will tend to lower utility costs over the long term.

The Societal Test is the benchmark for determining project cost effectiveness in Minnesota. This test reflects the cost effectiveness of a project from the viewpoint of society. For each of the Direct Impact programs, reduced energy usage (energy savings) is the primary contributor to societal benefits. The major cost component in the societal test is the incremental cost of the efficient measures.

The Participant Test is important because typically a project must be cost-effective from the participant's perspective if a customer is expected to implement it. If the customer does not view the project as cost-effective, the customer is not likely to implement it.

The Ratepayer Impact Measure Test indicates the effect on long-term system rates. A project with negative net benefits or a benefit/cost ratio less than 1.0 will tend to raise long-term rates. A project with positive net benefits or a benefit/cost ratio greater than 1.0 will tend to lower long-term rates. Typically, projects are not cost-effective from the ratepayer perspective.

All six Direct Impact programs (Home Efficiency, Energy Partners, Multifamily Direct Installation, Custom Multifamily Efficiency, Prescriptive Business Efficiency and Custom Business Efficiency) are cost-effective from the societal, utility, and participant perspectives. All programs are not cost-effective from the ratepayer perspective.

2023 Annual Energy Savings Summary

	kWh - Meter	kW - Meter	kWh - Generator	kW - Generator
Total Direct Impact Programs	**67,342,197**	**6,471.4**	**73,589,465**	**7,071.7**
Total Home Efficiency	15,178,221	1,647.3	16,586,289	1,800.1
Total Energy Partners	1,150,843	156.8	1,257,606	171.4
Total Multifamily Direct Installation	441,005	46.9	481,916	51.2
Total Custom Multifamily Efficiency	2,017,107	348.4	2,204,232	380.8
Total Prescriptive Business Efficiency	969,926	140.5	1,059,905	153.6
Total Custom Business Efficiency	47,585,095	4,131.4	51,999,517	4,514.7
Grand Total	**67,342,197**	**6,471.4**	**73,589,465**	**7,071.7**
Minnesota Power Projects	36,677	3.8	40,079	4.1
Total Custom Business Efficiency less MP Projects	47,548,418	4,127.6	51,959,437	4,510.5
Grand Total less MP Projects	**67,305,520**	**6,467.6**	**73,549,385**	**7,067.6**

** In compliance with Order Points 1 & 2 from July 16, 2013 Order Determining Ratemaking Treatment of Utility CIP Project Costs (Docket No. E, G-999/DI-12-1342), net benefits and energy savings resulting from MP facilities projects were excluded for the purpose of the financial incentive calculation.*

2023 Utility Test Summary

	Utility Benefits	Utility Costs	Utility Net Benefits	Utility B/C Ratio
Total Direct Impact Programs	**$31,484,469**	**$7,545,646**	**$23,938,823**	**4.17**
Total Home Efficiency	$8,299,321	$2,255,434	$6,043,887	3.68
Total Energy Partners	$604,880	$428,168	$176,712	1.41
Total Multifamily Direct Installation	$204,089	$150,911	$53,179	1.35
Total Custom Multifamily Efficiency	$1,120,855	$178,566	$942,289	6.28
Total Prescriptive Business Efficiency	$449,361	$51,175	$398,185	8.78
Total Custom Business Efficiency	$20,805,963	$4,481,392	$16,324,571	4.64
Indirect Program Costs	**$0**	**$2,016,625**	**-$2,016,625**	**0.00**
Grand Total	**$31,484,469**	**$9,562,271**	**$21,922,198**	**3.29**
Minnesota Power Projects	$15,842	$2,077	$13,765	7.63
Total Custom Business Efficiency less MP Projects	$20,790,121	$4,479,315	$16,310,806	4.64
Grand Total less MP Projects	**$31,468,627**	**$9,560,194**	**$21,908,433**	**3.29**

** In compliance with Order Points 1 & 2 from July 16, 2013 Order Determining Ratemaking Treatment of Utility CIP Project Costs (Docket No. E, G-999/DI-12-1342), net benefits and energy savings resulting from MP facilities projects were excluded for the purpose of the financial incentive calculation. Utility Test Net Benefits for Total Plan used in the financial incentive calculation were $21,908,433.*

2023 Societal Test Summary

All values are discounted to 2021

	Societal Benefits	Societal Costs	Societal Net Benefits	Societal B/C Ratio
Total Direct Impact Programs	**$43,790,114**	**$23,239,413**	**$20,514,435**	**1.88**
Total Home Efficiency	$15,678,786	$5,022,226	$10,656,561	3.12
Total Energy Partners	$1,052,579	$349,302	$703,278	3.01
Total Multifamily Direct Installation	$334,202	$255,602	$78,599	1.31
Total Custom Multifamily Efficiency	$1,356,401	$1,157,585	$162,549	1.17
Total Prescriptive Business Efficiency	$529,112	$226,703	$302,409	2.33
Total Custom Business Efficiency	$24,839,034	$16,227,995	$8,611,039	1.53
Indirect Program Costs	**$0**	**$2,016,625**	**-$2,016,625**	**0.00**
Grand Total	**$43,790,114**	**$25,256,038**	**$18,497,810**	**1.73**

2023 Participant Test Summary

All values are discounted to 2021

	Participant Benefits	Participant Costs	Participant Net Benefits	Participant B/C Ratio
Total Direct Impact Programs	**$95,601,560**	**$20,261,409**	**$75,340,151**	**4.72**
Total Home Efficiency	$33,663,959	$4,067,067	$29,596,892	8.28
Total Energy Partners	$2,611,999	$287,252	$2,324,747	9.09
Total Multifamily Direct Installation	$876,743	$224,251	$652,493	3.91
Total Custom Multifamily Efficiency	$2,948,784	$1,142,557	$1,806,227	2.58
Total Prescriptive Business Efficiency	$1,250,553	$217,349	$1,033,204	5.75
Total Custom Business Efficiency	$54,249,522	$14,322,933	$39,926,589	3.79
Indirect Program Costs	**$0**	**$0**	**$0**	**0.00**
Grand Total	**$95,601,560**	**$20,261,409**	**$75,340,151**	**4.72**

2023 Ratepayer Impact Test Summary

All values are discounted to 2021

	Ratepayer Benefits	Ratepayer Costs	Ratepayer Net Benefits	Ratepayer B/C Ratio
Total Direct Impact Programs	**$30,072,936**	**$83,855,121**	**-$53,782,185**	**0.36**
Total Home Efficiency	$7,927,241	$23,614,893	-$15,687,653	0.34
Total Energy Partners	$577,761	$1,971,425	-$1,393,663	0.29
Total Multifamily Direct Installation	$194,939	$693,844	-$498,905	0.28
Total Custom Multifamily Efficiency	$1,070,604	$2,734,512	-$1,663,908	0.39
Total Prescriptive Business Efficiency	$429,215	$1,203,422	-$774,208	0.36
Total Custom Business Efficiency	$19,873,176	$53,637,025	-$33,763,848	0.37
Indirect Program Costs	**$0**	**$1,926,214**	**-$1,926,214**	**0.00**
Grand Total	**$30,072,936**	**$85,781,336**	**-$55,708,399**	**0.35**

2023 Home Efficiency Annual Energy Savings

All values are discounted to 2021

	kWh - Meter	kW - Meter	kWh - Generator	kW - Generator
Lighting	**6,520,265**	**746.9**	**7,125,143**	**816.2**
LED Bulb	6,353,649	728.8	6,943,070	796.4
LED Fixture - Indoor	153,965	17.7	168,248	19.3
LED Fixture - Outdoor	8,928	0.0	9,756	0.0
LED Tube	528	0.1	577	0.1
Motion Sensor - Switch	1,035	0.1	1,131	0.1
Motion Sensor - Bulb Integrated	2,161	0.2	2,361	0.3
Bulb Recycling	0	0.0	0	0.0
Appliances	**491,276**	**56.4**	**536,851**	**61.6**
Refrigerator	9,990	1.1	10,917	1.3
Freezer	924	0.1	1,010	0.1
Dishwasher	14,444	1.7	15,784	1.8
Clothes Washer	16,095	1.8	17,588	2.0
Room Air Cleaner	98,352	11.3	107,476	12.3
Refrigerator Turn-In	284,565	32.6	310,964	35.7
Freezer Turn-In	66,906	7.7	73,113	8.4
HVAC	**3,527,644**	**361.1**	**3,854,900**	**394.6**
ASHP - Proper Installation	3,447	0.3	3,767	0.3
ASHP - Ducted	265,842	22.4	290,504	24.5
ASHP - Ductless	2,142,373	180.6	2,341,119	197.4
ASHP - Ductless - Cooling Only	27,051	30.7	29,560	33.5
Ground Source Heat Pump	750,156	63.2	819,747	69.1
ECM - Circulator Pump	176,460	0.0	192,830	0.0
ECM - Replacement Motor	248	0.1	271	0.1
Dehumidifier	43,268	49.1	47,282	53.7
Smart Thermostat - Low Voltage	34,827	2.9	38,058	3.2
Smart Thermostat - Line Voltage	68,952	0.0	75,349	0.0
Programmable Thermostat - Line Voltage	4,386	0.0	4,793	0.0
HVAC Tune-up	322	0.0	352	0.0
Dehumidifier Turn-In	6,448	7.3	7,046	8.0
Window AC Turn-In	3,864	4.4	4,222	4.8
Home Performance	**483,963**	**19.6**	**528,860**	**21.4**
Home Performance Project	483,963	19.6	528,860	21.4
Water Heating	**44,688**	**3.7**	**48,834**	**4.0**
Heat Pump Water Heater	44,688	3.7	48,834	4.0
Plug Load and Kits	**84,847**	**7.5**	**92,718**	**8.2**
Water Kit	61,341	5.1	67,032	5.6
Starter Kit	23,506	2.5	25,687	2.7
Direct Install	**442,890**	**41.1**	**483,976**	**44.9**
LED Bulb	145,622	16.7	159,131	18.3
Refrigerator Thermometer	35,640	4.1	38,946	4.5
Heat Shrink Window Insulation	23,760	0.0	25,964	0.0
Aerator	24,134	2.0	26,373	2.2
Showerhead	99,540	8.3	108,774	9.0
Thermostatic Restriction Valve	560	0.0	612	0.1
Shower Timer	46,620	3.9	50,945	4.2
Pipe Insulation	42,136	3.5	46,045	3.8
Water Heater Temperature Set-Back	5,346	0.4	5,842	0.5
Enable Power Management	2,600	0.3	2,841	0.3
Power Strip - Tier 1	16,932	1.9	18,503	2.1
Behavioral	**3,582,648**	**411.0**	**3,915,007**	**449.1**
EEBP	3,582,648	411.0	3,915,007	449.1
Administrative Costs	**0**	**0.0**	**0**	**0.0**
Administrative Costs	0	0.0	0	0.0
Grand Total	**15,178,221**	**1,647.3**	**16,586,289**	**1,800.1**

2023 Home Efficiency Annual Participation

All values are discounted to 2021

	Participants
Lighting	**290,864**
LED Bulb	287,154
LED Fixture - Indoor	3,484
LED Fixture - Outdoor	93
LED Tube	44
Motion Sensor - Switch	23
Motion Sensor - Bulb Integrated	65
Bulb Recycling	1
Appliances	**1,026**
Refrigerator	222
Freezer	22
Dishwasher	157
Clothes Washer	111
Room Air Cleaner	144
Refrigerator Turn-In	311
Freezer Turn-In	59
HVAC	**1,187**
ASHP - Proper Installation	3
ASHP - Ducted	76
ASHP - Ductless	209
ASHP - Ductless - Cooling Only	127
Ground Source Heat Pump	22
ECM - Circulator Pump	60
ECM - Replacement Motor	1
Dehumidifier	373
Smart Thermostat - Low Voltage	57
Smart Thermostat - Line Voltage	221
Programmable Thermostat - Line Voltage	17
HVAC Tune-up	1
Dehumidifier Turn-In	8
Window AC Turn-In	12
Home Performance	**36**
Home Performance Project	36
Water Heating	**24**
Heat Pump Water Heater	24
Plug Load and Kits	**307**
Water Kit	161
Starter Kit	146
Direct Install	**7,178**
LED Bulb	4,283
Refrigerator Thermometer	648
Heat Shrink Window Insulation	220
Aerator	304
Showerhead	252
Thermostatic Restriction Valve	7
Shower Timer	259
Pipe Insulation	916
Water Heater Temperature Set-Back	27
Enable Power Management	13
Power Strip - Tier 1	249
Behavioral	**55,920**
EEBP	55,920
Administrative Costs	**0**
Administrative Costs	0
Grand Total	**356,542**

2023 Home Efficiency Utility Test

All values are discounted to 2021

	Utility Benefits	Utility Costs	Utility Net Benefits	Utility B/C Ratio
Lighting	**$4,632,181**	**$526,992**	**$4,105,189**	**8.79**
LED Bulb	$4,514,894	$504,646	$4,010,248	8.95
LED Fixture - Indoor	$109,407	$16,065	$93,342	6.81
LED Fixture - Outdoor	$5,560	$1,281	$4,279	4.34
LED Tube	$375	$44	$331	8.53
Motion Sensor - Switch	$409	$115	$294	3.56
Motion Sensor - Bulb Integrated	$1,535	$145	$1,390	10.55
Bulb Recycling	$0	$4,695	-$4,695	0.00
Appliances	**$167,751**	**$75,314**	**$92,437**	**2.23**
Refrigerator	$5,307	$3,330	$1,977	1.59
Freezer	$398	$330	$68	1.21
Dishwasher	$6,717	$3,925	$2,792	1.71
Clothes Washer	$6,930	$3,550	$3,380	1.95
Room Air Cleaner	$35,307	$5,778	$29,529	6.11
Refrigerator Turn-In	$91,564	$49,138	$42,426	1.86
Freezer Turn-In	$21,528	$9,263	$12,265	2.32
HVAC	**$2,469,662**	**$476,392**	**$1,993,270**	**5.18**
ASHP - Proper Installation	$2,401	$150	$2,251	16.01
ASHP - Ducted	$185,155	$71,200	$113,955	2.60
ASHP - Ductless	$1,492,131	$229,100	$1,263,031	6.51
ASHP - Ductless - Cooling Only	$35,323	$50,400	-$15,077	0.70
Ground Source Heat Pump	$567,802	$88,700	$479,102	6.40
ECM - Circulator Pump	$99,196	$11,959	$87,237	8.29
ECM - Replacement Motor	$117	$100	$17	1.17
Dehumidifier	$40,215	$9,325	$30,890	4.31
Smart Thermostat - Low Voltage	$14,665	$2,843	$11,822	5.16
Smart Thermostat - Line Voltage	$27,203	$11,050	$16,153	2.46
Programmable Thermostat - Line Voltage	$1,730	$340	$1,390	5.09
HVAC Tune-up	$30	$25	$5	1.21
Dehumidifier Turn-In	$2,679	$480	$2,199	5.58
Window AC Turn-In	$1,014	$720	$294	1.41
Home Performance	**$332,773**	**$110,100**	**$222,673**	**3.02**
Home Performance Project	$332,773	$110,100	$222,673	3.02
Water Heating	**$21,268**	**$9,600**	**$11,668**	**2.22**
Heat Pump Water Heater	$21,268	$9,600	$11,668	2.22
Plug Load and Kits	**$24,380**	**$8,118**	**$16,262**	**3.00**
Water Kit	$18,828	$4,315	$14,513	4.36
Starter Kit	$5,552	$3,803	$1,749	1.46
Direct Install	**$186,926**	**$36,837**	**$150,089**	**5.07**
LED Bulb	$103,479	$18,811	$84,668	5.50
Refrigerator Thermometer	$4,620	$2,080	$2,540	2.22
Heat Shrink Window Insulation	$973	$242	$731	4.02
Aerator	$9,103	$1,181	$7,922	7.71
Showerhead	$37,545	$5,671	$31,874	6.62
Thermostatic Restriction Valve	$211	$170	$41	1.24
Shower Timer	$5,756	$1,023	$4,733	5.63
Pipe Insulation	$20,053	$1,145	$18,908	17.51
Water Heater Temperature Set-Back	$448	$405	$43	1.11
Enable Power Management	$310	$195	$115	1.59
Power Strip - Tier 1	$4,428	$5,914	-$1,485	0.75
Behavioral	**$464,380**	**$56,923**	**$407,458**	**8.16**
EEBP	$464,380	$56,923	$407,458	8.16
Administrative Costs	**$0**	**$955,158**	**-$955,158**	**0.00**
Administrative Costs	$0	$955,158	-$955,158	0.00
Grand Total	**$8,299,321**	**$2,255,434**	**$6,043,887**	**3.68**

2023 Home Efficiency Societal Test

All values are discounted to 2021

	Societal Benefits	Societal Costs	Societal Net Benefits	Societal B/C Ratio
Lighting	**$11,136,345**	**$2,141,508**	**$8,994,837**	**5.20**
LED Bulb	$10,913,398	$2,090,130	$8,823,268	5.22
LED Fixture - Indoor	$207,343	$47,960	$159,383	4.32
LED Fixture - Outdoor	$10,743	$2,083	$8,660	5.16
LED Tube	$1,270	$330	$939	3.84
Motion Sensor - Switch	$470	$437	$33	1.08
Motion Sensor - Bulb Integrated	$3,123	$568	$2,554	5.49
Bulb Recycling	$0	$0	$0	0.00
Appliances	**$190,133**	**$99,671**	**$90,462**	**1.91**
Refrigerator	$6,346	$4,440	$1,906	1.43
Freezer	$462	$440	$22	1.05
Dishwasher	$7,872	$7,850	$22	1.00
Clothes Washer	$8,040	$18,093	-$10,053	0.44
Room Air Cleaner	$40,135	$9,648	$30,487	4.16
Refrigerator Turn-In	$103,050	$49,760	$53,290	2.07
Freezer Turn-In	$24,229	$9,440	$14,789	2.57
HVAC	**$3,071,396**	**$1,517,382**	**$1,554,014**	**2.02**
ASHP - Proper Installation	$2,983	$2,025	$958	1.47
ASHP - Ducted	$230,094	$115,332	$114,762	2.00
ASHP - Ductless	$1,854,282	$1,043,250	$811,032	1.78
ASHP - Ductless - Cooling Only	$43,291	$55,880	-$12,589	0.77
Ground Source Heat Pump	$720,510	$199,034	$521,476	3.62
ECM - Circulator Pump	$119,803	$50,400	$69,403	2.38
ECM - Replacement Motor	$132	$475	-$343	0.28
Dehumidifier	$46,296	$18,650	$27,646	2.48
Smart Thermostat - Low Voltage	$16,805	$5,187	$11,618	3.24
Smart Thermostat - Line Voltage	$31,246	$25,351	$5,895	1.23
Programmable Thermostat - Line Voltage	$1,988	$598	$1,389	3.32
HVAC Tune-up	$32	$100	-$68	0.32
Dehumidifier Turn-In	$2,868	$440	$2,428	6.52
Window AC Turn-In	$1,066	$660	$406	1.62
Home Performance	**$418,607**	**$187,812**	**$230,795**	**2.23**
Home Performance Project	$418,607	$187,812	$230,795	2.23
Water Heating	**$25,217**	**$18,816**	**$6,401**	**1.34**
Heat Pump Water Heater	$25,217	$18,816	$6,401	1.34
Plug Load and Kits	**$27,372**	**$8,118**	**$19,254**	**3.37**
Water Kit	$21,230	$4,315	$16,915	4.92
Starter Kit	$6,141	$3,803	$2,338	1.61
Direct Install	**$308,721**	**$36,837**	**$271,884**	**8.38**
LED Bulb	$213,007	$18,811	$194,197	11.32
Refrigerator Thermometer	$4,984	$2,080	$2,904	2.40
Heat Shrink Window Insulation	$1,041	$242	$799	4.30
Aerator	$10,474	$1,181	$9,293	8.87
Showerhead	$43,198	$5,671	$37,527	7.62
Thermostatic Restriction Valve	$243	$170	$73	1.43
Shower Timer	$6,225	$1,023	$5,202	6.09
Pipe Insulation	$23,777	$1,145	$22,632	20.77
Water Heater Temperature Set-Back	$483	$405	$78	1.19
Enable Power Management	$336	$195	$141	1.72
Power Strip - Tier 1	$4,952	$5,914	-$962	0.84
Behavioral	**$500,996**	**$56,923**	**$444,074**	**8.80**
EEBP	$500,996	$56,923	$444,074	8.80
Administrative Costs	**$0**	**$955,158**	**-$955,158**	**0.00**
Administrative Costs	$0	$955,158	-$955,158	0.00
Grand Total	**$15,678,786**	**$5,022,226**	**$10,656,561**	**3.12**

2023 Home Efficiency Participant Test

All values are discounted to 2021

	Participant Benefits	Participant Costs	Participant Net Benefits	Participant B/C Ratio
Lighting	**$21,427,085**	**$2,141,508**	**$19,285,577**	**10.01**
LED Bulb	$20,932,079	$2,090,130	$18,841,950	10.01
LED Fixture - Indoor	$453,957	$47,960	$405,997	9.47
LED Fixture - Outdoor	$26,359	$2,083	$24,276	12.65
LED Tube	$2,104	$330	$1,774	6.37
Motion Sensor - Switch	$1,387	$437	$951	3.18
Motion Sensor - Bulb Integrated	$6,504	$568	$5,935	11.44
Bulb Recycling	$4,695	$0	$4,695	0.00
Appliances	**$593,136**	**$99,671**	**$493,465**	**5.95**
Refrigerator	$20,348	$4,440	$15,908	4.58
Freezer	$1,576	$440	$1,136	3.58
Dishwasher	$25,118	$7,850	$17,268	3.20
Clothes Washer	$25,252	$18,093	$7,159	1.40
Room Air Cleaner	$114,872	$9,648	$105,224	11.91
Refrigerator Turn-In	$330,544	$49,760	$280,784	6.64
Freezer Turn-In	$75,426	$9,440	$65,986	7.99
HVAC	**$8,093,729**	**$1,517,382**	**$6,576,347**	**5.33**
ASHP - Proper Installation	$7,631	$2,025	$5,606	3.77
ASHP - Ducted	$648,154	$115,332	$532,822	5.62
ASHP - Ductless	$4,878,671	$1,043,250	$3,835,421	4.68
ASHP - Ductless - Cooling Only	$109,109	$55,880	$53,229	1.95
Ground Source Heat Pump	$1,889,699	$199,034	$1,690,665	9.49
ECM - Circulator Pump	$333,280	$50,400	$282,880	6.61
ECM - Replacement Motor	$375	$475	-$100	0.79
Dehumidifier	$72,810	$18,650	$54,160	3.90
Smart Thermostat - Low Voltage	$45,647	$5,187	$40,460	8.80
Smart Thermostat - Line Voltage	$95,796	$25,351	$70,445	3.78
Programmable Thermostat - Line Voltage	$5,731	$598	$5,132	9.58
HVAC Tune-up	$108	$100	$8	1.08
Dehumidifier Turn-In	$4,520	$440	$4,080	10.27
Window AC Turn-In	$2,199	$660	$1,539	3.33
Home Performance	**$1,216,341**	**$187,812**	**$1,028,529**	**6.48**
Home Performance Project	$1,216,341	$187,812	$1,028,529	6.48
Water Heating	**$80,458**	**$18,816**	**$61,642**	**4.28**
Heat Pump Water Heater	$80,458	$18,816	$61,642	4.28
Plug Load and Kits	**$86,332**	**$8,118**	**$78,214**	**10.63**
Water Kit	$64,975	$4,315	$60,660	15.06
Starter Kit	$21,357	$3,803	$17,554	5.62
Direct Install	**$739,041**	**$36,837**	**$702,204**	**20.06**
LED Bulb	$449,875	$18,811	$431,064	23.92
Refrigerator Thermometer	$15,718	$2,080	$13,638	7.56
Heat Shrink Window Insulation	$3,333	$242	$3,091	13.77
Aerator	$30,843	$1,181	$29,662	26.12
Showerhead	$128,011	$5,671	$122,340	22.57
Thermostatic Restriction Valve	$858	$170	$688	5.05
Shower Timer	$18,862	$1,023	$17,839	18.44
Pipe Insulation	$67,957	$1,145	$66,812	59.35
Water Heater Temperature Set-Back	$1,782	$405	$1,377	4.40
Enable Power Management	$1,190	$195	$995	6.10
Power Strip - Tier 1	$20,612	$5,914	$14,698	3.49
Behavioral	**$1,427,837**	**$56,923**	**$1,370,914**	**25.08**
EEBP	$1,427,837	$56,923	$1,370,914	25.08
Administrative Costs	**$0**	**$0**	**$0**	**0.00**
Administrative Costs	$0	$0	$0	0.00
Grand Total	**$33,663,959**	**$4,067,067**	**$29,596,892**	**8.28**

2023 Home Efficiency Ratepayer Impact Test

All values are discounted to 2021

	Ratepayer Benefits	Ratepayer Costs	Ratepayer Net Benefits	Ratepayer B/C Ratio
Lighting	**$4,424,508**	**$12,681,064**	**-$8,256,556**	**0.35**
LED Bulb	$4,312,479	$12,349,347	-$8,036,868	0.35
LED Fixture - Indoor	$104,502	$302,920	-$198,418	0.34
LED Fixture - Outdoor	$5,311	$17,899	-$12,588	0.30
LED Tube	$358	$1,028	-$670	0.35
Motion Sensor - Switch	$391	$1,210	-$819	0.32
Motion Sensor - Bulb Integrated	$1,466	$4,175	-$2,708	0.35
Bulb Recycling	$0	$4,484	-$4,484	0.00
Appliances	**$160,230**	**$526,177**	**-$365,947**	**0.30**
Refrigerator	$5,069	$17,278	-$12,208	0.29
Freezer	$380	$1,381	-$1,001	0.28
Dishwasher	$6,415	$21,684	-$15,268	0.30
Clothes Washer	$6,619	$21,956	-$15,336	0.30
Room Air Cleaner	$33,724	$100,892	-$67,169	0.33
Refrigerator Turn-In	$87,459	$295,660	-$208,201	0.30
Freezer Turn-In	$20,563	$67,327	-$46,764	0.31
HVAC	**$2,358,941**	**$6,497,260**	**-$4,138,320**	**0.36**
ASHP - Proper Installation	$2,293	$6,085	-$3,792	0.38
ASHP - Ducted	$176,854	$526,244	-$349,390	0.34
ASHP - Ductless	$1,425,235	$3,911,674	-$2,486,439	0.36
ASHP - Ductless - Cooling Only	$33,739	$94,769	-$61,029	0.36
Ground Source Heat Pump	$542,346	$1,485,862	-$943,517	0.37
ECM - Circulator Pump	$94,748	$274,782	-$180,034	0.34
ECM - Replacement Motor	$112	$336	-$224	0.33
Dehumidifier	$38,412	$62,632	-$24,220	0.61
Smart Thermostat - Low Voltage	$14,008	$39,731	-$25,723	0.35
Smart Thermostat - Line Voltage	$25,984	$83,839	-$57,855	0.31
Programmable Thermostat - Line Voltage	$1,653	$4,986	-$3,334	0.33
HVAC Tune-up	$29	$102	-$73	0.28
Dehumidifier Turn-In	$2,559	$4,150	-$1,591	0.62
Window AC Turn-In	$969	$2,069	-$1,100	0.47
Home Performance	**$317,854**	**$974,715**	**-$656,861**	**0.33**
Home Performance Project	$317,854	$974,715	-$656,861	0.33
Water Heating	**$20,314**	**$68,495**	**-$48,181**	**0.30**
Heat Pump Water Heater	$20,314	$68,495	-$48,181	0.30
Plug Load and Kits	**$23,287**	**$77,231**	**-$53,944**	**0.30**
Water Kit	$17,984	$57,737	-$39,753	0.31
Starter Kit	$5,303	$19,494	-$14,191	0.27
Direct Install	**$178,546**	**$542,870**	**-$364,324**	**0.33**
LED Bulb	$98,840	$289,960	-$191,120	0.34
Refrigerator Thermometer	$4,413	$14,724	-$10,311	0.30
Heat Shrink Window Insulation	$929	$3,183	-$2,254	0.29
Aerator	$8,695	$26,778	-$18,083	0.32
Showerhead	$35,862	$111,211	-$75,349	0.32
Thermostatic Restriction Valve	$202	$758	-$556	0.27
Shower Timer	$5,498	$17,638	-$12,140	0.31
Pipe Insulation	$19,154	$57,031	-$37,877	0.34
Water Heater Temperature Set-Back	$428	$1,688	-$1,259	0.25
Enable Power Management	$296	$1,115	-$819	0.27
Power Strip - Tier 1	$4,230	$18,784	-$14,554	0.23
Behavioral	**$443,561**	**$1,334,745**	**-$891,184**	**0.33**
EEBP	$443,561	$1,334,745	-$891,184	0.33
Administrative Costs	**$0**	**$912,336**	**-$912,336**	**0.00**
Administrative Costs	$0	$912,336	-$912,336	0.00
Grand Total	**$7,927,241**	**$23,614,893**	**-$15,687,653**	**0.34**

