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CONSULTANT REPORT

Richmond DER Program Enrollment and Participation Manual

For the City of Richmond Advanced Energy
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Subtask 3.4 Develop DER Community Program

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Prepared by: **Olivine, Inc.**



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ABSTRACT

The purpose of this document is to outline the processes the program administrator will take to streamline customer enrollment and participation for the pilot Richmond Distributed Energy Resources (DER) Community Program. The goal for the Richmond DER Community Program is to develop and pilot a scalable DER Community Program (Pilot DER Community Program) consistent with the integrated policy, planning and framework developed through the City of Richmond Advanced Energy Community (AEC) Project, leveraging existing programs and initiatives to support the development of a grid-integrated zero net energy (ZNE) community. The Pilot DER Community Program is designed to use DER technologies, including demand response (DR), to mitigate the impact of price spikes during the evening ramp, a time period when net energy demand on the distribution grid increases sharply due to the drop off in solar production coincident with increased demand as many people return home in the evening.

Keywords: California Energy Commission, Advanced Energy Community, AEC, Richmond, Distributed Energy Resources, DER, Demand Response, DR, DER Program

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EXECUTIVE SUMMARY

The purpose of this document is to outline the processes the program administrator will take to streamline customer enrollment and participation for the pilot Richmond DER Community Program. These processes will include:

1. Customer outreach and marketing
2. Determination of program eligibility
3. Customer enrollment with the program
4. Enrollment in the California Independent California Independent System Operator (CAISO) market

The goal for the Richmond DER Community Program is to develop and pilot a scalable DER Community Program (Pilot DER Community Program) consistent with the integrated policy, planning and framework developed through the City of Richmond Advanced Energy Community (AEC) Project, leveraging existing programs and initiatives to support the development of a grid-integrated zero net energy (ZNE) community.

The Pilot DER Community Program is designed to use DER technologies, including demand response (DR), to mitigate the impact of price spikes during the evening ramp, a time period when net energy demand on the distribution grid increases sharply due to the drop off in solar production coincident with increased demand as many people return home in the evening.

In the pilot phase, the DER Community Program will be targeted to C&I buildings located within the City of Richmond. Initial targeting will be within a cluster of food production and distribution warehouses that have recently established themselves within the City. The Program will then partner with existing low-income programs to bring 50 low-income residential customers into the program. The program aims to kick-off in Q1 of 2018 and build enough scale over the year to create an aggregated resource of DERs to bid into the CAISO market in early 2019.

This document is a deliverable for the development of the Distributed Energy Resources (DER) Community Program for the City of Richmond. This program is being developed as part of the Richmond Advanced Energy Community (AEC) project, led by the ZNE Alliance and funded by the CEC EPIC program (GFO-15-312). Olivine, Inc. is leading the development of the DER Community Program under subtask 3.4 of this project.

Note: If needed, insert a blank page so that Chapter 1 begins on the right.

CHAPTER 1:

Introduction

This document is a deliverable for the development of the Distributed Energy Resources (DER) Community Program for the City of Richmond. This program is being developed as part of the Richmond Advanced Energy Community (AEC) project, led by the ZNE Alliance and funded by the CEC EPIC program (GFO-15-312). Olivine, Inc. is leading the development of the DER Community Program under subtask 3.4 of this project.

The purpose of this document is to provide information to outline the processes the program administrator will take to streamline customer enrollment and participation for the pilot Richmond Community DER Program. These processes will include:

1. Customer outreach and marketing
2. Determination of program eligibility
3. Customer enrollment with the program
4. Enrollment in the California Independent System Operator (CAISO) market

This deliverable also includes an initial draft of a program description that will be used for enrollment and participation, found in Appendix A. The program description is in the form of Frequently Asked Questions (FAQs), which explain the program and requirements for C&I customers that enroll in the program. In addition, Appendix B includes an updated list of target municipal facilities in the City of Richmond.

