Marin Clean Energy

Agricultural Sector

Program Implementation Plan

MCE Clean Energy
My community. My choice.

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ACRONYMS

The following acronyms are used throughout the document:

- AMI - Advanced Metering Infrastructure
- CPUC - California Public Utilities Commission
- CRM - Customer Relationship Management
- EM &V - Evaluation, Measurement and Verification
- GHG - Greenhouse Gas
- PACE - Property Assessed Clean Energy
- SPOC - Single Point of Contact
- TRC - Total Resource Cost
- USDA - United States Department of Agriculture

Implementation Plan: Agricultural

Introduction

Marin Clean Energy (MCE) has identified the agricultural sector as an important area for tailored and strategic energy efficiency program offerings.

MCE's agricultural landscape largely consists of dairies and vineyards. The agricultural program focuses on these industries, but does not exclude other business types from its program. The program will provide tailored offerings based on the unique characteristics and opportunities of agricultural businesses in MCE service territory. For example, the seasonal nature of vineyard operations may affect the cash flow of these businesses as well as the timing of when equipment is available to be upgraded. For these customers, the agricultural program will focus on ramping up energy efficiency activity during the slow periods in the production and harvest schedule.

Dairies produce a source of energy on-site in the form of cow manure. Generating electricity from cow manure can offset electricity costs and reduce greenhouse gas emissions. Pairing bio-digesters with energy efficiency increases the proportion of on-site energy needs met through renewable energy systems. This also increases the renewable energy project's financial viability. The program will take advantage of this by marketing these offerings together to maximize the potential savings.

Program offerings will include comprehensive rebates, technical assistance, energy efficiency education through peer working groups, and financing. The program will also aim to facilitate energy efficiency upgrades in farmworker housing by connecting them to relevant multifamily program offerings.

Depending on how integrated the product supply chain is at an agricultural facility, there may be many opportunities to collaborate with MCE's commercial and/or industrial programs. The Single Point of Contact (SPOC) will work with the technical assistance provider to ensure that all options are presented to the customer in the assessment report.

Market Characterization

MCE has analyzed energy consumption, barriers, triggers, key market actors, and energy efficiency adoption to better understand the opportunities that exist within the agricultural sector.

Although agricultural electricity use makes up a relatively small percentage of MCE's load, agriculture is an important part of the character of MCE's service territory, especially in Marin County and Unincorporated Napa County. In Marin, approximately 50% of the land is composed of farms and dairies. There are 255 agricultural operations in Marin, 64 of which are considered large farms. There are 159 livestock production operations producing beef cattle, dairy cows, and sheep and there are 23 dairies. Many of these dairies ship their milk to processers outside of MCE's service territory but a few process their milk on site.[1] The dairy industry is a highly regulated market. The demand for dairy is rising but state regulations cap prices, which can create financial uncertainty for farmers in the face of fluctuating feed prices.[2]

[1] David Lewis, Paige Phinney and Elli Rilla, ed., "Amazing but True Facts About Marin Agriculture." University of California Cooperative Extension, Marin County. http://ucanr.edu/sites/Grown_in_Marin/files/213433.pdf

[2] Navigant Consulting. *Market Characterization Report for the 2010-2012 Statewide Agricultural Energy Efficiency Potential and Market Characterization Study.* May 2013. Accessed July 10, 2015. http://www.calmac.org/publications/CA_Ag_Mrkt_Characterization_Final_5-13-13.pdf

In Napa County, the dominant agricultural activity is grape production for wine, which accounts for approximately 99% of the agricultural revenues in the county.[3] Vineyards may be winery-owned, or independently owned by those who sell its grapes to wineries. Most wineries list electricity among their top costs along with labor.[4]

The statewide market trend for both vineyards/wineries and dairies is a splitting of the industry into large companies with global markets or small companies with local/niche markets.[5]

Other communities in MCE service territory – Richmond, El Cerrito, San Pablo and Benicia – are located in urban settings and do not have a high number of agricultural accounts.

The greatest opportunity for MCE's agricultural efficiency will be in Marin County serving small agricultural operations.

