

Marin Clean Energy

Single Family Sector Program Implementation Plan



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ACRONYMS

The following acronyms are used throughout the document:

- AMI - Advanced Metering Infrastructure
- BPI - Building Performance Institute
- CAS - Combustion Appliance Safety
- CRM - Customer Relationship Management
- DG - Distributed Generation
- DR - Demand Response
- EE - Energy efficiency
- EM &V - Evaluation, Measurement and Verification
- EUC - Energy Update California
- EVs - Electric Vehicles
- HOA - Home Owners Associations
- HUR - Home Utility Report
- HVAC - Heating, Ventilation and Air Conditioning
- IDSM - Integrated Demand Side Management
- PACE - Property Assessed Clean Energy
- QA - Quality Assurance
- QC - Quality Control
- SPOC - Single Point of Contact
- TRC - Total Resource Cost
- ZNE - Zero Net Energy

Implementation Plan: Single Family

Introduction

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

For three years MCE has been running a web based behavioral program, which combines traditional home utility report mailers with online web tools to encourage customers to develop an Action Plan for their home. MCE also had an on-bill repayment program for single family customers, a program offered in partnership with a local financial institution.

MCE seeks to expand these offerings to include a more comprehensive suite of services, including technical assistance, rebates and incentives, advanced web-based tools and software, plus behavioral campaigns and competitions. Additionally, zero net energy design services and comprehensive home upgrades will be offered to interested residential customers.

A core tenet of the program is delivering a seamless platform for integrating opportunities across energy efficiency (EE), demand response (DR), distributed generation (DG), renewables, electric vehicles (EVs), and water efficiency. Collectively, these opportunities are called integrated demand side management (IDSM). The single family program will maximize customer and program benefits by offering a flexible yet structured approach to IDSM. The full-service approach will provide technical assistance, rebates, financing, assistance finding contractors, quality assurance, and project management. MCE is committed to providing excellent customer service and satisfaction through dedicated staff resources and tools.

Market Characterization

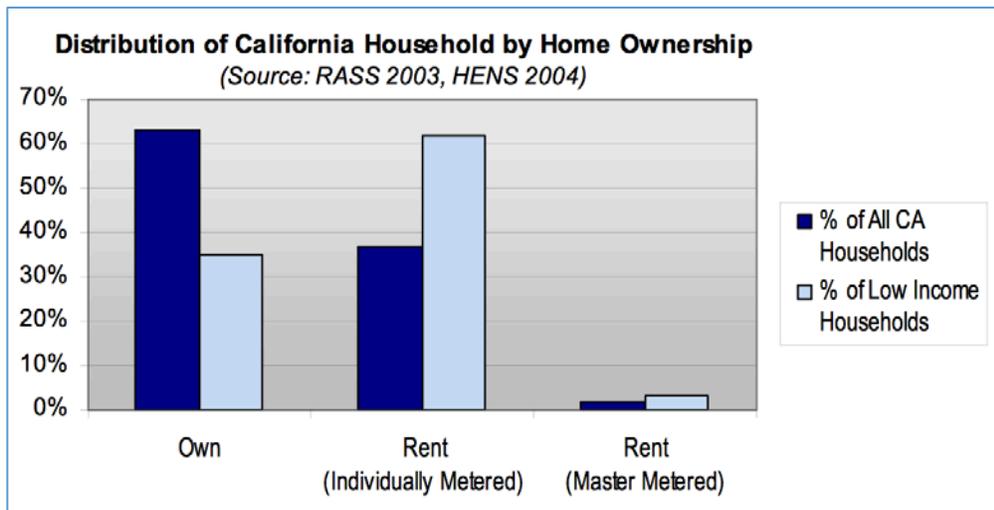
MCE has analyzed energy consumption, building data, barriers, triggers, key market actors, and energy efficiency adoption to better understand the opportunities that exist within the single family sector.

Energy Consumption

Statewide, approximately 60 percent of households own their homes, with the remaining approximately 40 percent renting. However, the percentages essentially flip flop for low-income households, where approximately 60 percent rent and 40 percent own. MCE's single family program is structured to assist both renters and owners.

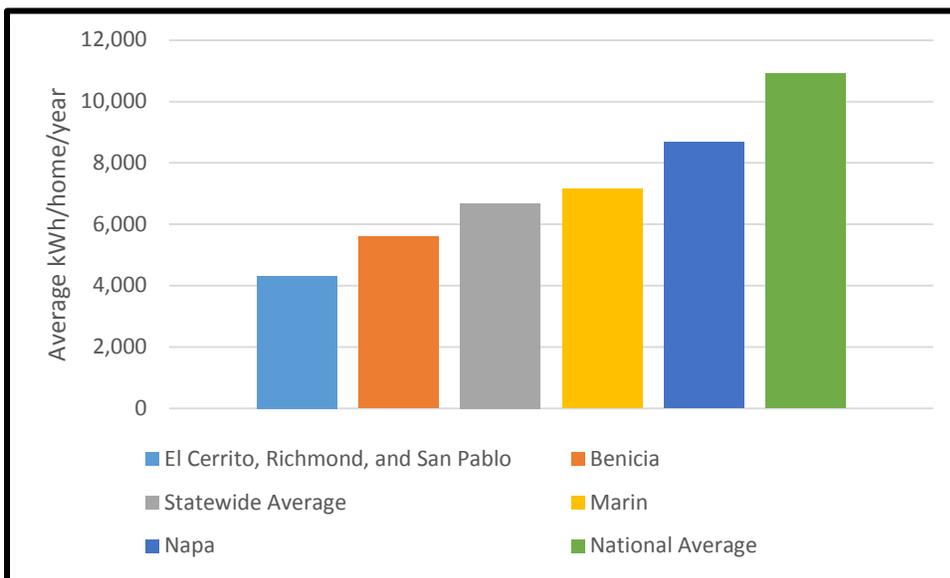
Single family homes represent 80% of MCE's customer accounts and about half of overall energy usage in MCE's service territory. There is significant variety in the single family sector, and developing a program to serve this sector requires having a solid understanding of how energy is used in our service territory.