Summary of DER Community Program

The goal for the Richmond DER Community Program is to develop and pilot a scalable DER Community Program (Pilot DER Community Program) consistent with the integrated policy, planning and framework developed through the City of Richmond Advanced Energy Community (AEC) Project, leveraging existing programs and initiatives to support the development of a grid-integrated zero net energy (ZNE) community.

The Pilot DER Community Program is designed to use DER technologies, including demand response (DR), to mitigate the impact of price spikes during the evening ramp, a time period when net energy demand on the distribution grid increases sharply due to the drop off in solar production coincident with increased demand as many people return home in the evening.

The Richmond DER Community Program is designed to create an aggregation of diverse customers from several sectors within the City of Richmond, including large commercial and Industrial (C&I) customers, municipal buildings, and residential households, with specific options targeted to low-income households. The aggregated loads from these diverse customers will be used to provide services to the grid, primarily through

procurement offsets for the local Community Choice Aggregator (CCA) MCE Clean Energy (MCE) and by bidding resources into the CAISO market.

Initially, the DER Community Program will be targeted to C&I buildings located within the City of Richmond. Initial targeting will be within a cluster of food production and distribution warehouses that have recently established themselves within the City. The value streams possible for each facility will depend on the unique load characteristics of each facility and the ability to respond during DR events.

The DER Community Program is proposed to be rolled out in three stages as follows:

1. Stage 1: Pilot Initiation with C&I Customers
2. Stage 2: Scale DER Community
3. Stage 3: DER Aggregation Market Operations

Stage 1 will begin in Q1 of 2018, with the goal of beginning active DR event calls by the beginning of Q2. Stage 2 will begin in Q2 where the program will build scale as residential low-income customers will be brought into the program through existing low-income programs provided by the City of Richmond and MCE. The goal in these first two stages will be to enroll sufficient participants in order to create an aggregated resource that can provide enough aggregated DERs to allow market simulations and eventually participate in the CAISO wholesale market. In Stage 3, starting in 2019, these resources will be bid directly into the market to open up new revenue streams for the program and its participants.

