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# Low Income CIP Program Assessment

Process Evaluation of COU Programs  
12/31/2017

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Conservation Applied Research and Development (CARD) FINAL Report

Prepared for: Minnesota Department of Commerce, Division of Energy Resources

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# Acronyms

CAP – Community Action Partnership

CIP – Conservation Improvement Program

COU – Community-Owned Utility

Department – the Minnesota Department of Commerce

EAP – Energy Assistance Program

EM&V – Evaluation, Measurement and Verification

ERR – Energy Related Repair

ESP – Energy Savings Platform

FFY – Federal Fiscal Year

HHS – United States Department of Health and Human Services

LI – Low Income

LI-CIP – Low-Income Conservation Improvement Program

LIHEAP – Low income Home Energy Assistance program

LIRC – Low Income Rental Certification

NEAT – National Energy Audit Tool

WAP – Weatherization Assistance Program

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## Executive Summary

The purpose of this study is to conduct a comprehensive assessment of the Conservation Improvement Program (CIP) services delivered to low-income households by Minnesota's community-owned utilities (COUs) with the goal of helping the Department of Commerce (Department) and the COUs identify ways to increase the efficiency and effectiveness of those programs. The assessment included:

- Development of an assessment framework that compares COU program performance to explicit CIP statutory and regulatory requirements, implicit public policy objectives, and low-income energy efficiency program best practices.
- Documentation of the context in which CIP low-income programs are implemented by developing information on low-income households and housing units, and the ways that publicly funded low-income energy assistance and energy efficiency programs serve those households and housing units.
- Collection of information about each COU's low-income CIP programs. To the extent feasible with the available data, characterization of the design and implementation of those programs, analysis of the program performance statistics, and identification of unique program designs or approaches that could be replicated by other COUs.
- Assessment of whether the overall investment by COUs and their ratepayers in low-income programs are meeting explicit regulatory requirements, fulfilling implicit public policy objectives, and taking advantage of low-income program best practices.
- Identification of opportunities for the Department and the COUs to undertake initiatives that could enhance the performance of the COU low-income programs.

The purpose of this report is to furnish the study findings and recommendations. The report is designed to complement the information contained in the report titled *COU CIP Low-Income Spending Requirements – Regulatory and Policy Analysis* that documents the regulatory framework for COU low-income programs. This report is limited to analysis of COU programs serving low-income households; there is a separate report on programs implemented by investor-owned utilities (IOUs).

## Low-Income Program Context

The CIP statute requires electric and natural gas COUs to spend funds on low-income programs. The statute defines "low-income programs" as "energy conservation programs that directly serve the needs of low-income persons, including low-income renters." The statute does not furnish a specific definition of "low-income persons." Many of the COUs use the state's Weatherization Assistance Program (WAP) and Energy Assistance Program (EAP) income guidelines to determine eligibility for low-income programs.

The Department has encouraged COUs to work with WAP service delivery agencies in the design and implementation of their low-income programs. Many of the COU aggregators and COUs with whom we conducted in-depth interviews reported that they were working with WAP service providers.

Since many COU programs use EAP or WAP income guidelines and have adopted WAP program protocols, it is important to have information on the EAP and WAP programs to understand the rationale for COU program designs. In addition, it is useful to have statistics on those programs to understand more about the ways that the publicly funded and ratepayer-funded programs can collaborate. This report includes information on:

- Income-Eligible Households – It documents EAP and WAP income guidelines and furnishes estimates of the number of income-eligible households, along with statistics on housing unit types and main heating fuels for income-eligible households.
- EAP and WAP Programs – It furnishes information on the program guidelines, program spending, and program participants for each of the programs.

Key findings from that analysis of income-eligible households and the EAP and WAP programs include:

- Low-Income Households – The EAP and WAP programs clearly define the households that are income-eligible for their programs. The American Community Survey data for 2015 show that there are about 508,000 Minnesota households that are income-eligible for those programs. That is about 24 percent of the state's 2.15 million households.
- Low-Income Housing Units – Some important statistics about the housing units occupied by low-income households include: 50 percent are in single family homes and 36 percent are in large multifamily buildings; 57 percent are occupied by renters, but the share of units occupied by renters varies considerably by housing unit type; about 55 percent of low-income housing units use natural gas as their primary heating source and 27 percent use electricity as their primary heating source.
- EAP Program – In FFY 2016, the EAP program served over 134,000 households with its heating assistance program, about 26 percent of all income-eligible households. The program also serves low-income households with an equipment repair and replacement program and a program that delivers energy education and budget counseling to clients, and by transferring funds to WAP.
- WAP Program – In a recent program year, the state WAP program had \$20.2 million available to train and monitor WAP program staff, and to deliver services to 1,782 low-income households. The Department's WAP unit has developed detailed information on eligible housing units, service delivery quality control procedures, and client health and safety measures to guide the use of program funds.

The COUs can take advantage of the EAP and WAP programs as they design and implement their low-income programs. However, it also is important for the COU aggregators and the COU program managers to understand how WAP program guidelines might limit the flexibility for COU programs that

combine resources with WAP funds, and to actively work with the Department’s WAP office and local service providers to ensure that COU funds are used in the most effective way possible.

### Analysis Framework

Each of the COUs has developed one or more LI CIP programs to meet the needs of low-income customers in their service territory. To better understand COU low-income programs, we examined the following program dimensions:

- Program Design, Implementation, and Reporting – The electric COUs often work with “aggregators” (i.e., generation and transmission electric cooperatives and municipal power agencies) in the design, implementation, and/or reporting of their CIP programs. We furnish information on how the electric and natural gas COU CIP programs are structured because that has important implications in terms of the Department’s regulatory oversight and the most effective approach for communicating CIP policies and procedures.
- Individual COU Low-Income Programs – Since there are 141 electric COUs and six natural gas COUs, it was not possible to develop and report detailed information on each of the COU low-income programs. Instead, we conducted in-depth interviews with a sample of COU aggregators, COUs, and WAP service providers to develop a better understanding of how some individual COU programs are designed. In addition, we conducted in-depth analysis of the Energy Savings Platform (ESP) reports for a sample of COUs to examine the depth and quality of information reported in the ESP.
- Summary of COU Accomplishments – We developed summary information for all electric and all natural gas COUs, and conducted subgroup analyses to develop a better understanding of what factors, if any, contribute to different levels of performance among the COUs.

We found that this approach to the analysis furnished good information on how the COUs work toward fulfilling their low-income spending requirement and helped us to develop the following key indicators for COU low-income programs.

- Program Investments – Furnishes information on the funding for each program, the number of units delivered, and average investment per unit. For residential programs, the analysis shows the estimated percentage of program participants that are low-income.
- Program Performance Statistics – Documents the available information on program performance, including the first-year projected savings, average measure lifetime, and projected lifetime savings.
- Program Characteristics – Where the information was available from either the program description or from an in-depth interview, we furnish additional information about the program design and implementation.

These data are used to show how some COUs implement their programs and to summarize the low-income spending and performance for all COUs.

## Electric COU Low-Income Programs

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In 2014, 141 electric COUs that reported towards meeting the requirement to spend 0.2 percent of their three-year average gross operating revenues on low-income programs. Of those, 108 COUs work with one of eight “aggregators” (i.e., generation and transmission power cooperative or municipal power authority) to help them design, implement, and/or report on their CIP program accomplishments. This study developed detailed information on the relationships between COU aggregators and COUs, and about the specific accomplishments of individual COUs with respect to the programs.

Findings with respect to the COU aggregators include the following:

- **Role of COU Aggregators** – Of the five aggregators that we interviewed, three reported that they are engaged with COUs on the design, implementation, and reporting of the COUs’ CIP programs, including their LI CIP programs. One role that these aggregators play is to develop contracts for the COUs to use with the WAP service providers that are delivering COU LI CIP programs. The other two aggregators that we interviewed indicated that their role was mainly to complete CIP reports for their COUs.
- **Size of COU Aggregator Portfolios** – The largest aggregator is Great River Energy; in 2014 they worked with 29 electric COUs that had a combined low-income spending requirement of over \$1.6 million. Three of the aggregators had COUs with a combined low-income spending requirement of less than \$50,000.
- **Engagement with WAP Service Providers** – Some of the aggregators reported that they perceive that the only cost-effective way to deliver services to verified low-income customers was to work directly with WAP service providers. The aggregators reported that some of their COUs had positive relationships with WAP service providers while others did not.

Findings with respect to dedicated low-income programs implemented and estimated low-income participation in residential programs by individual COUs include the following:

- **COU Portfolios** – The ESP analysis for a sample of COUs found that those with a larger low-income spending requirement tended to have two or more dedicated low-income programs, while those with a smaller spending requirement were more likely to focus their resources on one program.
- **Contracts with WAP Service Providers** – Most of the COUs that we interviewed reported that they worked with WAP service providers on at least one of the low-income programs. Most COUs reported having positive relationships with one or more WAP service providers and less successful relationships with others.
- **CIP Reporting** – The COUs furnished the required information for their dedicated low-income programs, though some furnished more detailed program descriptions than others. In our review of first-year savings estimates, we identified a number that appear to be erroneous. One COU reported savings that were far higher than could be achieved with the amount they invested in the program. Two other COUs appeared to underreport savings – one due to what

appeared to be a misunderstanding of how to report appliance replacement and recycling programs, the other because it appears that they failed to report delivered fuel savings.

- **Percentage Low-Income** – Some COUs identified which residential programs would be likely to serve low-income households and used different percentages for different programs. Other COUs followed the Department guidance and assumed that low-income customers participated in residential programs proportionally to their representation in the population.

Table 1 furnishes a summary of the electric COUs' dedicated low-income programs. It shows that 104 of the 141 electric COUs implemented dedicated low-income programs. They spent a total of about \$2.1 million, an average of about \$20,000 per COU. The COUs reported that they delivered weatherization to 129 housing units and spent an average of \$2,890 per housing unit. They also reported that they delivered 15,322 "units" in their specialty low-income programs. It is difficult to interpret this finding since our examination of ESP records found that there was very little consistency in what was counted as a "unit."

**Table 1. 2014 Electric COU LI CIP Program Summary – Dedicated Low-Income Programs**

<b>Program Type</b>	<b>Number of COUs with Programs</b>	<b>Total LI Spending</b>	<b>Percent of Spending</b>	<b>Average Spending per COU</b>	<b>Reported Units</b>	<b>Spending per Unit</b>
Specialty Low-Income	84	\$1,725,341	81%	\$20,540	15,322	\$113
Weatherization	24	\$372,781	17%	\$15,533	129	\$2,890
Indirect Low-Income	6	\$35,547	2%	\$5,925	121	\$294
All Programs <sup>a</sup>	104	\$2,133,669	100%	\$20,516	15,572	\$137

a. Some COUs offer more than one type of dedicated low-income program

Table 2 furnishes a summary of the estimated low-income spending on residential electric COU programs. It shows that 144 electric COUs implemented residential programs. Only 141 of these 144 programs had low-income spending reported. COUs estimated that they spent a total of about \$3.0 million on low-income customers through their residential CIP programs. Since about \$1.4 million of that was spent on load management programs, the net investment in energy efficiency measures for low-income households was estimated to be about \$1.6 million. It is difficult to interpret these statistics since none of the COUs reported that they used data to document the low-income participation in their residential programs.

**Table 2. 2014 Electric COU Residential Program Summary – Low-Income Spending**

Program Type	Number of COUs with Programs	Total LI Spending	Percent of Spending	Average Spending per Program	Reported Units	Spending per Unit
Weatherization (BE, WH)	18	\$28,511	1%	\$1,584	246	\$116
Mechanical Equipment (DHW, HP, SC, SH)	113	\$515,916	17%	\$4,566	1,921	\$269
Lighting, Appliances, and Electronics (L, AH, CE, ESA, SR)	143	\$813,388	27%	\$5,688	51,897	\$16
Load Management (LM)	91	\$1,420,512	48%	\$15,610	15,443	\$92
Other (BC, EA)	38	\$200,861	7%	\$5,286	22,404	\$9
Multifamily Building	0	\$0	0%	NA	0	NA
All Programs <sup>a</sup>	144	\$2,979,188	100%	\$20,689	91,911	\$32

a. Some COUs offer more than one type of dedicated low-income program

Key to Acronyms used in Table

Acronym	Explanation
AH	Appliance Harvesting
BC	Residential Behavior Change
BE	Residential Building Envelope
CE	Consumer Electronics / Plug Loads
DHW	Residential Domestic hot water
EA	Residential Energy Audits / Analysis
ESA	ENERGY STAR Appliances
HP	Residential Heat pump
L	Residential Lighting
LM	Load management
SC	Residential Space Cooling (Non-Heat Pumps)
SH	Residential Space Heating (Non-Heat Pumps)
SR	Specialty Residential
WH	Whole House

## Natural Gas COU Low-Income Programs

There are six natural gas COUs that reported low-income spending in 2014. Those COUs each work independently to design, implement, and report on their CIP programs. Since we did not conduct any in-



depth interviews with natural gas COUs, the information we have on their programs is limited to the ESP program description. Findings with respect to dedicated low-income programs implemented and estimated low-income participation in residential programs by individual COUs include the following:

- **COU Portfolios** – The ESP analysis for two of the natural gas COUs found that the one with a larger low-income spending requirement had two programs, while the one with a smaller requirement only had one.
- **Contracts with WAP Service Providers** – One of the COUs examined worked with Habitat for Humanity on their major project, while the other worked with a WAP service provider.
- **CIP Reporting** – The COUs furnished the required information for their dedicated low-income programs, though one furnished more detailed program descriptions than the other. Our review of the first-year savings estimate for the larger COUs found that it was difficult to interpret their savings estimates because of the way they described program units.
- **Percentage Low-Income** – One of the COUs identified which residential programs would be likely to serve low-income households and used different percentages for different programs. The other COU followed the Department guidance and assumed that low-income customers participated in residential programs proportionally to their representation in the population.

Table 3 furnishes a summary of the natural gas COUs' dedicated low-income programs. It shows that four of the six natural gas COUs implemented dedicated low-income programs. They spent a total of \$42,823, an average of about \$16,831 per COU. The COUs reported that they delivered weatherization to 4 housing units and spent an average of \$2,291 per housing unit. They also reported that they delivered 1,002 "units" in their specialty low-income programs. It is difficult to interpret this finding since our examination of ESP records found that there was very little consistency in what was counted as a "unit."

**Table 3. 2014 Natural Gas COU Program Summary – Dedicated Low-Income Programs**

<b>Program Type</b>	<b>Number of COUs with Programs</b>	<b>Total LI Spending</b>	<b>Percent of Spending</b>	<b>Average Spending per COU</b>	<b>Reported Units</b>	<b>Spending per Unit</b>
Specialty Low-Income	2	\$33,661	79%	\$16,831	1,002	\$34
Low-Income Weatherization	2	\$9,162	21%	\$4,581	4	\$2,291
Indirect Low-Income	0	\$0	0%	NA	0	NA
All Programs	4	\$42,823	100%	\$10,706	1,006	\$43

Table 4 furnishes a summary of the estimated low-income spending on residential natural gas COU programs. It shows that six natural gas COUs implemented residential programs. They estimated that they spent a total of \$277,055 on low-income customers through their residential CIP programs, with

about three-fourths of that being spent on weatherization programs. It is difficult to interpret these statistics since none of the COUs reported that they used data to document the low-income participation in their residential programs.

**Table 4. 2014 Natural Gas COU Residential Program Summary – Low-Income Spending**

<b>Program Type</b>	<b>Number of COUs with Programs</b>	<b>Total LI Spending</b>	<b>Percent of Spending</b>	<b>Average Spending per Program</b>	<b>Reported Units</b>	<b>Spending per Unit</b>
Weatherization (BE, WH)	4	\$167,278	74%	\$41,820	54	\$3,098
Mechanical Equipment (DHW, HP, SC, SH)	5	\$12,556	6%	\$2,511	126	\$100
Lighting, Appliances, and Electronics (L, AH, CE, ESA, SR)	3	\$3,831	2%	\$1,277	95	\$40
Load Management (LM)	0	\$0	0%	NA	0	NA
Other (BC, EA)	4	\$43,389	19%	\$10,847	4,429	\$10
Multifamily Building	0	\$0	0%	NA	0	NA
All Programs <sup>a</sup>	6	\$227,055	100%	\$37,842	4,704	\$48

- a. Some COUs offer more than one type of residential CIP program; of the six gas COUs with residential CIP programs, five estimated that some share of the program spending went to low-income households.

Key to Acronyms used in Table

<b>Acronym</b>	<b>Explanation</b>
AH	Appliance Harvesting
BC	Residential Behavior Change
BE	Residential Building Envelope
CE	Consumer Electronics / Plug Loads
DHW	Residential Domestic hot water
EA	Residential Energy Audits / Analysis
ESA	ENERGY STAR Appliances
HP	Residential Heat pump
L	Residential Lighting
LM	Load management
SC	Residential Space Cooling (Non-Heat Pumps)
SH	Residential Space Heating (Non-Heat Pumps)
SR	Specialty Residential
WH	Whole House

# Program Assessment Framework

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The purpose of this study is to conduct a comprehensive assessment of the CIP program services delivered to low-income households by Minnesota's COUs. We have developed an assessment procedure for examining the performance of the COU low-income programs at three levels.

- **Explicit Program Requirements and Opportunities** – Did the COUs fulfill the regulatory requirements established by statute? Did the COUs take advantage of the opportunities made available in Department Guidance?
  - **Spending Requirement** – Did the COUs spend the required amount through dedicated low-income programs and/or on low-income participation in residential programs?
  - **Reporting Requirement** – Did the COUs file the required information that the Department needs to assess program compliance?
  - **Department Guidance** – Did COUs take advantage of Department Guidance on multifamily buildings and on claiming energy savings for program services delivered to electric customers who use delivered fuels as their primary heating fuel and/or water heating fuel?
- **Implicit Program Objectives** – Did the set of COU low-income programs address the broader public policy objectives that are included in the statutory language and the regulatory decisions issued by the Department?
  - **Low-Income Renters** – Are the programs addressing the needs of low-income renters?
  - **WAP Protocols** – Where appropriate, do the programs make use of the well-developed WAP protocols for conducting health and safety assessments, selecting and installing health and safety and energy efficiency measures, and establishing procedures for ensuring quality control?
- **Low-Income Program Best Practices** – Do the COU low-income programs follow best practices that have been identified through the national evaluation of the WAP program and in state-level evaluations of WAP programs and ratepayer-funded low-income programs?
  - **Collaboration with WAP and EAP** – Does the Department and do the COUs ensure that there is effective communication about ways that the publicly funded and ratepayer-funded programs can jointly serve the entire low-income market in ways that are supportive and not duplicative?
  - **Measurement and Evaluation Framework** – Do the COUs have an effective system for assessing the performance of each program so that they can identify program improvement opportunities and make appropriate investment decisions?
  - **Targeting** – Do the COUs target program services to those housing units that are likely to have the greatest program impacts, either in terms of energy savings or societal benefits?

We examined both individual COU low-income program statistics and the overall performance of the COU programs with respect to these specific assessment criteria.

## Assessment of COU Low-Income Programs

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In this study, we assessed the extent to which the low-income programs implemented by the electric and natural gas COUs fulfilled the explicit program requirements, addressed implicit program objectives, and adopted low-income program best practices.

### Explicit Program Requirements

The study found that many of the electric and natural gas COUs met or exceeded the most important explicit program requirements established by the Department, but that some did fail to meet the spending requirements in 2014.

- Low-Income Spending Requirement
  - Electric COUs
    - Dedicated Low-Income Programs – About three-fourths of the electric COUs implemented dedicated low-income programs and met an average of almost 90 percent of their spending requirement with those programs.
    - Total Low-Income Spending – Three-fourths of electric COUs met or exceeded their low-income spending requirement with their estimated total low-income spending. However, 12 percent of electric COUs fulfilled less than one-half of their required low-income spending.
  - Natural Gas COUs
    - Dedicated Low-Income Programs – Four of six natural gas COUs implemented dedicated low-income programs and met an average of two-thirds of their spending requirement with those programs.
    - Total Low-Income Spending – Four of the six natural gas COUs met or exceeded their low-income spending requirement with their estimated total low-income spending. However, the other two natural gas COUs fulfilled less than 25 percent of their required low-income spending.
- Reporting Requirements – The natural gas and electric COUs have filed all the required ESP reports. Some of the COUs furnished comprehensive information on their programs, while others furnished more limited information.
- Department Guidance
  - Multifamily Guidance – None of the electric COUs that we interviewed made effective use of the Department’s 2012 Guidance related to multifamily buildings. There were no multifamily building residential programs reported by either electric or natural gas

COUs. However, during our in-depth interviews with electric COUs, several asked for additional technical assistance from the Department to help them understand the guidance and to advise them on how to engage landlords of multifamily buildings in LI CIP programs.

- Delivered Fuel Guidance – In our in-depth interviews, some electric COUs reported that they made use of this guidance. However, one important barrier to using this guidance is that it does not appear that the COU aggregators understand how to report the savings for this type of program.

Many of the COUs and the Department are working to try to ensure that the explicit program requirements are met.

## Implicit Program Objectives

The study found that the electric and natural gas COUs addressed some of the implicit program objectives with their low-income programs.

- Low-Income Renters – The Department does not require the COUs to report on renter households in ESP. None of the COUs reported that they were targeting renters with their programs. Some of the COUs that we interviewed were interested in working with multifamily buildings, but did not feel that they had the skills to engage those market actors in their programs.
- Contracting with WAP Service Providers – Many COUs report that they use WAP service providers to deliver their low-income programs. Most report that they have had positive experiences with WAP service providers, as well as negative experiences. Interviews with WAP service providers find that they have had both positive and negative experiences with COUs. It appears that each party has an incomplete understanding of the other party's needs and responsibilities.
- Using WAP Protocols – Since many COUs use WAP service providers to deliver their dedicated low-income programs, their participating customers are benefiting from WAP protocols. However, it does not appear that the COU program managers understand the WAP protocols and how they protect low-income households. Both the COU aggregators and the COU program managers indicated that they would like to have a better understanding of WAP and that they would appreciate receiving information from the Department on WAP.

This study has shown that there are many opportunities for the Department, COU aggregators, COUs, and WAP service providers to work together to improve the performance of the program with respect to these objectives.

## Low-Income Program Best Practices

The study found that the COUs have adopted some of the best practices that are implemented in other jurisdictions. However, there are important ways in which the Department and the COUs are not taking advantage of practices that could improve the efficiency and effectiveness of their low-income programs, though those best practices may not be practical for many of the smaller COUs.

Some best practices that the Department and COUs have implemented include:

- Identification and Verification of Low-Income – The Department has well-defined procedures for specifying which households qualify as low-income and collecting and verifying the information needed to document a household's status. It appears that most of the COUs make use of those definitions and procedures.
- eHeat Database – The Department's EAP unit has developed a database that has extensive demographic, housing unit, and natural gas and electric energy consumption data for all households that participate in EAP. That database is an invaluable resource for identifying and targeting households for the COU low-income programs.
- WAP Service Providers – Many of the COU programs work with WAP service providers to deliver services to low-income households. The existing WAP infrastructure can increase the efficiency and effectiveness of COU program design and implementation.

However, the Department and the COUs have failed to implement certain best practices that should improve the performance of the programs.

- Communications Strategy – The Department does not have an effective strategy for communicating with COUs and COU program service providers. The Department's CIP unit does not furnish consistent information to the WAP and EAP service providers about CIP low-income program policies and procedures. The Department's WAP unit does not furnish consistent information to the COUs about how WAP policies might affect their program implementation. The Department's EAP unit does not communicate to COUs about how the eHeat system can be used in the context of program outreach and marketing.
- Program Collaboration – There are missed opportunities for program collaboration.
  - Heating Equipment Programs – The EAP ERR program replaces heating equipment for households with nonworking systems. The COU aggregators and the COUs are not aware of this program and do not understand how it can help to overcome some treatment deferral issues.
  - EAP A16 Program – Some of the WAP service providers who are also EAP agencies are using A16 funds to identify LI CIP program opportunities. If the Department's EAP unit came together with the COU aggregators, they would likely be able to develop a program model that makes effective use of A16 funds and LI CIP funds together to meet the needs of low-income customers.

- **Measurement and Evaluation Strategy** – As required by the Department, the COU aggregators engage in intensive procedures to develop engineering estimates of the expected savings from their investment in their low-income programs. However, the Department does not specify any other measurement and verification procedures as do many other jurisdictions. The Department also does not specify any other program evaluations that would identify ways to improve the performance of the programs.
- **Targeting Procedures**
  - **High-Usage Customers** – The COUs can ask their WAP service providers to take advantage of the eHeat system to target the highest energy users and improve program performance.
  - **Non-energy Benefits** - There is no documented effort on the part of any COU program to identify and target households that would attain non-energy benefits from programs.

Overall, the analysis finds that the Department is not specifying best practices for the COUs. While not all of these opportunities are practical for COUs with small program budgets, there are some opportunities for the Department to add best practices to the program requirements and for the COUs to adopt such practices, particularly if they are designed by the COU aggregators in collaboration with the Department.

## Recommendations

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Our assessment finds that many of the COUs are meeting the explicit low-income program requirements, but that there are important ways that the Department and the COUs could work together to improve their performance. It further finds that the COUs have made important progress on implicit program objectives, but that the COUs report that they need additional information and guidance from the Department to enhance their ability to meet these objectives. But, it finds that there are important low-income program best practices that are not followed by the Department or by the COUs. Given the small budgets available to some COUs' low-income programs, it may not be appropriate to expect those COUs to implement many of the listed best practices. However, with effective collaboration between the Department and some of the larger COU aggregators, there are ways that many COUs could adopt low-income program best practices to enhance the performance of their programs.

## Explicit Program Requirements

We have a number of recommendations with respect to the explicit program requirements that would require the Department to develop and communicate updated policies and then establish a transition period of several years during which the COUs would be able to update their program portfolios to meet the new requirements.

**Recommendation #1** - With respect to the low-income program spending requirement, we recommend that COUs should be required to fulfill the requirement with a dedicated low-income program or with a residential program that offers a higher program incentive to low-income customers.

To help the COUs meet this new requirement, we recommend that the Department should establish the following procedures:

- The COUs should be allowed to fulfill their spending requirement over a period of up to three years so that COUs with small budgets can target program spending to a specific time period and not be required to address low-income program issues every year.
- The COUs should be allowed to carry forward excess spending from one year to future years and remediate prior year spending shortfalls with planned spending in later years.
- The Department should work with COUs' aggregators to develop a list of successful program models that give COUs options for meeting the spending requirements. Examples of successful models include working with WAP service delivery agencies, working with local affordable housing organizations, delivering services to Section 8 housing complexes, delivering services to establishments that serve low-income customers such as food pantries and homeless shelters, partnering with the EAP ERR program to increase the efficiency of heating equipment installed by ERR, and partnering with EAP proactive A16 programs to deliver energy-efficient appliances to low-income customers.
- The Department's CIP unit should work with the Department's WAP unit and the COU aggregators to develop a clear statement of how to develop a fair compensation plan if a COU is furnishing assistance to WAP service delivery agencies and asking a WAP service delivery agency to identify and serve a COU customer with electric services only.
- The Department's CIP unit should publish a list of the WAP service providers whose service territory potentially overlaps with a COU's service territory.

