# Monterey Bay Community Power 5-Year Electrification Programs Roadmap

September 2019 Final Report

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# CONTENTS

E۶	ECUTIVE	SUMMARY	1
1	INTR	ODUCTION AND OVERVIEW	.12
	1.1	Overview of the Roadmap Development Process	.12
	1.2	Rationale for Program Selection	.13
	1.3	Overview of the 5-Year Program Roadmap	.14
	1.4	Next Steps for the Program Roadmap	.19
2	Asse	SSMENT OF CUSTOMER, MARKET AND CLIMATE ACTION NEEDS	.25
	2.1	Coordination with PG&E on Local and Regional Distribution Issues Related to Electrificate 26	ion
	2.2 Reduct	Microgrids – Supporting Emergency Preparedness, Economic Development and GHG ions	27
	2.3 and GH	Transportation Electrification - Fostering Local Economic Benefit, Increased Clean Energy Use	<u>,</u> 30
	2.4 Enviror	Built Environment Electrification - Providing Customer Benefits, Healthier and Safer nments, Conversion to Clean Energy, and GHG Reductions	34
	2.5 Use, ar	Agricultural Electrification – Providing Local Economic Benefits, Increased Clean Energy nd GHG Reductions	40
	2.6 Prograi	Customer Engagement/Marketplace Tools - Providing Customer Benefits and Essential m Implementation Infrastructure	43
3	Proc	GRAMS DESCRIPTIONS	.45
	3.1	Distributed Energy Resource Programs	.45
	3.2	Transportation Electrification Programs	52
	3.3	Built Environment Electrification Programs	.65
	3.4	Agricultural Electrification Program	.91
	3.5	Customer Engagement/Marketplace	.94
	3.6	The Option of Becoming a Program Administrator	.97
4	Proc	GRAM TRACKING AND EVALUATION	100
	4.1	Embedded Evaluation	100
	4.2	Program Tracking Data	102
	4.3	Cost-Effectiveness Analysis	103
	4.4	Market and Process Performance Assessment	104
5	Proc	GRAM IMPACTS, BUDGETS AND COST-EFFECTIVENESS	106
	5.1	Energy and GHG Impacts	106

5.	2 Program Budgets and Cost-effectiveness1	108
6	IMPLEMENTATION TIMELINE	L11
Appe	NDIX A: SUMMARY OF PROGRAMS BEING DELIVERED BY OTHER CALIFORNIA CCAS1	112
Appe	NDIX B: SUMMARY OF OTHER PROGRAM CONCEPTS CONSIDERED1	115
Appe	NDIX C: GLOSSARY OF COMMON TERMS USED IN ELECTRIFICATION PROGRAM PLANNING1	117

# **Executive Summary**

This document presents a strategic framework and plan for developing a portfolio of customer-facing energy electrification programs to be developed, launched and implemented over the next five years. The plan is focused on electrification of the built environment, transportation sector, and agricultural sector. In the early years, the plan recognizes that electrification should be implemented in conjunction with other load shaping programs. In fact, in order to reach MBCP's concurrent goals of GHG reduction, lower generation charges, and supporting grid reliability/resiliency and community emergency preparedness, the portfolio should include a balanced strategic blend of energy efficiency, renewable generation + storage, and electrification programs. The program roadmap is designed to arrive at this balanced, integrated portfolio at maturity over the five-year planning timeframe.

The development of the 5-year electrification program roadmap was the third step in a three-step project that included the following activities. Task 1 was to conduct a market assessment of MBCPs customer base across it's service region. This task was focused on profiling the demographic characteristics of the transportation, built environment and agricultural sectors. Task 2 was to prepare a forecast of energy and GHG reduction impacts that could be achieved through the implementation of various market intervention strategies such as those that would be delivered by MBCP programs and collaborative agencies in their service region. Task 3 entailed the development of the 5-year electrification program roadmap. The development of the roadmap built upon the findings and observations of the Task 2 forecast. Predictably, the Task 2 forecast indicated that the greatest energy and GHG reduction impacts could be achieved through transportation electrification initiatives followed by electrification of the built environment. These observations informed the program development process.

The electrification programs roadmap was developed through a collaborative process between MBCP staff, the Tierra team, and key stakeholders including Monterey Bay Air Resources Board (MBARD), the Association of Monterey Bay Area Governments (AMBAG), and representatives of local government agencies including the Cities of Santa Cruz, Watsonville, and San Luis Obispo. A key outcome of this collaboration was the identification of leverage points and areas of cooperation with local government agencies for the delivery of programs. Another important consideration was to assure that the electrification roadmap is supportive to local agency Climate Action Plans.

The identification of program design concepts that could be applied to meet MBCP's goals began with a review of customer-facing programs currently being developed or deployed by other CCAs in the state. These reviews helped the project team identify program design parameters and potential pitfalls associated with the deployment of these programs. The project team also conducted a review of California statewide energy programs that could be adopted for the benefit of MBCP's customers, and how they could be integrated in MBCP's portfolio over the planning timeframe. Appendix A includes a summary of the features of programs being deployed by other CCA's and some select statewide programs. The question of whether MBCP should become a formal administrator of public goods funds programs is discussed below and remains an open question. Another important element of the program roadmap process involved the assessment of how other programs being delivered by other agencies in the MBCP services region, such as the MBARD, could be leveraged or partnered with particularly in the area of transportation electrification programs.

Once the review of these programs was completed, the project team assembled a "long list" of potential program concepts that focused on electrification of the transportation, built environment, and agricultural sectors. The team with MBCP staff to conduct a qualitative screening of program ideas to assess which programs most closely aligned with MBCP's electrification goals. The criteria used to

screen and evaluate program ideas is summarized below in Table 0-1. The qualitative screening narrowed the field of candidate programs down to those that most closed met the program selection criteria discussed below, and that that could most likely be delivered within MBCP's staffing and budget constraints and the ability to leverage key local and regional delivery partnerships. The qualitative screening was followed by a high level assessment of potential program impacts and performance metrics. The end result of this program concept screening process led to the portfolio of programs that is presented in this plan. Appendix B presents a summary of program concepts that were considered in this process. A summary listing of the programs recommended for inclusion in the five-year program roadmap is provided below in Table 0-3 along with a qualitative ranking of how each program satisfies one or more of the program selection criteria.

#### Table 0-1. Summary of Program Concept and Screening Criteria

GHG emissions reduction—Contributes to the achievement of GHG reduction goals

**Community emergency preparedness** — Supports community emergency preparedness and grid reliability/resiliency

**Cost effectiveness**—Is cost-effective from customer (lifecycle cost), MBCP (Net Present Value), and societal (\$/MT CO2e) perspectives

Economic development – Stimulates jobs and local economic development

Social equity – Addresses the needs of disadvantaged communities and low income customers

Leverages complementary resources – Leverages complimentary funding sources and existing programs available through local and State agencies

**Builds MBCP brand awareness** – Helps build MBCP brand awareness as a champion of electrification

MBCP plans to roll out its electrification programs over the five-year planning timeframe in a staged fashion focusing first on an initial set of high priority offerings, followed year-by-year with other programs to round out the portfolio. This staged delivery will be synchronous with MBCP's financial and staffing resources for program administration. The initial wave of programs to be launched in Fiscal Year (FY) 19-20 will include:

- Smart Connect Microgrid Initiative
- Transportation Electrification Programs
- Affordable Housing/MUD Grant Program
- Agricultural Electrification Programs
- Reach Code Initiative

During this initial launch phase, MBCP will also begin the process of assessing options for implementing the customer engagement platform and marketplace. Following the development, launch and initial implementation phase of the programs described above, MBCP will progressively launch the full suite of programs described in the roadmap to round out the program portfolio. Figure 0-1 below provides a high-level overview of the expected timing for the launch of the programs envisioned by the roadmap beginning in FY 19-20 and conducing through FY 20-21 and FY 21-22 and beyond. A more detailed program implementation timeline is provided below in Chapter 6.



Figure 0-1: Program Implementation Timeline Overview

A brief summary of each of the programs to be included in the electrification programs roadmap is provided below:

- **Distribute Energy Resources Programs** Programs that have a specific focus on strategic development of distributed energy resource include the following:
  - Smart Connect Microgrid Initiatives The Smart Connect microgrid initiative plays an essential role in helping MBCP reach its grid resiliency and community emergency preparedness goals. This is particularly important with the level of wildfire hazard that exists in MBCP's service region. In addition, this program supports economic development in grid constrained areas of MBCP's service region.
  - Load Management Program. This offering involves two primary components: 1) Demand Optimizer which provides advisory services for MBCP's largest customers will assist them with managing and shifting their peak demand to support the agency's overall cost of service, and 2) Demand Response which plays an essential role in managing peak system loads, providing resource adequacy, managing resource acquisition costs, and assuring system reliability and resiliency. Demand response capability is embedded in other elements of the MBCP program portfolio and includes promoting the deployment of enabling technologies, and putting the essential elements of its demand response program in place during the early years of the program roadmap. This includes incentivizing the installation of technologies such as battery storage in targeted markets to provide peak load management and load shifting opportunities.
- **Transportation Electrification Programs** Transportation electrification programs are key to achieving GHG reduction targets, establishing a base for demand response initiatives, and improving MBCP's overall revenue position through increased electricity sales.
  - **Passenger EV and Home Charger Incentives Program** MBCP will continue to partner with MBARD to on their existing program, *Monterey Bay Electric Vehicle Incentive*

(*MBeVIP*) program to provide residents of Monterey, San Benito and Santa Cruz County incentives to support residential home charging as well as panel upgrades. MBCP will also investigate opportunities to collaborate with other Air Districts within MBCP's service area on a similar program.

- Central Coast EV Infrastructure Project MBCP secured \$6 million in EV infrastructure funding for the Monterey Bay region via the California Energy Commission's CALeVIP program. MBCP has committed to add to the CEC funding beginning with \$1M in FY 19-20. The program will provide incentives to install Level 2 and DC fast chargers. MBCP will investigate additional avenues for supporting EV infrastructure development in the region based on the learnings from this project.
- Medium-Heavy Duty Transportation Program Starting in FY19-20, MBCP will partner with MBARD to enhance several of their transportation electrification programs to support transit agencies, school districts and other commercial enterprises, in the tricounty region. These programs include the Clean Air Management Program, the Zero Emission School Bus Program, and the Medium Duty EV Incentive/Charging Station Program.
- **Built Environment Incentive Programs --** Electrification programs for the built environment will include the following specific initiatives:
  - Project Sunshine at Night This program will serve the Company's social equity goals by providing significant financial relief to low income customers, help minimize customer attrition due to bill payment issues, assist in decarbonization through addition of battery storage systems on low income customer single-family and multifamily homes with rooftop solar energy systems.
  - Building Electrification Incentives These initiatives are designed to achieve decarbonization of key end uses with a focus on conversion of natural gas and propane water and space heating in the built environment. They are also designed to encourage all-electric homes and commercial facilities in both existing and new construction through education and promotion of other electric appliances and consumer products.
  - California Advanced Homes Program Enhancement An enhancement to the California Advance Home (CAHP) single-family and multifamily New Homes (CMFNH) Programs. The CAHP is a statewide program that offers incentives for exceeding Title 24 Building Energy Code requirements. Similarly, CMFNH Program is a statewide program sponsored by PG&E that provides incentives for exceeding Title 24 requirements in new low – and mid-rise multifamily buildings. The MBCP enhancements will take the form of incentives for going all-electric including the addition of high-efficiency heat pump water heaters and heat pump/AC units, and smart technologies including smart thermostats.
  - Savings by Design Program Enhancement Savings By Design is California's statewide program for encouraging high-efficiency non-residential new construction projects that exceed the requirements of Title 24. The MBCP enhancements will provide additional incentives to encourage design and construction of all-electric new non-residential buildings.
  - Building Electrification Reach Code Initiative Reach codes that require essential electrical infrastructure and systems be designed and installed into new construction and major renovation/remodeling projects are essential to achieving GHG mitigation goals. Putting this infrastructure in place during new construction and major renovation projects costs a fraction of what it takes to install these systems as a retrofit. Reach

codes also support economic development and jobs creation by promoting local design professional and trade resources. Reach codes are a natural complement to statewide new construction incentive programs that encourage energy improvements beyond those that are already required by the Title 24 Building Energy Code.

- Affordable Housing/MUD Developer Electrification Grants In addition to the incentives available from the CMFNH program discussed above, MBCP will work with City and County agencies in the quad-county region to provide incentives and technical support for the development of high-efficiency all-electric affordable multi-unit housing developments including grants to offset the additional cost of going all-electric including the addition of high-efficiency heat pump water heaters and heat pump/AC units, smart technologies including smart thermostats, and electric appliances.
- Agricultural Electrification Incentives MBCP's agricultural sector programs will initially focus
  collaboration with MBARD to subsidize the Carl Moyer FARMER, Community Air Protection, and
  Clean Ari Management Programs. The programs will encourage the purchase of high-efficiency
  equipment, well water pump testing, infrastructure electrification, and providing energy audits
  for ag customers. Other opportunities include electrification of propane fueled forklifts,
  electrification of refrigerated truck cooling at distribution locations, and, eventually
  electrification of agricultural vehicles and implements.
- Customer Engagement Platform MBCP is currently in the process of exploring a joint solicitation with other CCAs for a common online customer engagement platform and marketplace solution. This online resource will establish essential program delivery infrastructure going forward. The customer engagement platform will provide an essential link to all MBCP customer energy programs, program participation data tracking resources, key capabilities such as demand response capacity, and a portal for engagement with and promotion of key trade partners. Putting this resource in place at the outset of roadmap implementation will provide critical program data, information and outreach capabilities that will facilitate positive customer interaction with MBCP and channeling of customers to electrification programs.
- Online Marketplace Once the basic features of the customer engagement platform are put in place, additional online engagement features such as a trade partner portal and marketplace will be implemented. The marketplace provides an online retail outlet for electrification devices and consumer products ranging from smart thermostats, to consumer products such as electric leaf blowers, to heat pump water heaters. The marketplace also provides a venue for MBCP to provide direct discounts, instant incentives, and links to other retail outlets for electrification products, as well as an important messaging platform for outreach to customers.

Tables 0-2 through 0-5 provides summaries characteristics of these programs including incentives and services provided, satisfaction of the program selection criteria discussed above, markets serviced, and the technology application focus. An assessment of some of the customer, market and environmental/climate action needs that the recommended programs fulfill is provided in Chapter 2. Additional detail on each program is provided in the Chapter 3.

The project team also developed estimates of energy and greenhouse gas (GHG) reductions, program administration costs, and the cost-effectiveness of the portfolio as a part of this study. The primary metrics for program cost-effectiveness used in the analysis were the cost of achieving GHG reductions (\$/MT CO2e) and net present value (NPV) of benefits and costs attributable to program efforts. Tables 0-6 and 0-7 provide a summary of these indicators of cost-effectiveness metrics for the portfolio. Table 0-8 provides a summary of forecasts of increased electricity sales and GHG reductions for 2025 and

2030. Additional details on the cost-effectiveness analysis, and energy and GHG impacts for each program for FY 19 – 20 through FY 23-24 are provided in Chapter 5.

### Table 0-2. Summary of Electrification Programs Including Products and Services Offered

**Products and Services** 

_						
Programs	Rebates/ Incentives	Funding/ Financing	Technical Assistance	Customer Education	Workforce Training	Direct Install
Distributed Energy Resource Programs						
Smart Connect Microgrid Program		$\checkmark$	$\checkmark$		$\checkmark$	
Load Management Program	$\checkmark$		✓	$\checkmark$		
Transportation Electrification Programs						
Passenger EV and Home Charger Incentives Program	✓	✓		$\checkmark$		
Central Coast Electric Vehicle Infrastructure Project		✓	✓	✓	✓	
Medium-Heavy Duty Transportation Enhancements Program		✓	✓		✓	
Built Environment Electrification Programs						
Project Sunshine at Night	✓	✓	✓	$\checkmark$	$\checkmark$	
Building Electrification Incentives	✓		✓	$\checkmark$	$\checkmark$	
California Advanced Homes Program Electrification Enhancement		~	✓		•	
Savings by Design Program Electrification Enhancement		✓	✓		✓	
Building Electrification Reach Code Initiative		✓	✓	$\checkmark$	✓	
Housing Developer Electrification Grants		✓	✓		✓	
Agricultural Electrification Programs						
Enhancements to Carl Moyer, FARMER, Community Air Protection & Clean Air Management Programs	✓	✓	✓	$\checkmark$	✓	✓
Customer Engagement/Marketplace						
Customer Engagement Platform	$\checkmark$		$\checkmark$	$\checkmark$	✓	
Marketplace	$\checkmark$			$\checkmark$		

#### Table 0-3. Summary of Program Objectives and Selection Criteria

Programs	GHG Emissions Reductions	Community Emergency Preparedness	Economic Development	Social Equity	Demand Response	MBCP Brand Awareness	Complementary Funding/ Delivery		
Distributed Energy Resource Programs									
Smart Connect Microgrid Program	ନ୍ଦ	લ્ય	લ્ય	ങ	હ્ય	જ	ભ		
Load Management Program	હ્ય	ৰ্ম্জ	લ્સ	63	જ	ષ્ડ	R		
Transportation Electrification Programs									
Passenger EV and Home Charger Incentives Program	ନ୍ଦ	ଜ	C3	ନ୍ଦ	હ્ય	ચ્છ	ନ୍ଦ		
Central Coast Electric Vehicle Infrastructure Project	ନ୍ଦ	R	ର୍ଦ୍ଧ	ନ୍ଦ	ନ୍ଦ	ନ୍ଦ	ହେ		
Medium-Heavy Duty Transportation Enhancements Program	ନ୍ଦ	ର	ম্জ	જા	ଜ	ম্জ	ନ୍ଦ		
Built Environment Electrification Programs									
Project Sunshine at Night	ନ୍ଦ	ୟ	ନ୍ଦ	ନ୍ଦ	જા	જી	ନ୍ଦେ		
Building Electrification Incentives	ନ୍ଦ	જ	ନ୍ୟ	প্ট	ନ୍ଦ	~জ	લ્સ		
California Advanced Homes Program Electrification Enhancement	ନ୍ଦ	ନ୍ତ	ৰ্ণ্ড	ભ	ନ୍ଦ	ৰ্ম্জ	ନ୍ଦ		
Savings by Design Program Electrification Enhancement	প্ত	જ	ৰ্ম্জ	63	ନ୍ଦ	~জ	ହେ		
Building Electrification Reach Code Initiative	ନ୍ଦ	ୟ	ନ୍ୟ	ক্ষ	ନ୍ଦ	ম্জ	લ્ય		
Housing Developer Electrification Grants	ନ୍ଦ	R	କ୍ତ	63	જ	ષ્ડ	R		
Agricultural Electrification Program									
Enhancements to Carl Moyer, FARMER, Community Air Protection & Clean Air Management Programs	ନ୍ଦ	ନ୍ଦ	જ	હ્ય	প্ট	હ્ય	ନ୍ଦ		
Customer Engagement/Marketplace									
Customer Engagement Platform	~	જ	ৰ্ম্জ	63	প্ত	ନ୍ଦ	ନ୍ଦେ		
Customer Marketplace	જ	63	~	લ્ય	જ	ନ୍ଦ	63		

80 Program strongly contributes to objective es 🐝 Program moderately contributes to objective 🐼 Program minimally contributes to objective

### Table 0-4. Summary of Electrification Programs by Markets Served

	Target Markets Served										
Programs	New Construction	Existing Buildings	Trans- portation	Residential Single Family	Residential Multifamily	Residential Low Income	Non- Residential	Agricultural			
Distributed Energy Resource Programs											
Smart Connect Microgrid Program		✓					✓	$\checkmark$			
Load Management Program	✓	✓	√	$\checkmark$	✓	$\checkmark$	$\checkmark$	$\checkmark$			
Transportation Electrification Programs											
Passenger EV and Home Charger Incentives Program			✓	✓	✓	$\checkmark$					
Central Coast Electric Vehicle Infrastructure Project			✓		✓	$\checkmark$	✓	$\checkmark$			
Medium-Heavy Duty Transportation Enhancements Program			✓				$\checkmark$	$\checkmark$			
Built Environment Electrification Programs											
Project Sunshine at Night		✓		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$			
Building Electrification Incentives		✓		✓	✓	$\checkmark$	✓	✓			
California Advanced Homes Program Electrification Enhancement	$\checkmark$			~	$\checkmark$	$\checkmark$					
Savings by Design Program Electrification Enhancement	✓					$\checkmark$					
Building Electrification Reach Code Initiative	✓			$\checkmark$	✓	$\checkmark$	$\checkmark$				
Housing Developer Electrification Grants	✓				✓	$\checkmark$					
Agricultural Electrification Programs											
Enhancements to Carl Moyer, FARMER, Community Air Protection & Clean Air Management Programs	$\checkmark$	✓						$\checkmark$			
Customer Engagement/Marketplace											
Customer Engagement Platform	na	na	na	na	na	na	na	na			
Marketplace	$\checkmark$	✓	✓	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$			

#### Table 0-5. Summary of Electrification Programs by Technology Focus

**Technology Focus** 

Programs	Passenger & LD Vehicles	Medium & HD Vehicles	School & Transit Buses	Energy Efficiency	Water Heating	Space Heating	Cooking & Appliances	Solar	Storage	Ag Pumps & Vehicles	Demand Response Technology
Distributed Energy Resource Programs											
Smart Connect Microgrid Program				$\checkmark$				$\checkmark$	$\checkmark$		$\checkmark$
Load Management Program									✓		$\checkmark$
Transportation Electrification Programs											
Passenger EV and Home Charger Incentives Program	$\checkmark$										$\checkmark$
Central Coast Electric Vehicle Infrastructure Project	$\checkmark$	✓									$\checkmark$
Medium-Heavy Duty Transportation Enhancements Program			✓								
Built Environment Electrification Programs											
Project Sunshine at Night				$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$
Building Electrification Incentives					$\checkmark$	$\checkmark$	$\checkmark$				$\checkmark$
California Advanced Homes Program Electrification Enhancement				$\checkmark$	$\checkmark$	✓	$\checkmark$	✓	~		$\checkmark$
Savings by Design Program Electrification Enhancement				$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$
Building Electrification Reach Code Initiative				$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$			$\checkmark$
Housing Developer Electrification Grants						✓			$\checkmark$		
Agricultural Electrification Programs											
Enhancements to Carl Moyer, FARMER, Community Air Protection & Clean Air Management Programs										✓	✓
Customer Engagement/Marketplace											
Customer Engagement Platform	na	na	na	na	na	na	na	na	na	na	na
Marketplace	$\checkmark$			$\checkmark$	$\checkmark$	✓	$\checkmark$			$\checkmark$	$\checkmark$

Table 0-6. Estimated Pro	aram Cost-Effectiveness	s (\$/MTCO2e) fro	m FY 19/20 Investments
		(+)	

Program	<b>Total Program Year Cost</b>	NPV	MTCO2E (lifecycle) <sup>(1)</sup>	\$/MTCO2E
Smart Connect Microgrid Program	\$255,000.00	\$8,341,221.86	(2,930)	-\$2,846.83
Passenger Vehicle EV Incentive Program	\$192,000.00	\$88,936.45	(3,169)	-\$28.07
Central Coast Electric Vehicle Infrastructure Project	\$1,085,000.00	\$1,256,137.09	(26,406)	-\$47.57
Medium-Heavy Duty Transportation Enhancements Program	\$1,114,000.00	-\$234,153.39	(5,967)	\$39.24
Building Electrification Reach Code Initiative	\$85,000.00	\$10,904,033.48	(80,306)	-\$135.78
Housing Developer Electrification Grants Program	\$1,235,000.00	\$5,388,389.07	(48,173)	-\$111.85
Agricultural Program Enhancements	\$120,000.00	\$1,622,058.73	(11,758)	-\$137.96

Notes: (1) the lifecycle benefits are computed over the effective useful life (EUL) included in each program.

	Fuel Use Reduction (Gal)	Natural Gas Use Reduction (Therms)	Propane Use Reduction (Therms)	Electricity Use Impact (kWh)	Solar Generation (kWh)	Net GHG Impact (MTCO2)
Distributed Energy Resource Programs	29,670	39,300	-	940,451	11,467,226	1,465
Transportation Electrification Programs	2,002,153	-	-	5,105,189	-	6,315
Built Environment Electrification Programs	163,116	8,228,008	1,742,235	72,409,765	-	61,846
Agricultural Electrification Program	494,459	-	-	6,962,102	-	5,533
Customer Engagement/Marketplace	81,558	603,800	91,697	5,567,937	-	4,971
Portfolio	2,770,956	8,871,107	1,833,931	90,985,444	11,467,226	80,131

#### Table 0-7. Estimated 5 Year Cumulative Program Impacts from 2020 to 2025

# **1** Introduction and Overview

This document presents a strategic framework and plan for delivering a portfolio of customer-facing energy programs to be developed, launched and implemented over the next five years. It should be noted that the plan, including program design, delivery, budgeting and resource planning, is synchronous with MBCP's fiscal year and planning process. Hence, the program development and delivery process is laid out over MBCP's fiscal years beginning in Fiscal Year (FY) 19-20. While the plan is focused on electrification of the built environment and transportation sector, particularly in the early years, the plan recognizes that "beneficial electrification" does not happen in the absence of other types of program initiatives and load shape impact goals. In fact, in order to reach MBCP's concurrent goals of GHG reduction (decarbonization), providing the lowest possible billing rates to customers, and supporting community emergency preparedness and grid reliability/resiliency, the portfolio will need to include a balanced strategic blend of energy efficiency, demand response, renewable generation + storage, and electrification programs. The program roadmap is designed to arrive at this balanced, integrated portfolio at maturity over the five-year planning timeframe.

## **1.1 Overview of the Roadmap Development Process**

The development of the 5-year electrification program roadmap was the third step in a three-step project that included the following activities. Task 1 was to conduct a market assessment of MBCPs customer base across it's service region. This task was focused on profiling the demographic characteristics of the transportation, built environment and agricultural sectors. Task 2 was to prepare a forecast of energy and GHG reduction impacts that could be achieved through the implementation of various market intervention strategies such as those that would be delivered by MBCP programs and collaborative agencies in their service region. Task 3 entailed the development of the 5-year electrification program roadmap. The development of the roadmap built upon the findings and observations of the Task 2 forecast. Predictably, the Task 2 forecast indicated that the greatest energy and GHG reduction impacts could be achieved through transportation electrification initiatives followed by electrification of the built environment. These observations informed the program development process.

The program roadmap was developed through a collaborative process between MBCP staff, the Tierra team, and key stakeholders including Monterey Bay Air Resources Board (MBARD), the Association of Monterey Bay Area Governments (AMBAG), and representatives of local government agencies including the Cities of Santa Cruz, Watsonville, and San Louis Obispo. The process involved information and data exchange, screening of various program concepts, and the potential linkage of MBCP programs to statewide and local government and community sustainability, electrification and energy initiatives. A key outcome of this collaboration was the identification of leverage points and areas of cooperation with local government agencies for the delivery of programs. Another important consideration was to assure that the program roadmap is supportive of local agency Climate Action Plans.

The identification of program design concepts that could be applied to meet MBCP's goals began with a review of customer-facing programs currently being developed or deployed by other CCAs in the state. This step included telephone interviews with representatives of selected CCAs who are active in customer energy programs such as representatives of Peninsula Clean Energy (PCE) and Sonoma Clean Power (SCP). These discussions helped the project team identify program design parameters and potential pitfalls associated with the deployment of these programs in the context of the CCA business and customer relationship model.

The State of California has a number of well-established statewide customer energy programs that could be adopted for the benefit of MBCP's programs and customers. These programs include the Self-Generation Incentive Program (SGIP), Energy Upgrade California (EUC), California Advanced Homes Program, and Savings by Design (SBD) programs. The project team conducted an update review of these programs and an assessment of if and how they could be integrated in MBCP's portfolio over the planning timeframe. Appendix A includes a summary of the features of programs being deployed by other CCA's and some select statewide programs. The question of whether MBCP should become a formal administrator of public goods funds programs is discussed below and remains an open question. Another important element of the program roadmap process involved the assessment of how other programs being delivered by other agencies in the MBCP services region, such as MBARD's electric vehicle programs, could be leveraged or partnered with particularly in the area of transportation electrification programs. These programs provide an important point of leverage for MBCP funding and staff resources, and their linkage to the program portfolio is discussed below in the program descriptions.

Once the review of these programs was completed, the project team assembled a "long list" of potential program concepts that focused on electrification of the transportation, built environment, and agricultural sectors. The team with MBCP staff to conduct a qualitative screening of program ideas to assess which programs most closely aligned with MBCP goals. The criteria used for the screening process are discussed in the following section. The qualitative screening narrowed the field of candidate programs down to those that most closed met the program selection criteria discussed below, and that that could most likely be delivered within MBCP's staffing and budget constraints and the ability to leverage key local and regional delivery partnerships. The qualitative screening was followed by a high level assessment of potential program impacts and performance metrics. The end result of this program concept screening process led to the portfolio of programs that is presented in this plan. Appendix B presents a summary of program concepts that were considered in this process.

# **1.2 Rationale for Program Selection**

The program portfolio, when fully built out over the five-year planning timeframe, is designed to serve the diverse set of goals laid out by MBCP for its strategic electrification vision. As noted above, satisfaction of these goals will require the development and delivery of a well-rounded, and integrated set of energy programs that assures access to beneficial electrification for all customer segments. As noted above, the process of developing a balanced and integrated portfolio of programs began with establishing the rationale and design criteria with which to assess program options and identify those that best align with MBCP's objectives and funding and staff resources. Program selection is then a progressive process of screening program concepts against these design criteria, estimating program performance metrics, and developing the basic design elements of each program. Based on prior work conducted by MBCP staff and their stated goals and objectives, the project team arrived at the criteria described in Table 1-1 for assessing the viability of different program options and their potential fit in the portfolio.