Figure 1. Distribution of California Households by Ownership Structure.¹



Across MCE’s service territory, there are substantial differences in electricity consumption per home per year. Socio-economic, dwelling, and appliance factors contribute to these differences².

Figure 2. Average electricity consumption across MCE service territory

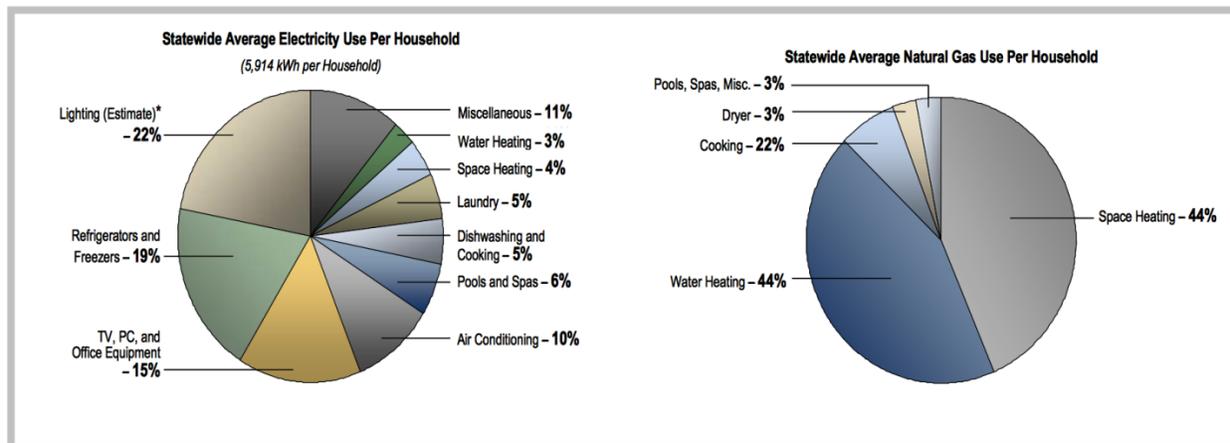


Statewide, lighting represents the largest share of residential electricity end-use, followed by refrigerators and freezers, then plug loads. For residential natural gas end-use, space and water heating are the largest consumers, followed by cooking.

¹ California Public Utilities Commission, *California Long Term Energy Efficiency Strategic Plan*, September 2008. Available at <http://www.cpuc.ca.gov/NR/rdonlyres/D4321448-208C-48F9-9F62-1BBB14A8D717/0/EEStrategicPlan.pdf>. Accessed July 17, 2015

² Rory V. Jones, Alba Fuertes, Kevin J. Lomas, *The socio-economic, dwell and appliance related factors affecting electricity consumption in domestic buildings*, *Renewable and Sustainable Energy Reviews*, Volume 43, March 2015. Available at <http://www.sciencedirect.com/science/article/pii/S1364032114010235>. Accessed July 17, 2015.

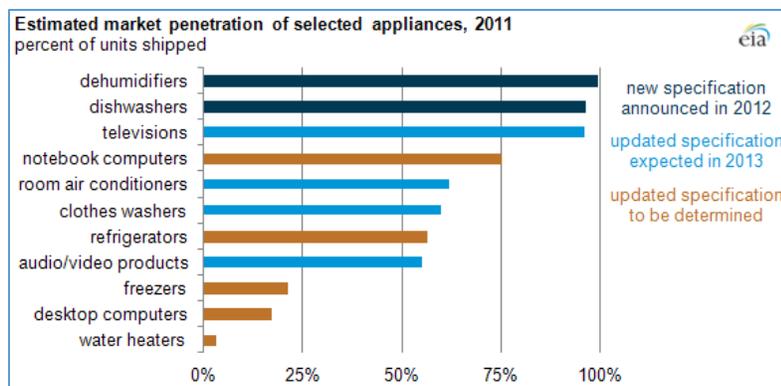
Figure 3. Electricity and Natural Gas Usage by End Use (Statewide³)



In single family homes many small decisions, such as buying a television, impact electricity usage. Fewer bigger decisions, such as changing a water heater, impact gas usage.

Plug loads are the most difficult end use to control, as there is significant variety among the types of devices that can be plugged into the wall. The United States Environmental Protection Agency (US EPA) labels certain efficient appliances with the Energy Star brand to help consumers navigate purchasing choices. Figure 4 shows adoption rates for selected Energy Star rated appliances. There is large remaining potential in appliances like computers, air conditioners, clothing washers, and refrigerators, to name a few. The California Energy Commission controls appliance energy use through Title 20 regulations, but can only target so many technologies.⁴ This data indicates that strategies focusing on controlling end use, for example with automation or information, will be key to managing this fast growing source of consumption.

Figure 4. Estimated Market Penetration of Selected Energy Star Appliances⁵



³ California Public Utilities Commission, *California Long Term Energy Efficiency Strategic Plan*, September 2008. Available at <http://www.cpuc.ca.gov/NR/rdonlyres/D4321448-208C-48F9-9F62-1BBB14A8D717/0/EEStrategicPlan.pdf>. Accessed July 17, 2015.