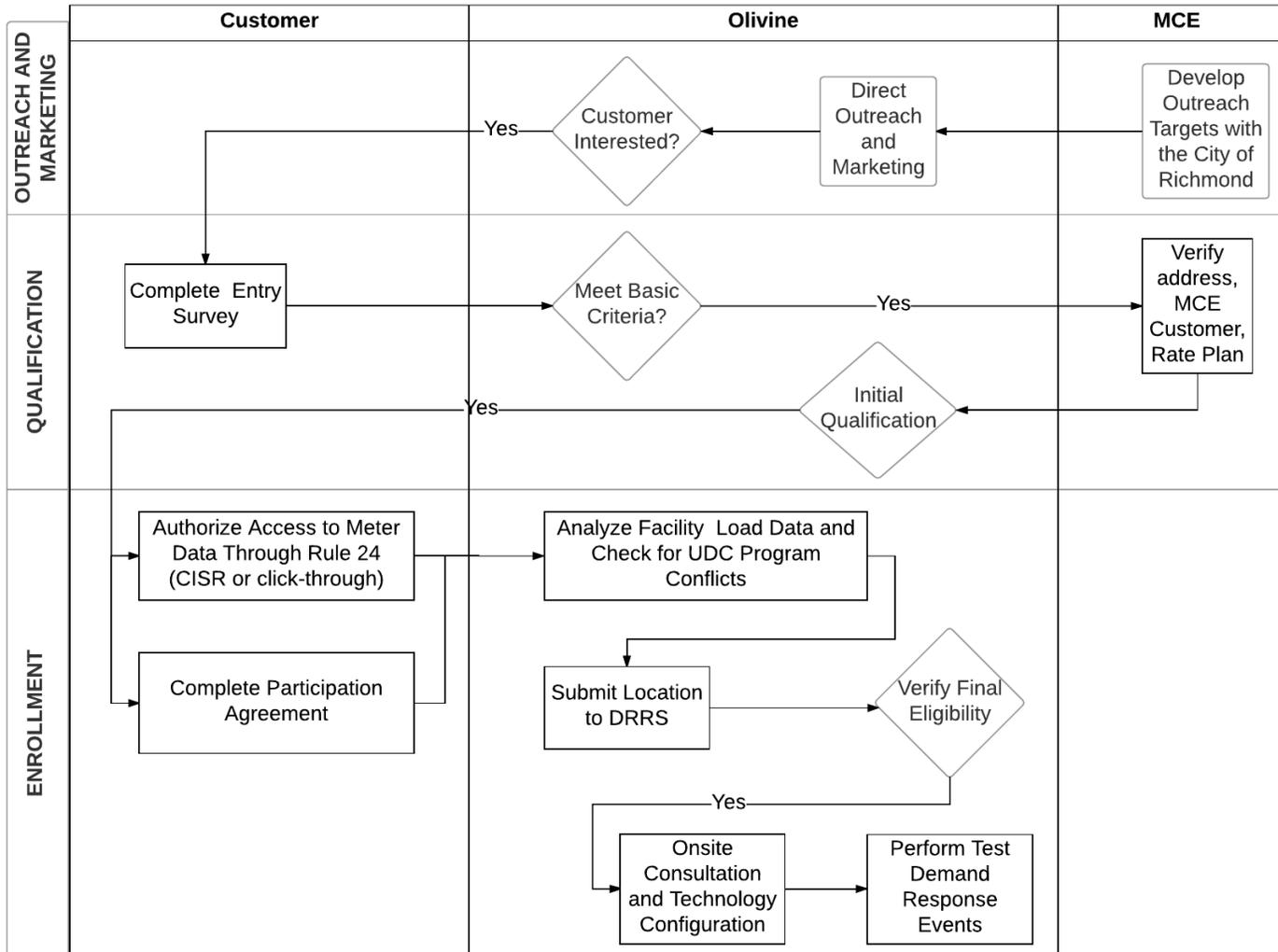
Overview of Processes for Enrollment and Participation

Table 1 provides a summary of program team activities for recruitment, enrollment and program participation. The table shows activities for the participating customer, the program administrator, and MCE. MCE is a partner in the design of the program and the retail energy provider, also known as the Load Serving Entity (LSE), for the eligible customers. Each activity is described in detail in later chapters of this report. In addition, Figure 1 provides a visual process diagram of the recruitment and enrollment of new participants.

Table 1: Program Team Responsibilities for Recruitment and Enrollment

	Customer	Program Administrator (Olivine)	LSE (MCE)
Outreach and Marketing		<ul style="list-style-type: none"> • Perform direct outreach • Program marketing 	<ul style="list-style-type: none"> • Develop outreach targets
Qualification	<ul style="list-style-type: none"> • Complete entry survey 	<ul style="list-style-type: none"> • Verify initial qualification 	<ul style="list-style-type: none"> • Verify address, MCE customer, non-residential rate plan
Enrollment	<ul style="list-style-type: none"> • Complete Rule 24 data authorization (CISR or Click-Through) • Complete Participation Agreement 	<ul style="list-style-type: none"> • Final verification of address, LSE, Rate plan, Sub-LAP, DR program conflicts, meter data integrity • Facility data analysis and DR measure valuation • Register customer location in Demand Response Registration System (DRRS) • Schedule and perform onsite consultation and technology configuration 	
Program Participation	<ul style="list-style-type: none"> • Opt-in or opt-out of events • Shift load in response to event calls 	<ul style="list-style-type: none"> • Send event notifications to customers • Measure customer event performance • Customer support 	<ul style="list-style-type: none"> • Identify event periods based on day ahead procurement

Figure 1: Flow Diagram of Recruitment and Enrollment



CHAPTER 2:

Marketing and Outreach

This section covers the approach to customer outreach and marketing. The general approach to marketing and outreach is described, followed by approaches that are specific to each of the three target customer types:

1. Commercial and industrial customers
2. Municipal facilities
3. Residential low-income

General Approach to Marketing and Outreach

Marketing and outreach materials will be produced for the purposes of recruiting participants into the pilot program. Program descriptions will be developed for target participant groups. In addition, the program will be promoted through the City of Richmond's website and MCE's website. The program administrators will provide content to support website updates and press releases to market the effort.