Energy Consumption

The agricultural sector accounts for less than 1% of the electric load in MCE's service territory. The sector's natural gas usage is also very small since most operations are in rural areas without access to utility natural gas service. While the primary uses of electricity vary depending on farm type, large end-uses typically include irrigation/water pumping, milking equipment, and refrigeration.

Barriers

There are several barriers that may prevent the agricultural sector from fully taking advantage of energy efficiency opportunities. These barriers include:

- Financial Constraints. Dairies operate under constrained cash flow due to regulations that set milk prices. Many dairies in Marin are able to increase the price of their milk by producing organic milk, while a few others process milk into value added product on site, such as cheese, allowing them to set their own prices. Other agricultural operations may face capital constraints due to fluctuating production, environmental factors such as drought, and market prices of products.
- Seasonal Cycles. Agricultural operations often follow a seasonal calendar that determines high and low periods of activity and equipment use. The seasonal cycles also affect cash flow and financial planning. Energy efficiency projects need to be arranged for at the appropriate point in the planning process conducted at key points during the year. Technical assistance, long term engagement with the customer and financing may help bridge this barrier.
- Equipment Downtime. Dairies generally operate on an intensive schedule with little to no down time for farm equipment. It can be burdensome and expensive for equipment to be off-line for even a short amount of time for upgrade and/or repairs.
- Lack of Awareness. Compared to other regions of the state, agricultural operations in Marin are smaller with fewer employees and fewer acres in production. These operations may not have staff with energy expertise and may not know where to seek out assistance, rebates, and financing for energy efficiency upgrades.

MCE's agricultural program is designed to address these barriers by reaching customers at trigger points and offering tailored solutions.

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[3] Napa County Department of Agriculture and Weights & Measures. *2014 Agricultural Crop Report.* May 2015. Accessed July 10, 2015. http://www.countyofnapa.org/agcom/

[4] Navigant Consulting. *Market Characterization Report for the 2010-2012 Statewide Agricultural Energy Efficiency Potential and Market Characterization Study.* May 2013. Accessed July 10, 2015. http://www.calmac.org/publications/CA_Ag_Mrkt_Characterization_Final_5-13-13.pdf

[5] Ibid.

Triggers

Trigger points are moments of opportunity when the likelihood of engaging customers in an energy efficiency program is highest. Trigger points for agricultural customers include:

- Seasonal Triggers. If the operation experiences regular seasonal periods of relatively lower activity, the best time to engage a customer for equipment upgrades would be a sufficient period of time before the low point of activity and would allow upgrades to be planned for that time period. Conversely, the best time to target a customer for behavioral or operational efficiency offerings might be during periods of high use when there is the most opportunity to save.
- Equipment Failure. Given capital constraints, agricultural operations are unlikely to replace equipment that is not at or near the point of failure. Furthermore, once equipment fails, the ability to replace it quickly becomes key. Establishing a relationship with these customers prior to equipment failure will be crucial to MCE's ability to influence the efficiency of the replacement equipment. Alternatively, partnering with the contractors who most often provide equipment replacement will also ensure customers are presented with efficient alternatives at the right time.
- Coordination with Renewable Energy Installation. The dairy and wine industries in particular have latched on to renewable energy as a way to distinguish their brand. There is an opportunity to further reduce greenhouse gas emission by coupling renewable energy installations with energy efficiency upgrades.
- Change in Law or Regulation. MCE will use upcoming or anticipated changes in codes, standards, and regulations as a trigger point to motivate agricultural customers to act on resource conservation.

MCE's objective is to utilize these trigger points to effectively engage customers in energy efficiency measures. To achieve this, MCE must identify and understand the entities that influence this sector.

Key Market Actors

There are many entities that influence the agricultural sector. It is important that MCE understand the role that each entity plays and how this can affect efforts to promote energy efficiency.