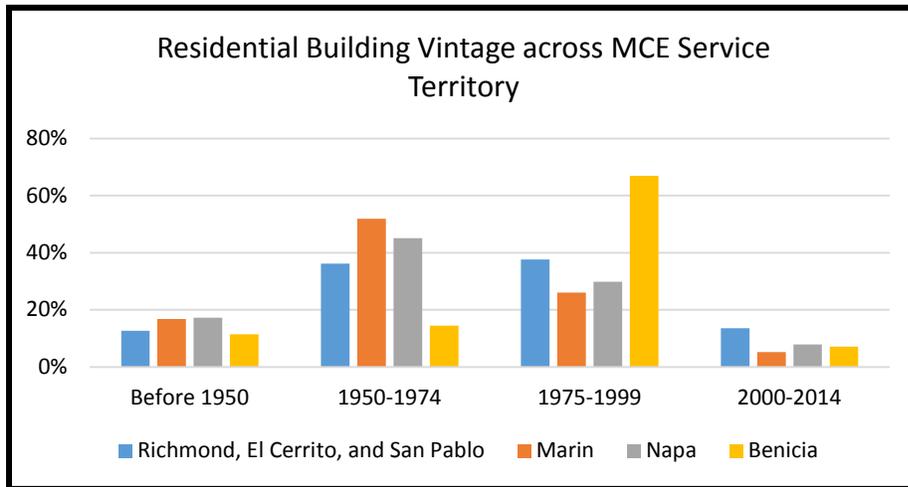
⁴ California Code of Regulations, Title 20. Public Utilities and Energy.

⁵ Energy Information Administration. Adoption of Energy Star Equipment. Accessed July 3, 2015.

Building Data

The vast majority of the residential building stock in MCE's service area was built between 1950 and 2000, with approximately 50% of the buildings being built between 1950 and 1975. The exception is in Benicia where the majority of residential buildings were built between 1975 and 1999. Title 24 was established in 1978 by the California Energy Commission and set regulations regarding energy conservation standards for new residential and new non-residential buildings.⁶ The pre-1978 building stock was not built with these set conservation standards. Older single family buildings present both an opportunity in that there is likely room for improvement but also a challenge as there will be costs associated with bringing those buildings up to code.

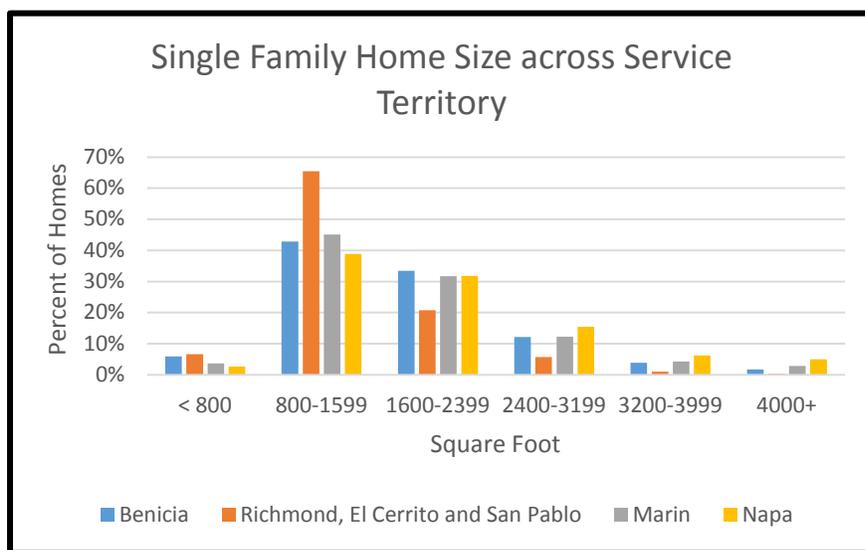
Figure 5. Residential Building Vintage in MCE Service Territory



The majority of single family homes are between 800 and 1,600 square feet, as illustrated by Figure 6. In fact, 65% of homes in Richmond, El Cerrito and San Pablo fall within that range. Meanwhile, in Benicia, Marin, and Napa, over 50% of homes are more than 1,600 square feet. This data provides some insight into demographics that can be useful when tailoring strategies to target residential consumers across MCE's diverse service territory. For example, larger homes will likely be good opportunities for improvements in space conditioning and building envelope relative to smaller homes.

⁶ California Energy Commission. Conservation Division. *Regulations Establishing Energy Conservation Standards for New Residential and New Nonresidential Buildings*. July 26, 1978. Available at http://www.energy.ca.gov/title24/standards_archive/1978_standards/CEC-400-1978-001.PDF, accessed July 15, 2015.

Figure 6. Single Family Home Size across MCE Service Territory



Barriers

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

- **Financial Constraints.** Customers may not have sufficient funds to cover the costs of upgrades, or may be uncertain as to the length of their tenure in a home. Customers may not be aware of financing options to overcome first cost barriers. Some customers may not qualify for traditional financing tools.
- **Split Incentive Issue.** In renter-occupied homes, it can be challenging to encourage energy efficiency upgrades when the tenant pays for electricity, but does not own the home.
- **Contractor Limitations.** There are a limited number of contractors with technical knowledge of integrated and comprehensive demand-side management. Additionally, there is a scarcity of contractors that also have the business, sales, and project management skills needed to convert lead generations and complete projects. Additionally, there is the perception among some contractors that rebate programs are time and labor intensive. This poses a significant barrier, as contractors prefer to reduce their pricing instead of referring projects to existing rebate programs.
- **Baseline Challenge.** Since the Title 24 code baseline has increased considerably, the opportunities to bring existing buildings above the baseline is expensive. Furthermore, available incentives are dwindling.
- **Visibility of Improvements.** Energy efficiency improvements are not as visible as other clean energy strategies, such as rooftop solar panels. As a result, efficiency improvements may not increase property values in the way that other clean energy strategies do.
- **Lack of Awareness.** Customers may not realize the potential benefits of energy efficiency upgrades in general and the benefits of MCE’s program in particular, and may be concerned by the uncertainty in achievable savings. Customers may be overwhelmed by the many energy and water programs available.

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

Triggers

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

- **Appliances and Equipment Failure.** Convincing customers to upgrade to more expensive but highly efficient equipment can be challenging to do until the equipment is at or near failure, especially for capital-intensive and long-lived equipment. Proactively educating contractors and customers about rebates and incentives and making programs easy to access can help ensure customers are informed and ready to replace equipment with more efficient alternatives.
- **Change in Law or Regulation.** MCE will use upcoming or anticipated changes in codes, standards, and regulations as a trigger point to motivate single family customers to act on resource conservation.
- **Resident and Owner Turnover.** Periods of change, such as a turnover in renters, or owners of a home, present an opportunity to perform home retrofits with minimal disruption.

