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PACIFIC GAS AND ELECTRIC COMPANY

ELECTRIC VEHICLE CHARGE 2

PREPARED TESTIMONY



PG&E's EVC 2 Application is Dedicated in Loving Memory of Philip Kreycik



This application would not have been possible if not for the brilliant, creative, thoughtful, and tireless work of Philip Kreycik, the original brainchild of this proposed Electric Vehicle Charge (EVC) 2 Program. Philip joined PG&E in late 2020; his role was to evaluate lessons learned from PG&E's EV Charge Network (EVCN) and develop a new proposal for a follow-on program, EVC 2. Philip brought with him to PG&E a wealth of knowledge about transportation electrification and quickly applied his experience to develop the framework of this application. He leveraged his ability to build relationships with both internal and external contributors and generated a mutual commitment with key stakeholders to the integrity of the EVC 2 proposal. His detail-orientation and thoughtfulness can be seen throughout this application.

PG&E's Clean Energy Transportation team was lucky to get to know Philip during his time with PG&E. Philip was a kind soul who always offered to lend a hand and took time to get to know his colleagues. Whether it was his warm welcome to start every meeting or his consistent engagement on all clean energy topics, he was a pleasure to work with. Philip understood that working as a team and collecting as much input as possible ensured the best outcome and made everyone feel valued. His humble and collaborative nature is what we remember most about him and is certainly reflected in these pages.

Philip passed away in July 2021, shortly after receiving PG&E leadership approval for his proposed EVC 2 program. This application represents Philip's contribution to drive California towards a carbon neutral future, slow the negative impacts of climate change, and change the world for the better. His passion for transportation electrification was genuine, pure, and inspiring. Philip gave so much of himself to this work. He had an uncompromising dedication to the cause and a relentless curiosity to chart new paths and develop solutions to one of society's most daunting challenges. Our entire team and industry are better from having had the chance to collaborate with him and witness his lasting contributions. In our commitment to Philip to carry on the work he was so passionate about, we dedicate this EVC 2 application to our friend and colleague, Philip Kreycik.

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PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 1

POLICY AND PROGRAM OBJECTIVES

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 1
POLICY AND PROGRAM OBJECTIVES

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 1
POLICY AND PROGRAM OBJECTIVES

A. Introduction

Pacific Gas and Electric Company (PG&E) continues to be a strong supporter of California's environmental policies. Increasing Transportation Electrification (TE) lies at the heart of the State's efforts to reduce greenhouse gas (GHG) emissions and mitigate the impacts of climate change. As the largest electric utility in the State, PG&E has a significant role to play in aiding this transition and PG&E is proud to manage programs that help customers switch to electric transportation. PG&E's proposed Electric Vehicle Charge (EVC) 2 program[1] is an extension of PG&E's fully subscribed and successful Electric Vehicle Charge Network (EVCN) program, which installed Level 2 (L2) EV charging infrastructure at Multi-Family Housing (MFH)[2] and workplaces. EVC 2 will also act as an extension of PG&E's EV Fast Charge program that is installing Direct Current Fast Charger (DCFC) infrastructure and has seen robust customer demand.[3] As described in detail throughout testimony, the EVC 2 program builds on lessons learned from PG&E's years of experience implementing EVCN and EV Fast Charge. EVC 2 will provide the program administration and customer acquisition; Marketing, Education and Outreach (ME&O); equity initiatives, and funding for L2 and DCFC infrastructure to support an estimated 16,000 charging ports at MFH, workplaces, and public destinations (examples of which include but are not limited to shopping centers, local government buildings, and park and ride lots). At least 50 percent of program infrastructure costs will be dedicated to Assembly Bill (AB) 841

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1 PG&E's EVC 2 program will make up one part of its larger network of EV charging programs. PG&E's entire portfolio of EV programs will henceforth be referred to as PG&E's EVCN.

2 PG&E's EVCN program referred to MFH units as multi-unit dwellings (MUD). Stakeholders PG&E held discussions with have noted a strong preference for the term "multi-family housing" instead of "multi-unit dwelling" to ensure that focus is correctly placed on the people who reside in these types of housing as opposed to the units of housing themselves.