There are two reasons why we perceive that these are appropriate recommendations. First, the analyses in Sections 7 and 8 of the report show that most COUs, including those with low-income spending requirements of less than \$1,000, implement dedicated low-income programs that are successful in meeting their low-income program spending requirements. Second, there is no evidence that the residential programs implemented by the COUs are serving the number of low-income customers estimated using the current Department guidelines.

*We consider these to be a high priority / high effort recommendation. The purpose is to build on the excellent work already done by many COU aggregators, COUs, and WAP service providers to ensure that low-income customers throughout Minnesota have access to important energy efficiency services.*

**Recommendation #2** - With respect to the low-income program spending requirement, we recommend that the Department should work with the Department's EAP unit to identify those COU service territories where it would be appropriate to expand the definition of "low-income" to include households with incomes up to 80 percent of state median income or area median income, whichever is higher.



This would be accomplished by first looking at the eHeat database and identifying the number of EAP recipients that show that a COU is their electric or natural gas service provider, and then by using Census data to identify the number of households with income at or below 50 percent of state median income in the census jurisdiction that most closely matches the COU's service territory.

A number of the WAP service providers indicated that they perceived that one or more of the COUs that they were working with "ran out of low-income households." What we perceive is that the service provider was saying that they had contacted all of the EAP recipients that had listed that COU as their electric or natural gas company, and therefore were unable to use that database to identify additional income-eligible households. In that situation, it might be effective for the local EAP office to identify COU customers who applied for assistance but were over-income for the LI CIP program for that COU.

*We consider this to be a moderate priority / low effort recommendation. It is moderate priority because relatively few COUs should have too few low-income households to serve. But, it would be useful for those that do to be able to expand the population that they are targeting. It is low effort because all of the resources needed to do the assessment are already available for analysis.*

**Recommendation #3** – We recommend that the Department work with the COU aggregators and the Department's WAP unit to identify those COUs that have adopted the Department's guidance on electric utilities claiming savings for delivered fuel customers and work with them to better document the actual outcomes from those services.

The purpose of this recommendation is two-fold. First, it appears to us that the COUs that have adopted this guidance are not reporting energy savings properly. We perceive that the Department could contract with the TRM contractor to work with those COU aggregators and COUs to improve the savings estimates. Second, we perceive that this would be a valuable option for many rural COUs to adopt. However, that cannot be done until the actual savings are verified using appropriate procedures.

*We consider this to be a high priority / low effort recommendation. This is high priority because it appears that savings are not currently being counted properly. It is low effort because we perceive that the resolution would be relatively straightforward.*

**Recommendation #4** – We recommend that the Department furnish technical assistance to COUs related to identifying and serving low-income multifamily buildings. They might consider contracting with the service provider that implements the multifamily building programs for Xcel and CPE.

There are three reasons why we perceive that this is a valuable recommendation. First, the statute implies that the low-income programs should serve low-income renters. Second, the Xcel and CPE program managers have found that the multifamily building programs are "oversubscribed" suggesting that these present good opportunities for all utilities. Third, during our in-depth interviews, the COUs explicitly asked for this kind of technical assistance.

*We consider this to be a moderate priority / high effort recommendation. This is only moderate priority because the COUs do not have an explicit responsibility to serve low-income renters and many COUs are*

*already fulfilling their spending requirement with existing programs. It is high effort because the expertise to fulfill the recommendation does not reside within the Department and would likely require engaging a contractor or organization that does have those skills.*

## Implicit Program Objectives

The COUs have made some progress toward the implicit program objectives in that many already have contracts with WAP service providers. However, very few have programs that appear to target low-income renter households.

We do not have recommendation that are specific to this area because those two issues already were addressed in term of the explicit program requirements. We recommended that the Department be more proactive in helping COUs to work effectively with WAP service providers (Recommendation #1). We recommended that the Department furnish technical assistance to COUs related to identifying and serving low-income buildings.

## Low-Income Program Best Practices

Our assessment found that there are many opportunities for the Department to work with the COUs to consider ways to operationalize low-income program best practices. Specific recommendations include:

- **Communications** – Discussions with the Department units have identified a potential strategy for improving communications. It was recommended that each of the Department’s low-income program units—CIP, WAP, and EAP—should identify a communications liaison who would have responsibility for identifying common information that should be distributed to all parties that are involved in CIP low-income programs, including COUs and COU aggregators, WAP service providers, and EAP service providers. As those liaisons identify issues, it would be the job of the CIP unit to communicate with COUs, the WAP unit to communicate with WAP service providers, and the EAP unit to communicate with EAP service providers. One example of communication might be the WAP unit’s most recent analysis of the cost of health and safety measures installed by WAP service providers. That would be useful information to disseminate to all parties.

*We consider this to be a high priority / moderate effort recommendation. It is high priority because there is important information that is not being communicated. It is moderate effort because, while it does not have to be particularly time-consuming, the Department staff are already fully booked with existing responsibilities. Finding the time to communicate consistently would be a challenge.*

- **Program Collaboration** – This study has identified a number of different ways that the Department’s programs and the COU programs could increase collaboration. The Department’s low-income program units, COU aggregators, and COUs should have an ongoing work group that identifies ways to improve collaboration. The highest priority example is improving the collaboration among the Department’s EAP unit, the Department’s WAP unit, and the COUs in terms of coordinating equipment replacement services. There are three different ways that a

low-income customer can get new heating equipment to replace inoperable or unsafe equipment – the ERR program, the WAP program, and COU programs. The Department’s EAP and WAP units have recently developed procedures for coordinating the type of units that will be installed and how the programs will interact. That discussion should be extended to include the natural gas and electric COU aggregators and COU program managers who report that they are struggling with that issue.

*We consider this to be a moderate priority and moderate effort issue for the Department and the COUs, mainly because most of the COUs are electric utilities and this is much more relevant to gas utilities. Note that for IOUs, this was considered to be a high priority and high effort issue.*

- Evaluation, Measurement, and Verification (EM&V) – The Department and the COUs need reliable information on low-income program performance to make decisions on how best to allocate program resources to low-income program initiatives. However, given the size of the COU programs, it may not be appropriate to require a significant investment in evaluation or measurement and verification. Rather, we would recommend that the highest priority would be for the Department’s TRM contractor to work with the COU aggregators and those COUs that file their ESP reports independently to verify that they are using the TRM procedures properly. In addition, since GRE has a relatively large low-income program portfolio, we would recommend that they engage with any Department/IOU initiative related to measurement and verification of low-income program savings, as well as any evaluation efforts.

*We consider this to be a high priority / high effort recommendation. It is high priority because it is the foundation on which good policy is developed. It is high effort because EM&V are complex issues. The Department staff and many of the COUs have relatively little experience with the standards and procedures. And, each type of program implemented by the COUs would need different types of EM&V procedures.*

- Targeting – The Department and the COU service providers should work to develop appropriate targeting procedures. The Department and the COUs’ service providers can make use of targeting findings from evaluations in other jurisdictions. However, more intensive targeting analysis cannot be implemented until there are better guidelines on program objectives and better research has been conducted on the Minnesota IOU and COU programs that demonstrates what kind of targeting would be most beneficial.

*In the short run, targeting high-usage households and buildings for program services is a high priority / low effort initiative. It is high priority because other evaluations have clearly shown that targeting high-usage households and high-usage buildings results in higher savings and more cost-effective programs. It is low effort because the eHeat system and utility benchmarking of multifamily buildings furnishes the needed information. In the long run, it is a moderate priority / moderate effort initiative. It is moderate priority because it will be important to take advantage of the findings from Minnesota low-income program EM&V efforts. It will be moderate effort because it will involve review and assessment of EM&V reports.*

The Department and the COU aggregators and COUs have worked hard to develop an innovative set of low-income programs that appear to be delivering good-quality services to low-income households in Minnesota. The Department and the COUs should move forward to implement the recommended initiatives to ensure that the programs are moving in the direction of maximizing the impact of the programs per dollar spent.

# 1.0 Introduction

The purpose of this study is to conduct a comprehensive assessment of the Conservation Improvement Program (CIP) services delivered to low-income households by Minnesota's community-owned utilities (COUs) with the goal of helping the Department of Commerce (Department) and the COUs to identify ways to increase the efficiency and effectiveness of those programs. The assessment included:

- Development of an assessment framework that compares COU program performance to explicit CIP statutory and regulatory requirements, implicit public policy objectives, and low-income energy efficiency program best practices.
- Documentation of the context in which CIP low-income programs are implemented by developing information on low-income households and housing units, and the ways that publicly funded low-income energy assistance and energy efficiency programs serve those households and housing units.
- Collection of information about each COU's low-income CIP programs and to the extent feasible with the available data, characterization of the design and implementation of those programs, analysis of the program performance statistics, and identification of unique program designs or approaches that could be replicated by other COUs.
- Assessment of whether the overall investment by COUs and their ratepayers in low-income programs are meeting explicit regulatory requirements, fulfilling implicit public policy objectives, and taking advantage of low-income program best practices.
- Identification of opportunities for the Department and the COUs to undertake initiatives that could enhance the performance of the COUs' low-income programs.

The purpose of this report is to furnish the study findings and recommendations. The report is designed to complement the information contained in the report titled *COU CIP Low-Income Spending Requirements – Regulatory and Policy Analysis* that documents the regulatory framework for COU low-income programs. This report is limited to analysis of COU programs serving low-income households; there is a separate report on programs implemented by investor-owned utilities (IOUs).

## 1.1 Methodology

The project team conducted the following research and analysis to complete this assessment.

- LI CIP Policies and Procedures – Information on LI CIP policies and procedures from the regulatory analysis report was used to establish what COUs are required to do and what they are allowed to do in the design and implementation of their CIP low-income programs.
- Low-Income Households – Data from the American Community Survey (ACS) were used to estimate the number of low-income households in Minnesota and to furnish information about those households.

- Federally Funded Low-Income Programs – Documentation from the Energy Assistance Program (EAP) and the Weatherization Assistance Program (WAP), along with in-depth interviews with EAP and WAP program managers were used to understand the opportunities for and limitations of LI CIP collaboration with those programs.
- COU Program Characterization - Information from the COU CIP Plans for 2016 and Status Reports for 2014 were used to document the funding allocated to each low-income program, the design and implementation of each program (to the extent that those data were available), and the program performance statistics.
- In-Depth Interviews – The project team conducted in-depth interviews with the Department’s CIP unit staff and a purposive sample of COU aggregators, COUs, and LI CIP service providers to develop a more comprehensive understanding of the details of and rationale for the design and implementation of the COUs’ low-income programs, and to obtain recommendations from those managers regarding the barriers and opportunities associated with those programs. [Note: COU aggregators are those generation and transmission cooperatives and municipal power agencies that work with COUs on the design and implementation of and/or reporting for CIP programs.]

These research activities furnished the project team with a comprehensive understanding of the COUs’ low-income programs and their performance metrics, and helped us to identify program design and implementation barriers and opportunities.

## 1.2 Organization of the Report

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The report consists of the following sections:

- Summary – Furnishes an overview of the study findings and recommendations.
- 1.0 Introduction – Describes the study purpose and methodology, and the organization of the report.
- 2.0 Low-Income Program Context – Furnishes information on low-income households in Minnesota. Documents the approach used by EAP and WAP to serve low-income households and identifies the opportunities and barriers that it presents to LI CIP programs.
- 3.0 Analysis Framework – Outlines the analysis framework that was used to document the investments made by COUs in their low-income programs, characterize those programs, and examine their projected performance.
- 4.0 Electric COU Low-Income Programs – Furnishes information on the electric COU programs implemented in 2014, including both dedicated low-income programs and residential program that serve some low-income customers.
- 5.0 Natural Gas COU Low-Income Programs – Furnishes information on the electric COU programs implemented in 2014, including both dedicated low-income programs and residential programs that serve some low-income customers.

- 6.0 Assessment Framework – Documents the explicit requirements for COU low-income programs and the implicit public policy objectives that can be derived from CIP statutory language and regulatory decisions, and identifies best practices for low-income programs.
- 7.0 Assessment of Electric COU Programs – Examines the performance of the electric COU CIP programs in terms of explicit program requirements and implicit policy goals. Identifies possible approaches for enhancing the performance of programs.
- 8.0 Assessment of Natural Gas COU Programs – Examines the performance of the natural gas CIP programs in terms of explicit program requirements and implicit policy goals. Identifies possible approaches for enhancing the performance of programs.
- 9.0 Program and Policy Recommendations – Identifies changes the Department and the COUs should consider for improving the performance of COUs' low-income programs.

Background documents and spreadsheets related to the research conducted by the project team are available upon request.

## 2.0 Low-Income Program Context

The CIP statute requires electric and natural gas COUs to spend funds on low-income programs. The statute defines “low-income programs” as “energy conservation programs that directly serve the needs of low-income persons, including low-income renters.” The statute does not furnish a specific definition of “low-income persons.” Many of the COUs use the state’s WAP and EAP income guidelines to determine eligibility for low-income programs.

The Department has encouraged COUs to work with WAP service delivery agencies in the design and implementation of their low-income programs. Our in-depth interviews with the COU aggregators found that most recommend that their member COUs work with WAP service providers because it is the most efficient way for a COU to identify and recruit a low-income customer for their dedicated low-income CIP programs. A few of the COUs that we interviewed reported working with other organizations that also can identify low-income households (e.g., Habitat for Humanity, Section 8 housing program managers). Since the COU program descriptions in the Energy Savings Platform (ESP) often do not report on the program implementer, it is not possible to furnish more robust statistics on the share of COU LI CIP programs that are delivered by WAP service providers.

Since many COU programs use EAP or WAP income guidelines and have adopted WAP program protocols, it is important to have information on the EAP and WAP programs to understand the rationale for COU program designs. In addition, it is useful to have statistics on those programs to understand more about the ways that the publicly-funded and ratepayer-funded programs can collaborate. This section of the report includes information on the following topics.

- Income-Eligible Households – Documents EAP and WAP income guidelines and furnishes estimates of the number of income-eligible households, along with statistics on housing unit types and main heating fuels for income-eligible households.
- EAP Program – Furnishes information on the program guidelines, program spending, and program participants.
- WAP Program – Furnishes information on the program guidelines, program spending, and program participants.

This report furnishes summary information on EAP and WAP program requirements. More information is available in the state EAP and WAP program manuals.

### 2.1 Income-Eligible Households

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The EAP and WAP programs each have an income threshold for program eligibility. The EAP program’s threshold is 50 percent of state median income by household size. The WAP program’s threshold is the higher of the EAP threshold and 200 percent of the United States Department of Health and Human Services (HHS) poverty guidelines. For households with three or more household members the WAP threshold is higher than the EAP threshold. Table 5 shows the number and percent of Minnesota



households that are income-eligible for EAP and WAP. Table 6 and Table 7 show the distribution of WAP income-eligible households by building type and ownership status. Table 8 and Table 9 show the distribution of WAP income-eligible households by building type and main heating fuel.

Table 5 shows that about 23 percent of households are income-eligible for EAP and that about 24 percent are income-eligible for WAP.

**Table 5. Number and Percent of EAP and WAP Income-Eligible Households in 2015**

Program Eligibility Group	Number	Percent
EAP Income-Eligible Households	487,239	23%
WAP Income-Eligible Household	507,982	24%
TOTAL Households	2,147,260	100%

Source: 2015 American Community Survey

Table 6 shows that about 50 percent of households that are income-eligible for WAP live in single family homes, while 36 percent live in large multifamily buildings. About 85 percent of WAP income-eligible owners live in single family homes, while 61 percent of WAP income-eligible renters live in large multifamily buildings.

**Table 6. Number and Percent of WAP Income-Eligible Households in 2015  
by Housing Unit Type and Ownership Status**

Building Type	All		Owners		Renters	
	Number	Percent	Number	Percent	Number	Percent
Manufactured Housing <sup>a</sup>	30,320	6%	22,089	10%	8,231	3%
Single Family Homes	255,033	50%	186,537	85%	68,496	24%
Small Multifamily (2-4 units)	40,285	8%	3,740	2%	36,496	13%
Large Multifamily (5+ units)	182,344	36%	7,888	4%	174,456	61%
All Building Types	507,982	100%	220,254	100%	287,728	100%

Source: 2015 American Community Survey

a. \* Includes "Other" types of housing units

Table 7 shows the statistics in a slightly different way. It shows the share of low-income households in each type of housing unit that are owners vs. renters. For both manufactured and single family homes, almost three-fourths of low-income households are owners. For both small multifamily and large multifamily homes, over 90 percent of low-income households are renters.

**Table 7. Number and Percent of WAP Income-Eligible Households in 2015  
by Housing Unit Type and Ownership Status**

Building Type	All		Owners		Renters	
	Number	Percent	Number	Percent	Number	Percent
Manufactured Housing <sup>a</sup>	30,320	100%	22,089	73%	8,231	27%
Single Family Homes	255,033	100%	186,537	73%	68,496	27%
Small Multifamily (2-4 units)	40,285	100%	3,740	9%	36,496	91%
Large Multifamily (5+ units)	182,344	100%	7,888	4%	174,456	96%
All Building Types	507,982	100%	220,254	43%	287,728	57%

Source: 2015 American Community Survey

a. Includes "Other" types of housing units

Natural gas COUs are expected to deliver energy services to their customers. In most cases, a household that uses natural gas will use it as their main heating fuel. Table 8 shows that 280,288 WAP income-eligible households use natural gas as their main heating fuel, about 55 percent of all WAP income-eligible households.

**Table 8. Number and Percent of WAP Income-Eligible Households in 2015  
by Housing Unit Type and Main Heating Fuel <sup>a</sup>**

Building Type	Natural Gas Main Heat		Electric Main Heat		Delivered Fuel Main Heat	
	Number	Percent	Number	Percent	Number	Percent
Manufactured Housing <sup>b</sup>	17,739	6%	2,613	2%	9,511	12%
Single Family Homes	155,218	55%	34,275	25%	63,148	81%
Small Multifamily (2-4 units)	25,156	9%	12,345	9%	2,158	3%
Large Multifamily (5+ units)	82,175	29%	85,683	64%	3,112	4%
All Building Types	280,288	100%	134,916	100%	77,929	100%

Source: 2015 American Community Survey

a. Excludes other fuel types

b. Includes "Other" types of housing units

Virtually all households use electricity and can be served by electric COU programs. However, Table 9 shows that only about 27 percent of WAP income-eligible households report that electric is their main heating fuel. While natural gas COUs can deliver a comprehensive set of natural gas energy efficiency

measures to most of their customers, an electric COU is more limited in the set of measures that its program can deliver. About 13 percent of low-income single family homes have electric main heat and are likely to be able to receive all types of electric energy efficiency services. However, 87 percent of those housing units use either natural gas or a delivered fuel for their main heat and many of those might only be eligible for services related to space cooling, lighting, refrigeration, and appliances. In 2012, the Department issued guidance that allowed electric utilities, at their option, to deliver space heating and water heating energy efficiency services to customers who use a delivered fuel or who use natural gas that is delivered by a utility that is not subject to the CIP requirements. Table 9 shows that about 25 percent of single family homes have delivered fuel main heat and could be served by electric COUs low-income programs. In-depth interviews with the COU aggregators, COUs, and WAP service providers found that a number of COUs have dedicated low-income programs that allow the WAP service provider to deliver space heating and water heating services to COU customers that use a delivered fuel for those end uses.

**Table 9. Number and Percent of WAP Income-Eligible Households in 2015  
by Housing Unit Type and Main Heating Fuel <sup>a</sup>**

Building Type	All		Natural Gas Main Heat		Electric Main Heat		Delivered Fuel Main Heat	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Manufactured Housing <sup>b</sup>	30,320	100%	17,739	58%	2,613	9%	9,511	31%
Single Family Homes	255,033	100%	155,218	61%	34,275	13%	63,148	25%
Small Multifamily	40,285	100%	25,156	62%	12,345	31%	2,158	5%
Large Multifamily	182,344	100%	82,175	45%	85,683	47%	3,112	2%
All Building Types	507,982	100%	280,288	55%	134,916	27%	77,929	15%

Source: 2015 American Community Survey

a. Excludes other fuel types

b. Includes "Other" types of housing units

Table 5 through Table 9 furnish useful information on the number and types of WAP-income eligible households that could be served by the COU low-income programs. Relatively few households in Minnesota that use natural gas are served by natural gas COUs that are subject to the CIP low-income spending. So, the statistics in Table 8 and Table 9 for natural gas main heat households are not particularly applicable to the analysis; most households that heat with natural gas are served by the IOUs. However, many Minnesota households have their electricity delivered by a COU. By comparing the

required low-income spending amount for electric COUs to the amount for electric IOUs, it appears that about 40 percent of Minnesota households are served by COUs.

## 2.2 EAP Program

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The EAP program is managed by the Department and is implemented by 31 local service delivery agencies. The Department develops EAP policies and procedures, and monitors the local service delivery agencies. The local agencies conduct program outreach and intake, and work with energy suppliers (including natural gas and electric utilities) to help ensure that participating households maintain energy service.

Households apply for EAP programs using the Minnesota Energy Programs application. In completing the application, they furnish documentation on the number of people in their household and on all sources of income. They also document the type of housing unit they occupy, their main and supplemental heating fuels, whether they are without energy service, and other information about their energy status. The EAP program makes use of that information to assess whether the household is income-eligible for EAP heating assistance benefits and for determining whether the household has a need for other available program services. The information supplied by clients is recorded in the Department's eHeat database. That database is used for tracking program participation and is available to the EAP and WAP service delivery agencies for outreach to clients for other program services.

In FFY 2016, Minnesota received \$124.0 million in Low income Home Energy Assistance program (LIHEAP) funds. Table 10 shows how funding was allocated among the programs and the number of households served by each program.

The primary use of EAP funds is to pay for heating assistance for income-eligible households. Most households served by the program first apply for a heating assistance benefit. In FFY 2016, \$63.1 million (51 percent) of the LIHEAP funds were used to deliver heating assistance benefits to 132,786 households. About 27 percent of income-eligible households (132,786 out of 487,239) received EAP heating assistance. Each EAP recipient has the option of having all of their benefit paid to their main heating fuel account or, alternatively, having 70 percent paid to their heating account and 30 percent paid to their electric account.

Table 10 shows that LIHEAP funds are also used for several other purposes. Three of those programs offer opportunities for collaboration with the COU low-income CIP programs.

- Energy Related Repair (ERR) – ERR is a crisis program that repairs or replaces nonworking or unsafe heating systems of EAP-eligible homeowners. In FFY 2016, EAP service delivery agencies spent \$6.0 million to deliver services to 4,692 households.
- Assurance 16 (A16) – These funds are used by local EAP service providers to furnish budget counseling, energy education, energy assessments, and other services that help households to reduce their needs for energy assistance.

- Weatherization (EAP/WX) – The EAP program transferred \$10.2 million to WAP. The EAP funds used for weatherization are spent using DOE WAP protocols with the exception that the funds are not subject to the DOE WAP statewide average cost per dwelling unit limit.

**Table 10. LIHEAP Funding and Participants by Program for FFY 2016**

Program	Funding		Participants	
	Amount (in millions)	Percent	Number of Households Receiving Benefit	Percent of Households Receiving Benefit
Heating Assistance	\$63.1	51%	132,786	100% <sup>b</sup>
Crisis Assistance	\$20.5	17%	40,476	30%
Energy Related Repair	\$6.0	5%	4,692	4%
Weatherization	\$10.2	8%	1,073	<1%
Assurance 16	\$4.6	4%	--	--
Administration	\$12.2	10%	--	--
Carryover	\$7.4	6%	--	--
<b>TOTAL</b>	<b>\$124.0</b>	<b>100%</b>	<b>132,886<sup>a</sup></b>	<b>100%</b>

Sources: 2016 Performance Data From, 2016 LIHEAP Household Report

a. Unduplicated count of clients receiving any type of assistance

b. Rounds to 100%.

There are opportunities for the COUs to collaborate with each of these programs.

- ERR Program – The COU program managers consider malfunctioning heating equipment as one important barrier to delivering services to low-income households. The ERR program worked with 4,692 low-income households in FFY 2016 to resolve those issues.
- A16 Program – The A16 program gives EAP service delivery agencies the flexibility to work with utilities to find better ways to serve low-income households. It is likely that discussions among the state EAP program office, the local service delivery agencies, and the COUs could identify some ways in which those funds could be used to improve LI CIP program outreach and service delivery.

The other important statistic that can be derived from the EAP program data is that relatively few households who apply for energy assistance have electricity as their main heating fuel. Table 11 shows the main heating fuel for EAP clients. About two-thirds of EAP clients use natural gas for their main heat. Most of those clients are eligible for low-income programs implemented by the natural gas IOUs and COUs. About 13 percent of clients have electric main heat and would be eligible for low-income

programs implemented by electric IOUs or COUs. About 20 percent of clients use a delivered fuel for their main heat and could be eligible for heating energy efficiency programs if their COU chooses to use the Department guidance on serving delivered fuel households.

**Table 11. Number and Percent of EAP Recipients by Main Heating Fuel in FFY 2016**

Main Heating Fuel	Number	Percent
Natural Gas	89,372	67%
Electricity	16,638	13%
Propane	17,908	13%
Fuel Oil	6,128	5%
Other	2,740	2%
TOTAL EAP Recipients	132,786	100%

Source: 2016 LIHEAP Performance Data Form

## 2.3 WAP Program

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The WAP program is managed by the Department and is implemented by 24 local service delivery agencies<sup>1</sup>. The Department develops WAP policies and procedures, and monitors the local service delivery agencies. The local agencies conduct program outreach and intake, and deliver weatherization services to households. Most WAP program participants first apply for EAP and, as part of that application process, indicate that they are interested in receiving weatherization services. Households that have not received EAP can apply separately for WAP using the same application form. As discussed earlier in this section of the report, some households are income-eligible for WAP, but not for EAP.

For Program Year 2016, WAP received a program allocation from DOE of \$8.4 million, along with a \$1.6 million grant for training and technical assistance. When added to the \$10.2 million from the EAP program (EAP/WX), the WAP program had a total of \$20.2 million available to train WAP program staff and deliver services to low-income households. In Program Year 2016, the WAP program used DOE funds to deliver services to 1,052 housing units and used EAP/WX funds to deliver services to 1,073 housing units. The unduplicated count of housing units served by the two funding sources was 1,782. The Department did not report statistics on how many of the housing units served by WAP or EAP/WX funds also received LI CIP program funding.

The delivery of WAP and EAP/WX weatherization program services is outlined in the WAP State Plan and by the WAP/EAP agreement on use of EAP funds for weatherization. The Minnesota WAP Policy Manual 4.6 furnishes detailed guidance on WAP program implementation. In deciding whether and how to collaborate with WAP service delivery agencies, it is important for COU low-income program managers to have an understanding of the opportunities and barriers associated with WAP program guidelines.

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<sup>1</sup> Twenty-one of the 24 WAP service delivery agencies also are EAP service delivery agencies.