2023 Energy Partners Annual Energy Savings

All values are discounted to 2021

	kWh - Meter	kW - Meter	kWh - Generator	kW - Generator
Lighting	**464,889**	**53.3**	**508,016**	**58.3**
LED Bulb	421,600	48.4	460,711	52.8
LED Torchiere	43,289	5.0	47,305	5.4
Appliances	**233,143**	**24.2**	**254,771**	**26.4**
Refrigerator Replacement	53,876	6.2	58,874	6.8
Freezer Replacement	2,298	0.3	2,511	0.3
Refrigerator Turn-In	90,585	10.4	98,988	11.4
Freezer Turn-In	15,876	1.8	17,349	2.0
Dehumidifier Turn-In	14,508	1.7	15,854	1.8
Microwave Oven	56,000	3.8	61,195	4.2
HVAC	**60,149**	**45.2**	**65,729**	**49.4**
Dehumidifier	39,808	45.2	43,501	49.4
Program Thermostat	17,860	0.0	19,517	0.0
Programmable Thermostat - High Voltage	0	0.0	0	0.0
Heat Shrink Window Insulation	108	0.0	118	0.0
Air Sealing and Insulation	2,373	0.0	2,593	0.0
Water Heating	**224,386**	**18.6**	**245,202**	**20.3**
Aerator	27,812	2.3	30,392	2.5
Showerhead	85,715	7.1	93,667	7.8
Thermostatic Restriction Valve	80	0.0	87	0.0
Shower Timer	62,280	5.2	68,058	5.6
Pipe Insulation	27,232	2.3	29,758	2.5
Water Heater Temperature Set-Back	594	0.0	649	0.1
Water Heater Insulation	125	0.0	137	0.0
Heat Pump Water Heater	20,548	1.7	22,454	1.9
Home Performance	**36,993**	**1.5**	**40,425**	**1.6**
Home Performance Project	36,993	1.5	40,425	1.6
Plug Load and Kits	**131,283**	**14.1**	**143,462**	**15.4**
Energy Expo Kit	53,764	5.2	58,752	5.7
Refrigerator Thermometer	33,935	3.9	37,083	4.3
Power Strip - Tier 1	43,384	4.9	47,409	5.4
Enable Power Management	200	0.0	219	0.0
Administrative Costs	**0**	**0.0**	**0**	**0.0**
Administrative Costs	0	0.0	0	0.0
Grand Total	**1,150,843**	**156.8**	**1,257,606**	**171.4**

2023 Energy Partners Annual Participation

All values are discounted to 2021

	Participants
Lighting	**12,993**
LED Bulb	12,400
LED Torchiere	593
Appliances	**300**
Refrigerator Replacement	99
Freezer Replacement	14
Refrigerator Turn-In	99
Freezer Turn-In	14
Dehumidifier Turn-In	18
Microwave Oven	56
HVAC	**148**
Dehumidifier	98
Program Thermostat	47
Programmable Thermostat - High Voltage	1
Heat Shrink Window Insulation	1
Air Sealing and Insulation	1
Water Heating	**1,478**
Aerator	307
Showerhead	217
Thermostatic Restriction Valve	1
Shower Timer	346
Pipe Insulation	592
Water Heater Temperature Set-Back	3
Water Heater Insulation	1
Heat Pump Water Heater	11
Home Performance	**9**
Home Performance Project	9
Plug Load and Kits	**1,556**
Energy Expo Kit	300
Refrigerator Thermometer	617
Power Strip - Tier 1	638
Enable Power Management	1
Administrative Costs	**0**
Administrative Costs	0
Grand Total	**16,484**

2023 Energy Partners Utility Test

All values are discounted to 2021

	Utility Benefits	Utility Costs	Utility Net Benefits	Utility B/C Ratio
Lighting	**$330,349**	**$97,942**	**$232,408**	**3.37**
LED Bulb	$299,588	$53,763	$245,825	5.57
LED Torchiere	$30,761	$44,178	-$13,417	0.70
Appliances	**$90,980**	**$138,897**	**-$47,917**	**0.66**
Refrigerator Replacement	$28,622	$113,293	-$84,671	0.25
Freezer Replacement	$989	$9,003	-$8,013	0.11
Refrigerator Turn-In	$29,147	$4,680	$24,467	6.23
Freezer Turn-In	$5,108	$360	$4,748	14.19
Dehumidifier Turn-In	$2,997	$360	$2,637	8.32
Microwave Oven	$24,116	$11,201	$12,915	2.15
HVAC	**$40,254**	**$25,950**	**$14,304**	**1.55**
Dehumidifier	$36,999	$23,346	$13,653	1.58
Program Thermostat	$1,567	$705	$862	2.22
Programmable Thermostat - High Voltage	$0	$20	-$20	0.00
Heat Shrink Window Insulation	$4	$5	-$1	0.80
Air Sealing and Insulation	$1,683	$1,874	-$191	0.90
Water Heating	**$70,888**	**$65,412**	**$5,476**	**1.08**
Aerator	$10,490	$1,279	$9,212	8.20
Showerhead	$32,330	$5,301	$27,029	6.10
Thermostatic Restriction Valve	$30	$24	$6	1.24
Shower Timer	$5,224	$1,367	$3,857	3.82
Pipe Insulation	$12,960	$645	$12,315	20.09
Water Heater Temperature Set-Back	$50	$45	$5	1.11
Water Heater Insulation	$25	$25	$0	0.98
Heat Pump Water Heater	$9,779	$56,726	-$46,947	0.17
Plug Load and Kits	**$46,972**	**$23,142**	**$23,830**	**2.03**
Energy Expo Kit	$31,203	$5,994	$25,209	5.21
Refrigerator Thermometer	$4,399	$1,981	$2,418	2.22
Power Strip - Tier 1	$11,347	$15,152	-$3,806	0.75
Enable Power Management	$24	$15	$9	1.59
Home Performance	**$25,436**	**$14,775**	**$10,661**	**1.72**
Home Performance Project	$25,436	$14,775	$10,661	1.72
Administrative Costs	**$0**	**$62,050**	**-$62,050**	**0.00**
Administrative Costs	$0	$62,050	-$62,050	0.00
Grand Total	**$604,880**	**$428,168**	**$176,712**	**1.41**

2023 Energy Partners Societal Test

All values are discounted to 2021

	Societal Benefits	Societal Costs	Societal Net Benefits	Societal B/C Ratio
Lighting	**$668,095**	**$97,942**	**$570,153**	**6.82**
LED Bulb	$616,692	$53,763	$562,929	11.47
LED Torchiere	$51,403	$44,178	$7,224	1.16
Appliances	**$163,358**	**$138,897**	**$24,461**	**1.18**
Refrigerator Replacement	$86,797	$113,293	-$26,496	0.77
Freezer Replacement	$7,113	$9,003	-$1,890	0.79
Refrigerator Turn-In	$32,804	$4,680	$28,124	7.01
Freezer Turn-In	$5,749	$360	$5,389	15.97
Dehumidifier Turn-In	$3,282	$360	$2,922	9.12
Microwave Oven	$27,613	$11,201	$16,412	2.47
HVAC	**$46,423**	**$3,860**	**$42,563**	**12.03**
Dehumidifier	$42,594	$1,960	$40,634	21.73
Program Thermostat	$1,684	$1,880	-$196	0.90
Programmable Thermostat - High Voltage	$0	$20	-$20	0.00
Heat Shrink Window Insulation	$5	$0	$5	0.00
Air Sealing and Insulation	$2,140	$0	$2,140	0.00
Water Heating	**$81,975**	**$8,636**	**$73,339**	**9.49**
Aerator	$12,070	$1,279	$10,791	9.44
Showerhead	$37,198	$5,301	$31,898	7.02
Thermostatic Restriction Valve	$35	$0	$35	0.00
Shower Timer	$5,629	$1,367	$4,262	4.12
Pipe Insulation	$15,367	$645	$14,722	23.82
Water Heater Temperature Set-Back	$54	$45	$9	1.19
Water Heater Insulation	$27	$0	$27	0.00
Heat Pump Water Heater	$11,595	$0	$11,595	0.00
Plug Load and Kits	**$60,732**	**$23,142**	**$37,589**	**2.62**
Energy Expo Kit	$43,272	$5,994	$37,278	7.22
Refrigerator Thermometer	$4,745	$1,981	$2,765	2.40
Power Strip - Tier 1	$12,688	$15,153	-$2,465	0.84
Enable Power Management	$26	$15	$11	1.72
Home Performance	**$31,997**	**$14,775**	**$17,222**	**2.17**
Home Performance Project	$31,997	$14,775	$17,222	2.17
Administrative Costs	**$0**	**$62,050**	**-$62,050**	**0.00**
Administrative Costs	$0	$62,050	-$62,050	0.00
Grand Total	**$1,052,579**	**$349,302**	**$703,278**	**3.01**

2023 Energy Partners Participant Test

All values are discounted to 2021

	Participant Benefits	Participant Costs	Participant Net Benefits	Participant B/C Ratio
Lighting	**$1,462,167**	**$97,942**	**$1,364,225**	**14.93**
LED Bulb	$1,301,765	$53,763	$1,248,001	24.21
LED Torchiere	$160,403	$44,178	$116,224	3.63
Appliances	**$475,512**	**$138,897**	**$336,615**	**3.42**
Refrigerator Replacement	$257,647	$113,293	$144,354	2.27
Freezer Replacement	$18,066	$9,003	$9,064	2.01
Refrigerator Turn-In	$94,259	$4,680	$89,579	20.14
Freezer Turn-In	$16,060	$360	$15,700	44.61
Dehumidifier Turn-In	$9,451	$360	$9,091	26.25
Microwave Oven	$80,028	$11,201	$68,827	7.14
HVAC	**$94,671**	**$3,860**	**$90,811**	**24.53**
Dehumidifier	$81,754	$1,960	$79,794	41.71
Program Thermostat	$5,306	$1,880	$3,426	2.82
Programmable Thermostat - High Voltage	$20	$20	$0	1.00
Heat Shrink Window Insulation	$20	$0	$20	0.00
Air Sealing and Insulation	$7,571	$0	$7,571	0.00
Water Heating	**$297,078**	**$8,636**	**$288,442**	**34.40**
Aerator	$35,461	$1,279	$34,182	27.73
Showerhead	$110,649	$5,301	$105,348	20.87
Thermostatic Restriction Valve	$123	$0	$123	0.00
Shower Timer	$17,411	$1,367	$16,045	12.74
Pipe Insulation	$43,825	$645	$43,180	67.95
Water Heater Temperature Set-Back	$198	$45	$153	4.40
Water Heater Insulation	$103	$0	$103	0.00
Heat Pump Water Heater	$89,308	$0	$89,308	0.00
Plug Load and Kits	**$183,237**	**$23,142**	**$160,095**	**7.92**
Energy Expo Kit	$115,366	$5,994	$109,372	19.25
Refrigerator Thermometer	$14,966	$1,981	$12,985	7.56
Power Strip - Tier 1	$52,813	$15,153	$37,661	3.49
Enable Power Management	$92	$15	$77	6.10
Home Performance	**$99,333**	**$14,775**	**$84,558**	**6.72**
Home Performance Project	$99,333	$14,775	$84,558	6.72
Administrative Costs	**$0**	**$0**	**$0**	**0.00**
Administrative Costs	$0	$0	$0	0.00
Grand Total	**$2,611,999**	**$287,252**	**$2,324,747**	**9.09**

2023 Energy Partners Ratepayer Impact Test

All values are discounted to 2021

	Ratepayer Benefits	Ratepayer Costs	Ratepayer Net Benefits	Ratepayer B/C Ratio
Lighting	**$315,539**	**$961,869**	**-$646,330**	**0.33**
LED Bulb	$286,157	$838,816	-$552,659	0.34
LED Torchiere	$29,382	$123,053	-$93,671	0.24
Appliances	**$86,901**	**$372,221**	**-$285,321**	**0.23**
Refrigerator Replacement	$27,339	$184,239	-$156,900	0.15
Freezer Replacement	$945	$11,250	-$10,305	0.08
Refrigerator Turn-In	$27,841	$83,646	-$55,806	0.33
Freezer Turn-In	$4,879	$14,220	-$9,341	0.34
Dehumidifier Turn-In	$2,862	$8,649	-$5,787	0.33
Microwave Oven	$23,035	$70,218	-$47,183	0.33
HVAC	**$38,449**	**$83,007**	**-$44,557**	**0.46**
Dehumidifier	$35,340	$71,728	-$36,387	0.49
Program Thermostat	$1,497	$5,019	-$3,522	0.30
Programmable Thermostat - High Voltage	$0	$19	-$19	0.00
Heat Shrink Window Insulation	$4	$19	-$14	0.23
Air Sealing and Insulation	$1,608	$6,222	-$4,614	0.26
Water Heating	**$67,710**	**$262,023**	**-$194,313**	**0.26**
Aerator	$10,020	$30,781	-$20,761	0.33
Showerhead	$30,881	$96,164	-$65,283	0.32
Thermostatic Restriction Valve	$29	$108	-$79	0.27
Shower Timer	$4,990	$16,459	-$11,469	0.30
Pipe Insulation	$12,379	$36,768	-$24,389	0.34
Water Heater Temperature Set-Back	$48	$188	-$140	0.25
Water Heater Insulation	$24	$95	-$72	0.25
Heat Pump Water Heater	$9,341	$81,461	-$72,121	0.11
Plug Load and Kits	**$44,866**	**$152,457**	**-$107,591**	**0.29**
Energy Expo Kit	$29,804	$90,223	-$60,419	0.33
Refrigerator Thermometer	$4,201	$14,020	-$9,818	0.30
Power Strip - Tier 1	$10,838	$48,129	-$37,291	0.23
Enable Power Management	$23	$86	-$63	0.27
Home Performance	**$24,296**	**$80,579**	**-$56,283**	**0.30**
Home Performance Project	$24,296	$80,579	-$56,283	0.30
Administrative Costs	**$0**	**$59,268**	**-$59,268**	**0.00**
Administrative Costs	$0	$59,268	-$59,268	0.00
Grand Total	**$577,761**	**$1,971,425**	**-$1,393,663**	**0.29**

2023 Multifamily Direct Installation Annual Energy Savings

All values are discounted to 2021

	kWh - Meter	kW - Meter	kWh - Generator	kW - Generator
Lighting	**105,224**	**12.1**	**114,986**	**13.2**
LED Bulb	77,588	8.9	84,786	9.7
LED Fixture - Non-Linear	3,040	0.3	3,322	0.4
LI LED Torchiere	24,596	2.8	26,878	3.1
Appliances	**81,108**	**9.3**	**88,632**	**10.2**
LI Refrigerator Replacement	26,208	3.0	28,639	3.3
Refrigerator Turn-In	54,900	6.3	59,993	6.9
Water Heating	**116,460**	**9.7**	**127,264**	**10.6**
Aerator	31,284	2.6	34,187	2.8
Showerhead	55,463	4.6	60,608	5.0
Shower Timer	23,940	2.0	26,161	2.2
Pipe Insulation	5,773	0.5	6,309	0.5
Plug Load and Kits	**39,310**	**4.5**	**42,957**	**4.9**
Refrigerator Thermometer	22,990	2.6	25,123	2.9
Power Strip - Tier 1	16,320	1.9	17,834	2.0
Common Area Direct Install	**98,902**	**11.3**	**108,077**	**12.4**
MF-CA - LED Bulb	33,015	3.8	36,078	4.1
MF-CA - LED Fixture - Linear	44,660	5.1	48,803	5.6
MF-CA - LED Fixture - Non-Linear	10,987	1.3	12,006	1.4
MF-CA - LED Exit Sign	7,014	0.8	7,665	0.9
MF-CA - Vending Miser	3,226	0.4	3,525	0.4
Administrative Costs	**0**	**0.0**	**0**	**0.0**
Administrative Costs	0	0.0	0	0.0
Grand Total	**441,005**	**46.9**	**481,916**	**51.2**

2023 Multifamily Direct Installation Annual Participation

All values are discounted to 2021

	Participants
Lighting	**2,769**
LED Bulb	2,282
LED Fixture - Non-Linear	152
LI LED Torchiere	335
Appliances	**108**
LI Refrigerator Replacement	48
Refrigerator Turn-In	60
Water Heating	**717**
Aerator	334
Showerhead	124
Shower Timer	133
Pipe Insulation	126
Plug Load and Kits	**658**
Refrigerator Thermometer	418
Power Strip - Tier 1	240
Common Area Direct Install	**607**
MF-CA - LED Bulb	155
MF-CA - LED Fixture - Linear	388
MF-CA - LED Fixture - Non-Linear	41
MF-CA - LED Exit Sign	21
MF-CA - Vending Miser	2
Administrative Costs	**0**
Administrative Costs	0
Grand Total	**4,859**

2023 Multifamily Direct Installation Utility Test

All values are discounted to 2021

	Utility Benefits	Utility Costs	Utility Net Benefits	Utility B/C Ratio
Lighting	**$74,772**	**$32,546**	**$42,226**	**2.30**
LED Bulb	$55,134	$11,086	$44,048	4.97
LED Fixture - Non-Linear	$2,160	$4,445	-$2,285	0.49
LI LED Torchiere	$17,478	$17,015	$463	1.03
Appliances	**$31,588**	**$47,608**	**-$16,019**	**0.66**
LI Refrigerator Replacement	$13,923	$43,038	-$29,114	0.32
Refrigerator Turn-In	$17,665	$4,570	$13,095	3.87
Water Heating	**$37,475**	**$5,817**	**$31,658**	**6.44**
Aerator	$11,800	$2,250	$9,550	5.25
Showerhead	$20,920	$2,338	$18,582	8.95
Shower Timer	$2,008	$665	$1,343	3.02
Pipe Insulation	$2,747	$565	$2,183	4.86
Plug Load and Kits	**$7,248**	**$6,722**	**$527**	**1.08**
Refrigerator Thermometer	$2,980	$1,659	$1,321	1.80
Power Strip - Tier 1	$4,268	$5,063	-$794	0.84
Common Area Direct Install	**$53,005**	**$26,866**	**$26,139**	**1.97**
MF-CA - LED Bulb	$22,676	$730	$21,945	31.05
MF-CA - LED Fixture - Linear	$20,767	$24,096	-$3,329	0.86
MF-CA - LED Fixture - Non-Linear	$5,109	$1,212	$3,897	4.22
MF-CA - LED Exit Sign	$3,840	$441	$3,399	8.71
MF-CA - Vending Miser	$613	$387	$227	1.59
Administrative Costs	**$0**	**$31,352**	**-$31,352**	**0.00**
Administrative Costs	$0	$31,352	-$31,352	0.00
Grand Total	**$204,089**	**$150,911**	**$53,179**	**1.35**

2023 Multifamily Direct Installation Societal Test

All values are discounted to 2021

	Societal Benefits	Societal Costs	Societal Net Benefits	Societal B/C Ratio
Lighting	**$148,295**	**$32,546**	**$115,748**	**4.56**
LED Bulb	$113,491	$11,086	$102,405	10.24
LED Fixture - Non-Linear	$5,637	$4,445	$1,192	1.27
LI LED Torchiere	$29,166	$17,015	$12,151	1.71
Appliances	**$62,019**	**$45,893**	**$16,126**	**1.35**
LI Refrigerator Replacement	$42,138	$41,323	$815	1.02
Refrigerator Turn-In	$19,881	$4,570	$15,311	4.35
Water Heating	**$43,068**	**$5,817**	**$37,251**	**7.40**
Aerator	$13,577	$2,250	$11,327	6.04
Showerhead	$24,070	$2,338	$21,732	10.30
Shower Timer	$2,164	$665	$1,499	3.25
Pipe Insulation	$3,258	$565	$2,693	5.77
Plug Load and Kits	**$7,988**	**$6,721**	**$1,267**	**1.19**
Refrigerator Thermometer	$3,215	$1,658	$1,557	1.94
Power Strip - Tier 1	$4,773	$5,063	-$290	0.94
Common Area Direct Install	**$72,832**	**$133,273**	**-$60,441**	**0.55**
MF-CA - LED Bulb	$31,528	$730	$30,798	43.17
MF-CA - LED Fixture - Linear	$29,109	$130,503	-$101,395	0.22
MF-CA - LED Fixture - Non-Linear	$6,492	$1,212	$5,280	5.36
MF-CA - LED Exit Sign	$5,029	$441	$4,588	11.40
MF-CA - Vending Miser	$674	$387	$288	1.74
Administrative Costs	**$0**	**$31,352**	**-$31,352**	**0.00**
Administrative Costs	$0	$31,352	-$31,352	0.00
Grand Total	**$334,202**	**$255,602**	**$78,599**	**1.31**

2023 Multifamily Direct Installation Participant Test

All values are discounted to 2021

	Participant Benefits	Participant Costs	Participant Net Benefits	Participant B/C Ratio
Lighting	**$338,405**	**$32,546**	**$305,858**	**10.40**
LED Bulb	$240,758	$11,086	$229,672	21.72
LED Fixture - Non-Linear	$14,634	$4,445	$10,189	3.29
LI LED Torchiere	$83,013	$17,015	$65,997	4.88
Appliances	**$172,035**	**$45,893**	**$126,142**	**3.75**
LI Refrigerator Replacement	$113,175	$41,323	$71,852	2.74
Refrigerator Turn-In	$58,860	$4,570	$54,290	12.88
Water Heating	**$127,755**	**$5,817**	**$121,938**	**21.96**
Aerator	$40,700	$2,250	$38,450	18.09
Showerhead	$70,505	$2,338	$68,167	30.16
Shower Timer	$6,832	$665	$6,167	10.27
Pipe Insulation	$9,719	$565	$9,154	17.21
Plug Load and Kits	**$29,686**	**$6,721**	**$22,965**	**4.42**
Refrigerator Thermometer	$10,456	$1,658	$8,798	6.31
Power Strip - Tier 1	$19,230	$5,063	$14,167	3.80
Common Area Direct Install	**$208,862**	**$133,273**	**$75,589**	**1.57**
MF-CA - LED Bulb	$79,858	$730	$79,127	109.35
MF-CA - LED Fixture - Linear	$94,393	$130,503	-$36,110	0.72
MF-CA - LED Fixture - Non-Linear	$17,837	$1,212	$16,625	14.72
MF-CA - LED Exit Sign	$14,366	$441	$13,925	32.57
MF-CA - Vending Miser	$2,408	$387	$2,021	6.23
Administrative Costs	**$0**	**$0**	**$0**	**0.00**
Administrative Costs	$0	$0	$0	0.00
Grand Total	**$876,743**	**$224,251**	**$652,493**	**3.91**

2023 Multifamily Direct Installation Ratepayer Impact Test

All values are discounted to 2021

	Ratepayer Benefits	Ratepayer Costs	Ratepayer Net Benefits	Ratepayer B/C Ratio
Lighting	**$71,420**	**$227,625**	**-$156,205**	**0.31**
LED Bulb	$52,662	$155,507	-$102,845	0.34
LED Fixture - Non-Linear	$2,063	$9,924	-$7,861	0.21
LI LED Torchiere	$16,695	$62,194	-$45,499	0.27
Appliances	**$30,172**	**$130,441**	**-$100,269**	**0.23**
LI Refrigerator Replacement	$13,299	$78,091	-$64,792	0.17
Refrigerator Turn-In	$16,873	$52,351	-$35,477	0.32
Water Heating	**$35,795**	**$111,243**	**-$75,448**	**0.32**
Aerator	$11,271	$35,399	-$24,128	0.32
Showerhead	$19,982	$61,181	-$41,199	0.33
Shower Timer	$1,918	$6,460	-$4,542	0.30
Pipe Insulation	$2,624	$8,203	-$5,579	0.32
Plug Load and Kits	**$6,923**	**$27,297**	**-$20,374**	**0.25**
Refrigerator Thermometer	$2,846	$9,801	-$6,955	0.29
Power Strip - Tier 1	$4,077	$17,496	-$13,419	0.23
Common Area Direct Install	**$50,629**	**$167,292**	**-$116,663**	**0.30**
MF-CA - LED Bulb	$21,659	$60,362	-$38,703	0.36
MF-CA - LED Fixture - Linear	$19,836	$78,469	-$58,633	0.25
MF-CA - LED Fixture - Non-Linear	$4,880	$14,800	-$9,920	0.33
MF-CA - LED Exit Sign	$3,668	$11,445	-$7,777	0.32
MF-CA - Vending Miser	$586	$2,216	-$1,630	0.26
Administrative Costs	**$0**	**$29,946**	**-$29,946**	**0.00**
Administrative Costs	$0	$29,946	-$29,946	0.00
Grand Total	**$194,939**	**$693,844**	**-$498,905**	**0.28**

2023 Custom Multifamily Efficiency Annual Energy Savings

All values are discounted to 2021

	kWh - Meter	kW - Meter	kWh - Generator	kW - Generator
Lighting	**1,340,209**	**243.4**	**1,464,539**	**266.0**
Lighting - Interior	1,212,656	243.4	1,325,153	266.0
Lighting - Exterior	125,532	0.0	137,177	0.0
Lighting Controls	2,021	0.0	2,208	0.0
Motors and Drives	**106,522**	**27.9**	**116,404**	**30.5**
Standard to Eff Motor	45,579	27.8	49,807	30.4
Standard to VSD Motor	18,202	0.0	19,891	0.0
Motor Controls	42,741	0.1	46,706	0.1
HVAC	**211,353**	**32.5**	**230,960**	**35.5**
AC Improvements	30,257	26.8	33,064	29.3
Heat Pump - Cooling and Heating	57,297	5.7	62,612	6.2
HVAC and EMS Controls	123,799	0.0	135,284	0.0
Miscellaneous	**359,023**	**44.6**	**392,329**	**48.7**
Appliances	108,815	44.2	118,910	48.3
Shell Measures	249,962	0.0	273,151	0.0
IT Equipment	246	0.4	269	0.4
Administrative Costs	**0**	**0.0**	**0**	**0.0**
Admin Costs	0	0.0	0	0.0
Grand Total	**2,017,107**	**348.4**	**2,204,232**	**380.8**

2023 Custom Multifamily Efficiency Annual Participation

All values are discounted to 2021

	Participants
Lighting	**53**
Lighting - Interior	35
Lighting - Exterior	15
Lighting Controls	3
Motors and Drives	**15**
Standard to Eff Motor	9
Standard to VSD Motor	3
Motor Controls	3
HVAC	**13**
AC Improvements	9
Heat Pump - Cooling and Heating	2
HVAC and EMS Controls	2
Miscellaneous	**23**
Appliances	16
Shell Measures	6
IT Equipment	1
Administrative Costs	**0**
Admin Costs	0
Grand Total	**104**

2023 Custom Multifamily Efficiency Utility Test

All values are discounted to 2021

	Utility Benefits	Utility Costs	Utility Net Benefits	Utility B/C Ratio
Lighting	**$731,236**	**$79,577**	**$651,659**	**9.19**
Lighting - Interior	$678,749	$73,476	$605,273	9.24
Lighting - Exterior	$51,839	$5,998	$45,841	8.64
Lighting Controls	$647	$102	$545	6.34
Motors and Drives	**$72,078**	**$9,948**	**$62,130**	**7.25**
Standard to Eff Motor	$48,565	$7,420	$41,144	6.54
Standard to VSD Motor	$7,004	$1,026	$5,979	6.83
Motor Controls	$16,509	$1,502	$15,007	10.99
HVAC	**$118,456**	**$50,622**	**$67,835**	**2.34**
AC Improvements	$28,295	$6,289	$22,006	4.50
Heat Pump - Cooling and Heating	$33,129	$40,000	-$6,871	0.83
HVAC and EMS Controls	$57,032	$4,333	$52,699	13.16
Miscellaneous	**$199,085**	**$23,391**	**$175,694**	**8.51**
Appliances	$95,240	$14,572	$80,668	6.54
Shell Measures	$103,483	$8,749	$94,734	11.83
IT Equipment	$362	$70	$292	5.18
Administrative Costs	**$0**	**$15,029**	**-$15,029**	**0.00**
Admin Costs	$0	$15,029	-$15,029	0.00
Grand Total	**$1,120,855**	**$178,566**	**$942,289**	**6.28**

2023 Custom Multifamily Efficiency Societal Test

All values are discounted to 2021

	Societal Benefits	Societal Costs	Societal Net Benefits	Societal B/C Ratio
Lighting	**$882,387**	**$497,911**	**$373,764**	**1.77**
Lighting - Interior	$820,408	$437,204	$375,305	1.88
Lighting - Exterior	$61,209	$60,220	-$1,801	1.02
Lighting Controls	$771	$487	$261	1.58
Motors and Drives	**$86,559**	**$124,130**	**-$43,397**	**0.70**
Standard to Eff Motor	$57,732	$29,791	$26,543	1.94
Standard to VSD Motor	$8,588	$9,340	-$1,190	0.92
Motor Controls	$20,239	$84,999	-$68,749	0.24
HVAC	**$146,917**	**$62,159**	**$83,755**	**2.36**
AC Improvements	$33,751	$17,394	$15,561	1.94
Heat Pump - Cooling and Heating	$41,274	$38,100	$2,999	1.08
HVAC and EMS Controls	$71,892	$6,665	$65,195	10.79
Miscellaneous	**$240,537**	**$458,357**	**-$236,546**	**0.52**
Appliances	$113,656	$94,576	$17,430	1.20
Shell Measures	$126,476	$363,505	-$254,090	0.35
IT Equipment	$405	$277	$115	1.46
Administrative Costs	**$0**	**$15,029**	**-$15,029**	**0.00**
Admin Costs	$0	$15,029	-$15,029	0.00
Grand Total	**$1,356,401**	**$1,157,585**	**$162,549**	**1.17**