3 Through Q2, 2021 PG&E has received three times as many applications to the EV Fast Charge program as the program was approved to serve.

Prioritized Communities (AB 841 PCs).[4] PG&E requests $276 million to implement the program over five years.

B. EVC 2 Will Positively Impact PG&E's Triple Bottom Line

EVC 2 will positively impact PG&E's triple bottom line: People, Planet, and California's Prosperity.

People: There are 1.2 million MFH units in PG&E's territory which account for approximately 24 percent of PG&E's total electric accounts. To-date, most EV adopters reside in Single-Family Homes (SFH) where there is often access to EV charging.[5,6] In contrast, MFH residents may not have a dedicated parking spot or the ability to easily install an EV charger. EVC 2 will serve this large customer segment that has increased barriers to charging infrastructure access by providing MFH residents infrastructure across a wide spectrum of locations, including at their MFH, workplace, or a public destination. EVC 2 will also provide education and outreach to boost awareness of the benefits of switching to an EV so that the EV market can move beyond the early adopter phase.

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4 AB 841 (Ting – 2020) establishes criteria for future TE programs to serve "underserved communities." AB 841 defines "underserved communities" as inclusive of any of the following: Is a "disadvantaged community" as defined by subdivision (g) of Section 75005 of the Public Resources Code; Is included within the definition of "low-income communities" as defined by paragraph (2) of subdivision (d) of Section 39713 of Health and Safety Code; Is within an area identified as among the most disadvantaged 25 percent in the state according to the California Environmental Protection Agency (CalEPA) and based on the most recent California Communities Environmental Health Screening Tool, also known as CalEnviroScreen; Is a community in which at least 75 percent of public school students in the project area are eligible to receive free or reduced-price meals under the National School Lunch Program; Is a community located on lands belonging to a federally recognized California Indian tribe. PG&E refers to the communities identified in AB 841 as AB 841 prioritized communities, "AB 841 PCs," rather than "underserved communities." PG&E believes this change in nomenclature is important as it takes away any potential negative stigma associated with these communities and instead highlights these communities in a positive light as areas of priority.

5 California Clean Vehicle Rebate Project 2019 Data Brief: Consumer Characteristics, Slide 15: 74 percent of rebate recipients from 2012-18 had annual household incomes of $100,000 or more and 83 percent owned their residence. Data Brief can be accessed at: https://cleanvehiclerebate.org/sites/default/files/attachments/CVRP-Consumer-Characteristics-Data-Brief_2021-07-10.pdf. (Accessed August 30, 2021).

6 https://pluginamerica.org/wp-content/uploads/2021/02/2021-PIA-Survey-Report.pdf. (Accessed October 14, 2021) See p. 13, figure 13 "Dwelling distribution of respondents" on page 13.

Planet: California's greatest source of emissions is transportation, at nearly 40 percent. Passenger vehicles alone make up nearly 29 percent of the State's total emissions.[7] Deploying EV infrastructure enables customers to adopt EVs, which accelerates California towards 2045 Carbon Neutrality goals. According to carbon neutrality studies from the California Air Resources Board (CARB)[8] and the CalEPA,[9] electrifying vehicles is a lynch pin strategy of deep decarbonization.

California's Prosperity: Depending on mileage driven, tax credits, and upfront and ongoing costs, EVs often exhibit lower total cost of ownership than conventional vehicles. An EV can save a customer from $790 to $1,310 per year in fueling costs relative to a gas-powered car (assuming 15,000 miles/year) and nearly $4,600 in lifetime maintenance costs.[10] From a wider industry perspective, California is home to 34 Zero Emissions Vehicle (ZEV)[11] and ZEV equipment manufacturers,[12] and the Governor's Office of Business and Economic Development (GO-BIZ) lists ZEVs as the largest source of California

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7 https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf, (Accessed October 14, 2021), p. 8.

8 Achieving Carbon Neutrality in California, published in October 2020 and available here: https://ww2.arb.ca.gov/sites/default/files/2020-10/e3_cn_final_report_oct2020_0.pdf. (Accessed October 14, 2021).

9 Driving California's Transportation Emissions to Zero, published in April 2021 and available here: https://escholarship.org/uc/item/3np3p2t0. (Accessed October 14, 2021).