## 2.3.1 WAP – Eligible Housing Units and Eligible Program Measures

It is important to understand that WAP service providers are not allowed to use DOE funds to weatherize certain homes, and that they are allowed to defer service delivery for certain situations. Some examples include:

- **Condition of the Housing Unit** – The housing unit has structural or equipment issues that cannot be addressed with the WAP funding available.
- **Status of the Housing Unit** – The housing unit is scheduled for demolition, is in the process of being sold, or is in the process of being remodeled.
- **Client-Related Issues** – The client is uncooperative, refuses to have certain cost-effective measures installed, or is unable to ensure the safety of weatherization staff.

It is important for COU aggregators and COU program managers to review the WAP guidelines and consider which should be adopted by their programs. For example, WAP program funds cannot be used to weatherize a home that was weatherized after 1994. However, since equipment efficiency and weatherization procedures have changed significantly since 1994, the COU program might set a different standard for which homes can be considered for weatherization. However, the COU programs might want to adopt WAP practices such as excluding from their low-income programs homes that are about to be sold.

Another important part of WAP guidelines are those related to housing unit types, assessment protocols, and building owner contributions.

- **Housing Unit Types** – The WAP program defines three different types of housing units – mobile homes, single family homes, and multifamily homes. Unlike the Census definitions, the WAP program defines single family homes as those in buildings with one to four units and multifamily homes as those in buildings with five or more units.
- **Assessment Protocols** – The WAP program requires states to have approved assessment protocols for each type of housing unit. Using the approved assessment tool, the service delivery agency identifies which measures are cost-effective (i.e., have a savings-to-investment ratio of 1.0 or greater) and which are not. The program requires that service delivery agencies install all measures that are determined to be cost-effective and only those measures. [Note: Health and safety measures are not included in this assessment.]
- **Building Owner Contributions** – For single family homes, local service delivery agencies are required to work with the building owner to assess whether owner contributions to the cost of service delivery are appropriate. For multifamily buildings, building owner contributions are required. There are special rules about owner contributions to “buy down” the cost of measures that are not determined to be cost-effective.

DOE has issued guidance about how state WAP programs can change these guidelines when using leveraged funds (e.g., building owner funds and utility program funds). The Minnesota WAP office has issued guidance with respect to building owner “buy downs” for measures installed in multifamily buildings, but not with respect to utility program “buy downs” for those buildings. In addition, DOE regulations allow WAP service delivery agencies to install any measure where the full cost of the measure is paid for by a leverage source of funding (e.g., building owners, EAPWX funds, and utility program funds). Since the value of an energy efficiency measure to the COU may be different from the value as calculated by the WAP program, it would make sense for the Department’s WAP unit and the COU aggregators—many of whom have designed programs for the COUs—to discuss the circumstances in which it would make sense for LI CIP funds to be used to install measures that are not eligible for installation with WAP fund.

## **2.3.2 WAP – Quality Control and Health and Safety Guidelines**

These are two other parts of the WAP program guidance that should be considered by the COU aggregators and COU program managers – quality control procedures and health and safety guidance. These procedures have been developed to increase the quality of the work done and to ensure that homes treated by WAP are healthy and safe for clients.

The WAP quality control procedures include the following components:

- **Pre-weatherization Audit** – Each home must have a comprehensive energy audit by a certified auditor prior to treatment. The audit identifies the cost-effective energy conservation measures, general (incidental) repair measures, and required health and safety measures.
- **Standard Work Specifications (SWS)** – All work completed in the home must be completed according to the SWS by certified staff with appropriate certification for each task. Certain work must be completed by licensed professionals such as an electrician.
- **Permits** – Service delivery agencies are responsible for obtaining all permits required by local municipal agencies.
- **Inspections** – The service delivery agency is required to conduct an inspection of all completed units. In most cases, the final inspection is conducted by a Quality Control Inspector who was not involved with the audit or weatherization of the home.

In addition to the quality control work conducted by the service delivery agency, the Department’s WAP unit conducts training for service delivery agencies, and conducts desk audits and on-site monitoring of the work of each service delivery agency.

The WAP program also has developed detailed procedures for identifying and resolving health and safety issues in clients’ homes. Some examples of the issues identified as part of the WAP audit and the ways that those issues are resolved include:



- **Equipment Operation and Safety** – Each combustion appliance (i.e., heating system, water heater, and stove/oven) is tested to assess whether it is operating properly. Equipment problems may be resolved by cleaning and tuning the equipment, replacing the equipment, or deferring the housing unit until the equipment problem can be addressed.
- **Moisture and Indoor Air Quality Problems** – As part of the audit, the housing unit is examined to determine whether there are issues with moisture that are causing mold or mildew to form, and to assess whether the home has adequate ventilation to meet the ASHRAE 62.2 standards. Issues may be addressed by installing exhaust fans in the kitchen and/or bathrooms, sealing heating ducts, and fixing dryer vents.
- **Asbestos and Lead-Based Paint** – In some homes, the audit may find that there is asbestos in the siding or covering pipes, or lead-based paint on window frames that could be disturbed by weatherization activities. The WAP program has detailed procedures that describe how to prevent weatherization activities from exposing clients or crew members to these dangerous substances.

The FFY 2017 WAP Plan has a detailed Health and Safety Plan that should be reviewed by any organization that is weatherizing low-income housing units in Minnesota. One important part of that plan is information from a recent study by the Department to determine the incidence of major health and safety measures, and the average cost of those measures. That study found that the average cost per unit for health and safety measures for treated homes was \$2,461. Since the DOE limit on health and safety spending per unit is \$1,058, EAP/WX funding is used to supplement the spending for health and safety measures. This information should be useful for those COU programs that are not implemented through co-funding with WAP service providers.

## 2.4 Summary of Low-Income Program Information

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The information presented in this section of the report furnishes information that is useful to consider in the context of the implementation of utility low-income programs.

- **Low-Income Households** – The EAP and WAP programs clearly define the households that are income-eligible for their programs. The American Community Survey data for 2015 show that there are about 508,000 households that are income-eligible for those programs. That is about 24 percent of Minnesota's 2.15 million households.
- **Low-Income Housing Units** – Some important statistics about the housing units occupied by low-income households include: 50 percent are in single family homes and 36 percent are in large multifamily buildings; 57 percent are occupied by renters, but the share of units occupied by renters varies considerably by housing unit type; about 55 percent of low-income housing units heat with natural gas and 27 percent heat with electricity.
- **EAP Program** – In a recent program year, the EAP program served over 134,000 households with its heating assistance program, about 26 percent of all income-eligible households. The program also serves low-income households with an equipment repair and replacement program and a

program that delivers energy education and budget counseling to clients, and by transferring funds to WAP.

- WAP Program – In a recent program year, the state WAP program had \$20.2 million available to train and monitor WAP program staff, and deliver services to 1,782 low-income households. The Department’s WAP unit has developed detailed information on eligible housing units, service delivery quality control procedures, and client health and safety measures to guide the use of program funds.

The COU aggregators and the COU program managers can take advantage of these resources as they design and implement their low-income programs. However, it is also important for the aggregators and COU program managers to understand how WAP program guidelines might limit the flexibility for COU programs that combine resources with WAP funds and actively work with the Department’s WAP office and local service providers to ensure that COU funds are used in the most effective way possible. During the in-depth interviews, both the COU aggregators and the COU program managers expressed a need to have a better understanding of how the publicly funded low-income program operate.

## 3.0 Analysis Framework

Each of the COUs has developed one or more LI CIP programs designed to meet the needs of low-income customers in their service territory. In this section of the report we document the way that the COU CIP programs are analyzed in terms of their allocation of resources to low-income customers.

### 3.1 COU Programs

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The electric COUs are quite different from the IOUs in the way that they design and implement their programs and how the program accomplishments are reported to the Department.

- **COU Aggregators** – Many electric COUs work with a generation and transmission cooperative or a municipal power agency in the design, implementation, and/or reporting of the CIP programs. However, the role played by each of nine “aggregators” is different. We conducted in-depth interviews with five of the COU aggregators and found that three of the five were very proactive in terms of design, implementation, and reporting on CIP programs. The other two aggregators mainly took responsibility for reporting on the programs designed and implemented by the COUs.
- **Reporting** – In most cases, the COU aggregators submit plans and reports for the COUs in the Department’s Energy Savings Platform (ESP). A report that documents key program statistics is submitted for each program implemented by the COU. However, unlike the IOU filings, the COU ESP reports include only a brief description of each program that they implement. The ESP reports allow us to develop information on program spending and energy savings. However, it is difficult to obtain more detailed information to characterize individual programs.
- **Counting Low-Income Program Spending** – COUs are asked to report on both spending for dedicated low-income programs and on the percentage of spending on residential programs that was allocated to low-income customers.

Because of these differences, the information that was developed for COUs is more limited than the information that was developed for the IOUs.

Because of the size exclusion in Subd. 1b(a)(1) of the statute, only six natural gas COUs are subject to the CIP low-income spending requirement. Those six natural gas COUs submit reports on CIP programs in the ESP that are limited to spending and performance requirements, along with a brief program description.

### 3.2 Program Investments

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In their annual status reports, the COUs document the investments that they made for each program. This analysis focuses on the 2014 COU status reports. It documents the following statistics with respect to program investments:

- Program Type – The COUs categorize their programs into the following types:
  - Dedicated Low-Income Weatherization – Funding assistance for the Federal Weatherization Assistance Program. The instructions ask COUs to report on LI CIP WAP weatherization measures. [Note: Our analysis finds that some electric COUs report spending on electric baseload energy efficiency measures here and that other electric COUs report spending on weatherization measures in the “specialty low-income” fields.]
  - Specialty Low-Income – Other direct energy efficiency measures. COUs report funding for lighting and appliance programs here, even if the measures are delivered by WAP service providers as an add-on to WAP-funded weatherization.
  - Indirect Low-Income – Low-income programs that do not result in direct energy savings.
  - Residential Programs – COUs report separately on the following types of programs: Appliance Harvesting, Behavior Change, Building Envelope, Consumer Electronics, Domestic Hot Water, Energy Audit/Analysis, Energy Star Appliances, Heat Pumps, Lighting, Load Management, Multifamily Buildings, Space Cooling (not heat pumps), Space Heating (not heat pumps), Specialty Residential, and Whole House.
- Program Spending – The amount the COU spent on each low-income and residential program in 2014.
- Number of Units – The number of units delivered with that program funding. Note that the units can be buildings, housing units, measures, or other types of units. The type of unit can sometimes be inferred from the type of program.
- Average Cost per Unit – The total funding divided by the number of units.
- Low-Income Percentage – This is 100% for dedicated low-income programs (e.g., low-income weatherization, specialty low-income, and indirect low-income) and a value between 0% and 100% for residential programs.
- Low-Income Spending – The total funding amount times the low-income percentage.

These statistics furnish the first level at which each program can be examined. They show what share of COU low-income program funding is spent on each program, how many units were delivered by the program, and the size of the investment that the program is making for each of the reported units.

### 3.3 Program Performance

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The analysis also documented the following statistics with respect to program performance.

- First-Year Energy Savings – The total amount of projected first-year energy savings (measured in kWh for electric COUs and dekatherms for natural gas COUs) for each program. [Source: 2014 ESP Status Report]
- Utility Cost per Unit of Savings – The program cost divided by the projected first-year energy savings. [Source: 2014 ESP Status Report]

- First Year Savings per Measure – The total projected first-year savings divided by the number of measures. [Source: Computed]
- Average Measure Life – The average measure life for the set of installed measures. [Source: 2014 ESP Status Report.]
- Lifetime Savings – The projected first-year savings times the average measure life. [Source: Computed]
- Utility Cost per Unit of Lifetime Savings – The program cost divided by the projected lifetime savings. [Source: Computed]

There are several important issues with the reliability of this reported information and comparability of information among programs implemented by the COUs.

- Projected Savings – The savings are based on technical estimates supplied by the Minnesota Technical Reference Manual, the NEAT audit, or another procedure. The estimates are accurate only if the measure was installed in a way that matches the technical assumptions. The regulatory framework does not require COUs to implement measurement and verification (M&V) protocols for programs in the low-income segment and does not require COUs to conduct low-income program evaluations.
- Ratepayer Costs vs. Total Costs – In some cases, the ratepayers pay the entire cost of services (e.g., weatherization), while in others the ratepayers only pay for part of the cost of the measure (e.g., multifamily equipment rebates). When comparing programs that have different types of incentives, it is important to know that the cost per unit of savings is only the utility cost per unit of savings, not the measure cost per unit of savings. While that is an important metric for assessing the ratepayer program, it is not as useful when considering the value of the measure to all parties involved in the transaction.

Cost-effectiveness tests help to make the comparisons across program somewhat more meaningful in that they include all the energy savings that will result from a program rather than just the savings in the first year of the program. However, the COUs are not asked to compute program cost-effectiveness. The estimate of utility cost per unit of lifetime savings offers some information about relative performance of individual programs. However, the limitation of having projected, rather than verified, energy savings is still problematic for identifying the highest performing programs.

## 3.4 Program Characteristics

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For the IOUs programs, we documented the program characteristics for each of the low-income programs implemented by the IOU by using detailed information available in the IOU Triennial Plans and Annual Status Report, and by conducting in-depth interviews with each of the IOU low-income program managers. For the COU programs, we were able to characterize some of the COUs' low-income programs using the ESP program descriptions and the information we collected during in-depth interviews with a sample of COU aggregators, COU program managers, and WAP service providers.

However, it was not possible to develop detailed information on the characteristics of each COU's low-income programs.

## 3.5 Analysis Framework

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Section 4 of this memo furnishes information on electric COU programs; Section 5 furnishes information on natural gas COU programs. We illustrate the type of information available for COUs by showing detailed information for six electric COUs and two natural gas COUs. For those COUs, we furnish the following information:

- Program Investments – Furnishes information on the funding for each program, the number of units delivered, and average investment per unit. For residential programs, shows the estimated percentage of program participants that are low-income.
- Program Performance Statistics – Documents the available information on program performance, including the first-year projected savings, average measure lifetime, and projected lifetime savings.
- Program Characteristics – Where the information was available from either the program description or from an in-depth interview, we furnish additional information about the program design and implementation.

These data are used to show how some COUs implement their programs. In addition, Section 4 furnishes summary information for all of the electric COU programs; Section 5 furnishes summary information for all of the natural gas COU programs.

## 4.0 Electric COU Low-Income Programs

There are 141 electric COUs in Minnesota that have a low-income program spending requirement. This section of the report furnishes information on how those COUs design, implement, and report on programs to fulfill that spending requirement. It includes information on the following:

- Electric COU Aggregators
- Information for Individual Electric COUs
  - In-Depth Interviews
  - ESP Report Statistics
- Summary Information for All Electric COUs

This section furnishes detailed information that illustrates how the LI CIP operates for individual electric COUs and summarizes the overall accomplishments of all electric COUs.

### 4.1 Electric COU “Aggregators”

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The CIP Statute includes language related to the role of generation and transmission power cooperatives, municipal power agencies, and “other nonprofit organizations.” It states that ...

*“A generation and transmission cooperative electric association that provides energy services to cooperative electric associations that provide electric service at retail to consumers may invest in energy conservation improvements on behalf of the associations it serves and may fulfill the conservation, spending, reporting, and energy-savings goals on an aggregate basis. A municipal power agency or other not-for-profit entity that provides energy service to municipal utilities that provide electric service at retail may invest in energy conservation improvements on behalf of the municipal utilities it serves and may fulfill the conservation, spending, reporting, and energy-savings goals on an aggregate basis, under an agreement between the municipal power agency or not-for-profit entity and each municipal utility for funding the investments.”*

The term “aggregator” is used to refer to power cooperatives and power agencies that work with COUs on their CIP program responsibilities, including reporting. However, while many of the COUs do have the “aggregator” organizations report on their CIP program accomplishments, our in-depth interviews found that both the “aggregators” and the COUs considered the CIP program responsibilities, including the low-income spending requirement, to be a COU responsibility, not an “aggregator” responsibility. Table 12 furnishes information on the electric COUs and their aggregators.

**Table 12. Structure of Minnesota Electric Community-Owned Utilities in 2014 <sup>a</sup>**

<b>Organization</b>	<b>Organization Type</b>	<b>ESP Report Submitted</b>
Dairyland Power Cooperative	G&T Power Cooperative	3
East River Electric Power Cooperative	G&T Power Cooperative	3
Great River Energy	G&T Power Cooperative	29
Minnkota Power Cooperative/NMPA	G&T Power Cooperative	18 <sup>b</sup>
Central Minnesota Municipal Power Agency	Municipal Power Agency	10
Minnesota Municipal Power Agency	Municipal Power Agency	7
Missouri River Energy Services	Municipal Power Agency	23
Northern Municipal Power Agency	Municipal Power Agency	b
Southern Minnesota Municipal Power Agency	Municipal Power Agency	15
Independent Power Cooperatives and Municipal Utilities		33
Total Electric COUs with Low-Income Spending Requirements		141

a. This table was developed in 2015. These relationships change over time. The numbers may be different at this time.

b. Minnkota Power Cooperative and the Northern Municipal Power Agency are one organization.

We conducted interviews with Dairyland Power Cooperative, Great River Energy, Minnkota Power Cooperative/Northern Municipal Power Agency (NMPA), Minnesota Municipal Power Agency (MMPA), and Missouri River Energy Services (MRES). Each of the aggregators reported that they played different roles with respect to the design, implementation, and reporting on LI CIP and residential CIP programs.

- Dairyland Power Cooperative – Dairyland plays a very limited role in the LI CIP and residential CIP programs. The COUs design and implement programs. Dairyland reviews and approves programs, and inputs COU information into the ESP.
- Great River Energy – Great River is very proactive with respect to the LI CIP and residential CIP programs. GRE develops all program parameters, including compensation amounts and rebate levels. GRE establishes all of the program implementation and reporting requirements. The GRE account executives then work with the COUs to establish program budgets and help them to develop service agreements with suppliers. GRE handles all ESP reporting.
- Minnkota Power Cooperative/NMPA – Minnkota/NMPA works with eight cooperatives and eleven municipal utilities. Minnkota/NMPA has a CIP program development team that met monthly at the start of the program and now meets on a quarterly basis. The development team decided that the COUs would work with Community Action Partnership (CAP) agencies if at all possible. Minnkota/NMPA takes responsibility for developing program requirements, service



provider contracts, compensation amounts, and program forms and materials. Minnkota/NMPA handles all ESP reporting.

- Minnesota Municipal Power Agency – MMPA designs the LI CIP and residential CIP programs, sets up rebate procedures, tracks program information, and submits reports for 7 of their 12 utilities.
- Missouri River Energy Services – Each of the member COUs designs and implements its own LI CIP and residential CIP programs. MRES inputs the required information into the ESP based on reports from the COUs.

It is clear that it would be efficient for the Department to communicate with three of the aggregators about program design issues. For the other two aggregators, the Department would need to go directly to the COUs to get information about their programs and to communicate information about changes in policies and procedures.

One important question related to COU program delivery is whether they work with their local WAP service providers to deliver program services. Since the aggregators are involved in program reporting, many had a good understanding of how the WAP service providers were involved in program service delivery. Table 13 furnishes summary information on the reports from the aggregators. The findings include:

- Dairyland does not have detailed information about how member COUs implement programs. But, they do know that their member COUs use CAP agencies to deliver services from the data that they enter in ESP. (Note: In-depth interviews with some of the Dairyland COUs show that they use CAP agencies and that they allow the CAPs to deliver space heating and water heating services to customers with delivered fuel main heat.)
- Both GRE and Minnkota/MNPA have COU members that they report use either mainly or only CAP agencies.
- Both Minnesota Municipal Power Authority and Missouri River Energy Services reported that their COUs used a number of different program delivery models, including both CAP agencies and other local service providers. They reported that some of their COUs would change their approach each year, working with a CAP agency one year and delivering services to a homeless shelter or food bank the next.

The interviews with aggregators found that many of their COUs work with CAP agencies, but that they also work with other types of organizations. Note that more in-depth information about the working relationships between WAP service delivery agencies and the COUs is reviewed in Section 7 of this report.

**Table 13. Aggregator Reports on COU LI CIP Program Implementation**

<b>Aggregator</b>	<b>Use CAP Agencies to Deliver Services</b>	<b>Use Other Contractors to Deliver Services</b>	<b>Directly Deliver Services to Customers</b>
Dairyland	Yes	Yes	DK
Great River Energy	Yes	No	No
Minnkota/NMPA	Yes	No	No
Minnesota MPA	Yes	Yes	Yes
Missouri River Energy Services	Yes	Yes	Yes

## 4.2 Experiences of Individual Electric COUs

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To get a better understanding of how electric COUs meet their CIP low-income spending requirements, we conducted in-depth interviews with eleven electric COUs and examined individual program statistics for six electric COUs. This research serves to demonstrate the diverse approaches that electric COUs take to meeting their CIP program responsibilities.

### 4.2.1 In-Depth Interviews with Electric COUs

Table 14 furnishes information on the eleven COUs interviewed for this project. The COU names are not listed so that no individual's responses will be identified in this report. The first column of the table shows the amount of each COU's low-income spending requirement for 2014. The second column shows the percentage of the spending requirement fulfilled by dedicated low-income programs. The third column shows the percentage of the spending requirement fulfilled by the total of dedicated low-income program spending and the estimated share of residential spending that was used by low-income customers.

- All of the COUs that were interviewed met the low-income spending requirement if both dedicated and estimated low-income spending was included.
- Four of the COUs met the spending requirement with dedicated spending and two additional COUs fulfilled more than 90 percent of the spending requirement with dedicated spending.
- Only two of the COUs spent less than 50 percent of the required amount on dedicated programs.

These interviews were most effective in determining how COUs were successful in meeting program requirements. They were less effective in determining why some COUs did not meet program spending requirements.

**Table 14. Characteristics of Interviewed COUs**

<b>COU Reference Number</b>	<b>2014 Low-Income Spending Requirements</b>	<b>Dedicated Program Spending Percentage</b>	<b>Total Low-Income Program Spending Percentage</b>
#1	Greater Than \$100,000	94%	147%
#2	Greater Than \$100,000	98%	268%
#3	\$50,000-<\$75,000	63%	115%
#4	\$50,000-<\$75,000	33%	720%
#5	\$25,000-<\$50,000	156%	475%
#6	\$10,000-<\$25,000	141%	700%
#7	\$10,000-<\$25,000	141%	700%
#8	\$10,000-<\$25,000	81%	132%
#9	\$10,000-<\$25,000	70%	260%
#10	\$10,000-<\$25,000	250%	330%
#11	Less Than \$10,000	Less than 10%	150%

The COUs furnished information on how they implemented their LI CIP programs, including information on whether they delivered space heating and water heating services to delivered fuel customers, whether they delivered services to multifamily buildings, and whether their program delivered services to moderate-income households. (The COUs tended to refer to “CAP agencies” during the interviews.)

Table 15 furnishes information on the reports from the COUs. The findings include:

- **CAP Agency Contractors** – Eight of the eleven COUs interviewed reported that they currently work with CAP agencies to deliver program services. Some of the advantages that the COUs list for working with the CAP agencies included the identification and verification of income-eligible households, an existing presence in the COUs’ service territory, and having a good understanding of the required energy efficiency measures.
- **Other Service Providers** – Among the COUs interviewed, very few use other service providers. Given the relatively small size of their programs and the geographically large service territories, it is hard for them to find other contractors that can deliver the program services to their low-income households.

- Delivered Fuel Customers – Two of the COUs reported that they deliver space heating and water heating services to customers who use a delivered fuel. Two other COUs reported that they had previously delivered those services but see higher savings from electric energy efficiency measures.

None of the COUs reported that they delivered services to multifamily buildings. However, some reported that they had delivered services to Section 8 housing complexes in the past. None of the COUs reported that they delivered services to moderate-income customers.

**Table 15. COU Reports on LI CIP Program Implementation Experiences**

<b>COU Reference Number</b>	<b>Use CAP Agencies</b>	<b>Use Other Service Providers</b>	<b>COUs Deliver Program Services</b>	<b>Delivered Fuel Customers</b>	<b>Other Service Delivery Notes</b>
#1	Yes	No	No	No	Some CAPs were not interested in CIP
#2	Yes	No	No	No	None
#3	Yes	No	No	No	None
#4	Yes	No	No	Yes	None
#5	Yes	No	No	Yes	None
#6	Yes	No	Yes	No	CAP identifies needs, COU delivers appliances
#7	Yes	No	No	Yes	None
#8	Yes	No	No	Previously, but not now	None
#9	No	Yes	No	Previously, but not now	Habitat for Humanity
#10	No	No	Yes	No	Used CAP in past and will in future
#11	No	Yes	No	No	None

## 4.2.2 Program Statistics for Sample of Electric COUs

To get a better understanding of the information that is available for the electric COUs in the ESP, we examined detailed program statistics for six of the larger COUs that work with several different aggregators. Note that we report the names of the COUs and aggregators in this section of the report because these statistics are in the public record. These program statistics demonstrate the value of the ESP in terms of documenting the electric COUs' investments in low-income programs and low-income customers. However, it also demonstrates the limitations of the ESP for in-depth analysis of the programs implemented by an individual COU.

This section of the report furnishes detailed program funding and performance information for six electric COUs with a high low-income program spending requirement, which operated various dedicated low-income programs, and achieved varying levels of spending compliance and performance. To the extent the information is available from either the program description in ESP or from information obtain in an in-depth interview, it also describes how the programs operate and what measures they install. The six electric COUs, in order of the size of their LI CIP spending requirements, in 2014, are:

- Connexus Energy - \$288,267 (Greater River Energy)
- Dakota Electric Association - \$219,292 (Great River Energy)
- Lake Country Power - \$118,445 (Great River Energy)
- Beltrami Electric Cooperative, Inc. - \$65,115 (Minnkota)
- Tri-County Electric Cooperative - \$44,965 (Dairyland)
- Moorhead Public Service - \$29,406 (Missouri River Energy Services)

### *Connexus Energy*

The Connexus Energy LI CIP programs are listed in Table 16. The program narrative furnishes some basic information about the programs, including:

- Connexus partners with an aggregator organization, Great River Energy, to design/select low-income CIP programs, and with local CAP agencies to deliver low-income CIP programs. In 2014, Connexus delivered low-income CIP measures categorized into two programs: appliance replacement and custom projects.
- Appliance Replacement Program - Income-eligible members are eligible to have old, inefficient refrigerators and clothes washers replaced with new, ENERGY STAR-rated models at no cost. In certain circumstances, income-eligible members are eligible to receive new microwave ovens.
  - Eligible refrigerators and clothes washers must be at least 10 years old unless other circumstances warrant replacement. The old refrigerator must be removed and recycled properly by the appliance dealer, Connexus, CAP agency, or other partner agency.

- To be eligible for a microwave oven, income-eligible members should have an electric range and not own a working microwave.
- Custom Program – This category is used by Connexus to capture income-eligible measures and projects that are not assignable to other income-eligible program areas (AC Tune-Up, Appliance Replacement, Energy Efficiency Kits, or Weatherization). An example of programs that *may* fall under a custom income-eligible program include energy efficiency measures implemented at nonprofit facilities that primarily serve low-income members.

The review of the ESP program plans and status reports submitted by Connexus furnishes good information on program spending but limited information on program design and implementation.