2023 Custom Multifamily Efficiency Participant Test

All values are discounted to 2021

	Participant Benefits	Participant Costs	Participant Net Benefits	Participant B/C Ratio
Lighting	**$1,795,267**	**$497,911**	**$1,297,356**	**3.61**
Lighting - Interior	$1,653,285	$437,204	$1,216,081	3.78
Lighting - Exterior	$140,023	$60,220	$79,803	2.33
Lighting Controls	$1,959	$487	$1,472	4.02
Motors and Drives	**$143,554**	**$124,130**	**$19,424**	**1.16**
Standard to Eff Motor	$60,853	$29,791	$31,062	2.04
Standard to VSD Motor	$25,220	$9,340	$15,879	2.70
Motor Controls	$57,482	$84,999	-$27,517	0.68
HVAC	**$470,225**	**$62,159**	**$408,066**	**7.56**
AC Improvements	$41,214	$17,394	$23,820	2.37
Heat Pump - Cooling and Heating	$158,362	$38,100	$120,262	4.16
HVAC and EMS Controls	$270,649	$6,665	$263,985	40.61
Miscellaneous	**$539,738**	**$458,357**	**$81,381**	**1.18**
Appliances	$189,311	$94,576	$94,735	2.00
Shell Measures	$350,115	$363,505	-$13,390	0.96
IT Equipment	$313	$277	$36	1.13
Administrative Costs	**$0**	**$0**	**$0**	**0.00**
Admin Costs	$0	$0	$0	0.00
Grand Total	**$2,948,784**	**$1,142,557**	**$1,806,227**	**2.58**

2023 Custom Multifamily Efficiency Ratepayer Impact Test

All values are discounted to 2021

	Ratepayer Benefits	Ratepayer Costs	Ratepayer Net Benefits	Ratepayer B/C Ratio
Lighting	**$698,453**	**$1,662,857**	**-$964,405**	**0.42**
Lighting - Interior	$648,319	$1,522,189	-$873,870	0.43
Lighting - Exterior	$49,515	$138,709	-$89,194	0.36
Lighting Controls	$618	$1,959	-$1,341	0.32
Motors and Drives	**$68,847**	**$143,554**	**-$74,707**	**0.48**
Standard to Eff Motor	$46,387	$60,853	-$14,465	0.76
Standard to VSD Motor	$6,690	$25,220	-$18,529	0.27
Motor Controls	$15,769	$57,482	-$41,713	0.27
HVAC	**$113,146**	**$392,084**	**-$278,939**	**0.29**
AC Improvements	$27,026	$41,034	-$14,008	0.66
Heat Pump - Cooling and Heating	$31,644	$134,503	-$102,859	0.24
HVAC and EMS Controls	$54,475	$216,547	-$162,072	0.25
Miscellaneous	**$190,159**	**$521,662**	**-$331,503**	**0.36**
Appliances	$90,970	$171,235	-$80,265	0.53
Shell Measures	$98,843	$350,115	-$251,272	0.28
IT Equipment	$346	$313	$33	1.11
Administrative Costs	**$0**	**$14,355**	**-$14,355**	**0.00**
Admin Costs	$0	$14,355	-$14,355	0.00
Grand Total	**$1,070,604**	**$2,734,512**	**-$1,663,908**	**0.39**

2023 Prescriptive Business Efficiency Annual Energy Savings

All values are discounted to 2021

	kWh - Meter	kW - Meter	kWh - Generator	kW - Generator
Lighting	**874,159**	**123.3**	**955,254**	**134.7**
LED Bulb	361,938	56.6	395,515	61.9
LED Tube	333,847	65.0	364,818	71.1
LED Fixture - Linear	114,207	0.0	124,802	0.0
LED Fixture - Non-Linear	46,129	0.0	50,408	0.0
LED Exit Sign	18,038	1.6	19,711	1.8
Refrigeration	**3,006**	**0.2**	**3,285**	**0.2**
Freezer	1,166	0.1	1,274	0.1
Refrigerator	1,840	0.1	2,011	0.1
HVAC	**92,761**	**17.0**	**101,366**	**18.6**
ASHP - Ducted	10,641	5.9	11,628	6.4
ASHP - Ductless	82,120	11.2	89,738	12.2
Administrative Costs	**0**	**0.0**	**0**	**0.0**
Admin Costs	0	0.0	0	0.0
Grand Total	**969,926**	**140.5**	**1,059,905**	**153.6**

2023 Prescriptive Business Efficiency Annual Participatio

All values are discounted to 2021

	Participants
Lighting	**7,065**
LED Bulb	2,022
LED Tube	3,995
LED Fixture - Linear	771
LED Fixture - Non-Linear	219
LED Exit Sign	58
Refrigeration	**7**
Freezer	1
Refrigerator	6
HVAC	**25**
ASHP - Ducted	6
ASHP - Ductless	19
Administrative Costs	**0**
Admin Costs	0
Grand Total	**7,097**

2023 Prescriptive Business Efficiency Utility Test

All values are discounted to 2021

	Utility Benefits	Utility Costs	Utility Net Benefits	Utility B/C Ratio
Lighting	**$393,740**	**$21,881**	**$371,859**	**17.99**
LED Bulb	$163,143	$4,008	$159,135	40.70
LED Tube	$171,046	$7,990	$163,056	21.41
LED Fixture - Linear	$37,304	$7,847	$29,457	4.75
LED Fixture - Non-Linear	$15,067	$1,456	$13,611	10.35
LED Exit Sign	$7,180	$580	$6,600	12.38
Refrigeration	**$1,380**	**$340**	**$1,040**	**4.06**
Freezer	$570	$75	$495	7.60
Refrigerator	$810	$265	$545	3.06
HVAC	**$54,241**	**$19,600**	**$34,641**	**2.77**
ASHP - Ducted	$10,665	$5,000	$5,665	2.13
ASHP - Ductless	$43,576	$14,600	$28,976	2.98
Administrative Costs	**$0**	**$9,354**	**-$9,354**	**0.00**
Admin Costs	$0	$9,354	-$9,354	0.00
Grand Total	**$449,361**	**$51,175**	**$398,185**	**8.78**

2023 Prescriptive Business Efficiency Societal Test

All values are discounted to 2021

	Societal Benefits	Societal Costs	Societal Net Benefits	Societal B/C Ratio
Lighting	**$462,005**	**$161,909**	**$300,096**	**2.85**
LED Bulb	$191,422	$16,176	$175,246	11.83
LED Tube	$199,807	$15,980	$183,827	12.50
LED Fixture - Linear	$44,383	$107,693	-$63,310	0.41
LED Fixture - Non-Linear	$17,927	$17,884	$43	1.00
LED Exit Sign	$8,466	$4,176	$4,290	2.03
Refrigeration	**$1,679**	**$540**	**$1,139**	**3.11**
Freezer	$691	$100	$591	6.91
Refrigerator	$987	$440	$547	2.24
HVAC	**$65,429**	**$54,900**	**$10,529**	**1.19**
ASHP - Ducted	$12,693	$7,400	$5,293	1.72
ASHP - Ductless	$52,736	$47,500	$5,236	1.11
Administrative Costs	**$0**	**$9,354**	**-$9,354**	**0.00**
Admin Costs	$0	$9,354	-$9,354	0.00
Grand Total	**$529,112**	**$226,703**	**$302,409**	**2.33**

2023 Prescriptive Business Efficiency Participant Test

All values are discounted to 2021

	Participant Benefits	Participant Costs	Participant Net Benefits	Participant B/C Ratio
Lighting	**$1,089,967**	**$161,909**	**$928,058**	**6.73**
LED Bulb	$446,240	$16,176	$430,064	27.59
LED Tube	$415,899	$15,980	$399,919	26.03
LED Fixture - Linear	$147,390	$107,693	$39,697	1.37
LED Fixture - Non-Linear	$57,818	$17,884	$39,935	3.23
LED Exit Sign	$22,620	$4,176	$18,444	5.42
Refrigeration	**$4,755**	**$540**	**$4,215**	**8.80**
Freezer	$1,787	$100	$1,687	17.87
Refrigerator	$2,967	$440	$2,527	6.74
HVAC	**$155,831**	**$54,900**	**$100,931**	**2.84**
ASHP - Ducted	$20,628	$7,400	$13,228	2.79
ASHP - Ductless	$135,203	$47,500	$87,703	2.85
Administrative Costs	**$0**	**$0**	**$0**	**0.00**
Admin Costs	$0	$0	$0	0.00
Grand Total	**$1,250,553**	**$217,349**	**$1,033,204**	**5.75**

2023 Prescriptive Business Efficiency Ratepayer Impact Test

All values are discounted to 2021

	Ratepayer Benefits	Ratepayer Costs	Ratepayer Net Benefits	Ratepayer B/C Ratio
Lighting	**$376,088**	**$1,041,101**	**-$665,013**	**0.36**
LED Bulb	$155,829	$426,234	-$270,405	0.37
LED Tube	$163,377	$397,253	-$233,876	0.41
LED Fixture - Linear	$35,632	$140,782	-$105,150	0.25
LED Fixture - Non-Linear	$14,392	$55,226	-$40,834	0.26
LED Exit Sign	$6,858	$21,606	-$14,747	0.32
Refrigeration	**$1,318**	**$4,542**	**-$3,224**	**0.29**
Freezer	$544	$1,707	-$1,163	0.32
Refrigerator	$774	$2,834	-$2,061	0.27
HVAC	**$51,809**	**$148,845**	**-$97,036**	**0.35**
ASHP - Ducted	$10,187	$19,703	-$9,516	0.52
ASHP - Ductless	$41,622	$129,142	-$87,520	0.32
Administrative Costs	**$0**	**$8,935**	**-$8,935**	**0.00**
Admin Costs	$0	$8,935	-$8,935	0.00
Grand Total	**$429,215**	**$1,203,422**	**-$774,208**	**0.36**

2023 Custom Business Efficiency Annual Energy Savings

All values are discounted to 2021

	kWh - Meter	kW - Meter	kWh - Generator	kW - Generator
Lighting	**16,414,395**	**2,280.5**	**17,937,142**	**2,492.0**
Lighting - Interior	13,244,719	2,280.5	14,473,418	2,492.0
Lighting - Exterior	3,017,998	0.0	3,297,975	0.0
Lighting Controls	151,678	0.0	165,749	0.0
Refrigeration	**2,217,050**	**340.3**	**2,422,724**	**371.8**
Refrigeration Improvement	302,530	73.5	330,595	80.3
Refrigeration Controls	1,914,520	266.8	2,092,128	291.5
Motors and Drives	**15,284,572**	**169.9**	**16,702,506**	**185.6**
Standard to Eff Motor	1,003,974	119.3	1,097,112	130.4
Standard to VSD Motor	13,825,230	21.9	15,107,783	23.9
Motor Controls	455,368	28.7	497,612	31.3
HVAC	**3,093,020**	**692.7**	**3,379,956**	**757.0**
AC Improvements	1,497,585	564.3	1,636,514	616.7
Heat Pump - Cooling and Heating	1,302,183	128.4	1,422,985	140.3
HVAC and EMS Controls	293,252	0.0	320,457	0.0
Miscellaneous	**10,539,381**	**644.3**	**11,517,109**	**704.0**
Compressed Air Upgrades	1,439,857	146.0	1,573,431	159.6
Process Improvements	6,488,252	241.7	7,090,161	264.1
Appliances	823,979	147.5	900,419	161.1
Shell Measures	147,973	0.0	161,700	0.0
Heat Recovery	354,586	0.0	387,481	0.0
Miscellaneous Controls	156,206	33.8	170,697	36.9
IT Equipment	221,929	56.1	242,517	61.3
Transformers	290,487	19.3	317,435	21.1
Comissioning	616,112	0.0	673,268	0.0
Administrative Costs	**0**	**0.0**	**0**	**0.0**
Admin Costs	0	0.0	0	0.0
Minnesota Power Projects	**36,677**	**3.8**	**40,079**	**4.1**
Lighting - Interior	25,459	3.8	27,821	4.1
Lighting - Exterior	11,218	0.0	12,259	0.0
Grand Total	**47,585,095**	**4,131.4**	**51,999,517**	**4,514.7**

2023 Custom Business Efficiency Annual Participation

All values are discounted to 2021

	Participants
Lighting	**528**
Lighting - Interior	331
Lighting - Exterior	167
Lighting Controls	30
Refrigeration	**34**
Refrigeration Improvement	23
Refrigeration Controls	11
Motors and Drives	**139**
Standard to Eff Motor	37
Standard to VSD Motor	71
Motor Controls	31
HVAC	**115**
AC Improvements	61
Heat Pump - Cooling and Heating	34
HVAC and EMS Controls	20
Miscellaneous	**201**
Compressed Air Upgrades	19
Process Improvements	29
Appliances	84
Shell Measures	7
Heat Recovery	6
Miscellaneous Controls	6
IT Equipment	24
Transformers	8
Comissioning	18
Administrative Costs	**0**
Admin Costs	0
Minnesota Power Projects	**2**
Lighting - Interior	1
Lighting - Exterior	1
Grand Total	**1,019**

2023 Custom Business Efficiency Utility Test

All values are discounted to 2021

	Utility Benefits	Utility Costs	Utility Net Benefits	Utility B/C Ratio
Lighting	**$7,885,836**	**$1,001,340**	**$6,884,495**	**7.88**
Lighting - Interior	$6,358,467	$841,521	$5,516,946	7.56
Lighting - Exterior	$1,478,619	$151,000	$1,327,620	9.79
Lighting Controls	$48,749	$8,820	$39,930	5.53
Refrigeration	**$1,205,473**	**$83,982**	**$1,121,491**	**14.35**
Refrigeration Improvement	$192,581	$13,144	$179,437	14.65
Refrigeration Controls	$1,012,892	$70,838	$942,054	14.30
Motors and Drives	**$6,075,444**	**$562,361**	**$5,513,083**	**10.80**
Standard to Eff Motor	$519,423	$38,748	$480,676	13.41
Standard to VSD Motor	$5,348,779	$504,435	$4,844,344	10.60
Motor Controls	$207,242	$19,179	$188,063	10.81
HVAC	**$1,736,899**	**$410,674**	**$1,326,225**	**4.23**
AC Improvements	$936,341	$162,406	$773,935	5.77
Heat Pump - Cooling and Heating	$679,154	$237,707	$441,447	2.86
HVAC and EMS Controls	$121,404	$10,561	$110,843	11.50
Miscellaneous	**$3,886,469**	**$515,895**	**$3,370,574**	**7.53**
Compressed Air Upgrades	$719,756	$42,365	$677,392	16.99
Process Improvements	$1,954,078	$272,653	$1,681,425	7.17
Appliances	$493,392	$44,740	$448,653	11.03
Shell Measures	$61,260	$5,468	$55,791	11.20
Heat Recovery	$136,451	$12,590	$123,861	10.84
Miscellaneous Controls	$102,322	$9,335	$92,987	10.96
IT Equipment	$107,246	$13,625	$93,620	7.87
Transformers	$133,334	$10,381	$122,954	12.84
Comissioning	$178,630	$104,739	$73,891	1.71
Administrative Costs	**$0**	**$1,905,062**	**-$1,905,062**	**0.00**
Admin Costs	$0	$1,905,062	-$1,905,062	0.00
Minnesota Power Projects	**$15,842**	**$2,077**	**$13,765**	**7.63**
Lighting - Interior	$11,321	$1,564	$9,756	7.24
Lighting - Exterior	$4,521	$512	$4,009	8.83
Grand Total	**$20,805,963**	**$4,481,392**	**$16,324,571**	**4.64**

2023 Custom Business Efficiency Societal Test

All values are discounted to 2021

	Societal Benefits	Societal Costs	Societal Net Benefits	Societal B/C Ratio
Lighting	**$9,231,373**	**$5,886,232**	**$3,345,141**	**1.57**
Lighting - Interior	$7,443,754	$4,631,086	$2,812,668	1.61
Lighting - Exterior	$1,729,574	$1,190,276	$539,298	1.45
Lighting Controls	$58,045	$64,870	-$6,825	0.89
Refrigeration	**$1,457,474**	**$425,814**	**$1,031,660**	**3.42**
Refrigeration Improvement	$231,676	$172,060	$59,616	1.35
Refrigeration Controls	$1,225,798	$253,755	$972,044	4.83
Motors and Drives	**$7,438,145**	**$3,246,809**	**$4,191,336**	**2.29**
Standard to Eff Motor	$629,106	$707,541	-$78,436	0.89
Standard to VSD Motor	$6,556,802	$2,249,428	$4,307,373	2.91
Motor Controls	$252,238	$289,839	-$37,601	0.87
HVAC	**$2,097,878**	**$1,602,468**	**$495,410**	**1.31**
AC Improvements	$1,127,075	$701,493	$425,581	1.61
Heat Pump - Cooling and Heating	$822,423	$802,829	$19,593	1.02
HVAC and EMS Controls	$148,380	$98,145	$50,236	1.51
Miscellaneous	**$4,595,548**	**$3,150,776**	**$1,444,772**	**1.46**
Compressed Air Upgrades	$872,838	$242,049	$630,789	3.61
Process Improvements	$2,270,363	$1,621,143	$649,220	1.40
Appliances	$594,655	$333,118	$261,537	1.79
Shell Measures	$74,872	$106,391	-$31,519	0.70
Heat Recovery	$167,311	$107,477	$59,834	1.56
Miscellaneous Controls	$122,996	$196,585	-$73,589	0.63
IT Equipment	$122,331	$218,740	-$96,409	0.56
Transformers	$162,228	$222,702	-$60,474	0.73
Comissioning	$207,956	$102,572	$105,383	2.03
Administrative Costs	**$0**	**$1,905,062**	**-$1,905,062**	**0.00**
Admin Costs	$0	$1,905,062	-$1,905,062	0.00
Minnesota Power Projects	**$18,617**	**$10,835**	**$7,782**	**1.72**
Lighting - Interior	$13,290	$7,507	$5,783	1.77
Lighting - Exterior	$5,327	$3,328	$1,999	1.60
Grand Total	**$24,839,034**	**$16,227,995**	**$8,611,039**	**1.53**

2023 Custom Business Efficiency Participant Test

All values are discounted to 2021

	Participant Benefits	Participant Costs	Participant Net Benefits	Participant B/C Ratio
Lighting	**$18,290,244**	**$5,886,232**	**$12,404,013**	**3.11**
Lighting - Interior	$14,582,245	$4,631,086	$9,951,159	3.15
Lighting - Exterior	$3,545,365	$1,190,276	$2,355,089	2.98
Lighting Controls	$162,635	$64,870	$97,764	2.51
Refrigeration	**$2,562,619**	**$425,814**	**$2,136,805**	**6.02**
Refrigeration Improvement	$365,479	$172,060	$193,419	2.12
Refrigeration Controls	$2,197,140	$253,755	$1,943,386	8.66
Motors and Drives	**$18,193,323**	**$3,246,809**	**$14,946,514**	**5.60**
Standard to Eff Motor	$1,292,169	$707,541	$584,628	1.83
Standard to VSD Motor	$16,293,001	$2,249,428	$14,043,573	7.24
Motor Controls	$608,153	$289,839	$318,313	2.10
HVAC	**$4,235,462**	**$1,602,468**	**$2,632,994**	**2.64**
AC Improvements	$1,976,240	$701,493	$1,274,747	2.82
Heat Pump - Cooling and Heating	$1,851,573	$802,829	$1,048,744	2.31
HVAC and EMS Controls	$407,648	$98,145	$309,504	4.15
Miscellaneous	**$10,920,984**	**$3,150,776**	**$7,770,208**	**3.47**
Compressed Air Upgrades	$1,748,399	$242,049	$1,506,350	7.22
Process Improvements	$5,709,798	$1,621,143	$4,088,655	3.52
Appliances	$1,233,830	$333,118	$900,712	3.70
Shell Measures	$197,863	$106,391	$91,472	1.86
Heat Recovery	$504,986	$107,477	$397,509	4.70
Miscellaneous Controls	$202,915	$196,585	$6,330	1.03
IT Equipment	$214,931	$218,740	-$3,809	0.98
Transformers	$359,160	$222,702	$136,458	1.61
Comissioning	$749,103	$102,572	$646,530	7.30
Administrative Costs	**$0**	**$0**	**$0**	**0.00**
Admin Costs	$0	$0	$0	0.00
Minnesota Power Projects	**$46,890**	**$10,835**	**$36,055**	**4.33**
Lighting - Interior	$32,671	$7,507	$25,165	4.35
Lighting - Exterior	$14,219	$3,328	$10,891	4.27
Grand Total	**$54,249,522**	**$14,322,933**	**$39,926,589**	**3.79**

2023 Custom Business Efficiency Ratepayer Impact Test

All values are discounted to 2021

	Ratepayer Benefits	Ratepayer Costs	Ratepayer Net Benefits	Ratepayer B/C Ratio
Lighting	**$7,532,293**	**$17,470,244**	**-$9,937,951**	**0.43**
Lighting - Interior	$6,073,400	$13,928,484	-$7,855,084	0.44
Lighting - Exterior	$1,412,329	$3,386,417	-$1,974,088	0.42
Lighting Controls	$46,564	$155,343	-$108,780	0.30
Refrigeration	**$1,151,429**	**$2,447,730**	**-$1,296,301**	**0.47**
Refrigeration Improvement	$183,947	$349,093	-$165,146	0.53
Refrigeration Controls	$967,481	$2,098,637	-$1,131,155	0.46
Motors and Drives	**$5,803,066**	**$17,377,668**	**-$11,574,602**	**0.33**
Standard to Eff Motor	$496,136	$1,234,238	-$738,102	0.40
Standard to VSD Motor	$5,108,979	$15,562,542	-$10,453,563	0.33
Motor Controls	$197,951	$580,887	-$382,937	0.34
HVAC	**$1,659,029**	**$4,045,575**	**-$2,386,546**	**0.41**
AC Improvements	$894,362	$1,887,640	-$993,278	0.47
Heat Pump - Cooling and Heating	$648,705	$1,768,562	-$1,119,857	0.37
HVAC and EMS Controls	$115,962	$389,372	-$273,411	0.30
Miscellaneous	**$3,712,229**	**$10,431,367**	**-$6,719,138**	**0.36**
Compressed Air Upgrades	$687,488	$1,670,013	-$982,525	0.41
Process Improvements	$1,866,471	$5,453,812	-$3,587,341	0.34
Appliances	$471,272	$1,178,514	-$707,242	0.40
Shell Measures	$58,513	$188,992	-$130,479	0.31
Heat Recovery	$130,333	$482,346	-$352,013	0.27
Miscellaneous Controls	$97,735	$193,818	-$96,083	0.50
IT Equipment	$102,437	$205,295	-$102,857	0.50
Transformers	$127,357	$343,058	-$215,701	0.37
Comissioning	$170,621	$715,518	-$544,897	0.24
Administrative Costs	**$0**	**$1,819,653**	**-$1,819,653**	**0.00**
Admin Costs	$0	$1,819,653	-$1,819,653	0.00
Minnesota Power Projects	**$15,131**	**$44,788**	**-$29,657**	**0.34**
Lighting - Interior	$10,813	$31,207	-$20,394	0.35
Lighting - Exterior	$4,318	$13,581	-$9,263	0.32
Grand Total	**$19,873,176**	**$53,637,025**	**-$33,763,848**	**0.37**

Investor Owned Electric Utility 2021-23 CIP Report
Overview

GENERAL UTILITY INFORMATION

2021-23
Electric

1. Utility Information	
Utility Name	Minnesota Power
Street Address	30 W Superior Street
Street Address	
City	Duluth
State	MN
Zip Code	55802

2. Contact Information	
Contact Name	Leah Peterson
Contact Title	Supervisor - Customer Business Analytics
Telephone	(218) 310-3713
Fax	(218) 723-3984
Email Address	lpeterson@mnpower.com

3. Utility Type

Indicate utility type by entering an "X" below.

Municipal	
Cooperative	
Investor Owned	X

4. Data Type

Indicate data type by entering an "X" below.

Public Information	X
Trade secret	

5. Customer Profile (Reference year 2019)

Category	# of Customers	kWh Sales
Residential	122,926	1,042,353,000
Commercial	23,059	1,202,403,000
Industrial	379	6,709,265,000
Farm	incl above	incl above
Other	976	59,436,000
Total	147,340	9,013,457,000

6. 2019 Adjusted Gross Operating Revenue (GOR)	
Gross Operating Revenue 2019	$647,686,951
Less Exempt Facility Revenue 2019	($391,315,155)
Adjusted GOR 2019	$256,371,796

CIP SPENDING REPORT

7. Annual CIP Minimum Spending Requirement	
2021	$3,846,000
2022	$3,846,000
2023	$3,846,000

8. 2021 CIP Actual	
Annual Total Expenditures	$9,331,962
Annual Energy Savings - (Gen kWh)	74,539,041
Annual Demand Savings - (Gen kW)	6,830.9

9. 2021 CIP Plan	
Annual Total Expenditures	$10,506,025
Annual Energy Savings - (Gen kWh)	65,932,815
Annual Demand Savings - (Gen kW)	9,889.4

10. 2022 CIP Actual	
Annual Total Expenditures	$9,635,730
Annual Energy Savings - (Gen kWh)	76,400,068
Annual Demand Savings - (Gen kW)	8,195.2

11. 2022 CIP Plan	
Annual Total Expenditures	$10,736,401
Annual Energy Savings - (Gen kWh)	66,278,387
Annual Demand Savings - (Gen kW)	10,023.0

12. 2023 CIP Actual	
Annual Total Expenditures	$9,745,568
Annual Energy Savings - (Gen kWh)	73,589,465
Annual Demand Savings - (Gen kW)	7,071.7

13. 2023 CIP Plan	
Annual Total Expenditures	$10,917,971
Annual Energy Savings - (Gen kWh)	66,926,284
Annual Demand Savings - (Gen kW)	10,095.6

12. # of Projects	11	Status (indicate with "X" below)	
	Project Name	New	Existing
1	Home Efficiency		X
2	Energy Partners		X
3	Multifamily Direct Install		X
4	Custom Multifamily Efficiency		X
5	Prescriptive Business Efficiency		X
6	Custom Business Efficiency		X
7	Customer Engagement		X
8	Energy Analysis		X
9	Evaluation and Planning		X
10	Research and Development		X
11	Regulatory Charges		X

Electric Conservation Project Information Sheet

2021/2022/2023

Utility Name: Minnesota Power
Project Name: Home Efficiency
Project Description: This Project provides a comprehensive package of products, technologies and services to residential customers.

Type Conservation
Status: Existing

	2021 Proposed	2021 Approved	2021 Actual	2022 Proposed	2022 Approved	2022 Actual	2023 Proposed	2023 Approved	2023 Actual
Project Type -- Enter "X"									
Indirect (No kWh or kW Savings)									
Audit/Info									
Education									
Classroom Training/Instructional									
R&D									
Renewable									
Other									
Direct (kWh or kW Savings)	X	X	X	X	X	X	X	X	X
Cost Components -- Enter Dollars									
Project Delivery	$ 1,045,400	$ 1,045,400	$ 969,483	$ 1,051,205	$ 1,051,205	$ 842,694	$ 1,032,010	$ 1,032,010	$ 851,693
Utility Administration	$ 64,500	$ 64,500	$ 31,181	$ 66,435	$ 66,435	$ 30,055	$ 68,428	$ 68,428	$ 41,791
Evaluation Labor									
Advertising & Promotion	$ 50,000	$ 50,000	$ 67,238	$ 50,000	$ 50,000	$ 39,151	$ 50,000	$ 50,000	$ 61,674
Participant Incentives	$ 817,758	$ 817,758	$ 1,256,129	$ 817,758	$ 817,758	$ 1,142,743	$ 817,758	$ 817,758	$ 1,300,276
R&D									
Other									
Total Costs	$1,977,658	$1,977,658	$2,324,030	$1,985,398	$1,985,398	$2,054,644	$1,968,196	$1,968,196	$2,255,434
Project Participants									
Total Participants (Measures)	220,559	220,559	229,345	225,559	225,559	309,430	230,559	230,559	356,542
% of Spending by Customer Segment									
Residential	100%	100%	100%	100%	100%	100%	100%	100%	100%
Commercial									
Industrial									
Farm									
Other									
Total % of Spending (must equal 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low-Income & Renter Participation									
Participants % (% of Row 32)			6%			5%			6%
Budget % (% of Row 27)			4%			4%			5%
End-Use Target -- Enter "X" or %									
Building Efficiency	X	X	X	X	X	X	X	X	X
Compressed Air									
Energy Star Appliances	X	X	X	X	X	X	X	X	X
Lighting	X	X	X	X	X	X	X	X	X
Motors (including ASD, Fans, Pumps)	X	X	X	X	X	X	X	X	X
Manufacturing Process									
Refrigeration	X	X	X	X	X	X	X	X	X
Space Cooling	X	X	X	X	X	X	X	X	X
Space Heating	X	X	X	X	X	X	X	X	X
Water Heating	X	X	X	X	X	X	X	X	X
Weatherization	X	X	X	X	X	X	X	X	X
General/Other	X	X	X	X	X	X	X	X	X
Energy and Demand Savings - Generator									
Average Annual kWh Savings per Participant	52	52	64	53	53	49	53	53	47
Annual kWh Saved - Generator	11,537,553	11,537,553	14,728,390	11,847,171	11,847,171	15,214,197	12,156,789	12,156,789	16,586,289
Cost per Annual kWh Saved	$0.1714	$0.1714	$0.1578	$0.1676	$0.1676	$0.1350	$0.1619	$0.1619	$0.1360
Measure Lifetime (Years)									
Lifetime kWh savings	0	0	0	0	0	0	0	0	0
Cost per kWh Lifetime	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Average kW Savings per Participant	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Annual kW Savings - Generator	1,274	1,274	1,741	1,309	1,309	1,735	1,345	1,345	1,800
Cost per KW Saved	$1,552.3909	$1,552.3909	$1,334.6033	$1,516.4226	$1,516.4226	$1,184.0514	$1,463.7940	$1,463.7940	$1,252.9328
Cost/Benefit Results	3 Years	3 Years	1 Year	3 Years	3 Years	1 Year	3 Years	3 Years	1 Year
Societal									
Net present value	20,260,499	20,260,499	6,660,421	20,260,499	20,260,499	8,893,152	20,260,499	20,260,499	10,656,561
B/C ratio	2.95	2.95	2.38	2.95	2.95	2.99	2.95	2.95	3.12
Participant									
Net present value	60,825,434	60,825,434	23,277,310	60,825,434	60,825,434	25,850,440	60,825,434	60,825,434	29,596,892
B/C ratio	9.49	9.49	7.18	9.49	9.49	8.25	9.49	9.49	8.28
Rate Payer									
Net present value	-32,865,016	-32,865,016	-14,659,310	-32,865,016	-32,865,016	-14,484,988	-32,865,016	-32,865,016	-15,687,653
B/C ratio	0.31	0.31	0.31	0.31	0.31	0.32	0.31	0.31	0.34
Utility									
Net present value	9,109,796	9,109,796	4,251,862	9,109,796	9,109,796	5,009,359	9,109,796	9,109,796	6,043,887
B/C ratio	2.62	2.62	2.83	2.62	2.62	3.44	2.62	2.62	3.68

Electric Conservation Project Information Sheet

2021/2022/2023

Utility Name: Minnesota Power
Project Name: Energy Partners
Project Description: This Project provides the products and services that have the greatest impact on saving energy to income-qualified customers.