10 https://advocacy.consumerreports.org/wp-content/uploads/2020/10/EV-Ownership-Cost-Final-Report-1.pdf. (Accessed October 14, 2021), Fueling costs savings found on p. 15, maintenance cost savings found on p. 11.

11 PG&E uses the definition of "zero-emission vehicle" as provided by CARB in its Zero Emission Vehicle Program that is part of its "Advanced Clean Cars package of coordinated standards that controls smog-causing pollutants and greenhouse gas emissions of passenger vehicles in California. The ZEV regulation is designed to achieve the state's long-term emission reduction goals by requiring auto manufacturers to offer for sale specific numbers of the very cleanest cars available. These vehicle technologies include full battery-electric, hydrogen fuel cell, and plug-in hybrid-electric vehicles." https://ww2.arb.ca.gov/our-work/programs/zero-emission-vehicle-program/about. (Accessed October 14, 2021).

12 https://www.sfchronicle.com/opinion/openforum/article/The-future-is-electric-with-California-leading-15930157.php. (Accessed October 14, 2021).

exports in 2020.[13] EVC 2 will thus help further California's prosperity by allowing individual drivers to save money as well as boosting an industry key to the State's green economy.

This Chapter describes why the EVC 2 program is critical to helping the state meet its climate goals, how EVC 2's key objectives will meet these goals, and how EVC 2 pairs with PG&E's proposed Low Carbon Fuel Standard (LCFS) implementation plan.

C. EVC 2 is crucial to achieving California's GHG Reduction Goals

PG&E continues to support California's ambitious goals to improve air quality and reduce GHG emissions in the wider fight against global climate change. California is a leader in taking policy action to transition to a clean transportation future and demonstrating that if the fifth largest economy in the world can move to cleaner sources of energy and transportation, so too can other national and subnational entities. Recent research makes clear that significant near-term worldwide action is needed to stave off the worst-case impacts of climate change.[14] Now more than ever California must continue to lead the fight against climate change.

According to CARB, vehicles and equipment in the transportation sector "contribute a majority of smog-forming oxides of nitrogen (NOx), the largest portion of GHG emissions, and are a significant source of toxic air contaminants that directly impact community health."[15] To combat climate change and protect community health, significant statewide action is required to move to cleaner

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[13] https://business.ca.gov/industries/zero-emission-vehicles/. (Accessed October 14, 2021).

[14] Intergovernmental Panel on Climate Change (IPCC), 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/ (Accessed August 24, 2021). "Global surface temperature will continue to increase until at least the mid-century under all emissions scenarios considered. Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO2 and other greenhouse gas emissions occur in the coming decades." Summary for Policymakers, p. 41. Emphasis added. Accessed at: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf. (Accessed October 14, 2021).

[15] CARB Revised Draft 2020 Mobile Source Strategy (April 23, 2021), p. 2 https://ww2.arb.ca.gov/sites/default/files/2021-04/Revised_Draft_2020_Mobile_Source_Strategy.pdf. (Accessed October 14, 2021).

transportation fuels. TE offers a clear path to reducing emissions as electricity has a lower carbon intensity than gasoline and diesel. Importantly, the carbon intensity of electricity continues to decrease. PG&E provided its customers about 85 percent of GHG-free electricity in 2020[16] and is on a path to meeting Senate Bill (SB) 100's goal of 100 percent GHG-free electricity generation by 2045.[17]

In continued support of reducing the state's carbon emissions, Governor Gavin Newsom signed Executive Order (EO) N-79-20 in 2020, outlining the following clean transportation goals:

- 100 percent of California sales of new passenger cars and trucks be zero-emission by 2035;
- 100 percent of drayage trucks operating in California be zero-emission by 2035;
- All off-road equipment, where feasible, transition to zero-emission by 2035; and
- All medium and heavy-duty vehicles, where feasible, to zero-emission by 2045.

CARB is continuing to develop regulations that will be necessary to reach the targets outlined in Governor Newsom's EO. For example, these regulations aim to increase the percentage of ZEVs sold statewide across vehicle sectors. For light-duty passenger vehicles, the focus of PG&E's EVC 2 program application, CARB is currently developing the Advanced Clean Cars II regulations "that seek to establish the next set of pollution standards for passenger cars and zero-emission vehicle production requirements for automakers."[18] In line with the recent EO, these regulations are expected to require 100 percent of new passenger vehicle sales in 2035 to be zero-emission.