**Table 16. Connexus CIP Dedicated LI Program Summary – 2014**

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
Appliance Replacement	SP	\$237,579	46	\$5,165	100%	\$237,579
Custom	SP	\$33,013	15	\$2,201	100%	\$33,013
TOTAL	SP	\$270,592	61	\$4,436	100%	\$270,592

Program Type: WX = Low-Income Weatherization, SP = Specialty Low-Income, IN = Indirect Low-Income

Table 17 shows that the average spending per unit for the appliance replacement program is \$5,165 and for the Custom program it is \$2,201. It is difficult to understand how the program could spend \$5,165 per unit when it focuses on appliance replacement. This highlights one of the challenges of working with the data reported in the ESP.

The performance of Connexus LI CIP programs is listed in Table 17. Some important findings include:

- The report shows that the first-year savings projection per unit for the Appliance Replacement Program is relatively high – 2,707 kWh. But, that is consistent with the relatively high spending per unit – \$5,165.
- The projected first-year savings per unit for the Custom program is quite high. Follow-up discussions with GRE and Connexus found that the 2014 Custom program replaced electric baseboard units in a multifamily building with heat pump units. Such programs do have quite high expected savings. However, projected first-year savings of 246,272 kWh per unit is not reasonable. Moreover, in follow-up conversations with GRE, we were unable to get clear documentation for the source of that savings estimate.

Looking at the design of the programs and the spending levels, we expect that the first-year savings for the LI CIP programs implemented by Connexus were substantial. However, the ESP report shows that it

is valuable to have program savings calculations checked by a third party to get more accurate savings results.

**Table 17. Connexus CIP Dedicated LI Program Performance Summary – 2014**

<b>Program Name</b>	<b>Program Spending</b>	<b>Units</b>	<b>First Year Energy Savings (kWh)</b>	<b>Savings per Unit (kWh)</b>	<b>Utility Cost per kWh Saved (First Year)</b>	<b>Lifetime Savings (kWh)</b>	<b>Utility Cost per kWh Saved (Lifetime)</b>
Appliance Replacement	\$237,579	46	124,542	2,707	\$1.91	622,708	\$0.38
Income Eligible: Custom	\$33,013	15	3,694,082	246,272	\$0.01	18,470,410	\$0.00
<b>TOTAL</b>	<b>\$270,592</b>	<b>61</b>	<b>3,818,624</b>	<b>62,600</b>	<b>\$0.07</b>	<b>19,093,118</b>	<b>\$0.01</b>

The Connexus CIP residential programs are listed in Table 18. Through in-depth interview discussions with Great River Energy and Connexus, we learned that the nine categories in which the residential spending is reported is developed by looking at individual program measures. There are only a few residential programs; some of the programs deliver two or more different kinds of measures.

- One important finding from Table 18 is that when GRE submits the Connexus data to the ESP, they do not report the same low-income participation rate for all residential programs. They identify those programs in which they expect low-income participation and then use a figure that is approximately one-half of the Department supplied ratio for the county in which Connexus is located. Overall, GRE estimates that about 9 percent of the residential program spending is for low-income program participants.
- Another important finding is that the “units” are difficult to interpret. For example, Connexus spent \$108,141 on the Measurable Behavior Modification program to deliver 11 units. Perhaps a unit is a month in which the program delivered information?

The ESP report is very valuable in terms of understanding the amount being spent by Connexus and the type of programs on which it was spent. However, it is difficult to interpret more about the program from the data itself.

**Table 18. Connexus CIP Residential Program Summary – 2014**

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
ASHP	HP	\$445,100	66	\$6,744	0%	\$0
Lighting	L	\$420,394	15,439	\$27	20%	\$84,079
Solar PV	LM	\$228,524	173	\$1,321	0%	\$0
Geothermal	HP	\$157,536	216	\$729	0%	\$0
Cycled AC & ASHP	LM	\$138,078	552	\$250	20%	\$27,616
Measurable Behavior Modification	BC	\$108,141	11	\$9,831	20%	\$21,628
Water Heat	DHW	\$87,678	16	\$5,480	20%	\$17,536
Dual Fuel	LM	\$79,591	0	NA	0%	\$0
Hot Water Savings	DHW	\$17,623	10	\$1,762	20%	\$3,525
TOTAL	Mixed	\$1,682,665	16,483	\$102	9%	\$154,383

Key to Acronyms used in Table

Acronym	Explanation
BC	Residential Behavior Change
DHW	Residential Domestic hot water
HP	Residential Heat pump
L	Residential Lighting
LM	Load management

The performance of Connexus residential CIP programs with low-income spending is listed in Table 19. Previously we noted that the number of units delivered was difficult to interpret. Similarly, the projected first-year savings per unit also are difficult to interpret.

Using the data in Table 16 and Table 19, we can see that Connexus was close to fulfilling its spending requirement with dedicated low-income programs and exceeded its low-income spending requirement with the combined spending on dedicated low-income programs and estimated low-income spending on low-income customers.

- Low-Income Spending Requirement = \$288,267
- Dedicated Low-Income Program Spending = \$270,592 (94%)
- Total Low-Income Spending = \$424,975 (147%)



It is clear that Connexus has implemented a comprehensive program to serve low-income customers and that their use of the “custom program” concept for special initiatives is delivering substantial services to their low-income customers.

**Table 19. Connexus Residential Program Performance Summary (Low-Income Units) – 2014**

<b>Program Name</b>	<b>Low-Income Spending</b>	<b>Units</b>	<b>First Year Energy Savings (kWh)</b>	<b>Savings per Unit (kWh)</b>	<b>Utility Cost per kWh Saved (First Year)</b>	<b>Lifetime Savings (kWh)</b>	<b>Utility Cost per kWh Saved (Lifetime)</b>
Lighting	\$84,079	3,088	250,919	81	\$0.34	2,258,270	\$0.04
Cycled AC & ASHP	\$27,616	110	9,924	90	\$2.78	148,854	\$0.19
Measurable Behavior Modification	\$21,628	2	478,277	239,139	\$0.05	2,391,386	\$0.01
Water Heat	\$17,536	3	1,517	506	\$11.56	15,173	\$1.16
Hot Water Savings	\$3,525	2	5,690	2,845	\$0.62	56,899	\$0.06
<b>TOTAL</b>	<b>\$154,383</b>	<b>3,205</b>	<b>746,327</b>	<b>233</b>	<b>\$0.21</b>	<b>4,870,581</b>	<b>\$0.03</b>

## ***Dakota Electric Association***

The Dakota Electric Association LI CIP programs are listed in Table 20. The findings include:

- Dakota Electric Association partnered with an aggregator organization, Great River Energy, to design/select low-income CIP programs, and with local CAP agencies to deliver low-income CIP programs. In 2014, Dakota delivered low-income CIP measures categorized into four programs: AC Tune-Ups, Energy Efficiency Kits, Appliance Replacement, and Custom Projects.
- In the AC Tune-Up program, income-eligible members are eligible for air conditioner tune-ups through local registered HVAC professionals. Tune-up services include cleaning condenser coils, checking refrigerant levels and pressures, checking/replacing indoor filters, testing controls, blowing out the drain line, visual inspections, homeowner education on proper operation, and programming thermostats, if applicable.
- In the Energy Efficiency Kits program, income-eligible homeowners and renters are eligible to receive energy conservation kits through their local CAP agency. The kits include the following measures: CFL bulbs, door sweeps, rope caulk, low-flow faucet aerators, pipe insulation, and other measures. Instructions are provided detailing proper installation of measures.
- Since Dakota Electric Association is a member of GRE, the program descriptions for the: Appliance Replacement and Custom programs are the same as those for Connexus.

Almost two-thirds of the LI CIP program funding is dedicated to the Appliance Replacement program that is delivered by WAP service providers to homes that are being treated by the WAP program.

**Table 20. Dakota Electric CIP Dedicated LI Program Summary – 2014**

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
Appliance Replacement	SP	\$195,182	408	\$478	100%	\$195,182
Custom	SP	\$76,596	1,152	\$66	100%	\$76,596
Energy Efficiency Kits	SP	\$25,707	167	\$154	100%	\$25,707
AC Tune-Up	SP	\$6,480	40	\$162	100%	\$6,480
TOTAL	SP	\$303,965	1,767	\$172	100%	\$303,965

Program Type: WX = Low-Income Weatherization, SP = Specialty Low-Income, IN = Indirect Low-Income

The performance of Dakota Electric Association LI CIP programs is listed in Table 21. None of the estimates stand out as being higher or lower than expected given the information available on the spending per unit in Table 20.

**Table 21. Dakota Electric CIP Dedicated LI Program Performance Summary – 2014**

Program Name	Program Spending	Units	First Year Energy Savings (kWh)	Savings per Unit (kWh)	Utility Cost per kWh Saved (First Year)	Lifetime Savings (kWh)	Utility Cost per kWh Saved (Lifetime)
Appliance Replacement	\$195,182	408	285,489	700	\$0.68	1,427,444	\$0.14
Custom	\$76,596	1,152	348,139	302	\$0.22	1,740,697	\$0.04
Energy Efficiency Kits	\$25,707	167	72,242	433	\$0.36	361,208	\$0.07
AC Tune-Up	\$6,480	40	4,494	112	\$1.44	22,472	\$0.29
TOTAL	\$303,965	1,767	710,364	402	\$0.43	3,551,820	\$0.09

**Table 22. Dakota Electric CIP Residential Program Summary – 2014**

<b>Program Name</b>	<b>Program Type</b>	<b>Program Spending</b>	<b>Units</b>	<b>Spending per Unit</b>	<b>Low-Income Percentage</b>	<b>Low-Income Spending</b>
Load Management Equipment	LM	\$402,518	0	NA	0%	\$0
Cooling	SC	\$364,393	1,378	\$264	0%	\$0
Cycled AC & ASHP	LM	\$290,257	788	\$368	20%	\$58,051
Motor	SH	\$150,787	1,402	\$108	0%	\$0
Water Heat	DHW	\$109,338	86	\$1,271	20%	\$21,868
ASHP	HP	\$80,908	66	\$1,226	0%	\$0
Energy Star Appliances	ESA	\$74,580	911	\$82	20%	\$14,916
Lighting	L	\$66,692	32,086	\$2	20%	\$13,338
Geothermal	HP	\$40,955	98	\$418	0%	\$0
Dual Fuel	LM	\$40,388	95	\$425	0%	\$0
Home Energy Savings	WH	\$20,500	40	\$513	20%	\$4,100
Solar PV	LM	\$18,190	0	NA	0%	\$0
Space Heat	LM	\$7,519	4	\$1,880	0%	\$0
HVAC Tune-Up	SC	\$6,967	219	\$32	20%	\$1,393
Hot Water Savings	DHW	\$209	1	\$209	20%	\$42
<b>TOTAL</b>	<b>Mixed</b>	<b>\$1,674,201</b>	<b>37,174</b>	<b>\$45.04</b>	<b>7%</b>	<b>\$113,709</b>

Key to Acronyms used in Table

<b>Acronym</b>	<b>Explanation</b>
DHW	Residential Domestic hot water
ESA	ENERGY STAR Appliances
HP	Residential Heat pump
L	Residential Lighting
LM	Load management
SC	Residential Space Cooling (Non-Heat Pumps)
SH	Residential Space Heating (Non-Heat Pumps)
WH	Whole House

The Dakota CIP residential programs are listed in Table 22. As we saw with Connexus, GRE reports low-income participation only for certain types of residential programs implemented by Dakota. They estimate that about 7 percent of the residential program spending is on low-income participants.

The performance of Dakota Electric Association residential CIP programs is listed in Table 23. None of the estimates stand out as being higher or lower than expected given the information available on the spending per unit in Table 23.

**Table 23. Dakota Electric Residential Program Performance Summary (Low-Income Units) – 2014**

Program Name	Low-Income Spending	Units	First Year Energy Savings (kWh)	Savings per Unit (kWh)	Utility Cost per kWh Saved (First Year)	Lifetime Savings (kWh)	Utility Cost per kWh Saved (Lifetime)
Cycled AC & ASHP	\$58,051	158	14,166	90	\$4.10	212,494	\$0.27
Water Heat	\$21,868	17	8,156	480	\$2.68	81,555	\$0.27
Energy Star Appliances	\$14,916	182	198,404	1,090	\$0.08	2,380,851	\$0.01
Lighting	\$13,338	6,417	275,491	43	\$0.05	2,479,423	\$0.01
Home Energy Savings	\$4,100	8	6,292	787	\$0.65	94,382	\$0.04
HVAC Tune-Up	\$1,393	44	4,921	112	\$0.28	68,899	\$0.02
Hot Water Savings	\$42	0	569	NA	\$0.07	5,690	\$0.01
TOTAL	\$113,709	6,826	508,000	74	\$0.22	5,323,295	\$0.02

Using the data in Table 20 and Table 23, we can see that Dakota exceeded its spending requirement with dedicated low-income programs.

- Low-Income Spending Requirement = \$219,292
- Dedicated Low-Income Program Spending = \$303,965 (139%)
- Total Low-Income Spending = \$417,674 (190%)

Dakota made a substantial investment in their low-income customers in 2014.

## ***Lake Country Power***

The Lake Country Power LI CIP programs are listed in Table 24. Some findings include:

- Lake Country Power partners with an aggregator organization, Great River Energy, to design/select low-income CIP programs, and with local CAP agencies to deliver low-income CIP programs. In 2014, Lake Country Power delivered low-income CIP measures categorized into two programs: energy efficiency kits and custom projects.
- Since Lake Country Power is a member of GRE, the program description for the Energy Efficiency Kits program is the same as that for Dakota Energy and the program description for the Custom program is the same as that for Connexus.

Without additional information, it is difficult to understand the specific program measures delivered by the Lake Country programs.

**Table 24. Lake County CIP Dedicated LI Program Summary – 2014**

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
Custom	SP	\$52,383	5	\$10,477	100%	\$52,383
Energy Efficiency Kits	SP	\$4,218	1	\$4,218	100%	\$4,218
TOTAL	SP	\$56,601	6	\$9,434	100%	\$56,601

Program Type: WX = Low-Income Weatherization, SP = Specialty Low-Income, IN = Indirect Low-Income

The performance of Lake Country Power LI CIP programs is listed in Table 25. It is difficult to assess the performance of the programs without more information on the types of measures installed by the programs.

**Table 25. – Lake County CIP Dedicated LI Program Performance Summary –2014**

Program Name	Program Spending	Units	First Year Energy Savings (kWh)	Savings per Unit (kWh)	Utility Cost per kWh Saved (First Year)	Lifetime Savings (kWh)	Utility Cost per kWh Saved (Lifetime)
Custom	\$52,383	5	63,371	12,674	\$0.83	316,854	\$0.17
Energy Efficiency Kits	\$4,218	1	3,884	3,884	\$1.09	19,421	\$0.22
TOTAL	\$56,601	6	67,255	11,209	\$0.84	336,275	\$0.17

The Lake Country Power CIP residential programs are listed in Table 26. Lake Country is a GRE COU and delivered a comprehensive set of the programs designed by GRE to its residential customers in 2014.

GRE only furnished estimates of low-income customer participation for those programs that it perceived were accessible to such customers. GRE estimated that about 6 percent of Lake Country residential program spending served low-income customers.

**Table 26. Lake County CIP Residential Program Summary – 2014**

<b>Program Name</b>	<b>Program Type</b>	<b>Program Spending</b>	<b>Units</b>	<b>Spending per Unit</b>	<b>Low-Income Percentage</b>	<b>Low-Income Spending</b>
Geothermal	HP	\$335,666	256	\$1,311	0%	\$0
ASHP	HP	\$202,461	109	\$1,857	0%	\$0
Energy Star Appliances	ESA	\$103,931	429	\$242	20%	\$20,786
Lighting	L	\$81,661	9,265	\$9	20%	\$16,332
Water Heat	DHW	\$49,784	92	\$541	20%	\$9,957
Home Energy Savings	WH	\$44,931	88	\$511	20%	\$8,986
Space Heat	LM	\$44,259	1,053	\$42	0%	\$0
Motor	SH	\$40,024	158	\$253	0%	\$0
Hot Water Savings	DHW	\$7,782	12	\$649	20%	\$1,556
Cycled AC & ASHP	LM	\$6,796	59	\$115	20%	\$1,359
Cooling	SC	\$2,403	4	\$601	0%	\$0
<b>TOTAL</b>	<b>Mixed</b>	<b>\$919,698</b>	<b>11,525</b>	<b>\$79.80</b>	<b>6%</b>	<b>\$58,977</b>

Key to Acronyms used in Table

<b>Acronym</b>	<b>Explanation</b>
DHW	Residential Domestic hot water
ESA	ENERGY STAR Appliances
HP	Residential Heat pump
L	Residential Lighting
LM	Load management
SC	Residential Space Cooling (Non-Heat Pumps)
SH	Residential Space Heating (Non-Heat Pumps)
WH	Whole House

The performance of Lake Country Power residential CIP programs is listed in Table 27. Most of the first-year energy savings estimates appear to be appropriate. However, the savings value per unit listed for hot water savings would suggest that a “unit” in that program is not an individual housing unit.

**Table 27. Lake County Residential Program Performance Summary (Low-Income Units) – 2014**

<b>Program Name</b>	<b>Low-Income Spending</b>	<b>Units</b>	<b>First Year Energy Savings (kWh)</b>	<b>Savings per Unit (kWh)</b>	<b>Utility Cost per kWh Saved (First Year)</b>	<b>Lifetime Savings (kWh)</b>	<b>Utility Cost per kWh Saved (Lifetime)</b>
Energy Star Appliances	\$20,786	86	85,913	999	\$0.24	1,030,959	\$0.02
Lighting	\$16,332	1,853	80,026	43	\$0.20	720,231	\$0.02
Water Heat	\$9,957	18	8,724	485	\$1.14	87,245	\$0.11
Home Energy Savings	\$8,986	18	25,660	1,426	\$0.35	384,897	\$0.02
Hot Water Savings	\$1,556	2	6,828	3,414	\$0.23	68,279	\$0.02
Cycled AC & ASHP	\$1,359	12	1,061	88	\$1.28	15,910	\$0.09
<b>TOTAL</b>	<b>\$58,977</b>	<b>1,989</b>	<b>208,212</b>	<b>105</b>	<b>\$0.28</b>	<b>2,307,520</b>	<b>\$0.03</b>

Using the data in Table 24 and Table 27 we can see that Lake County fulfilled 48 percent of its spending goal with its dedicated low-income programs, and 98 percent of its spending requirement if it included estimated low-income spending in its residential programs.

- Low-Income Spending Requirement = \$118,445
- Dedicated Low-Income Program Spending = \$56,601 (48%)
- Total Low-Income Spending = \$115,578 (98%)

It is difficult to assess the types of services that were received by Lake County's low-income customers.

## ***Beltrami Electric Cooperative***

The Beltrami Electric Cooperative LI CIP program is listed in Table 28. The findings include:

- Beltrami Electric Cooperative works with its aggregator organization, Minnkota Power Cooperative/Northern Municipal Power Agency (Minnkota/NMPA), to design its LI CIP program and partners with local CAP agencies for program delivery.
- Beltrami's LI CIP program is categorized as Specialty Low-Income in the ESP reporting platform and has as its objective addressing domestic hot water and lighting energy use in low-income homes through direct install measures. However, the program also installs weatherization measures for customers with electricity as their primary heating fuel. The Residential Low-

Income program is intended to mirror the market rate Residential Direct Install program, with the difference being the target audience of eligible low-income households.

- The Residential Low-Income program provides income-eligible members with “easy to install” water heating measures (low-flow faucet aerators, showerheads, and water heater temperature turn-down), lighting measures (CFLs to replace incandescent bulbs), and refrigerator replacement. In addition, income-eligible members with electrically heated homes may receive weatherization measures through this program. Income-eligible members may also receive air conditioning tune-up services and ECM blowers.

The program spends an average of \$922 per unit. The analysis unit is probably a customer served by the WAP program.

**Table 28. Beltrami CIP Dedicated LI Program Summary – 2014**

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
Low-Income	SP	\$40,567	44	\$922	100%	\$40,567

Program Type: WX = Low-Income Weatherization, SP = Specialty Low-Income, IN = Indirect Low-Income

The performance of Beltrami Electric Cooperative’s LI CIP program is listed in Table 29. The program is projected to deliver a relatively high average first-year savings per unit.

**Table 29. Beltrami CIP Dedicated LI Program Performance Summary – 2014**

Program Name	Program Spending	Units	First Year Energy Savings (kWh)	Savings per Unit (kWh)	Utility Cost per kWh Saved (First Year)	Lifetime Savings (kWh)	Utility Cost per kWh Saved (Lifetime)
Low-Income	\$40,567	44	106,655	2,424	\$0.38	533,276	\$0.08

The Beltrami Electric Cooperative CIP residential programs are listed in Table 30. Beltrami estimates that low-income customers receive about 50 percent of the spending for the residential lighting and Energy Star appliance programs, but does not count spending on any other program as serving low-income customers.



**Table 30. Beltrami CIP Residential Program Summary – 2014**

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
Residential and Business Load Management	LM	\$224,834	14,074	\$16	0%	\$0
Heat Pumps	HP	\$58,722	90	\$652	0%	\$0
Lighting	L	\$56,391	753	\$75	50%	\$28,196
Existing Homes	EA	\$25,932	1	\$25,932	0%	\$0
HVAC (non-heat pumps)	SH	\$19,475	128	\$152	0%	\$0
Energy Star Appliances	ESA	\$14,316	210	\$68	50%	\$7,158
Behavioral Change	BC	\$2,595	2,500	\$1	0%	\$0
Custom	SR	\$420	2	\$210	0%	\$0
Domestic Water Heaters	DHW	\$202	1	\$202	0%	\$0
<b>TOTAL</b>	<b>Mixed</b>	<b>\$402,888</b>	<b>17,759</b>	<b>\$22.69</b>	<b>9%</b>	<b>\$35,353</b>

Key to Acronyms used in Table

Acronym	Explanation
BC	Residential Behavior Change
DHW	Residential Domestic hot water
EA	Residential Energy Audits / Analysis
ESA	ENERGY STAR Appliances
HP	Residential Heat pump
L	Residential Lighting
SH	Residential Space Heating (Non-Heat Pumps)
SR	Specialty Residential

The performance of Beltrami residential CIP programs that serve low-income customers is listed in Table 31. The projected first-year savings per unit are modest.

**Table 31. Beltrami Residential Performance Summary (Low-Income Units) – 2014**

<b>Program Name</b>	<b>Low-Income Spending</b>	<b>Units</b>	<b>First Year Energy Savings (kWh)</b>	<b>Savings per Unit (kWh)</b>	<b>Utility Cost per kWh Saved (First Year)</b>	<b>Lifetime Savings (kWh)</b>	<b>Utility Cost per kWh Saved (Lifetime)</b>
Lighting	\$28,196	377	164,337	436	\$0.17	1,479,037	\$0.02
Energy Star Appliances	\$7,158	105	23,049	220	\$0.31	276,589	\$0.03
<b>TOTAL</b>	<b>\$35,353</b>	<b>482</b>	<b>187,386</b>	<b>388</b>	<b>\$0.19</b>	<b>1,755,625</b>	<b>\$0.02</b>

Using the data in Table 28 and Table 31, we can see that Beltrami only met 60 percent of its spending goal with its dedicated low-income programs, but that it exceeded its spending requirement by 17 percent when it included estimated low-income spending in its residential programs.

- Low-Income Spending Requirement = \$65,115
- Dedicated Low-Income Program Spending = \$40,567 (62%)
- Total Low-Income Spending = \$75,920 (117%)

Beltrami delivered important benefits to its low-income customers in 2014.

### ***Tri-County Electric Cooperative***

The Tri-County Electric Coop LI CIP program is listed in Table 32. Important findings from the program narrative and from an in-depth interview include:

- Tri-County Electric Cooperative designs its own LI CIP program and partners with local CAP agencies for program delivery; program reporting is completed by Tri-County’s aggregator organization, Dairyland.
- Tri-County’s LI CIP program is categorized as Specialty Low-Income in the ESP reporting platform and described as assisting “low income members with energy efficiency improvements”; details are determined by local CAP agencies receiving funds.
- However, during the in-depth interview with utility staff, Tri-County Electric Cooperative indicated that its LI CIP program provided weatherization measures (insulation, air sealing, etc.), mechanical replacement (HVAC, water heaters, thermostats, etc.), aerators, ECM motors, appliances (refrigerators), and lighting.

The program spending and spending per unit is consistent with expectations. However, it is unclear why the program is not categorized as a “low-income weatherization” program.

**Table 32. Tri-County CIP Dedicated LI Program Summary – 2014**

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
Cooperative - Low Income Program	SP	\$52,374	27	\$1,940	100%	\$52,374

Program Type: WX = Low-Income Weatherization, SP = Specialty Low-Income, IN = Indirect Low-Income

The performance of Tri-County Electric Cooperative's LI CIP program is listed in Table 33. The savings estimate per unit is surprisingly low. It seems unlikely that a program that spends \$1,940 per unit would only yield an average of 97 kWh per unit in first-year savings. We know that Tri-County delivers space heating and water heating energy efficiency measures to delivered fuel customers. We examined their ESP report for 2014 and found that no information was reported on the physical units of savings from serving delivered fuel households. It appears that any such savings are not being counted in Tri-County's report.

**Table 33. Tri-County CIP Dedicated LI Program Performance Summary – 2014**

Program Name	Program Spending	Units	First Year Energy Savings (kWh)	Savings per Unit (kWh)	Utility Cost per kWh Saved (First Year)	Lifetime Savings (kWh)	Utility Cost per kWh Saved (Lifetime)
Cooperative - Low Income Program	\$52,374	27	2,619	97	\$20.00	13,095	\$4.00

The Tri-County Electric Cooperative CIP residential programs are listed in Table 34. The Tri-County ESP report uses a different procedure for estimating the share of residential spending for low-income customers; it estimates that 25 percent of the participants for all of its residential programs are low-income. The other unique aspect of the Tri-County program is that they spend a large share of their residential funding (90 percent) on a load management program rather than on an energy efficiency program.

The Tri-County Electric Cooperative residential CIP program performance is listed in Table 35. Since the load management program is not designed to deliver energy savings, we exclude it from the analysis of savings per kWh. Overall, the programs are estimated to deliver an average of over 500 kWh in first-year savings to participating customers. The range of estimates is reasonable – the projected savings for a heat pump are higher than are the project savings for a water heater.