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 single family sector. It is important that MCE understand the role that each entity plays and how this can affect efforts to promote energy efficiency:

- **Local Governments.** Local governments set local building and zoning laws, issue permits, and provide information to local residents and property owners. Local governments have a pre-existing relationship with their constituents and are attuned to the community's opportunities, needs, and challenges. MCE will partner with local governments to conduct outreach to support implementation of its single family program.
- **Property Owners and Renters/Home Owners Associations (HOA).** Property owners are the primary decision makers and funders of expenditures on home improvements, such as energy efficiency improvements. MCE must engage them in order to accomplish projects and will benefit from building lasting relationships.
- **Contractors/Builders/Designers/Architects/Engineers.** Contractors, builders, designers, and architects are key influencers of home owners and make referrals to energy efficiency programs. These key players often hold significant delegated authority regarding the energy efficiency and capital improvements to properties. MCE will provide targeted training opportunities to these players to create a shift in the building industry to better incorporate energy efficient decision making. They will also be integral to driving participants to the program.
- **Retail Stores/Equipment Manufacturers.** Manufacturers and retail stores can use stocking and display practices to influence consumers' purchasing decisions. MCE will work with vendors to optimize these practices for greater adoption of energy efficient equipment.

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 implementing single family program strategies, MCE evaluated current adoption and penetration of energy efficiency programs to identify opportunities and determine market gaps.

55 percent of residential buildings were constructed before the state's landmark building standards were established.⁷ This indicates that there are many opportunities for improving efficiency. Furthermore, there is the market demand for efficiency. According to the National Association of Realtors, 46 percent of new homebuyers cite energy efficiency as a primary consideration in their purchasing decisions.⁸ Existing programs fall into four categories: (1) rebate and technical assistance programs; (2) direct install programs; (3) financing programs; and (4) behavioral programs.

Rebate and Technical Assistance Programs

Some existing single family residential programs largely focus on providing direct options for consumers. Customers are given a choice between light touch rebate offerings redeemed through mail-in receipts, or are invited to participate in more comprehensive measures through the Home Upgrade program. Some programs provide indirect or "upstream" rebates directly to the manufacturer so the product is competitively priced in stores.

One of the largest residential energy efficiency efforts in California is Energy Upgrade California (EUC). Within Marin (not the full MCE service territory), over 230 homes participated in the Home Upgrade program (over 70 basic and over 160 advanced projects) between 2013 and 2015. EUC provided numerous customer touch points and opened the door for future engagement.

Another large residential energy efficiency effort is the California Statewide Residential Energy Efficiency Program, which offers rebates and incentives for a wide range of appliances and whole house programs to single family residents (EUC is included as a component of the overarching program). PG&E reported the following 2013-2014 program savings: 149,983 MWh for Energy Advisor Program, 29,700 MWh for Energy Upgrade California, 7,233 MWh for new construction, and 7,233 MWh for California Advanced Homes program. These numbers represent savings recently achieved, which therefore reduce the available energy efficiency opportunities in those homes. It's important to note that the data is across all of PG&E's service territory, so is more insightful on relative savings potential than remaining savings opportunities within MCE territory.⁹

Direct Install Programs

Rising Sun currently offers direct install services for single family residences in MCE territory. Rising Sun, which provides youth training and basic home upgrades, reached around 5,000 Marin homes between 2006 and 2014. The program can serve as a gateway to greater home energy upgrades.

Financing Programs

Financing can allow homeowners to mitigate the first cost barrier, or the need for significant amounts of capital availability at the beginning of a project, by spreading the cost over time. MCE has one outstanding single-family homeowner participating in its previous on-bill repayment program. MCE is refocusing its efforts to facilitate access to Property Assessed Clean Energy (PACE) financing programs. Additionally the CPUC has directed the investor owned utilities to launch financing pilots which are expected to be available to customers beginning in 2015.

During the 2013-2015 program cycle, the California FIRST PACE program was authorized in most of MCE's service territory. Participation data for Marin shows that there have been 183 residential PACE applications received by the California FIRST program, with 58 projects funded and/or under construction

⁷ California Energy Commission. *Draft Action Plan for the Comprehensive Energy Efficiency Program for existing Buildings*. Page 1. Available at <http://www.energy.ca.gov/2013publications/CEC-400-2013-006/CEC-400-2013-006-D.pdf>, accessed July 2, 2015.

⁸ National Association of Realtors. "Selling Green" Pocket Card. Available at <https://store.realtor.org/product/brochure/selling-green-pocket-card>, accessed July 3, 2015.

⁹ California Public Utilities Commission. *Statewide Residential Programs 2013-2014*. Available at <http://www.cpuc.ca.gov/NR/rdonlyres/3DE5A49C-9E9C-4945-AD78-161338282638/0/201314ResidentialFactSheet.pdf>, accessed July 2, 2015.

(as of Q2 2015).¹⁰ There are now five PACE providers authorized in jurisdictions within Marin, where MCE is serving as a lead generator, liaison and impartial advisor in the Open PACE marketplace in Marin. MCE is also tracking and supporting the spread of PACE to other jurisdictions within its service territory.

Behavioral Programs

Behavioral programs are offering an increasingly untapped area of energy conservation activities. Energy reports which provide an overview of a home's energy usage relative to that of a neighbor's have been proven effective at decreasing consumption as much as 1.8%.¹¹ Emerging devices that communicate a home's energy usage to a web-based dashboard have increased the ability for homeowners to understand and control their energy usage. Pilots have been explored in this area with increasing frequency throughout the past few years in California.