Type Conservation
Status: Existing

	2021 Proposed	2021 Approved	2021 Actual	2022 Proposed	2022 Approved	2022 Actual	2023 Proposed	2023 Approved	2023 Actual
Project Type -- Enter "X"									
Indirect (No kWh or kW Savings)									
Audit/Info									
Education									
Classroom Training/Instructional									
R&D									
Renewable									
Other									
Direct (kWh or kW Savings)	X	X	X	X	X	X	X	X	X
Cost Components -- Enter Dollars									
Project Delivery	$ 68,050	$ 68,050	$ 57,069	$ 70,092	$ 70,092	$ 65,905	$ 72,194	$ 72,194	$ 30,722
Utility Administration	$ 19,350	$ 19,350	$ 12,862	$ 19,931	$ 19,931	$ 21,024	$ 20,528	$ 20,528	$ 31,328
Evaluation Labor									
Advertising & Promotion									
Participant Incentives	$ 276,938	$ 276,938	$ 259,155	$ 276,938	$ 276,938	$ 401,650	$ 276,938	$ 276,938	$ 366,118
R&D									
Other									
Total Costs	$364,338	$364,338	$329,086	$366,961	$366,961	$488,578	$369,660	$369,660	$428,168
Project Participants									
Total Participants (Measures)	14,126	14,126	12,594	14,126	14,126	12,735	14,126	14,126	16,484
% of Spending by Customer Segment									
Residential	100%	100%	100%	100%	100%	100%	100%	100%	100%
Commercial									
Industrial									
Farm									
Other									
Total % of Spending (must equal 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low-Income & Renter Participation									
Participants % (% of Row 32)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Budget % (% of Row 27)	100%	100%	100%	100%	100%	100%	100%	100%	100%
End-Use Target -- Enter "X" or %									
Building Efficiency	X	X	X	X	X	X	X	X	X
Compressed Air									
Energy Star Appliances	X	X	X	X	X	X	X	X	X
Lighting	X	X	X	X	X	X	X	X	X
Motors (including ASD, Fans, Pumps)									
Manufacturing Process									
Refrigeration	X	X	X	X	X	X	X	X	X
Space Cooling	X	X	X	X	X	X	X	X	X
Space Heating	X	X	X	X	X	X	X	X	X
Water Heating	X	X	X	X	X	X	X	X	X
Weatherization	X	X	X	X	X	X	X	X	X
General/Other	X	X	X	X	X	X	X	X	X
Energy and Demand Savings - Generator									
Average Annual kWh Savings per Participant	88	88	119	88	88	95	88	88	76
Annual kWh Saved - Generator	1,246,050	1,246,050	1,502,040	1,246,050	1,246,050	1,203,774	1,246,050	1,246,050	1,257,606
Cost per Annual kWh Saved	$0.2924	$0.2924	$0.2191	$0.2945	$0.2945	$0.4059	$0.2967	$0.2967	$0.3405
Measure Lifetime (Years)									
Lifetime kWh savings	0	0	0	0	0	0	0	0	0
Cost per kWh Lifetime	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Average kW Savings per Participant	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Annual kW Savings - Generator	132	132	155	132	132	133	132	132	171
Cost per KW Saved	$2,760.1374	$2,760.1374	$2,117.6691	$2,780.0086	$2,780.0086	$3,663.8465	$2,800.4556	$2,800.4556	$2,498.2123
Cost/Benefit Results	3 Years	3 Years	1 Year	3 Years	3 Years	1 Year	3 Years	3 Years	1 Year
Societal									
Net present value	1,587,416	1,587,416	754,762	1,587,416	1,587,416	477,435	1,587,416	1,587,416	703,278
B/C ratio	2.48	2.48	3.32	2.48	2.48	1.99	2.48	2.48	3.01
Participant									
Net present value	5,904,798	5,904,798	2,641,051	5,904,798	5,904,798	2,177,388	5,904,798	5,904,798	2,324,747
B/C ratio	8.29	8.29	11.35	8.29	8.29	6.51	8.29	8.29	9.09
Rate Payer									
Net present value	-3,669,728	-3,669,728	-1,685,666	-3,669,728	-3,669,728	-1,503,810	-3,669,728	-3,669,728	-1,393,663
B/C ratio	0.27	0.27	0.28	0.27	0.27	0.27	0.27	0.27	0.29
Utility									
Net present value	322,035	322,035	341,158	322,035	322,035	73,111	322,035	322,035	176,712
B/C ratio	1.31	1.31	2.04	1.31	1.31	1.15	1.31	1.31	1.41

Electric Conservation Project Information Sheet

2021/2022/2023

Utility Name: Minnesota Power
Project Name: Multifamily Direct Install
Project Description: This Project provides a comprehensive package of products, technologies and services to customers in Multifamily buildings.

Type Conservation
Status: New Program

	2021 Proposed	2021 Approved	2021 Actual	2022 Proposed	2022 Approved	2022 Actual	2023 Proposed	2023 Approved	2023 Actual
Project Type -- Enter "X"									
Indirect (No kWh or kW Savings)									
Audit/Info									
Education									
Classroom Training/Instructional									
R&D									
Renewable									
Other									
Direct (kWh or kW Savings)	X	X	X	X	X	X	X	X	X
Cost Components -- Enter Dollars									
Project Delivery	$ 25,800	$ 25,800	$ 10,334	$ 26,574	$ 26,574	$ 31,362	$ 27,371	$ 27,371	$ 31,352
Utility Administration									
Evaluation Labor									
Advertising & Promotion									
Participant Incentives	$ 147,201	$ 147,201	$ 26,636	$ 220,654	$ 79,557	$ 125,381	$ 293,928	$ 152,831	$ 119,559
R&D									
Other									
Total Costs	$173,001	$173,001	$36,970	$247,228	$106,131	$156,743	$321,299	$180,202	$150,911
Project Participants									
Total Participants (Measures)	8,197	8,197	3,505	12,294	3,868	2,904	16,381	7,955	4,859
% of Spending by Customer Segment									
Residential									
Commercial, Industrial & Farm Combined									
Industrial									
Farm									
Other (Multifamily)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total % of Spending (must equal 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low-Income & Renter Participation									
Participants % (% of Row 32)	53%	53%	79%	53%	53%	86%	53%	53%	72%
Budget % (% of Row 27)	69%	69%	79%	72%	72%	98%	74%	74%	92%
End-Use Target -- Enter "X" or %									
Building Efficiency									
Compressed Air									
Energy Star Appliances	X	X	X	X	X	X	X	X	X
Lighting	X	X	X	X	X	X	X	X	X
Motors (including ASD, Fans, Pumps)									
Manufacturing Process									
Refrigeration	X	X	X	X	X	X	X	X	X
Space Cooling	X	X	X	X	X	X	X	X	X
Space Heating	X	X	X	X	X	X	X	X	X
Water Heating	X	X	X	X	X	X	X	X	X
Weatherization	X	X	X	X	X	X	X	X	X
General/Other	X	X	X	X	X	X	X	X	X
Energy and Demand Savings - Generator									
Average Annual kWh Savings per Participant	84	84	83	83	104	121	83	93	99
Annual kWh Saved - Generator	686,465	686,465	290,137	1,025,640	401,482	351,955	1,363,919	739,761	481,916
Cost per Annual kWh Saved	$0.2520	$0.2520	$0.1274	$0.2410	$0.2643	$0.4453	$0.2356	$0.2436	$0.3131
Measure Lifetime (Years)									
Lifetime kWh savings	0	0	0	0	0	0	0	0	0
Cost per kWh Lifetime	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Average kW Savings per Participant	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Annual kW Savings - Generator	75	75	29	112	43	40	150	81	51
Cost per KW Saved	$2,309.2871	$2,309.2871	$1,264.0864	$2,200.8669	$2,456.7361	$3,923.5994	$2,146.6541	$2,238.5342	$2,946.6188
Cost/Benefit Results	3 Years	3 Years	1 Year	3 Years	2 Years*	1 Year	3 Years	2 Years*	1 Year
Societal									
Net present value	1,758,855	1,758,855	140,908	1,758,855	496,583	94,922	1,758,855	496,583	78,599
B/C ratio	3.44	3.44	4.82	3.44	2.76	1.61	3.44	2.76	1.31
Participant									
Net present value	5,336,443	5,336,443	429,063	5,336,443	1,732,809	567,411	5,336,443	1,732,809	652,493
B/C ratio	9.30	9.30	17.14	9.30	8.54	5.53	9.30	8.54	3.91
Rate Payer									
Net present value	-2,955,082	-2,955,082	-256,540	-2,955,082	-1,066,347	-425,508	-2,955,082	-1,066,347	-498,905
B/C ratio	0.29	0.29	0.29	0.29	0.27	0.25	0.29	0.27	0.28
Utility									
Net present value	505,594	505,594	69,483	505,594	122,118	-12,567	505,594	122,118	53,179
B/C ratio	1.73	1.73	2.88	1.73	1.44	0.92	1.73	1.44	1.35

**Program modification changes were applied to 2022 and 2023 of the triennial. Net Benefits associated with the modification reflect a 2-year evaluation. All values are discounted to 2022.*

Electric Conservation Project Information Sheet

2021/2022/2023

Utility Name: Minnesota Power
Project Name: Custom Multifamily Efficiency
Project Description: This Project provides a comprehensive package of products, technologies and services to customers in Multifamily buildings.
Type Conservation
Status: New Program

	2021 Proposed	2021 Approved	2021 Actual	2022 Proposed	2022 Approved	2022 Actual	2023 Proposed	2023 Approved	2023 Actual
Project Type -- Enter "X"									
Indirect (No kWh or kW Savings)									
Audit/Info									
Education									
Classroom Training/Instructional									
R&D									
Renewable									
Other									
Direct (kWh or kW Savings)	X	X	X	X	X	X	X	X	X
Cost Components -- Enter Dollars									
Project Delivery	$ 54,539	$ 54,539	$ 23,349	$ 56,448	$ 56,448	$ 34,604	$ 58,356	$ 58,356	$ 14,606
Utility Administration	$ 11,288	$ 11,288	$ 350	$ 11,626	$ 11,626	$ 285	$ 12,422	$ 12,422	
Evaluation Labor									
Advertising & Promotion	$ 20,968	$ 20,968		$ 21,350	$ 21,350		$ 21,731	$ 21,731	$ 422
Participant Incentives	$ 51,164	$ 51,164	$ 365,920	$ 51,164	$ 218,219	$ 232,747	$ 51,164	$ 218,219	$ 163,538
R&D									
Other									
Total Costs	$137,959	$137,959	$389,620	$140,588	$307,643	$267,636	$143,673	$310,728	$178,566
Project Participants									
Total Participants (Projects)	45	45	103	45	68	82	45	68	104
% of Spending by Customer Segment									
Residential									
Commercial, Industrial & Farm Combined									
Industrial									
Farm									
Other (Multifamily)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total % of Spending (must equal 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low-Income & Renter Participation									
Participants % (% of Row 32)			43%			35%			32%
Budget % (% of Row 27)			15%			16%			18%
End-Use Target -- Enter "X" or %									
Building Efficiency	X	X	X	X	X	X	X	X	X
Compressed Air	X	X	X	X	X	X	X	X	X
Energy Star Appliances	X	X	X	X	X	X	X	X	X
Lighting	X	X	X	X	X	X	X	X	X
Motors (including ASD, Fans, Pumps)	X	X	X	X	X	X	X	X	X
Manufacturing Process	X	X	X	X	X	X	X	X	X
Refrigeration	X	X	X	X	X	X	X	X	X
Space Cooling	X	X	X	X	X	X	X	X	X
Space Heating	X	X	X	X	X	X	X	X	X
Water Heating	X	X	X	X	X	X	X	X	X
Weatherization	X	X	X	X	X	X	X	X	X
General/Other	X	X	X	X	X	X	X	X	X
Energy and Demand Savings - Generator									
Average Annual kWh Savings per Participant	24,284	24,284	28,880	24,284	28,123	39,647	24,284	28,123	21,195
Annual kWh Saved - Generator	1,092,769	1,092,769	2,974,665	1,092,769	1,912,346	3,251,017	1,092,769	1,912,346	2,204,232
Cost per Annual kWh Saved	$0.1262	$0.1262	$0.1310	$0.1287	$0.1609	$0.0823	$0.1315	$0.1625	$0.0810
Measure Lifetime (Years)									
Lifetime kWh savings	0	0	0	0	0	0	0	0	0
Cost per kWh Lifetime	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Average kW Savings per Participant	4.10	4.10	4.79	4.10	5.15	7.66	4.10	5.15	3.66
Annual kW Savings - Generator	184	184	493	184	350	628	184	350	381
Cost per KW Saved	$748.5567	$748.5567	$790.4874	$762.8215	$878.7289	$425.9202	$779.5605	$887.5407	$468.9826
Cost/Benefit Results	3 Years	3 Years	1 Year	3 Years	2 Years*	1 Year	3 Years	2 Years*	1 Year
Societal									
Net present value	466,166	466,166	512,578	466,166	987,383	902,653	466,166	987,383	162,549
B/C ratio	1.41	1.41	1.42	1.41	1.96	1.81	1.41	1.96	1.17
Participant									
Net present value	2,711,427	2,711,427	3,478,197	2,711,427	3,785,501	3,575,442	2,711,427	3,785,501	1,806,227
B/C ratio	4.21	4.21	3.90	4.21	5.51	4.26	4.21	5.51	2.58
Rate Payer									
Net present value	-2,563,785	-2,563,785	-2,888,525	-2,563,785	-3,223,660	-2,739,999	-2,563,785	-3,223,660	-1,663,908
B/C ratio	0.33	0.33	0.33	0.33	0.33	0.37	0.33	0.33	0.39
Utility									
Net present value	847,561	847,561	1,009,295	847,561	976,693	1,406,955	847,561	976,693	942,289
B/C ratio	3.12	3.12	3.59	3.12	2.62	6.26	3.12	2.62	6.28

**Program modification changes were applied to 2022 and 2023 of the triennial. Net Benefits associated with the modification reflect a 2-year evaluation. All values are discounted to 2022.*

Electric Conservation Project Information Sheet

2021/2022/2023

Utility Name: Minnesota Power
Project Name: Prescriptive Business Efficiency
Project Description: This Project uses a prescriptive package of products and services that meets the unique needs of small- to mid- sized businesses.

Type Conservation
Status: New Program

	2021 Proposed	2021 Approved	2021 Actual	2022 Proposed	2022 Approved	2022 Actual	2023 Proposed	2023 Approved	2023 Actual
Project Type -- Enter "X"									
Indirect (No kWh or kW Savings)									
Audit/Info									
Education									
Classroom Training/Instructional									
R&D									
Renewable									
Other									
Direct (kWh or kW Savings)	X	X	X	X	X	X	X	X	X
Cost Components -- Enter Dollars									
Project Delivery	$ 21,815	$ 21,815	$ 3,309	$ 22,579	$ 22,579	$ 8,831	$ 23,343	$ 23,343	$ 5,854
Utility Administration	$ 11,288	$ 11,288	$ 788	$ 11,626	$ 11,626	$ 605	$ 12,422	$ 12,422	$ -
Evaluation Labor									
Advertising & Promotion	$ 18,880	$ 18,880	$ 1,522	$ 19,033	$ 19,033	$ 7,912	$ 19,186	$ 19,186	$ 3,500
Participant Incentives	$ 70,085	$ 70,085	$ 92,105	$ 70,085	$ 66,184	$ 41,899	$ 70,085	$ 66,184	$ 41,821
R&D									
Other									
Total Costs	$122,068	$122,068	$97,724	$123,323	$119,422	$59,247	$125,036	$121,135	$51,175
Project Participants									
Total Participants (Projects)	1,178	1,178	842	1,178	1,015	6,059	1,178	1,015	7,097
% of Spending by Customer Segment									
Residential									
Commercial, Industrial & Farm Combined	100%	100%	100%	100%	100%	100%	100%	100%	100%
Industrial									
Farm									
Other									
Total % of Spending (must equal 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low-Income & Renter Participation									
Participants % (% of Row 32)	0%			0%			0%		
Budget % (% of Row 27)	0%			0%			0%		
End-Use Target -- Enter "X" or %									
Building Efficiency	X	X	X	X	X	X	X	X	X
Compressed Air	X	X	X	X	X	X	X	X	X
Energy Star Appliances	X	X	X	X	X	X	X	X	X
Lighting	X	X	X	X	X	X	X	X	X
Motors (including ASD, Fans, Pumps)	X	X	X	X	X	X	X	X	X
Manufacturing Process	X	X	X	X	X	X	X	X	X
Refrigeration	X	X	X	X	X	X	X	X	X
Space Cooling	X	X	X	X	X	X	X	X	X
Space Heating	X	X	X	X	X	X	X	X	X
Water Heating	X	X	X	X	X	X	X	X	X
Weatherization	X	X	X	X	X	X	X	X	X
General/Other	X	X	X	X	X	X	X	X	X
Energy and Demand Savings - Generator									
Average Annual kWh Savings per Participant	936	936	659	936	595	167	936	595	149
Annual kWh Saved - Generator	1,102,604	1,102,604	554,903	1,102,604	603,964	1,013,699	1,102,604	603,964	1,059,905
Cost per Annual kWh Saved	$0.1107	$0.1107	$0.1761	$0.1118	$0.1977	$0.0584	$0.1134	$0.2006	$0.0483
Measure Lifetime (Years)									
Lifetime kWh savings	0	0	0	0	0	0	0	0	0
Cost per kWh Lifetime	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Average kW Savings per Participant	0.10	0.10	0.07	0.10	0.09	0.03	0.10	0.09	0.02
Annual kW Savings - Generator	123	123	56	123	88	173	123	88	154
Cost per KW Saved	$989.8307	$989.8307	$1,758.4070	$1,000.0073	$1,364.8229	$341.7202	$1,013.8978	$1,384.4000	$333.2561
Cost/Benefit Results	3 Years	3 Years	1 Year	3 Years	3 Years	1 Year	3 Years	3 Years	1 Year
Societal									
Net present value	1,020,036	1,020,036	48,772	1,020,036	254,029	296,938	1,020,036	254,029	302,409
B/C ratio	2.36	2.36	1.21	2.36	1.34	2.29	2.36	1.34	2.33
Participant									
Net present value	3,576,858	3,576,858	561,148	3,576,858	1,702,809	994,587	3,576,858	1,702,809	1,033,204
B/C ratio	7.23	7.23	3.43	7.23	3.97	5.68	7.23	3.97	5.75
Rate Payer									
Net present value	-2,969,186	-2,969,186	-564,623	-2,969,186	-1,665,860	-763,807	-2,969,186	-1,665,860	-774,208
B/C ratio	0.31	0.31	0.29	0.31	0.31	0.36	0.31	0.31	0.36
Utility									
Net present value	983,130	983,130	135,181	983,130	422,776	383,794	983,130	422,776	398,185
B/C ratio	3.81	3.81	2.38	3.81	2.25	7.48	3.81	2.25	8.78

**For cost-effectiveness evaluation purposes, program modification changes were made to all three years of the triennial for ease of comparison to the originally filed program. Net Benefits reflect 3-year evaluation. All values are discounted to 2021. For implementation, changes were only applicable to 2022 & 2023.*

Electric Conservation Project Information Sheet

2021/2022/2023

Utility Name: Minnesota Power
Project Name: Custom Business Efficiency
Project Description: This Project uses a customized package of products and services that meets the unique needs of distinct business, industrial, agricultural and public sector communities.

Type Conservation
Status: Existing

	2021 Proposed	2021 Approved	2021 Actual	2022 Proposed	2022 Approved	2022 Actual	2023 Proposed	2023 Approved	2023 Actual
Project Type -- Enter "X"									
Indirect (No kWh or kW Savings)									
Audit/Info									
Education									
Classroom Training/Instructional									
R&D									
Renewable									
Other									
Direct (kWh or kW Savings)	X	X	X	X	X	X	X	X	X
Cost Components -- Enter Dollars									
Project Delivery	$ 1,473,740	$ 1,473,740	$ 1,653,493	$ 1,521,728	$ 1,521,728	$ 1,800,135	$ 1,590,744	$ 1,590,744	$ 1,880,193
Utility Administration	$ 96,750	$ 96,750	$ 65,790	$ 99,653	$ 99,653	$ 39,050	$ 102,555	$ 102,555	$ 24,369
Evaluation Labor									
Advertising & Promotion	$ 664,553	$ 664,553	$ 9,686	$ 671,616	$ 671,616	$ 1,300	$ 678,679	$ 678,679	$ 500
Participant Incentives	$ 2,358,800	$ 2,358,800	$ 2,464,105	$ 2,358,800	$ 2,358,800	$ 2,633,641	$ 2,358,800	$ 2,358,800	$ 2,576,330
R&D									
Other									
Total Costs	$4,593,843	$4,593,843	$4,193,074	$4,651,797	$4,651,797	$4,474,126	$4,730,778	$4,730,778	$4,481,392
Project Participants									
Total Participants (Projects)	1,365	1,365	1,256	1,365	1,365	1,437	1,365	1,365	1,019
% of Spending by Customer Segment									
Residential									
Commercial, Industrial & Farm Combined	100%	100%	62%	100%	100%	64%	100%	100%	65%
Industrial			36%			34%			33%
Farm			2%			2%			2%
Other									
Total % of Spending (must equal 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low-Income & Renter Participation									
Participants % (% of Row 32)									
Budget % (% of Row 27)									
End-Use Target -- Enter "X" or %									
Building Efficiency	X	X	X	X	X	X	X	X	X
Compressed Air	X	X	X	X	X	X	X	X	X
Energy Star Appliances	X	X	X	X	X	X	X	X	X
Lighting	X	X	X	X	X	X	X	X	X
Motors (including ASD, Fans, Pumps)	X	X	X	X	X	X	X	X	X
Manufacturing Process	X	X	X	X	X	X	X	X	X
Refrigeration	X	X	X	X	X	X	X	X	X
Space Cooling	X	X	X	X	X	X	X	X	X
Space Heating	X	X	X	X	X	X	X	X	X
Water Heating	X	X	X	X	X	X	X	X	X
Weatherization	X	X	X	X	X	X	X	X	X
General/Other	X	X	X	X	X	X	X	X	X
Energy and Demand Savings - Generator									
Average Annual kWh Savings per Participant	36,826	36,826	43,383	36,826	36,826	38,528	36,826	36,826	51,030
Annual kWh Saved - Generator	50,267,374	50,267,374	54,488,907	50,267,374	50,267,374	55,365,426	50,267,374	50,267,374	51,999,517
Cost per Annual kWh Saved	$0.0914	$0.0914	$0.0770	$0.0925	$0.0925	$0.0808	$0.0941	$0.0941	$0.0862
Measure Lifetime (Years)									
Lifetime kWh savings	0	0	0	0	0	0	0	0	0
Cost per kWh Lifetime	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Average kW Savings per Participant	5.93	5.93	3.47	5.93	5.93	3.82	5.93	5.93	4.43
Annual kW Savings - Generator	8,101	8,101	4,356	8,101	8,101	5,485	8,101	8,101	4,515
Cost per KW Saved	$567.0847	$567.0847	$962.5048	$574.2388	$574.2388	$815.7139	$583.9886	$583.9886	$992.6271
Cost/Benefit Results	3 Years	3 Years	1 Year	3 Years	3 Years	1 Year	3 Years	3 Years	1 Year
Societal									
Net present value	8,401,480	8,401,480	4,989,512	8,401,480	8,401,480	5,357,279	8,401,480	8,401,480	8,611,039
B/C ratio	1.12	1.12	1.27	1.12	1.12	1.26	1.12	1.12	1.53
Participant									
Net present value	111,731,814	111,731,814	39,043,016	111,731,814	111,731,814	39,890,195	111,731,814	111,731,814	39,926,589
B/C ratio	2.81	2.81	3.29	2.81	2.81	3.10	2.81	2.81	3.79
Rate Payer									
Net present value	-119,468,817	-119,468,817	-38,253,868	-119,468,817	-119,468,817	-38,056,143	-119,468,817	-119,468,817	-33,763,848
B/C ratio	0.34	0.34	0.34	0.34	0.34	0.36	0.34	0.34	0.37
Utility									
Net present value	47,237,599	47,237,599	15,354,146	47,237,599	47,237,599	17,286,705	47,237,599	47,237,599	16,324,571
B/C ratio	4.57	4.57	4.66	4.57	4.57	4.86	4.57	4.57	4.64

Electric Conservation Project Information Sheet

2021/2022/2023

Utility Name: Minnesota Power
Project Name: Customer Engagement
Project Description: This Project is focused on educational outreach and communications designed to encourage customers to save energy and utilize energy conservation programs and resources.

Type Conservation
Status: Existing

	2021 Proposed	2021 Approved	2021 Actual	2022 Proposed	2022 Approved	2022 Actual	2023 Proposed	2023 Approved	2023 Actual
Project Type -- Enter "X"									
Indirect (No kWh or kW Savings)									
Audit/Info	X	X	X	X	X	X	X	X	X
Education	X	X	X	X	X	X	X	X	X
Classroom Training/Instructional	X	X	X	X	X	X	X	X	X
R&D									
Renewable									
Other									
Direct (kWh or kW Savings)									
Cost Components -- Enter Dollars									
Project Delivery	$ 367,100	$ 367,100	$ 200,198	$ 378,113	$ 378,113	$ 227,490	$ 389,456	$ 389,456	$ 215,226
Utility Administration	$ 12,900	$ 12,900	$ 1,749	$ 13,287	$ 13,287	$ 2,653	$ 13,686	$ 13,686	$ 4,759
Evaluation Labor									
Advertising & Promotion	$ 123,500	$ 123,500	$ 114,551	$ 123,500	$ 123,500	$ 95,026	$ 123,500	$ 123,500	$ 88,208
Participant Incentives									
R&D									
Other (Education)	$ 350,000	$ 350,000	$ 276,494	$ 350,000	$ 350,000	$ 315,121	$ 325,000	$ 325,000	$ 199,923
Total Costs	$853,500	$853,500	$592,991	$864,900	$864,900	$640,290	$851,642	$851,642	$508,117
Project Participants									
Total Participants	100,750	100,750	112,542	100,750	100,750	103,470	100,750	100,750	95,670
% of Spending by Customer Segment									
Residential									
Commercial									
Industrial									
Farm									
Other	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total % of Spending (must equal 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low-Income & Renter Participation									
Participants % (% of Row 32)									
Budget % (% of Row 30)									
End-Use Target -- Enter "X" or %									
Building Efficiency									
Compressed Air									
Energy Star Appliances									
Lighting									
Motors (including ASD, Fans, Pumps)									
Manufacturing Process									
Refrigeration									
Space Cooling									
Space Heating									
Water Heating									
Weatherization									
General/Other									
Energy and Demand Savings - Generator									
Average Annual kWh Savings per Participant	0	0	0	0	0	0	0	0	0
Annual kWh Saved - Generator									
Cost per Annual kWh Saved	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Measure Lifetime (Years)									
Lifetime kWh savings	0	0	0	0	0	0	0	0	0
Cost per kWh Lifetime	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Average kW Savings per Participant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual kW Savings - Generator									
Cost per KW Saved	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Cost/Benefit Results									
Societal									
Net present value									
B/C ratio									
Participant									
Net present value									
B/C ratio									
Rate Payer									
Net present value									
B/C ratio									
Utility									
Net present value									
B/C ratio									

Electric Conservation Project Information Sheet

2021/2022/2023

Utility Name: Minnesota Power
Project Name: Energy Analysis
Project Description: This Project delivers site and technology-specific information needed to help a cross section of customers choose energy-saving products and services for their homes and businesses.