**Table 34. Tri-County CIP Residential Program Summary – 2014**

<b>Program Name</b>	<b>Program Type</b>	<b>Program Spending</b>	<b>Units</b>	<b>Spending per Unit</b>	<b>Low-Income Percentage</b>	<b>Low-Income Spending</b>
Cooperative - Load Management	LM	\$991,742	8,265	\$120	25%	\$247,935
Water Heaters	DHW	\$73,677	139	\$530	25%	\$18,419
Heat Pump	HP	\$25,271	36	\$702	25%	\$6,318
Lighting	L	\$8,233	150	\$55	25%	\$2,058
AC	SC	\$7,239	77	\$94	25%	\$1,810
Appliances	ESA	\$6,814	231	\$29	25%	\$1,703
Conservation	SR	\$608	3	\$203	25%	\$152
Audit Implementation	SR	\$518	3	\$173	25%	\$129
Custom	SR	\$76	2	\$38	25%	\$19
<b>TOTAL</b>	<b>Mixed</b>	<b>\$1,114,178</b>	<b>8,906</b>	<b>\$125.10</b>	<b>25%</b>	<b>\$278,544</b>

Key to Acronyms used in Table

<b>Acronym</b>	<b>Explanation</b>
AH	Appliance Harvesting
BC	Residential Behavior Change
DHW	Residential Domestic hot water
ESA	ENERGY STAR Appliances
HP	Residential Heat pump
L	Residential Lighting
LM	Load management
SC	Residential Space Cooling (Non-Heat Pump)
SR	Specialty Residential

**Table 35. Tri-County Residential Program Performance Summary (Low-Income Units) - 2014**

<b>Program Name</b>	<b>Low-Income Spending</b>	<b>Units</b>	<b>First Year Energy Savings (kWh)</b>	<b>Savings per Unit (kWh)</b>	<b>Utility Cost per kWh Saved (First Year)</b>	<b>Lifetime Savings (kWh)</b>	<b>Utility Cost per kWh Saved (Lifetime)</b>
Water Heaters	\$18,419	35	15,807	452	\$1.17	158,070	\$0.12
Heat Pump	\$6,318	9	12,601	1,400	\$0.50	151,213	\$0.04
Lighting	\$2,058	38	29,213	769	\$0.07	262,918	\$0.01
AC	\$1,810	19	10,185	536	\$0.18	142,589	\$0.01
Appliances	\$1,703	58	14,282	246	\$0.12	171,381	\$0.01
Conservation	\$152	1	534	534	\$0.28	2,671	\$0.06
Audit Implementation	\$129	1	0	0	NA	0	NA
Custom	\$19	1	214	214	\$0.09	1,072	\$0.02
<b>TOTAL (excludes LM)</b>	<b>\$30,609</b>	<b>162</b>	<b>82,836</b>	<b>511</b>	<b>\$3.36</b>	<b>889,913</b>	<b>\$0.31</b>

Using the data in Table 32 and Table 35, we can see that Tri-County exceeded its spending requirement with dedicated low-income programs.

- Low-Income Spending Requirement = \$44,965
- Dedicated Low-Income Program Spending = \$52,374 (117%)
- Total Low-Income Spending = \$82,983 (185%)

Tri-County took advantage of the Department guidance on claiming energy savings from delivering space heating and water heating services to customers who use delivered fuels.

### ***Moorhead Public Service***

The Moorhead Public Service LI CIP program is listed in Table 36. Some findings include:

- Moorhead Public Service designs and implements its own LI CIP program and partners with local CAP agencies to deliver the measures.
- Moorhead's LI CIP program is categorized as Low-Income Weatherization in the ESP reporting platform and has a goal of reducing energy use of income-qualified members through

installation of efficient lighting, appliances, heating and cooling equipment, and improving the building envelope efficiency.

- However, during the in-depth interview with utility staff, Moorhead Public Service indicated that its LI CIP program is primarily focused on appliance replacement, using the partnership with CAP agencies to identify low-income customers and their needs, and then working with local appliance dealers to deliver high-efficiency appliances.

It is possible that the narrative in the ESP is out of date, since the in-depth interview found that Moorhead had made some changes in its program. Some users find it difficult to edit the program narratives in the ESP.

**Table 36. Moorhead Public Service CIP Dedicated LI Program Summary – 2014**

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
Weatherization	WX	\$45,163	34	\$1,328	100%	\$45,163

Program Type: WX = Low-Income Weatherization, SP = Specialty Low-Income, IN = Indirect Low-Income

The performance of Moorhead Public Service LI CIP program is listed in Table 37. The first-year projected savings do not look correct. The program spent \$1,328 per unit and the project first-year savings were only 100 kWh per unit. One possible explanation for the low savings rate is that Moorhead may not be applying the TRM properly. Our review of the IOU savings estimates found that the IOUs programs were counting appliance replacement as two measures – installation of the efficient equipment and recycling of the old equipment. If Moorhead is removing the existing appliance from the home but not taking credit for that as a measure, that could explain the relatively low average savings.

**Table 37. Moorhead Public Service CIP Dedicated LI Program Performance Summary – 2014**

Program Name	Program Spending	Units	First Year Energy Savings (kWh)	Savings per Unit (kWh)	Utility Cost per kWh Saved (First Year)	Lifetime Savings (kWh)	Utility Cost per kWh Saved (Lifetime)
Weatherization	\$45,163	34	3,396	100	\$13.30	50,935	\$0.89

The Moorhead Public Service CIP residential programs are listed in Table 38. Moorhead's aggregator, Missouri River Energy Services, uses the Department guidance and reports that 31 percent of the participants in each residential program are low-income.

**Table 38. Moorhead Public Service CIP Residential Program Summary – 2014**

<b>Program Name</b>	<b>Program Type</b>	<b>Program Spending</b>	<b>Units</b>	<b>Spending per Unit</b>	<b>Low-Income Percentage</b>	<b>Low-Income Spending</b>
AC Load Control Program (Existing)	LM	\$29,580	986	\$30	31%	\$9,170
Heating & Cooling - AC	SC	\$26,513	97	\$273	31%	\$8,219
Water Heater Load Control (New Points)	LM	\$18,033	241	\$75	31%	\$5,590
Energy Star Products	ESA	\$17,574	204	\$86	31%	\$5,448
Water Heater Load Control (Existing)	LM	\$16,233	974	\$17	31%	\$5,032
Heating & Cooling HP	HP	\$12,163	8	\$1,520	31%	\$3,771
Lighting	L	\$5,850	150	\$39	31%	\$1,814
Appliance Turn-In	AH	\$5,578	51	\$109	31%	\$1,729
<b>TOTAL</b>	<b>Mixed</b>	<b>\$131,524</b>	<b>2,711</b>	<b>\$48.51</b>	<b>31%</b>	<b>\$40,772</b>

Key to Acronyms used in Table

<b>Acronym</b>	<b>Explanation</b>
AH	Appliance Harvesting
ESA	ENERGY STAR Appliances
HP	Residential Heat pump
L	Residential Lighting
LM	Load management
SC	Residential Space Cooling (Non-Heat Pumps)

The projected performance of Moorhead Public Service residential CIP programs is listed in Table 39. Most of the projected first-year savings estimates appear to be reasonable, except for the heat pump program savings estimate.

Using the data in Table 36 and Table 39 we can see that Moorhead exceeded its low-income spending requirement by over 50 percent with its dedicated low-income programs.

- Low-Income Spending Requirement = \$29,406
- Dedicated Low-Income Program Spending = \$45,163 (153%)
- Total Low-Income Spending = \$71,733 (244%)

Moorhead's program delivered important benefits to its low-income customers.

**Table 39. Moorhead Public Service Residential Performance Summary (Low-Income Units) – 2014**

<b>Program Name</b>	<b>Low-Income Spending</b>	<b>Units</b>	<b>First Year Energy Savings (kWh)</b>	<b>Savings per Unit (kWh)</b>	<b>Utility Cost per kWh Saved (First Year)</b>	<b>Lifetime Savings (kWh)</b>	<b>Utility Cost per kWh Saved (Lifetime)</b>
Heating & Cooling AC	\$8,219	30	25,311	844	\$0.32	354,356	\$0.02
Water Heater Load Control (New Points)	\$5,590	75	2,436	32	\$2.29	36,543	\$0.15
Energy Star Products	\$5,448	63	12,006	191	\$0.45	144,069	\$0.04
Heating & Cooling HP	\$3,771	2	14,988	7,494	\$0.25	179,854	\$0.02
Lighting	\$1,814	47	9,342	199	\$0.19	84,079	\$0.02
Appliance Turn-In	\$1,729	16	12,069	754	\$0.14	90,521	\$0.02
<b>TOTAL (LM excluded)</b>	<b>\$26,570</b>	<b>431</b>	<b>76,153</b>	<b>177</b>	<b>\$0.35</b>	<b>889,432</b>	<b>\$0.03</b>

## 4.3 Summary Information for COU Electric Programs

Table 40 shows that 104 of the 141 electric COUs with a low-income spending requirement reported that they implemented dedicated low-income programs in 2014. Of the 104 electric COUs with programs, 84 reported on Specialty Low-Income programs, 24 reported on Low-Income Weatherization programs, and six reported on Indirect Low-Income programs. Some findings include:

- Over 80 percent of the funding was allocated to “Specialty” programs while a little less than 20 percent was allocated to “Weatherization” programs. However, our analysis of the program data for a few electric COUs found that many of the “Specialty” programs include at least some spending for weatherization measures.
- The average spending per unit for “Weatherization” programs was \$2,890, compared to average spending per unit of \$113 for “Specialty” programs. However, our analysis of program data for a few electric COUs found that it is hard to interpret what counts as a “unit” for each program. For weatherization programs, it is likely that a “unit” is one housing unit served by the program. For specialty programs, it seems that one “unit” can be something as large as a grant to an organization and as small as a lightbulb.



- The total electric COU spending for dedicated low-income programs was substantial. The electric COUs spent over \$2.1 million in 2014 compared to dedicated low-income spending by electric IOUs of about \$2.9 million.

The electric COUs are making a substantial investment in energy efficiency measures through programs that directly serve low-income customers.

**Table 40. 2014 Electric COU CIP Dedicated LI Program Summary**

<b>Program Type</b>	<b>Number of COUs with Programs</b>	<b>Total Spending</b>	<b>Percent of Spending</b>	<b>Average Spending per COU</b>	<b>Reported Units</b>	<b>Spending per Unit</b>
Specialty Low-Income	84	\$1,725,341	81%	\$20,540	15,322	\$113
Low-Income Weatherization	24	\$372,781	17%	\$15,533	129	\$2,890
Indirect Low-Income	6	\$35,547	2%	\$5,925	121	\$294
All Programs <sup>a</sup>	104	\$2,133,669	100%	\$20,516	15,572	\$137

a. Some COUs offer more than one type of dedicated low-income program

**Table 41. 2014 Electric COU CIP Dedicated LI Program Performance**

<b>Program Type</b>	<b>Number of COUs with Programs</b>	<b>Total Spending</b>	<b>First Year Savings (kWh)</b>	<b>Average Spending per Unit of First Year Savings</b>	<b>Lifetime Savings (kWh)</b>	<b>Average Spending per Unit of Lifetime Savings</b>
Specialty Low-Income	84	\$1,725,341	6,230,543	\$0.28	31,152,714	\$0.06
Low-Income Weatherization	24	\$372,781	1,107,879	\$0.34	16,618,185	\$0.02
Indirect Low-Income	6	\$35,547	70,343	\$0.51	70,343	\$0.51
All Programs <sup>a</sup>	104	\$2,133,669	7,408,765	\$0.29	47,841,242	\$0.04

a. Some COUs offer more than one type of dedicated low-income program

Table 41 shows the reported performance of the dedicated low-income programs implemented by electric COUs in 2014. Our analysis of a small sample of the individual electric COU programs found that some of the projected first-year savings per unit estimates were substantially higher or substantially lower than would be expected based on the program spending per unit. As such, it is difficult to consider

that these reported savings estimates furnish reliable information on the savings accruing to low-income customers.

**Table 42. 2014 Electric COU CIP Residential Program Summary (Low-Income Spending)**

<b>Program Type</b>	<b>Number of COUs with Programs</b>	<b>Total Spending</b>	<b>Percent of Spending</b>	<b>Average Spending per Program</b>	<b>Reported Units</b>	<b>Spending per Unit</b>
Weatherization (BE, WH)	18	\$28,511	1%	\$1,584	246	\$116
Mechanical Equipment (DHW, HP, SC, SH)	113	\$515,916	17%	\$4,566	1,921	\$269
Lighting, Appliances, and Electronics (L, AH, CE, ESA, SR)	143	\$813,388	27%	\$5,688	51,897	\$16
Load Management (LM)	91	\$1,420,512	48%	\$15,610	15,443	\$92
Other (BC, EA)	38	\$200,861	7%	\$5,286	22,404	\$9
Multifamily Building	0	\$0	0%	NA	0	NA
All Programs <sup>a</sup>	144	\$2,979,188	100%	\$20,689	91,911	\$32

a. Some COUs offer more than one type of residential CIP program

Table 42 shows that 144 of the electric COUs reported that they implemented residential programs in 2014.<sup>2</sup> Some findings include:

- Relatively few electric COUs (13%) reported implementing a weatherization program.
- Most of the electric COUs (79%) reported that they implemented programs that replaced mechanical equipment.
- Virtually all of the electric COUs reported that they implemented programs that delivered lighting, appliances, and electronics.
- None of the electric COUs reported that they implemented multifamily programs in 2014.

In total, the COUs estimated that about \$2.98 million in residential program spending went to low-income program participants. However, considering the different approaches to estimating the share of program participants that are low-income, it is not clear that the estimate furnishes meaningful

<sup>2</sup> Of the 144 electric COUs that implemented residential programs in 2014, 133 estimated that some share of the program spending went to low-income households.

information to policymakers. In addition, a large share of the estimated spending (48%) was on load management programs that would not deliver a direct energy-savings benefit to a low-income customer.

## 5.0 Natural Gas COU Low-Income Programs

There are six natural gas COUs in Minnesota that have a low-income program spending requirement. This section of the report furnishes information on how those COUs design, implement, and report on programs to fulfill that spending requirement. It includes information on the following:

- Natural Gas COU Aggregators
- ESP Report Statistics for Individual Natural Gas COUs
- Summary Information for All Natural Gas COUs

This section furnishes detailed information that illustrates how the LI CIP operates for individual natural gas COUs and summarizes the overall accomplishments of all natural gas COUs.

### 5.1 COU “Aggregators”

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The term “aggregators” applies to the electric COUs, but not to the natural gas COUs. That is because the statute has specific language related to electric generation and transmission power cooperatives, electric municipal power agencies, and “other nonprofit organizations.” It states that such an organization may fulfill the “conservation, spending, reporting, and energy-savings goals on behalf of the associations it serves ...” There is no such statutory language for natural gas COUs. The natural gas COUs that have CIP program requirements design, implement, and report on their CIP programs independently.

### 5.2 Experiences of Individual Natural Gas COUs

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To get a better understanding of the information that is available for the natural gas COUs in the ESP, we examined detailed program statistics for two of the COUs that have dedicated low-income CIP programs. These program statistics demonstrate the value of the ESP in terms of documenting the natural gas COUs’ investments in low-income programs and low-income customers. However, it also demonstrates the limitations of the ESP for in-depth analysis of the programs implemented by an individual COU.

The natural gas COUs that we reviewed and their required LI CIP spending in 2014, are:

- Duluth Public Works & Utilities (Duluth) - \$41,775
- Hutchinson Utilities Commission (Hutchinson) - \$7,395<sup>3</sup>

These natural gas COUs have the largest low-income spending requirement.

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<sup>3</sup> As a combined natural gas and electric COU, Hutchinson Utilities Commission also had an LI CIP spending requirement (\$10,703) for its electric customers. Their combined LI CIP spending requirement in 2014 was \$18,098.

## Duluth Public Works & Utilities

The Duluth LI CIP programs are listed in Table 43. The program narrative furnishes some basic information about the programs, including:

- In 2014, Duluth delivered two separate low-income CIP programs: Affordable Housing New Construction Conservation Program and Energy Awareness Expo Program.
- Affordable Housing New Construction Conservation Program – This program is intended to encourage developers to make properties for low-income households more energy efficient by upgrading the building envelope or efficiency of equipment **before** the construction or renovation is complete and households move into the homes.
  - Projects are eligible to receive a 10% grant on measures with a 2- to 20-year payback.
  - New construction projects used incremental costs to determine payback periods. Major renovations use the upgrade costs to determine payback periods.
- Energy Awareness Expo Program – This program is intended to help low-income households learn energy conservation methods, provide energy savings materials, and enroll households in winter heating assistance.
  - Residents are invited to attend an Energy Expo at the Duluth Salvation Army. Attendees sign up for winter heating assistance through the local CAP agency.
  - Those who enroll then receive energy conservation materials and learn about utility conservation and bill programs.

The review of the ESP program plans and status reports submitted by Duluth furnish good information on program spending but limited information on program design and implementation.

**Table 43. Duluth CIP Dedicated LI Program Summary – 2014**

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
Affordable Housing New Construction	SP	\$28,211	1	\$28,211	100%	\$28,211
Energy Awareness Expo	SP	\$5,390	1,000	\$5	100%	\$5,390
TOTAL	SP	\$33,601	1,001	\$34	100%	\$33,601

Program Type: WX = Low-Income Weatherization, SP = Specialty Low-Income, IN = Indirect Low-Income

Table 43 shows that the average spending per unit for the Affordable Housing Program is \$28,211. We assume that the program report refers to working with one Affordable Housing organization.

The Duluth LI CIP program performance is listed in Table 44. Some important findings include:

- The report shows a total of 1,101 Mcf in savings for the Affordable Housing program. It is not clear how many housing units were served by that program nor what specific types of measures were installed.
- The report shows projected first-year savings per unit for the Expo program of about 1 Mcf per program participant. Again, there is very limited information about the program, making it difficult to assess whether those program accomplishments are reasonable.

It is difficult to assess the LI CIP program implemented by Duluth since their program description and their ESP report provide so little information.

**Table 44. Duluth CIP Dedicated LI Program Performance Summary – 2014**

<b>Program Name</b>	<b>Program Spending</b>	<b>Units</b>	<b>First Year Energy Savings (Mcf)</b>	<b>Savings per Unit (Mcf)</b>	<b>Utility Cost per Mcf Saved (First Year)</b>	<b>Lifetime Savings (Mcf)</b>	<b>Utility Cost per Mcf Saved (Lifetime)</b>
Affordable Housing New Construction Conservation Program	\$28,211	1	1,101	1,101	\$25.62	5,505	\$5.12
Energy Awareness Expo	\$5,390	1,000	1,159	1	\$4.65	5,795	\$0.93
<b>TOTAL</b>	<b>\$33,601</b>	<b>1,001</b>	<b>2,260</b>	<b>2</b>	<b>\$14.87</b>	<b>11,300</b>	<b>\$2.97</b>

The Duluth CIP residential programs are listed in Table 45. It appears that the residential program portfolio is mainly focused on a Home Energy Loan program that spends about \$5,500 per housing unit. Duluth appears to have adopted the convention of using the Department guidance on the low-income spending percentage for all residential programs. One might question whether low-income households would take advantage of a Home Energy Loan Program. However, it is possible that low-income households would be more likely to use this loan option than would non-low-income households because non-low-income households may have better borrowing options.

**Table 45. Duluth Residential Program Summary – 2014**

<b>Program Name</b>	<b>Program Type</b>	<b>Program Spending</b>	<b>Units</b>	<b>Spending per Unit</b>	<b>Low-Income Percentage</b>	<b>Low-Income Spending</b>
Home Energy Loan Program	WH	\$508,019	91	\$5,583	33%	\$166,122

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
Advanced Home Energy Audit Program	EA	\$40,478	131	\$309	33%	\$13,236
Home Energy Check-Up	EA	\$33,795	209	\$162	33%	\$11,051
Home Energy Checkup Implementation Survey	WH	\$822	41	\$20	33%	\$269
TOTAL	Mixed	\$583,114	472	\$1,235	33%	\$190,678

Key to Acronyms used in Table

Acronym	Explanation
EA	Residential Energy Audits / Analysis
WH	Whole House

The performance of Duluth residential CIP programs with low-income spending is listed in Table 46. If we assume that the loan program offers homeowners the opportunity to invest in energy upgrades for their homes, the estimated saving per unit of 17 Mcf is reasonable.

Using the data in Table 43 and Table 46, we can see that Duluth was close to fulfilling its spending requirement with dedicated low-income programs and exceeded its low-income spending requirement when including estimated spending on low-income customers.

- Low-Income Spending Requirement = \$41,775
- Dedicated Low-Income Program Spending = \$33,601 (80%)
- Total Low-Income Spending = \$224,279 (537%)

Duluth invests significant resources in their low-income and residential programs. It would be particularly interesting to see the rate at which verified low-income households make use of the Home Energy Loan Program.

**Table 46. Duluth Residential Program Performance Summary (Low Income Units) – 2014**

<b>Program Name</b>	<b>Low-Income Spending</b>	<b>Units</b>	<b>First Year Energy Savings (Mcf)</b>	<b>Savings per Unit (Mcf)</b>	<b>Utility Cost per Mcf Saved (First Year)</b>	<b>Lifetime Savings (Mcf)</b>	<b>Utility Cost per Mcf Saved (Lifetime)</b>
Home Energy Loan Program	\$166,122	30	507	17	\$327.54	7,608	\$21.84
Advanced Home Energy Audit Program	\$13,236	43	0	0	NA	0	NA
Home Energy Check-Up	\$11,051	68	81	1	\$135.72	81	\$135.72
Home Energy Checkup Implementation Survey	\$269	13	36	3	\$7.54	535	\$0.50
<b>TOTAL</b>	<b>\$190,678</b>	<b>154</b>	<b>624</b>	<b>4</b>	<b>\$305.46</b>	<b>8,224</b>	<b>\$23.19</b>

## Hutchinson Utilities Commission

The Hutchison LI CIP program is listed in Table 47. The program narrative furnishes some basic information about the programs, including:

- Hutchinson operates the Low-Income Weatherization Program.<sup>4</sup>
- The program provides a maximum 20% of the cost of measures, up to \$1,500 per household. [Note: The program statistics for 2014 indicate that the actual maximum per household can be higher.]
- Hutchinson partners with Heartland Community Action Agency to deliver the program; it is implemented in conjunction with Hutchinson's low-income CIP program for electric.
- Hutchinson determines energy savings for this program using both the MN Deemed Savings database and deemed savings values from Xcel Energy.

The program served just a few customers with a sizeable investment.

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<sup>4</sup> Hutchinson reports separately on its Low-Income Weatherization Program for its gas requirements and electric requirements in the ESP.



**Table 47. Hutchinson CIP Dedicated LI Program Summary – 2014**

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
Low Income Weatherization Program Gas	WX	\$8,662	3	\$2,887	100%	\$8,662

Program Type: WX = Low-Income Weatherization, SP = Specialty Low-Income, IN = Indirect Low-Income

The performance of Hutchinson’s LI CIP program is listed in Table 48. The savings estimate per unit is relatively high compared to that for similar programs. However, if the program targets the highest energy users, it is possible that it could achieve that level of energy savings.

**Table 48. Hutchinson CIP Dedicated LI Program Performance Summary – 2014**

Program Name	Program Spending	Units	First Year Energy Savings (Mcf)	Savings per Unit (Mcf)	Utility Cost per Mcf Saved (First Year)	Lifetime Savings (Mcf)	Utility Cost per Mcf Saved (Lifetime)
Low Income Weatherization Program Gas	\$8,662	3	115	38	\$75.32	1,725	\$5.02

**Table 49. Hutchinson Residential Program Summary – 2014**

Program Name	Program Type	Program Spending	Units	Spending per Unit	Low-Income Percentage	Low-Income Spending
Residential HVAC GAS	SH	\$47,839	127	\$377	0%	\$0
Energy Star Appliance Gas	ESA	\$8,114	168	\$48	10%	\$811
TOTAL	Mixed	\$55,953	295	\$190	1%	\$811

Key to Acronyms used in Table

Acronym	Explanation
ESA	ENERGY STAR Appliances
SH	Residential Space Heating (Non-Heat Pumps)

The Hutchinson CIP residential programs are listed in Table 49. Hutchinson does not expect that low-income households would participate in their HVAC program and that only 10 percent of Energy Star Appliance Program participants would be low-income.

The performance of Hutchinson residential CIP programs that serve low-income households is listed in Table 50. The reported first-year savings estimate appears to be reasonable.

**Table 50. Hutchinson Residential Program Performance Summary (Low-Income Units) - 2014**

Program Name	Low-Income Spending	Units	First Year Energy Savings (Mcf)	Savings per Unit (Mcf)	Utility Cost per Mcf Saved (First Year)	Lifetime Savings (Mcf)	Utility Cost per Mcf Saved (Lifetime)
ES Appliance	\$811	17	2	0.10	\$477.30	20	\$0.00

Using the data in Table 47 and Table 50, we can see that Hutchinson exceeded its spending requirement with dedicated low-income programs.

- Low-Income Spending Requirement = \$7,395
- Dedicated Low-Income Program Spending = \$8,662 (117%)
- Total Low-Income Spending = \$9,473 (128%)

Hutchinson delivered substantial benefits to their low-income customers.

## 5.3 Summary Information for COU Natural Gas Programs

Table 51 shows that four of the six natural gas COUs with a low-income spending requirement reported that they implemented dedicated low-income programs in 2014. Of the natural gas COUs with low-income programs, two reported on Specialty Low-Income programs and two reported on Low-Income Weatherization programs.

**Table 51. 2014 Natural Gas COU CIP Dedicated LI Program Summary**

<b>Program Type</b>	<b>Number of COUs with Programs</b>	<b>Total Spending</b>	<b>Percent of Spending</b>	<b>Average Spending per COU</b>	<b>Reported Units</b>	<b>Spending per Unit</b>
Specialty Low-Income	2	\$33,661	79%	\$16,831	1,002	\$34
Low-Income Weatherization	2	\$9,162	21%	\$4,581	4	\$2,291
Indirect Low-Income	0	\$0	0%	NA	0	NA
All Programs	4	\$42,823	100%	\$10,706	1,006	\$43

Table 52 shows the reported performance of the dedicated low-income programs implemented by natural gas COUs in 2014. The average spending per unit of first year savings is lower for the Specialty Programs, but the average spending per unit of lifetime savings is lower for the Weatherization Programs.

**Table 52. 2014 Natural Gas COU CIP Dedicated LI Program Performance**

<b>Program Type</b>	<b>Number of COUs with Programs</b>	<b>Total Spending</b>	<b>First Year Savings (Dth)</b>	<b>Spending per Unit of First Year Savings</b>	<b>Lifetime Savings (Dth)</b>	<b>Spending per Unit of Lifetime Savings</b>
Specialty Low-Income	2	\$33,661	2,260	\$14.89	11,300	\$2.98
Low-Income Weatherization	2	\$9,162	385	\$23.80	5,775	\$1.59
Indirect Low-Income	0	\$0	0	NA	0	NA
All Programs	4	\$42,823	2,645	\$16.19	17,075	\$2.51

Table 53 shows that all six of the natural gas COUs reported that they implemented residential programs in 2014. It appears that most of the natural gas COUs implemented more than one kind of residential program. The estimated spending on low-income customers in the residential programs exceeds the spending on dedicated low-income programs by a significant margin.

**Table 53. 2014 Natural Gas COU CIP Residential Program Summary (Low-Income Spending)**

<b>Program Type</b>	<b>Number of COUs with Programs</b>	<b>Total Spending</b>	<b>Percent of Spending</b>	<b>Average Spending per Program</b>	<b>Reported Units</b>	<b>Spending per Unit</b>
Weatherization (BE, WH)	4	\$167,278	74%	\$41,820	54	\$3,098
Mechanical Equipment (DHW, HP, SC, SH)	5	\$12,556	6%	\$2,511	126	\$100
Lighting, Appliances, and Electronics (L, AH, CE, ESA, SR)	3	\$3,831	2%	\$1,277	95	\$40
Load Management (LM)	0	\$0	0%	NA	0	NA
Other (BC, EA)	4	\$43,389	19%	\$10,847	4,429	\$10
Multifamily Building	0	\$0	0%	NA	0	NA
All Programs <sup>a</sup>	6	\$227,055	100%	\$37,842	4,704	\$48

- a. Some COUs offer more than one type of residential CIP program; of the six gas COUs with residential CIP programs, five estimated that some share of the program spending went to low-income households.