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16 https://www.pgecorp.com/corp_responsibility/reports/2021/pf04_renewable_energy.html. (Accessed October 14, 2021)

17 SB 100 (De León, Chapter 310, Statutes of 2018) Section 1(b) states, "the Public Utilities Commission, State Energy Resources Conservation and Development Commission, and State Air Resources Board should plan for 100 percent of total retail sales of electricity in California to come from eligible renewable energy resources and zero-carbon resources by December 31, 2045."

18 https://ww2.arb.ca.gov/events/virtual-listening-session-increasing-access-clean-transportation. (Accessed October 14, 2021).

EO N-79-20 and the corresponding expected future light-duty passenger vehicle regulations to be put in place by CARB provide further policy certainty to vehicle manufacturers and consumers on the State's transition to ZEVs. By providing much needed access to charging infrastructure as well as targeted education and outreach to AB 841 PCs, PG&E's EVC 2 program will aid the State's efforts to move beyond early adopters and ensure that all Californians feel confident adopting EVs.

To help advance a move to cleaner sources of transportation, SB 350 (de Leon, 2015) requires the California Public Utilities Commission (CPUC or Commission) to direct investor-owned utilities (IOU) "to file applications for programs and investments to accelerate widespread transportation electrification."[19] In line with SB 350 and Commission guidance, PG&E received approval and is currently implementing myriad TE programs.

More recently, Commission Decision (D.) 21-07-028 found that "[a]dditional TE investments by the Electrical Corporations are necessary in order to meet the targets for EV chargers established by state policy" and that "[s]ome level of Electrical Corporation investments in TE infrastructure beyond that already approved by the Commission will be necessary to support the state to meet its 2025 charger goals."[20] D.21-07-028 concluded, in part, "[g]iven the urgent need to meet the state's EV policy goals by 2025, it is reasonable to allow expedited application proposals for TE investments to extend existing programs and avoid gaps in existing program offerings."[21] PG&E has become adept at installing EV charging infrastructure, installing 200 – 300 ports per month near the end of the EVCN program. To take advantage of PG&E's progression along the learning curve and minimize the gap between utility programs, PG&E is looking forward to working with the CPUC and key stakeholders to get EVC 2 approved on an expedited timeline, per D.21-07-028. EVC 2 will provide the infrastructure and ME&O support necessary to avoid gaps in utility offerings which in turn will enable the State to meet aggressive policy goals.

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19 Public Utilities Code § 740.12(b).

20 D.21-07-028, pp. 69-70, Findings of Fact (FOF) 2 and 3.

21 *Ibid*. p. 71, Conclusion of Law (COL) 3.

1. Current State of Light-Duty EV Adoption Supports EVC 2's Objective to Provide EV Charging Access to AB 841 PCs and Multi-Family Housing Residents

Over the last decade, EVs sold at a higher price than Internal Combustion Engine Vehicle (ICEV) alternatives. These higher costs were mainly driven by the cost of batteries and a limited scale of production.[22] Many of the early EV adopters have higher incomes and own their residence,[23],[24] likely with the ability to charge their vehicles at that residence (i.e., in the garage of a SFH with readily available access to electricity outlets.)

Technology improvements and scaled up manufacturing have pushed prices of ZEVs lower and industry experts forecast this will only continue over the coming decade. Leading industry analyst Bloomberg New Energy Finance (BNEF) predicts that ZEVs will be at price parity with ICEV alternatives in five years or less for a majority of light-duty vehicle segments.[25] Such price parity will be reached without factoring in

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22 BNEF, "When will electric vehicles be cheaper than conventional vehicles?" slide 4. Available here: https://www.bnef.com/insights/26895/view (Accessed October 14, 2021).