MCE has a single family program that combines energy reports with a sophisticated web-based tool to inspire customers to take action to reduce energy use. Customers can search for contractors, rebates, and financing through MCE's MyEnergyTool. MCE has also explored residential demand response (DR) programs, leveraging existing web technology to streamline access to DR programs. MCE seeks to integrate and expand on these offerings in 2016 and beyond.

MCE's single family program has delivered Home Utility Reports, which present customers with how their energy usage compares to that of their neighbors, to more than 12,500 customers in the MCE service territory. These reports are supplemented with an existing web tool designed to motivate customers to take action and connect them with resources and more information. To date, 2,325 users have registered on the site and over 1,600 have developed Action Plans to save energy.

MCE supplemented its web tool with a schools program in 2013 and 2014, designed to educate youth about energy conservation, using the web tool as supporting material. MCE, in partnership with Strategic Energy Innovations and Planet Ecosystems, Inc., was able to reach 2,025 students through this campaign.

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

¹⁰ CaliforniaFIRST Activity Summary. July Q2 Report, Marin. Received via email from Jonathan Kevles at Renew Financial.

¹¹ Program savings estimates are unverified net savings estimates based on early billing analysis results. These estimates are in alignment with EM&V findings from similar programs across the country, such as the following DNV-GL, KEMA, Opinion Dynamics, and SMUD reports:

- DNV-GL. *Home Electricity Report Program 2013 Impact Evaluation*. Prepared for Seattle City Light. July, 2014.
- KEMA, Inc. *SDG&E Home Energy Reports Program*. August 23, 2013.
- Opinion Dynamics, Navigant Consulting and Evergreen Economics. *Massachusetts Cross-Cutting Behavioral Program Evaluation Integrated Report*. Prepared for Massachusetts Energy Efficiency Advisory Council & Behavioral Research Team. June 2013.
- Sacramento Municipal Utility District. *Home Evaluation Program: Impact and Persistence Evaluation Report*. Available at <http://www1.integralanalytics.com/files/documents/related-documents/FinalSMUDHERSEval2012v4.pdf>, accessed August 4, 2015.

Budget

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

Table 1. Budget Summary

BUDGET CATEGORY	Year 1	Year 2	Year 3	Year 4
Administrative	\$ 117,204	\$ 169,868	\$ 186,638	\$ 186,638
Marketing	\$ 165,785	\$ 135,785	\$ 135,785	\$ 135,785
Direct Implementation	\$ 641,903	\$ 804,534	\$ 883,271	\$ 883,271
Incentives	\$ 289,131	\$ 608,787	\$ 602,376	\$ 747,638
Evaluation, Measurement and Verification (EM&V)	\$ 46,984	\$ 68,050	\$ 74,758	\$ 74,758
TOTAL	\$ 1,261,007	\$ 1,787,024	\$ 1,882,828	\$ 2,028,090

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
TRC	0.98		1.77	
Budget	\$1,261,007	\$1,787,024	\$1,882,828	\$2,028,090
Estimated Savings	492,451 kWh 39,177 therms	946,222 kWh 94,796 therms	1,235,809 kWh 134,150 therms	1,464,787 kWh 166,734 therms

Single Family Program

MCE's single family home program is designed to provide a positive customer experience and drive market transformation. Program strategies are integrated and delivered in a seamless fashion by a single point of contact (SPOC), who will serve as a facilitator and customer advocate. Non-energy benefits are an important component of each of the strategies. For example, MCE recognizes the importance of emphasizing benefits like aesthetics, reduced energy costs, and greater comfort.

Emerging technology platforms provide customers with a level of information and control related to their energy usage. For program administrators, these tools can also allow for a more powerful interaction with the customer. MCE will pair sophisticated customer relationship management software with home dashboard and data analytics platforms. This will help MCE provide targeted outreach according to demographics and energy savings opportunities and open the door to integration between demand side resources.

MCE proposes to offer the following four program strategies during the next program cycle: (1) rebate and technical assistance strategy; (2) direct install strategy; (3) financing strategy; and (4) behavioral strategy. To help ensure a successful outcome, MCE proposes a phased rollout, focusing first on building up existing programs and high-potential strategies.¹²

¹² High-potential strategies include those for which there is more energy savings opportunity in the MCE service territory. For example, there is less new construction overall in MCE's service territory, and hence retrofit programs will be emphasized before new construction.

Rebate and Technical Assistance

MCE plans to offer rebates and financial assistance to single family customers in its service territory. As single-family customer accounts make up 88% of total MCE accounts (and about 50% of total consumption), this is an area where MCE plans to offer robust services. The MCE single-family program strategy involves offering solutions for the widest range of customers possible. For those customers ready to perform significant home upgrades, MCE proposes to partner with existing providers for the Home Upgrade program. For customers who are not yet prepared to do either the Home Upgrade or the Advanced Home Upgrade program, MCE is offering a more streamlined single measure rebate program. Zero Net Energy design assistance and incentive kickers will also be offered. Financing will be offered to program participants. MCE plans to support these programs with accessible and engaging outreach and educational tools available on the web and at its physical storefront.

Advanced and Basic Home Upgrade Program

MCE proposes to partner with existing program administrators (BayREN for Basic Home Upgrade; Build It Green for Advanced Home Upgrade) to provide advanced and basic comprehensive home upgrade rebates and technical assistance. MCE proposes the development of a structure for shared attribution to account for its marketing, outreach, or financing efforts that may contribute to greater participation.

Single Measure Rebates

Not every residential customer is able or willing to consider a comprehensive upgrade to his or her property. However, providing meaningful rebate solutions for whatever project the applicant may be considering will help to ensure a positive customer experience. Additionally, customer touches allow MCE to establish a relationship with a customer, which can grow and build over time. MCE anticipates that, as customers have good experiences and have their needs met through the MCE program, they will be more willing to consider further upgrades down the road, for example as their HVAC equipment nears replacement. This offering may be valuable for tenants who do not have access or decision-making control over building envelope related measures but still seek to save money on bills.