Sector Specific Marketing and Outreach

The program administrator will cater the marketing and outreach approach for each of the three target customer types as described below.

Commercial and Industrial (C&I) Customers

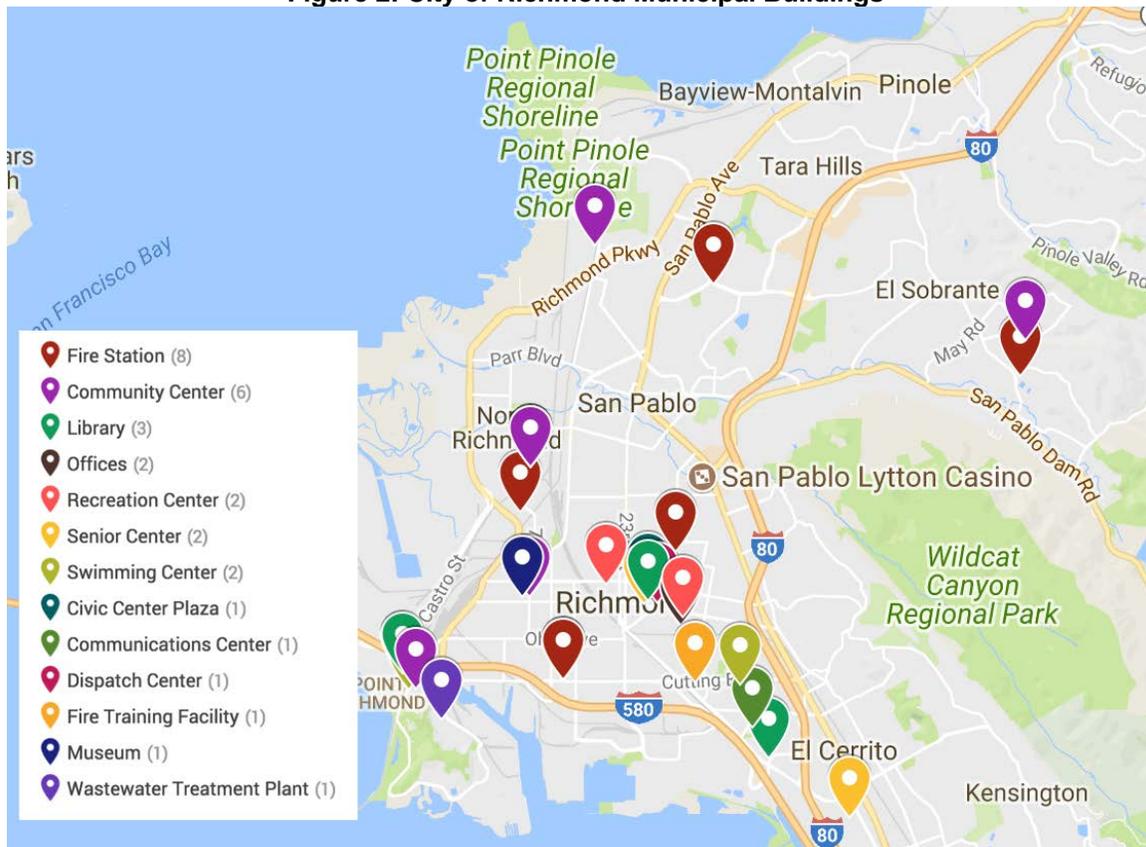
The program administrator will target large C&I customers identified by MCE and the City of Richmond. The team will perform direct outreach to these customers to gauge interest in participation in the program pilot. Direct outreach will include phone calls and visits to contacts at each company that are responsible for facilities management, operations or sustainability initiatives. The team will develop marketing materials to support this outreach including a program description and appropriate website content. Website content will be developed both for the City of Richmond website and MCE website. The team will also create content that could be included in MCE marketing emails or newsletters to C&I customers. In addition, the program administrator will provide program support and information through a program email address and customer support telephone number.