## 6.0 Assessment Framework

The purpose of this study is to conduct a comprehensive assessment of the Conservation Improvement Program (CIP) services delivered to low-income households by Minnesota's community-owned utilities (COUs) with the goal of helping the Department and the COUs to identify ways to increase the efficiency and effectiveness of those programs.

We believe that the Department and the COUs are best served if we use a three-level assessment framework to conduct our analysis and present our findings. The framework involves making the following assessments:

- **Explicit Program Requirements** – The statute and the Department have established explicit program requirements that identify the objectives that a COU is required to meet and guidance that tells COUs what they are allowed to do in terms of designing, implementing, and reporting on their low-income programs. We first establish whether the individual COUs have met the regulatory requirements and then document whether they have taken advantage of program guidance that is intended to improve the effectiveness of their programs.
- **Implicit Program Objectives** – The Statute, Rules, and Commissioner Decisions and Orders do not always furnish explicit guidance on the objectives of the low-income program. However, where there is consistent reference to certain program outcomes, we perceive that it is appropriate to consider those to be implicit program objectives against which the performance of the set of COU programs can be assessed.
- **Low-Income Program Best Practices** – Our experience with low-income program research and evaluation at the national level and in other jurisdictions has helped us to identify low-income program best practices that have been shown to deliver effective and efficient program services to low-income households. The third part of our assessment examines whether the Minnesota COU low-income programs have adopted best practices.

The electric and natural gas COUs have implemented low-income programs that are designed to meet the explicit statutory and regulatory requirements established by the legislature and the Department. Our research also has shown that, in the process of identifying ways to better serve their low-income customers and in the context of meeting other CIP requirements, the COUs have developed innovative programs that go beyond the basic requirements to deliver efficient and effective energy services to low-income customers. In this assessment, we document how the COUs have met the basic requirements, what program initiatives have helped them to go beyond those basics, and what opportunities there are for the COUs' programs to deliver efficient and effective services to low-income customers.

### 6.1 Explicit Program Requirements

The different elements of the regulatory framework come together to define the policies and procedures that the Department has established to ensure that utilities fulfill the statutory

requirements with respect to the low-income spending requirement. Those policies and procedures include:

- Low-Income Spending Requirement Amount - Each year, electric and gas utilities and associations are required to spend a specified percentage of their three-year average residential gross operating revenue (GOR) on low-income programs.
- Qualified Low-Income Spending - COUs are required to spend the specified amount on programs that "directly address the needs of low-income persons, including low-income renters." The Department has stated that it prefers that COUs meet the spending requirements with spending on dedicated low-income programs, but that it includes estimated spending on low-income customers in residential programs to also meet the performance requirements.
- Planning and Reporting Requirements - COUs are required to submit reports on their CIP programs each year using the Energy Savings Platform (ESP) that includes information on their low-income programs and the estimated participation rate of low-income customers in their residential programs.
- Compliance - Department staff review the COU Plans and Status Reports for compliance with low-income program guidelines and the low-income spending requirements, and publish a Decision Letter summarizing the Commissioner's findings.

To ensure that the utilities meet the CIP low-income spending requirement, the Department defines required spending amounts, furnishes guidelines on programs that can be counted toward the spending requirement, reviews Plans and Status Reports for compliance, and issues findings related to compliance. These policies and procedures have been successful in ensuring that most of the COUs comply with the CIP low-income program spending requirements with programs that are targeted to address the needs of low-income persons.

Our assessment of whether a COU meets the explicit program requirements includes the following analyses:

- Spending Requirement – Did the COU spend the required amount on low-income programs during the analysis year? Does the COU have effective plans for spending the required amount during subsequent program years?
- Reporting Requirement – Did the COU file all the required Plans and Reports with all the required information?

In addition to these program requirements, the Department also has issued guidance on two issues that make it easier for utilities to meet their low-income program spending requirement.

- Multifamily Buildings – The Department has issued guidance on multifamily buildings that assists utilities in three ways. First, it furnishes a clear definition of a low-income multifamily building. Second, it identifies existing resources that allow a utility to determine whether a multifamily building is low-income without collecting income information from all building tenants. Third, it

allows the utility program to serve all tenants in a low-income building with in-unit energy efficiency measures, not just those that are certified to be low-income.

- Delivered Fuel Households – The Department has issued guidance for electric utilities that allows them to deliver energy efficiency services to households that use a delivered fuel or natural gas from an exempted utility for space heating or water heating. That guidance gives electric utilities additional opportunities to serve their low-income customers if they are having difficulty meeting spending requirements in other ways.

The ESP reports do not furnish information on these two issues. In this assessment, we report on the extent to which the five COU aggregators that we interviewed reported that their COUs make use of this guidance. We also report on whether the eleven COUs that we interviewed reported that they are aware and took advantage of this Department guidance.

## 6.2 Implicit Program Objectives

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There are several ways in which the Statute and Commissioner Orders and Decisions have established program objectives that are not defined as program requirements. These include:

- Low-Income Renters – The Statute defines low-income programs as those that “directly serve the needs of low-income persons, including low-income renters.” However, the ESP does not include a data field that either requires or allows COUs to report on the number of renter households served by their programs. The implication is that this is a goal, but one that the Department is not currently prioritizing for COUs.
- WAP Protocols – The state WAP program office has developed detailed procedures for assessment of the health and safety status of a housing unit, selection and installation of energy efficiency measures, and ensuring quality control for work completed on low-income housing units. In at least one utility filing, the Commissioner ordered the for-profit implementation contractor to follow WAP protocols. In guidance documents issued for COUs, the Department has recommended that COUs work with their local WAP service provider as one way of delivering services to their low-income customers. The implication is that the Department considers those protocols to be a standard against which single family comprehensive programs should be compared.

For purposes of this analysis, we assess each COU’s low-income programs from the following perspectives:

- Renters – To what extent do COU programs target renter-occupied units?
- WAP Protocols – To what extent have the COU low-income programs implemented protocols that are consistent with the WAP protocols, either by using WAP service providers or by applying those standards in their programs?

Since the COUs have not been directed by the Department to assess their own programs based on these parameters, it is not appropriate to hold the COUs accountable for failing to meet one or more of these

objectives. Rather, it is the intent of this assessment to determine whether the COUs, in the context of designing and implementing low-income programs, have addressed some of these implicit program objectives.

## 6.3 Low-Income Program Best Practices

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WAP is the largest low-income energy efficiency program in the country. The U.S. Department of Energy (DOE) furnishes grants to states and territories to implement programs that meet a common set of standards that are established by DOE. National evaluations of WAP were conducted for program years 2008 and 2010. Those evaluations identified some best practices for comprehensive single family and multifamily programs.

In many different states, program evaluation research is conducted periodically by WAP grantees and ratepayer-funded programs. Examples include:

- **WAP Programs** – The WAP programs in Iowa, Illinois, and Wisconsin regularly fund evaluation research to measure the program outcomes.
- **Ratepayer Programs** – The Pennsylvania PSC requires each IOU to conduct an evaluation of its low-income energy efficiency programs each year. The New Jersey utilities have conducted periodic evaluations of their statewide Comfort Partners program. NYSERDA has conducted periodic evaluations of their low-income Empower Program.

Each of these evaluations was intended to help program managers to improve the efficiency and effectiveness of their programs. They had the added benefit of helping researchers to identify best practices with respect to the implementation of comprehensive low-income programs. Some of those best practices include:

- **Collaboration with WAP and EAP** – There are many ways for the COU programs to collaborate with WAP and EAP, from co-funding on individual housing units to simply discussing what market segments will be served by the publicly funded programs and which will be served by the ratepayer-funded programs. There is not one best model of collaboration. Rather, it is a best practice that there is collaboration.
- **Measurement and Evaluation Framework** – Many program managers have conducted program evaluations and have found that their programs were falling well short of projected savings estimates. Development of an ongoing measurement and evaluation framework can lead to continuous improvement in program outcomes. Such a framework requires:
  - **Program Database** – Development of a program database that tracks housing units, baseline conditions, installed measures, and measure spending.
  - **Performance Indicators** – Specification of measurement protocols to support the development of performance indicators that are correlated with targeted program outcomes.



- Periodic Evaluation – Comprehensive evaluation of program performance that includes program processes, energy impacts, and non-energy impacts.
- Targeting – Program evaluations have shown that targeting program services can significantly increase program performance. Two important examples are:
  - High Usage - Targeting the highest usage housing units and buildings for participation in comprehensive service delivery programs.
  - Direct Install Program Gateway – Using a low-cost direct install program as a “gateway” to identify customers who can be served by comprehensive programs.

Neither the COUs nor the Department have been directed to adopt these best practices. The purpose of this assessment is to examine the extent to which COU programs have adopted these practices and then to make recommendations for which might have the greatest impact on the performance of the COU low-income programs.

## 6.4 Program Assessment Framework

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The program assessment analysis examines COU and Department performance from three different perspectives.

- Explicit Program Requirements – The assessment examines whether the COUs are complying with explicit program requirements and taking advantage of Department guidance when it is appropriate. This analysis is done at the COU level.
- Implicit Program Objectives – This assessment examines the extent to which the COU programs are addressing implicit program objectives. This analysis is done for the entire set of programs implemented by each type of COU (i.e., electric vs. natural gas). Reference is made to specific COU programs that are examples of ways to address these objectives. However, it is important to remember that COUs are not required to meet these objectives.
- Best Practices – This assessment examines the extent to which the Department and the COUs have adopted best practices related to low-income program design, implementation, measurement, and evaluation. The analysis is with respect to the overall CIP low-income program guidance, design and implementation, and oversight.

The assessment framework is designed to help the Department and the COUs to identify those areas where the programs have been successful in meeting the needs of low-income households and those areas where initiatives could be expected to lead to improved performance.

## 7.0 Assessment of Electric COU Programs

This section of the report examines the performance of the electric COU programs in terms of the assessment framework outlined in Section 6. It examines performance with respect to:

- Explicit Program Requirements
- Implicit Program Objectives
- Low-Income Program Best Practices

The assessment of the performance with respect to explicit program requirements is at the COU level since the regulatory framework requires each COU to meet certain requirements. The assessments with respect to the implicit program objectives and the adoption of low-income program best practices considers whether the set of programs implemented by the COUs and approved by the Department are performing in the most efficient and effective way.

### 7.1 Explicit Program Requirements

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The assessment examines whether the COUs are complying with explicit program requirements and taking advantage of Department guidance when it is appropriate, including:

- Spending Requirement – Did the COU spend the required amount on low-income programs during the analysis year?
- Reporting Requirement – Did the COUs use ESP to file the required information?

In addition to these program requirements, the Department also has issued guidance on two issues that make it easier for utilities to meet their low-income program spending requirement.

- Multifamily Buildings – Did the COU make use of the Department guidance on multifamily buildings to implement programs to serve this market segment?
- Delivered Fuel Households – Did the COU make use of the Department guidance on furnishing space heating and water heating services to delivered fuel customers?

The assessment focuses on the 2014 program year. We did not update this analysis with information from the most recent plans and status reports.

#### 7.1.1 LI CIP Spending Requirement

In 2014, electric COUs were required to spend 0.2 percent of their three-year average gross residential operating revenue on low-income programs. Based on guidance from the Department, that spending amount can be fulfilled with spending on dedicated low-income programs or with the estimated amount spending on low-income customers in residential programs. In their ESP reports, the COUs report on the

amount spent on dedicated low-income programs and the estimated low-income spending in residential programs.

Table 54 furnishes a summary of the electric COU spending on dedicated low-income programs in 2014. It shows the number of electric COUs that reported spending on dedicated programs and summarizes how their total dedicated program spending compares to their spending requirement. About 74 percent of the COUs (104) implemented dedicated low-income programs to fulfill their low-income spending requirement. On average, those COUs fulfill almost 90 percent of their spending requirement with dedicated low-income programs. The average spending requirement for those COUs was \$23,148, the average spending on dedicated low-income programs was \$20,516, and the average shortfall was \$2,632. The average spending requirement for those COUs that did not have a dedicated low-income program was \$4,674.

**Table 54. 2014 Electric COU Dedicated LI CIP Spending Compared to Requirements**

Type of COU	Number of COUs	Total Spending Requirement	Total Dedicated Low-Income Spending	Excess or (Shortfall)	Percent Excess or (Shortfall)
Dedicated Program – Yes	104	\$2,407,398	\$2,133,669	(\$273,729)	(11%)
Dedicated Program – No	37	\$172,947	\$0	(\$172,947)	(100%)
No Spending Requirement	4	\$0	\$0	\$0	N/A
All Electric COUs	145	\$2,580,345	\$2,133,669	(\$446,676)	(17%)

Table 55 shows the distribution of the ratio of spending on dedicated low-income programs to the required low-income spending for electric COUs in 2014. Over 20 percent of electric COUs **exceeded** the low-income spending requirement with their dedicated low-income programs. About 45 percent of the electric COUs fulfilled less than one-half of their low-income spending requirement with dedicated low-income programs.

**Table 55. 2014 Electric COU Dedicated LI CIP Ratio of Spending Compared to Requirements**

Percentage (Spending / Required * 100)	Number of COUs	Percent of COUs
Greater than 100%	31	22%
90% to 100%	15	11%
75% to less than 90%	16	11%

Percentage (Spending / Required * 100)	Number of COUs	Percent of COUs
50% to less than 75%	16	11%
25% to less than 50%	12	9%
10% to less than 25%	6	4%
Less than 10%	8	6%
No Dedicated Program	37	26%
All Electric COUs	141	100%

Table 56 furnishes statistics for electric COUs by the size of their low-income spending requirement. The findings include:

- All of the electric COUs with spending requirements of \$100,000 or more have dedicated low-income programs. Those COUs fulfill 95 percent of their low-income spending requirements with dedicated low-income programs.
- Most of the electric COUs with spending requirements of \$10,000 to \$100,000 reported that they implemented dedicated low-income programs in 2014. However, the average shortfall from the dedicated low-income programs was about 20 percent of the spending requirement.
- More than 60 percent of the COUs with spending requirements of less than \$10,000 reported that they implemented dedicated low-income programs and those programs exceeded the spending requirement by an average of 29 percent. Among all COUs with a spending requirement of less than \$10,000, the spending shortfall was only 7 percent of the required spending amount.

A large share of the COUs in all groups implemented dedicated low-income programs and fulfilled a significant share of those requirements with their dedicated low-income programs.

**Table 56. 2014 Electric COU Dedicated LI Spending – By Spending Requirement Group**

Spending Requirement / Program Type	Number of COUs	Total Spending Requirement	Total Dedicated LI Spending	Excess or (Shortfall)	Percent Excess or (Shortfall)
<b><i>LI CIP Spending Requirement \$100,000 or More</i></b>					
Dedicated Low-Income Program – Yes	5	\$883,066	\$843,120	(\$39,946)	(5%)
Dedicated Low-Income Program – No	0	N/A	N/A	N/A	N/A
All COUs in Group	5	\$883,066	\$843,120	(\$39,946)	(5%)

Spending Requirement / Program Type	Number of COUs	Total Spending Requirement	Total Dedicated LI Spending	Excess or (Shortfall)	Percent Excess or (Shortfall)
<b><i>LI CIP Spending Requirement \$25,000 to \$100,000</i></b>					
Dedicated Program – Yes	18	\$885,027	\$683,075	(\$201,952)	(23%)
Dedicated Program – No	1	\$27,535	\$0	(\$27,535)	(100%)
All COUs in Group	19	\$912,562	\$683,075	\$229,487	(25%)
<b><i>LI CIP Spending Requirement \$10,000 to \$25,000</i></b>					
Dedicated Program – Yes	28	\$453,035	\$368,005	(\$85,030)	(19%)
Dedicated Program – No	5	\$75,271	\$0	(\$75,271)	(100%)
All COUs in Group	33	\$528,306	\$368,005	\$160,301	(30%)
<b><i>LI CIP Spending Requirement \$5,000 to Less than \$10,000</i></b>					
Dedicated Program – Yes	11	\$89,549	\$151,557	\$66,008	77%
Dedicated Program – No	2	\$15,071	\$0	(\$15,071)	(100%)
All COUs in Group	13	\$104,620	\$151,557	\$50,937	45%
<b><i>LI CIP Spending Requirement \$1,000 to Less than \$5,000</i></b>					
Dedicated Program – Yes	36	\$96,107	\$80,684	(\$15,423)	(16%)
Dedicated Program – No	21	\$49,961	\$0	(\$49,961)	(100%)
All COUs in Group	57	\$146,068	\$80,684	(\$59,384)	(45%)
<b><i>LI CIP Spending Requirement Less than \$1,000</i></b>					
Dedicated Program – Yes	6	\$4,613	\$7,228	\$2,615	57%
Dedicated Program – No	8	\$5,108	\$0	(\$5,108)	(100%)
All COUs in Group	14	\$9,721	\$7,228	(\$2,493)	(25%)

Table 57 furnishes statistics for electric COUs by their aggregator. Important findings include:

- Central Minnesota MPA – All of the COUs working with this aggregator implemented dedicated low-income programs that, in average, exceeded their low-income spending requirements.
- Great River Energy – Almost all of the GRE COUs implemented dedicated low-income program that, on average, met about 85 percent of the low-income spending requirements.
- Independent COUs – The 19 independent electric cooperatives and electric municipals (for purposes of CIP) implemented dedicated low-income programs and exceeded their spending requirements by an average of 24 percent.

The findings for each COU aggregator are somewhat different, suggesting that each is taking a different strategy toward helping their COUs meet their CIP and LI CIP program requirements.

**Table 57. 2014 Electric COU Dedicated LI Spending – By Aggregator**

<b>Aggregator / Type of Program</b>	<b>Number of COUs<sup>5</sup></b>	<b>Total Spending Requirement</b>	<b>Total Dedicated Low-Income Spending</b>	<b>Excess or (Shortfall)</b>	<b>Percent Excess or (Shortfall)</b>
<b><i>Dairyland</i></b>					
Dedicated Program – Yes	3	\$120,788	\$103,540	(\$17,247)	(14%)
Dedicated Program – No	0	N/A	N/A	N/A	N/A
All COUs in Group	3	\$120,788	\$103,540	(\$17,247)	(14%)
<b><i>East River Electric Power Cooperative</i></b>					
Dedicated Program – Yes	3	\$31,385	\$22,650	(\$8,735)	(28%)
Dedicated Program – No	0	N/A	N/A	N/A	N/A
All COUs in Group	3	\$31,385	\$22,650	(\$8,735)	(28%)
<b><i>Great River Energy</i></b>					
Dedicated Program – Yes	28	\$1,605,817	\$1,387,153	(\$218,664)	(14%)
Dedicated Program – No	1	\$27,535	\$0	(\$27,535)	(100%)
All COUs in Group	29	\$1,633,352	\$1,387,153	(\$246,199)	(15%)
<b><i>Minnkota Power Cooperative/Northern Municipal Power Agency<sup>6</sup></i></b>					
Dedicated Program – Yes	14	\$235,640	\$152,387	(\$83,254)	(35%)
Dedicated Program – No	4	\$12,729	\$0	(\$12,729)	(100%)
All COUs in Group	18	\$248,369	\$152,387	(\$95,983)	(39%)
<b><i>Central Minnesota Municipal Power Agency</i></b>					
Dedicated Program – Yes	10	\$24,796	\$25,463	\$668	3%
Dedicated Program – No	0	N/A	N/A	N/A	N/A
All COUs in Group	10	\$24,796	\$25,463	\$668	3%
<b><i>Minnesota Municipal Power Agency</i></b>					
Dedicated Program – Yes	3	\$21,039	\$26,810	\$5,771	27%
Dedicated Program – No	4	\$7,142	\$0	(\$7,142)	(100%)
All COUs in Group	7	\$28,181	\$26,810	(\$1,371)	(5%)

<sup>5</sup> The total number of COUs indicated for each aggregator organization may differ from the Task 7 memo because 1) different sources were used in the Task 7 memo, and 2) member COUs may choose to operate their dedicated LI CIP program(s) separate from their aggregator organization.

<sup>6</sup> The ESP records program information for members of Minnkota Power Cooperative and Northern Municipal Power Agency under a combined aggregator name.

<b>Aggregator / Type of Program</b>	<b>Number of COUs<sup>5</sup></b>	<b>Total Spending Requirement</b>	<b>Total Dedicated Low-Income Spending</b>	<b>Excess or (Shortfall)</b>	<b>Percent Excess or (Shortfall)</b>
<b><i>Missouri River Energy Services</i></b>					
Dedicated Program – Yes	10	\$82,549	\$84,252	\$1,703	2%
Dedicated Program – No	13	\$32,419	\$0	(\$32,419)	100%
All COUs in Group	23	\$114,968	\$84,252	(\$30,716)	(27%)
<b><i>Southern Minnesota Municipal Power Agency</i></b>					
Dedicated Program – Yes	14	\$55,944	\$46,377	(\$9,567)	(17%)
Dedicated Program – No	1	\$4,920	0	(\$4,920)	(100%)
All COUs in Group	15	\$60,864	\$46,377	(\$14,487)	(24%)
<b><i>Independent Power Cooperatives and Municipal Utilities</i></b>					
Dedicated Program – Yes	19	\$229,441	\$285,038	\$55,597	24%
Dedicated Program – No	14	\$88,202	0	(\$88,202)	(100%)
All COUs in Group	33	\$317,643	\$285,038	(\$32,605)	(10%)

Table 58 furnishes a summary of the 2014 total electric COU spending on low-income customers, including both spending on dedicated low-income programs and estimated low-income spending on residential programs. Findings include:

- COUs with Dedicated Low-Income Programs – Table 53 showed that COUs with dedicated low-income programs had dedicated program spending that fulfilled almost 90 percent of their low-income spending requirement. Adding in estimated spending on low-income customers in residential programs, the COUs exceeded their spending requirement by 95%.
- COUs without Dedicated Low-Income Projects – Table 57 shows that those COUs that did not have dedicated low-income programs estimated that their spending on low-income customers in the residential programs was more than twice the low-income spending requirement.
- Load Management Programs – Table 57 includes \$1,420,512 that was spent on load management programs. If those funds are excluded from the analysis, low-income spending exceeded the requirements by 43 percent.
- Low-Income Participation in Residential Programs – The analysis of a sample of COU ESP reports demonstrated that COUs are not consistent in the way that they estimate the residential program participants that are low-income; some COUs apply conservative estimation procedures based on the type of residential program implemented, while others simply apply the Department guidance that allows them to estimate the share of residential program participants that are low-income as being the same as the share of the population that is low-income.

Overall, these statistics show that the COUs are making a substantial commitment to delivering energy efficiency services to their low-income customers.

**Table 58. 2014 Electric COU Total LI CIP Spending Compared to Requirements**

Type of COU	Number of COUs	Total Spending Requirement	Total Low-Income Spending (Dedicated + Estimated)	Excess or (Shortfall)	Percent Excess or (Shortfall)
Dedicated Program – Yes	104	\$2,407,398	\$4,688,248	\$2,280,851	95%
Dedicated Program – No	37	\$172,947	\$421,210	\$248,264	144%
No Spending Requirement	4	\$0	\$3,399	\$3,399	N/A
All Electric COUs	145	\$2,580,345	\$5,112,857	\$2,532,514	98%
All Electric COUs (LM excluded)	145	\$2,580,345	\$3,692,345	\$1,112,000	43%

Table 59 shows the distribution of the ratio of total low-income spending on dedicated low-income and residential CIP programs to the required low-income spending for electric COUs in 2014. Over 73 percent of electric COUs **exceeded** the low-income spending requirement. About 12 percent of the electric COUs fulfilled less than one-half of their low-income spending requirement with their total low-income spending.

**Table 59. 2014 Electric COU Total Low-Income CIP Spending Compared to Requirements**

Percentage (Total Spending / Required * 100)	Number of COUs	Percent of COUs
Greater than 100%	103	73%
90% to 100%	10	7%
75% to less than 90%	6	4%
50% to less than 75%	5	4%
25% to less than 50%	8	6%
10% to less than 25%	3	2%
Less than 10%	3	2%
No Low-Income Spending	3	2%
All Electric COUs	141	100%



## 7.1.2 Reporting Requirements

The ESP reporting instructions ask COUs to report five types of information that is important to understanding how their CIP programs are serving low-income customers.

- Program Type – COUs are asked to separate their programs into dedicated low-income programs and residential programs.
  - Within the category of low-income programs, COUs are asked to report separately on low-income weatherization programs, specialty low-income programs, and indirect low-income programs.
  - Within the category of residential programs, COUs are asked to report on the type of residential program in terms of the major measures installed by those programs.
- Spending Data – COUs are asked to report on spending amounts for each program.
- Performance Data – COUs are asked to report on the number of units served, first-year savings from those units, and the average lifetime for the measures installed in each unit. One important note is that the COUs are expected to report the fuel oil, LPG, and natural gas savings when an electric COU's program delivers space heating or water heating measures to customers who use delivered fuels or natural gas for those end uses.
- Low-Income Customer Participation – For residential programs, COUs are expected to report the estimated percentage of program participants that are low-income.
- Program Description – COUs are asked to furnish information about their program, including information about the “units” reported in the performance data.

Based on our in-depth interviews with the COU aggregators and COUs, in-depth analysis of individual COU ESP reports, and development of electric COU statistics, we found the following with respect to CIP program reporting.

- Program Type – We did not see a consistent pattern with respect to COUs distinguishing between categorizing programs as Low-Income Weatherization or as Specialty Low-Income. We were expecting that there would be one of two ways that COUs would classify programs. First, we might have expected to see that any program that delivered weatherization measures (i.e., air sealing and insulation) would have been categorized as low-income weatherization. Second, we might have expected to see that any program that furnished assistance to WAP service delivery agencies would be categorized as low-income weatherization. However, neither of those appeared to be consistent with respect to program categorization.
- Spending Data – The spending data appeared to be consistent with other information that we observed about individual COUs.
- Performance Data – COUs consistently report the required performance data. However, from our in-depth review of the data for individual COUs, we had some concerns about the quality of the reported data. Examples include: One COU reported 246,272 kWh in first year savings per unit for a set of measures that cost \$2,201 per unit. That savings amount is most likely

overstated. Another COU reported 100 kWh of first year savings per unit for a set of measures that cost \$1,348 per unit. That savings amount is most likely understated. A third COU reported 97 kWh of first year savings per unit for a set of measures that cost \$1,940 per unit. That COU delivered space heating and water heating measures to delivered fuel customers, but in the ESP, we did not see any report of the gallons of fuel oil or LPG saved.