MCE will offer a suite of one-off rebates for measures including lighting, HVAC, insulation, and efficient appliances. There will be higher rebates for measures that offer benefits across multiple resources (water-energy, for example). MCE's goal is to provide a positive experience for customers who have specific and discrete needs, and to use this entry point to establish an on-going relationship with the customer. For building envelope measures or HVAC replacement measures the MCE SPOC will first make an attempt to up sell the customer on the Basic Home Upgrade strategy.

This strategy will be integrated with the MCE web tool. The MCE web tool contains an existing Equipment Marketplace where customers can review different appliances and can even purchase these appliances online. For those products for which MCE offers a rebate, the customer will be informed of available rebates and will be offered assistance on how to take advantage of them.

Zero Net Energy (ZNE)

The California Public Utilities Commission and the California Energy Commission have reinforced a commitment to increased development of ZNE buildings in California. For the purposes of this program offering, MCE defines a ZNE building as one that annually produces at least as much energy on site as it consumes. To achieve statewide carbon mitigation goals, ZNE buildings will be crucial, and deep retrofits for existing buildings will be necessary, while significant design and technical assistance will be required for new construction.

MCE's approach to ZNE buildings will be two fold. Design assistance will be offered to local area architects and contractors to assist in integration of ZNE strategies at the onset of the project. MCE has the benefit of a great deal of local interest and capacity in the ZNE building realm, and MCE will partner with local organizations to offer technical and design assistance for ZNE retrofits. MCE will also work with these organizations to develop a skilled workforce and advocate for codes and standards that facilitate the implementation of projects. The SPOC will also have a very strong role to play in ZNE projects, as these projects are by definition integrated. The SPOC will facilitate application to multiple funding

streams to access renewable energy incentives, EV incentives, and to encourage ZNE projects to also incorporate water and energy saving measures as well.

For ZNE retrofit projects, MCE will offer additional incentives to customers that want to achieve ZNE and already undertaking home upgrade projects. Incentives will be provided on the basis of percent improvement over the modeled baseline of the home upgrade project. This will be an add-on to the existing Advanced Home Upgrade program. Projects will still be required to complete a pre and post installation verification, and will be subject to the same QA/QC procedures outlined for that program, including demonstration of successful permitting. In addition, contractors may be required to agree to specific installation standards for emerging technologies.

ZNE for new construction will primarily involve front-end work with building professionals to ensure the ZNE strategies are integrated at the earliest possible stage of the project. As stated above, MCE will work with local organizations to offer technical and design assistance in accomplishing these projects. Incentives will be offered on an above code basis. Contractors will be required to demonstrate compliance with codes and standards, and may be required to agree to minimum installation standards for specific emerging technologies to ensure proper installation.

Door to Door Residential Direct Installation Program

MCE proposes to build off of the successful door to door residential direct installation campaigns. Emphasizing youth vocational services and providing free installation and education for residential households provides a win-win situation. This activity will be co-funded between marketing and outreach as well as direct implementation, but will be used primarily as a lead generation strategy to expose residential households to energy conservation and encourage them to implement more energy savings measures over time.

Behavioral Strategy

Behavioral savings are an increasingly important component of energy efficiency programs. Some customers need an initial introduction to energy savings concepts before they are willing to consider investing money in performing energy upgrades. There are also certain energy end uses that are more difficult to control through traditional rebate programs, such as plug loads. MCE seeks to expand its existing behavioral program offerings in 2016 and beyond.

Schools Program

MCE has found that working with local schools is an important strategy for educating youth and parents alike about the value and benefits of energy and water conservation. MCE will continue to work with local schools to deliver curriculum based on energy savings. MCE will continue to provide in-class instruction, take home assignments, and school assemblies in order to raise energy awareness, encourage families to perform online energy assessments, and create energy actions plans. MCE will also seek to leverage its existing web tool to provide a platform for competitions between schools and/or classrooms around energy savings accomplishments.

Home Information and Automation Program

The information and automation strategy aims to empower customers with a deeper understanding of their energy consumption and habits, and provide tools that enable energy savings at a level of engagement that matches the customer's style.

The logic behind MCE's information strategy is that knowledge is power, and people are motivated by their peers. Meanwhile, home automation provides a promising way to integrate with other demand side management resources, and possibly provides avenues for limiting plug load energy use. Providing insights into energy consumption and benchmarking peers against one-another (via web-based tools and home utility reports) is enough to motivate many consumers to take action. By employing innovative social norming and marketing tactics that help people emotionally connect to energy savings and home performance, MCE anticipates reaching an even greater number of customers with its energy efficiency message. Connecting all of these tools to automate energy efficiency actions in an engaging platform

takes the customer experience and savings opportunities to another level by reducing the need for individual customer interventions over time.

The strategy will offer multiple avenues for educating residential single family customers on how they use energy in their homes and ways they can save. The program will continue to offer our current Home Utility Report (HUR) mailers and energy web tool offerings while looking for ways to expand into Home Automation Tools and home dashboard technologies.

MCE's Home Utility Report (HUR) mailers will be sent to a targeted group of MCE customers in the higher usage tiers. While these mailers alone have been shown to achieve on average approximately 2% energy savings,¹³ MCE will also use the mailers to drive customers to the web tool where they can find additional resources to help and motivate them to save energy in their homes. These tools include a searchable contractor database, information on financing, and an online equipment marketplace to compare and purchase efficient appliances.

The web tool will use publicly available housing data, energy usage information, and any customer-provided data to develop a set of customized energy saving actions. The web tool will also guide users to resources (e.g., rebates, contractors, financing) that can help them take the recommended actions. MCE will expand upon its current offerings to provide customers with a dashboard to track project progress and participation in other demand management programs (e.g., automated demand response using remotely controllable smart thermostats and load control devices).

Where possible, MCE will explore options for integrating the web tool into home displays, mobile phones, and home automation tools.