- Contractors are the primary point of contact with customers. They are involved in the installation of projects and often have influence over the decision making process.
- Equipment distributors and manufacturers have control over which products are available on the market.
- Industry Groups and Trade Associations, such as Dairy Council of California, Organic Marin, California Sustainable Winegrowing Program, Napa Green, Sustainable Napa County, Marin Agricultural Land Trust, etc., have broad networks of members that can be potential program participants. They also have knowledge of issues affecting the industrial sector and can be valuable advisors.
- Regulatory Bodies, such as Occupational Safety and Health Administration, US Department of Agriculture, US Food and Drug Administration, California Department of Food and Agriculture, California Energy Commission, and California Public Utilities Commission, set the rules that govern the market and may affect product availability, product prices, program design, etc.
- Organic Certification Groups can help with marketing and providing incentive to implement energy efficiency improvements.
- Academic Institutions such as University of California Cooperative Extension can provide research and case studies on resource conservation in agricultural operations and may also be a partner for marketing, outreach, and training.

MCE tracks key market actors in order to best understand policy opportunities and challenges, and the impact of these entities on a customer's energy efficiency decision-making.

Adoption and Penetration

Before determining agricultural program strategies, MCE evaluated current adoption and penetration of energy efficiency programs to identify opportunities and determine market gaps.

According to the California Agriculture Market Characterization Study, vineyards and wineries have seized upon renewable energy - and to a lesser extent energy efficiency - as a means to distinguish their brand. They are seen as energy efficiency leaders in the agricultural sector.[6] MCE will look for opportunities to further recognize energy efficiency leaders in its service territory.

The energy efficiency upgrades that agricultural operations have already undertaken vary by farm type. Dairies are more likely to have upgraded their lighting equipment than their pumping or cooling equipment. Although pumping accounts for a much greater share of their electricity consumption, lighting equipment has a lower first cost, which make it more feasible for the capital-constrained dairy farmer. Dairy farmers have indicated that they learn about the energy efficiency measures they install through equipment vendors, suggesting that these vendors will be an important partner in marketing MCE's program offerings.

Since 2006, over 150 wineries have installed energy efficiency measures through PG&E's wine industry program, although MCE has not received figures on how many of those are within MCE's service territory. Water is a primary concern for grape-growers and many are updating and mechanizing their irrigation systems. This represents a major opportunity for MCE to influence equipment purchasing decisions. However, many agricultural customers also operate on well water so communicating long-term sustainability of the aquifer for environmental and financial reasons will be an important message.

Based on the market characterization analysis, MCE has developed, improved upon or leveraged agricultural program offerings, and projected a budget for the first four years.

Budget

The proposed budget for the first four years of the agricultural program is as follows:

Table 1. Budget Summary

Budget Category	Year 1	Year 2	Year 3	Year 4
Administrative	$ 46,289	$ 66,289	$ 66,289	$ 66,289
Marketing	$ 46,733	$ 51,733	$ 51,733	$ 51,733
Direct Implementation	$ 249,063	$ 374,063	$ 374,063	$ 374,063
Incentives	$ 125,615	$ 226,937	$ 193,531	$ 211,051
Evaluation, Measurement and Verification (EM&V)	$ 19,287	$ 30,663	$ 30,663	$ 30,663
TOTAL	**$ 486,988**	**$ 749,686**	**$ 716,280**	**$ 733,800**

[6] Navigant Consulting. *Market Characterization Report for the 2010-2012 Statewide Agricultural Energy Efficiency Potential and Market Characterization Study.* May 2013. Accessed July 10, 2015. http://www.calmac.org/publications/CA_Ag_Mrkt_Characterization_Final_5-13-13.pdf

The expected total resource cost (TRC) and estimated savings are detailed below:

Table 2. Cost Effectiveness Summary

Sector Summary	Year 1	Year 2	Year 3	Year 4
Total Resource Cost Test (TRC)	0.89		0.96	
Budget	$ 486,988	$ 749,686	$ 716,280	$ 733,800
Estimated Savings	482,778 kWh 9,450 therms	808,062 kWh 18,900 therms	565,167 kWh 31,104 therms	760,222 kWh 31,104 therms

Agricultural Program

Based on the sector analysis, MCE will implement the following agricultural program offerings.

Technical Assistance and Comprehensive or Phased Projects

MCE will offer technical assistance to customers to help them understand the full scope of available resource conservation options. Program offerings will focus on pumps, lighting, refrigeration, water heating, distributed generation and water conservation measures.