- Low-Income Program Participation – We found that the COUs were inconsistent in how they estimated program participation rates. Some COUs carefully considered the type of program and whether they would expect participation of low-income customers in each program. Other COUs simply followed the Department guidance and entered the percentage of low-income households in their service territory.
- Program Descriptions – For some COUs, the program descriptions furnished good information about the program design and implementation, and included a description of the reported “units” while for others the information was minimal and did not support the development of a good understanding of the program.

The findings with respect to program reports were inconsistent. Some COUs furnish detailed information that appeared to be consistent with program performance expectations. Other COU reports had various issues, including: limited program descriptions and program statistics that did not appear to be consistent with the program design.

### **7.1.3 Department Guidance - Multifamily Buildings / Delivered Fuels**

The Department Guidance on Multifamily Buildings was designed to make it easier for utilities to engage multifamily buildings in low-income programs by specifying less costly procedures for identifying low-income buildings and delivering services to individual apartments. The Department Guidance on Delivered Fuels was designed to give electric utilities another option for serving their low-income customers by allowing them to install space heating and water heating energy efficiency measures to customers that use a delivered fuel for those end uses.

The COUs do not report on whether they use Department guidance in their ESP reports. In addition, analysis of the residential program types listed by COUs in ESP did not find any residential programs that were listed as being “multifamily” programs. As such, we are not able to develop statistics on the rate at which COUs take advantage of this Department guidance.

At part of the in-depth interviews with the COU aggregators, COU program managers, and COU service providers, the interviewer asked each respondent to comment on whether the COUs were making use of that guidance.

With respect to the multifamily guidance, the interviews found the following:

- COU Aggregators – Most of the aggregators reported that the COUs have multifamily buildings, but that they are facing challenges in understanding how to use the Department guidance. In

addition, the COUs aggregators reported that they and the COUs would need additional technical assistance from the Department on how to serve this type of building.

- COUs – Six of the eleven COUs interviewed for this study indicated that they have multifamily buildings in their service territory and would be interested in receiving additional information on how to identify and serve these buildings. At least two of the interviewed COUs indicated that they have new service territory with multifamily buildings that they would like to be able to serve.
- WAP Service Providers – None of the WAP service providers reported that they were delivering multifamily building services for COUs.

It appears that the multifamily building guidance is not currently being used by COUs, but that there is potential for using that guidance.

With respect to the delivered fuel guidance, the interviews found the following:

- COU Aggregators – None of the aggregators designed programs that made use of this guidance, but several of the aggregators reported that some of their COUs use the guidance.
- COUs – Three of the eleven COUs interviewed for this study indicated that they use the delivered fuel guidance. Two of the eleven COUs interviewed for this study indicated that they delivered those services in the past, but have changed their programs because they perceived that the electric energy efficiency measures deliver more cost-effective savings.
- WAP Service Providers – Among the five WAP service providers interviewed for this study, only one reported that they were providing services to delivered fuel households and that they were only doing that for a few of the COUs for which they deliver services.

From the interviews, it does not appear that very many COUs are using the delivered fuel guidance. One possible reason is that it does not appear that the COUs that are using the guidance are calculating savings properly. Tri-County Electric Cooperative is one of the COUs that reported that they use the delivered fuel guidance. In Table 32, we see that they reported spending \$1,940 per unit, but saved only 97 kWh per unit. When we looked in ESP to see whether they had recorded the physical units of savings in the proper location, we found that the field was blank.

The COU aggregators and the COUs reported that they would like to receive additional technical assistance on how to make effective use of the Department guidance. The finding with respect to reporting on delivered fuel savings highlights the need for that type of technical assistance.

## 7.2 Implicit Program Objectives

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There are several ways in which the Statute and Commissioner Orders and Decisions have established program objectives that are not clearly defined as program requirements. For purposes of this analysis, we assess whether the COU low-income programs effectively address the following issues:

- Renters – What percent of low-income program funds are used to deliver services to low-income renters? How does the funding allocated to serving renters compare to the share of low-income households in Minnesota that are renters?
- WAP Protocols – To what extent have the COU low-income programs worked with WAP service providers so that they can implement programs that deliver high-quality services to low-income customers?

Since the COUs have not been directed by the Department to assess their own programs based on these parameters, it is not appropriate to hold the COUs accountable for failing to meet one or more of these objectives. Rather, it is the intent of this assessment to determine whether the COUs, in the context of designing and implementing low-income programs, have addressed some of these implicit program objectives.

## 7.2.1 Serving Low-Income Renters

Table 6 shows that 57 percent of low-income households are renters. About 27 percent of manufactured and single family homes are renter-occupied. Over 90 percent of small multifamily housing units (i.e., buildings with 2 to 4 units) are renter-occupied.

The statute does not require that a certain percentage of low-income program funds be spent on renter-occupied housing. The ESP reports do not require COUs to collect or report information on renters that participate in either their low-income or residential programs. Further, we did not see any evidence that the COUs focus on serving renters in our in-depth interviews or detailed review of ESP reports.

The in-depth interviews with electric COUs in particular found that many low-income program managers were interested in serving multifamily buildings in their service territory. However, they reported that they did not know how to make use of the Department guidance on multifamily buildings and that they did not know how to engage landlords in their programs. They specifically requested that the Department furnish more information on that topic.

## 7.2.2 Making Use of WAP Protocols

The Department has encouraged utilities to partner with WAP service providers to deliver program services. In at least one case where the program implementation was not a WAP service provider, the Commissioner ordered the IOU to ensure that the program used WAP health and safety protocols and measure selection procedures. The implication is that, for comprehensive single family homes, service providers should either adopt WAP guidelines or identify why the WAP guideline is not appropriate for that particular program.

It would be challenging for a COU that has a relatively small budget to design and implement a program that has all of the health and safety and quality control procedures that are incorporated into the WAP program. That is one reason why the Department has encouraged COUs to collaborate with WAP service providers on dedicated low-income programs. This study found that many COUs report that they do

work with WAP service providers. However, some COUs do not work with WAP service providers and some WAP service providers are not willing to work with COUs at this time. The following analysis outlines some of the important issues that we identified through in-depth interviews.

## ***In-Depth Interviews with COU Aggregators***

The interviews with aggregators found that many of their COUs work with CAP agencies and that some have very good experiences, but that other COUs are not able to meet program requirements because their CAP agency(ies) do not spend the available funds and do not communicate with the COUs about spending. Table 60 furnishes information on the perceptions of the COU aggregators that were interviewed. Findings include:

- **Working with CAP Agencies** – All of the aggregators report that at least some of their COUs are working with CAP agencies. Some of the aggregators reported that they perceived that working with CAP agencies was the only cost-effective way to identify and serve verified low-income customers.
- **Experiences with CAP Agencies** – Four of the five COU aggregators reported that some COUs had very positive experiences with CAP agencies, while others have had very negative experiences.
- **Current Providers** – Two of the COU aggregators report that some of their COUs now use other types of providers because of their negative experiences with CAP agencies.

These mixed experiences indicate that there are good opportunities for COUs to work with CAP agencies, but that it is not always possible to make those relationships work effectively.

**Table 60. Aggregator Reports on COU LI CIP Program Implementation Experiences**

<b>Aggregator</b>	<b>Use CAP Agencies</b>	<b>Positive Experiences with CAP Agencies</b>	<b>Negative Experiences with CAP Agencies</b>	<b>Use Other Types of Service Providers</b>	<b>COUs Deliver Program Services</b>
Dairyland	Yes	DK	DK	Yes	DK
Great River Energy	Yes	Yes	Yes	No	No
Minnkota/NMPA	Yes	Yes	Yes	No	No
Minnesota Municipal PA	Yes	Yes	Yes	Yes	Yes
Missouri River Energy Services	Yes	Yes	Yes	Yes	Yes

Some of the other issues that the aggregators identified as challenging for their COUs included:

- **Walkaways/Deferrals** – Some of the aggregators indicated that their COUs were frustrated with the increasing number of walkaways in the WAP program. However, at least one aggregator indicated that the WAP service delivery agencies that serve their COUs work hard to identify

what types of electric measures can be installed even when the agency must defer weatherization work.

- Measures – Some of the aggregators reported that there was confusion on the part of the aggregator, COUs, and service providers on what types of measures could be installed with which funding sources.
- Low-Income Customers – Some of the aggregators reported that they perceive that the CAP agencies are “running out of low-income customers” and that the COUs need to look to other populations or types of programs to meet spending requirements.
- Paperwork – Some aggregators reported that they have had problems getting paperwork from the CAP agencies to prepare the ESP reports on accomplishments.

The aggregators made some recommendations on ways to address these issues.

- Department Oversight – The aggregators recommended that the Department work more proactively with the WAP service delivery agencies to ensure that those agencies fulfill the commitments that they make to COUs.
- Reporting – The aggregators perceive that there should be a way for the WAP data system to generate the information that the aggregators need to input into ESP.
- Allowable Measures – The aggregators would like more detailed information from the Department on which measures are allowed to be installed with which funding sources and under what conditions.
- Flexibility – The aggregators would like the Department to consider making the program requirements more flexible. One option would be for the Department to allow the COU to have a multiyear spending goal. Another option would be to allow the aggregators to fulfill the spending requirements for a number of small COUs without respect to the geographic location of spending in any particular year. [Note: This appears to be allowed by the statute.]

Some of the COU aggregators are directly involved with the design and implementation of the programs, including preparing contracts for their COUs to use with WAP service providers. It is clear that at least some could play an important role in working with the Department to resolve some of the outstanding issues.

## ***COU In-Depth Interviews***

The COUs furnished detailed information on how they implemented their LI CIP programs, including information on their relationships with their local WAP service providers. (The COUs tended to refer to “CAP agencies” during the interviews.) Table 61 furnishes summary information on the reports from the COUs. The findings include:

- CAP Agency Contractors – Eight of the eleven COUs interviewed reported that they currently work with CAP agencies to deliver program services. Some of the advantages that the COUs list for working with the CAP agencies included the identification and verification of income-eligible

households, an existing presence in the COU's service territory, and having a good understanding of the required energy efficiency measures. Nine of the eleven COUs have had positive experiences with CAP agencies.

- **Negative Experiences with CAP Agencies** – Six of the eleven COUs reported that they have had negative experiences with CAP agencies. Problems include:
  - Reporting – Failing to report the required information to the COU.
  - Spending – Failing to spend the funding made available by the COU.
  - Personnel – Changes in personnel caused disruptions in service delivery.
  - Lack of Interest – Some COUs reported that they have offered to make funding available, but some CAP agencies in their service territory were not interested.

It is important to note that none of the COUs reported any problems with the quality of service delivery.

- **Other Service Providers** – Among the COUs interviewed, very few use other service providers. Given the relatively small size of their programs and the geographically large service territories, it is hard for them to find other contractors that can deliver the program services to their low-income households.

The interviews with COUs find that many work with CAP agencies and that many have very good experiences. While they have had negative experiences with some CAP agencies and lack of interest by others, they usually address that problem by allocating more funding to those agencies with which they have had successful relationships.

**Table 61. COU Reports on LI CIP Program Implementation Experiences**

<b>COU Reference Number</b>	<b>Use CAP Agencies</b>	<b>Positive Experiences with CAP Agencies</b>	<b>Negative Experiences with CAP Agencies</b>	<b>Use Other Types of Service Providers</b>	<b>COUs Deliver Program Services</b>	<b>Other Notes</b>
#1	Yes	Yes	No	No	No	Some CAPs were not interested in CIP
#2	Yes	Yes	Yes	No	No	None
#3	Yes	Yes	Yes	No	No	Fell short on spending some years due to CAP performance
#4	Yes	Yes	Yes	No	No	New staff at one CAP resulted in performance problems

COU Reference Number	Use CAP Agencies	Positive Experiences with CAP Agencies	Negative Experiences with CAP Agencies	Use Other Types of Service Providers	COUs Deliver Program Services	Other Notes
#5	Yes	Yes	No	No	No	CAP does an excellent job in delivering services and meeting program requirements
#6	Yes	Yes	No	No	Yes	CAP identifies needs during audit, COU delivers appliances as needed
#7	Yes	Yes	No	No	No	Excellent relationships with CAP agency
#8	Yes	Yes	Yes	No	No	None
#9	No	No	Yes	Yes	No	Works with Habitat for Humanity
#10	No	Yes	No	No	Yes	Has used CAP in past and will in future, changes program year-to-year
#11	No	No	Yes	Yes	No	None

One COU commented on CAP agency administrative costs. They wondered why the CAP agency needed a 14 percent administrative charge. As will be discussed in the context of the service provider interviews, the lack of interest in delivering CIP program services for certain COUs may relate to the fact that COUs do not understand the cost structure for WAP service delivery and how electric LI CIP program add-ons can increase all costs for the CAP agency, not just the direct service delivery costs. One COU uses the CAP agency to identify homes that need energy-efficient lighting and appliances. The COU then delivers those services to the customers and pays the CAP agency a “finder’s fee” of 10% of the value of the products delivered.

The COUs made two recommendations that were consistent with those made by the aggregators.

- **Department Oversight** – The COUs recommended that the Department work more proactively with the WAP service delivery agencies to ensure that those agencies fulfill the commitments that they make to COUs.



- Allowable Measures – The COUs would like more detailed information from the Department on which measures are allowed to be installed with which funding sources and under what conditions.

All of the COUs reported that they take their CIP responsibilities seriously and perceived that they were meeting the requirements. Some clearly had focused on meeting the requirements through dedicated low-income programs while others perceived that they met the requirements when the dedicated and estimated low-income spending exceed the requirements.

## ***WAP Service Provider Interviews***

The project team conducted nine in-depth interviews with LI CIP service providers. Five of those service providers were WAP service providers that deliver LI CIP services to one or more COUs. The other four service providers included one for-profit company, two nonprofit organizations, and one WAP service provider that all deliver services for IOUs but do not deliver services to the COUs. Four of the five service providers that deliver services to COUs also deliver services to IOUs.

In preparation for the interviews, the project team identified the COUs that have customers in the service providers' WAP service territory. At the start of the in-depth interviews, the interviewer discussed the list of COUs with the service provider and identified those COUs for which the service provider delivers services. The interviewer also collected information on why the service provider did not work with certain COUs.

Table 62 furnishes information on the findings from the analysis. The first column furnishes an interview reference number. The second column shows the number of COUs where it appears that the COU service territory and the service provider's territories overlap. The third column shows the number of COUs with which the agency has contracts. The last column lists the service provider's perception of why they are not contracting with certain COUs.

- Eligible Customers – All the service providers indicated that they had “served all of the low-income customers” at one or more of the COU service territories listed. That probably means that the service provider had contacted all of the EAP-recipient households in that area and had either served them or had been told by the customer that they were not interested in receiving services.
- Service Provider – In some cases, the service provider is not interested because the administrative costs of working with a COU may be larger than the budget for delivery of low-income services. For example, for service provider #5, nine of the 21 COUs have budgets of less than \$5,000. In other cases, the service provider does not deliver the service requested by the COU (e.g., solar water heaters) or is not willing to work for a COU because the administrative cost allowance is inadequate.
- COU – In some cases, the service provider reports that they have reached out to the COU, but that the COU was not interested in working with them.

It seems clear that there is a substantial effort involved in identifying and contracting with COUs. Some of the interviews with service providers found that the relationships are successful, while others are not.

**Table 62. WAP Service Provider COU Service Delivery**

<b>Service Provider Reference #</b>	<b>Number of COUs in WAP Service Territory</b>	<b>Number of COUs Served</b>	<b>Reasons for Not Serving Other COUs</b>
#1	10	2 (in past)	Worked with 2 COUs in the past. Those COUs now deliver services in other ways. Does not market services to COUs because there are few LI CIP eligible customers.
#2	6	2 (3 in the past)	Proposed compensation is too low. Budgets are too small. COU reported that they had changes in their priorities.
#3	13	9	Wasn't aware of some COU opportunities. Is unsure how to approach one comparatively large COU. [Note: The targeted COU fulfills spending requirement with dedicated low-income program.]
#4	9	3	One COU wanted to focus its LI CIP program on delivering solar water heaters. One COU is not interested in service provider's services. One COU may not actually have customers in service provider's territory.
#5	21	6	Has not yet contacted certain COUs. One COU now works with a non-WAP service provider. "Ran out" of low-income customers in some COU service territories.

The service providers furnished detailed information on how they implemented their LI CIP programs in terms of program models. The models considered include:

- WAP Add-On – Use COU funds to deliver additional services to housing units served with WAP funding.
- Delivered Fuel WX – Use COU funds to deliver weatherization services to customers with delivered fuel main heat.
- WAP Deferral – Use COU funds to deliver electric energy efficiency measures to housing units that are deferred for weatherization services but for whom electric baseload measures are allowed.
- Prior WAP – Use COU funds to deliver electric efficiency measures to homes that were previously served by WAP but did not receive electric efficiency measures.
- Independent – Use COU funds to deliver electric energy efficiency measures to homes that are not being served by WAP.

- ERR Supplement – Use COU funds to deliver services in combination with delivery of EAP ERR services.

Table 62 shows that three of the four service providers only deliver COU program services as WAP Add-On. Moreover, they do not consider the compensation from the COUs to be adequate to pay for the cost of delivering services and suggest that WAP funding is subsidizing the delivery of COU LI CIP program services. In particular, they point to administrative budgets of less than 10 percent as being inadequate to cover the costs of managing the delivery of these program services. When asked why they continue to work with the COUs, they report that “they do it to give their clients the best possible services.”

One other important finding from those three service providers is that they would not be in favor of combining ERR services with COUs’ CIP services. One important reason for that is that the ERR is done on an emergency basis, making it difficult to deliver any other services at the same time. But, the other reason that is less compelling is that “the paperwork is completely different.”

The one agency that delivers multiple types of program services to COUs indicates that they have longstanding relationships with their COUs and that there is a certain amount of trust. The COUs trust the agency to meet program requirements. The service provider trusts the COUs to work with them to be paid fairly for program services. The agency is concerned that two of the COUs pay them an administrative fee of less than 10 percent. But, they are working with them to ensure that compensation is fair. With respect to each model they report:

- WAP Add-On – It is the easiest model to implement, but does not always use the available funding.
- Delivered Fuel Main Heat – Certain COUs have decided to deliver weatherization and water heating services to customers with delivered fuel main heat. They use those program funds quickly and efficiently.
- WAP Deferral – They always assess what measures can be installed in a home that they audit, even when they are not able to deliver weatherization services.
- Prior WAP – They have not attempted to use this program model.
- Independent – When they have extra funds they use the eHeat database to identify customers with high electric usage and find that those homes need a significant amount of services and can be served in a cost-effective way.
- EAP ERR Supplement – They have not attempted to deliver other services along with EAP ERR.

The interviews with the service providers show that it is challenging for COUs and service providers to work together. However, the experiences of provider #3 and the positive reports from the COUs discussed previously in this memo suggest that there are ways to make the relationship work effectively.

**Table 63. Service Provider Implementation Models and Experiences**

<b>Model</b>	<b>Service Provider Reference Number</b>			
	<b>#2</b>	<b>#3</b>	<b>#4</b>	<b>#5</b>
WAP Add-On	Yes	All	Yes	Yes
Delivered Fuel WX	No	Some	No	No
WAP Deferral	No	All	No	No
Prior WAP	No	No	No	No
Independent	No	Some	No	Yes
ERR Supplement	No	No	No	No
Other Suggestions	No	No	No	No
COU Compensation is Fair	No	Yes	No	Some Yes Some No

One of the service provider in-depth interview respondents did a good job of summarizing the issues and some recommended approaches to resolving the issues. The other in-depth interviews would clearly support these findings.

- **Compensation Model** – The Department should furnish the COUs with information on how to appropriately account for the different costs of delivering program services to low-income households. It would document the administrative, audit/assessment, service delivery, and quality control protocols that WAP service delivery agencies are required to follow and would identify ways for COUs and LI CIP service providers to work collaboratively toward a fair compensation system that ensures that COUs get good-quality services and that LI CIP service providers are fairly compensated for providing those services.
- **Department Policy on Leveraging** – The Department should consider whether the WAP and/or EAP WX program should be covering all of the costs for delivering health and safety measures and incidental repairs that make it feasible to deliver energy efficiency measures to a home, or whether LI CIP programs should pay for some part of those costs.
- **Reporting and Invoicing** – The WAP service providers would benefit greatly if there were a standard way to record, report, and invoice for COU LI CIP program measures within the existing WAP information system.
- **COU / WAP Service Provider T&TA** – All parties would benefit from some proactive T&TA to both COUs and WAP service providers about what is possible and what is recommended.
- **LI CIP Policy Manual** – The Department should consider developing a LI CIP Policy Manual that would serve as a companion to the EAP Policy Manual and the WAP Policy Manual.

Some of these recommendations seem to be quite similar to the recommendations from the aggregators and the COUs, while others are somewhat more focused on the specific needs of the WAP service providers.

## 7.3 Low-Income Program Best Practices

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This assessment examines the extent to which the Department and the COUs have adopted best practices related to low-income program design, implementation, measurement, and evaluation. The best practice assessment considers the following questions.

- Collaboration with WAP and EAP – How does the program work in a collaborative way with WAP and EAP to take advantage of opportunities to increase program efficiency and effectiveness?
- Measurement and Evaluation Framework – What measurement and evaluation strategy has the program adopted to ensure that the programs are achieving their expected outcomes? How does the information system developed by the program support measurement and evaluation activities and development of valid indicators to track progress toward improved performance?
- Targeting – Does the program have effective strategies for targeting services in a way that maximizes program impacts and cost-effectiveness?

Neither the COUs nor the Department have been directed to adopt these best practices. The purpose of this assessment is to examine the extent to which COU programs have adopted these practices and then to make recommendations for which might have the greatest impact on the performance of the COUs' low-income programs.

### 7.3.1 Collaboration with EAP and WAP

There are several ways that the Minnesota EAP and WAP programs have developed procedures that have made it easier for the electric COUs to develop effective low-income programs.

- Definition of Low-Income – The EAP and WAP programs have clear guidelines for identifying income-eligible households. Adopting those guidelines makes it easier for COU programs to justify their definition.
- Application and Income Verification Procedures – The EAP, WAP, and CIP units jointly developed an application with specified income verification procedures that covers all three programs – EAP, WAP, and CIP. The COUs can make use of that application form model and follow those income verification procedures, even if they are not working with an EAP or WAP service provider.
- Measure Selection and Installation – The WAP program does not have guidance on measure selection and installation for all of the electric energy efficiency measures that are considered to be eligible by the COUs for electric low-income CIP programs. However, the health and safety assessments and quality control protocols are still relevant to electric low-income programs. The

COUs can adopt those practices and be assured that their programs will meet good quality standards.

Where appropriate, the Department has also developed guidance for CIP programs that differs from the EAP or WAP guidance. For example, the guidance on multifamily buildings issued by the Department lowers the cost of identifying income-eligible multifamily buildings and increases the amount of energy savings that can be attained from programs serving those buildings.

Our findings from the in-depth interviews with five COU aggregators and eleven COUs found the following:

- **COU Aggregators** – All five aggregators reported at least some of their COUs use WAP service providers. At least one aggregator reported that all of her COUs use WAP service providers. All of the COUs' aggregators appreciated the procedures that the EAP and WAP offices have put in place to identify verified low-income households.
- **COUs** – Eight of the eleven COUs interviewed reported that they worked with WAP service providers to deliver services. However, none of the COUs identified other ways in which they currently collaborate with either EAP or WAP.

Our analysis found that there were several ways in which there could be better coordination among EAP, WAP, and the COUs.

- **Communication on Health and Safety Protocols and Costs** – The Department's WAP office has developed detailed protocols for health and safety assessments, and has developed service delivery guidelines for their agencies. The WAP office has also collected and analyzed detailed information on the cost of required health and safety measures installed by their agencies. Given the importance of health and safety in this sector, it would be appropriate for the Department to communicate those findings to the COUs and initiate discussions with the COUs about how the WAP program addresses health and safety issues that represent barriers to the delivery of comprehensive energy efficiency services to low-income households. That information could be particularly useful to COU aggregators who design programs for multiple COUs to give them a better understanding of how the WAP service delivery agency approaches each home and why that is important.
- **WAP Information System** – The Department's WAP office has a database that service delivery agencies use to record information on housing units served by the program. A significant number of households served by WAP also receive funding from the COUs' low-income programs. It is likely that there is some opportunity for that database to furnish some useful information to the COUs about the clients that are served.
- **EAP & WAP Information System** – The Department's EAP information and WAP information systems each have information about clients that are customers of individual COUs. Those information systems could be used to develop information for each COU on the number of verified low-income households who are their customers in each EAP program year, and the number that have already been served by the WAP program.

These are a few ways that the Department and the COUs could work together to improve the efficiency and effectiveness of the EAP, WAP, and COU low-income programs.

### 7.3.2 Measurement and Evaluation Strategy

Low-income program evaluations have demonstrated the importance of having a systematic measurement and evaluation strategy that develops information on program performance and furnishes ongoing feedback for program improvement. State-level WAP program evaluations have demonstrated significant differences in the energy savings levels achieved by WAP agencies; some agencies achieve savings less than one-half the state average while others achieve savings that are more than 50 percent higher than the state average. Analyses of the differences in performance among those agencies demonstrate that a number of factors can lead to those differences in performance, even though the individual agencies are using the same protocols and all have regular monitoring and oversight by the state WAP office. As such, any set of parameter-based estimates of energy savings is vulnerable to understating or overstating the actual accomplishments of the program. We find that direct measurement of energy savings along with detailed observations and inspections are the only reliable way to determine the energy savings from a program and identify specific ways to improve the program outcomes.

For residential and low-income programs, the Department's energy savings estimation strategy is to contract with experts to develop the Minnesota Technical Reference Manual and encourage the COUs to make use of the TRM for purposes of projecting savings from the measures installed by each program. In general, the COU aggregators report that they use this strategy for projecting energy savings for their COUs from their low-income and residential programs. However, in some cases, the COU aggregators use the energy savings values output from a low-income measure selection assessment tool (e.g., NEAT) instead of the TRM values.

During in-depth interviews with COU aggregators and COU program managers, they reported that they perceive that the Department does not require that they implement measurement and verification procedures or conduct evaluations of their low-income or residential programs.

This approach falls short of low-income program best practices in three ways.

- **Verification of TRM / Energy Savings Inputs** – One important component of an effective measurement and verification strategy is to ensure that the COUs are collecting the correct information and using it properly in calculating energy savings. It is common practice in other jurisdictions for third-party technical experts to review a COU's program records to verify that these procedures are being implemented properly. The Department has not required the COUs to conduct this verification for their low-income programs.
- **Measurement and Verification** – It is common for commissions to specify protocols for third party measurement and verification of measures installed by low-income programs. These procedures might include desk reviews of invoices to ensure qualified equipment was installed,

telephone or email contacts with participants to verify service delivery and satisfaction, and field visits to document that equipment is installed properly.

- **Program Evaluation** – Most low-income programs conduct periodic evaluations that include billing analysis to assess program-level savings rates, as well as other types of analysis procedures that develop information on program implementation procedures or other factors that affect program performance. Such evaluations often find energy savings values that are different from projections and identify specific remediation and performance tracking procedures that improve program performance over time. None of the electric COUs have conducted this type of evaluation.