The program administrator has several leads on C&I buildings within the City of Richmond that have an interest in participating in a DER Community Program, including a number of food distribution centers that could be excellent targets for program participation because of their high cooling loads.

Municipal Customers

To select the City of Richmond buildings to participate in the program, the program administrator will work with city representatives to identify candidate buildings based upon energy usage profiles and flexibility to shift usage from the evening ramp period to other periods. City representatives will include the city Environmental Manager and facilities personnel. The program administrator will analyze facility meter data collected to support development of the DER Program Challenges and Opportunities Report¹ to identify candidate buildings. This will include an effort to identify the best candidates for solar plus storage installations through the solar and storage request for proposal (RFP) process which is being developed as part of this project to be released in the first quarter of 2018. City of Richmond buildings for which the program administrator has reviewed usage data are included in Appendix B of this report, and in Figure 2 below.

Figure 2: City of Richmond Municipal Buildings



¹ Reid, Beth, AJ Howard (Olivine, Inc.). 2017. *Richmond DER Program Challenges and Opportunities Report*. California Energy Commission. CEC-EPC-15-076.

Residential Low-Income

As described above, by leveraging existing low-income programs offered by the City of Richmond and MCE, the program administrator expects to be able to target qualified low-income households in order to enroll up to 50 households. The program administrator will work with the program administrator of existing low-income programs to identify target program participants. Existing programs include:

1. Multifamily Energy Savings Program
2. Low Income Families and Tenants Pilot Program (LIFT)
3. ZNE Abandoned Homes program

Materials developed will include a program description and appropriate website content. Using a database compiled from existing resources supplied by MCE and the City of Richmond, the program administrator will send mailers and emails to promote the program and to direct interested households to more information. Those seeking additional information will be able to access information via websites or a customer support telephone number (supported by the administrator). Website content will be developed both for the City of Richmond website and MCE website. The program administrator will host one community event to promote the program, provide information, confirm eligibility and to schedule installations. The team will also create content that could be included in general MCE marketing emails or newsletters to residential customers.

CHAPTER 3:

Program Eligibility

The Richmond DER Community Program will be open to commercial, industrial and low-income residential customers. The program is only available to MCE customers within the City of Richmond and the PG&E East Bay (PGE) Sub-LAP. This section describes the eligibility requirements for non-residential and low-income residential customers and how eligibility will be verified by the program administrator.

Non-Residential Eligibility

In stage 1 of the pilot, the Richmond DER Community Program will target non-residential customers including commercial and industrial buildings within the City of Richmond, and at least one municipal City of Richmond building.

To be eligible for this program, these non-residential participants must:

1. Be within the City of Richmond
2. Be a MCE customer for retail energy purchases
3. Be located within the PG&E East Bay Sub-LAP (PGE)
4. Not be enrolled in conflicting DR programs through utilities or through the CAISO
5. Have an energy usage profile and flexibility that allows participant to curtail load during the evening period (5 pm to 8 pm) or to shift load from that period to different times outside of this period
6. Achieve load shifting from either existing automated building systems (e.g., smart thermostats, building management systems, on-site energy storage) or manual behavioral demand response

Table 2 provides a summary of the eligibility criteria for non-residential customers, and how these criteria will be verified by the program.