#### Table 1-1. Summary of Program Concept and Screening Criteria

GHG emissions reduction—Contributes to the achievement of GHG reduction goals

**Community emergency preparedness** \_\_\_\_Supports community emergency preparedness and grid reliability/resiliency

**Cost effectiveness**—Is cost-effective from customer (lifecycle cost), MBCP (Net Present Value), and societal (\$/MT CO2e) perspectives

Economic development - Stimulates jobs and local economic development

Social equity – Addresses the needs of disadvantaged communities and low income customers

Leverages complementary resources – Leverages complimentary funding sources and existing programs available through local and State agencies

**Builds MBCP brand awareness** – Helps build MBCP brand awareness as a champion of electrification

It is also essential to identify the different customer markets that will be served by the programs, the incentives, services and market intervention strategies that will be used by each program, and the technologies that will ultimately need to be deployed at customer sites to achieve the desired energy and GHG impacts. As a general guide, customer-facing energy programs typically provide some bundle of the following incentives and services:

- Incentives Rebates, upstream incentives/rebates, and marketplace discounts.
- Funding and Financing Providing funding for existing program initiatives, and access to financing resources such as Property Assessed Clean Energy (PACE), on-bill financing (OBF), and financing concierge services.
- Technical Assistance Audits, technical advisory, design assistance, and project development support.
- Information & Education Customer education, online content (energy tips, savings, support with technology selection, etc.), classes and workshops
- Workforce Education & Training Classes and workshops, pre-qualification and referral, continuing education.
- **Marketplace** Direct online purchase of qualifying energy efficient equipment (e.g., Energy Star refrigerators)
- Direct Install Direct installation of measures in target markets (e.g., low income multifamily)

The characteristics and features of programs included in the five-year roadmap and how they satisfy the program selection criteria are summarized below in the roadmap summary and described in greater detail in the program descriptions in Chapter 3.

## **1.3 Overview of the 5-Year Program Roadmap**

The 5-year program roadmap is designed to provide a balanced, integrated portfolio of programs at full maturity that:

• Achieves decarbonization goals

- Provides customers across all customer classes with a range of options for managing their energy costs, including low-income and disadvantaged communities
- Provides MBCP with options for managing loads on the customer side of the meter that align with the company's resource acquisition plan and help minimize resource acquisition costs
- Stimulates local economic development and job creation
- Supports grid reliability and resiliency and community emergency preparedness
- Provides a solid foundation for program development and evolution into the future

The program portfolio is also intended to leverage existing market and program resources available through local agencies,, and statewide energy efficiency programs such as the Self-Generation Incentive Program (SGIP), Energy Upgrade California (EUC), the California Advanced Home Program (CAHP), and the Savings By Design (SBD) program. By referencing and leveraging these existing resources through its program designs, MBCP will be able to provide customers with an integrated and comprehensive set of options for managing their energy costs, and provide a "one–stop shop" for local, regional, and statewide programs, incentives, and financing opportunities. Through the implementation of its online customer and trade ally engagement platform, MBCP programs will serve as a single point of contact (SPOCs) for identifying solutions that meet customers' needs.

MBCP plans to roll out its electrification programs over the five-year planning timeframe in a staged fashion focusing first on an initial set of high priority offerings, followed year-by-year with other programs to round out the portfolio. This staged delivery will be synchronous with MBCP's financial and staffing resources for program administration. The initial wave of programs to be launched in Fiscal Year (FY) 19-20 will include:

- Smart Connect Microgrid Initiative
- Transportation electrification programs
- Housing Developer Electrification Grant Program
- Agricultural Electrification Programs
- Reach Code Initiative

During this initial launch phase, MBCP will also begin the process of assessing options for implementing the customer engagement platform and marketplace. Following the development, launch and initial implementation phase of the programs described above, MBCP will progressively launch the full suite of programs described in the roadmap to round out the program portfolio. Figure 1-1 below provides a high-level overview of the expected timing for the launch of the programs envisioned by the roadmap beginning in FY 19-20 and conducing through FY 20-21 and FY 21-22 and beyond. A more detailed program implementation timeline is provided below in Chapter 6.





A brief summary of each of the programs to be included in the electrification programs roadmap is provided below:

- **Distribute Energy Resources Programs** Programs that have a specific focus on strategic development of distributed energy resource include the following:
  - Smart Connect Microgrid Initiatives The Smart Connect microgrid initiative plays an essential role in helping MBCP reach its grid resiliency and community emergency preparedness goals. This is particularly important with the level of wildfire hazard that exists in MBCP's service region. In addition, this program supports economic development in grid constrained areas of MBCP's service region.
  - Load Management Program. This offering involves two primary components: 1)
     Demand Optimizer which provides advisory services for MBCP's largest customers will
     assist them with managing and shifting their peak demand to support the agency's
     overall cost of service, and 2) Demand Response which plays an essential role in
     managing peak system loads, providing resource adequacy, managing resource
     acquisition costs, and assuring system reliability and resiliency. Demand response
     capability is embedded in other elements of the MBCP program portfolio and includes
     promoting the deployment of enabling technologies, and putting the essential elements
     of its demand response program in place during the early years of the program
     roadmap. This includes incentivizing the installation of technologies such as battery
     storage in targeted markets to provide peak load management and load shifting
     opportunities.
- **Transportation Electrification Programs** Transportation electrification programs are key to achieving GHG reduction targets, establishing a base for demand response initiatives, and improving MBCP's overall revenue position through increased electricity sales.

- Passenger EV and Home Charger Incentives Program MBCP will continue to partner with MBARD to on their existing program, *Monterey Bay Electric Vehicle Incentive* (*MBeVIP*) program to provide residents of Monterey, San Benito and Santa Cruz County incentives to support residential home charging as well as panel upgrades. MBCP will also investigate opportunities to collaborate with other Air Districts within MBCP's service area on a similar program.
- Central Coast EV Infrastructure Project –MBCP secured \$6 million in EV infrastructure funding for the Monterey Bay region via the California Energy Commission's CALeVIP program. MBCP has committed to add to the CEC funding beginning with \$1M in FY 19-20. The program will provide incentives to install Level 2 and DC fast chargers. MBCP will investigate additional avenues for supporting EV infrastructure development in the region based on the learnings from this project.
- Medium-Heavy Duty Transportation Program Starting in FY19-20, MBCP will partner with MBARD to enhance several of their transportation electrification programs to support transit agencies, school districts and other commercial enterprises, in the tricounty region. These programs include the Clean Air Management Program, the Zero Emission School Bus Program, and the Medium Duty EV Incentive/Charging Station Program.
- **Built Environment Incentive Programs --** Electrification programs for the built environment will include the following specific initiatives:
  - Project Sunshine at Night Program This program will serve the Company's social equity goals by providing significant financial relief to low income customers, help minimize customer attrition due to bill payment issues, assist in decarbonization through addition of battery storage systems on low income customer single-family and multifamily homes with rooftop solar energy systems.
  - Building Electrification Incentives These initiatives are designed to achieve decarbonization of key end uses with a focus on conversion of natural gas and propane water and space heating in the built environment. They are also designed to encourage all-electric homes and commercial facilities in both existing and new construction through education and promotion of other electric appliances and consumer products.
  - California Advanced Homes Program Enhancement An enhancement to the California Advance Home (CAHP) single-family and multifamily New Homes (CMFNH) Programs. The CAHP is a statewide program that offers incentives for exceeding Title 24 Building Energy Code requirements. Similarly, CMFNH Program is a statewide program sponsored by PG&E that provides incentives for exceeding Title 24 requirements in low – and mid-rise multifamily buildings. The MBCP enhancements will take the form of incentives for going all-electric including the addition of high-efficiency heat pump water heaters and heat pump/AC units, and smart technologies including smart thermostats.
  - Savings by Design Program Enhancement Savings By Design is California's statewide program for encouraging high-efficiency non-residential new construction projects that exceed the requirements of Title 24. The MBCP enhancements will provide additional incentives to encourage design and construction of all-electric new non-residential buildings.
  - Building Electrification Reach Code Initiative Reach codes that require essential electrical infrastructure and systems be designed and installed into new construction and major renovation/remodeling projects are essential to achieving GHG mitigation

goals. Putting this infrastructure in place during new construction and major renovation projects costs a fraction of what it takes to install these systems as a retrofit. Reach codes also support economic development and jobs creation by promoting local design professional and trade resources. Reach codes are a natural complement to statewide new construction incentive programs that encourage energy improvements beyond those that are already required by the Title 24 Building Energy Code.

- Affordable Housing/MUD Developer Electrification Grants In addition to the incentives available from the CMFNH program discussed above, MBCP will work with City and County agencies in the quad-county region to provide incentives and technical support for the development of high-efficiency all-electric affordable multi-unit housing developments including grants to offset the additional cost of going all-electric including the addition of high-efficiency heat pump water heaters and heat pump/AC units, smart technologies including smart thermostats, and electric appliances.
- Agricultural Electrification Incentives MBCP's agricultural sector programs will initially focus
  collaboration with MBARD to subsidize the Carl Moyer FARMER, Community Air Protection, and
  Clean Ari Management Programs. The programs will encourage the purchase of high-efficiency
  equipment, well water pump testing, infrastructure electrification, and providing energy audits
  for ag customers. Other opportunities include electrification of propane fueled forklifts,
  electrification of refrigerated truck cooling at distribution locations, and, eventually
  electrification of agricultural vehicles and implements.
- Customer Engagement Platform MBCP is currently in the process of exploring a joint solicitation with other CCAs for a common online customer engagement platform and marketplace solution. This online resource will establish essential program delivery infrastructure going forward. The customer engagement platform will provide an essential link to all MBCP customer energy programs, program participation data tracking resources, key capabilities such as demand response capacity, and a portal for engagement with and promotion of key trade partners. Putting this resource in place at the outset of roadmap implementation will provide critical program data, information and outreach capabilities that will facilitate positive customer interaction with MBCP and channeling of customers to electrification programs.
- Online Marketplace Once the basic features of the customer engagement platform are put in place, additional online engagement features such as a trade partner portal and marketplace will be implemented. The marketplace provides an online retail outlet for electrification devices and consumer products ranging from smart thermostats, to consumer products such as electric leaf blowers, to heat pump water heaters. The marketplace also provides a venue for MBCP to provide direct discounts, instant incentives, and links to other retail outlets for electrification products, as well as an important messaging platform for outreach to customers.

Table 1-2 provides a summary of programs included in the roadmap including the incentives and services offered by the program, and Table 1-3 provides a summary of how the programs satisfy the program selection criteria discussed above. Table 1-4 shows the target markets that will be served by the programs, while Table 1-5 indicates the technology application focus of each program. A summary of common terms used in electrification program planning is included in Appendix C.

# 1.4 Next Steps for the Program Roadmap

The 5-year program roadmap presented in this plan provides a strategic vision for a balanced, comprehensive portfolio of customer energy programs that will help enable MBCP to meet it's GHG reduction and resiliency goals, while providing customers with a full range of options for managing their energy costs. It is recognized, however, that the plan presented herein is subject to MBCP's internal review and approval process and implementation of the plan will be dependent upon staffing and financial resource availability. Once this review process has helped the MBCP programs team gain greater clarity on the direction and scope of program offerings, several additional steps will be needed to take the plan to the next stage, that is, ready for delivery to MBCP's customers in the different geographic regions, communities and customer groups. These next steps include the following:

- Identify additional program components specifically for the San Luis Obispo and Santa Barbara service regions The project team focused on leveraging local and regional initiatives and relationships will local partners that could be leveraged to support the program development process. Due to the short timeline in which this plan was produced, it was not possible to provide the same level of investigation to potential local resources and partnering relationships in San Louis Obispo county or Santa Barbara County. As such, these resources will need to be sought out and additional opportunities for local engagement found to support the portfolio in these areas.
- Conduct a more in-depth analysis of the benefits and costs of electrification measures offered through these programs Typically, new energy measures included in a program plan are subjected to a rigorous analysis of benefits and costs. Due to the short timeframe under which this plan was prepared, it was not possible to conduct the required research and prepare a detailed analysis on a measure-by-measure basis. Thus, the project team had to rely on a relatively high level of analysis for forecasting benefits and costs. The electrification measures including in the plan including EV measures, fuel switching measures, solar + storage, and other distributed energy resource and demand management measures should be subject to a more rigorous analysis. This does not apply to established programs and measures such as those provided by offerings such as the CALeVIP EV Infrastructure Incentive program or statewide programs (e.g., the California Advanced Home Program) that are part of this plan.
- **Develop detailed Program Implementation Plans** -- This plan provides considerable detail on the designs of each program. However, once the final roster of programs is decided upon, it will be necessary to produce formal Program Implementation Plans (PIPs) that lay out additional details necessary for MBCP to implement the programs internally or to put them out to bid to implementation contractors. Examples of formal PIPs are available from the IOUs for their programs.
- Coordinate with local jurisdictions on key elements of their Climate Action Plans -- The results of the market characterization and forecasting work of this project provide an invaluable resource for MBCP constituents for updating their Climate Action Plans (CAPS). In fact, MBCP could plan a key role as an integrator of data resources and analytic tools that would bring consistency and coordination to the CAPs across the different jurisdictions.
- Consider grant funding opportunities The State of Californian has rich sources of funding for electrification and decarbonization. Particularly of note is the California Energy Commission (CEC) Electric Program Investment Charge (EPIC) grant program, and the. According to the CEC website, the purpose of the EPIC program is as follows:

To help meet the state's climate goals, new clean energy solutions are developed and commercialized to decarbonize the electricity sector. The EPIC program invests more than \$130 million annually. EPIC-funded research is helping to:

- Expand the use of renewable energy.
- Build a safe and resilient electricity system.
- Advance electric technologies for buildings, businesses, and transportation.
- Enable a more decentralized electric grid.
- Improve the affordability, health, and comfort of California's communities.
- Support California's local economies and businesses.

MBCP is already benefiting from the Clean Vehicle Rebate Project sponsored by the California Air Resources Board (CARB) as a key part of the Central Coast EV Infrastructure Incentive Program. MBCP would be well advised to monitor other grant funding opportunities through the CEC and CARB and consider submitting proposals in concert with other CCAs.

Clearly, this is not an exhaustive list of follow-up actions that will need to be taken to bring the plan to fruition but does provide some guidance on several areas that will be key to the process going forward.

### Table 1-2. Summary of Electrification Programs Including Products and Services Offered

**Products and Services** 

_						
Programs	Rebates/ Incentives	Funding/ Financing	Technical Assistance	Customer Education	Workforce Training	Direct Install
Distributed Energy Resource Programs						
Smart Connect Microgrid Program		$\checkmark$	$\checkmark$		$\checkmark$	
Load Management Program	$\checkmark$		$\checkmark$	$\checkmark$		
Transportation Electrification Programs						
Passenger EV and Home Charger Incentives Program	$\checkmark$	$\checkmark$		$\checkmark$		
Central Coast Electric Vehicle Infrastructure Project		$\checkmark$	$\checkmark$	$\checkmark$	✓	
Medium-Heavy Duty Transportation Enhancements Program		✓	$\checkmark$		✓	
Built Environment Electrification Programs						
Project Sunshine at Night	✓	$\checkmark$	$\checkmark$	$\checkmark$	✓	
Building Electrification Incentives	✓		✓	$\checkmark$	✓	
California Advanced Homes Program Electrification Enhancement		~	✓		~	
Savings by Design Program Electrification Enhancement		$\checkmark$	$\checkmark$		✓	
Building Electrification Reach Code Initiative		$\checkmark$	✓	$\checkmark$	✓	
Housing Developer Electrification Grants		$\checkmark$	✓		✓	
Ag Electrification Programs						
Enhancements to Carl Moyer, FARMER, Community Air Protection & Clean Air Management Programs	~	✓	✓	$\checkmark$	~	~
Customer Engagement/Marketplace						
Customer Engagement Platform	$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$	
Marketplace	$\checkmark$			$\checkmark$		

Programs	GHG Emissions Reductions	Community Emergency Preparedness	Economic Development	Social Equity	Demand Response	MBCP Brand Awareness	Complementary Funding/ Delivery
Distributed Energy Resource Programs							
Smart Connect Microgrid Program	ନ୍ଦ	લ્સ	લ્ય	ନ୍ଦ	ନ୍ଦ	જ	િર
Load Management Program	લ્સ	જા	જ	63	ৰ্ম্জ	જ	ୟ
Transportation Electrification Programs							
Passenger EV and Home Charger Incentives Program	ନ୍ଦ	ଜ	ଜ	ନ୍ଦ	હ્ય	ર્જ	ହ
Central Coast Electric Vehicle Infrastructure Project	ନ୍ଦ	63	~	മാ	ନ୍ଦ	മാ	ନ୍ଦ
Medium-Heavy Duty Transportation Enhancements Program	લ્થ	હ્ય	જો	જા	જ	ৰ্জ	ନ୍ଦ
Built Environment Electrification Programs							
Project Sunshine at Night	ନ୍ଦ	ୟ	63	ജ	ৰ্ণ্ড	જ	63
Building Electrification Incentives	ନ୍ଦ	63	63	ৰ্ণ্ড	ନ୍ଦ	જ	ୟ
California Advanced Homes Program Electrification Enhancement	જ	ୟ	ର୍ଭ	હ્ય	ନ୍ଦ	ৰ্জ	ନ୍ଦ
Savings by Design Program Electrification Enhancement	જા	R	ন্ট	63	ନ୍ଦ	જ્ય	લ્ય
Building Electrification Reach Code Initiative	ନ୍ଦ	લ્સ	63	ৰ্ণ্ড	ନ୍ଦ	જ	ୟ
Housing Developer Electrification Grants	ନ୍ଦ	63	~	લ્ય	ৰ্ণ্ড	જ	ୟ
Agricultural Electrification Program							
Enhancements to Carl Moyer, FARMER, Community Air Protection & Clean Air Management Programs	മ	ମ୍ଭ	മ	R	~5	ର	ନ୍ଦ
Customer Engagement/Marketplace							
Customer Engagement Platform	~~	63	-53	50	ৰ্ণ্ড	ନ୍ଦ	હ્ય
Customer Marketplace	ৰ্ম্জ	R	ৰ্ম্জ	લ્સ	ন্থ	ନ୍ଦ	ୟ

### Table 1-3. Summary of Program Objectives and Selection Criteria

80 Program strongly contributes to objective es 🐝 Program moderately contributes to objective 🐼 Program minimally contributes to objective

### Table 1-4. Summary of Electrification Programs by Markets Served

	ו מוצבו ואומו אבול שבו אבו										
Programs	New Construction	Existing Buildings	Trans- portation	Residential Single Family	Residential Multifamily	Residential Low Income	Non- Residential	Agricultural			
Distributed Energy Resource Programs											
Smart Connect Microgrid Program		✓					✓	✓			
Load Management Program	~	✓	✓	✓	✓	✓	✓	✓			
Transportation Electrification Programs											
Passenger EV and Home Charger Incentives Program			✓	✓	✓	✓					
Central Coast Electric Vehicle Infrastructure Project			$\checkmark$		✓	$\checkmark$	$\checkmark$	$\checkmark$			
Medium-Heavy Duty Transportation Enhancements Program			$\checkmark$				$\checkmark$	$\checkmark$			
Built Environment Electrification Programs											
Project Sunshine at Night		✓		✓	✓	$\checkmark$	$\checkmark$	$\checkmark$			
Building Electrification Incentives		✓		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$			
California Advanced Homes Program Electrification Enhancement	$\checkmark$			$\checkmark$	$\checkmark$	$\checkmark$					
Savings by Design Program Electrification Enhancement	$\checkmark$					$\checkmark$					
Building Electrification Reach Code Initiative	$\checkmark$			$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$				
Housing Developer Electrification Grants	$\checkmark$				$\checkmark$	$\checkmark$					
Ag Electrification Programs											
Enhancements to Carl Moyer, FARMER, Community Air Protection & Clean Air Management Programs	$\checkmark$	✓						$\checkmark$			
Customer Engagement/Marketplace											
Customer Engagement Platform	na	na	na	na	na	na	na	na			
Marketplace	$\checkmark$	✓	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$			

### Table 1-5. Summary of Electrification Programs by Technology Focus

Programs		Medium & HD Vehicles	School & Transit Buses	Energy Efficiency	Water Heating	Space Heating	Cooking & Appliances	Solar	Storage	Ag Pumps & Vehicles	Demand Response Technology
Distributed Energy Resource Programs											
Smart Connect Microgrid Program				$\checkmark$				$\checkmark$	✓		$\checkmark$
Load Management Program									✓		$\checkmark$
Transportation Electrification Programs											
Passenger EV and Home Charger Incentives Program	✓										$\checkmark$
Central Coast Electric Vehicle Infrastructure Project	$\checkmark$	$\checkmark$									$\checkmark$
Medium-Heavy Duty Transportation Enhancements Program			✓								
Built Environment Electrification Programs											
Project Sunshine at Night				✓	✓	✓	$\checkmark$	$\checkmark$	✓		$\checkmark$
Building Electrification Incentives					✓	✓	$\checkmark$				$\checkmark$
California Advanced Homes Program Electrification Enhancement				✓	~	$\checkmark$	$\checkmark$	✓	✓		$\checkmark$
Savings by Design Program Electrification Enhancement				$\checkmark$	✓	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$
Building Electrification Reach Code Initiative				$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$			$\checkmark$
Housing Developer Electrification Grants						$\checkmark$			✓		
Ag Electrification Programs											
Enhancements to Carl Moyer, FARMER, Community Air Protection & Clean Air Management Programs										✓	✓
Customer Engagement/Marketplace											
Customer Engagement Platform	na	na	na	na	na	na	na	na	na	na	na
Marketplace	$\checkmark$			$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$

# 2 Assessment of Customer, Market and Climate Action Needs

As part of the process of designing the following proposed programs, the Tierra team used publicly available datasets to conduct a market assessment and needs assessment, analysis of customer demographic characteristics, as well as climate and sustainability related metrics. In particular, the results of this analysis helped to inform what types of programs MBCP should be deploying, as well as, when these programs should be launched over the next 5 years in order to create a balanced and integrated portfolio that addresses MBCP's previously stated goals. For FY19-20, MBCP staff has identified microgrid, transportation, Housing Developer Electrification, and agricultural sector programs as being the highest priority for delivering value to the community. Going forward, additional program efforts will be implemented to further satisfy these needs and support MBCP's goals.

Based on publicly available fuel usage data from 2017 and current fuel costs, it's estimated that the combined counties spend approximately \$3.7B on gasoline and diesel transportation fuels, as shown in Table 2-1. Of this total, \$1.7B and \$220M is spent annually on gasoline and diesel fuel respectively. Since these vehicle fuels, approximately 52% of total fuel spending, are not produced in the Quad-Counties, adoption of electric vehicles will change where transportation energy is generated and how efficiently it is used. When paired with clean energy resources, local solar and storage systems, and demand response capability transportation electrification will help control both fuel costs and also demand charge related to electricity procurement. These changes present a new set of economic opportunities at the community level as the annual outflow of funds spent on imported fuels converts to local economic benefits in the form of increased jobs, additional expendable income, much of which will be spent locally, and the increased value of locally owned assets.<sup>1</sup> Figure 2-1 provides additional details on the distribution of annual fuel costs by county.

Fuel	Units	Unit Cost	Units Consumed	Total Cost
Electricity	kWh	\$0.225	5,974,624,247	\$1,344,290,456
Natural Gas	Therm	\$1.69	260,156,273	\$439,664,101
Residential Propane	Therm	\$2.39	9,234,755	\$22,071,064
Gasoline	Gallons	\$3.99	430,000,000	\$1,715,700,000
Diesel	Gallons	\$3.92	56,279,070	\$220,613,954
			Total Annual	\$3,742,339,575

#### Table 2-1. 2017 Combined County Fuel Usage and Cost

<sup>1</sup> Tierra Resource Consultants. Monterey Bay Technical and Market Assessment, Figure 1: Annual County Fuel Costs.



#### Figure 2-1. Distribution of Annual County Fuel Costs

# 2.1 Coordination with PG&E on Local and Regional Distribution Issues Related to Electrification

Increasing loads due to electrification efforts has potentially significant implications for PG&E's local and regional distribution. Grid reliability is largely dependent on the condition of the distribution system, which can influence the value of grid interactivity based on the location of the device being controlled. Figure 2-2 shows PG&E's Integration Capacity Analysis (ICA) map illustrating where the distribution system in Monterey may be constrained for potential for new electrification projects. Such locational analysis can be used to focus program marketing and also help define appropriate incentive levels for grid interactivity based on locational value. As part of the overall strategic electrification plan, MBCP may wish to consider forming a working coordination group with PG&E to plan forward for electrification efforts (e.g., commercial, municipal transit, and school district vehicle charging) that may have significant local load increase implications on the distribution system.

#### Figure 2-2: PVRAM Feeder Status



# 2.2 Microgrids – Supporting Emergency Preparedness, Economic Development and GHG Reductions

MBCP staff have identified Microgrid Programs as a time-sensitive, high priority for near-term implementation to support local emergency preparedness, economic development, and GHG reductions:

 Microgrids will facilitate community emergency preparedness and resiliency particularly in high wildfire threat areas. According to the CPUC's Fire Threat Map—which designates areas where enhanced fire safety regulations found in Decision 17-12-024 will apply—a significant portion of MBCP service region has been designated as elevated and extreme fire-threat areas, depicted as the orange and red overlays respectively, in Figure 2-3 and Figure 2-4.

Figure 2-3. Upper Central Coast Fire Threat Map



Figure 2-4. Lower Central Coast Fire Threat Map



- Microgrids can be used to foster economic development and job growth, particularly in grid constrained areas of the electric systems in the MBCP service region.
- Microgrids provide significant opportunities for GHG reductions though on-site renewables generation, as well as demand management through storage and smart technologies. Based on Tierra's analysis of a microgrid with the characteristics described in Table 2-2, the installation of a typical microgrid was estimated to produce a GHG reduction of 670 MTCO<sub>2</sub>e.

Metric	Unit
Total built area (sq. ft.)	300,000
Baseline facility electricity consumption	3,885,000
Added electricity from building electrification	319,936
Potential Added electricity from vehicle electrification	49,923
Total site electricity use	4,254,859
DG size (kWdc)	1,529
DG production (kWh)	2,293,445
% solar offset	54%
Critical system battery capacity (kWh)	-7
EV fleet size	4
Fleet off-peak charging demand (kW)	120

#### Table 2-4. Microgrid Project Characteristics Summary

MBCP staff may consider the following criteria in selecting microgrid sites to maximize their benefits:

- Commercial vehicle electrification timing and GHG reduction potential:
  - Vehicle fleets for which electrification appears feasible (i.e. older fleets, larger trucks)
  - Minimum fleet size of 10 vehicles to electrify over time (OK to combine multiple fleets)
  - A business or agency with plans to electrify
- Built environment electrification timing and GHG reduction potential.
  - Built environment with NG heating systems that are at or approaching the end of their useful life
  - New construction planned or likely
- Targeting locations with grid constraints targeting grid reliability and resiliency.
  - PG&E fire mitigation areas and distribution systems with high potential for shut down
  - Indicates DER grid constrained through system tools such as PVRAM
- Targeting locations with potential for deployment of DER in the built environment consistent with the CA loading order.
  - Energy efficiency
  - Demand response, including batteries for demand management and critical load
  - Distributed generation in the form of solar mounted on buildings, ground or structures (e.g. parking lots)
- Targeting locations with potential for economic growth.
  - LI/DAC designation or located with adjacent areas
  - Identified within jurisdictional planning as areas of interest, such as general plan development areas or transportation plan development areas

- o Potential for brownfield development of ground mounted solar
- Includes potential for new construction and new load addition
- Offers potential for DG systems
- Match funding potential.
  - Has commercial funding potential (i.e. developers willing to invest incremental funds)
  - Has characteristics in alignment with agency program funding (i.e. aligns with CARB funding mechanisms, DAC funds, etc.)
- Electric transit buses, school buses and light-to-medium duty trucks are projected to become more common by 2030, providing EVSE for fleet operators may present opportunities for microgrid applications where fleet storage and charging facilities are collocated with buildings that also provide opportunities to advance the electrification of natural gas equipment, distributed solar, energy efficiency and battery storage.

Chapter 3 provides program details for these high priority Microgrid and Transportation Programs proposed by MBCP staff to be designed and launched in FY19-20.

# 2.3 Transportation Electrification - Fostering Local Economic Benefit, Increased Clean Energy Use, and GHG Reductions

MBCP staff have identified Transportation Programs as a high priority for near-term implementation to support local economic benefits, increased clean energy use, and GHG reductions:

In the Quad-Counties, the built environment and vehicles are estimated to produce 5,574,730 metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e).<sup>2</sup> Another 82%<sup>3</sup> or 4,549,628 MTCO<sub>2</sub>e is associated with vehicle emissions. Transportation electrification presents the largest opportunity to reduce local GHG emissions by pairing the technology with MBCP's carbon free service. MBCP's long-term proposed transportation programs target light-duty vehicles and trucks which account for approximately 57% of Monterey Bay's GHG emissions.

<sup>2</sup> CO2e related to the generation of grid purchased electricity or waste and wastewater processing were not considered in Tierra's Monterey Bay Technical and Market Assessment.