Some jurisdictions set a limit on the measurement and evaluation requirements for smaller utilities. From that perspective, it is appropriate for most of the COUs to be exempted from all but the most basic requirements. However, there are two ways in which it might be appropriate for COUs to be engaged in certain activities.

- **Review of Calculations** – Our analysis of detailed ESP reports for a sample of COUs found that there appeared to be misunderstanding on the part of the COU aggregator and/or COU as to what should be reported for first-year savings. It might be appropriate to have the Department's third-party TRM contractor work with the COU aggregators to furnish technical assistance on energy savings reporting.
- **GRE Evaluation** – GRE has designed programs for 29 COUs that have total spending on low-income programs of about \$1.4 million. That amount exceeds that value of spending for all IOUs except for CPE and Xcel. As such, it might be appropriate to engage GRE and their COUs in more extensive evaluation and measurement.

It is important for the Department to review the Commissioner Order on measurement and verification procedures and consider whether the intent of the original Order is consistent with the status of measurement and verification procedures for low-income programs.

### 7.3.3 Program Targeting

Low-income program evaluations have identified some specific targeting procedures that have increased energy savings and other benefits from low-income programs. Electric COUs have not consistently adopted these targeting strategies.

- **High Users** – Program evaluations have found that high energy users generally have more energy saving opportunities (i.e., more energy efficiency measures are cost-effective to install) and higher energy savings from each measure installed. Implementation of this strategy increases program effectiveness by increasing the measure-level savings and lowering the average fixed costs for delivering each measure. None of the COUs that we interviewed identified that they use this strategy.
- **Non-energy Benefits** – Recent research has shown that comprehensive low-income energy efficiency programs can deliver substantial benefits in terms of reducing indoor air quality



problems that can exacerbate health problems. Programs that target comprehensive service delivery to households with existing health problems can achieve both energy savings and non-energy benefits. None of the COUs that we interviewed reported that they are currently targeting these households.

- **Effective Screening Procedures** – It is costly to conduct assessments for the delivery of comprehensive energy services. Many low-income programs have developed procedures that attempt to conduct advance screening to assess the readiness of the household and housing unit to participate in the program, as well as the housing unit’s need for program services. None of the COUs reported implementing such procedures.

The electric COUs are not required to target their programs. From a prior study with Minnesota WAP service providers, we are aware that some use targeting procedures. It might be appropriate to identify the success of such procedures.

## 7.4 Summary of Findings

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Our assessment considered whether the COUs are meeting the explicit requirements associated with the CIP low-income programs, addressing the implicit program objectives, and adopting low-income program best practices.

With respect to explicit program requirements and Department guidance, we find that most of the COUs are currently meeting most of the program requirements.

- **Spending Requirement: Dedicated Programs** – 22 percent of the electric COUs are meeting or exceeding their low-income spending requirement with their dedicated low-income programs and 44 percent are fulfilling 75 percent or more of their requirement. For all COUs, dedicated low-income programs are fulfilling 83 percent of the required spending amount.
- **Spending Requirement: All Low Income** – 73 percent of the electric COUs are meeting or exceeding their low-income spending requirement with the sum of their dedicated low-income programs and their low-income participation in residential programs and 84 percent are fulfilling 75 percent or more of their requirement.
- **Reporting Requirements** – All of the COUs are reporting the basic information on program spending and many are furnishing good information in other required data fields. However, it appears that some COUs are not furnishing reliable information in certain data fields and that many COUs are not furnishing detailed program descriptions.
- **Guidance on Multifamily Buildings** – None of the COUs that we interviewed were making use of the Department guidance on multifamily buildings. However, a number of COUs expressed an interest in receiving technical assistance from the Department on this issue.
- **Guidance on Delivered Fuels** – Only a few of the COUs that we interviewed were making use of the Department guidance on serving delivered fuel customers. One issue might be that those

COUs that are using that guidance appear to be reporting the data incorrectly in the ESP and, as a result, are perceiving that those programs do not deliver cost-effective savings.

With respect to the implicit program objectives, we find that the Department, the COU aggregators, the COUs, and WAP service providers have more work to do in terms of addressing these objectives.

- **Serving Low-Income Renters** – None of the COUs we interviewed indicated that they are targeting renter households. However, a number of the COUs explicitly asked for technical assistance from the Department related to serving multifamily buildings.
- **Making Use of WAP Protocols** – Many of the COUs reported that they are working with WAP service providers and are therefore using WAP protocols. However, a number of COU aggregators and COUs indicated that they needed better information from the Department on the WAP protocols and their use in the context of LI CIP.

With respect to low-income program best practices, we find that the COUs and the Department could improve their performance.

- **Program Collaboration** – We find that the EAP and WAP offices have developed some procedures that facilitate the implementation of COUs' low-income programs. For example, the EAP/WAP/CIP program intake form and procedures are useful for streamlining program intake. However, there are a number of collaboration and coordination opportunities that are not being addressed.
- **Measurement and Verification and Program Evaluation** – None of the COU aggregators or COUs reported that they have a systematic measurement and verification strategy. [Note: One COU aggregator reported that he thought that some of the COUs were doing in-field inspections.] None of the COUs conduct periodic evaluations of their low-income programs. This represents a major barrier to achieving the highest performing low-income programs.
- **Program Targeting** – None of the COUs that we interviewed reported that they had programs that explicitly target higher users or households for whom the low-income programs would deliver significant non-energy benefits.

Overall, the electric COU programs have performed best with respect to the explicit program requirements, have made progress toward achieving implicit program goals, but generally have not adopted low-income program best practices.

## 8.0 Assessment of Natural Gas COU Programs

This section of the report examines the performance of the natural gas COU programs in terms of the assessment framework outlined in Section 6. It examines performance with respect to:

- Explicit Program Requirements
- Implicit Program Objectives
- Low-Income Program Best Practices

The assessment of the performance with respect to explicit program requirements is at the COU level since the regulatory framework requires each COU to meet certain requirements. The assessments with respect to the implicit program objectives and the adoption of low-income program best practices considers whether the set of programs implemented by the COUs and approved by the Department are performing in the most efficient and effective way.

### 8.1 Explicit Program Requirements

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The assessment examines whether the COUs are complying with explicit program requirements and taking advantage of Department guidance when it is appropriate, including:

- Spending Requirement – Did the COU spend the required amount on low-income programs during the analysis year?
- Reporting Requirement – Did the COU use ESP to file the required information?

In addition to these program requirements, the Department has also issued guidance on an issue that makes it easier for utilities to meet their low-income program spending requirement.

- Multifamily Buildings – Did the COU make use of the Department guidance on multifamily buildings to implement programs to serve this market segment?

The assessment focuses on the 2014 program year. We did not update this analysis with information from the most recent plans and status reports.

#### 8.1.1 LI CIP Spending Requirement

In 2014, natural gas COUs were required to spend 0.2 percent of their three-year average gross residential operating revenue on low-income programs. Based on guidance from the Department, that spending amount can be fulfilled with spending on dedicated low-income programs or with the estimated amount spending on low-income customers in residential programs. In their ESP reports, the COUs report on the amount spent on dedicated low-income programs and the estimated low-income spending in residential programs.

Table 63 furnishes a summary of the natural gas COUs' spending on dedicated low-income programs in 2014. It shows the number of natural gas COUs that reported spending on dedicated programs and summarizes how their total dedicated program spending compares to their spending requirement. Four of the six COUs implemented dedicated low-income programs to fulfill their low-income spending requirement. On average, those COUs fulfilled about two-thirds of their spending requirement with dedicated low-income programs. The average spending requirement for those COUs was \$15,882, the average spending on dedicated low-income programs was \$10,706, and the average shortfall was \$5,176. The average spending requirement for those COUs that did not have a dedicated low-income program was \$10,044.

**Table 64. 2014 Natural Gas COU Dedicated LI CIP Spending Compared to Requirements**

Type of COU	Number of COUs	Total Spending Requirement	Total Dedicated Low-Income Spending	Excess or (Shortfall)	Percent Excess or (Shortfall)
Dedicated Low-Income Program – Yes	4	\$63,528	\$42,823	(\$20,706)	(33%)
Dedicated Low-Income Program – No	2	\$20,087	\$0	(\$20,087)	(100%)
No Low-Income Spending Requirement	0	N/A	N/A	N/A	N/A
All Electric COUs	6	\$83,615	\$42,823	(\$40,793)	(49%)

Table 65 shows the distribution of the ratio of spending on dedicated low-income programs to the required low-income spending for electric COUs in 2014. One of the natural gas COUs **exceeded** the low-income spending requirement with their dedicated low-income programs. Four of the six natural gas COUs fulfilled less than one-fourth of their low-income spending requirement with dedicated low-income programs.

Table 66 furnishes a summary of the 2014 total natural gas COU spending on low-income customers, including both spending on dedicated low-income programs and estimated low-income spending on residential programs. Findings include:

- COUs with Dedicated Low-Income Programs – Table 63 showed that COUs with dedicated low-income programs had dedicated program spending that fulfilled about two-thirds of their low-income spending requirement. Adding in estimated spending on low-income customers in residential programs, the COUs exceeded their spending requirement by a substantial margin.
- COUs without Dedicated Low-Income Projects – Table 65 shows that those COUs that did not have dedicated low-income programs estimated that their spending on low-income customers in the residential programs was about 96 percent of the low-income spending requirement.

Overall, these statistics show that the COUs are making a substantial commitment to delivering energy efficiency services to their low-income customers.

**Table 65. 2014 Natural Gas COU Dedicated LI CIP Ratio of Spending Compared to Requirements**

Percentage (Spending / Required * 100)	Number of COUs	Percent of COUs
Greater than 100%	1	17%
75% to less than 100%	1	17%
50% to less than 75%	0	0%
25% to less than 50%	0	0%
10% to less than 25%	1	17%
Less than 10%	1	17%
No Dedicated Program	2	33%
All Natural Gas COUs	6	100%

**Table 66. 2014 Natural Gas COU Total LI CIP Spending Compared to Requirements**

Type of COU	Number of COUs	Total Spending Requirement	Total Low-Income Spending (Dedicated + Estimated)	Excess or (Shortfall)	Percent Excess or (Shortfall)
Dedicated Low-Income Program – Yes	4	\$63,528	\$250,627	\$187,099	295%
Dedicated Low-Income Program – No	2	\$20,087	\$19,251	(\$837)	(4%)
All Natural Gas COUs	6	\$83,615	\$269,878	\$186,262	223%

Table 67 shows the distribution of the ratio of total low-income spending on dedicated low-income and residential CIP programs to the required low-income spending for natural gas COUs in 2014. Four of the six natural gas COUs **exceeded** the low-income spending requirement with their total low-income spending. Two of the six natural gas COUs fulfilled less than 25 percent of their low-income spending requirement with their total low-income spending.

**Table 67. 2014 Natural Gas COU Total Low-Income Spending Compared to Requirements**

<b>Percentage (Total Spending / Required * 100)</b>	<b>Number of COUs</b>	<b>Percent of COUs</b>
Greater than 100%	4	67%
90% to 100%	0	0%
75% to less than 90%	0	0%
50% to less than 75%	0	0%
25% to less than 50%	0	0%
10% to less than 25%	1	17%
Less than 10%	1	17%
No Dedicated Program	0	0%
All Electric COUs	6	100%

## 8.1.2 Reporting Requirements

The ESP reporting instructions ask COUs to report five types of information that is important to understanding how their CIP programs are serving low-income customers.

- Program Type – COUs are asked to separate their programs into dedicated low-income programs and residential programs.
  - Within the category of low-income programs, COUs are asked to report separately on low-income weatherization programs, specialty low-income programs, and indirect low-income programs.
  - Within the category of residential programs, COUs are asked to report on the type of residential program in terms of the major measures installed by those programs.
- Spending Data – COUs are asked to report on spending amounts for each program.
- Performance Data – COUs are asked to report on the number of units served, first-year savings from those units, and the average lifetime for the measures installed in each unit.
- Low-Income Customer Participation – For residential programs, COUs are expected to report the estimated percentage of program participants that are low-income.
- Program Description – COUs are asked to furnish information about their program, including information about the “units” reported in the performance data.

We did not conduct in-depth interviews with any of the natural gas COUs. Based on our in-depth analysis of individual COU ESP reports and our development of natural gas COU statistics, we found the following with respect to CIP program reporting.

- **Spending Data** – The spending data appeared to be consistent with other information that we observed about individual COUs.
- **Performance Data** – COUs consistently report the required performance data. However, for one of the two COUs we reviewed, it was difficult to assess the performance of the program because both of the low-income programs had only limited information on the number of “units” and the rationale for the estimated first-year savings per unit.
- **Low-Income Program Participation** – We found that the COUs were inconsistent in how they estimated program participation rates. Some COUs carefully considered the type of program and whether they would expect participation of low-income customers in each program. Other COUs simply followed the Department guidance and entered the percentage of low-income households in their service territory.
- **Program Descriptions** – For some COUs, the program descriptions furnished good information about the program design and implementation, and included a description of the reported “units” while for others the information was minimal and did not support the development of a good understanding of the program.

The findings with respect to program reports were inconsistent. Some COUs furnished detailed information that appeared to be consistent with program performance expectations. Other COU reports had various issues, including: limited program descriptions and program statistics that did not appear to be consistent with the program design.

### **8.1.3 Department Guidance - Multifamily Buildings**

The Department Guidance on Multifamily Buildings was designed to make it easier for utilities to engage multifamily buildings in low-income programs by specifying less costly procedures for identifying low-income buildings and delivering services to individual apartments. Analysis of the natural gas residential program types listed by COUs in ESP did not find any residential programs that were listed as being “multifamily” programs. As such, we are not able to develop statistics on the rate at which COUs took advantage of this Department guidance.

As part of the in-depth interviews with the electric COU aggregators, electric COU program managers, and electric COU service providers, the interviewer asked each respondent to comment on whether the COUs were making use of that guidance. Six of the eleven COUs interviewed for this study indicated that they have multifamily buildings in their service territory and would be interested in receiving additional information on how to identify and serve these buildings. At least two of the interviewed COUs indicated that they have new service territory with multifamily buildings that they would like to be able to serve.

## 8.2 Implicit Program Objectives

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There are several ways in which the Statute and Commissioner Orders and Decisions have established program objectives that are not clearly defined as program requirements. For purposes of this analysis, we assess whether the COUs' low-income programs effectively address the following issues:

- Renters – What percent of low-income program funds are used to deliver services to low-income renters?
- WAP Protocols – To what extent have the COUs' low-income programs worked with WAP service providers so that they can implement programs that deliver high-quality services to low-income customers?

Since the COUs have not been directed by the Department to assess their own programs based on these parameters, it is not appropriate to hold the COUs accountable for failing to meet one or more of these objectives. Rather, it is the intent of this assessment to determine whether the COUs, in the context of designing and implementing low-income programs, have addressed some of these implicit program objectives.

### 8.2.1 Serving Low-Income Renters

Table 6 shows that 57 percent of low-income households are renters. About 27 percent of manufactured and single family homes are renter-occupied. Over 90 percent of small multifamily housing units (i.e., buildings with 2 to 4 units) are renter-occupied.

The statute does not require that a certain percentage of low-income program funds be spent on renter-occupied housing. The ESP reports do not require COUs to collect or report information on renters that participate in either their low-income or their residential programs. Further, we did not see any evidence that the COUs focus on serving renters in our detailed review of ESP reports. The Duluth program works with Habitat for Humanity. We are aware that Habitat sometimes works with rental units. However, there was no additional information in the ESP related to that issue.

### 8.2.2 Making Use of WAP Protocols

The Department has encouraged utilities to partner with WAP service providers to deliver program services. In at least one case where the program implementer was not a WAP service provider, the Commissioner ordered the COU to ensure that the program used WAP health and safety protocols and measure selection procedures. The implication is that, for comprehensive single family homes, service providers should either adopt WAP guidelines or identify why the WAP guidelines are not appropriate for that particular program.

We did not conduct in-depth interviews with any natural gas COUs. None of the WAP service providers that we interviewed reported that they were serving a natural gas COU. However, we did find that one



of the COUs we examined did not use a WAP service provider and the other did. We did not determine whether Habitat for Humanity follows protocols similar to what WAP employs when they deliver energy efficiency measures to housing units.

## 8.3 Low-Income Program Best Practices

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This assessment examines the extent to which the Department and the COUs have adopted best practices related to low-income program design, implementation, measurement, and evaluation. The best practice assessment considers the following questions.

- Collaboration with WAP and EAP – How does the program work in a collaborative way with WAP and EAP to take advantage of opportunities to increase program efficiency and effectiveness?
- Measurement and Evaluation Framework – What measurement and evaluation strategy has the program adopted to ensure that the programs are achieving their expected outcomes? How does the information system developed by the program support measurement and evaluation activities and development of valid indicators to track progress toward improved performance?
- Targeting – Does the program have effective strategies for targeting services in a way that maximizes program impacts and cost-effectiveness?

Neither the COUs nor the Department have been directed to adopt these best practices. The purpose of this assessment is to examine the extent to which COU programs have adopted these practices and then make recommendations for which might have the greatest impact on the performance of the COU low-income programs.

We did not conduct any in-depth interviews with natural gas COUs and did not conduct any in-depth interviews with WAP service providers that reported working with a natural gas COU. None of the information that we developed for the natural gas COUs furnished insight as to whether those COUs follow those best practices.

## 9.0 Recommendations

Our assessment finds that many of the COUs are meeting the explicit low-income program requirements, but that there are important ways that the Department and the COUs could work together to improve their performance. It further finds that the COUs have made important progress on implicit program objectives, but that the COUs report that they need additional information and guidance from the Department to enhance their ability to meet these objectives. But, it finds that there are important low-income program best practices that are not followed by the Department or by the COUs. Given the small budgets available to some COU low-income programs, it may not be appropriate to expect those COUs to implement many of the listed best practices. However, with effective collaboration between the Department and some of the larger COU aggregators, there are ways that many COUs could adopt low-income program best practices to enhance the performance of their programs.

### 9.1 Explicit Program Requirements

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We have recommendations with respect to the explicit program requirements in which the Department to develop and communicate updated policies, and then establish a transition period of several years during which the COUs would be able to update their program portfolios to meet the new requirements.

**Recommendation #1** - With respect to the low-income program spending requirement, we recommend that COUs should be required to fulfill the requirement with a dedicated low-income program or with a residential program that offers a higher program incentive to low-income customers.

To help the COUs meet this new requirement, we recommend that the Department should establish the following procedures:

- The COUs should be allowed to fulfill their spending requirement over a period of up to three years so that COUs with small budgets can target program spending to a specific time period and are not required to address low-income program issues every year.
- The COUs should be allowed to carry forward excess spending from one year to future years and remediate prior year spending shortfalls with planned spending in later years.
- The Department should work with COUs' aggregators to develop a list of successful program models that give COUs options for meeting their spending requirements. Examples of successful models include working with WAP service delivery agencies, working with local affordable housing organizations, delivering services to Section 8 housing complexes, delivering services to establishments that serve low-income customers such as food pantries and homeless shelters, partnering with the EAP ERR program to increase the efficiency of heating equipment installed by ERR, and partnering with EAP proactive A16 programs to deliver energy efficient appliances to low-income customers.

- The Department's CIP unit should work with the Department's WAP unit and COU aggregators to develop a clear statement of how to develop a fair compensation plan if a COU is furnishing assistance to WAP service delivery agencies and asking a WAP service delivery agency to identify and serve a COU customer with electric services only.
- The Department's CIP unit should publish a list of the WAP service providers whose service territory potentially overlaps with a COU's service territory.

There are two reasons why we perceive that these are appropriate recommendations. First, the analyses in Sections 7 and 8 of the report showed that most COUs, including those with low-income spending requirements of less than \$1,000, implement dedicated low-income programs that are successful in meeting their low-income program spending requirements. Second, there is no evidence that the residential programs implemented by the COUs are serving the number of low-income customers estimated using the current Department guidelines.

*We consider this to be a high priority / high effort recommendation. The purpose is to build on the excellent work already done by many COU aggregators, COUs, and WAP service providers to ensure that low-income customers throughout Minnesota have access to important energy efficiency services.*

**Recommendation #2** - With respect to the low-income program spending requirement, we recommend that the Department should work with the Department's EAP unit to identify those COU service territories where it would be appropriate to expand the definition of "low-income" to include households with incomes up to 80 percent of state median income or area median income, whichever is higher.

This would be accomplished by first looking at the eHeat database and identifying the number of EAP recipients that show that a COU is their electric or natural gas service provider, and then by using Census data to identify the number of households with income at or below 50 percent of state median income in the census jurisdiction that most closely matches the COU's service territory.

A number of the WAP service providers indicated that they perceived that one or more of the COUs that they were working with "ran out of low-income households." What we perceive is that the service provider was saying that they had contacted all of the EAP recipients that had listed that COU as their electric or natural gas company, and therefore were unable to use that that database to identify additional income-eligible households. In that situation, it might be effective for the local EAP office to identify COU customers who applied for assistance but were over-income for the LI CIP program for that COU.

*We consider this to be a moderate priority / low effort recommendation. It is moderate priority because relatively few COUs should have too few low-income households to serve. But, it would be useful for those that do to be able to expand the population that they are targeting. It is low effort because all of the resources needed to do the assessment are already available for analysis.*

**Recommendation #3** – We recommend that the Department work with the COUs' aggregators and the Department's WAP unit to identify those COUs that have adopted the Department's guidance on electric

utilities claiming savings for delivered fuel customers and work with them to better document the actual outcomes from those services.

The purpose of this recommendation is two-fold. First, it appears to us that the COUs that have adopted this guidance are not reporting energy savings properly. We perceive that the Department could contract with the TRM contractor to work with those COU aggregators and COUs to improve the savings estimates. Second, we perceive that this would be a valuable option for many rural COUs to adopt. However, that cannot be done until the actual savings are verified using appropriate procedures.

*We consider this to be a high priority / low effort recommendation. This is high priority because it appears that savings are not currently being counted properly. It is low effort because we perceive that the resolution would be relatively straightforward.*

**Recommendation #4** – We recommend that the Department furnish technical assistance to COUs related to identifying and serving low-income multifamily buildings. They might consider contracting with the service provider that implements the multifamily building programs for Xcel and CPE.

There are three reasons why we perceive that this is a valuable recommendation. First, the statute implies that the low-income programs should serve low-income renters. Second, the Xcel and CPE program managers have found that the multifamily building programs are “oversubscribed” suggesting that these present good opportunities for all utilities. Third, during our in-depth interviews, the COUs explicitly asked for this kind of technical assistance.

*We consider this to be a moderate priority / high effort recommendation. This is only moderate priority because the COUs do not have an explicit responsibility to serve low-income renters and many COUs are already fulfilling their spending requirement with existing programs. It is high effort because the expertise to fulfill the recommendation does not reside within the Department and would likely require engaging a contractor or organization that does have those skills.*

## 9.2 Implicit Program Objectives

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The COUs have made some progress toward the implicit program objectives in that many already have contracts with WAP service providers. However, very few have programs that appear to target low-income renter households.

We do not have recommendation that are specific to this area because those two issues already were addressed in terms of the explicit program requirements. We recommended that the Department be more proactive in helping COUs to work effectively with WAP service providers (Recommendation #1). We recommended that the Department furnish technical assistance to COUs related to identifying and serving low-income buildings.

## 9.3 Low-Income Program Best Practices

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Our assessment found that there are many opportunities for the Department to work with the COUs to consider ways to operationalize low-income program best practices. Specific recommendations include:

- **Communications** – Discussions with the Department units have identified a potential strategy for improving communications. It was recommended that each of the Department’s low-income program units—CIP, WAP, and EAP—should identify a communications liaison who would have responsibility for identifying common information that should be distributed to all parties that are involved in CIP low-income programs, including COUs, COU aggregators, WAP service providers, and EAP service providers. As those liaisons identify issues, it would be the job of the CIP unit to communicate with COUs, the WAP unit to communicate with WAP service providers, and the EAP unit to communicate with EAP service providers. One example of communication might be the WAP unit’s most recent analysis of the cost of health and safety measures installed by WAP service providers. That would be useful information to disseminate to all parties.

*We consider this to be a high priority / moderate effort recommendation. It is high priority because there is important information that is not being communicated. It is moderate effort because, while it does not have to be particularly time-consuming, the Department staff are already fully booked with existing responsibilities. Finding the time to communicate consistently would be a challenge.*

- **Program Collaboration** – This study has identified a number of different ways that the Department’s programs and the COU programs could increase collaboration. The Department’s low-income program units, COU aggregators, and COUs should have an ongoing work group that identifies ways to improve collaboration. The highest priority example is improving the collaboration among the Department’s EAP unit, the Department’s WAP unit, and the COUs in terms of coordinating equipment replacement services. There are three different ways that a low-income customer can get new heating equipment to replace inoperable or unsafe equipment – the ERR program, the WAP program, and COU programs. The Department’s EAP and WAP units have recently developed procedures for coordinating the type of units that will be installed and how the programs will interact. That discussion should be extended to include the natural gas and electric COU aggregators and COU program managers who report that they are struggling with that issue.

*We consider this to be a moderate priority and moderate effort issue for the Department and the COUs, mainly because most of the COUs are electric utilities and this is much more relevant to gas utilities. Note that for IOUs, this was considered to be a high priority and high effort issue.*

- **Evaluation, Measurement, and Verification (EM&V)** – The Department and the COUs need reliable information on low-income program performance to make decisions on how best to allocate program resources to low-income program initiatives. However, given the size of the COU programs, it may not be appropriate to require a significant investment in evaluation or measurement and verification. Rather, we would recommend that the highest priority would be

for the Department's TRM contractor to work with the COU aggregators and those COUs that file their ESP reports independently to verify that they are using the TRM procedures properly. In addition, since GRE has a relatively large low-income program portfolio, we would recommend that they engage with any Department/IOU initiative related to measurement and verification of low-income program savings, as well as any evaluation efforts.

*We consider this to be a high priority / high effort recommendation. It is high priority because it is the foundation on which good policy is developed. It is high effort because EM&V are complex issues. The Department staff and many of the COUs have relatively little experience with the standards and procedures. And, each type of program implemented by the COUs would need different types of EM&V procedures.*

- Targeting – The Department and the COU service providers should work to develop appropriate targeting procedures. The Department and the COU service providers can make use of targeting findings from evaluations in other jurisdictions. However, more intensive targeting analysis cannot be implemented until there are better guidelines on program objectives and until better research has been conducted on the Minnesota IOU and COU programs that demonstrates what kind of targeting would be most beneficial.

*In the short run, targeting high-usage households and buildings for program services is a high priority / low effort initiative. It is high priority because other evaluations have clearly shown that targeting high-usage households and high-usage buildings results in higher savings and more cost-effective programs. It is low effort because the eHeat system and utility benchmarking of multifamily buildings furnishes the needed information. In the long run, it is a moderate priority / moderate effort initiative. It is moderate priority because it will be important to take advantage of the findings from Minnesota low-income program EM&V efforts. It will be moderate effort because it will involve review and assessment of EM&V reports.*

The Department, COU aggregators, and COUs have worked hard to develop an innovative set of low-income programs that appear to be delivering good-quality services to low-income households in Minnesota. The Department and the COUs should move forward to implement the recommended initiatives to ensure that the programs are moving in the direction of maximizing the impact of the programs per dollar spent.