23 California Clean Vehicle Rebate Project 2019 Data Brief: Consumer Characteristics, Slide 15: 74 percent of rebate recipients from 2012-18 had annual household incomes of $100,000 or more and 83 percent owned their residence. Data Brief can be accessed at: https://cleanvehiclerebate.org/sites/default/files/attachments/CVRP-Consumer-Characteristics-Data-Brief_2021-07-10.pdf. (Accessed August 30, 2021).

24 https://pluginamerica.org/wp-content/uploads/2021/02/2021-PIA-Survey-Report.pdf. (Accessed October 14, 2021), See p. 13, figure 13 "Dwelling distribution of respondents."

25 https://about.bnef.com/blog/the-ev-price-gap-narrows/. Publication date: June 25, 2021. (Accessed August 25, 2021). "Electric vehicles should be cheaper to buy on average than combustion vehicles in about five years, without subsidies… battery pack prices need to drop well below $100 per kilowatt hour (kWh) for EVs to reach parity — that rate has long been held out as the benchmark for reaching this point. But given consumer preferences for higher ranges and heavier vehicles the magic number looks closer to $80/kWh in Europe and the U.S., and even lower in some other markets with cheaper vehicles. Taking it a step further, $60/kWh is a good benchmark for when EVs are cheaper than combustion vehicles in all segments and countries. BNEF expects battery prices to reach $80/kWh in 2026 and $60/kWh in 2029, down from $137/kWh in 2020." Emphasis added.

government incentives (investment tax credits, clean vehicle rebates, etc.) that can lower the price of an EV even further.

Leading vehicle manufacturers have announced that "a record number of almost 100 pure electric EV models are set to debut by the end of 2024."[26] Several manufacturers have also announced that they will cease production of ICEVs and instead only produce ZEVs over the next five to fifteen years.[27]

As the economics continue to improve, ZEVs, especially fully electric battery EVs, are forecasted to become the passenger vehicle choice for drivers.[28] As adoption increases, a larger share of EV owners will live in non-SFH. As a result, charging at home may not be as easy for future adopters as it has been for current EV drivers.

In mid-2021, PG&E conducted a survey asking MFH residents in its service territory what the main reasons were for not purchasing or leasing an EV and found that 56 percent of respondents cited "a concern with vehicle range and running out of power" while 36 percent cited a concern with a "lack of public charging stations."[29] Research completed by others has uncovered similar results. For example, a Volvo/Harris Research poll of non-EV drivers found that 61 percent of those surveyed stated that more

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26 https://www.consumerreports.org/hybrids-evs/hot-new-electric-cars-are-coming-soon-a1000197429/. (Accessed August 30, 2021).

27 BNEF EV Outlook 2021, p. 26 "In the first two months of 2021, four automakers announced new goals to phase out sales of combustion vehicles. Three of them – Jaguar, Volvo and GM –announced global targets and aim to stop selling ICE vehicles by 2025, 2030 and 2035, respectively." Published June 9, 2021. (Accessed August 30, 2021). https://www.bnef.com/insights/26533/view.

28 Leading forecasters such as BNEF predict that plug-in hybrid and fully battery electric vehicles will hold a dominant passenger vehicle ZEV market share over the remaining ZEV type, hydrogen fuel cell vehicles: "Direct electrification via batteries is the most economically attractive and efficient approach to decarbonizing road transport and should be pursued wherever possible. Hydrogen fuel cell vehicles can help fill the small gaps left by electrification in some heavy vehicles, in regions or duty cycles where batteries struggle. In the Net Zero Scenario, hydrogen fuel cell vehicles are 10 percent of medium and heavy commercial trucks on the road in 2050, some 16 percent of municipal buses, and less than 1 percent of the passenger vehicle fleet. The balance is fully electric vehicles." BNEF Electric Vehicle Outlook 2020, p. 8. Available here: https://www.bnef.com/insights/26533/view. (Accessed October 14, 2021).

29 PG&E internal survey, which contains confidential data.

charging stations would increase their likelihood of purchasing an EV.[30] BNEF lists "refueling time and availability" as one of the top three concerns presenting a barrier to customer adoption of EVs.[31]

It is imperative that public and shared private charging[32] infrastructure is readily available to give consumers confidence to purchase EVs and support the wider market transformation. EVC 2 is specifically designed to meet the needs of MFH residents by focusing on infrastructure investment and ME&O for this target segment.