<sup>3</sup> Tierra Resource Consultants. Monterey Bay Technical and Market Assessment, Table 14. Estimated Vehicle Emissions (Tons of CO2e) by vehicle type and Figure 2-5: Total CO2e by Vehicle Type





Table 2-3. Estimated Vehicle Emissions (Tons of CO<sub>2</sub>e) by Vehicle Type

	Monterey	San Benito	San Luis Obispo	Santa Cruz	Total	Percent
Light-Duty Trucks	417,887	58,902	322,183	176,699	975,670	21%
Passenger Cars	684,612	107,181	536,637	288,805	1,617,235	36%
Medium - Heavy Trucks	741,167	282,342	535,136	251,063	1,809,708	40%
Buses	47,224	3,460	22,663	17,462	90,809	2%
Other	26,218	3,652	18,151	8,185	56,206	1%
Total Vehicle Emissions	1,917,109	455,537	1,434,769	742,214	4,549,628	

- Assuming residential customers enroll in PG&E's EV-A rate or install a specific meter for EV-B rate, the financial benefit for customers shown Table 2-5 from reduced fuel and maintenance costs offered by EVs when compared to costs for internal combustions engine (ICE) vehicles. At approximately \$1290 annually per vehicle for residents below 200% of the federal poverty line this represents an hourly gross wage increase equivalent of \$1.06 (9.6%) at California's current minimum wage of \$11.00 per hour. These savings are particularly important for low-income households because despite tending to be one of if not the largest and least flexible expenses after rent. In addition, residential transportation fuel costs have no subsidy, unlike other major household costs which benefit from various subsidies, including:
  - HUD or CA section 8 housing vouchers for rent.
  - Medicaid and Medi-Cal for medical expenses.
  - Supplemental Nutrition Assistance Program (SNAP) and CalFresh for food costs.

• California Alternative Rates for Energy (CARE) for residential fuel costs. These savings do not consider the reduction in annual maintenance costs offered by EVs when compared to maintenance costs for internal combustions engine (ICE) vehicles.

	State		
Income Cohort	Below 200% FPL	Above 200% FPL	State
Miles Driven per Year	10,281	9,760	9,810
Annual ICE Maintenance Cost	\$571.10	\$542.16	\$544.93
Annual EV Maintenance Cost	\$411.19	\$390.35	\$392.35
Annual Savings	\$159.91	\$151.80	\$152.58

Table 2-4.	Estimated	Annual	Maintenance	Savings⁴
				0

Table 2-5. Vehicle Usage and Cost Characteristics by Income Cohort<sup>5</sup>

	State		
Income Cohort	Below 200% FPL	Above 200% FPL	State
Miles per year driven	10,281	9,760	9,810
Miles per gallon	25.9	29.2	28.9
Estimated vehicles per household	1.7	2.0	1.9
Estimated gallons per year fuel	667	657	657
Est kWh	4,316	4,793	4,741
Est gasoline cost	\$2,475	\$2,437	\$2,437
Est kWh cost - Ave Statewide	\$1,360	\$1,510	\$1,494
Est kWh cost - PG&E Ave Off Peak	\$557	\$618	\$612
Annual Savings at statewide kWh cost	\$1,115	\$927	\$943
Annual Savings at PG&E EV-A Off Peak kWh cost	\$1,918	\$1,819	\$1,825

<sup>4</sup> Tierra Resource Consultants, Lumidyne Consulting, Fresno Metro Ministry. EV Ready Low-Income Multifamily Community Blueprint's Table 44: Annual Maintenance Savings.

5 Tierra Resource Consultants, Lumidyne Consulting, Fresno Metro Ministry. EV Ready Low-Income Multifamily Community Blueprint's Table 48: Vehicle Usage and Cost Characteristics by Income Cohort.
MBCP's Transportation Programs will focus efforts on light-duty vehicles and light-medium duty trucks. Tierra's forecast analysis estimates that there are limited opportunities for the electrification of heavy-duty trucks as yet because these machines are largely in the prototype phase and we are uncertain about their adoption potential by 2030. This is illustrated in Figure 2-6 below which shows program attribution opportunities to increase the adoption of electric vehicles over Tierra's baseline forecast.



Figure 2-6. Electric Vehicle Attribution to Change in kWh Consumption by Vehicle Type in 2025

Based on this attribution estimate:

• The majority of increased sales will reach 18 GWh by 2025, growing to approximately 129 GWh by 2025, with 95% of new sales originating from light-medium duty trucks and light-duty vehicles.



*Figure 2-7. Electric Vehicle Additional Cumulative kWh by Program Year* 

• Customer savings from electric vehicles—which will cumulatively reach \$4.5M in 2025, growing to \$31.8M by 2030—will also be attributable to program interventions focusing on light duty vehicles and light-medium trucks.



# *Figure 2-8. Electric Vehicle Cumulative Customer Fuel Savings by Program Year*

# 2.4 Built Environment Electrification - Providing Customer Benefits, Healthier and Safer Environments, Conversion to Clean Energy, and GHG Reductions

MBCP staff have identified select Built Environment Electrification Programs as a priority during the middle years of the 5-year roadmap to provide customers with economic, safety, and environmental benefits, increased use of clean energy resources, and GHG reductions:

• There is significant regulatory interest in converting primary space heating and air conditioning from natural gas to electricity, and new funding opportunities, such as SB 1477, which requires, from July 1, 2019 through June 30, 2023, the CPUC to allocate \$50 million annually from gas corporations' GHG emissions allowance revenues for the BUILD Program and the TECH Initiative.

These initiatives may help drive more acceptance of electric high-efficiency space and water heating.<sup>6</sup>

- 32% of Quad-County residents currently receive an energy subsidy through CARE and providing incentives to these customers to install solar and electrification measures can substantially reduce their energy costs.
- Based on 2017 fuel usage data, approximately \$440M is spent annually on natural gas in the Quad-Counties. Since natural gas, approximately 13% of total fuel spending, is not produced in the Quad-Counties, adoption of electrification measures will change where space and water heating energy is sourced and how efficiently it is used—especially when paired with clean energy resources and local solar and storage. These changes present a new set of economic opportunities at the community level as retaining the annual outflow of funds spent on imported natural gas and propane in the community converts to local economic benefits in the form of increased jobs, additional expendable income, much of which will be spent locally, and the increased value of locally owned assets.<sup>7</sup>



# Figure 2-9. Built Environment Distribution of GHG Emissions

 In the Quad-Counties, the built environment produces 1,025,102 MTCO<sub>2</sub>e/year.<sup>8</sup> Figure 2above shows the distribution of CO<sub>2</sub>e for the end-uses analyzed for the residential and commercial sectors. The combined output from water heating is the highest at 46% of emissions, followed by space heating at 45% and cooking at 9% of emissions. The residential

<sup>6</sup> The Commission opened a proceeding via Order Instituting Rulemaking 19-01-011 regarding building decarbonization on February 8, 2019 to address the implementation of these programs.

<sup>7</sup> Tierra Resource Consultants. Monterey Bay Technical and Market Assessment, Figure 1: Annual County Fuel Costs.

<sup>8</sup> CO2e related to the generation of grid purchased electricity or waste and wastewater processing were not considered in Tierra's Monterey Bay Technical and Market Assessment.

sector accounts for approximately 54% of these emissions while the commercial sector accounts for approximately 46%.

MBCP's Built Environment Electrification Programs will concentrate on activities to influence adoption of heat pump water heaters and space heaters in the residential and commercial sectors. While these measures are reliable and technically and economically viable, they represent a technology change for many residential and commercial property owners. The new construction and major renovation market is the most economically viable opportunity from a lifecycle cost perspective. Tierra's forecasting shows that increased adoption of these measures will be largely attributed to program activities, as shown in Figure 2-10, and will involve initiatives that engage property owners, equipment distributors, and installation contractors through marketing, education, outreach, and financial incentives.





Based on this attribution estimate, the majority of:

Cumulative increase in kWh sales is expected to total 76 GWh by 2025, growing to approximately 259 GWh by 2030. As detailed in Table 2-6 and Figure 2-11 below, approximately 72% of cumulative increased sales—54 GWh in 2025 and 185 GWh by 2030—is forecast to be attributable to hot water heating. Approximately 52% of total cumulative increased sales is expected to be attributable to hot water heating in the residential sector.

able 2-6. Cumulative Inc	rease in Electricity	Requirements
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Sector	2025 Cumulative kWh	2030 Cumulative kWh
Commercial	23,116,471	78,568,952
Commercial NG Hot Water Heating	14,687,287	49,814,191
Commercial NG Space Heating	8,429,183	28,754,761
Residential	53,049,838	180,309,977

Residential NG Hot Water Heating	31,998,641	108,717,326
Residential NG Space Heating	7,942,112	26,456,920
Residential Propane Hot Water Heating	7,801,717	26,758,344
Residential Propane Space Heating	5,307,368	18,377,388
Total	76,166,309	258,878,929





• Customer cost savings will be positive for all measures, with cumulative savings of \$2.0M in 2025 increasing to \$6.5M in cumulative cost savings by 2030 at current fuel costs, as shown in Table 2-7 and Figure 2-12. Of these measures, the electrification of propane will generate the most fuel saving, largely due to the price premium of propane fuel. We estimate that this equipment is located primarily in rural homes that tend to be larger than the average urban home, which includes smaller multifamily dwellings.

	Table 2-7.	Cumulative	<b>Customer Fuel</b>	Cost Savings
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Measure	2025 Cumulative Customer Fuel Cost Savings	2030 Cumulative Customer Fuel Cost Savings
Residential NG Space Heating	\$17,374	\$57,875

Total	\$2,044,460	\$6,511,362
Residential Propane Hot Water Heating	\$1,018,828	\$3,494,377
Residential Propane Space Heating	\$693,090	\$2,399,906
Residential NG Hot Water Heating	\$69,998	\$237,822
Commercial NG Space Heating	\$155,451	\$203,763
Commercial NG Hot Water Heating	\$89,719	\$117,620

Figure 2-12. Built Environment Cumulative Customer Fuel Savings by Program Year



Given these figures, MBCP's proposed Built Environment Electrification Programs will focus efforts on replacing gas and propane water heaters with high efficiency heat pump water heaters, especially in new construction applications in the residential market. MBCP also anticipates promoting models that offer manufacturer or 3<sup>rd</sup> party grid-interactive controls which can be utilized by future demand response programs as well as enable customers to save money by implementing preheating strategies to lower usage during peak periods.

Informed by Tierra's Market Assessment and Forecast, as well as E3's recent Residential Building Electrification in California study of built environment electrification measures<sup>9</sup>, MBCP's strategy for deploying these measures will consider the following performance factors:

- Focusing residential cooking efforts on educating residential customers about induction cooktops/ranges. Although this end-use makes up a small percentage of GHG emissions, giving up favored natural gas cooking is a barrier to all-electric homes. MBCP may offer small incentives to offset the slightly higher upfront costs.
- Considering building reach codes and new construction incentive programs that promote allelectric single family and low-rise multi-family homes. All-electric residential new construction in certain climate zones that typically do not require air conditioning (e.g., climate zone 3) show more challenging customer economics, although this can be overcome through the addition of solar. A cost-effective application in climate zone 3, entails focusing on incentivizing high efficiency grid-interactive heat pump water heaters in the new construction market, enabling TOU and demand management which improves heat pump water heater customer economics. Unlike residential retrofits, heat pump water heaters in new construction have net capital cost savings from avoiding the installation of gas infrastructure.
- Retrofits of heat pump HVAC and heat pump water heating in single family homes with AC can have favorable customer economics, as 84% of projects are projected to have positive lifecycle savings.
- Installing heat pump HVAC in existing homes with AC will typically produce customer cost savings by replacing a gas furnace and AC with a heat pump in warmer climate zones such as San Benito and San Luis Obispo.
- Targeting the "low-hanging fruit" in the residential water heating market, by converting propane water heating to electric heat pump water heaters results in much higher bill and lifecycle savings.
- Targeting water heating conversions over space heating because approximately 12.5% of the water heating market will turn over annually compared to 6.67% of the space heating market. This means there will be more frequent opportunities for MBCP to incentivize water heating market interventions due to this higher annual stock turnover.
- Prioritizing grid-interactive heat pump hot waters in the commercial market because it is the second highest natural gas end-use and offers opportunities that are similar to the residential market:
  - Many commercial properties use tank style hot water heaters that have a relatively short useful life and thus offer higher annual stock turnover and resulting opportunities for market interventions.
  - Electric hot water heating in the commercial market offers demand response opportunities such as heating water during off-peak periods or times when there is an oversupply of renewable power on the grid.
  - In commercial settings such as restaurants, heat pump water heaters are ideal as they will also provide space cooling.
- Targeting the restaurant and food service segments which have considerable natural gas usage relative to other sectors, accounting for approximately 15% of commercial natural gas use. This

<sup>9</sup> Energy+Environmental Economics. Residential Building Electrification in California. April 2019. https://www.ethree.com/wpcontent/uploads/2019/04/E3\_Residential\_Building\_Electrification\_in\_California\_April\_2019.pdf

offers a greater leverage opportunity for induction cooking than the residential market because it represents a large opportunity in a relatively small number of facilities. While the acceptance of electric cooking (e.g. induction systems) in the commercial market is nascent and not fully understood it will be less susceptible to the same preference bias as induction cooking in the residential market.

There are many unique factors that will ultimately determine whether a project incorporating heat pump space or water heating will produce positive net customer benefits.

Table 2-8 below summarizes, according to the previous studies, in what conditions heat pump technologies generally will produce benefits and whether these benefits are from bill savings or lifecycle.

	Residential Single-Family Retrofit	Residential Multi-Family Retrofit	Residential Single- Family New Construction	Residential Multi- Family New Construction
Heat Pump HVAC CZ 3	Lifecycle -	Lifecycle -	Lifecycle -	Lifecycle -
Heat Pump HVAC CZ 4	Lifecycle +	Lifecycle +*	Lifecycle +	Lifecycle +
Heat Pump Water Heating CZ 3	Bill Savings +/ Lifecycle -	Bill Savings +/ Lifecycle -	Lifecycle +	Lifecycle +
Heat Pump Water Heating CZ 4	Bill Savings +/ Lifecycle -	Bill Savings +/ Lifecycle -	Lifecycle +	Lifecycle +

# Table 2-8. Summary of Conditions When Electrification Measures Produce Benefits

Program design details for Built Environment Electrification Programs anticipated to launch mid-way through the 5-year roadmap are provided in Chapter 3.

# 2.5 Agricultural Electrification – Providing Local Economic Benefits, Increased Clean Energy Use, and GHG Reductions

MBCP staff have identified an Agricultural Program as a priority during the early years of the 5-year roadmap to provide local economic benefits, conversion of agricultural end uses to clean energy, and GHG reductions:

According to CARB's 2018 update of the population of diesel-fueled agricultural irrigation pumps, there are 564 diesel pumps in the Tri-Counties and approximately 7 pumps are replaced each year.<sup>10</sup> It is important to note that in this 2018 data, San Luis Obispo County APCD was not reported. In a previous CARB report, there were 124 diesel pumps in San Luis Obispo in 2003.<sup>11</sup> Based on the trend of diesel pump replacements in Monterey Bay Unified APCD overtime, we suspect that San Luis Obispo County has zero or near zero diesel pumps.

<sup>10</sup> CARB, EMISSION INVENTORY SOURCE CATEGORY, AGRICULTURAL IRRIGATION PUMPS – DIESEL. August 2018. Source:

https://ww3.arb.ca.gov/ei/areasrc/fullpdf/full1-1.pdf

<sup>11</sup> CARB, Emission Inventory Methodology Agricultural Irrigation Pumps – Diesel. August 2006. https://ww3.arb.ca.gov/regact/agen06/attach2.pdf

District	County	Engine Population	Estimated Portable	Estimated Stationary
Monterey Bay Unified APCD	Monterey	450	107	343
Monterey Bay Unified APCD	Santa Cruz	62	15	47
Monterey Bay Unified APCD	San Benito	52	12	40
San Luis Obispo County APCD	San Luis Obispo	0	0	0
	Total	564	135	429

#### Table 2-9. Population for Diesel-Fueled Ag Irrigation Pumps (updated 2018)

 According to 2015 PG&E data illustrated in Figure 2-13 below, Monterey county is one of the few counties in California with medium agricultural therm usage. In addition, Monterey, San Benito, and San Luis Obispo do not appear to have achieved much, if any, savings from customers participating in PG&E programs.

Figure 2-13. PG&E 2015 Whole Sector Energy Usage and Savings Maps by County



• Table 2-10<sup>12</sup>, MBCP estimates that approximately 11 MM therms are used in MBCP service territory, with large customers responsible for approximately 88% of this usage. As such, MBCP's agricultural electrification program will focus efforts on the largest agricultural customers.

	Large Customers	Medium Customers	Small Customers	Total
Coastal Usage (MM)	18	2	0.1	20.1
<b>Coastal Customers</b>	406	421	367	1194
Estimated MBCP Customers	136	141	123	401
Estimated MBCP Ag Usage (MM)	10.2	1.5	0.1	11.8

# Table 2-10. Estimated Therms from Agriculture in Quad-Counties

Coastal includes: CZ01-CZ06 & CZ09 (excluding Bay Area Counties. Large: ≥ 250,000 Therms. Medium: 10,000 - 250,000 Therms. Small: < 10,000 Therms

Given the low number of diesel pumps in San Luis Obispo County, MBCP's Agricultural Program will focus efforts in San Luis Obispo County on providing incentives for pump testing and agricultural energy audits, while the focus in the Tri-Counties will be on partnering with MBARD to provide additional incentives to electrify diesel pumps. The Agricultural Program will incorporate the following components based on the findings from Tierra's literature review of agricultural reports to improve program performance:

- Partnering with agricultural trade allies to improve program participation.
  - Past studies have shown that non-utility sources on energy efficiency were much more effective at engaging farmers, with one study claiming these sources to be utilized 3 times more often.<sup>13</sup>
- Focusing on fully explaining the energy savings and co-benefits of pump repairs and upgrades that will improve efficiency.
  - Evaluation of existing utility agricultural programs has found that the key to increase adoption of energy measures is to articulate the non-energy saving benefits of the technology to customers. This may include a focus on how improving water management strategies produces healthier crops that are easier to sell, and that regular maintenance and repair of pumps increases reliability during hotter periods.
  - Past agricultural surveys have indicated that farmers wait to replace equipment until burnout but are generally receptive to early replacement if the new equipment is

<sup>12</sup> Due to limited agricultural data, therms from Agriculture in Quad-Counties were estimated by ratioing PG&E's reported agricultural usage in its Business Plan by the percentage of MBCP agricultural electric customers relative to PG&E agricultural electric customers.

<sup>13</sup> Evergreen Economics. March 26, 2015. SDG&E Agricultural Sector Market Study. Prepared for San Diego Gas & Electric. Final Report. Advice Letter 2627-E-A/2309-G-A (U902-M) CALMAC ID SDG0292.0. http://calmac.org/publications/SDG%26E\_Agricultural\_Sector\_Market\_Study\_Final\_Report\_032615.pdf

significantly more efficient and it is shown to them that their individual specific project would generate cost savings.<sup>14, 15</sup>

- Targeting small and medium sized customers for technical assistance, energy audits and pump testing.
  - Small and medium sized customers are much less likely to perform routine pump testing and maintenance or be aware of available incentives and as such will be a target market for these initiatives.<sup>16</sup>

# 2.6 Customer Engagement/Marketplace Tools - Providing Customer Benefits and Essential Program Implementation Infrastructure

MBCP staff have identified launching an online Customer Engagement/Marketplace a high priority during the early years of the 5-year roadmap to provide additional customer benefits in the form of easy online access to electrification technologies and consumer products and engagement with MBCP programs, as well as essential program marketing, outreach, and implementation information and processing systems:

- As technological advancement continues to reshape the energy industry, many utilities are turning to 3<sup>rd</sup> party, online, solutions to provide customers with a broad range of services that improve the customer's experience. As of December 2017, 60 million utility customers had access to a utility marketplace, including every California investor-owned utility, due to state regulations.<sup>17</sup>
- Integrating MBCP's developing portfolio of programs with an online platform will enable MBCP to serve its customers and trade allies more efficiently and effectively. Sophisticated utility marketplaces are successfully engaging customers and increasing adoption of energy efficiency measures. Exemplifying the success of these marketplaces, PG&E's \$2 million marketplace, which has been operating since 2015, has saved customers approximately 36.3kWh for every \$1 spent. Customer survey responses are also compelling with:<sup>18</sup>
  - o 48% indicating that the marketplace influenced their purchase decision.
  - 64% reporting being satisfied with the site.
  - 46% reporting having a more favorable view of PG&E after using the website.
- The launch of a Customer Engagement Platform would enable MBCP to launch customer dashboards, analytics, customer relationship management (CRM) systems, rebate processing, program impact and cost effectiveness calculation tools, as well as trade partner management systems

17 Utility Dive. Utilities Target Marketplace for Customer Interaction, Energy Savings. June 2018. https://www.utilitydive.com/news/utilities-target-marketplace-forcustomer-engagement-energy-savings/525308/

18 Research into Action. Assessment of PG&E's Online Marketplace. April 2018. https://www.etcc-ca.com/reports/assessment-pge%E2%80%99s-online-marketplace?dl=1562906426

<sup>14</sup> Navigant Consulting, Inc. 2013. Market Characterization Report for 2010-2012 Statewide Agricultural Energy Efficiency Potential and Market Characterization Study. Prepared for PG&E, CPUC, SDG&E, SCE, and SCG. May 6, 2013. http://calmac.org/publications/CA\_Ag\_Mrkt\_Characterization\_Final\_5-13-13.pdf

<sup>15</sup> Evergreen Economics. March 26, 2015. SDG&E Agricultural Sector Market Study. Prepared for San Diego Gas & Electric. Final Report. Advice Letter 2627-E-A/2309-G-A (U902-M) CALMAC ID SDG0292.0. <u>http://calmac.org/publications/SDG%26E\_Agricultural\_Sector\_Market\_Study\_Final\_Report\_032615.pdf</u>

<sup>16</sup> Navigant Consulting. Measure, Application, Segment, Industry (MASI): Agriculture. 2015. http://calmac.org/publications/MASI\_Agriculture\_Final\_Report.pdf

• At least two other CCAs have expressed interest in exploring the opportunity of jointly launching a marketplace to reduce set-up and administration costs.

For FY20-21/21-22 and beyond, MBCP staff have identified further adoption of Customer Engagement Platform/Marketplace, Built Environment Electrification Programs, and Agricultural Electrification as being the priority for delivering value to the community. These new offerings will be rolled out in a staged fashion and will be in addition to the ongoing delivery of the microgrid, transportation electrification and other programs discussed previously.

# **3** Programs Descriptions

This section of the report provides detailed description of each program recommended for inclusion in the 5-year program roadmap portfolio. Foundation information for each program including the overall program concept, target market, objectives, incentives and services, marketing and outreach concepts, and delivery strategy. This information will serve as the basis for detailed program design and the preparation of Program Implementation Plans (PIPs) as discussed in Chapter 1.

# 3.1 Distributed Energy Resource Programs

# 3.1.1 Smart Connect Microgrid Program

# **Program Concept and Description**

The MBCP Smart Connect microgrid program is designed to facilitate the development of microgrid projects in the MBCP service region to support the company's GHG reduction, economic development, grid reliability and resiliency, and community emergency preparedness goals. Microgrid development will likely involve the following business models:

- 1. Open solicitation at customer host sites as a Microgrid-as-a-service (MAAS) arrangement.
- 2. Joint projects with city and county agencies for critical infrastructure, and other private sector and community-based entities for community emergency preparedness.

These business models include options for both MBCP ownership and operation of microgrid generation, storage and control technologies, and customer ownership and operation of these resources.

**Open Solicitation at Host Sites.** MBCP currently has an open request for proposal solicitation on the street for customer host sites for turnkey engineering, procurement and construction ("EPC") of microgrid systems ("MGS") from 200kW and up to be installed in MBCP territory. The host site location must be either a current customer of MBCP or a new customer of MBCP following commission of the system. It is expected that the solicitation will result in one or more projects completed in the 2019-2020 fiscal year. Under this business model, MBCP expects to drive at least 1 additional project per year over the 5-year timeframe of the roadmap to facilitate the power needed for expanding businesses, governmental installations, and local public facilities. The open solicitation component of the Smart Connect program is a Microgrid-as-a-service model that aims to allow new or existing customers to increase electric supply on site without dealing with long Macrogrid interconnection wait times and costly distribution infrastructure upgrades. The project includes but is not limited to engineering, procurement, construction, testing, commissioning, start-up and performance verification. MBCP may own and operate generation, storage and control technologies installed at the host site.

Joint Development for Critical Infrastructure and Community Preparedness. Under this business model, MBCP will partner with city and county agencies in the quad county region for the development of clean energy microgrid projects for critical infrastructure including police, fire and other emergency response services and local government operations. MBCP will provide funding for project development including engineering, procurement and construction ("EPC") of microgrid systems ("MGS") sized for the needs of the facilities to be installed in MBCP territory. The city or county where the facility is located must be either a current customer of MBCP or a new customer of MBCP following commissioning of the system. It is expected that the solicitation will result in one or more projects completed in the 2019-2020 fiscal year. Under this business model, MBCP expects to drive at least 1 additional project per year

over the 5-year timeframe of the roadmap to facilitate the power needed to maintain critical emergency and governmental services during extended power grid outages and provide load relief during times of peak demand. This element of the Smart Connect program will either be a grant offering or rate-based offering with either MBCP or municipal and/or county agency ownership and operation of generation, storage and control technologies installed at the site.

MBCP will also partner with local private sector and community-based organizations in the quad county region for the development of clean energy microgrid projects for community emergency preparedness including grocery, hospitals and health care facilities, elder care facilities, and schools. MBCP will offer the options of a) MBCP ownership and operation of generation, storage and control systems, or b) providing funding for engineering, procurement and construction ("EPC") of microgrid systems ("MGS") sized for the needs of the facilities to be installed in MBCP territory. The facility must be either a current customer of MBCP or a new customer of MBCP following commission of the system. It is expected that the solicitation will result in one or more projects completed in the 2019-2020 fiscal year. Under this business model, MBCP expects to drive at least 1 additional project per year over the 5-year timeframe of the roadmap to facilitate the power needed to maintain critical community services during extended power grid outages and provide load relief during times of peak demand. This element of the Smart Connect program is offered as either a) a turnkey project with MBCP owners, or b) a grant offering with private sector ownership and operation of generation, storage and control technologies installed at the site.

# **Target Market and Eligibility**

The target market for this program is all customers facing grid constraints and interconnection challenges and non-wires alternative sites, all city and county critical infrastructure facilities, and other community facilities providing emergency preparedness functions during extended power outages potentially impacted by the Power Safety Power Shutoff (PSPS).

# **Program Objectives**

- Community Emergency Preparedness: The region is faced with potential power shut-offs, grid constraints and congestion that provide long wait times for interconnection. This congestion and long interconnect wait times directly affects economic development within our region. The opportunity to alleviate the power supply needs via an "Island Before Interconnect" microgrid model would potentially unlock further economic opportunities for local cities and businesses to sustainably grow. Additionally, in light of potential wildfires and other climate driven events which will cause the grid to cut power to specific areas of MBCP's service area, it is imperative MBCP support energy resiliency at critical infrastructure.
- GHG Emission Reductions: Deploying solar and storage which will reduce emissions.
- Demand Response: Deploying infrastructure that can be used in future load shifting and demand response programs that can assist MBCP in meeting resource adequacy.
- MBCP Brand Awareness: Community education and outreach will build brand awareness with our commercial community.
- Economic development: Creating jobs in the community more quickly than they may otherwise occur by enabling large commercial facilities unable to interconnect to the grid to power their facility using a microgrid.

Table 3-1 below summarizes the team's assessment of the Smart Connect Microgrid Program against the design scoring criteria described previously in section 1.2.

#### Table 3-1. Smart Connect Microgrid Program Scoring Criteria Matrix

GHG emissions reductions	Community emergency preparedness	Demand response	Social Equity	MBCP brand awareness	Complementary Funding/Delivery	Economic development	Priority Ranking
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#### **Incentives and Services**

The Smart Connect will engage with and leverage the incentives and resources of the California Self-Generation Incentive Program (SGIP). The SGIP is a CPUC sponsored and funded statewide program that provides incentives to support existing, new, and emerging distributed energy resources on the customer's side of the utility meter including advanced energy storage systems. The primary focus of engagement with SGIP will be to assist customers in applying for and accessing incentives for battery storage systems for microgrid applications. Other incentives offered by MBCP are summarized in the Table 3-2 below.

#### Table 3-2. Summary of Smart Connect Incentives and Services

<b>Business Model</b>	Incentives	Other Services
Open Solicitation at Host Sites	<ul> <li>Full cost of project development, installation, startup and operation</li> <li>Additional incentives for load relief</li> </ul>	<ul> <li>Turnkey EPC for host sites</li> <li>Develop pre-qualified pool of suppliers for solar, storage, and controls</li> <li>EM&amp;V and performance monitoring</li> </ul>
Joint Development for Critical Infrastructure and Community Preparedness	<ul> <li>Funding contribution for project development, installation and startup</li> <li>Additional incentives for load relief</li> <li>Rate based tariffs to pay back upfront capital</li> </ul>	<ul> <li>Technical assistance during project development</li> <li>Develop pre-qualified pool of suppliers for solar, storage, and controls</li> <li>EM&amp;V and performance monitoring</li> </ul>

#### Marketing, Education and Outreach

Marketing, education and outreach (MEO) activities for the Smart Connect program will include:

- Targeted outreach to host site solicitations.
- Direct outreach to city and county sustainability departments, public works departments, etc. for critical infrastructure sites.
- Targeted solicitations to community preparedness organizations

#### **Delivery Strategy and Administration**

Program delivery and administration to include:

- Turnkey project development and EPC for host sites
- Funding and technical assistance for critical infrastructure and community preparedness sites
- Pre-qualification and referral for contractors and suppliers
- Pre-negotiation of equipment discounts and service agreements

# 3.1.2 Load Management Program

# **Program Concept and Description**

The Load Management Program is designed to give MBCP the capabilities to influence customer load shapes and the timing of energy use. This will provide the flexibility to achieve desired load shape objectives depending on resource and cost of service needs including peak clipping and load shifting through demand management technologies such as grid interactive smart water heating, smart vehicle charging stations, and battery storage installations. The program involves two primary components:

- 1) **Demand Optimizer** will provide advisory services for MBCP's largest customers will assist them with managing and shifting their peak demand to support the agency's overall cost of service.
- 2) Demand Response plays an essential role in managing peak system loads, providing resource adequacy, managing resource acquisition costs, and assuring system reliability and resiliency. Demand response capability is embedded in other elements of the MBCP program portfolio and includes promoting the deployment of enabling technologies, and putting the essential elements of its demand response program in place during the early years of the program roadmap including technologies such as battery storage.