Type Conservation
Status: Existing

	2021 Proposed	2021 Approved	2021 Actual	2022 Proposed	2022 Approved	2022 Actual	2023 Proposed	2023 Approved	2023 Actual
Project Type -- Enter "X"									
Indirect (No kWh or kW Savings)									
Audit/Info	X	X	X	X	X	X	X	X	X
Education									
Classroom Training/Instructional									
R&D									
Renewable									
Other									
Direct (kWh or kW Savings)									
Cost Components -- Enter Dollars									
Project Delivery	$ 973,908	$ 973,908	$ 577,080	$ 1,011,433	$ 1,011,433	$ 698,596	$ 1,049,562	$ 1,049,562	$ 640,572
Utility Administration	$ 6,450	$ 6,450	$ 4,230	$ 6,644	$ 6,644	$ 1,899	$ 6,843	$ 6,843	$ 3,772
Evaluation Labor									
Advertising & Promotion									
Participant Incentives									
R&D									
Other (Education & Training)									
Total Costs	$980,358	$980,358	$581,310	$1,018,077	$1,018,077	$700,495	$1,056,405	$1,056,405	$644,345
Project Participants									
Total Participants	5,960	5,960	3,892	6,145	6,145	5,771	6,330	6,330	4,490
% of Spending by Customer Segment									
Residential	28%	28%	19%	27%	27%	28%	26%	26%	28%
Commercial, Industrial & Ag Combined	67%	67%	79%	66%	66%	70%	66%	66%	55%
Industrial									
Farm									
Other (Multifamily)	5%	5%	2%	7%	7%	2%	8%	8%	17%
Total % of Spending (must equal 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low-Income & Renter Participation									
Participants % (% of Row 32)	19%	19%	23%	22%	22%	22%	24%	24%	27%
Budget % (% of Row 30)	15%	15%	12%	16%	16%	16%	17%	17%	22%
End-Use Target -- Enter "X" or %									
Building Efficiency									
Compressed Air									
Energy Star Appliances									
Lighting									
Motors (including ASD, Fans, Pumps)									
Manufacturing Process									
Refrigeration									
Space Cooling									
Space Heating									
Water Heating									
Weatherization									
General/Other									
Energy and Demand Savings - Generator									
Average Annual kWh Savings per Participant	0	0	0	0	0	0	0	0	0
Annual kWh Saved - Generator									
Cost per Annual kWh Saved	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Measure Lifetime (Years)									
Lifetime kWh savings	0	0	0	0	0	0	0	0	0
Cost per kWh Lifetime	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Average kW Savings per Participant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual kW Savings - Generator									
Cost per KW Saved	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Cost/Benefit Results									
Societal									
Net present value									
B/C ratio									
Participant									
Net present value									
B/C ratio									
Rate Payer									
Net present value									
B/C ratio									
Utility									
Net present value									
B/C ratio									

Electric Conservation Project Information Sheet

2021/2022/2023

Utility Name: Minnesota Power
Project Name: Evaluation & Planning
Project Description: This Project provides the resources for Minnesota Power to plan and evaluate the Triennial CIP filing, complete the evaluation of current CIP projects, prepare the CIP tracker and DSM incentive reports for the Annual Consolidated filing, respond to information requests and evaluate the benefit/cost of proposed modifications to existing Projects or for the development of new Projects.
Type Conservation
Status: Existing

	2021 Proposed	2021 Approved	2021 Actual	2022 Proposed	2022 Approved	2022 Actual	2023 Proposed	2023 Approved	2023 Actual
Project Type -- Enter "X"									
Indirect (No kWh or kW Savings)									
Audit/Info									
Education									
Classroom Training/Instructional									
R&D									
Renewable									
Other	X	X	X	X	X	X	X	X	X
Direct (kWh or kW Savings)									
Cost Components -- Enter Dollars									
Project Delivery	$ 369,850	$ 369,850	$ 246,929	$ 376,236	$ 376,236	$ 235,756	$ 382,813	$ 382,813	$ 426,192
Utility Administration	$ 70,950	$ 70,950	$ 47,263	$ 73,079	$ 73,079	$ 53,534	$ 75,271	$ 75,271	$ 76,160
Evaluation Labor	$ 242,900	$ 242,900	$ 129,781	$ 247,157	$ 247,157	$ 154,971	$ 251,542	$ 251,542	$ 197,213
Advertising & Promotion									
Participant Incentives									
R&D									
Other (Edu)	$ 35,000	$ 35,000	$ 12,348	$ 35,000	$ 35,000	$ 23,609	$ 35,000	$ 35,000	$ 46,294
Total Costs	$718,700	$718,700	$436,321	$731,472	$731,472	$467,870	$744,626	$744,626	$745,860
Project Participants									
Total Participants									
% of Spending by Customer Segment									
Residential									
Commercial									
Industrial									
Farm									
Other	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total % of Spending (must equal 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low-Income & Renter Participation									
Participants % (% of Row 32)									
Budget % (% of Row 30)									
End-Use Target -- Enter "X" or %									
Building Efficiency									
Compressed Air									
Energy Star Appliances									
Lighting									
Motors (including ASD, Fans, Pumps)									
Manufacturing Process									
Refrigeration									
Space Cooling									
Space Heating									
Water Heating									
Weatherization									
General/Other	X	X	X	X	X	X	X	X	X
Energy and Demand Savings - Generator									
Average Annual kWh Savings per Participant	0	0	0	0	0	0	0	0	0
Annual kWh Saved - Generator									
Cost per Annual kWh Saved	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Measure Lifetime (Years)									
Lifetime kWh savings	0	0	0	0	0	0	0	0	0
Cost per kWh Lifetime	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Average kW Savings per Participant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual kW Savings - Generator									
Cost per KW Saved	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Cost/Benefit Results									
Societal									
Net present value									
B/C ratio									
Participant									
Net present value									
B/C ratio									
Rate Payer									
Net present value									
B/C ratio									
Utility									
Net present value									
B/C ratio									

Electric Conservation Project Information Sheet

2021/2022/2023 Cons1 BudgtSavgs

Utility Name: Minnesota Power
Project Name: Research & Development
Project Description: This Project is designed to take advantage of a broad base of technologies across customer classes - residential and low income, commercial, public and agricultural and industrial (non-opt-out) to ensure that each customer class benefits from participation in technology development, application and market-based research.
Type Conservation
Status: Existing

	2021 Proposed	2021 Approved	2021 Actual	2022 Proposed	2022 Approved	2022 Actual	2023 Proposed	2023 Approved	2023 Actual
Project Type -- Enter "X"									
Indirect (No kWh or kW Savings)									
Audit/Info									
Education									
Classroom Training/Instructional									
R&D	X	X	X	X	X	X	X	X	X
Renewable									
Other									
Direct (kWh or kW Savings)									
Cost Components -- Enter Dollars									
Project Delivery									
Utility Administration	$ 6,450	$ 6,450	$ 2,709	$ 6,644	$ 6,644	$ 968	$ 6,843	$ 6,843	$ 3,381
Evaluation Labor									
Advertising & Promotion									
Participant Incentives									
R&D	$ 378,150	$ 378,150	$ 177,763	$ 377,957	$ 377,957	$ 147,941	$ 377,757	$ 377,757	$ 114,923
Other									
Total Costs	$ 384,600	$ 384,600	$ 180,472	$ 384,600	$ 384,600	$ 148,909	$ 384,600	$ 384,600	$ 118,304
Project Participants									
Total Participants									
% of Spending by Customer Segment									
Residential									
Commercial									
Industrial									
Farm									
Other									
Total % of Spending (must equal 100%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Low-Income & Renter Participation									
Participants % (% of Row 32)									
Budget % (% of Row 30)									
End-Use Target -- Enter "X" or %									
Building Efficiency									
Compressed Air									
Energy Star Appliances									
Lighting									
Motors (including ASD, Fans, Pumps)									
Manufacturing Process									
Refrigeration									
Space Cooling									
Space Heating									
Water Heating									
Weatherization									
General/Other									
Energy and Demand Savings - Generator									
Average Annual kWh Savings per Participant	0	0	0	0	0	0	0	0	0
Annual kWh Saved - Generator									
Cost per Annual kWh Saved	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Measure Lifetime (Years)									
Lifetime kWh savings	0	0	0	0	0	0	0	0	0
Cost per kWh Lifetime	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Average kW Savings per Participant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual kW Savings - Generator									
Cost per KW Saved	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Cost/Benefit Results									
Societal									
Net present value									
B/C ratio									
Participant									
Net present value									
B/C ratio									
Rate Payer									
Net present value									
B/C ratio									
Utility									
Net present value									
B/C ratio									

Electric Conservation Project Information Sheet

2021/2022/2023 Cons1 BudgtSavgs

Utility Name: Minnesota Power
Project Name: Regulatory Charges
Project Description: This Project recovers charges billed to Minnesota Power by the Department of Commerce regarding CIP.

Type Conservation
Status: Existing

	2021 Proposed	2021 Approved	2021 Actual	2022 Proposed	2022 Approved	2022 Actual	2023 Proposed	2023 Approved	2023 Actual
Project Type -- Enter "X"									
Indirect (No kWh or kW Savings)									
Audit/Info									
Education									
Classroom Training/Instructional									
R&D									
Renewable									
Other	X	X	X	X	X	X	X	X	X
Direct (kWh or kW Savings)									
Cost Components -- Enter Dollars									
Project Delivery	$ 200,000	$ 200,000	$ 170,364	$ 200,000	$ 200,000	$ 177,191	$ 200,000	$ 200,000	$ 183,297
Utility Administration									
Evaluation Labor									
Advertising & Promotion									
Participant Incentives									
R&D									
Other									
Total Costs	$200,000	$200,000	$170,364	$200,000	$200,000	$177,191	$200,000	$200,000	$183,297
Project Participants									
Total Participants									
% of Spending by Customer Segment									
Residential									
Commercial									
Industrial									
Farm									
Other	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total % of Spending (must equal 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low-Income & Renter Participation									
Participants % (% of Row 32)									
Budget % (% of Row 30)									
End-Use Target -- Enter "X" or %									
Building Efficiency									
Compressed Air									
Energy Star Appliances									
Lighting									
Motors (including ASD, Fans, Pumps)									
Manufacturing Process									
Refrigeration									
Space Cooling									
Space Heating									
Water Heating									
Weatherization									
General/Other									
Energy and Demand Savings - Generator									
Average Annual kWh Savings per Participant	0	0	0	0	0	0	0	0	0
Annual kWh Saved - Generator									
Cost per Annual kWh Saved	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Measure Lifetime (Years)									
Lifetime kWh savings	0	0	0	0	0	0	0	0	0
Cost per kWh Lifetime	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Average kW Savings per Participant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual kW Savings - Generator									
Cost per KW Saved	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000
Cost/Benefit Results									
Societal									
Net present value									
B/C ratio									
Participant									
Net present value									
B/C ratio									
Rate Payer									
Net present value									
B/C ratio									
Utility									
Net present value									
B/C ratio									

Successes

SUCCESS STORIES

minnesota power
AN ALLETE COMPANY

SUCCESS STORY | AFFORDABILITY PROGRAMS

A LEGACY OF HELPING CUSTOMERS IN NEED CONSERVE ENERGY, LOWER MONTHLY BILLS, AND GAIN PEACE OF MIND

October often brings the first harbingers of winter to upper Minnesota—cooler temperatures, shorter days and even occasional snow squalls. For families and individuals on low or fixed incomes, the month is a harsh reminder of the long winter heating season ahead and the strain it can place on already tight budgets.

Many Duluth residents in this financial position look to the annual Energy Awareness Expo for information and assistance. The event, held each October during (Energy Awareness Month) at the Duluth Salvation Army in Lincoln Park, connects income-qualified Minnesota Power customers with company and community resources to help with home energy efficiency, state energy assistance, utility billing discounts and related affordability programs that can take the chill off of winter.

Minnesota Power's two main affordability programs are Energy Partners, which focuses on home energy conservation, and CARE, or (Customer Affordability of Residential Electricity), which provides significant billing discounts to income-qualified customers.

ACCESS TO ASSISTANCE WITH EASE AND DIGNITY

The Energy Awareness Expo celebrated its 20th anniversary in 2023. Over the years, thousands of people have benefited from this joint event, coordinated by Minnesota Power and co-sponsored by the utility along with the Arrowhead Economic Opportunity Agency, ComfortSystems (the City of Duluth's water and gas utility) and the Duluth Salvation Army. Its success speaks to Minnesota Power's longstanding legacies of community engagement, affordability and outreach to customers most in need.

The people of Minnesota Power live and work in the communities they serve. They know and care about their neighbors in need. It is not enough to simply offer affordability programs—Minnesota Power is driven to reach those who qualify where they are at, educate them about available options, and provide personalized assistance to enroll them in programs that are the right fit.

"We strive for ease of access," said Customer Program and Services Representative Angela Fulghum, the point person for Minnesota Power's affordability program. She connects income-qualified customers to a full range of resources that will help them reduce home energy use, manage energy costs and lower monthly bills through energy assistance or billing discounts. "My position was established so customers can contact one person and get linked into multiple resources rather than being transferred among three or four different people or departments."

Angela Fulghum of Minnesota Power helps serve lunch at the 20th annual Energy Awareness Expo.

Whether it is answering personal inquiries, helping people complete necessary forms, organizing events like the Energy Awareness Expo, or holding informational sessions at area food shelves across Minnesota Power's large and diverse service area, Fulghum and her team make sure the right resources are in place for those who qualify.

"A struggle can happen to anybody," Fulghum said. "I enjoy helping people get through troubled times and move forward in a way that preserves their dignity and confidence."

MEETING PEOPLE WHERE THEY ARE

One-stop-shop events, such as the Energy Awareness Expo and other customer outreach activities held around the region, are effective ways to meet people face-to-face, build relationships, and establish trust in Minnesota Power as a utility that truly cares about its customers and wants to help.

The Energy Awareness Expo is unique in that it draws a wide range of community partners that also serve residents on low and fixed incomes. Its goals are to collect Minnesota Energy Assistance Program applications in the new program year, engage income-qualified customers with community resources, increase customer comfort in approaching their utilities with questions, educate participants about their utility bills, familiarize attendees with affordability programs and provide a free meal. Invited attendees also can pick up a free kit with easy-to install home energy-saving products such as LED lightbulbs, an advanced power strip, and heat shrink film

window insulation provided by ComfortSystems.

"It is so nice to have all of these resources in one place," said one recent attendee. "And I love the energy-saving kit."

"The Expo is one of our largest customer-facing events and a way for some of our most economically vulnerable customers to meet the people behind our programs and our partners' programs," Fulghum said. "Outreach is important year-round, but may be especially welcomed when heating season begins. Hearing customer concerns and answering their questions is always time well spent."

OPENING DOORS TO FREE HOME ENERGY- AND COST-SAVING RESOURCES

One value of making sure Energy Awareness Expo attendees sign up for Minnesota's Energy Assistance Program is that EAP enrollment qualifies customers for Minnesota Power's in-house affordability programs: Energy Partners and CARE.

Energy Partners is Minnesota Power's energy conservation program for income-qualified customers. It collaborates with local agencies to deliver in-home energy analyses and other services to help income-eligible customers identify energy-saving opportunities in their homes and take meaningful steps to lower their energy usage.

Among its core offerings are regular energy-saving tools and resources offered through Minnesota Power's Home Energy Support conservation program, plus a free Home Health Check, available to income-qualified customers who heat their homes or water with electricity. This service can open doors to significant long-term savings.

An energy professional visits the qualified customer's home, provides education and resources about their energy usage, identifies potential ways to lower energy consumption, and installs free energy-saving products. Depending on the age and efficiency of appliances in the home, customers may qualify for free energy-efficient refrigerators, freezers and dehumidifiers. If they heat their home with electricity, they may qualify for cold-climate air source heat pumps and programmable thermostats. Those with electric water heating may qualify for a new heat pump water heater. Both the energy-saving equipment and installation are provided at no-cost to eligible customers.

SHOWING WE CARE WITH BILLING DISCOUNTS

Minnesota Power customers who qualify for Energy Partners also may benefit from CARE, a discounted rate on their electric bills. Lowering monthly payments can be life-changing for those struggling to make ends meet.

CARE offers two discounts for customers. One is a flat discount of $20 per month, available automatically to income-qualified customers who are senior citizens or living with a disability. The second is the affordability discount. This discount requires completion of a one-page application. Funds are limited and distributed on a first-come, first-served basis. It is designed to help customers lower their average electric bill to no more than 3% of their annual household income.

There are two ways to qualify for CARE billing discounts—through enrollment in Minnesota's Energy Assistance Program or by completing a self-declaration of income form. Minnesota Power was the first utility in the state to offer the latter option, in an attempt to expand the pool of customers that qualify for affordability resources.

Jon Sullivan of Minnesota Power talks to an attendee at the 20th annual Energy Awareness Expo.

"It is a quick application form," Fulghum said. "Customers can either volunteer to share what their income is or they can check a box from a list of other assistance programs they utilize. For example, if they receive assistance through Head Start, MinnesotaCare, SNAP (the Supplemental Nutrition Assistance Program) or Social Security, they can check a box and instantly qualify."

CUSTOMERS HELP SHAPE MEANINGFUL PROGRAMS THAT MAKE A DIFFERENCE

Minnesota Power regularly solicits stakeholder input in the design and modification of its programs—including affordability programs for customers on low or fixed incomes. A stakeholder process generated some of the ideas that now make it easier and less stressful for customers to qualify for CARE billing discounts and other affordability resources.

Having access to these programs makes a real difference in the lives of those who use them. You can hear the emotion in these heartfelt testimonials (full names excluded to protect customer privacy):

- **"CARE is a lifesaver. I can stay in my home!"** – J
- **"I went through some tough times and everything was over due. It gives me money to stay close to being on budget."** – L
- **"Thank you from the bottom of my heart. My husband is on so many medications and this helps us afford the co-pay. We are so grateful."** – T
- **"I am a diabetic and the savings helps me eat healthier."** – J

The 20-year success of the Energy Awareness Expo has led to other outreach efforts across Minnesota Power's service area. Recently, Fulghum has been visiting area food shelves to talk with low-income customers face-to-face and learn more about their localized needs. Minnesota Power plans to host a series of events, similar to but smaller than the Energy Awareness Expo, in more rural communities to expand the reach of its energy efficiency and affordability programs.

"Minnesota Power is doing great work building trust and making customers aware of the energy efficiency and affordability options that are available to them and that they can approach their utility without fear or anxiety," said Crystal Pelkey, Customer Programs and Services Representative for Minnesota Power's Community Engagement Program. "We are really proud of that commitment, and the 20-year legacy of the Energy Awareness Expo is just one of many examples."

To learn more about Minnesota Power's Affordability programs, visit:
https://www.mnpower.com/Affordability or call 218-355-2843

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SUCCESS STORY | SMOKE ON THE WATER

Photos courtesy of Smoke on the Water

FORMER FIRE HALL TRANSFORMED INTO ENERGY-EFFICIENT COMMUNITY HOT SPOT

Word gets around in a small town. That was the case when entrepreneur Tia Marie purchased the former fire hall in Coleraine, Minnesota, in 2022 with a vision to open a bar, wood-fired pizza restaurant and production facility for wine and hard cider. It definitely got folks talking.

Minnesota Power Customer Programs and Services Representative Waylon Munch first got wind of the project while wrapping up an LED lighting rebate at a nearby business. The satisfied customer pointed to the old fire hall, mentioned it was going to be renovated into a restaurant, and noted that the owner also had a wine bar called Unwined Up North in Grand Rapids.

Munch tracked down contact information for Marie and called to tell her about Minnesota Power's rebates and financial incentives for incorporating energy-efficient lighting and equipment in commercial building projects.

Marie could have hung up before the initial pitch was out of his mouth, but she didn't. The same neighboring business owners had already approached her with a glowing endorsement of Minnesota Power's commercial energy conservation team.

"They actually came over and talked with me about contacting Minnesota Power," said Marie, who was interested in designing and building the project to be energy efficient. "That's how we made the connection. It definitely helped that other people in the community were saying you really want to talk with Minnesota Power, its (energy conservation) program is legit."

The timing was perfect for Minnesota Power to work with the project design team and recommend choices for maximum energy efficiency and incentives. The relationship helped Marie and her new business, Smoke on the Water, qualify for nearly $4,000 in utility rebates.


Tia Marie, owner of Smoke on the Water.

FROM FIRE HALL TO HOT SPOT

The former fire hall is an interesting structure. Primarily made of concrete, it boasts unique angles and banks of windows with sweeping views of scenic Trout Lake.

"You look at it and wonder why in the world did someone put a fire hall in that location," Marie said. "It has a funny backstory."

Apparently, Coleraine won the fire hall in the late 1970s. The state of Minnesota had some extra money and designed six small community fire halls. Then it asked rural fire departments

to make the case for why they deserved one of the projects. Coleraine submitted a proposal but was not selected.

"Chisholm actually won this one but couldn't decide where to put it, so the state wound up giving it to Coleraine," Marie said. "People in town were not really thrilled that the fire hall went on the waterfront, but it worked out in the end."

After three decades as a fire hall, the building was vacated. It sat unoccupied for seven years before Marie purchased it. Converting the facility to Smoke on the Water required a major overhaul and an investment of roughly $1.5 million.

"The ceiling was falling in and there was old tube lighting everywhere," Marie recalled. "We had to put in a new heating and cooling system and all new lighting and electrical. We had an opportunity to do everything right."

MINNESOTA POWER SERVES UP SAVINGS INSIGHTS AND REBATES

That's when Minnesota Power brought its expertise to the table. Utility representatives visited the site before construction began, reviewed drawings and plans, offered feedback and recommendations for lighting and HVAC upgrades, and served as a resource from start to finish.

"At the very end, we did a final walkthrough to verify that all of the systems were in place and the lighting and HVAC equipment matched what was specified," Munch said. "Then the numbers were crunched for the final rebate."

Smoke on the Water's decisions to install interior and exterior LED lighting, high efficiency exhaust fans, high performance heating and cooling equipment, and ENERGY STAR® refrigerators are expected to offset annual electric usage by roughly 62,000 kWh and lower demand by 14.41 kW.

These energy-saving choices qualified the business for $3,981 in rebates from Minnesota Power. It also can expect to save thousands of dollars per year on its electric bills and hundreds more in reduced operations and maintenance costs.

"Margins are so small in this business that every penny counts," Marie said. "It was important to make these choices in the beginning so ongoing energy usage is as smart as possible."

The rebate also helped Smoke on the Water through the unusual winter of 2023-24 as northern Minnesota hospitality businesses struggled with a shortage of snowmobilers, skiers, ice anglers and others who enjoy seasonal snow and cold.

"This was not the winter everyone planned on, so it was a wonderful time to receive a rebate check and welcome relief to have made wise energy choices," Marie said. "I can't imagine anyone in this area would build without checking with Minnesota Power to make sure they are doing the right things to save energy."

A FIERY ADVOCATE OF ENERGY EFFICIENCY

Smoke on the Water opened in June 2023 and the former fire hall quickly became a community hot spot. The bar/restaurant contains numerous nods to its firefighting past with a bench made of fire hoses, a firefighter U.S. flag with a "thin red line," an original tile embedded in the exterior concrete

Photos courtesy of Smoke on the Water

Minnesota Power utility experts offered recommendations for lighting and HVAC updates before the project began.

that reads Trout Lake Fire Hall, and firefighting scenes painted on the wood-fired pizza oven.

You might say the popular new gathering spot is the talk of the town and if other business owners should want to talk about Marie's positive experience with Minnesota Power, she is eager to share.

"They can definitely talk to me," Marie said. "I'll explain why it is worth their time to visit with the people at Minnesota Power and engage in the program … time well spent."

"This was a really cool project because of what it brings to the area," Munch said. "Tia (Marie) brought an exciting new business to Coleraine, and I'm so happy Minnesota Power was able to be involved."

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SUCCESS STORY | VIRTUAL COMMISSIONING

Minnesota Power energy advisors use visual displays of usage data to facilitate conversations between building owners and operators and identify energy-saving opportunities.

SMART METER DATA UNCOVERS COMMERCIAL ENERGY-SAVINGS POTENTIAL

A small mom-and-pop business learns its electricity usage peaks during hours when it isn't even open because the settings on its energy management system were accidentally bumped.

An institution uses significantly more energy than expected over the winter and discovers the chiller in its new facility inadvertently was set to run year-round.

These are the types of energy-wasting issues that Minnesota Power's Advanced Metering Infrastructure (AMI) data can help businesses uncover.

SMART METER DATA REVEALS ENERGY-WASTING ISSUES

Minnesota Power is a state leader in AMI deployment, providing customers with granular information that can help them understand and modify their energy usage patterns to save energy and money. Information collected through AMI provides the detailed data required for Minnesota Power's virtual commissioning program offered in partnership with Power TakeOff, a consulting company specializing in data-driven energy efficiency programs. Through the program, AMI data is used to spot anomalies in energy-usage patterns, indicating there may be opportunity for energy savings. Minnesota Power works with these businesses to identify potential causes and make recommendations for equipment adjustments or minor modifications that could save energy and lower costs. The virtual commissioning program was added to Minnesota Power's commercial energy conservation portfolio in 2021 to leverage the data provided through advanced meters.

"Our goal is always energy savings and customer service," said Emily Heiken, Programs and Services representative, Minnesota Power. "Through the virtual commissioning program, we are not waiting for customers to come to us with concerns about their bills being higher than expected. It is a proactive way to reach out and say, 'Hey, do you have time to talk? We have some suggestions that could save you money and energy.'"

PARTICIPATION IS FREE AND RECOMMENDATIONS ARE LOW OR NO COST

Minnesota Power customers benefit from being able to participate for free and recommendations that often focus on no-cost or very low-cost solutions, such as resetting controls or adjusting the settings on equipment. It is an approach that does not work for every business but can help those with hidden issues that can be pinpointed through analysis of advanced meter data. This is particularly useful for businesses with limited budgets for capital improvements.

Additionally, the virtual commissioning program does not require a significant time investment which can be a barrier to participation in energy efficiency programs, particularly for small- and mid-sized businesses. Customers are contacted by phone, email, or video conferencing to discuss the findings of

Customers can monitor their usage using Minnesota Power's virtual tool, MyAccount.

the virtual commissioning analysis and identify opportunities to make operational changes in their facility.

"We work with quite an array of small- and medium-sized businesses—anything from city office buildings to car dealerships to school portfolios," said Erin Roach-Alberts, program manager, Power TakeOff. "We don't discriminate on who is the right fit. Our job is to determine through the data which customers would benefit."

Customers that engage in the program get a Participation Report with a screenshot of their usage before and after making the recommended adjustments. The report visually tells the story of how much energy they saved, what kinds of measures they implemented, and the end results in energy and cost savings.

PARTICIPANTS ENCOURAGED TO TAKE NEXT STEPS IN ENERGY EFFICIENCY

Once a customer has completed the program, they are connected with a Minnesota Power representative to discuss opportunities to participate in other programs designed to give them more insight to their energy use and make additional improvements.

Not only have initial conversations led to interest in energy-saving actions or programs, but they have garnered new enrollments in Minnesota Power's MyAccount portal as well. MyAccount also relies on AMI data to provide insights into a customer's daily usage patterns, empowering them to take control of their energy use. Seeing usage displayed daily and even hourly provides insights far beyond seeing only total usage on their bill every month.

Waylon Munch, Minnesota Power Programs and Services representative, said, "In many of the virtual commissioning meetings, the visuals presented spark a newfound sense of curiosity from customers about their energy usage, patterns and interval data. A lot of times the customer asks something along the lines of 'Is there a way I can access this graph and look at it anytime, share with my supervisor, zoom in further, etc.' and we've been able to get them set up in MyAccount where they can see their usage, set energy markers, create energy thresholds, benchmark their building and more."

SEEING IS BELIEVING

Of course, not every customer contacted moves forward with recommendations, but those who do often see significant results. In 2023 alone, 19 commercial customers across the service area went all the way through the program and completed steps to achieve dramatic energy savings. Their combined electric savings totaled 616,112 kilowatt hours!

A large portion of the program savings in 2023 came from K-12 schools, a segment that is often challenged by budget restrictions and staffing shortages. Dillon Malay, a Minnesota Power Programs and Services representative, recalled one experience when working with a customer.

"We had worked with a school district in our service territory to help them better understand how their facility was using energy, but the project was unfortunately halted as a result of staff and budget shortages in the district," Malay said. "We were able to provide them with information about their usage patterns and make recommendations for low-cost improvements, allowing them to overcome challenges that would have otherwise prevented them from participating in energy efficiency programs."

Another customer that has experienced the benefits of virtual commissioning of its equipment and systems is Welia Health, a regional health care system based in Mora, Minnesota, that serves communities in Pine and Kanabec counties.

"It was a tremendous collaborative effort working with Minnesota Power/ALLETE to re-commission one of my clinics to optimize energy costs," said Mark Vizenor, Facility Operations manager for Welia Health. "I would recommend the free service to any of their customers."

"Building operators are often not the same people who see the monthly energy bills and energy usage, so they may have no idea that the energy usage is off until they have visual proof," Heiken said. "Since we started offering the virtual commissioning program, there have been a lot of situations where customers realize building controls were changed inadvertently or reset and Power TakeOff can walk them through fixing it. It's a win-win-win."

To learn more about Minnesota Power's Virtual Commissioning programs, visit: **mnpower.com/VCX or call 218-355-2843**

Appendix

APPENDIX A

Filing Cover Letter, Filing Summary, Affidavit of Service and Service List

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April 1, 2024

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

Deputy Commissioner Michelle Gransee
Minnesota Department of Commerce
85 Seventh Place East, Suite 500
St. Paul, MN 55101-2198

Re: **2023 Conservation Improvement Program Consolidated Filing**
Docket Nos. E015/M-24-48, E015/CIP-20-476

In the Matter of a Joint Investigation into the Impacts of the Federal Inflation Reduction Act
Docket No. E,G-999/CI-22-624

Dear Mr. Seuffert and Ms. Gransee:

Attached please find via eFiling Minnesota Power's 2023 Conservation Improvement Program ("CIP") Consolidated Filing. This submittal includes a CIP Tracker Activity Report, a Financial Incentives Report, a Proposed Conservation Program Adjustment Factor, 2023 CIP Project Evaluations and a compliance with Department of Commerce ("DOC") orders section. Minnesota Power is filing this information pursuant to Minn. Stat. §§ 216B.241, 216B.16, subd, 6c, 216B.2401, and 216B.2411 and in compliance with Minnesota Public Utilities Commission ("MPUC") and DOC rules and orders relating to annual filings associated with Company-sponsored conservation program activities, including Minn. Rule 7690.0550.