The technical advisor will create a comprehensive report outlining the rebates available to the customer at the time as well as take note of when existing equipment may be nearing the end of its expected useful life. This information will be entered into a customer relationship management system to allow the SPOC to follow up at the appropriate points in the future when the customer may be making purchasing decisions. The SPOC will serve as a project facilitator and customer advocate to help guide business owners through the process from initial contact to project completion as well as helping to identify future participation opportunities.

After the assessment report is complete the SPOC and technical advisor will work with the customer to develop a work plan for projects they intend to complete in the short-, medium-, and long-term. The SPOC will track projects over time, allowing for energy efficiency upgrades to be scheduled around the seasonal calendar. Project phasing will be encouraged to lessen barriers related to seasonal cash flow and periods of high equipment use.

Upon project completion the SPOC will work with the customer to help them participate in local certification or recognition programs and help them market their investment in energy efficiency.

Peer Outreach and Training Cohorts

MCE will convene cohorts of small farm owners to discuss experiences with energy efficiency upgrades and equipment maintenance best practices. MCE will develop targeted outreach efforts, trainings, and technical assistance for this group. When possible, MCE will aim to coordinate with industry groups to bring peer groups together at existing events. The focus of these groups will be on sharing best practices around operations, maintenance, and behavioral energy efficiency. Additionally, MCE will work with each group to develop energy management metrics. Bringing similar businesses together will foster a network for sharing best practices and benchmarking. The cohorts could also provide a valuable feedback channel for MCE on its agricultural program offerings.

Energy Efficiency Assistance for Farmworker Housing

There are approximately 500 farmworkers in Marin, many of whom are living in homes that do not meet minimum housing standards.[7] MCE will use relationships with farm owners developed through this program to refer farmworkers to MCE's multifamily program, which can provide resources and referrals to organizations that can help improve the quality of housing.

Financing

MCE will help customers navigate the landscape of financing offerings available and encourage them to participate to the extent that it facilitates energy efficiency upgrades.

Financing will focus on reducing up-front cost and working around seasonal cash flow. Financing is available either through the commercial On-Bill Repayment (OBR) program offered by MCE, the Property Assessed Clean Energy (PACE) financing programs available in the MCE service territory, the California Energy Commission low interest loan program, and/or agricultural specific lending programs such as those offered by the United States Department of Agriculture (USDA). The SPOC will facilitate access to all financing programs depending on which is the best fit for the applicant. The SPOC will provide assistance in completing applications, include information about the energy impacts of the proposed project where appropriate, and provide project management and oversight of the application process to keep the process moving forward.

Implementation Elements

Across the agricultural program offerings, MCE will utilize the following implementation strategies to help customers achieve energy reductions.

Marketing and Outreach

MCE will undertake the following activities to market the program and promote awareness of energy efficiency and resource conservation in its service territory:

- Single Point of Contact (SPOC). The SPOC will manage relationships with customers in the agricultural program. MCE's Customer Relationship Management (CRM) software organizes data for lead generation and follow-up. The SPOC will use this data to engage existing participants in additional energy efficiency opportunities, converting leads into active and completed projects.
- Targeted Outreach. MCE will use energy usage data to conduct outreach campaigns at facilities with high energy consumption. These campaigns will be aligned with trigger points. MCE will also use property specific data, such as assessor records and advanced metering infrastructure (AMI) data, to develop pre-assessment opportunity reports to present to decision makers. This information will be a powerful tool for the SPOC to use in communicating with customers about opportunities and benefits of the program.
- Messaging. MCE will produce data-driven, segment-specific marketing materials to distribute at events, on MCE's website, and via partner channels. MCE's energy efficiency message will also be distributed via print ads, television, and radio channels. There will be a broad social media effort. MCE will develop its own YouTube channel, combining original content with Energy Upgrade California resources and other online videos on energy efficiency and renewable energy. This will enable the community to begin referring to MCE as a resource for energy efficiency information.
- Partner Distribution Channels. Agricultural trade organizations, such as Marin Organics, have an established network of members who may be eligible for the program and who have in-depth knowledge of the needs and barriers of their members. Working with these groups to craft and disseminate marketing messages will be key to reaching potential participants. Additionally, MCE will

[7] Trevor Bach, "Farm Worker Housing: 200 Units Planned," Point Reyes Light, February 23, 2012. http://www.ptreyeslight.com/article/farm-worker-housing-200-units-planned.

develop relationships with contractors that install measures eligible for program rebates and create co-branded marketing materials.