Each of these components is discussed below.

# **Demand Optimizer**

Staff is evaluating opportunities to advise MBCP's largest customers with ways to reduce their demand charges. The Demand Optimizer program would empower commercial, industrial and agricultural customers to lower their utility bills by reducing peak demand charges, by reducing peak loads, shifting their energy use from peak to off-peak periods, or switching to alternative tariffs. For peak demand management, the program objective is to enable these customers to temporarily modify electrical load after receiving a communications signal from MBCP, shedding or shifting load on a short-term basis. MBCP anticipates Demand Optimizer will provide commercial, industrial and agricultural customers advice on which tariffs are best suited for them based on their historical energy usage and demand, as well as tips on how they can shift or reduce load.

# **Demand Response**

Demand response plays an essential role in managing peak system loads, providing resource adequacy, managing resource acquisition costs, and assuring system reliability and resiliency. Demand response capability is embedded in other elements of the MBCP program portfolio and includes promoting the deployment of enabling technologies in the marketplace, communication and control platforms for actuating demand response events, and incentives systems for encouraging customer participating in demand response elements of electrification programs. MBCP will pursue putting the essential elements of its demand response program in place during the early years of the program roadmap, while working on collaborative efforts with PG&E demand response programs such as their Automated Demand Response Program. Efforts to promote the deployment of enabling technologies will include the following:

- Battery storage incentives for and demand response agreements at microgrid sites, multifamily housing sites, and other commercial, industrial, agricultural and municipal facilities.
- Select demand response enabled EV charging installations
- Smart thermostats and wifi-enabled smart water heaters through building electrification program participants.
- Demand response agreements with participants in transportation electrification infrastructure program participants.

MBCP will study the feasibility of launching a commercial demand response pilot program for its customers. It is anticipated that the first pilot could be a commercial peak day pricing program. If successful, MBCP will consider continuous implementation of the pilot and launching other commercial and residential demand response pilots.

MBCP will investigate using the Customer Engagement Platform for communication and control of demand response events, and a customer demand response participation incentive to encourage customers to enroll in demand response program features. This incentive is typically provided on an annual basis in exchange for the customer allowing the utility to access and control enabling technologies such as heat pump water heaters and/or smart thermostats during peak demand periods. Once offered, participation for the first year should be included as part of the agreement for a customer to receive the initial purchase incentive. For years two and onward, we recommend an annual participation incentive in the range of \$25-\$50.

# **Target Market and Eligibility**

The target market for Tariff Advisory, demand response, and storage incentives and technical assistance will include:

- Large commercial customers with high demand charges that would most benefit from managing demand.
- Smart Connect program participants
- Multifamily housing developments with battery storage technologies
- Commercial electric vehicle charging infrastructure development projects with smart charger technology
- Residential and commercial customers with smart thermostat and smart water heating technologies.

The basic requirements to participate in the peak day pricing pilot component of the program include:

- MBCP, non-NEM customers
- E-19 and E-20 rate schedules
- No standby accounts
- Must have at least 12 billing months of hourly usage data available
- Must have measured demands equal to or exceeding 200 kW for 3 consecutive months during the past 12 months.

Participation in the Peak Day Pricing Pilot would be voluntary, and participation could be limited. For instance, CleanPowerSF's Peak Day Pricing Pilot limited participation to 50 service agreements.

# **Program Objectives**

Demand Optimizer is a strategy designed to address MBCP's largest commercial, industrial and agricultural customer's need for tools to manage demand charges. In addition to helping these customers reduce the largest portion of their utility bills, MBCP will benefit from deploying control technologies, such as battery storage, that can be used in the future to implement load shifting programs as well as be able to reduce load on a set number of event days throughout the year through the peak day pricing pilot.

The rationale for implementing this program includes:

- Demand Response: deploy infrastructure that can be used in future load shifting and demand response programs, including customer installations of smart thermostat and water heating, battery storage, and charging stations.
- Customer Benefit: demand charge savings and billing arbitrage.
- Brand Awareness: This program will drive brand awareness by providing customers with energy cost management options.
- Complementary Delivery: Leverage statewide programs such as SGIP for storage technology and, potentially, and PG&E demand response programs.
- Economic Development: local contractors used for installations
- Other: Address large commercial, industrial and agricultural customers' need to reduce the demand charge component of their utility bill, lowering the risk that these customers, which make up a significant amount of MBCP's revenue, may opt-out.

Table 3-3 below summarizes the team's assessment of the Load Management program against the design scoring criteria described previously in section 1.2.



# Table 3-3. Load Management Scoring Criteria Matrix

# **Incentives and Services**

One component of the Demand Optimizer program is offering a Peak Day Pricing Pilot that could offer commercial, industrial and agricultural customers the opportunity to earn a bill credit by reducing electricity use on a number of event days between set hours during the summer. Typically, these event days occur on the hottest days of the year and customers will be notified a day in advance. In addition, the pilot could include 1-year Bill Protection, ensuring that participants do not pay any additional fees in the first year.

During the pilot customers could be charged the standard E-19 or E-20 electric rate with no difference in monthly billing. Participating customers would accumulate credits in a PDP balance at the end of each month. Monthly accumulated credits would be calculated by multiplying the demand from each month's bill, by a "KW credit". Then on each of the 15 event days during the pilot, the PDP balance would be reduced according to the number of kWh's used during a 4-hour PDP peak by a PDP period charge. At the end of the pilot, MBCP would perform a calculation to determine if the customer's electricity usage

pattern resulted in a net bill credit. Note that MBCP anticipates setting the PDP period charge and PDP credits equal to PG&E's Peak Day Pricing Program's incentive levels at the time of launch but would adjust the PDP peak to the four-hour period when California's grid is most stressed. For comparison, Table 3-4 below illustrates the value of these credits and charges CleanPowerSF is using for their 2019 pilot, which are equivalent to PG&E's credits and charges.

Rate Schedule	PDP Period Charge (\$/kWh)	Peak KW Credit (\$/KW)	Part Peak KW Credit (\$/KW)
E-19S	\$1.20	\$5.82	\$1.44
E-19P	\$1.20	\$5.66	\$1.38
E-19T	\$1.20	\$4.20	\$1.05
E-20S	\$1.20	\$5.69	\$1.40
E-20P	\$1.20	\$6.22	\$1.47
E-20T	\$1.20	\$5.95	\$1.42

#### Table 3-4. CleanPowerSF Peak Day Pricing Credits and Charges

In addition to the Peak Day Pricing Pilot, battery storage incentives and technical assistance could be offered to commercial, industrial and agricultural customers to help them choose the best available rate structure given their business operations as well as provide best practices for how they can reduce their demand costs through operational adjustments.

# Marketing, Education and Outreach

The program's ME&O approach will consist of outreach to all commercial, industrial and agricultural customers on E19 and E20 tariffs with measured demand equal to or exceeding 200 kW for 3 consecutive months during the past 12 months. Considering that the program may be limited to 50 customers, MBCP will begin its ME&O activities by strategically targeting those customers that meet these criteria and that have historically had the largest demand charges. MBCP will utilize this engagement to offer customers free assistance navigating tariff options and providing suggestions for how they can shift and reduce electric load during peak-demand hours, regardless of whether they opt into the pilot. Marketing of demand response efforts will also be conducted as part of the marketing of their associated programs (e.g., Smart Connect). Customer education on the cost saving associated with peak demand charges and time-of-use (TOU) tariff options will be conducted as part of the Demand Optimizer program.

# **Delivery Strategy and Administration**

Staff proposes coordinating with an experienced third-party to implement the Demand Optimizer's marketing, customer communications, rebate processes, and general administrative functions. In addition, MBCP would solicit advice and best practices from other CCAs regarding delivery strategy and administration that have conducted or are planning to conduct demand response programs such as CleanPowerSF. Demand response event delivery will be handled primarily through the Customer Engagement Platform.

# **3.2 Transportation Electrification Programs**

# 3.2.1 Passenger EV and Home Charger Incentives Program

# **Program Concept and Description**

Typically, programs must run for multiple years to build awareness (and resulting participation) as well as leverage up front design and implementation costs and benefit from improved efficiencies over time. However, the Buy Local program is extremely costly to administer, constraining limited resources. In addition, with the closure of the Hyundai dealership, the inability to include Tesla and, with the exception of Chevrolet, the limited number of remaining dealerships to drive competition and encourage dealer participation – the overall success of future Buy Local EV incentive offerings could be limited. Therefore, the recommendation is to not continue the Buy Local program as currently designed.

The current phase 2 Passenger EV and Home Charger Incentives program—which launched on August 1<sup>st</sup>—is a joint effort leveraging MBARD's existing program infrastructure to provide residents of Monterey, San Benito and Santa Cruz County a rebate for purchasing or leasing new or used EVs from any dealership in California. This program also provides twice the incentive amount for income qualified residents. With the recent expansion of MBCP's territory, staff recommend transitioning the program into a post-purchase rebate for electric vehicle charging equipment and related panel upgrades that would be available to all residential customers in MBCP territory including San Louis Obispo and Santa Barbara Counties. While MBCP will seek to continue leveraging the awareness already established in MBARDs existing program, and coordinate were possible with MBARD on education and outreach efforts in Monterey, San Benito and Santa Cruz County, the administration, marketing and rebate processing of this next iteration of the program will be internally operated by MBCP. In preparation for this transition, MBCP will further research the possibility of working with service providers within the service territory that already have existing relationships with the low-income community—such as Peninsula Family Services—to provide targeted outreach and education regarding the program offerings. Care will be taken to ensure that used EV incentives support minimum range requirements and that stacked incentives, especially in the used market, do not result in customers reselling the vehicle for profit.

# **Target Market and Eligibility**

Marketing and outreach will primarily target single-family and 2-4-unit MDUs. A portion of the program's incentive and marketing budgets will also be reserved for low-income and disadvantaged (DAC) communities.

The basic requirements to participate include:

- Be a resident within MBCP's service territory.
- For the current program, purchase a new or used ZEV listed on MBARDs list of eligible vehicles. For the proposed program, purchase and install a new level 1 or 2 EVSE.
- For the current program, provide proof of temporary or permanent vehicle registration and a copy of a California driver's license.
- Submit an application to MBARD prior to exhaustion of available rebate funds and within 18 months of the vehicle purchase or lease date.

• Provide proof of qualifying annual household income or alternatively provide proof of enrollment in California Alternate Rates for Energy (CARE) or Family Electric Rate Assistance (FERA) to receive the income-qualified incentive adder.

# **Program Objectives**

The program will accelerate adoption of ZEVs by reducing the upfront cost to residents so that it is on par with comparable internal combustion engine (ICE) vehicles.

The rationale for implementing this program includes:

- GHG Emission Reductions: increased EV adoption will result in reduced emissions
- Social Equity: utilize existing and trusted channels to spread awareness in low-income communities; provide incremental incentives to low income customers.
- MBCP Brand Awareness: community education and outreach will build brand awareness with our residential community
- Complementary Funding/Delivery: state rebates, federal tax incentives, and other local incentives will complement MBCP's rebate.
- Economic development: retaining funds in the community that are normally spent on transportation fossil fuels will stimulate local economic development.

Table 3-5 below summarizes the team's assessment of the Passenger EV and Home Charger Incentives Program against the design scoring criteria described previously in section 1.2.

GHG emissions reductions	Community emergency preparedness	Demand response	Social Equity	MBCP brand awareness	Complementary Funding/Delivery	Economic development	Priority Ranking
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#### Table 3-5. Passenger EV and Home Charger Incentives Program Scoring Criteria Matrix

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# Marketing, Education and Outreach

The program specific marketing, education and outreach (ME&O) will target two groups:

- 1. Single-family and 2-4-unit MDU residents
- 2. Low-income and disadvantaged community residents

ME&O activities applicable to both groups will include, but not be limited to:

- Promotion of incentives on the Customer Engagement Platform and Marketplace.
- Community Events
- MBCP Media (social, e-newsletter)
- Print
- Ride & Drive
- Radio
- Digital targeted outreach to previous "green" customers, which may include those enrolled in MBprime rates or MBgreen+

- Partnering with local non-profits already serving low-income communities
- Explore new opportunities to connect with low income community including Peninsula Family Service, faith-based groups, local government organizations

It is important to point out that more focused ME&O efforts will be directed towards low-income and disadvantaged community residents. This will be conducted by leveraging existing community assets and connections to drive program participation in underserved communities. By building partnerships with local organizations that have pre-established relationships with low-income residents, and then using these organizations to implement the program's outreach efforts to low-income residents, MBCP will be better able to engage these customers and address their concerns regarding ZEVs through trusted channels. The types of organizations MBCP will seek to partner with to conduct this targeted ME&O may include non-profits, faith-based community groups, and local government organizations that provide services to low-income communities, as well as local financial institutions specialized in providing auto loans and financial advisory services to this market sector. For instance an organization such as Peninsula Family Service— which operates in San Benito and Santa Cruz County—exemplifies a potential partner for engaging the low-income market because they have extensive experience connecting low-moderate income residents with auto financing through local credit unions, and in this instance have even worked with Peninsula Clean Energy on its "DriveForward" EV down payment program.

# **Incentives and Services Provided**

The services currently provided by the Passenger EV and Home Charger Incentives Program include customer information and education regarding EVs as well as a \$200-\$3000 rebate for purchasing an electric vehicle, PHEV, hydrogen cell vehicle, or electric motorcycle. The customer information and education component of this program may consist of:

- Maintaining MBCP's existing library of on-line resources as well as expanding it to include an inventory of marketplace financing options.
- Providing residents, the opportunity to test drive EVs at select community events.
- Coordinating with local non-profits already serving low-income communities to identify prospective ways to encourage these communities to participate.

Table 3-6 shows the rebate amounts by eligible vehicle type and the eligibility period for this program. Note that income-qualified customers will be eligible to receive double the indicated rebate amounts. Table 3-7 also summarizes other incentives including federal tax credits and statewide or regional rebates that can potentially be used in conjunction with the Passenger EV and Home Charger Incentives program to further reduce the upfront cost of ZEVs.

Rebates		Eligibility Period	
New/Used EVs, General Public	New: \$1,000 Used: \$750	August 1, 2019 while funds are available	
New and Used PHEVs	New: \$500 Used: \$300		
New Electric Motorcycle	\$200		
New Hydrogen Fuel Cell Vehicles, General Public	\$1,500		
	Rebates         New/Used EVs, General Public         New and Used PHEVs         New Electric Motorcycle         New Hydrogen Fuel Cell         Vehicles, General Public	RebatesNew/Used EVs, General PublicNew: \$1,000Used: \$750Used: \$750New and Used PHEVsNew: \$500Used: \$300Used: \$300New Electric Motorcycle\$200New Hydrogen Fuel Cell Vehicles, General Public\$1,500	

#### Table 3-6. Passenger EV and Home Charger Incentives Program Rebates At-a-Glance

Notes:

(1) Passenger EV and Home Charger Incentives incentives are for any used or new alternative fuel vehicle of their choice from any dealer throughout California.

(2) Income-Qualified residents can receive double the indicated rebate amount.

#### Table 3-7. Other Available EV Incentives

Incentive	Standard Amount	Low/Mod Income Amount			
CA Clean Vehicle Rebate	\$2,500	\$4,500			
PG&E Clean Fuel Rebate	\$800	\$800			
Federal Tax Credit (1)	Up to \$7,500				
Notes: (1) Federal Tax Credit only applicable on purchased vehicles.					

After the current allocation of funding for EV incentives through MBARD are depleted, the services MBCP staff propose include expanding customer information and education to also include panel upgrades as well as offering up to \$500 rebate for installing level 1 or 2 EVSE.

#### **Delivery Strategy and Administration**

The current EV rebate offering is currently being jointly funded and marketed by MBCP and MBARD, with administration and rebate processing being handled by MBARD. The proposed transition to a territory-wide EVSE rebate will require MBCP to fully fund and administer the program, including rebate applications, processing, and distribution. These latter functions can be facilitated by the online Customer Engagement Platform and Marketplace.

# 3.2.2 Central Coast Electric Vehicle Infrastructure Project

# **Program Concept and Description**

In FY18-19, MBCP secured \$6 million in EV infrastructure funding for the Monterey Bay region via the California Energy Commission's CALeVIP program. MBCP has committed to matching the CEC funding beginning with \$1M in FY 19-20. Combined, this is a \$7M charging station program. Made possible

through a grant by the Energy Commission's Alternative and Renewable Fuel and Vehicle Technology Program and Implemented by the Center for Sustainable Energy (CSE), local business customers receive generous incentives to install Level 2 and DC fast chargers. The statewide project aims to provide a streamlined process for getting chargers installed to fill the significant gaps in charging availability.

The Central Coast Electric Vehicle Infrastructure Project is expected to launch in October 2019. The project will provide financial incentives for design, engineering and installation costs of new Level 2 (L2) and dual standard DC fast charging (DCFC) stations in public or private shared-use locations in the Tri-County. A portion of the Project's budget will be reserved for installing charging stations in the top 50% of disadvantage communities census tracks, as defined in CalEnviroScreen 3.0. The Project allows sites to apply incentives to a combination of L2 and DCFC equipment as well as coordinate with simultaneous regional EV incentive projects to ensure that all Project goals are met and to avoid eligibility limitations for potential applicants. In addition to offering incentives, the Project will channel customers to the CALeVIP website which serves as a hub through which customers can find information and resources that promote increased EV charger installations, and will soon include interactive tools that interested site hosts, EV charging station manufacturers, EV service providers and contractors can use to connect to create new installation projects.

# **Target Market and Eligibility**

The primary target of the Project will consist of commercial, public, and multi-unit dwellings with capacity to install 1-10 L2 charging stations for either public or private shared-use locations and 1-4 DCFC for public 24-hour access charging. The following subsections describe the types of equipment, project costs and site locations eligible for charging infrastructure funding under this program.

# **Eligible Equipment**

An updated list of eligible equipment and incentive amounts are maintained on the CALeVIP website. There are two major categories of equipment eligible for funding under the program:(a) Level 2 and (b) dual standard DC fast chargers.

- 1. Single or Dual Connector Level 2 (L2) EV Chargers. One or two SAE J1772 connectors originating from a single Energy Star certified charger, capable of charging at 6.2-kilowatt (kW) or greater.
- 2. Dual standard DC Fast Chargers (DCFC). DCFC dual standard charger, meaning the charger must have both CHAdeMO and SAE CCS combo connectors, capable of charging at 50 kW or greater.

# **Eligible Project Costs**

Project costs must be part of the same charger project installation and any costs incurred at a different project site are ineligible.

- 1. Design, engineering and utility service request costs.
- 2. Installation costs (labor and materials) including:
  - Contractor labor and materials for connecting the charger(s) to the electrical service.
  - Utility service order, if applicable for the installation site.
  - Planning and engineering design costs such as development of drawings and plans meeting the Americans with Disabilities Act requirements for charger(s).
  - Necessary project signage.
- 3. Electric infrastructure related to EV charging upgrades. Site electrical infrastructure upgrades are often required to serve new EV charging load. Eligible costs must be incurred after the funds reserved date and may include necessary site transformer upgrades servicing EV chargers and

electric panel upgrades, and necessary stub-outs. Electrical single line diagram(s) referencing project electrical infrastructure upgrades must be provided upon CSE's request.

- 4. Energy storage equipment
- 5. Service agreements

Ineligible project costs include permits, solar panels, any project costs offset by other incentive programs or any costs incurred prior to the Project launch date.

# **Eligible Site Types**

- 1. Located in Monterey, San Benito, or Santa Cruz County.
- 2. Be well-lit, secure and in compliance with all federal, state and municipal laws, ordinances, rules, codes, standards and regulations
- 3. For Level 2 projects containing 1-10 connectors, be one of the following site types:
  - Commercial any non-residential property used solely for business purposes including private office buildings, warehouses, and retail buildings.
  - Workplace A place where people work, such as an office or factory.
  - Multi-unit dwelling Classification of housing where multiple separate housing units for residential inhabitants are contained within one building or several buildings within one complex. Chargers may be public or private and must be shared use.
  - Light-duty Fleet Groups of motor vehicles owned or leased by a business, government agency or other organization rather than by an individual or family. Chargers may be public or private and must be shared use.
  - Public facility can be any facility, including, but not limited to, buildings, property, recreation areas, and roads, which are owned, leased, or otherwise operated, or funded by a governmental body or public entity.
  - Curbside On-street in public right-of-way along the street frontage of any of the above listed uses.
- 4. DCFC Projects must be publicly accessible and available 24 hours per day, year-round and must be one of the following site types:
  - Urban/suburban retail core standalone retail stores are ineligible.
  - Retail shopping center standalone retail stores do not qualify as a retail shopping center.
  - Grocery store
  - Restaurant
  - Gas station
  - Hospital
  - Sheriff/police station
  - Airport
  - Hotels
  - City/County/Privately owned parking lot or garage
  - Library
  - Casino
  - Public transit hub includes train stations, rapid transit stations, bus stations, and tram stops.
  - Curbside

# **Program Objectives**

The Project is just one of multiple transportation electrification investments MBCP is proposing to accelerate regional EV adoption in the residential and non-residential market. The purpose of the program is to support EV supply development strategies that facilitate strategic deployment of electric vehicle supply equipment (EVSE) at MDUs and businesses near where residents work or frequent for commercial purposes. The Project's supply development strategies consist of:

- 1. Engaging with property owners to increase awareness of EV benefits.
- 2. Providing implementation support in the form of technical and financial support to property owners to complete EVSE installation as either an owner/operator or in partnership with a 3<sup>rd</sup> party EVSE provider.

The rationale for implementing this program includes:

- GHG Emission Reductions: increased EV adoption through increased charging access
- Demand Response: Networked and grid connected charging stations, as well as the deployment of battery storage used to strategically shave peak demand costs by shifting load to off-peak, can be used as part of a demand response program
- Social Equity: additional incentives for DAC defined locations
- Brand Awareness: all MBCP installed charging stations will have a sticker with MBCP's name and logo, building awareness for all that use the charging stations; all owners applying for incentive will learn that the funding is co-sponsored by MBCP.
- Complimentary Funding/Design: funding from the Energy Commission; design, program infrastructure, processes and administration through CSE.
- Economic Development: benefit the regional economy by providing additional work for local contractors including engineers and electricians, as well as providing multi-unit dwellings, workplaces and activity centers with a physical asset attractive to tenants, customers, and workers.

Table 3-8 below summarizes the team's assessment of the Central Coast Infrastructure Project against the design scoring criteria described previously in section 1.2.

GHG emissions reductions	Community emergency preparedness	Demand response	Social Equity	MBCP brand awareness	Complementary Funding/Delivery	Economic development	Priority Ranking
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ନ୍ତ High 🛥 Medium ଭୟ Low							

# Table 3-8. Central Coast Infrastructure Project Scoring Criteria Matrix

# **Incentives and Services**

The services provided by the Central Coast Electric Vehicle Infrastructure Project include incentives and technical assistance for installing workplace, public and commercial EVSE. As detailed previously in the Eligible Project Costs section, this rebate can be used to cover design, engineering and utility service request costs; installation costs; electric infrastructure related to EV charging upgrades; energy storage equipment; and service agreements with a network provider. Once the application is prescreened and

deemed qualified, applicants have 270 days (9 months) to complete their equipment installation and provide all supporting documentation for Level 2 only applications, and 450 days (15 months) for DCFC / Combination applications. Incentives are issued within 15 calendar days of application approval.

The amount of incentives offered through the Project will be determined by type of charger and whether the chargers are located within a DAC. Incentive amounts will be based on actual costs for both Level 2 and DCFC. Incentives for Level 2 chargers will be provided up to the amounts shown in Table 3-9 below, and DCFC incentives to either the lesser of 75% (for non-DAC sites) / 80% (for DAC sites) of the amounts shown. Sites may include a combination of L2 and DCFCs but may not exceed the quantities shown below. Applicants can still apply for sites exceeding the maximum quantity of DCFCs but may only receive incentives for the quantity outlined in Table 3-10 below.

# Table 3-9. Central Coast Electric Vehicle Infrastructure Project Incentives

Charger Type	Non-DAC	DAC	MUD
Level 2	Up to \$5,000/connector	Additional \$500/connector	Additional \$1,000/connector
DCFC	Up to \$70,000/DCFC	Additional \$10,000/DCFC	Not applicable

# Table 3-10. Quantity of Chargers Eligible for Incentives per Site (min-max)

Territory	DCFC	L2 Connectors
Santa Cruz, Monterey & San Benito Counties	1-4	1-10

While there is no limit to the total amount of incentives an eligible applicant can receive if funding is available, applicants are subject to a maximum amount of Project funds reserved on active and on-hold applications (applications that have not been approved for final payment, paid out or cancelled) at one time. When an applicant reaches the maximum allowable incentive amount for active applications, CSE will submit a notice to the applicant. Once the applicant receives payment from previously submitted projects, the applicant may fall below the maximum funds reserved amount and is eligible for more incentives. Maximum Funds Reserved Amounts on active and on-hold Project applications totals \$640,000 per applicant.

# Marketing, Education and Outreach

CSE will be providing marketing collateral that MBCP will co-brand. The Project's ME&O approach will initially focus outreach on large MDUs, public agencies, and large commercial activity centers that are well positioned to provide charging services to a wide number of employees, customers, and/or tenants. Additionally, MBCP will identify and conduct targeted outreach to businesses and MDUs located in charging deserts, to ensure access to charging is spread thoroughly throughout the service territory. Large organizations and charging deserts that overlap with disadvantaged community census tracts will be prioritized.

The key to engaging outreach will be to identify opportunities to install EVSE that align with and are beneficial to the customer's business model. This outreach will begin primarily through outreach from, and collaboration with, known community assets and stakeholders. As detailed in Figure 3-, this will include multiple communication modes and will include educational outreach that focuses on defining

and promoting the key benefits of implementing EVSE to property owners most commonly referenced in literature, including:

- Increased property value
- Marketing benefits, including providing charging for customers and positioning the business as EV and environmentally friendly
- Attracting and retaining workers through reduced turnover
- Differentiating a property from competitors
- Potential to generate additional revenues for retail operations, including additional foot traffic
- Increasing satisfaction among users of the property

Marketing Education and Outreach activities will include:

- MBCP Media
- Print
- Radio
- Digital
- Energy Account Services Relationships

Once demand development strategies are successful in convincing a site owner to pursue deployment of EVSE and participate in the program, MBCP will connect interested customers with a technical consultant that provides specialized technical and design assistance. This assistance will vary depending on the customer's preferred ownership model.

For owners interested in an owner/operator model, implementation support may include, but not be limited to:

- Technical solution identification including both hardware and software configurations as well as parking layout considerations.
- Defining operator and EV driver interface solutions such as access control and payment settlement.
- Establishing contracting structures with and among implementers, equipment providers, contractors, operators and drivers.
- Designing system performance evaluation strategies.
- Completing technical reviews and financial assessments to refine vendor estimates of economic impact, such as annual usage and costs or forecast benefits.
- Lending support to leverage additional funding and financing products that may be potentially be layered on top of the Project.
- Completing a detailed turn-key technical installation delivery services package.

For owners interested in providing their property as a host site for a 3<sup>rd</sup> party EVSE service provider, implementation support would include, but not be limited to:

• Working with service providers on the owner's behalf to review various service provider technical solution offerings, contracts, and options including distribution of performance and financial risk.

- Working with owners to review various service provider contracts and options, including confirming provisions of SB 454:<sup>19</sup>
  - No membership requirement to use publicly available Electric Vehicle Service Equipment (EVSE).
  - Fees to use EVSE must be disclosed at point of sale.
  - Credit card/mobile technology for payment.
  - Location and payment info must be provided to National Renewable Energy Laboratory (NREL).
  - State may adopt interoperability billing standards.
  - Standardize starting a charging session experience for consumers.
  - Facilitate non-member access to networked electric vehicle charging stations through:
    - Ubiquitous methods of payment;
    - Ease of customer use;
    - Not locking out any consumer base;

# **Delivery Strategy and Administration**

MBCP in coordination with the Energy Commission's CALeVIP implementer CSE, will implement the program's marketing and customer communications. MBCP will be primarily responsible for channeling participants into the program. The Central Coast Electric Vehicle Infrastructure Project applicants will utilize CSE's existing CALeVIP website which includes:

- An Applicant Dashboard where applicants create an account, apply and view all application materials, and can upload required documents online
- Transaction & Reminder Emails that notify applicants of any application status changes
- A dedicated hotline where CSE project staff are available to answer project questions on eligibility, required documentation, etc.

CSE will also be responsible for implementing the program's rebate application, processing, rebate distribution and other general administration.

# 3.2.3 Medium-Heavy Duty Transportation Enhancements Program

# **Program Concept and Description**

Starting in FY19-20, staff recommends collaborating with MBARD to enhance several of their transportation electrification programs to support transit agencies, school districts and other commercial enterprises, including:

• Clean Air Management Program. An existing program which provides AB2766 grants to local agencies for plug-in electric vehicles (PEVs) and infrastructure, including both new electric transit buses and electric fleet vehicle replacement.