Table 2: Determining Program Eligibility for Non-Residential Participants

Eligibility Factor	Criteria	Method of Verification
Location	Service address within the City of Richmond	MCE
Load Serving Entity (LSE)	MCE only	MCE
Customer type	MCE non-residential rate schedule	MCE
Sub-LAP	PGEB only	Olivine verification based on response to CISR form
DR Program Conflicts	Not enrolled in any other DR programs	Olivine verification based on Rule 24 data and DRRS registration
Load shifting potential	Be able to curtail load during the evening period (5 pm to 8 pm) or to shift load from that period to different times outside of this period	Olivine assessment based on review of meter data and onsite consultation

Low-Income Residential Eligibility

In stage 2 of the pilot, the Richmond DER Community Program will target up to 50 qualifying low-income households with electric air conditioning (AC) and/or electric heating loads. To qualify low-income households for participation in the pilot, the program administrator will verify participation in existing low-income programs offered by the City of Richmond and MCE to establish eligibility. These programs will also be used to identify households with electric AC and/or electric heating end uses.

To be eligible for this program, low-income residential participants must:

1. Be within the City of Richmond
2. Be a MCE customer for retail energy purchases
3. Be located within the PGEB Sub-LAP
4. Not be enrolled in other DR programs with utilities or with the CAISO
5. Have an energy usage profile and flexibility that allows participant to curtail load during the evening period (5 pm to 8 pm) or to shift load from that period to different times outside of this period
6. Have electric AC and/or electric heating end uses
7. Have an approved smart thermostat and NILM device.

To participate in the program, customers must have an approved smart thermostat and NILM device. Smart thermostats may be provided through the Richmond LIFT program, or other low-income programs. The program administrator will provide approved NILM devices as part of the low-income residential pilot DER Community Program.

Table 3 provides a summary of the eligibility criteria for low-income residential customers, and how these criteria will be verified by the program.

Table 3: Determining Program Eligibility for Low-Income Residential Participants

Eligibility Factor	Criteria	Method of Verification
Location	Service address within the City of Richmond	MCE
Load Serving Entity (LSE)	MCE only	MCE
Customer type	MCE residential rate schedule	MCE
Sub-LAP	PGEB only	Olivine verification based on response to CISR form
DR Program Conflicts	Not enrolled in any other DR programs	Olivine verification based on response to CISR form
Load shifting potential	Be able to curtail load during the evening period (5 pm to 8 pm) or to shift load from that period to different times outside of this period	Olivine assessment based on review of meter data and onsite consultation
Low-income status	Participating in low-income program through the City of Richmond or MCE	MCE / City of Richmond
Electric HVAC systems	Have electric air conditioning and/or electric heating end uses	Program documentation and/or Olivine onsite inspection
Technology	Have an approved smart thermostat and NILM device	Program documentation and/or Olivine onsite inspection

CHAPTER 4:

Customer Enrollment

Customer enrollment will be done in two phases. The first phase involves enrolling in the program. In the second phase, the program will be expanded and the program administrator aims to aggregate customers into proxy demand resources (PDR) and enroll them in the CAISO market for full market participation.

Program Enrollment

Customer enrollment for the Richmond DER Community Program will require the steps listed below.

1. Customer completes an entry survey expressing interest in the program and providing information for initial qualification such as: facility address, LSE, rate schedule, available building management technologies, and whether they are currently enrolled in any other demand response programs.
2. MCE will verify information such as LSE (if they are an MCE customer), Richmond service address, and the customer rate schedule.
3. The program administrator will then confirm they are eligible based on known information and ask the customer to complete Rule 24 authorization through a CISR form or click-through process (when available) to allow the program administrator access to the customer meter data.
4. Customer completes Rule 24 authorization and participation agreement.
5. The program administrator will receive data following the Rule 24 authorization. This data will be used to verify the customer Sub-LAP and whether the customer is enrolled in any conflicting demand response programs through the Utility Distribution Company (UDC), in this case PG&E.
6. The program administrator will then download facility meter data and perform basic analysis on the facility data to see if the load profile is a good candidate for demand response or installation of future DERs to reduce facility energy costs.
7. The program administrator will submit the customer location to the CAISO Demand Response Registration System (DRRS) through Olivine's DER Community™ Platform. After submission, the UDC and LSE have an opportunity to validate the customer information. Submission to the DRRS will also confirm that the participant is not registered in any conflicting DR programs through the ISO. This registration will also ensure that the customer is not enrolled in any conflicting programs in the future through other Demand Response Providers (DRP).
8. The program administrator will then perform final verification that the customer is eligible for the program.