- Recognition Campaigns. The agricultural sector is ahead of most other industries in terms of making use of resource conservation activities to differentiate and distinguish their brand. Local energy efficiency leaders will be given free publicity on the MCE website and may be featured in MCE's Energy Efficiency Demonstration Room. MCE will also work to develop labeling campaigns for customers who have completed projects, such as signage, window stickers, and other public recognition.
- Leverage Existing Certification Programs. MCE will provide support to organizations offering certification and 'green' labeling to promote awareness of energy efficiency and increase demand for green agricultural practices.

Key Partners

MCE will partner closely with other organizations promoting resource conservation, including water districts, waste diversion groups, and groups promoting dairy digesters, solar power, and electric vehicles. MCE will communicate regularly with these entities to ensure that they are armed with the latest program information. MCE will facilitate program participants' applications for rebates with these partner agencies and to the extent possible integrate those applications with the MCE application to streamline the participation process.

MCE will also seek to provide energy efficiency solutions in neighboring regions that may be connected to farms in MCE service territory through the supply chain. One example of this would be milk processors in Sonoma that receive milk shipments from Marin dairies.

The SPOC will coordinate with social service organizations, income assistance programs, farmworker assistance programs, and the MCE multifamily program to ensure that farmworkers living in eligible housing units are given assistance in upgrading their homes and bringing down their electricity costs.

Some of the key partners include:

- Implementation Partners will provide technical assistance, project management, training, quality assistance, and quality control.
- Contractors will install measures and help recruit participants.
- Local Agricultural Associations will help with marketing and outreach, recruit participants, and provide feedback on program design.
- Equipment distributors will help with marketing and outreach.
- Local Certification Bodies (i.e. Napa Green, Marin Green Business Program).
- The USDA provides complimentary programs and is a source for financing and grants which can help cover upfront costs.
- MCE's Low-Income Multifamily Program will offer upgrade assistance for qualified farm worker housing.
- MCE's Existing On-Bill Repayment Programs and PACE program providers will be sources of financing for participants to cover upfront costs.

The table below maps strategies to key partners. It is not intended to be fully comprehensive, but rather, a visual representation.

Table 3. Key Partners

Agricultural Strategies						
Key Partners		Technical Assistance + Comprehensive Rebates	Peer Outreach	EE Assistance for Farmworker Housing	Financing	Marketing + Outreach
	Implementation Partners	X	X	X	X	X
	Contractors	X	X		X	X
	Local Agricultural Associations					X
	Equipment Distributors				X	X
	Local Certification Bodies		X			X
	USDA				X	

Health and Safety

Although MCE cannot offer rebates for any upgrades that are required by Health and Safety regulations, MCE will provide free technical assistance to customers that need to bring their operations up to code, and will use this opportunity to promote the installation of higher efficiency equipment at the time that the property is being updated. In addition, MCE will work with farm inspectors to ensure that they are aware of MCE's technical assistance offering and can promote it to customers that are in need of upgrades. MCE will consider conducting outreach campaigns focused on employee health and safety, such as a pesticide awareness campaign.