<sup>19</sup> SB 454 Electric Vehicle Charging Stations Open Access Act, California Health and Safety Code § 44268, 44268.2. This law "is intended to ensure all drivers of plugin electric vehicles are able to access publicly available charging stations regardless of membership status. The proposed requirements include adoption of an interoperable billing standard at all public electric vehicle charging stations, and clear communication on electricity pricing. Additionally, the proposed requirements will standardize station location data sent to the Alternative Fuels Data Center (AFDC) from the National Renewable Energy Laboratory (NREL), to ensure accurate and up-to-date data is available to consumers."

- Zero Emission School Bus Program. An existing program which provides AB923 funds for new electric school buses purchased in conjunction with the California Air Resources Board's (CARB) Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP).
- Medium Duty EV Incentive/Charging Station Program. A possible future program that will use AB923 funds to incentivize medium-duty EVs and charging stations purchased in conjunction with the California Air Resources Board's (CARB) Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP).

Staff recommends funding the following enhancements to the MBARD programs described above:

- Incentives. Applicants of the designated MBARD programs would be eligible to receive additional incentives, funded by MBCP and administered by MBARD, if the project meets specific technology, economic development or equity requirements.
- Evaluate unique tariffs to address needs of commercial EV charging. In 2020, PG&E is expected to launch commercial EV tariffs with the goal of reducing demand charges for EV fleets. At this time, it is not known if the desired results will be realized. MBCP may develop specialized commercial EV rates if the 2020 EV commercial rates do not meet customer needs or better align customer rates with system costs.

# **Target Market and Eligibility**

The primary target of the program is medium-heavy duty fleets, with an emphasis on supporting the electrification of transit and school buses. While enrollment in Transit Tariffs will be limited to MBCP customers on a commercial, industrial or agricultural rate, the incentives will only be available to organizations with a medium-heavy duty electrification project that is selected for funding through MBARDs' Clean Air Management, Zero Emission School Bus, or Medium-Duty EV Incentive/Charging Station Program.

# **Program Objectives**

The Enhancements Program is a transportation electrification investment MBCP is proposing to accelerate regional EV adoption in the non-residential market. The purpose of the program is to support EV supply development strategies that reduce barriers to purchasing medium-heavy duty EV vehicles including transit or school busses and trucks, as well as facilitate strategically deploying the necessary electric vehicle supply equipment (EVSE) to commercial, industrial and agricultural customers. The program's supply development strategies consist of:

- 1. Engaging with property owners to increase awareness of EV benefits.
- 2. Providing implementation support in the form of technical and financial support to property owners to complete EVSE installation as either an owner/operator or in partnership with a 3<sup>rd</sup> party EVSE provider.

The rationale for implementing this program includes:

- GHG Emission Reductions: incents regional EV adoption
- Demand Response: networked and grid connected charging stations, as well as the deployment of battery storage used to strategically shave peak demand costs by shifting load to off-peak, can a part of a demand response program
- Social Equity: health improvement for all ridership
- Brand Awareness: work with bus agencies to provide stickers with logos for all agencies that provided funding to increase brand awareness within community.

- Complementary Funding/Delivery: MBARD, HVIP, CARB; leverage MBARD's expertise and processes
- Economic Development: additional work for local contractors

Table 3-11 below summarizes the team's assessment of the Medium-Heavy Duty Transportation Enhancements Program against the design scoring criteria described previously in section 1.2.





# **Incentives and Services**

The services provided by MPCP's Medium-Heavy Duty Transportation Enhancements Program could include potential rate design as well as incentives for transportation electrification projects enrolled in MBARD's Clean Air Management, Zero Emission School Bus, and Medium-Duty EV Incentive/Charging Station Program. The types of incentives that MBCP is currently considering include, but are not limited to:

- Disadvantaged Community Incentives. Increased incentive amounts for MBARD enrolled projects located in a DAC or low-income community, and could be used to cover vehicle, EVSE, battery equipment, and installation costs that are not covered by the incentives provided by the MBARD programs and HVIP.
- Battery Storage Incentives. Increased incentive amounts for MBARD enrolled projects that include installation of a battery storage system to shave peak load while the charging equipment is in operation.
- 3. Economic and Workplace Development Incentives. Additional incentives for contractors utilizing local labor and/or that hire a job trainee—an individual currently enrolled in an eligible job training program or who graduated from an eligible job training program within 12 months of the start date of the installation project. MBCP would provide potential contractors with a list of eligible workplace training/development programs.
- 4. Technical Assistance Incentives. Additional incentives to cover the cost of electrical site assessments, project financial analysis including assessment of incremental electricity charges, design and engineering support, or technical assistance that are not covered by the incentives provided by the MBARD programs and HVIP.

Discussions with MBARD are ongoing to prioritize need and funding, and these discussions will ultimately determine the types of incentives offered.

As for Transit Tariffs, if PG&E's proposed commercial EV tariff isn't approved, MBCP will begin to develop commercial EV rates that better align customer rates with system costs, providing mid-large duty fleet operators relief from high demand charges that make the cost of charging comparable or even higher than gasoline, creating a significant barrier to commercial EV adoption. The process for developing these Transit Tariffs would consist of:

- 1. Collecting and analyzing market data to understand the impacts of current rates and regional commercial EV load profiles.
- 2. Developing a set of ratemaking objectives and identify possible new rate options.
- 3. Performing an assessment of potential impacts for these rate options.
- 4. Conducting various rate pilots.
- 5. Launching full-scale deployment of new commercial EV rates.

Commercial EV rate options that would be explored as part of this process will include, but not be limited to:

- Keeping existing rates but issuing demand charge rebates
- Time-of-Use rates with reduced demand charges
- Time-of-Use rates with higher volumetric rates but reduced demand charges
- Time-of-Use rates with a subscription charge lower than current demand charges
- Subscription pricing model

# Marketing, Education and Outreach

The Project's ME&O approach will initially focus outreach on the commercial, industrial and agricultural customers that are known to operate medium-heavy duty vehicle fleets. Additionally, MBCP will identify and conduct targeted outreach to businesses located in charging deserts, to ensure access to charging is spread thoroughly throughout the service territory. Organizations operating large fleets and located in charging deserts that overlap with disadvantaged community census tracts will be prioritized.

The key to engaging outreach will be to identify opportunities to install EVSE that align with and are beneficial to the customer's business model. This outreach will begin primarily through outreach from, and collaboration with, known community assets and stakeholders. As detailed in Figure 3-1, this will include multiple communication modes and will include educational outreach that focuses on defining and promoting the key benefits of implementing EVSE to property owners most commonly referenced in literature, including:

- Increased property value;
- Marketing benefits, including providing charging for customers and positioning the business as EV and environmentally friendly;
- Attracting and retaining workers through reduced turnover;
- Differentiating a property from competitors;
- Potential to generate additional revenues for retail operations, including additional foot traffic;
- Increasing satisfaction among users of the property

Marketing Education and Outreach activities will include:

- MBCP Media
- Print
- Radio
- Digital
- Energy Account Services Relationships



Figure 3-1. Demand and Supply Development Nexus

Once demand development strategies are successful in convincing a site owner to pursue deployment of EVSE and participate in the program, MBCP will connect interested customers with a technical consultant that provides specialized technical and design assistance as well as resources to educate staff on how to properly operate, maintain, and maximize the benefit of medium-heavy duty vehicles and charging infrastructure.

# **Delivery Strategy and Administration**

MBCP in coordination with MBARD will implement supplemental program marketing and customer communications. The program's rebate application, processing, rebate distribution and other general administration will be handled by MBARD, with MBCP contributing funding to offset a portion of MBARD's administration expenses.

The program's EV Commercial Tariffs would be funded entirely by MBCP. Market research, rate design, rate pilots and deployment of final rates would be conducted internally by MBCP staff with outside consultants where deemed necessary, unless PG&E's proposed commercial EV rate is approved and determined to meet customer needs.

Source: Tierra Resource Consultants
# **3.3 Built Environment Electrification Programs**

# 3.3.1 Project Sunshine at Night Program

# **Program Concept and Description**

In partnership with GRID Alternatives— a nonprofit community organization that connects families with government programs that provide solar at no cost to eligible homeowners—MBCP launched Project Sunshine in spring 2019 with the Solar Program for Affordable Housing, which is in the process of providing 20 low-to-moderate income single-family homeowners with no-cost solar for their homes. These homeowners will save thousands of dollars in electricity costs by utilizing solar energy. In addition to helping low-income communities and supporting the growth of renewable energy, Project Sunshine connects people to clean energy jobs by incorporating workforce development into each project. Trainees can participate in the installation process from start to finish as an introduction to industry opportunities.

MBCP proposes launching Project Sunshine at Night, to provide battery storage systems in lowmoderate income single and multi-unit family dwellings with existing rooftop or ground mount solar systems serving electricity to low-moderate income tenants. The program will provide rebates and technical assistance for qualifying energy storage systems installed on the customer's side of the utility meter.

# **Target Market and Eligibility**

The target market for Project Sunshine at Night will consist of home/building owners and developers of single-family as well as multi-family homes that have solar systems serving low-moderate income tenants. The basic project requirements to participate in the program are anticipated to include:

- Any class of customer (agricultural, commercial or residential) of MBCP is eligible to be the Host Customer and receive incentives through this program. However, the Host Customer must be the utility customer of record at the site where the energy system is or will be located. In the event that the Host Customer's name is not on the utility bill, a letter of explanation is required that addresses the relationship of the Host Customer to the named utility customer.
- The existing solar system and incentivized battery must primarily serve electricity to low-income single-family, low-rise multifamily, or high-rise multifamily tenants.
  - Eligible multi-family housing is defined as a multi-family residential building of at least five rental housing units that is operated to provide deed-restricted low-income residential housing, and is either located in a disadvantaged community, or is a building where at least 80% of the households have incomes at or below 60% of the area median income.
- All systems receiving incentives must be connected to the local electric utility's distribution system and must be installed on the host customer's side of the electric utility meter. The interconnection, operation, and metering requirements for the systems must be in accordance with the local electric utility rules for customer generating facility interconnections. Energy storage systems must also be configured to operate in parallel with the grid.
- The intent of the program is to provide incentives for equipment installed and functioning for the duration of its useful life. Only permanently installed systems are eligible for incentives.

#### **Program Objectives**

Project Sunshine at Night is intended to complement existing solar systems serving low-moderate income households. The rationale for implementing this program includes:

- GHG emission Reductions: in the built environment by complimenting solar energy systems with battery storage systems in the single-family and multifamily low-moderate income market
- Community Emergency Preparedness: Allow energy storage systems to be used to provide backup power during planned power shut offs
- Demand Response: through storage installations on dwelling with existing solar systems
- Social Equity: provide low-income residents with energy savings and utility bill reductions through installation of energy storage systems that complement their existing solar system
- Brand Awareness: low-moderate income customers and affordable housing developers
- Complimentary Funding: leverage existing low-income solar programs' marketing efforts
- Economic Development: additional work for local contractors including electricians and solar installers; local workforce development

Table 3-13**Error! Reference source not found.** below summarizes the team's assessment of the Project Sunshine against the design scoring criteria described previously in section 1.2.



#### Table 3-12. Project Sunshine Scoring Criteria Matrix

#### **Incentives and Services**

The anticipated services provided by Project Sunshine at Night include customer information and education regarding optimizing solar systems using battery storage , workforce education and training, technical assistance, and incentives. The customer and workforce education components of this program will consist of developing a library of on-line resources through the Customer Engagement Platform and Trade Ally Portal to educate consumers and contractors about the benefits of potential solar+storage use cases as well as channel customers towards other existing rebate programs and tax incentives (e.g. SOMAH, CSD's LIWAP) that can be leveraged to improve project economics. This program will also include workforce development requirements that ensure projects incorporate some job training and/or local hiring practices.

# Marketing, Education and Outreach (ME&O)

MBCP will initially focus outreach on the largest low-moderate income MDUs and single-family housing developments in its service territory, as well as those organizations—such as regional housing authorities—that oversee a large number of low-moderate income properties, many of which already are providing residents with renewable energy. Additionally, MBCP will engage with administrators of statewide and regional solar programs to explore opportunities to leverage their data on previous participants in MBCP territory to conduct targeted outreach. MBCP will also consider how to take advantage of locational and time-based opportunities.

# 3.3.2 Existing Building Electrification Incentives

# **Program Concept and Description**

Staff proposes a Building Electrification Program that would drive customer adoption of switching from fossil fuel-based water heating, space heating and cooking appliances to electric by providing residential and commercial customers with incentives, technical assistance, and customer information and education. Adding grid-connected controls to water and space heating systems can also enable peak demand shaving and load shifting.

MBCP anticipates rolling out the program in two phases:

- Phase I: Induction Cooking Incentives and Lending Program. One of the key barriers to homeowners owning all-electric homes is their gas cooking appliances. SCP has seen success addressing customer concerns by providing customers with the opportunity to use an induction cooktop. MBCP could promote induction cooking as an alternative to natural gas by loaning portable induction cooktops to customers, and anticipates providing discounts on induction cooktops/ranges through the Marketplace, discussed below in section 3.5.
- Phase II: High-efficiency Space and Water Heating Incentives. MBCP will implement a highefficiency water and space heating incentive program that engages manufacturers, provides local contractors training and technical support, as well as customer and distributor incentives for Wi-Fi enabled and grid-interactive smart thermostats and high-efficiency heat pump water heaters and heat pump air conditioning units. These technologies enable load management and demand response capabilities. Due the fact that customer economics for fuel switching are marginal depending on the technology mix and climate zone, MBCP will also consider incentivizing solar + storage to improve customer economics.

In addition to these initiatives, during the early stages of the program roadmap rollout, MBCP will investigate the technical and economic potential for offering incentives and technical support for comprehensive retrofits and conversion to electricity of all natural gas and propane fueled end-use applications in existing residential homes.

# **Target Market and Eligibility**

Initially, customers using existing natural gas and propane fueled systems will be targeted. Due to the high upfront costs of heat pump water and space heating, it is not typically economical for consumers to replace an existing appliance while it is still operating. Consequently, phase II will focus on equipment that is at the end of its useful life and/or emergency replacement situations. Target market actors will be comprised of local plumbers, HVAC contractors, retailers, and distributors. Reaching these market actors is essential to launching a successful program because they are often the first point of contact with customers, especially in the case of water heaters, where replacement is typically an emergency.

The basic requirements to participate in phase I or II are anticipated to include:

- Must be a MBCP customer and the appliance must be installed/loaned within MBCP territory.
- The customer must have an existing gas or propane appliance
- Existing buildings with retrofit or replace on burnout projects are eligible.
- Grid-interactive water heaters must have storage tanks equal to or greater than 60 gallons.

#### **Program Objectives**

Building Electrification Incentives are just one of multiple strategies designed to reduce greenhouse gas (GHG) emissions through promoting fuel switching in the built environment, while also furthering the

adoption of appliances with connected technologies capable of shifting loads to meet the current and future needs of the electric grid. The rationale for implementing this program includes:

- GHG Emission Reductions: by accelerating regional adoption of grid connected high-efficiency heat pump space and water heating systems, and induction cooking technologies.
- Demand Response: grid integrated heat pump water heaters, and electric space heating systems with smart thermostats can be part of a demand response program
- Social Equity: additional incentives for affordable housing
- Complementary Funding/Delivery: potentially leverage PG&E rebates
- Economic Development: Provide additional work for local contractors including plumbers and electricians.
- Other: Provide energy savings and utility bill reductions to customers; address the market need for contractor and builder training and technical assistance support; equip MBCP with data and experience on the technical aspects of controlling flexible loads at the grid level, as well as logistical and programmatic knowledge for working with customers with grid-interactive features and demand response initiatives. This experience can serve as proof-of-concept and be critical in helping MBCP to develop grid resources by addressing the following issues:
  - $\circ$   $\;$  Identifying the best opportunities to control distributed grid-interactive loads
  - From both customer and MBCP perspectives, assessing the economic and environmental impact of controlling flexible loads
  - Understanding the best methods for working with customers Including customer participation/recruitment, billing, operations, and maintenance.

Table 3-14 below summarizes the team's assessment of the Monterey Bay Infrastructure Project against the design scoring criteria described previously in section 1.2.

GHG emissions reductions	Community emergency preparedness	Demand response	Social Equity	MBCP brand awareness	Complementary Funding/Delivery	Economic development	Priority Ranking
ନ୍ଦ	જ	હ્ય	ৰ্ম্জ	જો	C3	લ્ય	ন্থ
နာ High	i Medium	ca Low					

# Table 3-13. Building Electrification Scoring Criteria Matrix

# **Incentives and Services**

The anticipated services provided by MPCP's Building Electrification incentives in phase I and II include customer information and education regarding electrification measures, workforce education and training, technical assistance, funding and financing concierge services, and incentives for purchasing qualifying equipment. The customer and workforce education components of this program will consist of:

- Developing a library of on-line resources through the Customer Engagement Platform and Trade Ally Portal to educate consumers and contractors about induction cooking, smart thermostats, and high-efficiency heat pump technologies.
- Providing residential customers the opportunity to borrow single-burner induction cooktops and cookware, at no charge, to try out at home.

• Hosting workforce training workshops with HVAC contractors, plumbers, and electricians to educate them about these technologies and provide them with resources to distribute to customers.

Funding and financing concierge services consist of advisory services to customers during the project development phases to assist them with identifying and accessing all available incentive funds as well as project financing resources such as on-bill financing (OBF) and Property Assessed Clean Energy (PACE) financing.

The financial incentives offered in phase I will include a simple downstream rebate on induction cooktops/ranges offered through the Marketplace. Phase II incentives for smart thermostats and highefficiency heat pump water heaters may also be offered through the Marketplace. Incentives for highefficiency space and water heating equipment will also include a midstream rebate offered to the customer to offset the upfront purchase cost and a distributor incentive to encourage program participation. Additional incentives will be provided for grid-interactive water heaters, once there is enough market saturation of grid-interactive devices (smart thermostats, water heaters, and EVSE), a customer participation incentive can be provided to customers that allow MBCP to control their gridinteractive devices for load management. Incentives will be paid at the distributor level and comprised of three components: the customer purchase incentive, the distributor incentive, and the customer ongoing participation award. MBCP anticipates managing and offering these incentives through the Customer Engagement/Marketplace described in section 3.5. Examples of building electrification incentives based on other existing programs are described below and summarized in Table 3-15.

- **Smart Thermostat Incentive**. Incentive for installation of one or more wifi enabled smart thermostat(s).
- Induction Cooktop/Range Incentive. Incentives for induction cooktops/ranges consisting of two downstream incentives, a \$100 incentive for installations replacing electric cooktops/ranges and a \$500 incentive for those fuel switching.
- Heat Pump Water Heater Incentive. This incentive could vary based on whether the replaced equipment is electric resistance, propane, or natural gas. This incentive cost is passed on to the customer at the time of sale, and MBCP could reimburse the distributor the incentive cost for each unit sold and installed.
- **Grid-interactive Heat Pump Water Heater Kicker.** An additional incentive provided for the purchase of 3<sup>rd</sup> party control technologies or water heaters with these controls built into the equipment.
- Heat Pump Air Conditioner Incentive. An incentive for a high-efficiency heat pump air conditioning unit.
- Heat Pump Distributor Incentive. This is a smaller incentive, paid to the distributor for each unit sold, to encourage distributor participation in the program. The incentive of \$25-\$50 would be paid on a per-unit basis after installation is confirmed and all program eligibility and data requirements have been met.
- Heat Pump Customer Ongoing Participation Reward. This incentive is typically provided on an annual basis in exchange for the customer allowing the utility to access and control their HPWH and/or smart thermostat during peak demand periods.
- Solar + Storage -- Due to the fact that customer monthly energy cost economics for space and water heating fuel switching can be marginal depending on the technology mix and climate zone, MBCP will also consider incentivizing solar + storage to improve customer economics.

Incentive	Minimum Efficiency	Amount
Smart Thermostat	NA	\$50
Induction Cooktop/Range	NA	Electric: \$100 Fuel Switch: \$500
Heat Pump Water Heater	3.0 UEF	Electric Resistance: \$1000 Natural Gas and Propane Replacement: \$2500
Grid-interactive HPWH Kicker	NA	\$200
Heat Pump Air Conditioner	SEER 16	\$300/Ton
Heat Pump Distributor Incentive	NA	\$25-\$50
Heat Pump Load Management Participation Incentive (through the Tariff Optimizer program)	NA	\$25-\$50

#### Table 3-14. Building Electrification Incentives

#### Marketing, Education and Outreach

The marketing plan for phase II will target customers in need of a new water heater or space heating, due to an emergency equipment breakdown or a unit being at the end of its effective useful life. Approximately 85% of water heater purchases are emergency replacements. Marketing efforts will need to prioritize informing customers prior to the need for replacement about the benefits of heat pump water heaters. The key will be to form strong partnerships with manufacturers, distributers and installers. Essential to these efforts is engaging with local contractors and big box retailer associates, who are typically the point of sale for space and water heating technologies in an emergency replacement scenario. This will require a multi-faceted marketing approach, which may include but not be limited to the following:

- Linking to the Energy Upgrade California website (California's statewide customer energy MEO resource) for customer education and information on high-efficiency space and water heating technologies, as well as solar energy improvements, available rebates, energy assistance for low income customers, financing options, and other information resources.
- Coordinating with manufacturers to conduct contractor trainings that simultaneously promote the monetary and environmental benefits of the MBCP program.
- Heat pump water heaters must be kept stocked on supplier shelves for it to become a viable option in emergency replacement scenarios. Use a combination of marketing, agreements, and upstream or midstream incentives, to guarantee that heat pump technologies will be made available and easily accessible within the timeframe needed in an emergency replacement scenario.
- Working with distributors and big box retailers to integrate program marketing with their current marketing initiatives.
- Making it easy for interested customers to learn about and purchase heat pumps by advertising
  participating retailers and contractors on MBCP's website and social media channels, as well as
  having participating retailers and contractors advertise the program on their own websites and
  social media channels.

In addition to the manufacturer, distributer and contractor marketing strategies described previously, MBCP should consider how to take advantage of other locational and time-based opportunities that may allow for the scaling of these successes in planned replacement scenarios. These opportunities might include, but not be limited to the following:

- Targeting neighborhoods where water heaters and space heaters installed during construction are now approaching the end of their effective useful life.
- Targeting outreach to previous "green" customers, which may include those enrolled in MBprime rates or MBgreen+, and past participants in MBCP programs such as Buy Local and Project Sunshine.

# **Delivery Strategy and Administration**

Staff recommends coordinating with an experienced third-party to implement the Building Electrification Program's marketing, customer communications, rebate processes, and distributor, retail and vendor relations. For demand response utilizing the grid-interactive capacity of smart thermostats and water heaters, MBCP could utilize the Customer Engagement Platform for administering control strategies and protocols for demand response (see Section 3.1.3 for more details on MBCP's proposed demand response strategies).

# 3.3.3 California Advanced Homes Program Electrification Enhancement

# **Program Concept and Description**

MBCP proposes investigating partnering with PG&E to launch an enhancement of their California Advanced Homes Program (CAHP) that will provide additional incentives and technical assistance to participants in MBCP territory for electrification measures including energy efficiency improvements, solar and battery storage. The CAHP is a statewide comprehensive residential new construction program for single and multi-family projects which provides builders as well as designers, incentives and technical assistance to exceed compliance with Title 24 through sustainable design and construction, energy efficiency, demand reduction and emerging technologies. MBCP anticipates modeling the enhancement program after Sonoma Clean Power's Advanced Energy Rebuild (AER) program. A highly successful partnership with PG&E to enhance the CAHP, providing wildfire victims additional incentives for reaching 20% above code as well as offering an all-electric home pathway—of which about 1/3 of program enrollees have selected.<sup>20</sup>

# **Target Market and Eligibility**

The target market for the CAHP Enhancement will include multiple parties identified as being key to successfully enrolling participants and overcoming implementation barriers. These parties include:

- Builders. Promoting the benefits of and creating demand for all-electric homes. MBCP anticipates making advisory services available to provide technical assistance selecting measures to get homes over the 20% threshold as well as support the required energy modeling.
- Future Homeowners. Educating customers on the benefits of electrification technologies through the Customer Engagement Platform (see below) and the CAPH website, as well as referrals to the MBCP Lending Library.

<sup>20</sup> Interview with Rachel Kuykendall, Senior Programs Manager at SCP. June 2019.

- Home Energy Raters. MBCP will help to streamline the process by offering to act as the point of contact between projects and certified local CEAs through MBCPs Customer Engagement Platform and Trade Ally Portal.
- Building Departments. The building departments are key to intercepting potential projects early enough in the design phase to enroll in the program. MBCP will be working with the Building Departments as part of the Building Electrification Reach Code Initiative and will provide CAHP materials at that time.
- Heat Pump Technology and Battery Storage Vendors. MBCP will help connect customers to vendors through the Customer Engagement Platform.

The basic project requirements to participate in the program are anticipated to include:

- Must be a single-family, low-rise or high-rise multifamily residential new construction built in the MBCP service area.
- Must meet all eligibility criteria outlined in the most recent version of PG&E's CHAP participant handbook.<sup>21</sup>
- Project must meet all of the following:
  - 20% above Title 24 using the performance-based approach for compliance and demonstrate utilizing approved Energy Commission compliance software.
  - Commit to building the home according to the All Electric Advanced Home Pathway or Electric-Ready Advanced Home Pathway described in the Incentives and Services section.
  - Include EV-Ready charging infrastructure.
  - If home meets an exception under Title 24 for solar, the roof must be designed for additional structural loads associated with solar, including a conduit for future installation.

# **Program Objectives**

With the passage of the new 2019 Building Energy Efficiency Standards, all low-rise single family and multifamily buildings are required to have a PV system installed in order to comply with the prescriptive requirements, unless the building qualifies for an exception.<sup>22</sup> The Energy Commission has forecast that the energy efficiency measures in these standards will reduce energy use in single-family homes by 7% compared to 2016 Standards. However, after factoring the solar requirement, homes are forecast to use about 53% less energy. The economic consequence of this is that new construction costs for homes will be \$9,500 higher, costing the average home about \$40 per month but saving about \$80 per month on utility bills.<sup>23</sup> This presents an opportunity for MBCP to pair this mandatory solar requirement for residential new construction with electrification incentives and technical assistance to drive development of zero-net carbon homes in the Quad-Counties.

The rationale for implementing this program includes:

23 Energy Commission. 2019 Building Energy Efficiency Standards Fact Sheet.

https://ww2.energy.ca.gov/title24/2019standards/documents/2018\_Title\_24\_2019\_Building\_Standards\_FAQ.pdf

<sup>21</sup> PG&E. 2019 California Advanced Homes Program Participant Handbook and Program Agreement for Single-family New Construction Projects. https://cahppge.com/CAHP\_TRC\_Handbook\_2019.pdf

<sup>22</sup> Energy Commission. 2019 Residential Compliance Manual. https://ww2.energy.ca.gov/2018publications/CEC-400-2018-017/CEC-400-2018-017-CMF.pdf

- Greenhouse gas (GHG) emission Reductions: through electrification investments designed to accelerate regional adoption of heat pump and induction cooking technologies
- Building Awareness: Addressing the market need for builder and contractor training as well as technical assistance support for these emerging electrification technologies.
- Economic Development: additional work for local contractors including plumbers, electricians, and CEAs.
- Customer Benefit: Providing customers with energy savings and utility bill reductions through installation of high efficiency electrification measures.
- Demand Response: equipping MBCP with data and experience on the technical aspects of controlling flexible loads. Lessons to learn:
  - $\circ$  What are the best opportunities to control distributed grid-interactive loads?
  - From both customer and MBCP perspectives, what is the economic and environmental impact of controlling flexible loads?
  - What are the best methods for working with customers? Including customer participation/recruitment, billing, operations, and maintenance.

Table 3-16 below summarizes the team's assessment of the California Advanced Homes Electrification Enhancement program against the design scoring criteria described previously in section 1.2.

Table 3-15.	California Advanced	Homes Electrification	Enhancement Scoring	Criteria Matrix
	·· <b>)</b> · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	<u> </u>	

GHG emissions reductions	Community emergency preparedness	Demand response	Social Equity	MBCP brand awareness	Complementary Funding/Delivery	Economic development	Priority Ranking
ନ୍ଦ	લ્સ	ନ୍ଦ	ત્સ	ન્જ	લ્લ	જો	લ્સ

ନ୍ତ High \land Medium ରହ Low

# Incentives and Services – Single Family

The anticipated services provided by MPCP's CAHP – Single Family Enhancement include:

- Providing advisory serves that will consist of hands-on technical assistance to support projects in getting over the 20% above code threshold to receive incentives.
- Increasing CAHP incentives for building all-electric homes or prewiring for electric when gas some gas appliances are selected
- Hosting zero-net carbon (ZNC) training workshops with builders, raters, building departments and local contractors, to educate them about how to easily incorporate electrification technologies into their work processes
- Streamlining and simplifying the CAHP application process.

Similar to SCP's enhancement, MBCP anticipates offering the following two pathways:

- Electric-Ready Advanced Home Pathway. Under this option the home is built with duel-fuel but a 220V outlet will be included at the stove/range, water heater, and clothes dryer for future electrification.
- All-Electric Advanced Home Pathway. Under this option the home is built using all-electric enduses, including:
  - o Smart Thermostat

- Electric Vehicle Charging Station
- Electric Induction Cooking
- o Electric Heat Pump Clothes Dryer
- o Electric Heat Pump Water Heater
- Electric Heat Pump Space heating (with A/C)

Although the primary objective of MBCP is to influence customers towards building all-electric homes, MBCP anticipates offering the Electric-Ready Advanced Home Pathway because a significant percentage of customers will still desire to use natural-gas appliances and in these cases it is important to incentivize pre-wiring the home to make future electrification easier and more cost effective. Anticipated financial incentives offered under each pathway are described in Table 3-17 below.