9. The program administrator will then perform the onsite inspection and consultation and configure any building management technology if present and possible.
10. Finally, the program administrator will run test events through Olivine’s DER Community™ Platform to confirm that data exchanges and communication are working to verify the ability for the facility to reduce load during the appropriate period.

Table 4 Includes a timeline for the key milestones in program enrollment.

Table 4: Enrollment Timeline

Enrollment Step	Time from entry form submission
1. Customer completes entry form	T = 0
2. MCE verifies information	T + 1 week
3. Program administrator requests Rule 24 data	T + 1 week
4. Customer completes Rule 24 authorization and participation agreement.	T + 2 weeks
5. Program administrator receives Rule 24 data	T + 3 weeks
6. Program administrator analyzes load data	T + 4 weeks
7. Program administrator submits DRRS registration	T + 4 weeks
8. Program administrator confirms final eligibility of customer	T + 5 weeks
9. Onsite consultation and technology configuration	T + 6 weeks
10. Program administrator runs test DR event	T + 7 weeks

Additional details and requirements specific to customer enrollment are available in the draft Customer Participation Agreement in Appendix B.

CHAPTER 5:

Program Participation

Program participation requirements for customers are as follows:

1. Commercial and industrial customers are asked for a 6-month commitment to active participation in the program. The pilot program is anticipated to be active with live event calls from April 2018 through September 2018.
2. Small and medium business and residential customers may leave the program at any time, but must give 15 days advanced notice.
3. For the pilot program, all events are voluntary. Event calls will go out 48-hours in advance and participants will have 24 hours to respond as to whether they will participate in the event and the load drop that can be achieved for that event.

During the program period, the program administrator will provide a customer service telephone number and email address to answer any questions and address any issues during the program period.

Appendix A: One-Page C&I Program Description

Introduction

The purpose of the Richmond Distributed Energy Resource (DER) Community Pilot Program is to develop a sustainable program that will enable facilities in the City of Richmond to generate bill savings for the facility and earn additional revenue by providing valuable grid services that increase resiliency of the grid and enable higher penetrations of clean renewable energy. These grid services help to ease local electrical grid congestion and thereby increase the resiliency of the system and lower the cost of local electrical supply. Distributed Energy Resources include, but are not limited to, energy efficiency, demand response, customer generation (e.g., rooftop solar), energy storage, and alternative fuel vehicles (e.g., electric vehicles).

Who can participate in the DER Community Program?

The pilot program is initially available only to Commercial or Industrial customers within the City of Richmond that have MCE as their retail energy provider. Participants must have the ability to curtail load during the evening period (5 pm to 8 pm) or to shift load from that period to different times outside of this period. This shift can be manual or automatic using various technologies such as: smart thermostats, building management systems (BMS), battery storage, etc. Participants in the DER Community program cannot be enrolled in other demand response programs simultaneously.

What are the benefits of program participation?

Participants in the Richmond Distributed Energy Resource (DER) Community Pilot Program will gain an increased understanding of their energy usage and receive information on how to earn revenue and lower energy costs through demand response and other DERs. Pilot program applicants will receive a site consultation to determine what load shifting or curtailment opportunities are applicable at the facility. Load curtailment or shifting must be enabled by existing technologies in the facility or a manual process - no technology incentives will be provided as part of the program. Program participants will also be recognized on the program website and all relevant press releases unless they request their participation to be confidential.

What is the time period of the pilot?