2. EVC 2 Helps Address California's Need for EV Charging Infrastructure

To help meet California's ambitious TE goals, PG&E and other IOUs in California offer ratepayer-funded programs that aid participating customers with the design, construction, and operation of EV charging infrastructure. For example, PG&E has supported the light-duty passenger EV segment by providing infrastructure support through its EV Charge Network, EV Fast Charge, EV Schools and Parks, and Empower EV programs. In addition to these ratepayer-funded programs, PG&E proposed a portfolio of LCFS-funded EV incentive programs, some of which will aid customers installing EV charging infrastructure.[33]

However, the existing programs are not sufficient to meet California's TE goals in the near-term. The California Energy Commission (CEC)'s inaugural AB 2127 EV Infrastructure Needs Assessment ("AB 2127 Assessment") released in June 2021 states that in order "to meet the 2025 goal of 250,000 public and shared chargers, the State will need about

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30 Volvo Car USA/The Harris Poll. Published February 26, 2019. Accessed at: https://www.media.volvocars.com/us/en-us/media/pressreleases/248305/poll-finds-americans-feel-electric-vehicles-are-the-future-of-driving. (Accessed October 14, 2021).

31 Electric Vehicles: a Primer. Slide 26. Published December 7, 2020. Available here: https://www.bnef.com/insights/24969/view. (Accessed October 14, 2021).

32 PG&E uses the definitions for "public" and "shared-private" chargers as found on the CEC's Zero Emission Vehicle and Infrastructure statistics site: https://www.energy.ca.gov/data-reports/energy-insights/zero-emission-vehicle-and-charger-statistics. (Accessed October 14, 2021).

33 See, Advice Letter (AL) 6226-E, available online at: https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_6226-E.pdf. (Accessed October 14, 2021).

57,000 chargers more than are already installed or planned."[34] Furthermore, "modeling results in this report project that the state will need nearly 1.2 million public and shared private chargers in 2030 to support the number of light-duty vehicles needed to achieve the goals of the Executive Order N-79-20."[35] Through July 30, 2021, there are less than 75,000 public and shared private chargers installed in California, demonstrating a large gap to cover in just over eight years.[36] Looking ahead, the AB 2127 Assessment asserts "[c]ontinued growth of the plug-in electric vehicle (PEV) market will depend on driver confidence in charging infrastructure. Widely available charging will reduce range anxiety and give drivers confidence that PEVs are as convenient to fuel as conventional vehicles. The state must continue to invest in charging infrastructure to achieve its ZEV goals."[37]

The number of charging ports approved in IOU TE programs to-date represent only four percent of those needed by 2030.[38] Including the 16,000 ports proposed as part of PG&E's EVC 2 program brings this total to six percent. Although a small percentage of overall need, installation of ports through IOU programs helps address the adoption barrier presented by a lack of charging infrastructure, which in turn can help to galvanize the nascent passenger EV market and bring greater equity by focusing investments in AB 841 PCs. California remains in the midst of a "chicken-and-egg" problem wherein drivers are hesitant to adopt an EV partly due to a lack of charging infrastructure, yet private entities are

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34 CEC AB 2127 EV Charging Infrastructure Assessment (July 2021), p. 2. Available at: https://www.energy.ca.gov/programs-and-topics/programs/electric-vehicle-charging-infrastructure-assessment-ab-2127. (Accessed October 14, 2021).

35 *Ibid*.

36 CEC ZEV and Infrastructure Statistics Dashboard, available here: https://www.energy.ca.gov/data-reports/energy-insights/zero-emission-vehicle-and-charger-statistics. (Accessed September 13, 2021).

37 CEC AB 2127 EV Charging Infrastructure Assessment, p. 3. Available at: https://www.energy.ca.gov/programs-and-topics/programs/electric-vehicle-charging-infrastructure-assessment-ab-2127. (Accessed October 14, 2021).

38 PG&E calculates the four percent based on a total of 51,262 ports approved in IOU programs, of the 1.2 million ports needed to support the EO. (See D.16-01-023, D.16-01-045, D.16-12-065, D.18-05-040, D.19-11-017, D.20-08-045, D.21-04-014).

unwilling to invest in developing the necessary infrastructure until more EVs are on the road.[39] Programs provided by utilities, especially those that offer utility-owned infrastructure like EVC 2, can provide assurance to entities who may be uncomfortable and/or unable to install charging infrastructure without this assistance given the current nascent stage of the wider transition.