Pathway	Incentive	Amount
All-Electric Advanced	Approximate Total	\$4500
Home Pathway	Smart Thermostat	\$50
	EVSE	\$150
	Induction Cooktop/Range	\$500
	Heat Pump Electric Clothes Dryer	\$800
	Heat Pump Water Heater	\$1500
	Heat Pump Space Heating	\$1500
Electric-Ready Advanced Home Pathway	Pre-Wiring End-Uses	\$800

Tahle	3-16	Estimated	CAHP -	Sinale	Family	Enhancemen	t Additional	Incentives
IUDIE	$5^{-10}$ .	LSUITIULEU	CALLE -	Sillyie	гантту	LIIIuiiceiiieii	ι Ασαπιοπαί	IIICEIILIVES

# **Incentives and Services – Multifamily**

The California Multifamily New Homes (CMFNH) Program provides incentives and design assistance for the construction of new low-rise and high-rise multifamily facilities. MBCP will offer additional electrification incentive enhancement to promote high-efficiency all-electric buildings that approach zero-net energy.

The CMFNH offers design assistance and incentives for energy efficient new multifamily buildings. CMFNH developers work with Title 24 consultants to model buildings in comparison to the 2016 Title 24, Building Energy Code. Depending on the size of the property, there are two paths to qualify for CMFNH incentives.

- Low Rise (1-3 habitable stories, with 4 or more units): The program evaluates buildings based on an energy model output score called the Energy Design Rating (EDR). To qualify for incentives, participants must demonstrate that their proposed efficiency (Proposed Efficiency EDR) is better than standard efficiency (Standard Efficiency EDR) for their building. The difference between these two metrics is called the Delta EDR. Participants must achieve an EDR of at least 3 to qualify for incentives. Participants can increase their Delta EDRs and raise their incentives by increasing the energy efficiency of their buildings.
- **High rise (4 or more habitable stories)**: High rise buildings qualify if their energy performance is at least 10% above 2016 Title 24 and achieve increasing incentives with each 5% improvement.

Incentives for both paths are summarized in Table 3-18 below.

	Incentive Type	Incentive Amount		
Developer	Performance	<ul> <li>Low Rise (1-3 stories)</li> <li>Delta EDR (per unit)</li> <li>\$135 for Delta EDR 3</li> <li>Plus \$30 per Delta EDR point from 4 to 6</li> <li>Plus \$60 per Delta EDR ≥ 7</li> </ul>	High Rise (4+ stories) Percent above code (per unit) • \$160 for 10%-15.999% • \$275 for 16%-30.999% • \$500 for ≥ 31.000%	
	Design Charrette	\$5000 (meeting including project team and CMFNH staff)		
HERS Rater	HERS Testing	Not available	\$50 per unit (200 unit limit)	
Energy Consultant	Dwelling Unit	\$50 per unit (200 unit limit)		

Table 3-18. CAHP Low Rise and High-Rise Incentives

**Kickers and design charrette.** Certain energy efficiency measures are eligible for additional incentive kickers (per unit). There are two types of kickers: point kickers and cash kickers.

- Point kickers increase the Delta EDR for non-modelable features, add incentives, and could help a project gain entry. (Low rise only)
- Cash kickers are modeled features, which implicitly effect the Delta EDR, and also earn the developer an additional cash bonus. (Low rise and high rise)

Developers are also eligible to receive up to an extra \$5,000 incentive if their project team participates in a design charrette.

Participants can raise their Delta EDRs and their incentives by increasing the energy efficiency of their projects. Certain energy efficiency measures are eligible for additional incentive kickers:

- 100% LED Lighting (LR: 0.5 1 points / HR: \$15 per unit)
- ENERGY STAR Tier II Appliances (LR: 0.5 1.0 points / HR: \$15 per unit)
- High Performance Fenestration (\$75 per unit)
- Quality Insulation Installation (QII) (\$45 per unit) Low-rise only
- High Performance Walls (\$25 per unit)
- 2019 Code Home (\$50 per unit) *Low-rise only*
- Balanced IAQ (\$25 per unit) Low-rise only
- DOE Zero Energy Ready Home (\$25 per unit) *Low-rise only*
- ENERGY STAR Laundry Facility (\$5 per appliance)
- Drain Water Heat Recovery (\$200 per device)
- Design Charrette (Up to \$5,000 per project)

**MBCP electrification grant funds**. In addition to the incentives offered by the CMFNH Program, MPCP's enhancement will offer grant funding to developers of up to \$4850 per housing unit for all-electric building construction. Anticipated financial incentives offered are described in

Incentive	Amount
Approximate Total	\$4850
Smart Thermostat	\$50
Smart EVSE	\$500
Induction Cooktop/Range	\$500
Electric Clothes Dryer	\$800
Smart Heat Pump Water Heater	\$1500
Heat Pump Space Heating/AC	\$1500

#### Table 3-19. Estimated Affordable Housing -- Multifamily Electrification Incentives

# Marketing, Education and Outreach

The most important consideration in developing the CAHP Enhancement's marketing plan is to focus on making the program easy for customers to understand. Strategies for simplifying the program process that will make engaging participants easier include:

- Providing a set incentive amount for each of the two pathways that is paid as long as the project passes the percentage above code threshold and meets eligibility requirements.
- Providing a menu-based alternative to the percentage above code threshold for both the All-Electric Advanced Home Pathway and the Electric-Ready Advanced Home Pathway. This menubased option lists a set of measures which if installed will qualify the project for full incentives regardless of the home's percentage above code. Although most projects won't select this option, it is incredibly valuable as a marketing tool to help customers visualize the types of measures, especially electrification measures, that can be combined to reach the percentage above code threshold. Figure 3-2, from SCP's AER program, lists the measures under their menubased path for all-electric homes.
- Collaborating with PG&E to simplify the customer experience while maintaining the original CAHP processes. By marketing the program under the MBCP banner, this will reduce confusion with PG&E's normal CAHP.

 Induction Cooking Energy Star Appliances for all Refrigerators, Dishwashers, Clothes NEEA Tier 3 Heat Pump Water Heater w/ Washers, and Bathroom Fans

Heating/cooling ducts that are well

sealed, insulated (R-8), and located

Smart Thermostat

Water efficient landscaping

primarily in conditioned space (note: buried

ducts as defined by Title 24 can qualify)

WaterSense efficient plumbing fixtures

- Heat Pump or Electric Clothes Dryer
- Electric Vehicle Charging Station –

Equipment free from Sonoma Clean Power

The program's ME&O approach will consist of:

- Direct mail campaign.
- Social media campaign. •

9.5+)

(QII)

· "Cool" Roof

0.30, SHGC 0.23)

- Advertising via building departments.
- Engaging neighborhood and development organizations, encouraging word of mouth. •
- Hosting, in collaboration with PG&E, educational workshops and classes for the identified target markets.

# **Delivery Strategy and Administration**

The CAHP Enhancement will be a jointly funded and administered program by PG&E and MBCP. It is important to note that because PG&E is a public administrator it is required to comply with the California Public Utilities Commission's cost effectiveness rules. Since MBCP is not a public administrator, there is an opportunity for MBCP funding to specifically incentivize electrification or other advanced efficiency measures that have high GHG reduction value but would not otherwise be able to be offered through the program due to cost effectiveness restrictions. Creating a mutually beneficial relationship for collaborating with PG&E. Based on the SCP model, PG&E funding contributions will vary from project to project based on the percentage above code as prescribed by their standard CAHP guidelines, while MBCP backfills the difference between PG&E's incentive and the customer's set incentive.

MBCP will be the lead for ME&O activities, but PG&E is anticipated to lend its expertise in hosting professional classes on technical topics through the Pacific Energy Center, to support CAHP Enhancement classes for builders and contractors. MBCP will also be responsible for providing hands-on technical assistance to support projects in getting over the 20% above code threshold with electrification measures. PG&E and its program implementer will continue to provide all of the other services that are typically provided through CAHP, including complex design and engineering assistance as well as application and rebate processing.

#### Figure 3-2. Simple Menu-Based Path for All-Electric Home

2016 Title 24 High Performance Walls

2016 Title 24 High Performance Attics\*

Insulation Inspected by a HERS Rater

Building Enclosure Airtightness verified

by a HERS Rater (less than 3 ACH50)

2019 Title 24 Windows (Max U-factor

heating/cooling (EER of 12.5+, HSPF of

grid-integration controls installed

High efficiency heat pump for

(note: unvented attic can gualify)

# 3.3.4 Savings by Design Program Electrification Enhancement

# **Program Concept and Description**

MBCP proposes investigating partnering with PG&E to launch an enhancement of the statewide Savings By Design (SBD) Program. The SBD Program is California's statewide nonresidential new construction energy efficiency program, administered and funded by Utility customers through the Public Purpose Programs surcharge applied to gas and electric services. The program promotes the efficient use of energy by offering incentives for up-front design assistance and financial incentives to building owners based on project performance. The electrification enhancement would provide additional incentives and technical assistance to participants in MBCP territory for the addition electrification measures and battery storage.

# **Target Market and Eligibility**

The target market for the SBD Enhancement are all nonresidential new construction, major renovation and rehabilitation projects occurring in MBCP's service region. Incentives and program services are directed at both the design professional team and the building owner:

- Design professionals. Incentives are provided to the design team to cover the incremental effort and cost of considering alternative high-efficiency designs and electrification options for designing all-electric buildings.
- Building owners. Incentives for building owners to encourage the design, selection and installation of high-efficiency options and electrification alternatives for all-electric buildings.

To be eligible for SBD, the project must meet all eligibility criteria outlined in the most recent version of PG&E's SBD participant handbook<sup>24</sup> including:

- At a point where the customer can be influenced by the program's offerings and incentives to implement energy efficient design alternatives in place of their current or conceived designs
- Located in the PG&E and MBCP service territory and subject to payment of public purpose charge for electric service and/or the gas surcharge for gas service.
- A new construction, major renovation or rehabilitation project.

# **Program Objectives**

With the passage of the new 2019 Building Energy Efficiency Standards, all low-rise single family and multifamily buildings are required to have a PV system installed in order to comply with the prescriptive requirements, unless the building qualifies for an exception.<sup>25</sup> The Energy Commission has forecast that the energy efficiency measures in these standards will reduce energy use in single-family homes by 7% compared to 2016 Standards. However, after factoring the solar requirement, homes are forecast to use about 53% less energy. The economic consequence of this is that new construction costs for homes will be \$9,500 higher, costing the average home about \$40 per month but saving about \$80 per month on

<sup>24</sup> PG&E. 2019 California Advanced Homes Program Participant Handbook and Program Agreement for Single-family New Construction Projects. https://cahppge.com/CAHP\_TRC\_Handbook\_2019.pdf

<sup>25</sup> Energy Commission. 2019 Residential Compliance Manual. https://ww2.energy.ca.gov/2018publications/CEC-400-2018-017/CEC-400-2018-017-CMF.pdf

utility bills.<sup>26</sup> This presents an opportunity for MBCP to pair this mandatory solar requirement for residential new construction with electrification incentives and technical assistance to drive development of zero-net carbon homes in the Quad-Counties.

- Greenhouse gas (GHG) emission Reductions: through electrification investments designed to accelerate regional adoption of heat pump and induction cooking technologies
- Building Awareness: Addressing the market need for builder and contractor training as well as technical assistance support for these emerging electrification technologies.
- Economic Development: additional work for local contractors including plumbers, electricians, and CEAs.
- Customer Benefit: Providing customers with energy savings and utility bill reductions through installation of high efficiency electrification measures.
- Demand Response: equipping MBCP with data and experience on the technical aspects of controlling flexible loads. Lessons to learn:
  - $\circ$   $\;$  What are the best opportunities to control distributed grid-interactive loads?
  - From both customer and MBCP perspectives, what is the economic and environmental impact of controlling flexible loads?
  - What are the best methods for working with customers? Including customer participation/recruitment, billing, operations, and maintenance.
- Cost-effectiveness:
- Priority Ranking:

Table 3-20 below summarizes the team's assessment of the Savings by Design Electrification Enhancement program against the design scoring criteria described previously in section 1.2.

# Table 3-20. Savings by Design Program Electrification Enhancement Scoring Criteria Matrix

GHG emissions reductions	Community emergency preparedness	Demand response	Social Equity	MBCP brand awareness	Complementary Funding/Delivery	Economic development	Priority Ranking
ହ	ଜ	ନ୍ଦ	ત્સ	ન્જ	લ્ય	ન્જ	લ્ય
ေး High 🛪	s Medium তথ	Low					

# **Incentives and Services**

The SBD Program offers incentives for both building owners and the design team. Financial incentives, to help offset increased design interaction and potential costs of construction, are available for projects that exceed thresholds established by the program. Designed for Nonresidential New Construction Projects. Savings by Design targets the primary decision-makers in new construction and renovation/remodel projects: building Owners, developers, architects, engineers, designers, contractors, builders, and energy consultants. Savings By Design analyses provide detailed technical and financial assistance data that allows Owners and Design Teams to make informed decisions regarding energy

<sup>26</sup> Energy Commission. 2019 Building Energy Efficiency Standards Fact Sheet.

https://ww2.energy.ca.gov/title24/2019standards/documents/2018\_Title\_24\_2019\_Building\_Standards\_FAQ.pdf

efficiency features. The program serves commercial, industrial, and agricultural customers and utilizes the California Building Energy Efficiency Standards (Title 24, Part 6) as a reference baseline for comparison. The program encourages and moves energy savings within projects to perform better than mandated by Title 24.

**Owner Incentives.** To encourage owners to invest in energy efficiency, financial incentives are available to owners when the efficiency of their new building exceeds the minimum Savings By Design threshold (generally 10% better than Title 24 Energy Efficiency Standards).

**Design Team Incentives.** Financial incentives are available to design teams who make the extra effort when integrating energy efficiency with exceptional design. The design team may qualify for incentives when the building design saves at least 10% and the owner agrees to participate in the program.

**Other Benefits.** In addition to owner and design team incentives, participating projects may receive other services including design assistance and Energy Design Resources. Services begin in the project design phase and continue through construction completion. Design assistance can range from simple plan review and/or efficiency upgrade recommendations to complete computer simulation analysis comparing a number of alternative systems and integrated building design options. Participation in the program brings additional benefits, such as reduced long-term operating costs, greater comfort, health and productivity for occupants, and conservation of natural resources and cleaner air due to avoided power generation.

There are two design and incentive pathways: 1) the whole building approach, and 2) the systems approach.

# The Whole Building Approach

**Owner incentives**. The Whole Building Approach is the preferred method of achieving energy savings within Savings by Design. Enabling the design team to consider integrated energy efficiency solutions that

- Greater health, comfort, and productivity for the occupant
- Reduced building and operating costs for the owner

In the Whole Building Approach, the estimated total annual energy savings for the building is calculated compared to the Title 24 minimum requirements. Using an approved computer tool, this analysis can be prepared by the design team, or by an energy consultant provided by the utility. Owner's Incentives are available for projects estimated to exceed Title 24 or standard practice baseline by at least 10% on a whole building performance basis. Owner Incentives range from 0.10 - 0.30 per annualized kWh savings, with a step increase to 0.40 per annualized kWh savings for projects that exceed Title 24 by 40%, and 1.00 per annualized therm savings as the design becomes more efficient. Owners may also qualify for demand reduction incentives of 100 per kW.

Owners meeting program requirements may be eligible to receive additional incentives:

• End Use Monitoring Incentive

Each incentive is calculated as 10% or 20% of the Owner's Incentive respectively. The maximum incentive per project is \$150,000. Figure 3-3 summarizes the SBD the building owner incentives.





Design team incentives. Savings by Design encourages a team approach to the design of energy efficient buildings. By working together to integrate the systems within a building, the design team can more effectively design efficient facilities that may qualify for Design Team Incentives<sup>\*</sup>. Encouraging teams to explore these higher levels of energy efficiency, these incentives help offset some of the added costs resulting from investigating enhanced options and promotes energy efficient features in a new construction projects. To qualify for Design Team Incentives, the team uses the Whole Building Approach and a computer simulation model to optimize their design. The model calculates the energy savings of the building compared to the Title 24 baseline. The Design Team qualifies for incentives when the building design saves at least 10%. Design Team incentives range from \$0.033 – \$0.13 per annualized kWh savings and \$0.333 per annualized therm savings as the design becomes more efficient. The maximum incentive per project is \$50,000. The Design Team will submit a summary report of one qualifying proposed integrated design. Projects exceeding Title 24 by at least 10% will receive Design Team Incentives upon construction completion and verification. Design teams submitting projects that perform at least 30% better than Title 24 are now eligible to receive 50% of the incentive upon utility acceptance of the proposed design. The balance of the incentive will be paid upon construction completion and verification. Figure 3-4 summarizes the SBD design team incentives.

# Design Team Incentives



Design Team Assistance to be offered in lieu of Design Team Incentives in SDG&E service territory. SCE therms incentive, offered in partnership with SCGC.

# **The Systems Approach**

The Systems Approach is a method of optimizing energy efficiency choices for less complex buildings. By considering building systems holistically rather than as a collection of components, the Systems Approach encourages greater energy efficiency by designing "whole" building systems, rather than individual equipment or fixtures. It's a straightforward approach, and the Design Team may find it more appropriate for their project. Savings can be estimated using a simplified energy simulation modeling tool to help identify system options and quickly estimate the associated potential savings. Projects that may qualify for incentives using the Systems Approach include:

- Daylighting
- Interior Lighting
- Heating, Ventilation, and Air Conditioning
- Service Hot Water
- Other Systems and Processes

Systems Approach project incentives are calculated using a flat incentive rate as summarized in the Figure 3-5.

Program Approach and System Categories	Entry Levels (% better than T24)	Incentive	Maximum Incentive Per Project <sup>*</sup>		
Systems Approach					
Lighting Systems**		\$0.08 / kWh \$150.00 / peak kW			
HVAC Systems**		\$0.15 / kWh \$1.00 / therm \$150.00 / peak kW			
Refrigeration	See program brochure for specific	\$0.15 / kWh \$1.00 / therm \$150.00 / peak kW	\$150,000		
Envelope Measures	thresholds and requirements.	\$0.15 / kWh \$150.00 / peak kW			
Service Hot Water Systems		\$1.00 / therm			
Other Systems and Processes*		\$0.08 / kWh \$1.00 / therm \$150.00 / peak kW			
<sup>1</sup> Unique building types and/or processes may receive a package of services and incentives that may differ from the Handbook guidelines when we elect to use an ADM.					
Incentives are limited to 100% of the incremental costs associated with efficiency upgrades with a maximum project cap of \$150,000.00.					
** For SA projects only, if the IOU measures through more cost-eff	identifies that the custor fective and streamlined	mer can receive incentives program offerings, the IOU	for proposed EE may direct the customer		

# Figure 3-5. Savings by Design Systems Approach Incentives

# Systems Approach Incentive Rates and Entry Levels<sup>1</sup>

#### **MBCP Electrification Enhancement Incentives**

Non-residential new construction, major renovation and rehabilitation projects built in the MBCP service region will be eligible for additional incentives to encourage all-electric high efficiency building design and construction as described above in the Building Electrification Incentives.

# Marketing, Education and Outreach

The program's ME&O approach will consist of:

- Direct mail campaign.
- Social media campaign.
- Hosting, in collaboration with PG&E, educational workshops and classes for the identified target markets.

#### **Delivery Strategy and Administration**

The SBD Program Enhancement will be a jointly funded and administered program by PG&E and MBCP. It is important to note that because PG&E is a public administrator it is required to comply with the California Public Utilities Commission's cost effectiveness rules. Since MBCP is not a public administrator, there is an opportunity for MBCP funding to specifically incentivize electrification or other advanced efficiency measures that have high GHG reduction value but would not otherwise be able to be offered through the program due to cost effectiveness restrictions. PG&E funding contributions will vary from project to project based on the percentage above code as prescribed above and in their standard SBD guidelines.

MBCP will be the lead for ME&O activities, but PG&E is anticipated to lend its expertise in hosting professional classes on technical topics through the Pacific Energy Center, to support SBD Enhancement classes for design professionals and building owners. PG&E will continue to provide all of the services that are typically provided through SBD, including complex design and engineering assistance as well as application and rebate processing.

# 3.3.5 Building Electrification Reach Code Initiative

# **Program Concept and Description**

It is significantly less expensive to install the necessary building infrastructure for EV charging and electric systems and appliances during new building construction than retrofitting after the building has been completed. Multiple research studies have shown that all-electric homes and non-residential buildings are less expensive for the developer to build compared to mixed-fuel home also supplied by natural gas. For example, a study by Peninsula Clean Energy, Silicon Valley Clean Energy and the San Mateo Office of Sustainability found that "investing in EV infrastructure during new construction saves 40-400% of costs compared to retrofitting it later." However, today's existing building codes do not adequately support EV adoption goals through EV infrastructure requirements and in some cases discourage all-electric buildings. While it is quite possible the California Energy Commission will modify the building codes to address these issues, the next opportunity is 2023. Therefore, staff recommends working with jurisdictions to adopt "reach codes" (codes that are more aggressive than existing codes) to remedy this shortcoming.

The MBCP Building Electrification Reach Code Initiative will drive adoption of transportation and building electrification measures in residential and non-residential new construction by supporting local jurisdictions to adopt reach code ordinances, which make local building energy standards more advanced than those required by the state's Title 24, Part 6 Energy Standards. At the same time, MBCP will examine the option to promote building electrification through incentive program enhancements such as those proposed above for the California Advanced Homes Program (CAHP) for Single-Family and Multifamily housing, and the Savings by Design (SBD) Program for non-residential building construction.

Exemplifying the cost effectiveness of electrification reach codes, a recent draft analysis prepared by the California Energy Codes and Standards Program—a statewide utility program—evaluated the feasibility and cost-effectiveness of "above code" performance specifications through the application of efficiency measures, solar, and electric battery storage in all 16 California climate zones. According to this study, in MBCP's service territory climate zones (CZ3 and CZ4), both single-family and low-rise multi-family allelectric homes versus mixed fuel code compliant homes are cost effective. Table 3-21 below summarizes these cost effectiveness ratios for residential new construction all-electric homes compared to a mixed fuel code compliant home.<sup>27</sup>

Case	cz	On-Bill B/C Ratio	TDV B/C Ratio
Single-family all-electric code compliant home versus a mixed fuel code compliant home		0.8	1.5
	4	0.8	1.5
Single-family Efficiency & PV all-electric home versus a mixed fuel code compliant home	3	3.4	Immediate
		3.0	Immediate
Multi-family all-electric code compliant home versus a mixed fuel code compliant home	3	0.8	1.3
	4	0.9	1.6
Multi-family Efficiency & PV all-electric home versus a mixed fuel code compliant home	3	4.8	Immediate
	4	5.6	Immediate

 Table 3-21. Summary of Cost Effectiveness Ratios for Residential New Construction All-Electric Homes
 Image: Construction All-Electric Homes

"Immediate" indicates cases where there are both first cost savings and annual utility bill savings.

MBCP's Building Electrification Reach Code Initiative would support the development of draft model ordinance language in the jurisdictions, offering technical assistance services, and facilitating trainings for participating jurisdictions' staff. Key to this effort is consistent codes amongst neighboring jurisdiction to simplify the construction trades' ability to efficiently follow building codes. Neighboring Silicon Valley Clean Energy on MBCP's north border and the city of San Luis Obispo in the south are all in the process of adopting reach building codes.

The expected reach codes will build upon the electrification aspects of Title 24 that are already in place or are expected to be in place by the time these codes are adopted by the jurisdictions. These minimum Title 24 requirements include:

- Pre-siring of homes for future electric water heater
- Solar PV sized to cover all non-HVAC equipment at a minimum
- The use of the Energy Design Rating (EDR) for all energy models which accounts for the effect of high-efficiency equipment such as high-efficiency heat pump equipment, and solar energy systems.

The reach codes area also expected to include the following features:

- Minimum electrical wiring requirements for water heating, space heating, cooking and clothes drying, and EVSE stations including minimum requirements for Level 1 and Level 2 charging capacity.
- Alternative performance pathways for exceeding Title 24 for relevant climate zones for allelectric and mixed fuels designs with an emphasis on promoting all-electric options
- Alternative pathways and options for single-family, multifamily and non-residential buildings
- With regard to EVSE infrastructure requirements, providing for the following options:

<sup>27</sup> California Energy Codes & Standards Program. Cost-effectiveness Study: Low-Rise Residential. March 2019.

- EV Capable provision of basic electrical infrastructure (conduit, service capacity) to install charging stations in the future
- EV Ready provision of all necessary electric service (conduit, wiring, electrical service capacity and circuit breakers) to install a future EV charging station
- EV Supply Installed all electrical wiring and charging station equipment needed to deliver electrical energy supply to an EV

# **Target Market and Eligibility**

The primary focus of the Building Electrification Reach Code Initiative will be working with local jurisdictions within MBCP's service territory that haven't yet passed both building and EV reach codes to develop and implement such codes while considering the advancements of electrification-ready advancements of the Title 24 Building Energy Code and the relative opportunities to achieve the same results through enhancements to the CAHP and SBD program mentioned above.

The eligibility requirements for participation in the program by the jurisdictions are anticipated to include:

- A letter of intent and, if deemed necessary by a jurisdiction's council, a resolution to participate.
- A commitment of the jurisdictions' staff time to participate in the model reach code development process.
- A commitment to present findings to the jurisdiction's council for consideration of adoption.

In addition to these program participation requirements, participating jurisdictions must be aware of and comply with the following legal requirements for reach codes:<sup>28</sup>

- Compliance with local requirements for ordinances
- Compliant with all state laws
- Updated for each new Building Code cycle
- Filed with the State
- Accessible to the public
- Must be more stringent than state requirements
- Cost effective
- May not "preempt" federal regulations (i.e. require high efficiency HVAC or DHW)

Once in place, the target market for reach codes are all residential single-family and multifamily, and non-residential building new construction, major renovation and rehabilitation projects. Secondarily, target market actors are single-family and multifamily developers and builders, building architects and engineers, and non-residential building ownership and management groups.

# **Program Objectives**

The Building Electrification Reach Code Initiative is designed to promote the building of more efficient and all-electric homes, multifamily developments, and non-residential buildings through supporting the adoption of local reach codes. The rationale for implementing this program includes:

• GHG Emission Reductions: promoting electrification and higher-efficiency appliances and systems; creating pre-wiring requirements in mixed-fuel homes and buildings will make future electrification retrofits easier and more cost effective

<sup>28</sup> California Energy Codes & Standards Program. 2020 Vision: Reach Codes Best Practices v2.0. April 2019.

- Demand Response: future installation of electric appliances and charging stations provides demand response opportunities
- Social Equity: building codes will ensure clean, electric homes for new affordable housing construction.

Table 3-22 below summarizes the team's assessment of the Building Electrification Reach Code Initiative against the design scoring criteria described previously in section 1.2.

Table 3-17. Building Electrification Reach Code Initiative Scoring Criteria Matrix



# **Incentives and Services**

The anticipated services provided by MPCP's Building Electrification Reach Code Initiative include:

- Technical Assistance. MBCP will consider issuing an RFP to hire and fund a 3<sup>rd</sup> party consultant to provide code adoption and implementation technical assistance to participating jurisdictions. MBCP anticipates the scope of work to consist of:
  - Research all-electric building and EV codes.
  - Develop reach codes with input from MBCP, participating jurisdictions, and stakeholders.
  - Develop building electrification and EV cost-effectiveness study.
  - Provide participating jurisdictions support presenting to councils and submitting approved reach codes to the CEC for approval.
- Staff Trainings and Workshops. MBCP will organize and coordinate trainings on important code related topics with participating jurisdictions, consultants, and the Statewide Codes and Standards team, and stakeholders as necessary.

# Marketing, Education and Outreach

MBCP staff will be responsible for outreach to jurisdictions without reach codes to channel them into the program. In addition, MBCP plans to work with its Community Advisory Council as well as the Policy and Operations Board to share the opportunity. MBCP will also engage jurisdictions that have already passed reach codes and invite them to participate in trainings and workshops to provide best practices to the other jurisdictions. Additionally, a 3<sup>rd</sup> party consultant could work with MBCP to organize stakeholder meetings including: architects, developers, affordable housing organizations, electric vehicle experts, building electrification experts, PG&E, building trades, environmental groups, building electrification and EV advocates.

# **Delivery Strategy and Administration**

MBCP anticipates administering the program and will be responsible for marketing, participant communications, general administrative functions, and issuing an RFP to hire a 3<sup>rd</sup> party to provide participating jurisdictions with technical support. The hired consultant will have experience developing and passing building and EV reach codes, and a strong understanding of the new 2019 Title 24 standards. MBCP plans for this program to be a onetime occurrence within the current building code

cycle, and expects the program to last approximately 2 years including contracting with a 3<sup>rd</sup> party consultant, given the California Energy Codes & Standards Program's sample timeline for 2019 reach codes shown in Figure 3-6. During this time, MBCP will also evaluate the effectiveness of achieving the same results through the deployment of enhancements to incentive programs such as CAHP and SBD programs.



# Figure 3-6. Sample Reach Code Development Timeline

# 3.3.6 Housing Developer Electrification Grants Program

# **Program Concept and Description**

MBCP will partner with City and County agencies to support the development of high-efficiency, allelectric affordable and market-rate housing projects in the quad-county region. The program will provide an incentive per housing unit to install all electric systems including heat pump water heaters, heat pump space heat/AC units, and electric appliances such as induction cooking appliances. While the first cost of all-electric facilities is favorable compared to mixed-fuel facilities, the customer monthly bill economics of all-electric residences compared to mixed fuel can be less favorable to all-electric depending on climate zone. The installation of solar PV systems can improve customer monthly billing economics. Hence, MBCP will investigate the option of providing a solar + storage system incentive, as well.