The pilot will kick off in Q1 2018 when new participants will be enrolled in the program, data will be collected on the facilities and load shifting technologies will be integrated into Olivine's DER Community™ Platform and tested. Commercial and Industrial customers are asked for a minimum 6-month commitment for participating in the pilot.

Following the pilot, the program is targeting full integration of the aggregated resources into the California ISO market in 2019, which would enable new revenue streams.

How do I enroll in the program?

To enroll in the program, please visit [URL] and complete an entry survey. If your business qualifies for the program you will be contacted to schedule a facility audit.

What is required during the program?

When the program is operational you will receive “event” calls signaling the need for reduced load on the grid. The event notifications will be sent approximately 48-hours in advance by email, text message, and/or automatically to your building control systems. For the pilot program, all events will be voluntary, so you will then have 24 hours to choose to opt in or out of the event and indicate how much load will be dropped between the 5 pm to 8 pm period. The day of the event the facility should curtail or shift load away from the event hours of 5 pm to 8 pm. Events will only be called on non-holiday weekdays, and a maximum of 4 events will be called per month. At the end of the pilot program, you will receive a summary of your facility event performance, as well as estimates of energy cost savings that your facility could capture through demand response.

Appendix B: City of Richmond Target Facility List

This table provides the potential target municipal facilities in the City of Richmond that are being considered for the solar and storage RFP and for inclusion in the DER Community Program. This list is an updated version of the list that is included with the DER Challenges and Opportunities Report.

City of Richmond Facility Name	Facility Type	Rate	Average Load (kW)	Peak Load (kW)
Annex Senior Center	Senior Center	HA1	0.9	5.3
Bayview Branch Library	Library	A1	1.7	5.3
BTA Com Center / Southeast Substation	Communications Center	HA10S	5.1	16
Civic Center Plaza	Civic Center Plaza	NEMMT	242.2	475.9
Disabled People's Recreation Center	Recreation Center	HA1	1.3	5.5
Fire Station 61	Fire Station	A1P	3.4	11
Fire Station 62	Fire Station	HA6	15.4	6.8
Fire Station 63	Fire Station	A1P	19.8	7.2
Fire Station 64	Fire Station	A1	16.5	7
Fire Station 66	Fire Station	HA1	2	8.3
Fire Station 67 / Southwest Substation	Fire Station	HA1	3.2	13
Fire Station 68	Fire Station	A1	6.4	11.7

City of Richmond Facility Name	Facility Type	Rate	Average Load (kW)	Peak Load (kW)
Fire Training Facility	Fire Training Facility	A1	2	6.6
Main Library	Library	NEMEXPM	14.2	59.8
May Valley Community Center / Valley View Substation	Community Center	HA1	1	8.2
Nevin Community Center	Community Center	HE19SX	5.7	20.3
Parchester Community Center	Community Center	HA1	1.4	5.2
Parks and Landscape Division Office	Offices	HA6	2.4	40.6
Parks and Landscape Division Office	Offices	HA1X	0.5	13.4
Recreation Complex	Recreation Center	HA10S	10.9	29.3
Richmond Communications Center	Dispatch Center	HE19SX	21.6	44.5
Richmond Museum of History	Museum	A1P	3.7	15.1
Richmond Senior Center	Senior Center	E19S	30.4	54.1
Richmond Swim Center	Swimming Center	HE19SX	59.1	128.6
Shields / Reid Community Center	Community Center	HA1X	2.2	5.1
Shields / Reid Community Center	Community Center	A1P	5.2	16.6
The Plunge	Swimming Center	NEMS	26.2	52.2
Washington Fieldhouse Community Center	Community Center	A1	0.5	3.1

City of Richmond Facility Name	Facility Type	Rate	Average Load (kW)	Peak Load (kW)
Wastewater Treatment Plant	Wastewater Treatment Plant	E19S	504.2	842
West Side Branch Library & Point Richmond Center	Library	A1	1	3.8