Minnesota Power requests that the MPUC review the filed material and approve Minnesota Power's 2023 CIP Tracker Activity, Financial Incentives, and proposed Conservation Program Adjustment factor. Further, Minnesota Power requests that the DOC review and approve the evaluations of the various CIP projects included herein and the compliance with prior DOC orders. Minnesota Power has electronically filed this document and copies of this Cover Letter along with the Summary of Filing have been served on the parties on the attached service list.

Also included in this filing on page 22 is compliance for Order Point 3 from the September 12, 2023 order in Docket No. E,G-999/CI-22-624, In the Matter of a Joint Investigation into the Impacts of the Federal Inflation Reduction Act.

If you have any questions regarding this filing, please contact me at (218) 591-4870 or avang@mnpower.com.

Sincerely,

Analeisha Vang
Senior Public Policy Advisor

AMV:th
Attach.

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of Minnesota Power's 2023 Conservation Improvement Program Consolidated Filing Reporting on CIP Tracker Account Activity, Financial Incentives Report, Proposed CPA Factors and 2023 Project Evaluations In the Matter of a Joint Investigation into the Impacts of the Federal Inflation Reduction Act	Docket Nos.E-015/M-24-48,E-015/CIP-20-476, E,G-999/CI-22-624

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 2023 CIP Tracker Account activity year-end balance of $477,246.
- A revised Conservation Program Adjustment ("CPA"), to be first implemented without proration on July 1, 2024, of $0.001444/kilowatt hour ("kWh").

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.

STATE OF MINNESOTA)
)ss
COUNTY OF ST. LOUIS)

AFFIDAVIT OF SERVICE VIA ELECTRONIC FILING

Tiana Heger of the City of Duluth, County of St. Louis, State of Minnesota, says that on the 1st day of April, 2024, she served Minnesota Power's 2023 Conservation Improvement Program Consolidated Compliance Filing in **Docket Nos. E015/M-24-48, E015/CIP-20-476 and E,G-999/CI-22-624** on the Minnesota Public Utilities Commission and the Energy Resources Division of the Minnesota Department of Commerce via electronic filing. The persons on E-Docket's Official Service List for this Docket were served as requested.

Tiana Heger

Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Matthew	Brodin	mbrodin@allete.com	Minnesota Power Company	30 West Superior St Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_Generic Service List
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	No	GEN_SL_Minnesota Power_Generic Service List
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	GEN_SL_Minnesota Power_Generic Service List
Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_Generic Service List
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	GEN_SL_Minnesota Power_Generic Service List
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	No	GEN_SL_Minnesota Power_Generic Service List
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	No	GEN_SL_Minnesota Power_Generic Service List

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Tom	Balster	tombalster@alliantenergy.com	Interstate Power & Light Company	PO Box 351 200 1st St SE Cedar Rapids, IA 524060351	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Lisa	Beckner	lbeckner@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
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Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	60 S 6th St Ste 1500 Minneapolis, MN 55402-4400	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
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Jim	Erchul	jerchul@dbnhs.org	Daytons Bluff Neighborhood Housing Sv.	823 E 7th St St. Paul, MN 55106	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Greg	Ernst	gaernst@q.com	G. A. Ernst & Associates, Inc.	2377 Union Lake Trl Northfield, MN 55057	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Melissa S	Feine	melissa.feine@semcac.org	SEMCAC	PO Box 549 204 S Elm St Rushford, MN 55971	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List

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Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Karolanne	Foley	Karolanne.foley@dairylandpower.com	Dairyland Power Cooperative	PO Box 817 La Crosse, WI 54602-0817	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Jenny	Glumack	jenny@mrea.org	Minnesota Rural Electric Association	11640 73rd Ave N Maple Grove, MN 55369	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Jason	Grenier	jgrenier@otpco.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
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Joe	Hoffman	ja.hoffman@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Dave	Johnson	dave.johnson@aeoa.org	Arrowhead Economic Opportunity Agency	702 3rd Ave S Virginia, MN 55792	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Tina	Koecher	tkoecher@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Martin	Lepak	Martin.Lepak@aeoa.org	Arrowhead Economic Opportunity	702 S 3rd Ave Virginia, MN 55792	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List

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Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 E 7th St St Paul, MN 55106	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
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Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Leah	Peterson	lpeterson@mnpower.com	Minnesota Power	30 West Superior St Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Lisa	Pickard	lseverson@minnkota.com	Minnkota Power Cooperative	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Dave	Reinke	dreinke@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024-9583	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
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Susan	Romans	sromans@allete.com	Minnesota Power	30 West Superior Street Legal Dept Duulth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Jean	Schafer	jeans@bepc.com	Basin Electric Power Cooperative	1717 E Interstate Ave Bismarck, ND 58501	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List

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Christine	Schwartz	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List
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Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	GEN_SL_Minnesota Power_MPs CIP Service List

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Hillary	Creurer	hcreurer@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	Yes	GEN_SL_Minnesota Power_MPs General Service List
Adam	Heinen	aheinen@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List
Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List
Michael	Krikava	mkrikava@taftlaw.com	Taft Stettinius & Hollister LLP	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List
James D.	Larson	james.larson@avantenergy.com	Avant Energy Services	220 S 6th St Ste 1300 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List
Susan	Ludwig	sludwig@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 E 7th St St Paul, MN 55106	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	Yes	GEN_SL_Minnesota Power_MPs General Service List
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List
Jennifer	Peterson	jjpeterson@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	GEN_SL_Minnesota Power_MPs General Service List
Susan	Romans	sromans@allete.com	Minnesota Power	30 West Superior Street Legal Dept Duulth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	GEN_SL_Minnesota Power_MPs General Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Tom	Balster	tombalster@alliantenergy.com	Interstate Power & Light Company	PO Box 351 200 1st St SE Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_24-48_M-24-48
Lisa	Beckner	lbeckner@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_24-48_M-24-48
William	Black	bblack@mmua.org	MMUA	Suite 200 3131 Fernbrook Lane North Plymouth, MN 55447	Electronic Service	No	OFF_SL_24-48_M-24-48
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	60 S 6th St Ste 1500 Minneapolis, MN 55402-4400	Electronic Service	No	OFF_SL_24-48_M-24-48
Ray	Choquette	rchoquette@agp.com	Ag Processing Inc.	12700 West Dodge Road PO Box 2047 Omaha, NE 68103-2047	Electronic Service	No	OFF_SL_24-48_M-24-48
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_24-48_M-24-48
George	Crocker	gwillc@nawo.org	North American Water Office	5093 Keats Avenue Lake Elmo, MN 55042	Electronic Service	No	OFF_SL_24-48_M-24-48
Patrick	Deal	pdeal@mnchamber.com	Minnesota Chamber of Commerce	400 Robert St N Ste 1500 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_24-48_M-24-48
Steve	Downer	sdowner@mmua.org	MMUA	3025 Harbor Ln N Ste 400 Plymouth, MN 554475142	Electronic Service	No	OFF_SL_24-48_M-24-48
Charles	Drayton	charles.drayton@enbridge.com	Enbridge Energy Company, Inc.	7701 France Ave S Ste 600 Edina, MN 55435	Electronic Service	No	OFF_SL_24-48_M-24-48

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jim	Erchul	jerchul@dbnhs.org	Daytons Bluff Neighborhood Housing Sv.	823 E 7th St St. Paul, MN 55106	Electronic Service	No	OFF_SL_24-48_M-24-48
Greg	Ernst	gaernst@q.com	G. A. Ernst & Associates, Inc.	2377 Union Lake Trl Northfield, MN 55057	Electronic Service	No	OFF_SL_24-48_M-24-48
Melissa S	Feine	melissa.feine@semcac.org	SEMCAC	PO Box 549 204 S Elm St Rushford, MN 55971	Electronic Service	No	OFF_SL_24-48_M-24-48
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_24-48_M-24-48
Karolanne	Foley	Karolanne.foley@dairylandpower.com	Dairyland Power Cooperative	PO Box 817 La Crosse, WI 54602-0817	Electronic Service	No	OFF_SL_24-48_M-24-48
Tyler	Glewwe	Tyler.Glewwe@centerpointenergy.com	CenterPoint Energy	505 Nicollet Mall Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-48_M-24-48
Jenny	Glumack	jenny@mrea.org	Minnesota Rural Electric Association	11640 73rd Ave N Maple Grove, MN 55369	Electronic Service	No	OFF_SL_24-48_M-24-48
Jason	Grenier	jgrenier@otpco.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_24-48_M-24-48
Jeffrey	Haase	jhaase@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_24-48_M-24-48
Patty	Hanson	phanson@rpu.org	Rochester Public Utilities	4000 E River Rd NE Rochester, MN 55906	Electronic Service	No	OFF_SL_24-48_M-24-48

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jared	Hendricks	jared.hendricks@owatonnautilities.com	Owatonna Municipal Public Utilities	PO Box 800 208 S Walnut Ave Owatonna, MN 55060-2940	Electronic Service	No	OFF_SL_24-48_M-24-48
Joe	Hoffman	ja.hoffman@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	OFF_SL_24-48_M-24-48
Dave	Johnson	dave.johnson@aeoa.org	Arrowhead Economic Opportunity Agency	702 3rd Ave S Virginia, MN 55792	Electronic Service	No	OFF_SL_24-48_M-24-48
Martin	Kapsch	martin.kapsch@centerpointenergy.com	CenterPoint Energy Minnesota Gas	505 Nicollet Mall Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-48_M-24-48
Deborah	Knoll	dknoll@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_24-48_M-24-48
Kathryn	Knudson	kathryn.knudson@centerpointenergy.com	CenterPoint Energy Minnesota Gas	N/A	Electronic Service	No	OFF_SL_24-48_M-24-48
Tina	Koecher	tkoecher@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_24-48_M-24-48
Martin	Lepak	Martin.Lepak@aeoa.org	Arrowhead Economic Opportunity	702 S 3rd Ave Virginia, MN 55792	Electronic Service	No	OFF_SL_24-48_M-24-48
Corey	Lubovich	coreyl@hpuc.com	Hibbing Public Utilities Commission	1902 6th Ave E Hibbing, MN 55746	Electronic Service	No	OFF_SL_24-48_M-24-48
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 E 7th St St Paul, MN 55106	Electronic Service	No	OFF_SL_24-48_M-24-48

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Scot	McClure	scotmcclure@alliantenergy.com	Interstate Power And Light Company	4902 N Biltmore Ln PO Box 77007 Madison, WI 537071007	Electronic Service	No	OFF_SL_24-48_M-24-48
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_24-48_M-24-48
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-48_M-24-48
Carl	Nelson	cnelson@mncee.org	Center for Energy and Environment	212 3rd Ave N Ste 560 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_24-48_M-24-48
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_24-48_M-24-48
Audrey	Partridge	apartridge@mncee.org	Center for Energy and Environment	212 3rd Ave. N. Suite 560 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_24-48_M-24-48
Lisa	Pickard	lseverson@minnkota.com	Minnkota Power Cooperative	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_24-48_M-24-48
Bill	Poppert	info@technologycos.com	Technology North	2433 Highwood Ave St. Paul, MN 55119	Electronic Service	No	OFF_SL_24-48_M-24-48
Dave	Reinke	dreinke@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024-9583	Electronic Service	No	OFF_SL_24-48_M-24-48
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_24-48_M-24-48

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jean	Schafer	jeans@bepc.com	Basin Electric Power Cooperative	1717 E Interstate Ave Bismarck, ND 58501	Electronic Service	No	OFF_SL_24-48_M-24-48
Christine	Schwartz	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_24-48_M-24-48
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_24-48_M-24-48
Rick	Sisk	RSisk@trccompanies.com	Lockheed Martin	1000 Clark Ave. St. Louis, MO 63102	Electronic Service	No	OFF_SL_24-48_M-24-48
Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.	76 W Kellogg Blvd St. Paul, MN 55102	Electronic Service	No	OFF_SL_24-48_M-24-48
Anna	Sommer	ASommer@energyfuturesgroup.com	Energy Futures Group	PO Box 692 Canton, NY 13617	Electronic Service	No	OFF_SL_24-48_M-24-48
Russ	Stark	Russ.Stark@ci.stpaul.mn.us	City of St. Paul	Mayor's Office 15 W. Kellogg Blvd., Suite 390 Saint Paul, MN 55102	Electronic Service	No	OFF_SL_24-48_M-24-48
Kodi	Verhalen	kverhalen@taftlaw.com	Taft Stettinius & Hollister LLP	80 S 8th St Ste 2200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-48_M-24-48
Michael	Volker	mvolker@eastriver.coop	East River Electric Power Coop	211 S. Harth Ave Madison, SD 57042	Electronic Service	No	OFF_SL_24-48_M-24-48
Sharon N.	Walsh	swalsh@shakopeeutilities.com	Shakopee Public Utilties	255 Sarazin St Shakopee, MN 55379	Electronic Service	No	OFF_SL_24-48_M-24-48

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Ethan	Warner	ethan.warner@centerpointenergy.com	CenterPoint Energy	505 Nicollet Mall Minneapolis, MN 55402	Electronic Service	No	OFF_SL_24-48_M-24-48
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_24-48_M-24-48

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Tom	Balster	tombalster@alliantenergy.com	Interstate Power & Light Company	PO Box 351 200 1st St SE Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Lisa	Beckner	lbeckner@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_20-476_CIP-20-476
William	Black	bblack@mmua.org	MMUA	Suite 200 3131 Fernbrook Lane North Plymouth, MN 55447	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	60 S 6th St Ste 1500 Minneapolis, MN 55402-4400	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Ray	Choquette	rchoquette@agp.com	Ag Processing Inc.	12700 West Dodge Road PO Box 2047 Omaha, NE 68103-2047	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_20-476_CIP-20-476
George	Crocker	gwillc@nawo.org	North American Water Office	5093 Keats Avenue Lake Elmo, MN 55042	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Patrick	Deal	pdeal@mnchamber.com	Minnesota Chamber of Commerce	400 Robert St N Ste 1500 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Steve	Downer	sdowner@mmua.org	MMUA	3025 Harbor Ln N Ste 400 Plymouth, MN 554475142	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Charles	Drayton	charles.drayton@enbridge.com	Enbridge Energy Company, Inc.	7701 France Ave S Ste 600 Edina, MN 55435	Electronic Service	No	OFF_SL_20-476_CIP-20-476

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jim	Erchul	jerchul@dbnhs.org	Daytons Bluff Neighborhood Housing Sv.	823 E 7th St St. Paul, MN 55106	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Greg	Ernst	gaernst@q.com	G. A. Ernst & Associates, Inc.	2377 Union Lake Trl Northfield, MN 55057	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Melissa S	Feine	melissa.feine@semcac.org	SEMCAC	PO Box 549 204 S Elm St Rushford, MN 55971	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Karolanne	Foley	Karolanne.foley@dairylandpower.com	Dairyland Power Cooperative	PO Box 817 La Crosse, WI 54602-0817	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Jenny	Glumack	jenny@mrea.org	Minnesota Rural Electric Association	11640 73rd Ave N Maple Grove, MN 55369	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Laura	Goldberg	lgoldberg@nrdc.org	Natural Resources Defense Council	20 N. Upper Wacker Dr. Suite 1600 Chicago, IL 60606	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Jason	Grenier	jgrenier@otpco.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Jeffrey	Haase	jhaase@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Patty	Hanson	phanson@rpu.org	Rochester Public Utilities	4000 E River Rd NE Rochester, MN 55906	Electronic Service	No	OFF_SL_20-476_CIP-20-476

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jared	Hendricks	jared.hendricks@owatonnautilities.com	Owatonna Municipal Public Utilities	PO Box 800 208 S Walnut Ave Owatonna, MN 55060-2940	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Joe	Hoffman	ja.hoffman@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Dave	Johnson	dave.johnson@aeoa.org	Arrowhead Economic Opportunity Agency	702 3rd Ave S Virginia, MN 55792	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Deborah	Knoll	dknoll@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Tina	Koecher	tkoecher@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Martin	Lepak	Martin.Lepak@aeoa.org	Arrowhead Economic Opportunity	702 S 3rd Ave Virginia, MN 55792	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Corey	Lubovich	coreyl@hpuc.com	Hibbing Public Utilities Commission	1902 6th Ave E Hibbing, MN 55746	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 E 7th St St Paul, MN 55106	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Scot	McClure	scotmcclure@alliantenergy.com	Interstate Power And Light Company	4902 N Biltmore Ln PO Box 77007 Madison, WI 537071007	Electronic Service	No	OFF_SL_20-476_CIP-20-476
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	Yes	OFF_SL_20-476_CIP-20-476

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Ted	Nedwick	tnedwick@nhtinc.org	National Housing Trust	1101 30th Street NW Ste 100A Washington, DC 20007	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Carl	Nelson	cnelson@mncee.org	Center for Energy and Environment	212 3rd Ave N Ste 560 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Audrey	Partridge	apartridge@mncee.org	Center for Energy and Environment	212 3rd Ave. N. Suite 560 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Leah	Peterson	lpeterson@mnpower.com	Minnesota Power	30 West Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Lisa	Pickard	lseverson@minnkota.com	Minnkota Power Cooperative	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Bill	Poppert	info@technologycos.com	Technology North	2433 Highwood Ave St. Paul, MN 55119	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Dave	Reinke	dreinke@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024-9583	Electronic Service	No	OFF_SL_20-476_CIP-20-476

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Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_20-476_CIP-20-476
Anne	Rittgers	arittgers@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Jean	Schafer	jeans@bepc.com	Basin Electric Power Cooperative	1717 E Interstate Ave Bismarck, ND 58501	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Christine	Schwartz	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_20-476_CIP-20-476
Rick	Sisk	RSisk@trccompanies.com	Lockheed Martin	1000 Clark Ave. St. Louis, MO 63102	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.	76 W Kellogg Blvd St. Paul, MN 55102	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Anna	Sommer	ASommer@energyfuturesgroup.com	Energy Futures Group	PO Box 692 Canton, NY 13617	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Russ	Stark	Russ.Stark@ci.stpaul.mn.us	City of St. Paul	Mayor's Office 15 W. Kellogg Blvd., Suite 390 Saint Paul, MN 55102	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Analeisha	Vang	avang@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_20-476_CIP-20-476

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kodi	Verhalen	kverhalen@taftlaw.com	Taft Stettinius & Hollister LLP	80 S 8th St Ste 2200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Michael	Volker	mvolker@eastriver.coop	East River Electric Power Coop	211 S. Harth Ave Madison, SD 57042	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Sharon N.	Walsh	swalsh@shakopeeutilities.com	Shakopee Public Utilties	255 Sarazin St Shakopee, MN 55379	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Ethan	Warner	ethan.warner@centerpointenergy.com	CenterPoint Energy	505 Nicollet Mall Minneapolis, MN 55402	Electronic Service	No	OFF_SL_20-476_CIP-20-476
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_20-476_CIP-20-476

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Michael	Ahern	ahern.michael@dorsey.com	Dorsey & Whitney, LLP	50 S 6th St Ste 1500 Minneapolis, MN 554021498	Electronic Service	No	OFF_SL_22-624_Official
Elizabeth	Aldrich	laldrich@bluesource.com	Bluesource	15669 WATERLOO CIR TRUCKEE, CA 96161	Electronic Service	No	OFF_SL_22-624_Official
Michael	Allen	michael.allen@allenergysolar.com	All Energy Solar	721 W 26th st Suite 211 Minneapolis, MN 55405	Electronic Service	No	OFF_SL_22-624_Official
Abigail	Alter	aalter@rmi.org		2490 Junction Place Ste 200 Boulder, CO 80301	Electronic Service	No	OFF_SL_22-624_Official
Gary	Ambach	Gambach@slipstreaminc.org	Slipstream, Inc.	8973 SW Village Loop Chanhassen, MN 55317	Electronic Service	No	OFF_SL_22-624_Official
Kristine	Anderson	kanderson@greatermngas.com	Greater Minnesota Gas, Inc.& Greater MN Transmission, LLC	1900 Cardinal Lane PO Box 798 Faribault, MN 55021	Electronic Service	No	OFF_SL_22-624_Official
Susan	Arntz	sarntz@mankatomn.gov	City Of Mankato	P.O. Box 3368 Mankato, MN 560023368	Electronic Service	No	OFF_SL_22-624_Official
Mara	Ascheman	mara.k.ascheman@xcelenergy.com	Xcel Energy	414 Nicollet Mall Fl 5 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_22-624_Official
Thomas	Ashley	tom@greenlots.com	Greenlots	N/A	Electronic Service	No	OFF_SL_22-624_Official
Kevin	Auerbacher	kauerbacher@tesla.com	Tesla, Inc.	1050 K Street NW, Suite 101 Washington, DC 20001	Electronic Service	No	OFF_SL_22-624_Official
Michael J	Auger	Michael.auger@ever-greenenergy.com	Ever-Green Energy	305 Saint Peter St Saint Paul, MN 55102	Electronic Service	No	OFF_SL_22-624_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Anjali	Bains	bains@fresh-energy.org	Fresh Energy	408 Saint Peter Ste 220 Saint Paul, MN 55102	Electronic Service	No	OFF_SL_22-624_Official
Gail	Baranko	gail.baranko@xcelenergy.com	Xcel Energy	414 Nicollet Mall7th Floor Minneapolis, MN 55401	Electronic Service	No	OFF_SL_22-624_Official
Max	Baumhefner	MBAUMHEFNER@NRDC.ORG	Natural Resources Defense Council	111 Sutter St 21st Fl San Francisco, CA 94104	Electronic Service	No	OFF_SL_22-624_Official
Jessica L	Bayles	Jessica.Bayles@stoel.com	Stoel Rives LLP	1150 18th St NW Ste 325 Washington, DC 20036	Electronic Service	No	OFF_SL_22-624_Official
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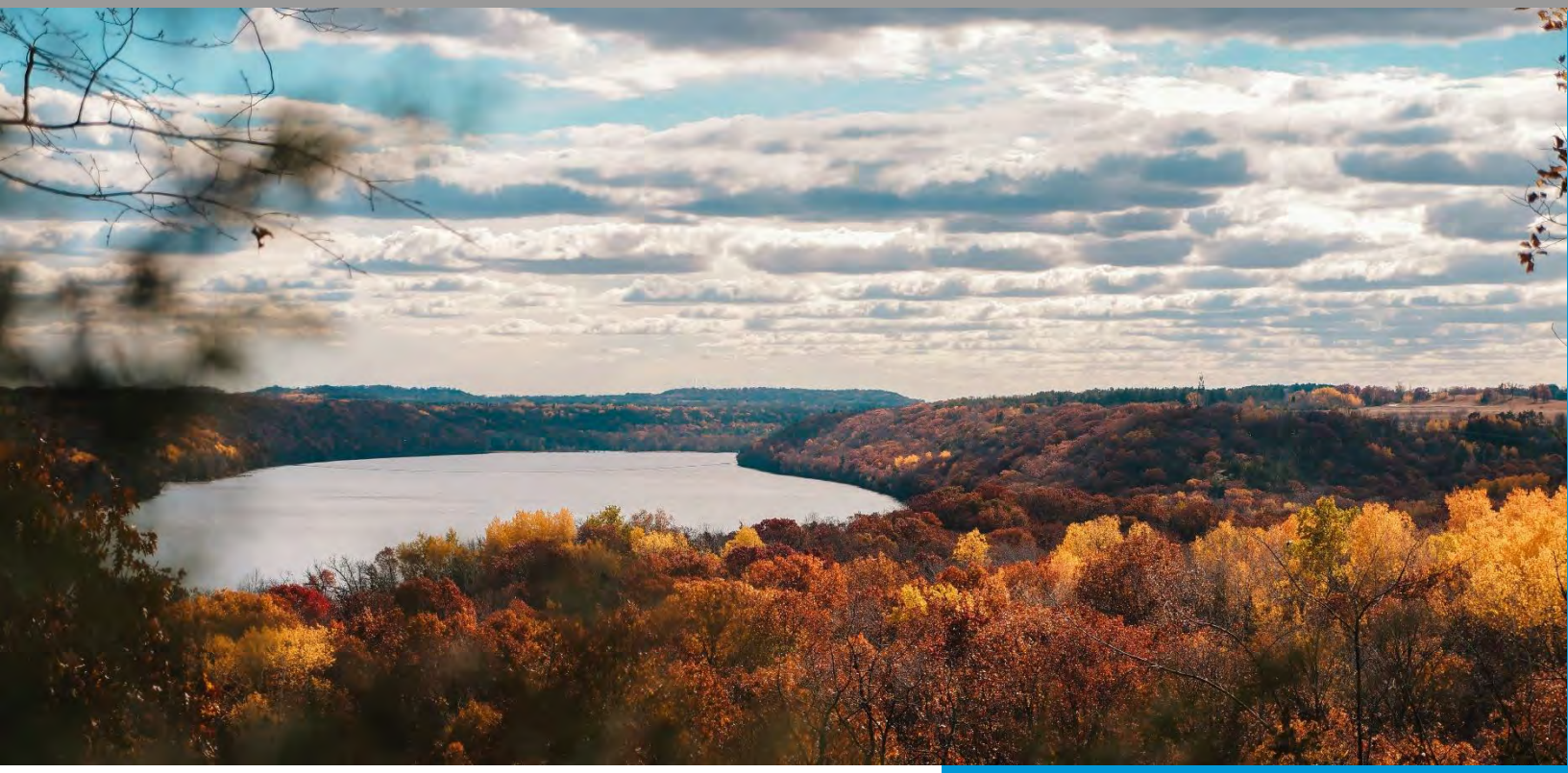
APPENDIX B

Behavioral

Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

Draft Report

Energy Engagement Behavioral Program Impact Evaluation



Prepared for Minnesota Power
By Demand Side Analytics, LLC
March 2024

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1 EXECUTIVE SUMMARY

Minnesota Power's Energy Engagement Behavioral Program (EEBP) leverages online engagement and two-way communication with residential customers to generate behavioral energy savings. The foundation of EEBP is an online energy tracking and account management tool branded "MyAccount". The MyAccount system allows customers to use a computer, tablet, or smartphone to manage their energy usage, make changes to their account, and pay their monthly bill. Through the interactive online portal, customers can set up notifications and alerts, track events, view available upgrades, and set goals that affect their electricity use. Additionally, customers can access their billing history and make online payments.

As a result, the MyAccount online portal is primarily:

- A data-driven and visually informative tool that promotes energy awareness and helps customers modify their energy use behavior.
- An online option that allows customers to view and pay their bill online.

Minnesota Power (MP) retained Demand Side Analytics (DSA) to perform a third-party independent impact evaluation of EEBP. This report is the third annual impact evaluation of a three-year engagement. The key research question for the evaluation was "*what were the energy savings achieved by EEBP participants during calendar year 2023*?" Specifically, what were the:

1. Average Daily electric energy savings (kWh per day)?
2. Annual electric energy savings (kWh per year)?
3. Percentage savings relative to baseline consumption (%)?
4. Average annual savings using the Average Savings Method (ASM)[1] in kWh per year?

DSA completed a quasi-experimental analysis of EEBP using daily usage data from 2019 to 2023. To conduct the analysis, DSA utilized a difference in differences empirical framework. The modeling includes additional modern econometric techniques, including pseudo controls and household-level fixed effects.

Table 1 shows the results. We estimate an average daily savings of **0.527 kWh** per service location, or a **1.98% decrease** in consumption. This estimated effect is statistically significant with a 95% confidence interval ranging from 0.498 kWh per day to 0.555 kWh per day. These results translate to annual

[1] The Average Savings Method requires utilities to claim one-third of the observed savings in each year of a triennial planning period.
https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId=%7b1733C21D-B866-4A7F-821C-7DFCC6C64D83%7d&documentTitle=20122-70948-03

savings of **192.20 kWh** per service location, or a **64.07 kWh** of annual reduction per service location using the ASM method.

Table 1: 2023 Average Savings per Service Location

Result	Daily Savings (kWh/day)	Annual Savings (kWh/year)	Percentage Savings	Annual Savings (ASM kWh/year)
Point Estimate	0.527	192.2	1.98%	64.07
95% CI	(0.498, 0.555)	(181.86, 202.52)	(1.88%, 2.09%)	(60.62, 67.51)

Participation in EEBP is constantly changing with new customers enrolling in the service daily and other customers moving and closing their account with Minnesota Power. There was an average of 63,835 active service locations with MyAccount credentials in 2023. This report focuses on the 55,920 residential service locations. Table 2 presents aggregate results for all active residential service locations. We estimate that EEBP saved an average of **29.45 MWh** per day or **10,748 MWh** annually. Dividing the annual MWh savings by three returns aggregate savings of **3,583 MWh** using the ASM method.