As the program portfolio matures, MBCP will consider merging this offering into the more comprehensive effort envisioned by the enhancement to the California Multifamily New Homes (CMFNH) Program described above.

# **Target Market and Eligibility**

The target market for the Affordable Housing Program is multi-unit developments (MUDs) in the quadcounty region. Any project being developed by either a City/County agency or private sector developer in the MBCP service area will be eligible for the program.

# **Rationale and Objectives**

Affordable housing is a dominant issue throughout California and in the quad-county region. Recent state legislative initiatives have brought a focus on this issue and the potential for energy efficiency and renewable energy to play a role in improving the affordability in the state's housing stock. The California Housing Partnership has recognized the value of energy and water efficiency and renewable energy measures in improving home affordability by creating the Green Rental Home Energy Efficiency Network:

"In recognition of the key role that energy and water costs play in the long-term financial feasibility of operating affordable housing, the California Housing Partnership has convened the Green Rental home Energy Efficiency Network (GREEN) since 2010 to collaboratively increase access to solar, energy efficiency and water conservation resources for low-income renters and affordable housing properties. GREEN includes more than 50 nonprofit and government housing organizations active throughout California with extensive experience with financing, installing and maintaining clean and efficient energy systems in their multifamily affordable residential properties."

The rationale for implementing this program includes:

- Reducing greenhouse gas (GHG) emissions in the built environment through electrification investments designed to accelerate regional adoption of heat pump and induction cooking technologies that run on electricity generated by carbon-free sources such as wind, solar, hydroelectric and geothermal.
- Addressing the market need for builder and contractor training as well as technical assistance support for these emerging electrification technologies.
- Benefiting the regional economy by providing additional work for local contractors including plumbers, electricians, and CEAs.
- Providing customers with energy savings and utility bill reductions through installation of high efficiency, renewable energy, and energy storage electrification measures.
- Providing demand response capability through the deployment of smart technologies and battery storage systems.

Table 3-23 below summarizes the team's assessment of the California Advanced Homes Electrification Enhancement against the design scoring criteria described previously in section 1.2.



# Table 3-18. Housing Developer Electrification Grants Program Scoring Matrix

#### **Incentives and Services**

MPCP will work directly with City and developers as needed to provide project development and design assistance services. The program will also offer grant funding to developers per housing unit for allelectric building construction. An example of financial incentives that could be offered is provided in Table 3-9 below.

Incentive	Amount
Approximate Total	\$3050
Smart Thermostat	\$50
Induction Cooktop/Range	\$500
Electric Clothes Dryer	\$500
Smart Heat Pump Water Heater	\$1000
Heat Pump Space Heating/AC	\$1000

# Table 3-19. Example Affordable Housing Electrification Incentives

# Marketing, Education and Outreach

The program's ME&O approach will consist of:

- Direct mail campaign
- Social media campaign
- Advertising via building departments
- Engaging neighborhood and development organizations, encouraging word of mouth
- Hosting, in collaboration with PG&E, educational workshops and classes for the identified target markets

# **Delivery Strategy and Administration**

MBCP will be the lead for ME&O activities, working with City agencies on project development, providing technical design assistance and processing incentives to developers.

# 3.4 Agricultural Electrification Program

# **Program Concept and Description**

To improve air quality and promote economic benefits, MBARD applies for and expends funds from the California Air Resources Board's Carl Moyer Program (CMP) to provide grant funding to encourage the voluntary purchase of cleaner-than-required engines, equipment, and emission reductions technologies. Due to the 2017 CMP Guideline update, MBARD now has the ability to co-fund CMP eligible projects using funding from other sources as long as all program criteria associated with each funding source are met. MBCP proposes subsidizing energy consultations, co-funding engine and infrastructure electrification projects, as well as offering supplemental incentives for technical assistance.

# **Target Market**

While this program's energy consultation subsidies will broadly target agricultural customers, the target market for co-funding of CMP incentives and technical assistance could include:

- Off-Road Vehicles. This includes electrification of mobile, portable and stationary, off-road compression-ignition (CI or diesel), and large spark-ignition (LSI) projects such as construction, agricultural, and industrial equipment.
- Infrastructure Projects. This includes electrification of stationary agricultural pumps and transport refrigeration units.

The basic eligibility criteria for receiving MBCP co-funding incentives through the CMP are anticipated to include:

- Project must meet all CMP criteria outlined in MBARD's most recent CMP Policies and Procedures Manual.<sup>29</sup>
- All vehicles and equipment must remain in use in the MBCP service area. Equipment shipped to other facilities outside the MBCP service area do not qualify.
- Repowering of existing equipment and equipment replacements with zero-emission electric technology.
- Transport refrigeration unit specific requirements include:
  - Must be 3-phase power, 480-volt plug-in.
  - Infrastructure may include the necessary wiring, contractor fees, breakers, individual electrical outlets at each warehouse bay, and any other typical and necessary infrastructure that is necessary to provide power to the all-electric standby truck refrigeration unit infrastructure (E/S TRUs).
  - Only newly installed infrastructure is eligible for a rebate. Electric infrastructure replacing existing electric infrastructure does not qualify for this program.
  - Customer is responsible for contacting MBCP/MBARD with any questions regarding whether a certain type of proposed plug-in infrastructure is eligible for rebates.

Basic eligibility criteria for the energy agricultural water pump testing component of the energy consultation services offered under this program are anticipated to include:

- The pump test must be for the purpose of determining current overall pumping efficiency and can't be used to satisfy a mandate of a public agency or in a real estate transaction.
- Only one subsidized test is allowed per pump in a 2-year period.
- Pumps must be powered by a motor/engine equal to or greater than 25 horsepower.
- Project must meet all CMP criteria outlined in MBARD's most recent CMP Policies and Procedures Manual.<sup>30</sup>
- Repowering of existing equipment and equipment replacements with zero-emission electric technology.

# **Program Objectives**

The Agricultural Electrification Program is intended to be the flagship program for addressing the unique energy needs of the agricultural market by providing a combination of consultations, incentives, and technical assistance to drive electrification of farm equipment. It is also one of multiple investments designed to reduce greenhouse gas (GHG) emissions through promoting fuel switching agricultural end uses such as water pumping and transportation with a unique focus on off-road vehicles and, potentially, farm implements.

The rationale for implementing this program includes:

- GHG Emission Reductions: replace gas-powered farm equipment engines with electric motors
- Customer Benefit: agricultural customers receive subsidized energy consultations to help identify opportunities to improve operational efficiency though electrification, energy efficiency,

<sup>29</sup> MBARD, CARL MOYER PROGRAM Policies and Procedures Manual . August 2018. https://www.mbard.org/files/a5a39041f/CMP\_PoliciesProcedures\_August\_2018.pdf

<sup>30</sup> MBARD, CARL MOYER PROGRAM Policies and Procedures Manual . August 2018. https://www.mbard.org/files/a5a39041f/CMP\_PoliciesProcedures\_August\_2018.pdf

and solar; and, energy savings and utility bill reductions through installation of high efficiency electrification measures

- Economic Development: additional work for local contractors, energy auditors and water pump testers
- Complimentary Delivery: Leverage MBARD's processes, infrastructure and expertise, as well as CMP's established customer awareness and known requirements.

Table 3-25 below summarizes the team's assessment of the Agricultural Electrification Program against the design scoring criteria described previously in section 1.2.



# Table 3-20. Agricultural Electrification Program Scoring Criteria Matrix

#### **Incentives and Services**

The anticipated services provided by MPCP's Agricultural Electrification program include subsidized energy consultations in addition to incentives for high-efficiency farm equipment and technical assistance. This program's energy consultations will provide agricultural customers interested in identifying ways to conserve energy with the following services:

- Agricultural water pump testing. MBCP will provide a subsidy to qualified pump test companies to determine agricultural customers' current overall pumping efficiency.
- Energy audits. MBCP will provide a subsidy to qualified energy auditors to identify and advise on applicable, high-value electrification, energy efficiency, renewable and storage project opportunities. Examples include:
  - Off-road and on-road vehicle electrification
  - Electric water pumping
  - Heat pumps for space and water heating
  - Solar and battery storage
  - Industrial refrigeration
  - Pipe and tank insulation
  - Heat recovery
  - Process optimization
  - Control optimization
  - Lighting retrofits

Discussions with MBARD are ongoing to prioritize need and funding, and these discussions will ultimately determine the amount and types of incentives offered.

Table 3-26 details the preliminary subsidies and rebates MBCP is considering providing based on a review of similar programmatic offerings.

Incentive	Amount	Limitations
Water Pump Testing Subsidies	Up to \$200/Test for pumps Up to \$50/Test for booster pump being supplied by a	
	water well	
Energy Audit Subsidy	75% of Audit Costs up to \$500	
Incremental Off-Road Rebate	Up to an Additional 15% of Eligible CMP Project Costs	CMP typically covers up to 65% of project costs
Incremental Infrastructure Rebate (e.g. E/S TRU)	Up to an Additional 15% Eligible CMP Project Costs	CMP typically covers up to 65% of project costs

#### Table 3-21. Agricultural Electrification Program Subsidies and Rebates

# Marketing, Education and Outreach

A key feature of partnering with MBARD to deliver the Agricultural Electrification Program through the CMP will be to leverage its significant marketplace recognition in the agricultural sector to drive farm equipment electrification. MBCP anticipates collaborating with MBARD to identify and provide outreach to high priority CMP sites throughout the Tri-Counties.

# **Delivery Strategy and Administration**

The CMP's rebate application, processing, rebate distribution and other general administration will be handled by MBARD's existing processes, with MBCP contributing funding to offset a portion of MBARD's administration costs. Energy consultations aren't currently part of the CMP, and as such MBCP plans to jointly fund and administer with MBARD the subsidized energy consultations. This may require the hiring of a 3<sup>rd</sup> party with experience operating agricultural efficiency programs.

# 3.5 Customer Engagement/Marketplace

# **Program Concept and Description**

MBCP proposes exploring the opportunity to launch an online Customer Engagement Platform/Marketplace, and may consider exploring a partnership with other CCAs such as Sonoma Clean Power and Silicon Valley Clean Energy. A joint RFP would provide a lower cost solution and leverage more resources and expertise throughout the process. This platform would include, at a minimum, an online customer engagement platform, trade partner portal, and branded marketplace that will establish valuable customer engagement and outreach tools, links to MBCP programs, online retail options, and essential program delivery infrastructure going forward. This online capability is essential as MBCP expands and meets diverse customer needs across its broad geographic service region. A brief summary of the features of each component of this online resource is provided below.

#### The customer engagement platform

- Link to educational information
- Link to all MBCP customer energy programs
- Customer dashboard, personalized outreach and messaging
- Program participation, reward programs, data tracking resources
- Concierge capability for a variety of products and services, including financing options and resources for installation
- Enroll in and connect to demand response programs

Trade partner portal

- Incentive application and processing resource
- Training and education opportunities, business development support
- Bulk product purchase marketplace resources

Online marketplace

- Instant access to electrification and high-efficiency appliances, rebates and shipping
- Discount and manufacturer direct pricing
- Instant rebate processing
- Access to product choices from other retail providers.

This resource will provide critical program data, information and outreach capabilities that will facilitate positive customer interaction with MBCP, and channel customers to electrification programs. These options can be deployed in a modular fashion to minimize upfront investment costs. Once in place, these extensive customer and trade partner engagement tools can be delivered with minimal impact on MBCP staff time.

# **Target Market and Eligibility**

The target market for the Customer Engagement/Marketplace is all residential, commercial and agriculture customers as well as trade and retail partners.

# **Program Objectives**

The Customer Engagement Platform/Marketplace is a branded online market that will boost customer engagement while introducing customers to MBCP's programs and energy-saving services.

The rationale for implementing this program includes:

- GHG Emission Reductions: enables customers to directly apply for MBCP program incentives as well as non-program energy efficiency, EVSE and smart appliances
- Demand Response: provides demand response opportunities through direct control of demand response enabled technologies at customer sites
- Customer Benefit: energy savings and utility bill reductions from purchase of energy efficiency, electrification, and EVSE technologies, and demand response capabilities
- Other: opportunity for MBCP to generate revenue through advertising, sponsorships, affiliate marketing fees, referrals, and lead-generation; channel customers to all MBCP programs
- MBCP Brand Awareness: enhances user engagement with MBCP while building brand awareness
- Complementary Delivery: Leverage other CCAs' expertise and benefit from "volume discounts" to deploy jointly funded engagement platform/marketplace
- Economic Development: local contractors used for installations
- Cost Effectiveness: Based on PG&E's results, savings through joint CCA focus, incremental revenue and customer fuel switching; data analytics provide staff with immediate control and visibility into resources, programs, marketing, website, marketplace, and customer care

performance. This could include dashboards, analytics, customer relationship management (CRM) systems, rebate processing, program impact and cost effectiveness calculation tools, as well as trade partner management systems.

Table 3-27 below summarizes the team's assessment of the Customer Engagement Platform/Marketplace against the design scoring criteria described previously in section 1.2.



# Table 3-22. Customer Engagement Platform/Marketplace Scoring Criteria Matrix

# **Incentives and Services**

MBCP anticipates that the Customer Engagement Platform/Marketplace will provide a range of services to:

- Residential and Commercial Customers. Services provided to customers via the marketplace will consist of:
  - Customer Engagement Features. This category of customer services provides customized interactions and tools, which may include account dashboards, alerts and notifications, reward programs, personalized customer action plans that help them to set budgets or choose the best rate, as well as concierge services putting customers in contact with curated quality rated and highly rated trade allies or financiers.
  - Marketplace Features: This category of customer services provides a branded on-line market that may be able to validate customer eligibility, offer instant appliance rebates and shipping, personalized marketing, professional installation, and enroll in and connect to demand response programs.
- Trade Allies and Retail Partners. Contractor qualification and referral services that will support the growth of MBCP's business partners, including but not limited to program support, tools to manage leads and track projects, online invoice and rebate submittal, in-field assessment tools, and discounted bulk purchase marketplace.
- MBCP Staff. Business intelligence and data analytics, giving MBCP staff real-time control and visibility into resources, programs, marketing, website and marketplace, and customer care performance. This may include dashboards and analytics, customer relationship management (CRM) systems, rebate processing, program impact and cost effectiveness calculation tools, and trade partner management systems.

While MBCP intends to eventually build out a comprehensive platform that encompasses customized solutions from each of these categories, MBCP anticipates launching the platform in segments and will prioritize features which can synergize with the development of MBC's suite of customer energy programs.

# Marketing, Education and Outreach

The Customer Engagement Platform/Marketplace's features will improve MBCP's ability to market products and services to its customers. The Marketplace's data tracking and analytics can be used to

trace a customers' activities on the Marketplace in addition to the original digital channels that directed them to the Marketplace. This will enable MBCP to send targeted messages to customers based on the customer profile built from recording their interactions in the Marketplace, helping to further drive customers toward efficient products.

#### **Delivery Strategy and Administration**

MBCP will consider partnering with one or more CCAs to jointly fund the launch of the Customer Engagement Platform/Marketplace. MBCP expects that once a services provider is selected following the RFP process, the Marketplace will be curated based on the priority needs of MBCP and its partner CCAs. One of the primary benefits of investing in a platform is that once development is complete, the service provider handles ongoing operation and maintenance of the program with limited MBCP staff time required. MBCP expects that at launch the Customer Engagement Platform/Marketplace will be limited to select features, but that overtime additional functionality will be implemented as the needs of MBCP evolve with the development of its portfolio.

# 3.6 The Option of Becoming a Program Administrator

A high priority in the later years of the 5-year roadmap will be to study the costs and benefits of applying or electing to become a program administrator of energy efficiency programs within the context of MBCP's goals. Conducting this study late in the 5-year roadmap is beneficial in that it provides time for MBCP to establish itself in the market, firmly establish it's growing service region, and build up the internal staff capacity necessary to become a program administrator, if it chooses to do so. This is a major decision that will impact future portfolio design, and the strategic direction of MBCP's energy programs depending on which of the following options MBCP decides to pursue:

- MBCP continues to offer non-ratepayer-funded electrification and GHG reduction programs. In this scenario, MBCP would continue to fund and expand its offering of electrification programs by leveraging existing programs wherever possible. Customers would continue to have access to most PG&E programs including statewide and regional offerings. SCP is currently operating programs under this method.
- 2. MBCP provides ratepayer-funded energy efficiency programs only to fill gaps in current programming. In this scenario, MBCP would **elect to administer** funding which is an easier pathway for becoming a PA as it has less stringent regulatory requirements, but has limited budgets as it restricts the CCA to operating downstream, non-statewide/regional programs. It also may potentially be viable to use the elect to administer option to ramp up slowly to applying to administer programs. MCE and Lancaster are currently operating programs under this method.
- 3. MBCP offers ratepayer-funded energy efficiency programs that absorb, compete with, or replace existing PG&E programs. In this scenario, MBCP would **apply to administer** funding, becoming a fully-fledged administrator like the IOUs, RENs, and MCE. This means adhering to the full scope of CPUC regulations including cost-effectiveness and fuel-switching but would enable MBCP to access more ratepayer dollars as well as administer midstream, upstream and statewide/regional programs.

CCA's have statutory authority to administer energy efficiency programs funded by public goods charge under Cal. Pub. Util. Code section 381.1, and as directed by CPUC decisions and rulemakings.<sup>31</sup> MBCP will need to assess the benefits of costs of becoming an administrator of public goods charge funded programs going forward. There are two pathways under this Code: 1) Apply under (a)-(d) or, 2) Elect under (e)-(f) to administer energy efficiency funds. Below is a summary of the Apply and Elect Administrator options.

- Apply to Administer under section (a)-(d)
  - The Commission has more discretion to approve or reject a CCA's application under the Apply Option.
  - In this option the CCA can request any budget that they can justify under their program design.
  - The Application option provides CCAs with access to state and regional funding.
  - CCAs are also not limited to serving their own customers but can also provide EE programs to bundled customers.
- Elect to Administer under section (e)-(f)
  - The CCA must present a proposal, budget and rules that will govern the program. In this option, the CCA gets to develop its own metrics and evaluation.
  - This proposal must meet 5 criteria and is subject to approval by the Commission. (D.14-01-033)
  - The funding is essentially proportional to utility funds in the CCA territory, minus regional and statewide programs. Thus, budgets are limited and will vary based on the utility programs in one's region.
  - One of the restrictions in this Elect option is that the CCA can only fund projects that target the CCA's own customers.
  - The elect option can be a way of learning about program administration for a CCA, by starting small and going from there. However, since this option involves the CCA proposing their own unique rules for programs, CCA staff won't learn about the rules that generally apply to other Program Administrators

Additional considerations include:

- All rules that apply to IOUs also apply to CCAs, unless: 1) a Commission Decision provides specific instructions for CCAs not to comply (such as in D.14-01-033), or 2) when compliance with the Policy Manual or a Commission decision is impossible because of some unique characteristic of CCAs as distinct from IOUs
- New CCAs are given a 3-year period when they are not held to an administrative cap on spending and will be subject to a threshold Total Resource Cost (TRC) ratio of 1.0 rather than the current 1.25 threshold TRC ratio.

<sup>31</sup> Rulemaking 09-11-014, *Decision Enabling Community Choice Aggregators to Administer Energy Efficiency Programs*, Noivember 10, 2009.

- For new CCAs it is also important to consider application cost barriers including program design, strategies, and technical underpinnings through E3 calculators (complex spreadsheets, used to demonstrate that program is cost effective). It takes expertise to use these E3 calculators and it may be prudent to hire an experienced consultant. The CPUC is moving to an online tool, but it is unlikely to reduce the complexity of the showing of cost-effectiveness.
- MCE initially was required to design a portfolio to serve hard to reach markets, avoid duplication with the IOUs, and provide innovative pilots but this requirement has since been lifted. New CCAs don't need to target these areas, however it is important to focus on these areas to advance the EE programs and can help get stakeholders interested and listening.
- IOUs perform revenue collection to fund all EE programs. So only IOUs, as opposed to CCAs, need to pursue rate setting to ensure adequate collection of EE funding.
- Often the Commission will consolidate all applications into one proceeding, to streamline the record and process for approval.

# **4** Program Tracking and Evaluation

This section presents MBCP's approach to evaluation, measurement and verification during the five-year planning horizon of the roadmap. The approach presented below is based on the guidance provided in the California Standard Practice Manual (CaSPM)<sup>32</sup> and the National Standard Practice Manual (NSPM)<sup>33</sup>. The CaSPM has been the primary standard for assessing the cost-effectiveness of demand-side management programs since it was first published in 1983. The cost-effectiveness of the State's current portfolio of energy efficiency programs is evaluated using the Total Resource Cost (TRC) test as defined in the CaSPM. Should MBCP elect to become a Program Administrator of public goods funded programs, these programs will fall under the program evaluation requirements of the CPUC and the need to satisfy the TRC test. The NSPM builds on the fundamental principles presented in the CaSPM while providing a more customizable "Resource Value Framework." This framework is fundamentally oriented toward the policy objectives of the load serving entity and provides for the definition of a Resource Value Test (RVT) for assessing the cost-effectiveness of program options that align with these objectives. The RVT framework is summarized in the NSPM as follows:

"The NSPM presents an objective and neutral Resource Value Framework that can be used to define a jurisdiction's primary cost-effectiveness test, which is referred to as a Resource Value Test. The Resource Value Framework is based on six principles that encompass the perspective of a jurisdiction's applicable policy objectives, and it includes and assigns value to all relevant impacts (costs and benefits) related to those objectives. The NSPM also provides information, guidance, and templates that support the selection of components of a jurisdiction's Resource Value Test (e.g., the range of costs and benefits to consider and appropriate discount rates), the application of such tests (e.g., defining of analysis periods), and the documentation of the relevant policies as well as quantification of relevant costs and benefits. The NSPM also addresses the use of secondary tests in addition to a primary Resource Value Test."

The approach defined in the NSPM is well suited to the assessment of MBCP's programs as it provides for a customized approach that can incorporate valuation of MBCP's primary objectives of GHG emissions reductions, job creation and economic development, and social equity within program offerings. The framework of the NSPM is the basis for the approach to cost-effectiveness presented below.

# 4.1 Embedded Evaluation

Embedded or integrated evaluation is a process of systematically collecting basic data needed for evaluation as part of the program delivery process and conducting periodic reviews and assessments of the data in order to provide feedback to program managers. This approach emphasizes the need to collect essential data both at the time of program engagement as well as at strategic points in the

<sup>&</sup>lt;sup>32</sup> California Public Utilities Commission, *California Standard Practice Manual, Economic Analysis of Demand-Side Programs and Projects*, October 2001.

<sup>&</sup>lt;sup>33</sup> The National Efficiency Screening Project, *National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources*, Edition 1, Spring 2017.

program delivery process. Collection of these data elements does not need to be a daunting or onerous task. Often, it is simply a matter of selectively adding to or modifying the information systems that are used for program implementation purposes to assure that specific data elements are collected and that survey/feedback mechanisms are put in place to collect supplemental information. It is important that these procedures be established as early as possible in the implementation process as possible.

For process evaluation purposes, data collection systems seek to collect data on customer response to program products/services and implementation processes, satisfaction with program offerings, response to marketing and communications, and recommendations for program adjustment. Program evaluation plans also specify the need, timing, and quantity of various data collection activities including participation data, survey and customer response data, and in-field performance measurement and monitoring.

The integrated data collection process requires that data be collected on an ongoing basis over the course of the evaluation and maintained in program tracking databases. In addition, to these program tracking databases, the integrated data collection process calls for certain types of follow-up research activities that result in data that must also be housed in appropriate database systems. These include databases for tracking participant mail back surveys, follow-up customer surveys, and other research conducted over the course of the evaluation.

Each program in the portfolio will be subject to periodic performance assessment based on data collected in the program tracking database as discussed above. Table 4-1 presents a summary of the performance metrics that could be used to evaluate the progress and achievements of MBCP's electrification programs.

Program Effect	Performance Metric
Energy and GHG Impact	<ul> <li>GHG reductions</li> <li>KWH generation (renewables)</li> <li>KW reduction (battery storage, demand response)</li> <li>Fossil fuel reduction (gasoline, diesel, natural gas, propane)</li> <li>Increased KWH sales (electrification of fossil fueled end uses)</li> </ul>
Financial Performance	<ul><li>\$/MT CO2e</li><li>Net-Present Value of program benefits and costs</li></ul>
Program Process	<ul> <li>MBCP brand awareness development</li> <li>Customer satisfaction with program services</li> <li>Customer retainage and reduction of opt-outs</li> <li>Success at reaching transportation, built environment, and ag electrification goals</li> </ul>
Economic Development	<ul> <li>Value of fossil fuel expenditures retained for local economic impact</li> <li>Job creation</li> </ul>
Reliability, Resiliency and Emergency Preparedness	<ul> <li>Success at reaching microgrid goals for critical infrastructure and emergency response facilities and services</li> <li>Success at implementing demand response technologies in the transportation, built environment, and ag sectors</li> </ul>
Social Equity	<ul> <li>Reduction in energy costs for low-income customers</li> <li>Success at serving hard-to-reach customer market segments</li> </ul>

# Table 4-1. Program Performance Metrics
## 4.2 Program Tracking Data

Accurate and reliable evaluations require accurate and complete datasets. The evaluation process will draw on data from a variety of sources, and a key data source is the participation data set. This evaluation proposes to use an "integrated data collection" approach in order to achieve the high levels of accuracy and completeness required. The concept of integrated data collection (IDC) provides a data acquisition process that is designed into the program process flow and occurs throughout the life of the program.

Collection of evaluation-specific data collection should be integrated into the program design and implementation process. Developing datasets using the IDC approach has proven to be a very cost-effective means of producing the highly reliable evaluation datasets. The concept of an IDC approach dictates that the participation data set should have the following distinct features and requirements:

- The data is complete enough to accurately describe and quantify what measures and technologies were installed and what they replaced. In the case of new construction, this may require the comparison of a full design specification for the whole building as constructed under both baseline and energy-efficient conditions.
- The data includes additional explanatory variables needed to characterize how the measure is applied and what the utilization patterns are. That is, in addition to knowing what is installed it is necessary to know when and how it is used. For example, for a lighting retrofit it is necessary to know the details of what fixture was installed, what it replaced, what its operating hours are, how it interacts with the HVAC system, and so on.
- The data should be collected and compiled as close to the time of measure implementation as possible to minimize customer recall problems and loss or misinterpretation of data and maximize customer or trade partner willingness and ability to respond.
- Finally, the data should be collected as systematically as possible so as to assure the greatest consistency across the dataset.

As a general guide, the types of measure and system data that are needed for impact evaluation purposes fall into five technical categories:

- Quantity of devices/systems installed (e.g., number of solar panels)
- Capacity or size of devices installed (e.g., Watts/panel for solar panels).
- Efficiencies of devices installed (e.g., SEER/EER for air conditioning).
- Characteristics of the technology (e.g., variable speed, low-emissivity).
- Operating variables for the technology (e.g., operating hours, usage/occupancy profiles.

Program tracking and evaluation databases will include the pre- and post-installation reports, results of pre- and/or post-installation inspections, any M&V data collected, and other supporting calculations and documentation. These data are critical for constructing a detailed compilation of the installed measures and their performance criteria. The advantage of assembling and maintaining these databases is that periodic progress and findings reports can be generated for the benefit of the implementation team and program managers. These reports can assist implementers with identifying problem areas and making mid-course corrections to program processes.

The International Performance Measurement and Verification Protocols (PIMVP) set the standard for the assessment of the performance of energy systems and technologies. Volume I of the protocols

establishes procedures for energy efficiency measures in building and industrial facilities, and Volume III provides additional guidance on specific applications including renewable energy systems. The methods presented in these protocols provide the basis for the assessment of measures and technologies included in MBCP's program portfolio.

The IMPVP protocols define four different options for assessing the performance of energy technologies and systems, as follows:

- **Option A:** Engineering calculations of the technology or system using stipulated performance parameters, or spot/short-term measurements.
- **Option B:** Engineering calculations using metered data for the technology or system.
- **Option C:** Analysis of utility bills or whole-facility metered data.
- Option D: Whole building energy simulation modeling

Table 4-2 presents a summary of how the IPMVP protocol options can be applied to assess the performance of technologies and systems installed through MBCP's electrification programs.

#### Table 4-2. Assignment of M&V Protocols to Program Measures

IDM/VD Option

	11		opin	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Measure Category	Α	В	С	D
Microgrid operations			R	
EV charging stations		R	R	
Water heating electrification measures	B			
Space heating electrification measures	R			
Solar energy + storage systems		B	B	
Appliance and consumer product electrification measures	R			
Irrigation pump electrification		B	R	
All-electric new home construction				R
All-electric commercial new construction				R
Demand management technologies		B	R	

### 4.3 Cost-Effectiveness Analysis

The cost-effectiveness analysis of MBCP's programs during the initial phases of program development and implementation presented in the roadmap relied on two primary metrics: 1) metric tons of CO2 equivalent GHG reductions (MT CO2e), and 2) the net-present value (NPV) of program benefits and costs. Valuation of GHG reductions will be based on displacement of fossil-fuel applications with electricity and renewable energy using GHG mitigation conversion factors appropriate for MBCP's resource mix. As noted above, the NPV analysis will be based on the Resource Value Framework presented in the National Standard Practice Manual<sup>34</sup>. The framework employs the Resource Value Test (RVT) as the cost-effectiveness metric. Since the programs presented in the roadmap are focused on electrification and conversion of fossil-fuel driven applications to electricity, one of the primary benefits of the NPV analysis will be the revenue gain from increased sales. The RVT also provides for the valuation of other performance metrics that are well aligned with MBCP's policy goals including GHG emissions reductions, job creation and costs to be included in RVT during the program development and roll-out of MBCP programs. This is not intended as an exhaustive list of benefits and costs, and as the programs evolve additional components may be built into the analysis regime.