Community Engagement and Gamification

MCE will work closely with community groups and local schools to recruit volunteers for geographically targeted campaigns encouraging families to implement energy saving actions and compete for rewards. This program will use the web tool and utility records to track the progress of groups. Participants will receive HUR-like newsletters on their progress and competitive standing throughout the campaign. MCE will also work with climate action related local groups to keep members engaged throughout the competition. Participants will compete for free energy efficient equipment. Middle and high-school students from participating households will be eligible to participate in a photo and essay contest about their experiences with energy efficiency. The winning entries will be put on display in MCE's Energy Efficiency Demonstration Room and the winning students will receive scholarships. All participating families will be required to create Action Plans in order to register for the program.

This platform may also enable group purchasing for the residential sector. Through these campaigns, participating households that would like to pool resources to contribute to a single measure, for example home upgrades, may be able to combine purchasing power and receive better costs. MCE will facilitate this aggregated purchasing on behalf of interested community groups.

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.

MCE's web tool offers important resources for homeowners and program participants considering financing. The web tool allows those who have completed an Action Plan, a plan identifying water and energy saving strategies that are unique and specific to the home, to compare which financing products might be available to support the measures in the Action Plan. A matrix table offers side-by-side comparisons of the different lending products, and links to online applications or websites for more

information. As other statewide financing tools roll out, MCE will work to provide information on these tools.

Property Assessed Clean Energy (PACE)

PACE is a tool where property owners can voluntarily opt into a tax assessment, which is then tied to the property. Advantages of PACE include transferability with the property, helping to mitigate concerns over payback period and average tenancy in a residential building, and the fact that it is paid on property taxes. PACE financing also enables investment in renewable energy and water savings improvements, and in some cases can be a source of financing for new construction projects.¹⁴

Currently MCE is working with the County of Marin to establish an Open Market PACE model where any provider who can agree to a minimum set of best practices would be eligible to operate in Marin. MCE will seek to work with other parts of its service territory to expand this approach to PACE. MCE maintains a financing marketplace web portal where information about all available financing products is presented to the customer. Additionally, SPOCs will refer customers directly to PACE providers.

Implementation Elements

Across the single family program offerings, MCE will utilize these 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 single family 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 properties 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 in their home 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 enables the community to begin associating MCE as a resource for energy efficiency information.
- **Recognition Campaigns.** MCE will host award ceremonies conducted by an emcee or local luminary to recognize customers with the greatest energy savings and contractors who provide the most customer leads or complete the greatest number of projects. These 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 lawn signs, window stickers, and other public recognition.

¹⁴ Some PACE providers utilize SB 555 (2012) as the enabling legislation; this follows the Mello-Roos style assessment (rather than the Streets and Highways Code assessment enabled under AB 811 [2008]), which can be used for new construction.

- **Energy Efficiency Demonstration Space.** MCE will develop a room in its existing facility into a demonstration space where members of the public can learn about resource conservation options. This room will combine rotating interpretive displays on energy efficiency and resource conservation, with a meeting space that can be used by local groups for regular meetings and fundraising events. MCE will work with student groups to develop displays for this space.

Key Partners

MCE will partner closely with other organizations promoting resource conservation, including water districts, climate coalitions, renewable and distributed generation companies and installers, and electric vehicle companies. 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 supports innovative partnerships (such as neighborhood-based or peer-to-peer learning approaches), using the Department of Energy’s “Tool Kit Framework: Small Town Energy Program”¹⁵. This guide highlights models of successful community engagement and serves as a reference manual for parties running community-based energy programs.

MCE will adjust its partnership strategy throughout the program cycle based on key performance indicators, and customer needs and drivers. MCE constantly seeks new partnership opportunities to help achieve its end goal of deeper energy and greenhouse gas savings.

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

Single Family Strategy							
		Information and Automation	Community Engagement	Energy Upgrades	Zero Net Energy	Basic Rebates	Financing
Key Partners	Contractors (HVAC, lighting, etc.)			X	X	X	X
	Community Groups	X		X		X	
	City and County Organizations	X		X	X	X	X
	Business Partners (implementers, software and web tool providers, etc.)	X		X	X	X	X
	Schools			X			

¹⁵ Department of Energy. Tool Kit Framework: Small Town Energy Program. Available at <http://energy.gov/eere/better-buildings-neighborhood-program/tool-kit-framework-small-town-energy-program-step>. Accessed August 5, 2015.

Health and Safety

MCE will not offer rebates for any upgrades that are required by federal, state, or local regulations. MCE will consider incorporating health and safety messaging in program outreach and marketing efforts. For example, MCE may work with contractors to encourage the inclusion of gas and refrigerant leak detection in the assessment (“health audits”), or to deliver informational pamphlets.