Table 2: 2023 Total Savings (MWh) for all Active Service Locations

Daily Savings	Annual Savings	Annual Savings (ASM)
29.45	10,748	3,583

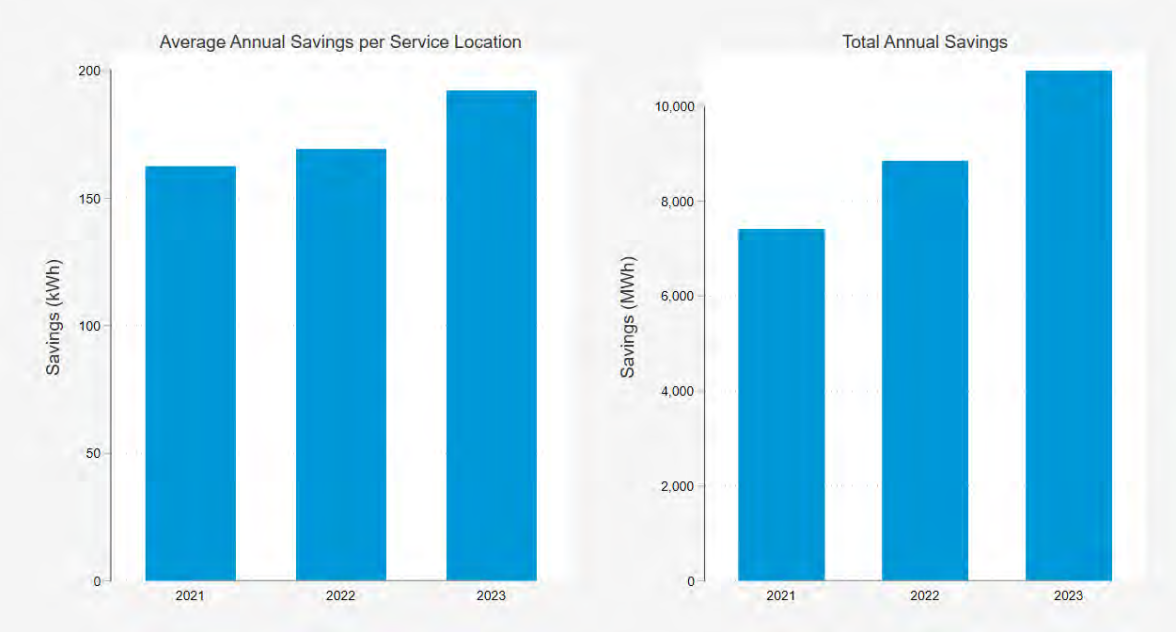
Table 3 compares the evaluated results to the 2023 projections in Minnesota Power's Triennial Plan. The participation totals were higher than projected and the aggregate energy savings exceeded planed totals. While percent savings were nearly exact to the planned value of 2%, the average baseline consumption was higher. As a result, the annual kWh savings per home was estimated to be approximately 13% higher than planned.

Table 3: Comparison of Evaluation Results with Triennial Plan Projections

Metric	2023 Planned	Evaluation Results
Assumed Participants (Registered Accounts)	45,000	Higher (55,920 service locations)
Average annual consumption - kWh	8,500	Higher (9,692)
Total participant estimated kWh	382,500,000	Higher (541,976,640)
Expected average annual savings - %	2%	Lower (1.98 %)
Expected average savings per participant - kWh	170	Higher (192.2)
Expected total program savings - kWh	7,650,000	Higher (10,747,944)
Total savings after ASM applied - kWh	2,550,000	Higher (3,582,648)

Our findings from the 2023 impact evaluation are generally consistent with our results from 2022 and 2021, showing a modest year-over-year increase in estimated savings per service location. This is not surprising because our regression modeling approach estimates the average treatment effect across multiple years. This evaluation quantifies savings from 2021 to 2023 amongst households that enrolled in EEBP in 2021 and 2022. Similarly, the prior evaluation quantified savings from 2020 to 2022 amongst households that enrolled in EEBP in 2020 and 2021. Put simply, the two evaluations rely on a partially overlapping set of MP households over partially overlapping timeframes. The savings per service location is shown in the left pane of Figure 1, revealing a gradual increase attributable to both higher baseline consumption values and a slight rise in percent savings. The right pane factors both the average impact per service location and the growth in enrollment and thus shows a steeper increase in aggregate MWh savings.

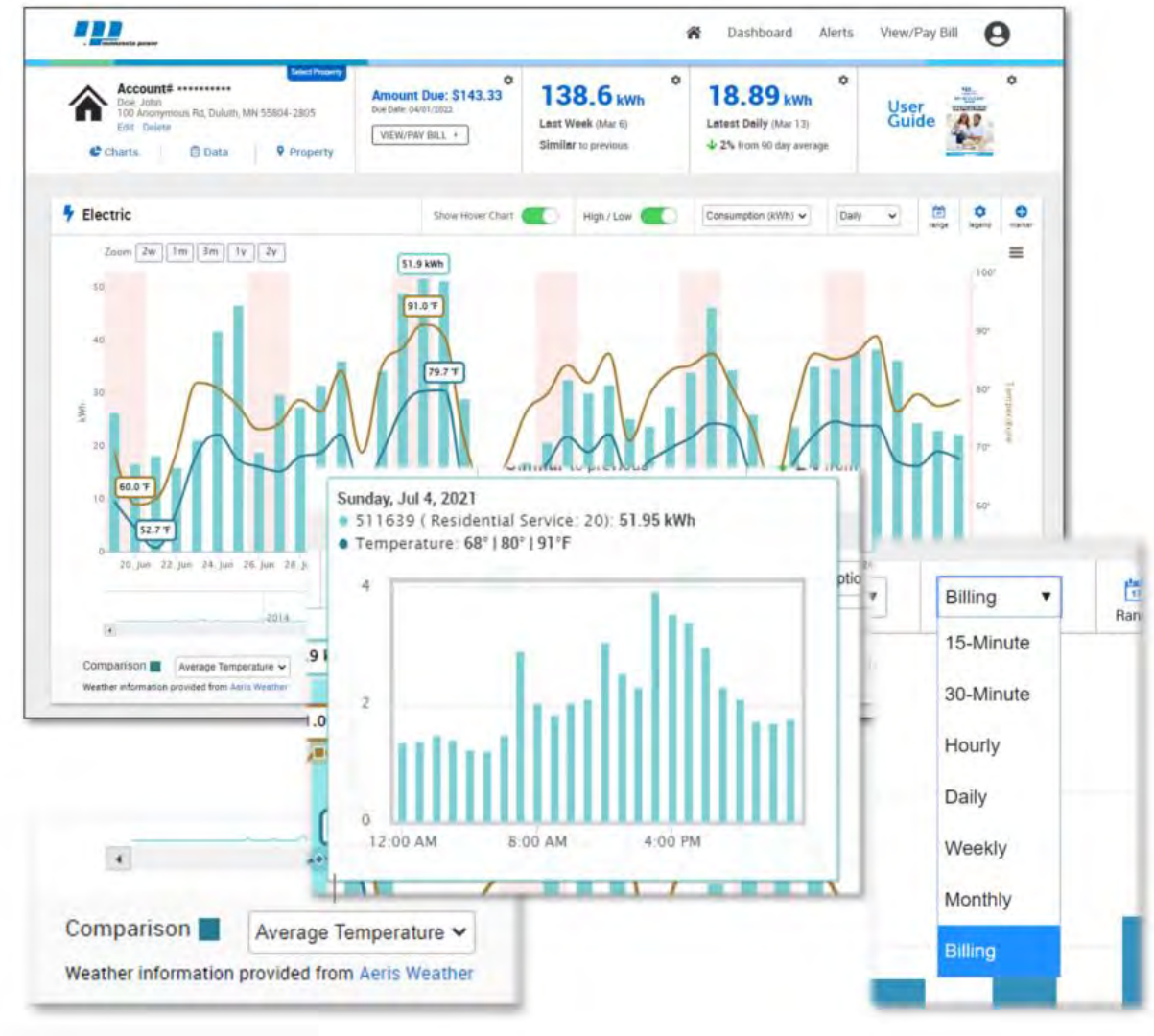
Figure 1: Savings Comparison (2021 to 2023)



2 PROGRAM OVERVIEW

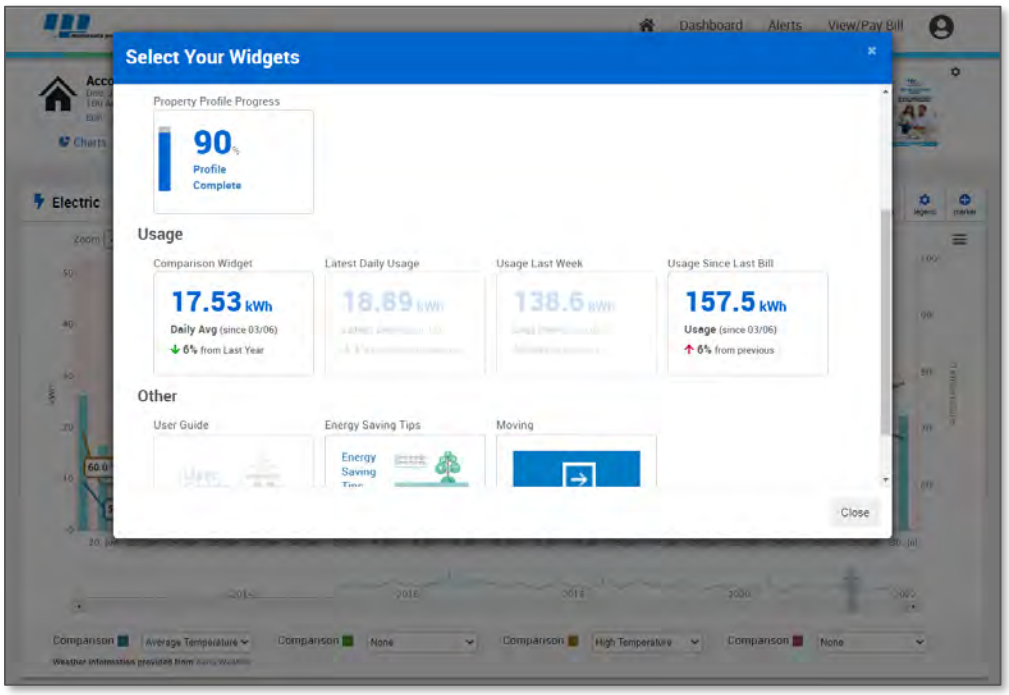
The MyAccount platform that powers EEBP is a customer self-service portal managed by Accelerated Innovations on behalf of Minnesota Power. Figure 2: Sample MyAccount ScreensFigure 2 shows sample screens where users can view and download their historic consumption data at an hourly, daily, or monthly level, add information about their property or set energy conservation goals. MyAccount users can interact with usage visualization with controls to zoom and drill-down to examine trends, and view changes in usage in comparison to weather variables such as average or high temperature:

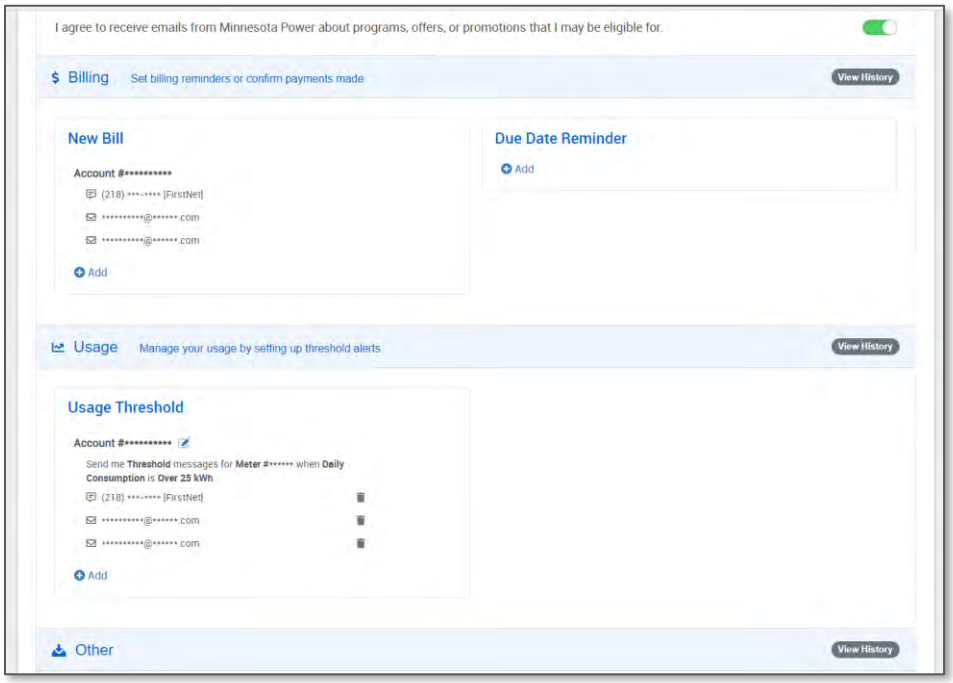
Figure 2: Sample MyAccount Screens



EEBP participants can customize their usage dashboard to view at-a-glance metrics on usage or link to resources like an Energy Saving Tips library. Users can set notifications and alerts to be notified about billing events and when their usage (e.g., daily, weekly) exceeds a set threshold.

Figure 3: Additional MyAccount Screens



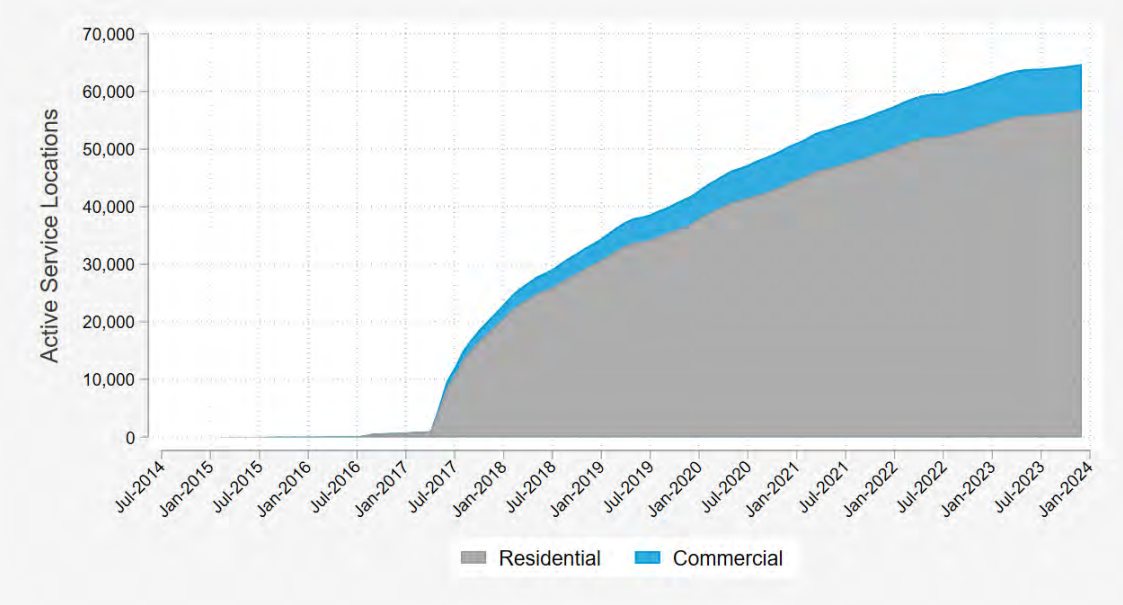


Features of the MyAccount platform include:

1. Utility customer self-service portal (online and mobile app) for:
    a. Online bill payment and presentment
        i. Make payment
        ii. Auto pay
        iii. Paperless billing
        iv. Manage digital wallet
    b. Start/stop/transfer service requests
    c. Utility program promotion and enrollment
2. Energy usage engagement
    a. Access to monthly billed usage and weekly/daily/hour/15-minute AMI/interval usage data
    b. Real-time energy use feedback and alerts (e.g.., high usage, "Notify me when…") via email/text/push notifications
    c. Dynamic charting interface with zoom/drill-down capabilities and comparisons to weather data and usage history
    d. At-a-glance feedback and analytics from configurable widget content

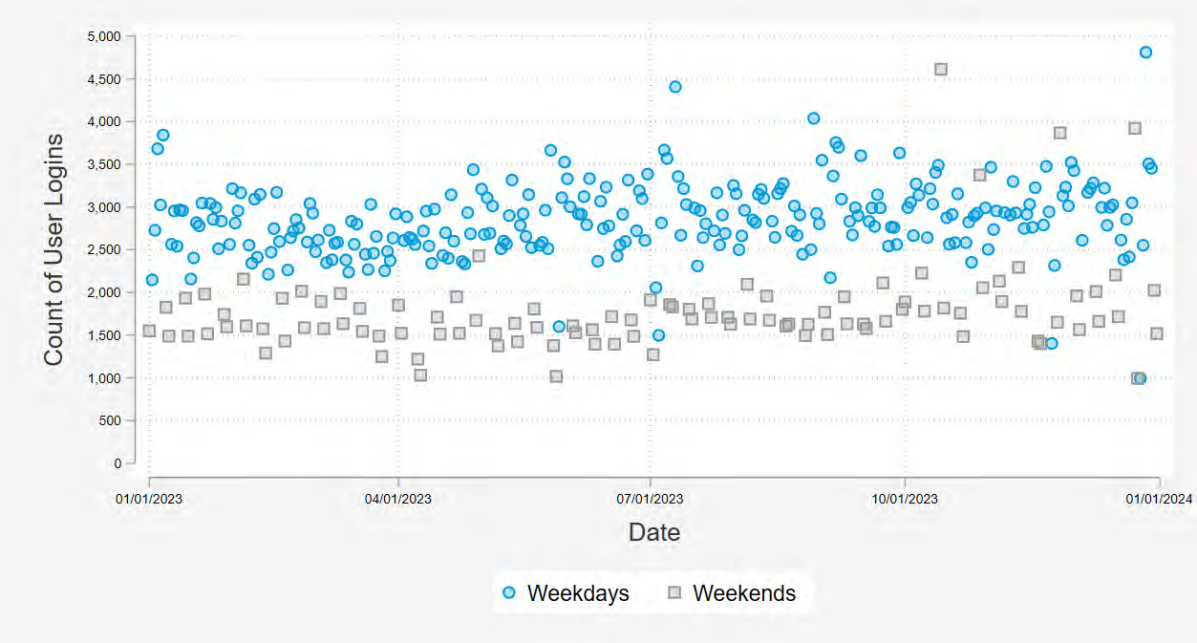
MyAccount was available to a small test group of customers as early as 2014 and has been widely available since 2016. Figure 4 shows the number of active service locations by sector over time.

Figure 4: Time Series EEBP Participation Trend by Sector



While the number of enrolled customers grew gradually over 2023, the level of activity on the portal was relatively steady. Figure 5 shows the number of distinct users who logged into the portal each day during 2023. Activity tends to be higher on weekdays than on weekends.

Figure 5: Count of Distinct Users to Access MyAccount by Date



While users' total engagement is evenly distributed over time, the distribution of engagement across participants is not. Figure 6 shows a histogram of 2023 logins among active users and Table 4 shows the mean, 10th percentile, 25th percentile, median, 75th percentile, 90th percentile. Some participants access the portal frequently while others only logged in a handful of times or not at all.

Figure 6: Distribution of 2023 Logins across Active MyAccount Users

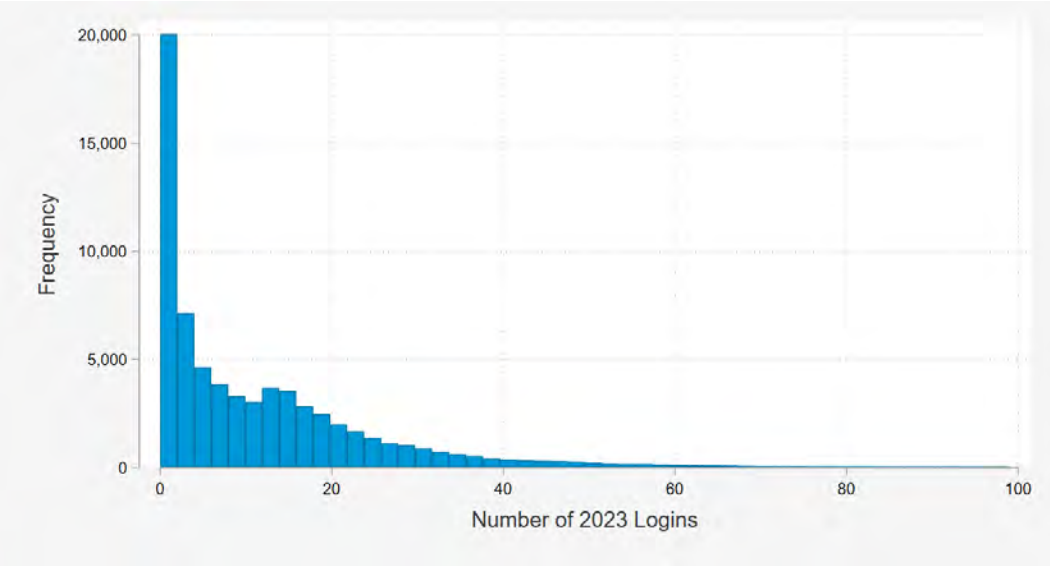


Table 4: 2023 Login Summary Statistics

Mean	P10	P25	Median	P75	P90
11.58	0	1	7	17	29

User interaction with the MyAccount portal is likely a proxy for the distribution of energy savings amongst EEBP participants. While this evaluation estimates the average savings per participant, that average is likely composed of a mixture of homes that save much more than the average and households that save little or no energy because they rarely engage with the platform features.

3 METHODS

3.1 DATA MANAGEMENT

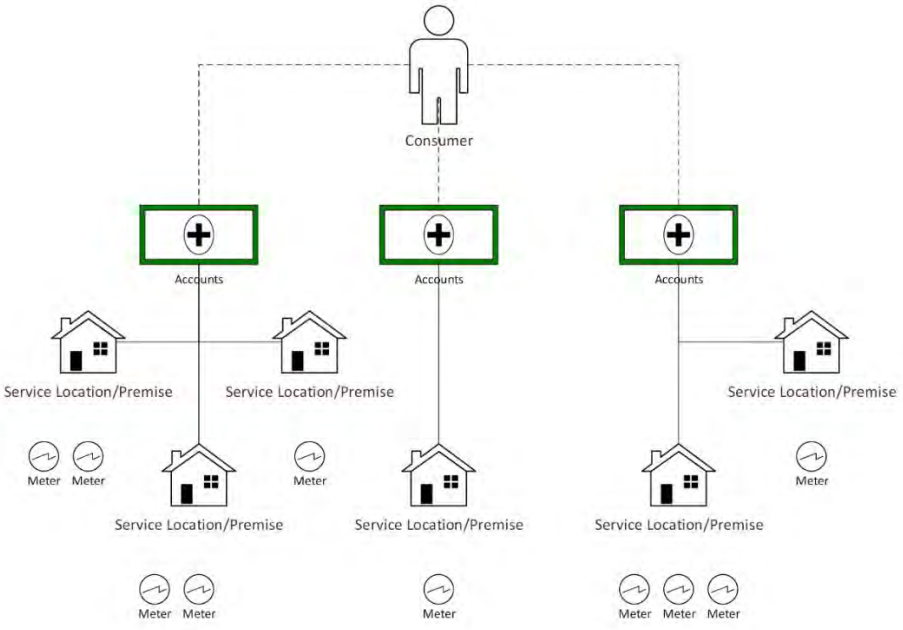
Panel data for the EEBP evaluation came from Minnesota Power and Accelerated Innovations and includes customer characteristics, daily electricity usage, and monthly billing data from 2019 to 2023. DSA completed a series of data management steps to clean and prepare the data for regression analysis. For the purposes of this report, these data management stages are condensed. This section briefly describes the five fundamental data management steps:

1. Linking EEBP Participants to their Energy Usage
2. Preparing Daily Usage Data for Analysis
3. Refining the Analysis to be for Residential Participants Only
4. Reconciling Daily Usage Data with Monthly Billing Data
5. Incorporating Weather Data

3.1.1 LINKING EEBP PARTICIPANTS TO THEIR ENERGY USAGE

Figure 7 illustrates the relationship between a Minnesota Power customer (shown in Figure 7 as Consumer) and their energy consumption at the meter level. To estimate the effect of EEBP on energy consumption, we first had to link EEBP participants to their corresponding energy usage. As previously mentioned, not all MP customers are EEBP participants. For this analysis, only data for EEBP participants are used.

Figure 7: Consumer to Consumption Associations



We initially defined EEBP participation at the customer level. We consider a customer enrolled in EEBP if they have a MyAccount User ID. EEBP participation begins on the date that the customer created their User ID. In the case where a customer created multiple User IDs, the minimum User ID creation date is defined as the day of enrollment. Multiple User IDs can exist when customers who forget their original User ID can create new ones when attempting to log in. The existence of multiple User IDs was not problematic for the analysis.

We then linked customers to their Minnesota Power account (service agreement number). If a customer is enrolled in MyAccount, then all their accounts were considered to be treated. If multiple customers are associated with an account (e.g., a husband and wife), then there only needed to be one enrolled customer for that account to be considered treated. Once treatment status and enrollment dates were established for an account, we were able to link accounts to their respective service locations. If at least one treated account was associated with a service location, then we considered that service location to be treated.

Treatment continued to the present unless the MP account closed, or the customer moved to a different service location. In other words, once treatment begins, we consider it "on" as long as the account remained active at the same service location. Through this process, we were able to identity treatment status for a service location for each day. Ultimately, we used a "service location—day" as the unit of analysis for the impact evaluation.

Lastly, we aggregated consumption from all meters to the service location level. When multiple meters are present at a single service location, we take the sum of those meters' daily usage levels to compute that service location's daily energy use. Figure 8 summarizes the process whereby we linked EEBP participants to their daily electricity use.

Figure 8: Linkages from MyAccount User to the Meter

3.1.2 Preparing Daily Usage Data for Analysis

Minnesota Power's metering infrastructure has evolved since EEBP enrollment began to ramp up in 2017. Today most customers have advanced meters that record consumption on an hourly or sub-hourly basis as well as daily totals. However, in 2017 most residential customers still had meters that recorded a single daily register read. We chose to use daily data for this analysis based on the quality and completeness of observations over the period of interest. The most important step in this process was converting daily register reads to uniform 24-hour intervals, since "daily" interval data was sometimes recorded for inconsistent durations due to the nature of the legacy metering and communications technology. The most common alternative time interval was 27 hours. We also

excluded outlier observations from the analysis since these could artificially skew the results. Notably, we restricted daily kWh values at the meter to be between 0 kWh and 5,000 kWh. By doing so, we excluded negative generation values and removed extreme negative values caused by meters cycling over from their maximum storage value back to zero.

3.1.3 Refining the Analysis to Residential Participants Only

We chose to restrict this analysis to residential customers since Minnesota Power filed EEBP as a residential program and approximately 90% of participants are residential. Engagement with the MyAccount platform likely has different impact on daily kWh levels for residential customers compared to commercial customers as consumption levels and the mechanisms through which EEBP can influence energy savings are inherently different in these sectors. Table 5 provides a frequency table of the residential rate codes found in the final analysis data set. It is important to note that rate code is a property of a meter, not a service location so a service location can have two meters billed on different rate codes. Rate codes can also change over time for a given meter. We received the most current rate code for each meter. The 'MP' rate codes represent participants who closed their account before transitioning to the current 'ME' array of tariffs.

Table 5: Rate Codes Used in Analysis Data Set

Rate Code	Description	Number Meters in Analysis (2019-2023)
ME20	ME Residential Service	40,233
ME21	ME Residential Dual Fuel	2,731
ME22	ME Residential All Electric	2,965
ME23	ME Residential Seasonal	1,218
MP-20	MP Residential Service	16
MP-21	MP Residential Dual Fuel	7
MP-22	MP Residential All Electric	3
Total		**47,173**

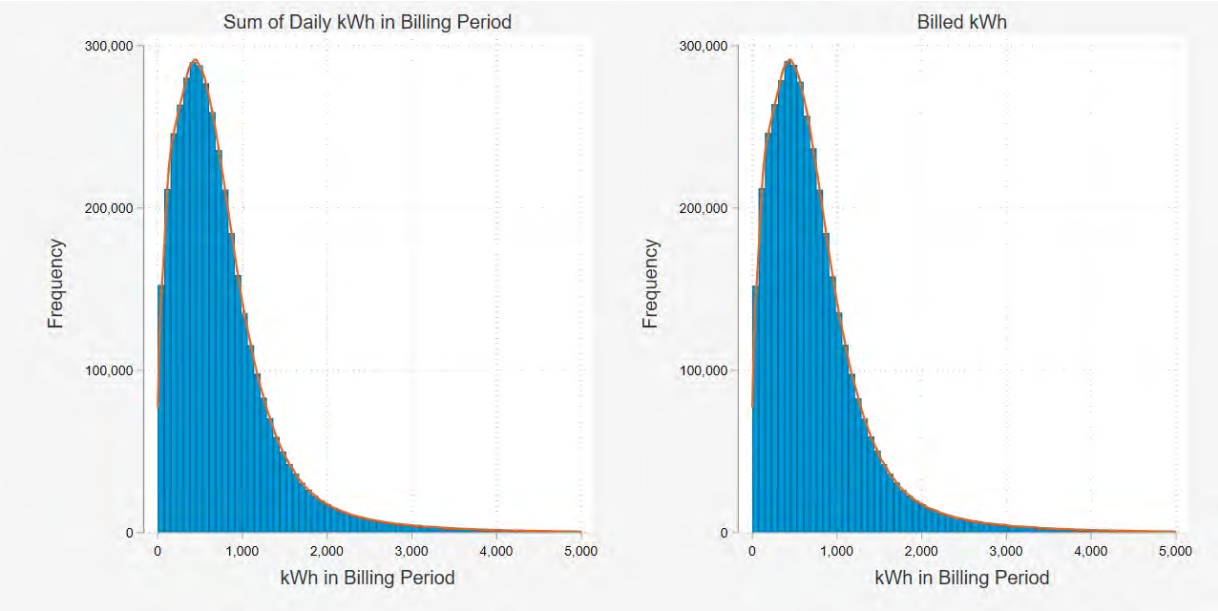
It is also worth mentioning that in 2023 Minnesota Power began transitioning residential customers to Time-of-Day (TOD) rates. Many of these customers were new accounts, but some were existing MP customers who transitioned to the new rate voluntarily within the analysis period. Give that the TOD rate was introduced during the scope of this evaluation and involved a relatively small group of customers, we excluded these accounts from the EEBP analysis. This decision was made to maintain consistency with the methodologies employed in the previous two evaluations. Given the MP's planned expansion of TOD rates, future evaluations will need to consider EEBP participants on both TOD and flat rates.

3.1.4 Reconciling Daily Usage Data with Monthly Billing Data

As a data quality step, we verified that the daily usage data was consistent with the monthly billing data. This is an important consideration because customers are most aware of their monthly electricity bills. To make an accurate comparison, we aggregated the daily usage totals from each billing cycle.