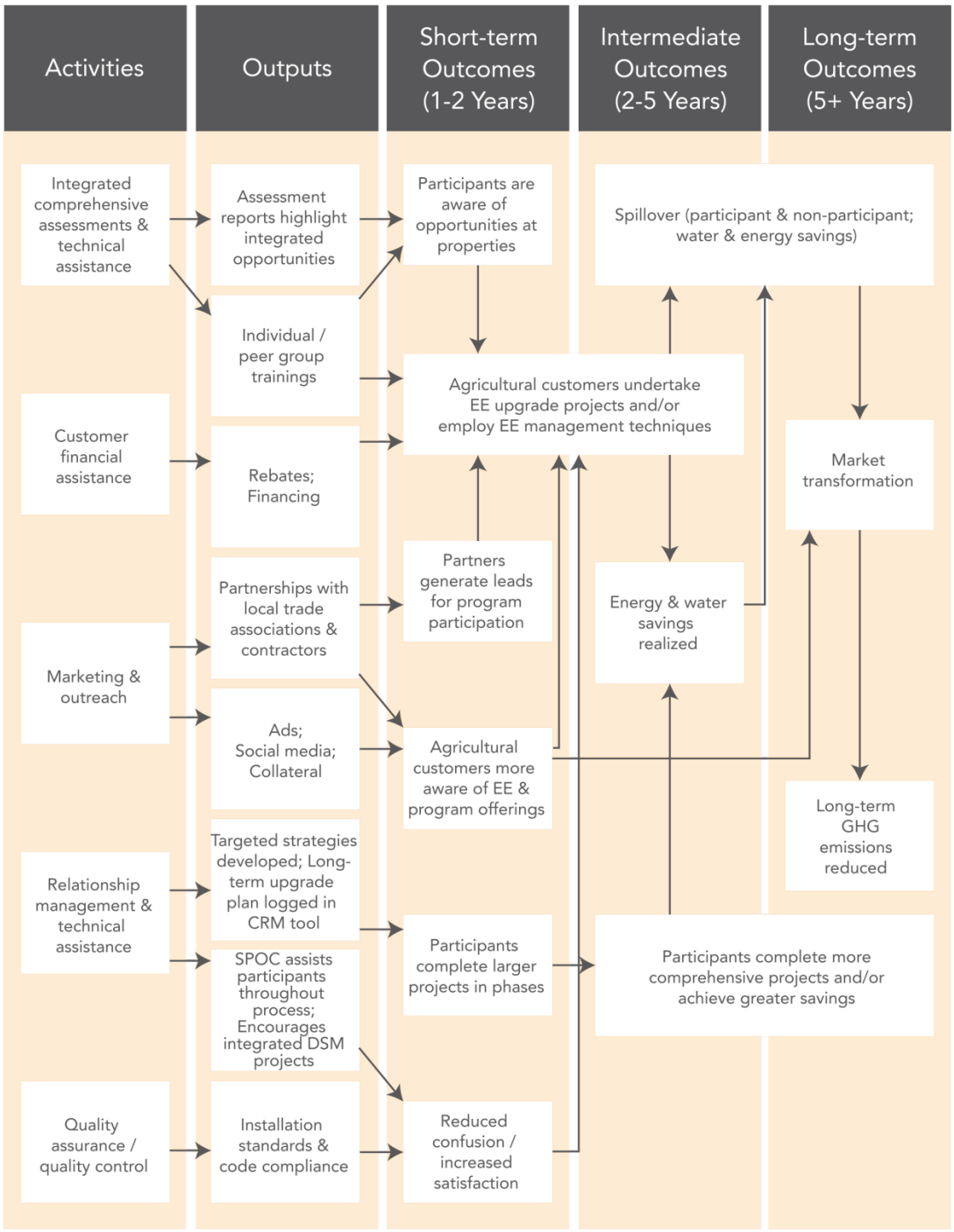
Quality Assurance and Quality Control

The SPOC will offer quality assurance to the program by preventing and/or resolving project management issues as they occur. Our technical assistant will work with contractors to ensure project proposals meet program requirements. All projects will be inspected post-installation to ensure proper equipment installation.

Measuring Success

Logic Model

Figure 1. Logic Model



Performance Metrics

MCE will track the following metrics in addition to energy savings to gauge program success:

1. Number of comprehensive assessment reports delivered
2. Number of contractors providing leads to program
3. Number of participants actively participating in training cohorts
4. Number of participants that access financing through the program
5. Greenhouse Gas (GHG) emission reductions
6. Water savings
7. Number of farmworker housing units referred to the Multifamily Program
8. Increase in awareness of energy efficiency opportunities among agricultural customers in MCE's service territory

Evaluation, Measurement and Verification (EM&V)

To supplement any EM&V activities conducted by the CPUC, MCE will undertake a process evaluation at the end of year two of the peer training and outreach cohort offering. This evaluation will focus on the effectiveness of this strategy in influencing change in the operations and maintenance at agricultural operations and the effectiveness in encouraging members to undertake comprehensive upgrade projects.

In addition, MCE will conduct a cross-program process evaluation of the SPOC offering to assess the degree to which it alleviates customer confusion and encourages repeat participation through project phasing.