Quality Assurance and Quality Control

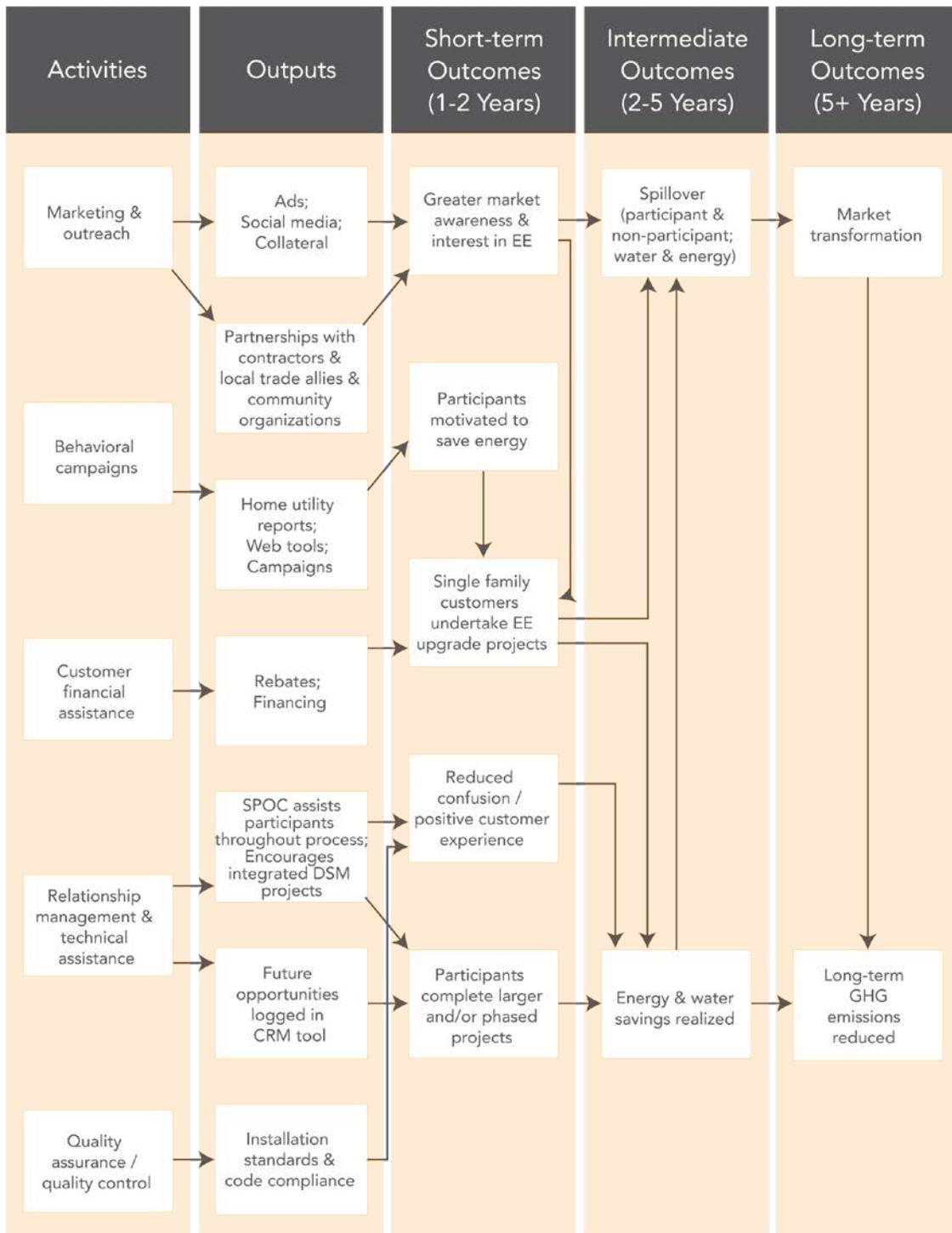
Advanced and Basic Home Upgrade Program. MCE does not propose changes to the existing Quality Assurance (QA) and Quality Control (QC) policies of the Home Upgrade program, which relies on Building Performance Institute (BPI) certified contractors to perform building diagnostic testing and complete the work.

Single Measure Rebates. For most single measure rebates, such as appliances, lighting, and refrigeration, a mailed or scanned receipt with a signed rebate application will be sufficient documentation. If building envelope measures such as windows and insulation are a component of the project, then combustion appliance safety (CAS) testing will be required. Additionally, the program will require proof of permits for single measure projects for which permits are required by law, for example furnace and water heater replacements. Rebates will not be available for measures for which there is an existing upstream rebate; MCE will post the list of eligible measures on the website to avoid confusion.

Measuring Success

Logic Model

Figure 7. Logic Model



Performance Metrics

MCE takes an adaptive management approach to continuously evaluate program performance. To enable an interactive approach, MCE has a process for gathering information: Advanced Metering Infrastructure (AMI) data, customer feedback, participation surveys, and other sources. This feedback loop enables MCE to make improvements throughout the program cycle. For the residential sector, the following performance metrics will be tracked:

1. **Participation Metrics.** Number of customers participating in each strategy. Number of hard-to-reach customers. Number of repeat participants. Number of projects provided with technical assistance. Number of projects completed with more than one demand side strategy.
2. **Savings Metrics.** Total net and gross energy and demand savings and greenhouse gas savings. MCE plans to employ a mix of deemed, widget based methodologies as well as custom and performance based methodologies.
3. **Measure-level Information.** Total number of installed measures.
4. **Incentive Metrics.** Total dollar value allocated. Largest rebate amount.
5. **Customer Satisfaction.** Number of repeat participants. Number of referrals. Customer satisfaction as reported by customers.
6. **MCE Brand Awareness.** Number of customers in MCE service territory that are aware of MCE's energy efficiency programs.

Program Specific Metrics:

1. **Home Information and Automation Program.** Number of Action Plans created. Number of HUR recipients who create Action Plans. Customer satisfaction/positive feedback on web tool. Number of projects initiated through web tool.
2. **Community Engagement and Gamification.** Number of participants. Number of events held throughout the competition, and number of attendees. Increased participation in MCE's Residential EE offerings.
3. **Home Upgrade Program.** Increase in participation of whole home upgrades. Number of HVAC replacement projects in the program. Contractors trained in CAS testing and natural gas leak detection. Projects completed with one or more other demand side strategies integrated.
4. **Zero Net Energy (ZNE).** Number of ZNE retrofits completed. Number of ZNE new construction projects completed.
5. **PACE Financing.** Number of referrals. Number of completed projects.
6. **Single Measure Rebates.** Number of online rebate applications. Number of applicants 'up-sold' to the comprehensive program.
7. **Schools Program.** Number of students provided with in-class curriculum. Numbers of students reached through assembly presentations.

Evaluation, Measurement and Verification (EM&V)

MCE will gather data on participation metrics, savings, and measure information as a standard business practice. Depending on resources and expertise, MCE will either conduct or hire an outside firm to complete a study on the market transformation indicators mentioned above.

Additionally, MCE will gather customer satisfaction and referral metrics as standard business practice – either on project forms, or via customer survey submitted shortly after project completion. This data will be analyzed to ensure continuous improvement and that program strategies align with customer needs.