The sum of the daily kWh was between 99% and 101% of the billed kWh for almost all cases. We excluded a limited number of meters from the analysis where the daily kWh totals did not align with the billed energy. Figure 9 compares the distribution of replicated billing totals from daily reads with the actual billed kWh.

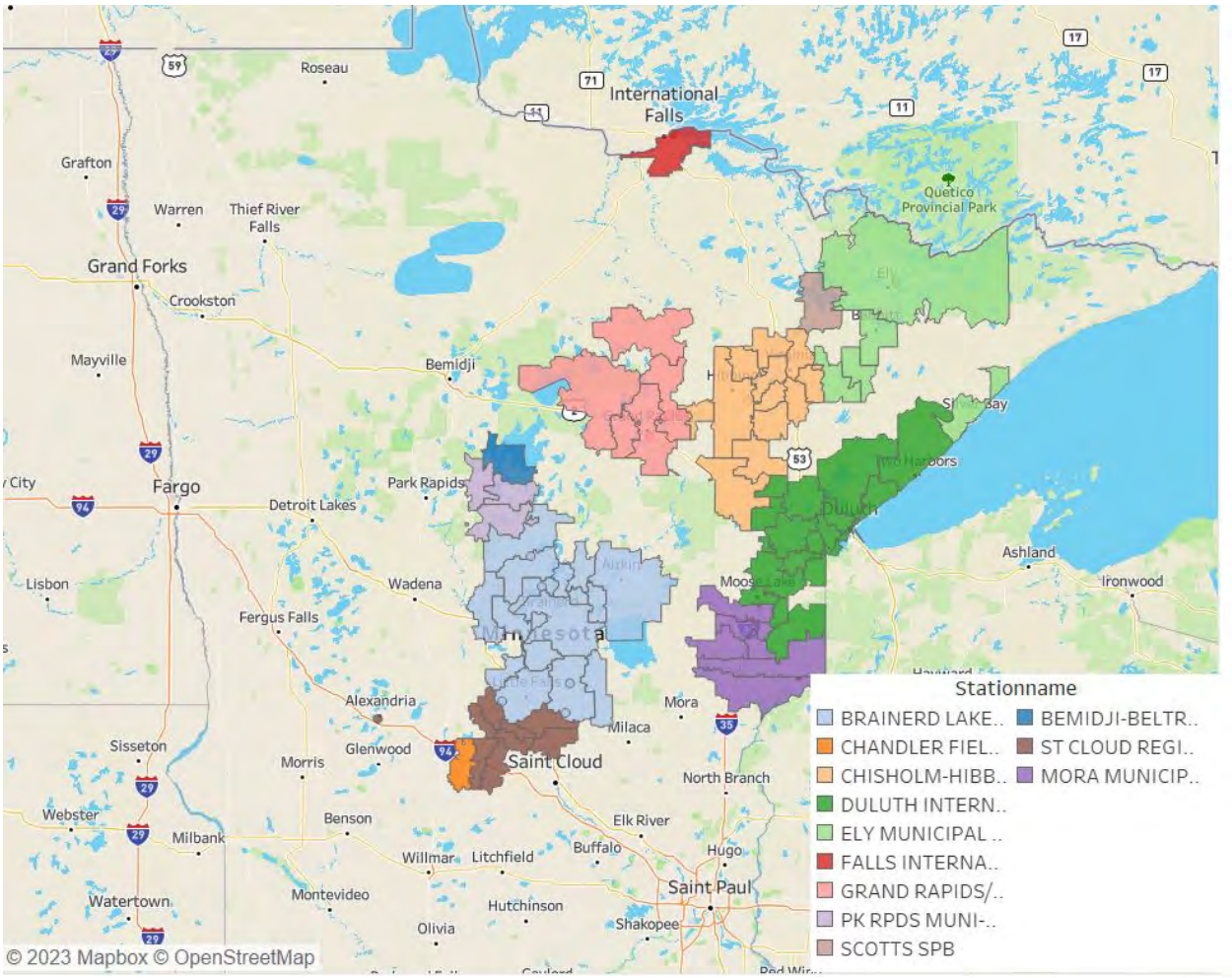
Figure 9: Comparison of Billed kWh with Daily kWh Totals



3.1.5 Incorporating Weather Data

Each Minnesota Power service location has a service zip code and weather is a strong predictor of electric consumption. Figure 10 illustrates how we matched service locations with historic daily weather data. Service location zip codes were linked to the closest weather station with dependable weather data.

Figure 10: Zip Code to Weather Station Mapping



We used twelve different Minnesota weather stations for the analysis, allowing for a decent amount of weather variation even within a condensed geographic area. Table 6 lists the twelve stations and the average annual CDD and HDD base 60 degrees (F) observed over the five years of data analyzed.

Table 6: Average Annual CDD and HDD by Weather Station 2019-2023

Weather Station	USAF	CDD60	HDD60
BEMIDJI-BELTRAMI CO ARPT	727550	957	8,258
BRAINERD LAKES RGNL ARPT	726555	1,311	7,225
CHANDLER FIELD AIRPORT	726557	1,357	7,313
CHISHOLM-HIBBING AIRPORT	727455	753	8,615
DULUTH INTERNATIONAL AIRPORT	727450	849	7,602
ELY MUNICIPAL AIRPORT	727459	787	8,440
FALLS INTERNATIONAL AIRPORT	727470	882	8,294
GRAND RAPIDS NEWSTROM FIELD ARPT	727458	906	7,878
MORA MUNICIPAL AIRPORT	727475	1,014	7,292
PK RPDS MUNI-KONSHOK FD AP	727453	1,128	7,960
SCOTTS SEAPLANE BASE	727473	693	8,774
ST CLOUD REGIONAL AIRPORT	726550	1,330	7,051

3.2 CAUSAL IDENTIFICATION STRATEGY

EEBP differs from the ubiquitous utility behavioral Home Energy Report programs in that it is available to all Minnesota Power customers on an opt-in basis. This means that all participants took some action to enroll in the program rather than being assigned to it. It also means that there is no randomly assigned control group to act as the counterfactual for modeling purposes.

Since Minnesota Power did not roll out EEBP as a randomized control trial, there is an innate challenge in identifying the causal effects of the EEBP participation. The opt-in component creates the greatest threat to validity for the analysis because individuals who opt-in to EEBP are inherently different from those who do not; this is called the "selection effect". As a result, a natural control group does not exist. Some sort of comparison group is necessary to control for exogenous and because of the small expected effect size. The absence of a control group can create a variety of problems in causal analysis. Without controlling for the "selection effect," the EEBP estimates would not only capture a change in energy usage from EEBP participation but also include time-varying differences in energy usage that were naturally occurring between those who opted-in to EEBP and those who did not.

A variety of unobservable factors related to EEBP enrollment and independent energy usage could bias results. For example, customers may have opted-in to EEBP because they use more energy, were more financially conscious, or were more inclined to reduce their energy usage over time in response to climate change. If these unobservable factors are correlated with the outcome variable, an analysis comparing participants to non-participants could be biased. Similarly, if we were to simply compare participants' energy consumption prior to EEBP enrollment to their consumption following EEBP, the results would likely confound the EEBP treatment effect and broad trends in energy consumption.

Because of these concerns and the absence of a pure control group, we utilized a quasi-experiential technique to estimate EEBP savings.

Figure 11 comes from the Uniform Methods Project Protocol[2] for this type of analysis with our selected approach highlighted. For this analysis, we use prior participants as the comparison group.

Figure 11: Uniform Methods Project Protocol Overview of Comparison Group Approaches

Table 1. Program Characteristics, Comparison Group Specifications, and Consumption Data Analysis Structure and Interpretation

Randomized Controlled Trial?	Stable Population?	Comparison group	2-Stage and Pooled with Comparison Group	Gross or Net Savings	Unknown Biases
Yes	N/A	Randomly selected control group	Yes	Net	Spillover from T to C, if it exists
No	Yes	Prior and/or future participants	Yes	Gross	Time-varying Characteristics
No	No	Matched comparison group	Yes	Likely between gross and net	Time-varying Characteristics, Self-selection unaccounted for by matching and same-period NP spillover
No	No	General eligible nonparticipants	Yes, With additional characteristics in the 2nd stage or pooled regression	Likely between gross and net	Time-varying Characteristics, Self-selection unaccounted for by regression and same-period NP spillover

Specifically, we used early EEBP adopters (Wave 1) as a comparison group for more recent EEBP adopters (Wave 2). Using prior participants mitigates concerns about selection effects because the comparison group also chose to enroll in EEBP. Wave 1 was comprised of participants who enrolled in EEBP from 2019-2020, while Wave 2 was comprised of participants who enrolled in EEBP from 2021-2022. Since Wave 1 participants do not have a change in treatment status from 2021-2022, they can be effectively used as a control group for the Wave 2 participants who do experience a change in treatment status during this period. The underlying assumption of this strategy is that there are not any time-varying differences between Wave 1 and Wave 2 participants that affect their energy usage.

Figure 12 visualizes the quasi-experimental identification strategy. Real data for Wave 2 from 2019-2023 is used for the analysis. To effectively use Wave 1 as a control group, the true treatment status for Wave 1 participants could not change. So, while they enrolled in EEBP at some date from 2019-2020, only their post-enrollment data was kept. Wave 1's true enrollment dates were then shifted forward in time by two years (730 days). As a result, Wave 1 energy usage data could be used as control data for

[2] https://www.nrel.gov/docs/fy17osti/68564.pdf. Page 13

Wave 2's energy usage data. By shifting Wave 1's enrollment data forward 2 years, we preserve the true enrollment month, which helped mitigate the effect of enrolling in EEBP during a specific month.

Figure 12: Quasi-Experimental Identification Strategy

Real Wave 1 and Wave 2 Data

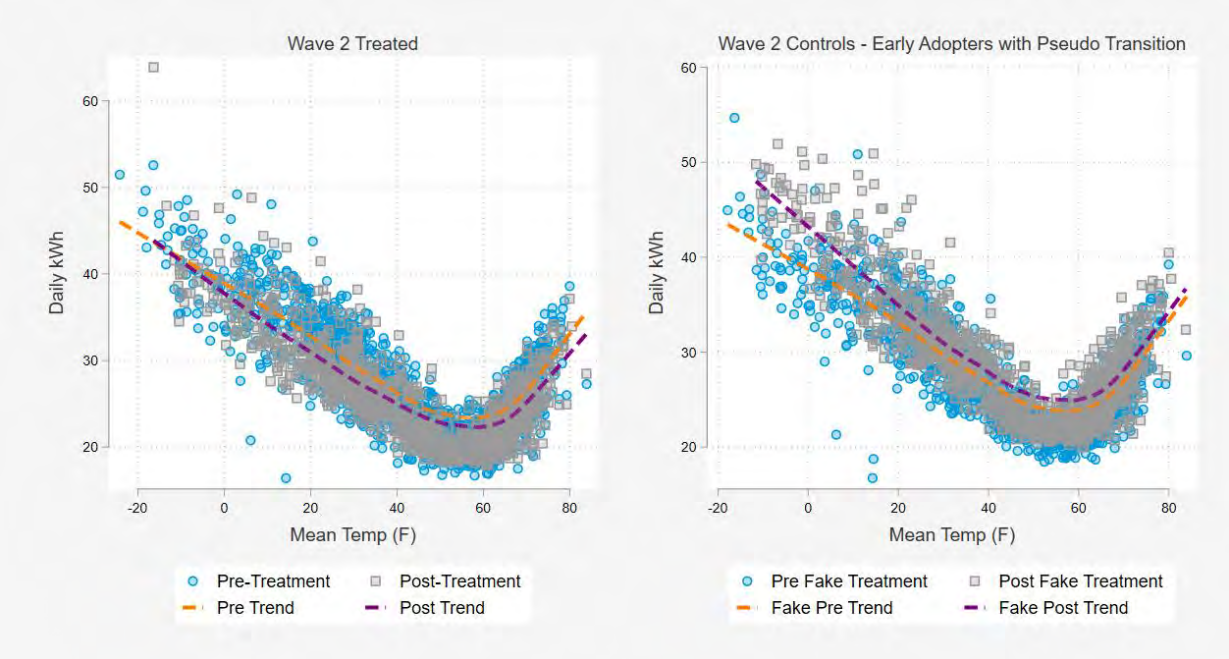
	2019	2020	2021	2022	2023
Wave 1	Change from Pre to Post		Pure Post Data		
Wave 2	Pure Pre Data		Change from Pre to Post		Pure Post Data

Real Wave 2 Data Using Wave 1 as Synthetic Controls

	2019	2020	2021	2022	2023
Wave 1	Change from Pre to Post		*Synthetic Change* from Pre to Post (Actual Start Date + 730 days)		Pure Post Data
Wave 2	Pure Pre Data		Change from Pre to Post		Pure Post Data

Figure 13 illustrates how we use this identification strategy to estimate the average effect of EEBP. After controlling for the effects of weather, we see a reduction in daily electric consumption amongst the Wave 2 households following enrollment in EEBP. The change in average daily consumption amongst the Wave 1 households over the same period is subtracted from the change in the Wave 2 homes. Of course, the Wave 1 households did not experience a change in treatment status during this period so the differences in energy consumption are attributed to exogenous factors.

Figure 13: Differences in Differences Visual Using the Selected Identification Strategy



4 REGRESSION ANALYSIS

4.1 PREFERRED MODEL

The preferred model specification leverages pseudo control participants to use a difference-in-differences design with appropriate fixed effects and controls. This difference-in-differences design utilizes panel data from 2019 to 2023 to estimate the average effect of EEBP on daily kWh for a service location. A difference-in-differences approach compares changes in outcomes over time for a treated group versus a comparison group. In this case, we compared the change in energy usage that resulted from EEBP status for Wave 2 versus Wave 1. Simply put, this difference-in-differences regression calculated the average treatment effect of EEBP for a service location in Wave 2. Since Wave 2 is active in EEBP from 2021-2023, (β_2) represents the average treatment effect from 2021-2023.

Equation 1: Regression Model Specification

$$kWh_{s,d} = \beta_0 + \beta_1 * Post_{s,d} + \beta_2 * Post_{s,d} * Treat_s + \beta_3 * CDD_{d,s} + \beta_4 * HDD_{d,s} + \varepsilon_{s,d} + \delta_{ym}$$

Where:

- β_o is the average of the service-location fixed effects. This term acts as the model intercept
- $Post_{s,d}$ is an indicator variable equal to 1 for each date (d) after the service location (s) enrolls in EEBP and zero otherwise. For Wave 1, the pre to post transition date is set to two years after the actual enrollment date.
- $Treat_s$ is an indicator variable equal to 1 for service locations in Wave 2 and zero for service locations in Wave 1.
- $CDD_{d,s}$ is the equal to the average daily temperature (F) at service location s minus 60 degrees or zero, whichever is greater.
- $HDD_{d,s}$ is the equal to 60 degrees (F) minus the average daily temperature or zero, whichever is greater.
- $\varepsilon_{s,d}$ is the error term
- $\delta_{y,m}$ is an array of year-month fixed effects

4.2 UNDERSTANDING THE MODEL

Equation 2 shows the basic average treatment effect formula, which is naturally embedded in Equation 1 given the model specification.

Equation 2: Difference in Differences Fundamental Equation

$$\Delta kWh = (kWh_{Wave\,2\,Post} - kWh_{Wave\,2\,Pre}) - (kWh_{Wave\,1\,PseudoPost} - kWh_{Wave\,1\,PseudoPre})$$

The "pre" period includes days before EEBP enrollment, and "post" includes days after EEBP enrollment. It is easy to see here how the approach removes static, pre-treatment differences between Wave 2 and Wave 1 in terms of energy consumption in addition to removing the natural energy consumption time trend that would have occurred without EEBP. Table 7 shows the results using this simplified approach for homes with at least one year of billing history in their pre and post periods.

Table 7: Simplified Analysis - Comparison of Means

Group	Average Daily kWh Post	Average Daily kWh Pre	Inner Difference
Wave 2	28.785	29.204	-0.419
Wave 1	28.967	29.249	-0.282
Difference in Differences via Simple Means (kWh per day)			**-0.137**

Equation 1 also includes fixed effects and temperature control variables to estimate the treatment effect more precisely. The month-year fixed effects control for any observable or unobservable factors within a certain month that are common amongst all service locations. Thus, the month-year fixed effects absorb seasonal shocks that could affect energy consumption at the month-year level. In addition, the service location fixed effects control for any time-invariant service location characteristics related to energy consumption, e.g., home size, age of home, geographic location. Characteristics like "home size" are an important factor to account for as larger homes use more energy, which gives them more energy use available for conservation. If participants were more likely to own larger homes than non-participants, results could be biased upwards, leading to an overestimate of energy savings. Furthermore, the CDD and HDD variables absorb variation in energy consumption related to weather. Given that Minnesota experiences significant variation in temperature, especially during the winter months, these variables are important to include.

As a result of the difference-in-difference strategy and additional independent variables, it is difficult to imagine a scenario in which the effect of EEBP on energy consumption is biased due to the model specification. There would have to be some omitted factor that varied within a month and was differentially trending in terms of its effect on energy savings for Wave 2 participants compared to Wave 1 participants. Thus, the greatest threat to internal validity is not the model specification but, as previously mentioned, the absence of a natural control group.

4.3 REGRESSION RESULTS

We chose to limit the analysis dataset to service locations with at least one year of data in the pre and post-periods. This filter omits approximately 46% of participants from the regression model and caused the average usage amongst analyzed participants to exceed the average consumption across the program population. Table 10 at the conclusion of the section shows how DSA calibrated the regression outputs to the program population.

Wave 2 households enrolled in EEBP, and Wave 1 households had pseudo transition dates, at various points in time over 2021 and 2022. While we required at least one year of post-period data for inclusion in the model, we did not filter the post-period to exclusively calendar 2023 or the first year after enrollment. For example, if a service location enrolled in EEBP on July 12, 2021 their post-period consumption data and estimated treatment effect includes all days from July 13, 2021 to December 31, 2023. DSA feels that inclusion of up to three years of data in the modeling is consistent with the Average Savings Method accounting procedures in Minnesota and provides a more robust estimate of the average effect of EEBP participation.

Table 8 shows the regression output. The coefficient of the 'treatpost' term (β_2 from Equation 1) represents the average change in daily kWh consumption following enrollment in EEBP.

Table 8: Regression Output

HDFE Linear regression — Number of obs = 26,072,274
Absorbing 2 HDFE groups — F(4,26055346)= 124972.26
Prob > F = 0.0000
R-squared = 0.5791
Adj R-squared = 0.5788
Within R-sq. = 0.0188
Root MSE = 19.6259

daily_kwh	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
post	.4308648	.0168464	25.58	0.000	.3978466	.4638831
treatpost	-.5823752	.0162974	-35.73	0.000	-.6143176	-.5504329
cdd	.6250557	.0013181	474.20	0.000	.6224723	.6276392
hdd	.2661769	.0004745	561.01	0.000	.265247	.2671068
_cons	22.28275	.0130847	1702.96	0.000	22.25711	22.3084

Absorbed degrees of freedom:

Absorbed FE	Categories	- Redundant	= Num. Coefs
location_id	16865	0	16865
ym	60	1	59

Table 9 shows the derivation of the key outputs from the estimation sample. Amongst residential Wave 2 households with at least one year of continuous billing history before and after EEBP enrollment, we estimate an average daily reduction in consumption of 0.582 kWh. Multiplying this result by 365.25 returns an average annual savings of 212.57 kWh per service location.

Table 9: Results Summary – Estimation Sample

Performance Metric	Result
Effect of EEBP on Daily kWh	-0.582 kWh per service location per day
Annual Savings	212.57 kWh
Standard Error	0.016 (significant at the 99% confidence level)
95% Confidence Interval	(-0.614, -0.55)

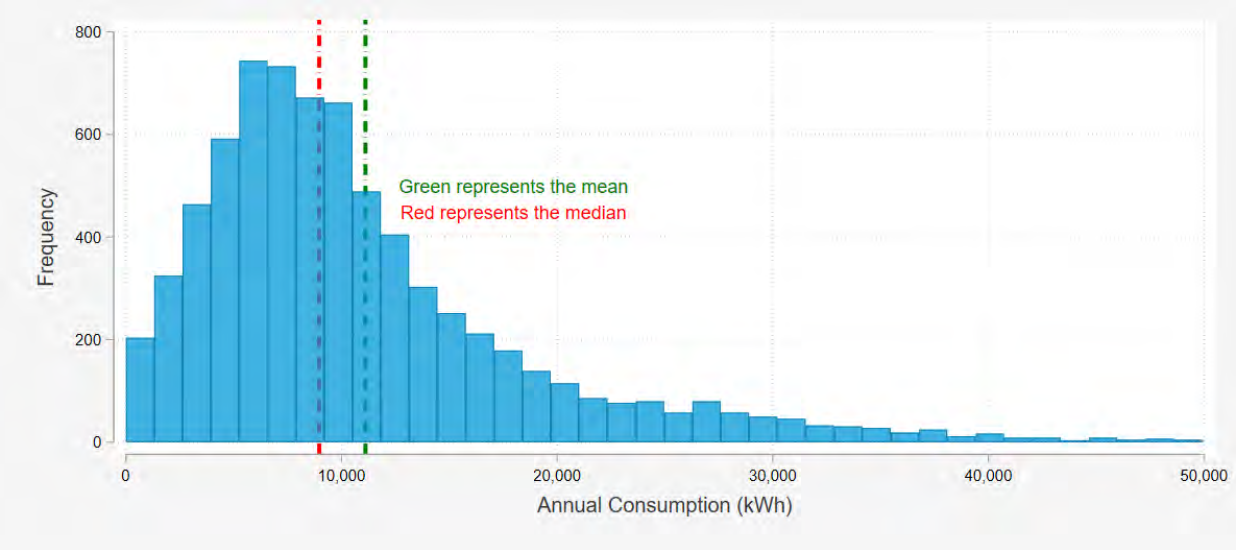
To estimate the average percent savings, we "add back" the estimated treatment effect to the average daily consumption of the Wave 2 homes in the post-period as shown in Equation 3.

Equation 3: Percent Savings Calculation

$$Percent\ Savings = \frac{0.582}{(28.785 + 0.582)} = 1.983\%$$

The implied baseline consumption in Equation 3 is 28.785 kWh per day, or approximately 10,513 kWh per year. As shown in Figure 14, the long right tail of the distribution skews the mean upward. The median annual consumption amongst Wave 2 households included in the regression is 8,341 kWh per year.

Figure 14: Distribution of Annual Consumption amongst Wave 2 Homes



As noted above, our decision to limit the analysis dataset to service locations with at least one year of billing history before and after EEBP enrollment caused the average EEBP participant analyzed to have higher average annual electric consumption than the full population of EEBP participants. Since we are ultimately interested in an estimate of the average effect for the population, DSA applied the average percent savings from the analyzed homes to the entire EEBP population. Table 10 shows the calculation of the final study results.

Table 10: Expansion of Regression Results to EEBP Population

Parameter	Value
Average Percent Savings per Service Location	1.98%
Average Annual Consumption Amongst All EEBP Participants	9,692
Average Annual kWh Savings per Service Location	192.2
Average Daily kWh Savings per Service Location	0.527
Average Annual kWh Savings per Service Location – ASM	64.067

EEBP participants are slightly above average in terms of annual consumption for Minnesota Power customers. In its 2022 U.S. Energy Information Administration (EIA) Form 861 filing[3], Minnesota Power showed sales of 1,053.6 GWh to 125,243 residential customers, or approximately 8,413 kWh per service agreement number. This difference is due, in part, to our decision to use service location as the analysis unit rather than service agreement number. It also makes sense that homes with larger monthly energy expenditures are more likely to opt into a service that helps manage their energy consumption. As Minnesota Power looks to grow the EEBP offering and projects savings from additional enrollments, we anticipate the average household size will decline.

4.4 COMPARISON WITH PRIOR EVALUATION RESULTS

The estimated impacts in this evaluation are consistent with our results from 2021 and 2022. Table 11 summarizes the results of the three evaluations.

Table 11: Results Comparison (2021 to 2023)

Parameter	2021	2022	2023
Average Service Locations in Evaluation Year	45,614	52,284	55,920
Average Percent Savings per Service Location	1.68%	1.77%	1.98%
Average Annual kWh Consumption Amongst All EEBP Participants	9,693	9,545	9,692
Average Annual kWh Savings per Service Location	162.5	169.2	192.20
Average Annual kWh Savings per Service Location - ASM	54.16	56.40	64.07
Total MWh Annual Savings	7,411	8,847	10,748
Total MWh Annual Savings - ASM	2,470	2,949	3,583

Our estimates of the percent savings per service location increased slightly each year from 1.68% in the 2021 evaluation to 1.98% in the 2023 evaluation. Another notable difference is the increase in enrollment from 2021 to 2023. Since aggregate MWh savings are the product of per-home impacts and the number of enrolled homes, aggregate energy increased approximately 20% each year.

[3] https://www.eia.gov/electricity/data/eia861/

4.5 VALIDATION OF CAUSAL IDENTIFICATION STRATEGY

For our primary analysis we use Wave 2 service locations as the treated units and Wave 1 service locations with a pseudo-transition date as controls. This returns an estimated treatment effect for EEBP in 2021, 2022 and 2023. To validate the identification strategy, DSA ran a similar analysis with the group assignments reversed. For this methods, Wave 1 service locations are the treated units and Wave 2 service locations have their pre-post transition date moved backwards 730 days to act as controls. This returns an estimated treatment effect for EEBP in 2019, 2020, and 2021 amongst earlier adopters.

We maintained that our sample consisted of participants that had one year of data both pre and post enrollment. This led to a slightly smaller sample pool, indicating that there were more "new" accounts in the period from 2019-2021. Despite this, we were still able to estimate a significant impact when participants enrolled in the program. Table 12 shows the regression results when using this "reversed" strategy.

Table 12: Regression Results – Reversed Strategy

HDFE Linear regression
Absorbing 2 HDFE groups

Number of obs	= 9,624,934
F(4,9618614)	= 39507.61
Prob > F	= 0.0000
R-squared	= 0.6090
Adj R-squared	= 0.6087
Within R-sq.	= 0.0162
Root MSE	= 20.5002

daily_kwh	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
post	-.011382	.0383002	-0.30	0.766	-.0864491	.063685
treatpost	-.5176674	.0297158	-17.42	0.000	-.5759094	-.4594255
cdd	.6092132	.0023417	260.16	0.000	.6046235	.6138028
hdd	.2553753	.0008009	318.87	0.000	.2538056	.256945
_cons	22.84301	.029724	768.50	0.000	22.78475	22.90126

Absorbed degrees of freedom:

Absorbed FE	Categories	- Redundant	= Num. Coefs
location_id	6257	0	6257
ym	60	1	59

We see that the coefficient on our `treatpost' term is -0.517 for this analysis, which is a lower reduction than our primary estimate of -0.582. A slightly lower impact is not surprising since the EEBP offering has evolved over time and includes features today that were not available 2019-2021. More importantly, the directionally similar result gives us reassurance since our causal identification strategy is picking up a similar change in consumption regardless of which group acts as the control group.

5 CONCLUSION

Our estimated reduction of 1.98% is consistent with impact evaluation results for residential behavioral efficiency programs, which typically show energy savings between 1% and 2%. This reduction was slightly higher than the 2022 figure of 1.77%. Minnesota Power's Energy Engagement Behavior Program is different from typical Home Energy Report in two important ways:

- **Customers choose to enroll in the offering**. The fact that EEBP participants opt into the service rather than being defaulted suggests a greater degree of interest or motivation than traditional Home Energy Report programs. This characteristic suggests that EEBP might produce larger savings than Home Energy Reports.
- **EEBP does not include normative comparisons**. One of the key components of traditional Home Energy Reports is a comparison with 'neighboring' households. These comparisons are widely believed to act as a "call to action" for recipients and make them more receptive to energy savings recommendations. The fact that EEBP does not include this feature suggests that savings might be lower than traditional Home Energy Report and other behavioral program models that use this "social norming" tactic.

It is interesting that the directional effects of these two features appear to offset and return average savings similar in magnitude to Home Energy Report programs. It is important to note that utilities typically deliver Home Energy Report programs as a randomized control trial with no variation in treatment timing, so the measurement of impacts is far more straightforward than approach used for this study. Our quasi-experimental design makes certain assumptions about Minnesota Power customers. These assumptions can largely be broken down into two categories:

- **Participants vs. Non-Participants** - Since EEBP participants are inherently different than non-participants, comparing trends across the two populations could introduce bias in the results. We considered matching methods to leverage non-participants but felt that selection effects were the largest threat to validity for the study and thus called for a study design focused on mitigating selection effects. The key decision is therefore our use early adopters of EEBP as the control group and comparing participants to participants. By doing so, static, pre-treatment differences between participants and non-participants became irrelevant. However, this approach still cannot control for time-varying characteristics between the populations and only allows us to analyze the effect of Wave 2 homes during the period of interest (2021-2023). For robustness, we performed the opposite quasi-experimental design described in Section 4.5 using Wave 2 households with their treatment timing shifted back two years as a comparison group for Wave 1 households. This analysis returned a similar average treatment effect from 2019-2021, which supports our decision to apply the percent impacts from the 2021-2023 modeling results to all EEBP participants.

- **Wave 1 Participants vs. Wave 2 Participants** - While using Wave 1 participants as the control groups mitigates the selection effect, there are still some underlying assumptions we make by using Wave 1 as the control population. In short, we assume that Wave 1 participants are like Wave 2 participants. Additionally, we assume that EEBP does not have any cumulative effects over time. In other words, we assume that the effect does not grow or fade away over time.