	Costs	Benefits					
	Financial incentives	Avoided energy costs					
	Program administration costs	Avoided generation capacity costs					
Utility	Evaluation, measurement and verification	Avoided reserves or other ancillary services					
	Interconnection costs	Avoided credit and collection costs					
	Distribution system upgrades	Revenue gain from increased sales					
	Lost revenues from fossil-fuel purchases	Reduce low-income energy burden					
Non-	P	Public health benefits					
Utility	Financial loss from environmental hazards	Jobs and economic development benefits					
		Environmental benefits					

#### Table 4-3. Sample of Cost and Benefits Typically Included in the RVT

### 4.4 Market and Process Performance Assessment

In addition to the impact and cost-effectiveness analysis described above, it is also necessary to assess other "market" and "process" program performance metrics. Data to assess these indicators of performance will be gathered though periodic surveys of customers and program participants. Qualitative metrics of program performance include:

- **Social Equity** How programs equitably serve the needs of MBCP's customers including low income and disadvantaged communities.
- **Demand Response** Implementation of demand response enabling technologies including battery storage, and smart, Wi-Fi enabled appliances, thermostats, water heating and space heating systems.
- **Complementary Funding and Services** Collaboration with local agencies and communitybased organizations to leverage program funding, delivery mechanisms, and customer engagement and outreach.

<sup>34</sup> The National Efficiency Screening Project, National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources, May 18, 2017.

- **Economic Development and Job Creation** The degree to which program efforts promote local economic development and job creation.
- **Community Preparedness** How MBCP programs put in place resources and systems through efforts such as microgrid development to support community preparedness, response and resiliency for emergency events such as wildfires.
- **MBCP Brand Awareness** Developing MBCP brand awareness through program services, MEO activities, and customer/trade partner engagement platforms.
- **Customer Benefits** Customer benefits including reduced energy costs, greater energy cost management options, and participation in solutions to pressing local and global challenges including community emergency preparedness and climate change.\
- **Customer Satisfaction** This is a traditional metric that gauges customer response to program offerings. It can also be applied to the trade ally and contractor communities, as well as satisfaction of the jurisdictions with program offerings and support for their initiatives.

## 5 Program Impacts, Budgets and Cost-effectiveness

The estimated energy and GHG impacts for programs included in the roadmap are presented below. It should be noted that not all program efforts lead directly to the installation of measures promoted by the programs, and, rather, serve as marketing channels for other programs, general awareness building around clean energy and electrification issues, and help to build the infrastructure for successful customer and market engagement around program offerings. Marketing, education and outreach (MEO) and customer/trade partner engagement platforms fall into this category. A cost-effectiveness summary is also provided below.

### 5.1 Energy and GHG Impacts

The tables below present the estimated energy and GHG impacts for first year programs as well as estimated cumulative impacts for each type of program through 2025. These tables include:

- Fossil fuel usage reductions from conversion of transportation, building systems, and agricultural applications to electricity.
- Increased electricity usage from conversion of transportation, building systems, and agricultural applications to electricity.
- Solar generation impacts.
- Net GHG impacts.

Program		Natural Gas Use Reduction (Therms)	Propane Use Reduction (Therms)	Electricity Use Impact (kWh)	Solar Generation (kWh)	Net GHG Impact (MTCO2)
Smart Connect Microgrid Program	5,934	7,860	-	188,090	2,293,445	293
Passenger Vehicle EV Incentive Program	32,227	-	-	238,586	-	317
Central Coast Electric Vehicle Infrastructure Project	268,558	-	-	1,988,215	-	2,641
Medium-Heavy Duty Transportation Enhancements Program	56,344	-	-	747,211	-	597
Building Electrification Reach Code Initiative	38,744	1,048,879	217,800	9,332,458	-	8,031
Housing Developer Electrification Grants Program	-	592,461	194,454	5,624,926	-	4,817
Agricultural Program Enhancements	105,073	-	-	1,479,447	-	1,176
Portfolio	506,880	1,649,200	412,254	19,598,933	2,293,445	17,871

### Table 5-1. Estimated Program Impacts in 2025 from FY 2019/2020 Investments

### Table 5-2. Estimated 5 Year Cumulative Program Impacts from 2020 to 2025

	Fuel Use Reduction (Gal)	Natural Gas Use Propane Use Electricity Use Reduction (Therms) Reduction (Therms) Impact (kWh)		Electricity Use Impact (kWh)	Solar Generation (kWh)	Net GHG Impact (MTCO2)
Distributed Energy Resource Programs	29,670	39,300	-	940,451	11,467,226	1,465
Transportation Electrification Programs	2,002,153	-	-	5,105,189	-	6,315
Built Environment Electrification Programs	163,116	8,228,008	1,742,235	72,409,765	-	61,846
Ag Electrification Program	494,459	-	-	6,962,102	-	5,533
Customer Engagement/Marketplace	81,558	603,800	91,697	5,567,937	-	4,971
Portfolio	2,770,956	8,871,107	1,833,931	90,985,444	11,467,226	80,131

## 5.2 Program Budgets and Cost-effectiveness

Estimated program budgets and cost-effectiveness metrics are presented below. The primary metrics for program cost-effectiveness are the cost of achieving GHG reductions (\$/MT CO2e) and net present value (NPV) of benefits and costs attributable to program efforts.

The \$/MT CO2e are computed by converting fossil fuel consumption and change in electricity use to GHG emissions. The conversion factors are summarized in Table 5-3 below.

Fuel Type	MTCO2e	Units
Grid purchased electricity	0	mTCO₂e /kWh
Natural gas	0.00585	mTCO <sub>2</sub> e /Therm
Propane	0.00695	$mTCO_2e$ /Therm
Gasoline	19.64	lbs CO2 gallon fuel
Diesel	22.38	lbs CO2 gallon fuel
Fleet average	21.01	lbs CO2 gallon fuel
Gasoline	0.00982	$mTCO_2e/gallon$
Diesel	0.01119	mTCO <sub>2</sub> e/gallon
Fleet average	0.010505	$mTCO_2e/gallon$

Table 5-3. GHG Conversion Factors

The net present value is computed using the following formula:

Net Present Value = Present Value of Program Benefits – Present Value of Program Costs

The PV of program benefits can include a range of benefits including revenue gain from increased sales, the resource value of peak demand reduction, the value of carbon reductions and economic development, and other benefits (see the *National Standard Practice Manual (NSPM) for Assessing Cost-Effectiveness of Energy Efficiency Resources*). For the purposes of the analysis of the program benefits for this plan, however, we have limited the analysis of benefits to the PV of total revenue gain from increased retail sales valued at an average retail rate. Similarly, the analysis of program costs can consider a variety of factors according to the NSPM. However, for the purposes of this analysis, the PV of program costs includes increased supply costs valued at MBCP's average marginal cost and program administration costs. Net present value was computed using the assumptions detailed in Table 5-4.

Electrification EUL	10
Solar EUL	20
Retail	\$0.234
Marginal	\$0.036
Discount Rate	2.50%

I ADIE 5-4. INPV FACTO
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The proposed budget distribution for the portfolio of programs over time is shown in Table 5-5. Admin costs consist of program management, ME&O, technical assistance, and EM&V costs, while incentives consist of rebates as well as funding and financing—defined here as monies distributed to partner organizations to fund a jointly-administered program, typically building off or enhancing a partner's existing program.

	Incentives	Pr	ogram A	dministra	tion
	Incentives	<b>Technical Assistance</b>	ME&O	EM&V	Program Management
FY 19/20	80%	9%	3%	2%	7%
Early Program Years	65%	5%	15%	5%	10%
Late Program Years	75%	3%	11%	3%	8%

Table 5-5.	Proposed	Proaram	Budaet	Distribution	Over	Time by	Incentives	and	Administration
Tubic 5 5.	rioposcui	rogram	Duuget	Distribution	Over	THIC Dy	meentives	unu	, with the set of the

Estimated first year program costs, including rebates and incentives, are presented in Table 5-6 below. While Table 5-7 provides estimated program cost-effectiveness in \$/MTCO<sub>2</sub>e for each program and the portfolio. A negative value indicates a net benefit per ton reduced, whereas a positive value indicates a net cost per ton reduced. Note that the cost effectiveness of Agricultural Programs is based on limited agricultural irrigation pump data.

#### Table 5-6. Estimated First Year Program Costs – FY 2019/2020

Program	Incentives	Technical Assistance	ME&O	EM&V	Program Management	Total Budget
Smart Connect Microgrid Program	\$0	\$65,000	\$20,000	\$40,000	\$130,000	\$255,000
Passenger Vehicle EV Incentive Program	\$120,000	\$12,000	\$30,000	\$10,000	\$20,000	\$192,000
Central Coast Electric Vehicle Infrastructure Project	\$1,000,000	\$0	\$15,000	\$0	\$70,000	\$1,085,000
Medium-Heavy Duty Transportation Enhancements Program	\$1,000,000	\$12,000	\$32,000	\$0	\$70,000	\$1,114,000
Building Electrification Reach Code Initiative	\$0	\$85 <i>,</i> 000	\$0	\$0	\$0	\$85,000
Housing Developer Electrification Grants Program	\$1,200,000	\$0	\$15,000	\$20,000	\$0	\$1,235,000
Agricultural Program Enhancements	\$85,000	\$5,000	\$15,000	\$5,000	\$10,000	\$120,000
Jurisdictional GHG Emissions Accounting	\$0	\$120,000	\$0	\$0	\$0	\$120,000
Programmatic Design Support	\$0	\$70,000	\$0	\$0	\$0	\$50,000
Portfolio	\$3,405,000	\$369,000	\$127,000	\$75,000	\$300,000	\$4,276,000

\*This budget is for conducting further research and outreach regarding the potential of launching a Customer Engagement Platform Program.

#### Table 5-7. Estimated Programs Cost-Effectiveness (\$/MTCO2e) from FY 19/20 Investments

Program	Total Program Year Cost	NPV	MTCO2E (lifecycle) <sup>(1)</sup>	\$/MTCO2E
Smart Connect Microgrid Program	\$255,000.00	\$8,341,221.86	(2,930)	-\$2,846.83
Passenger Vehicle EV Incentive Program	\$192,000.00	\$88,936.45	(3,169)	-\$28.07
Central Coast Electric Vehicle Infrastructure Project	\$1,085,000.00	\$1,256,137.09	(26,406)	-\$47.57
Medium-Heavy Duty Transportation Enhancements Program	\$1,114,000.00	-\$234,153.39	(5,967)	\$39.24
Building Electrification Reach Code Initiative	\$85,000.00	\$10,904,033.48	(80,306)	-\$135.78
Housing Developer Electrification Grants Program	\$1,235,000.00	\$5,388,389.07	(48,173)	-\$111.85
Agricultural Program Enhancements	\$120,000.00	\$1,622,058.73	(11,758)	-\$137.96

Notes: (1) the lifecycle benefits are computed over the effective useful life (EUL) included in each program

## **6** Implementation Timeline

As noted in Chapter 2, MBCP plans to roll out its electrification programs over the five-year planning timeframe in a staged fashion focusing first on an initial set of high priority offerings, followed year-by-year with other programs to round out the portfolio. Figure 6-1 below shows the planned schedule for rollout and implementation of programs included in the portfolio over the five-year planning timeframe.

	FY 19-20		FY 20-21		FY 21-22		FY 22-23		3	FY 23		24				
Distributed Energy Resource Programs																
Smart Connect Microgrid Program																
Load Management Program																
Transportation Electrification Programs																
Passenger EV and Home Charger Incentives Program																
Central Coast EV Infrastructure Incentive Program																
MedHeavy Duty Transportation Enhancements																
Built Environment Electrification Programs																
Project Sunshine at Night																
Building Electrification Incentives																
CA Advanced (New) Home Program Enhancement																
Savings by Design Enhancement																
Building Electrification Reach Code Initiative																
Housing Developer Electrification Grants																
Agricultural Electrification Programs																
Enhancements to Carl Moyer, FARMER, Community																
Air Protection & Clean Air Management Programs																
Customer Engagement and Marketplace			 				 						I			
Customer engagement platform									_		-					
Marketplace																



Planning and collaboration Launch and implementation

# Appendix A: Summary of Programs Being Delivered by other California CCAs

California CCA and Statewide Program Activities																	
												Progran	n Type				
CalCCA List	Service Area	Customer Accounts	Program	Market	Description	m	entwes for	ancine	n.Asist.	0. 8 Ed.	EST M	athetplace	- Di	ect install	alcovinit	ative Rec	Actis not store se
Currently Active CO	CAs					Í	Í	(	(	Í	Í	Í	Í	Í	Í	(	
Sonoma Clean	Sonoma and		Advanced Energy Rebuild Drive EV	New Construction EV	Enhancement of CAHP, \$7,500 for Advanced Energy Home, \$12,500 for All Electric Home, 20% above T24 Rebates up to \$4500 for purchase or lease of new EV.	✓ ✓											
		225,000	DIY Home Energy Toolkits	Residential	Home Energy and Water Savings Guidebook on simple home upgrades, dimmable LED lightbulbs, weather stripping, low- flow shower heads and aerators, and measuring devices like a Kill-a-Watt, infrared laser thermometer, and flow rate bag.				~			~					
Power	Mendicino Counties		GridSavvy	EV	Free home EV charging station.	<ul> <li>✓</li> </ul>			<ul> <li>✓</li> </ul>			1					
			Induction Cooking	Residential	Small, portable induction cooktop units to borrow and try out at home.				~								
			Lead Locally	Other	Beginning fall of 2019, SCP opening a store where SCP customers can test and purchase discounted, high efficiency electric appliances.				~								
МСЕ			Advanced Energy Rebuild	New Construction	Up to \$12,540 in incentives for EE home, plus solar, storage, and EV charging options.	~		~									
	Marin and Napa Counties, 1 city in Solano County, unicorporated Contra Costa County and 13 cities	470,000	Residential	Residential	Links to EUC, contractor referrals, online audits, home energy coach,			~	~								
			Multifamily Energy Savings Program	Residential	Rebates, no-cost energy assessments, no-cost energy and water saving measures for tenants, no-cost technical assistance, low-cost loans	~	~	~	~								
			Business	Non-Residential	No-cost energy assessments, rebates, pre-negotiated contractor discounts, project management, quality assurance, low-cost loans and PACE financing	~	~	~	~								
			Financing	Other	PACE and Go Green Financing		<ul> <li>✓</li> </ul>					1					
			Small Com DI Program	Non-Residential													
			Seasonal Savings Pilot														
			MCEv	EV	\$3500 rebate for new or used EV purchase or lease.	✓			L			<u> </u>					
			EV Charging	EV	\$2500 per port rebate for workplace and multifamily charging stations.	~											
			MCE's Solar Rebate	Solar	Solar incentives for income qualified single-family and multifamily homes	~											
Silicon Valley Clean Energy	Unincorporated Santa		All-Electric Building Design Grants, Electrification Reach Codes	New Construction	Building electrification and EV infrastructure reach codes, all- electric showcase building design grants.	~								~		~	
	Clara County and 12 cities	270,000	FutureFit Your Home	Residential	Assistance with replacing home n.g. w.h. heaters with heat pump w.h.												
			Grid Integration and Energy Efficiency														
			Transportation	EV	Assistance creating EV infrastructure strategy and plan			<ul><li>✓</li></ul>						L 🗸			

						Program Type											
		Customer	_				entives	ancing	n.Asist.	0. 0 Ed.	9 <sup>51</sup> 11 <sup>2</sup>	inetpisce		etInstal	alcovinit	stive Res	yclis polycose
CalCCA List	Service Area	Accounts	Program	Market	Description	<u>/                                    </u>	<u> </u>	$\angle \sim$	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	/
Peninsula Clean Energy			Electrification Reach Codes	New Construction	In collaboration with San Mateo County and SVCE, providing extensive technical assistance plus a \$10,000 incentive to each city that brings electrification reach codes to their councils.	~		~									
			Easy Charge Apartments	Residential	Technical assistance, including free site electrical assessments, guidance on apartment policies and linkages to existing resources for EV charger installations.			~									
			Low-income bill assistance programs	Residential	ESAP, SASH, LIWP, REACH, HEAP energy bill assistance programs.												
			DriveForward	EV	\$4000 incentive for purchase of used plug-in hybrid for income qualified customers	~											
	Unincorporated San Meteo County and 20 Cities	293,000	EV Charging Equipment Incentives	EV	Program to accelerate electric vehicle charging infrastructure deployment in the workplace (private and public sectors, schools, government offices, etc), apartments and condominiums, and retail locations. Roll-out expected summer 2019.	~											
			Home Intel	Residential	Online audit, energy savings tips, energy coach			×	×								
			Home energy and water saving toolkit	Residential	In collab with SM County, visit library and check out Home Energy and Water Saving Toolkit with supplies and measuring devices to lower your utility bills.							~		~			
			Residential	Residential	In collab with SM County and BayREN, links to SF and MF EUC with rebates.	~		~	~								
			Business	Non-Residential	In collab with SM County Energy Watch, technical assistance, energy audits and rebates.	~		~	~								
				Other	In collab with SM County, promotion of PACE financing		<ul><li>✓</li></ul>										
			Community Pilot Awards	Other	Six programs to repair homes for low-income residents, promote access to electric vehicles, switch appliances from gas to electric, provide clean backup power for emergency shelters, and ensure safe apoliance recycling.	~		~				~	~		~		
Apple Valley Choice Energy	Town of Apple Valley	25,000	No Active Programs														
CleanPowerSF	San Francisco County	110,000	No Active Programs														
Clean Power Alliance	Unincorporated Ventura County and 7 cities, unincorporated Los Angeles County and 22 cities	972,500	No Active Programs														
East Bay	Unincorporated	533.000	No Active Programs														
Community Energy King City	Alameda County and	333,000	Street Lights	Other	KCCP installs solar powered, wireless street lighting in areas		<u> </u>						~				
Community Power	City of King City		Solar Installations	Residential	Without existing electric lines or poles.								~				
Lancaster Choice Energy	City of Lancaster	50,000	Energy Advisor Program	Residential	Free survey to highlight ways to use less energy around the house, including weatherization, efficiency upgrades, and special financing programs for energy saving appliances and equipment.			~									
			Small Com DI Program	Other	Free energy saving products and free installation, such as lighting and refrigeration upgrades								~				
Pico Rivera Innovation	City of Pico Rivera	17,600	No Active Programs														
Pioneer Community Energy	Unincorporated Placer County and 5 cities	79,500	No Active Programs														

						Program Type												
CalCCA List	Service Area	Customer Accounts	Program	Market	Description	174	sentives fir	ancing Te	ch. Asist.	0.0 Fd.	est M	attetpace	- Di	rectinistal	alcovhit	ative Ref	yel's storese	
Rancho Mirage Energy Authority	City of Rancho Mirage	14,500	Residential Solar Rebate Program	Solar	\$500.00 rebate to any residential customer who installs a new solar system or expands an existing solar system	~												
Redwood Coast Energy Authority	Humboldt County, water district and 7 cities	62,000	Residential Services Commercial Services Regional EV Readiness Planning CAP-ing	Residential Non-Residential EV	Free Energy Advisor consultation. Free energy efficiency kit including products such as LED light bulbs, smartstrips, showerheads, weather stripping, and more. Whole – House Efficiency Projects including up to \$5500 in rebates for homeowners completing several major efficiency upgrades. No-obligation assessments, detailed reports, project management, and assistance with 0%-interest project on-bill financing. Various EV information resources, plus information on rebates and tax incentives available for Evs. Climate action planning and greenhouse gas inventory	<ul> <li></li> <li></li> </ul>	4	* * *	~			✓						
State and IOU Progr	rams				Scruces.													
Energy Upgrade California					Tips, information, links to PG&E rebates	~			~									
California Advanced Home Program					Incentives from \$300 to \$1950 based in improved EDR. Education, tips, case studies. Application portal. Handbook and guides. Master Builder training program.	~			~	~								
Savings By Design					Design team and building owner/developer incentives for energy efficiency new non-residential construction	~		~	~									
Self-Generation					storage systems	×		<u> </u>	~			<u> </u>				<u> </u>		
PG&E Programs	8			8	Evanous energy eniciency product rebates,		. •	1		8			R.	Į.	Į.	1		

## **Appendix B: Summary of Other Program Concepts Considered**

#### Programs that are currently in the Roadmap:

#### **Distributed Energy Resource Programs**

- 1. Smart Connect Microgrid Program
- 2. Load Management Program

#### Transportation Electrification Programs

- 3. Passenger EV and Home Charger Incentives Program
- 4. Central Coast EV Infrastructure Incentive Program
- 5. Med.-Heavy Duty Transportation Enhancements

#### **Built Environment Electrification Programs**

- 6. Project Sunshine at Night
- 7. Building Electrification Incentives
- 8. CA Advanced (New) Home Program Enhancement
- 9. Savings by Design Enhancement
- 10. Building Electrification Reach Code Initiative
- 11. Housing Developer Electrification Grants

#### **Agricultural Electrification Programs**

12. Enhancements to Carl Moyer, FARMER, Community Air Protection & Clean Air Management Programs

#### **Customer Engagement and Marketplace**

- 13. Customer engagement platform
- 14. Marketplace

#### Other program options that were considered:

#### **Distributed Energy Resource Programs**

- 1. Grid-interactive heat pump water heating pilot project
- 2. Other demand response initiatives in addition to Load Management Program above, such as, collaboration with PG&E on their Demand Response Programs, smart charger demand response pilot program

#### Transportation Electrification Programs

- 1. Low income customer passenger EV incentives
- 2. Low-income multifamily housing charger direct install program
- 3. Move Monterey Bay collaboration with jurisdictions on local transportation initiatives
- 4. Electrical infrastructure assessment technical support services
- 5. Smart charger demand response pilot program
- 6. Managed workplace charging demand response pilot program

#### Built Environment Electrification Programs

- Project Sunshine 2.0 Affordable housing initiative including elements of energy efficiency, solar + storage, FERA/CARE rate consultation and advocacy, EV incentives and EV charging direct install
- 2. Portable induction stove loaner program as a stand alone program (now included in Building Electrification Incentives)
- 3. DIY home energy kits
- 4. Small commercial direct installation program for energy upgrades

- Business Energy Adviser -- technical assistance and project development advising as a stand alone effort (tariff advising for large customers now included as a component of the Load Management program. Other forms of technical assistance included as elements of different programs)
- 6. Energy Upgrade California enhancements including incentives for HPWH and HPSH technologies (EUC now included as marketing and education component of Built Environment electrification program)
- 7. Municipal building electrification
- 8. Green leases
- 9. Model rental housing green licensing program
- 10. Commercial/Industrial energy storage program (stand alone)
- 11. Demonstration projects for building electrification

#### **Agricultural Electrification Programs**

- 1. Load dock/warehouse refrigerated truck electrification
- 2. Diesel water pumping electrification incentives
- 3. Farm implement electrification research and demonstration
- 4. Solar homes energy retrofit program administrator

#### Other

- 1. Contractor training and referral program (training included in some programs, particularly statewide programs)
- 2. Financing concierge services to help customers find and originate loans for home and business energy upgrades
- 3. On-Bill Financing (OBF) program
- 4. Marketing, Education and Outreach as a stand alone effort (now embedded in different programs)
- 5. Climate action planning and GHG inventory and accounting services
- 6. CARE/FERA marketing, education and outreach
- 7. Host workshops and seminars about transportation and building electrification

# Appendix C: Glossary of Common Terms Used in Electrification Program Planning

#### **Transportation Terms**

All Electric Range (AER) - The total range of a battery-electric vehicle. For hybrid vehicles, this refers to the approximate number of miles it can travel on electricity alone.

**Battery Electric Vehicle BEV -** A vehicle powered by an electric motor instead of an internal combustion engine

**Battery Pack Rating -** The size of the battery pack measured in kWh. The greater the rating, the farther the vehicle can travel on a full charge.

**CHAdeMO** - A level 3 charger that is compatible with most electric vehicles except for Tesla, which requires an adaptor.

**Direct Current Fast Charger (DCFC)** - Sometimes referred to as a Level 3 because it charges at a substantially faster rate than Level 2 AC charging.

Electric Vehicle Service Provider (EVSP) - A business that provides connectivity software for chargers.

Electric Vehicle Supply Equipment (EVSE) - A term for electric vehicle charging equipment.

**Hybrid Electric Vehicle HEV** - A vehicle powered by both an internal combustion engine and an electric battery. This battery is usually charged using regenerative braking.

Hydrogen Cell Vehicle - A zero emissions vehicle that is fueled by compressed hydrogen.

Internal combustion Engine (ICE) - A term for a standard, fuel-powered, nonelectric vehicle.

**J1772 Connector Port** - A level 2 charger connector that is compatible with all electric vehicles except for Tesla, which requires an adaptor.

**Level 1 charging -** A method of charging that uses a standard AC 120-volt outlet. This is a common method of overnight charging and can add approximately 4 miles of range for every hour of charging.

**Level 2 Charging Station (L2)** - Charging that uses a 240 volt electric circuit, which usually takes 4-8 hours to fully charge a BEV.

**Level 3 Charging -** Can be AC or DC current. DC Fast Charging is commonly called Level 3 charging, though the terms are not interchangeable

**Makeready Costs** - Expenses required to install a charging station such as electrical panel upgrades, necessary wiring, parking lot demolition, etc..

**Off peak charging -** A method of charging electric vehicles at off-peak times to reduce cost to vehicle owners and reduce strain on the grid.

**On board charger -** The in-vehicle device that converts AC power from the port to DC power to fuel the vehicle.

**Plug in hybrid electric vehicle (PHEV)** - A type of hybrid electric vehicle with a battery that can be recharged by plugging into a charging station. PHEV's can drive on electricity alone.

**Power Acceptance Rating -** This determines how fast the on board charger can accept electricity while charging. The rating is measured in kW. A high rating means the battery can be charged quickly.

**Power Delivery Rating -** The power that an EV charging station can provide, measured in kW. Higher ratings are able to charge vehicles faster.

**Range anxiety** - Range anxiety is the fear that an electric vehicle will run out of power before reaching the destination or an available charging station. This is often a barrier to EV adoption.

**Regenerative Braking -** An energy recovery mechanism which slows a vehicle by converting it's kinetic energy into a form which can be used.

**SAE Combo CCS** - A level 3 charger that is compatible with most electric vehicles except for Tesla, which requires an adaptor.

**Vehicle to Grid (V2G)** - Describes a system in which EVs can communicate with the grid. V2G capabilities could enable EVs to store and discharge electricity to the grid.

Zero emission vehicle (ZEV) - A vehicle that emits no exhaust gas and no emissions.

#### **Building Electrification Terms**

**Electrical Panel** - A component of an electricity supply system that divides an electrical power feed into subsidiary circuits, while providing a protective fuse or circuit breaker for each circuit in a common enclosure.

#### Air Heating and Cooling Systems -

There are many air heating and cooling systems including:

- HVAC: A heating, ventilation and air conditioning system that distributes warm or cool air among rooms, with air conditioning units typically running on electricity and heating on gas. There are many types of HVAC, with the most typical having a furnace to heat the air.
- Air source heat pump: a system which transfers heat from outside to inside a building, or vice versa. It can function to domestic heat water tanks and cool or heat the air in homes.

**Building Decarbonization** - A movement to reduce greenhouse gas emissions associated with buildings. This is largely done by updating old fuel-based appliances with newer, more efficient options such as heat pump water heaters and induction cooktops to address the sources of highest household emissions.

**California Building Standards Code (California Code of Regulations, Title 24)** - An organization of building codes within the California Code of Regulations (CCR) outlining the requirements for structural, plumbing, electrical and mechanical systems of buildings, and for fire and life safety, energy conservation, green energy design and accessibility in and about of buildings. All occupancies in California are subject to national model codes adopted into Title 24.

**Heat Pump** - A device that uses electricity to transfer heat from the air or ground to heat or cool a building, rather than using a furnace to create heat.

**Heat Pump Water Heater** - A heat pump water heater works like a reverse refrigerator by using electricity to move heat form one place to another. Because it transfers heat rather than generating it directly, it can be 2-3 times more efficient than conventional electric resistance water heaters.

**Induction Cooking** - A method of cooking using electric currents to heat pots and pans directly instead of using thermal conduction (gas or electric element transferring heat from a burner to a pot or pan). Because induction cooking uses direct induction rather than indirect heating from conventional gas cooktops, about 90% of the heat they generate reaches a pot or pan. This

exceeds the 65-70% from gas cookstoves, reducing spillover heating of the air around the oven and improving energy efficiency.

**Panel Upgrades** - An upgrade or a replacement of an electrical panel to increase its power or to improve safety of an old panel.

Any home renovations or additional appliances may create additional demand on electrical panels. Homes older than 20-25 years are also at risk for having faulty panels that need to be upgraded to improve safety of the home

**Zero Emissions Appliances** - Electric appliances that replace traditional gas and propane appliances (such as stoves) eliminating indoor emissions. High efficiency electric appliances also reduce overall greenhouse gas emissions.

#### **DER/Microgrid Terms**

**Capacity** - A term expressing the potential to generate electric energy. Typically measured in kilowatts (kW), megawatts (MW) or gigawatts (GW).

**Clean Energy** - A general term referring to energy that is low or zero carbon. Clean energy may include non-RPS eligible sources, such as large (>30 MW) hydroelectric and nuclear generators, as well as RPS-eligible generating resources that utilize typical renewable fuel sources (sun, wind, geothermal, biofuels).

**Distributed Energy Resource (DER)** - Small-scale power generation that is connected to the grid. Solar and storage are the most common DER.

**Virtual Power Plant (VPP)** - A virtual power plant is a cloud-based distributed power plant that aggregates the capacities of distributed energy resources (DER) to enhance power generation and sometimes trading or selling power on the grid.