3. EVC 2 Focuses on Multi-Family Housing Residents Who Are Necessary to Scale Equitable EV Adoption

Further effort is needed to ensure that MFH residents, especially those within AB 841 PCs, feel confident adopting EVs. As previously mentioned, because EVs generally have a higher up-front cost compared to ICE alternatives, early adopters have primarily been higher-income individuals with the ability to charge their vehicles at a single-family residence. As the costs of EVs continue to decrease, a concerted effort is needed to make drivers who reside in residences other than owner-occupied SFHs confident in their ability to adopt and re-fuel an EV.

A recent CEC study of charging distribution highlights that at the "census tract level, more chargers appear in census tracts with low population density than in tracts with high population density."[40] The authors of the AB 2127 Assessment concluded, "[T]his preliminary analysis

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39 CEC AB 2127 Assessment, p. 87: "While PEVs are projected to reach cost parity with internal combustion vehicles in the next few years, there is more uncertainty about the path to self-sufficiency for the charging market. Electricity sales alone may not be enough to maintain sustainable business operations or cover capital costs for planning and constructing charging infrastructure. Continued deployment incentives and innovation-enabling policies are critical to promoting private investment and a sustainable industry." Available at: https://www.energy.ca.gov/programs-and-topics/programs/electric-vehicle-charging-infrastructure-assessment-ab-2127. (Accessed October 14, 2021); EVgo "The Costs of EV Fast Charging Infrastructure and Economic Benefits to Rapid Scale-Up", p. 11: "However, in nascent market—like the current one in most of the U.S.—making the financial math work can be challenging. In most U.S. geographies today, the combination of low volumes of EVs on the road, relatively early stage technology, and high 'effective kWh' rates, means that the revenue derived from cars using fast chargers does not yet cover the costs of building, owning and operating them." Available here: https://a.storyblok.com/f/78437/x/f28386ed92/2020-05-18_evgo-whitepaper_dcfc-cost-and-policy.pdf. (Accessed October 14, 2021).

40 CEC SB 1000 Study, discussed on pp. 14-17 of CEC AB 2127 Assessment, Available here: TN238853_20210714T100900_Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment Anal.pdf (Accessed October 14, 2021).

indicates that more public charging investments may need to be targeted toward low-income communities and high-population-density neighborhoods to enable more proportionate charging infrastructure distribution throughout the state."[41]

EVC 2 will help bridge the gap between low-density and high-density charger availability by installing charging infrastructure to serve MFH residents, including onsite at MFH as well as at workplaces and public destinations conveniently accessible by MFH residents. In addition to providing infrastructure to serve MFH residents, EVC 2 will provide pre- and post-energization ME&O to residents of MFHs where infrastructure is installed. These efforts will include providing site hosts with educational materials that can be used to promote EV adoption (e.g., signage, materials to include in site-host newsletters, social media, direct mail, etc.), information on EV incentive programs (e.g., incentives available through the Clean Fuel Reward program and a pre-owned EV rebate program, if approved by the CPUC, etc.), and ride and drive/extended test-drive events. These post-energization ME&O efforts will be aimed at increasing resident awareness and confidence that an EV will meet their needs.

4. EVC 2 Will Advance Vehicle-Grid Integration and Limit Grid Upgrade Needs

EVC 2 will also help meet state policy goals on Vehicle-Grid Integration (VGI), including using managed charging to reduce the need for grid infrastructure upgrades. PG&E worked with customers to successfully deploy Automated Load Management (ALM) in its EVCN program to reduce or eliminate the need for infrastructure upgrades and to serve customers that it otherwise would not have been able to due to space constraints at the customer site. In EVC 2, PG&E will continue this practice and evaluate all applications to determine if ALM can be used to cost-effectively meet the customer's charging needs. PG&E has also designed flexibility into EVC 2 VGI program elements to be able to incorporate evolving approaches, technologies, and business models to support bidirectional charging applications.

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41 *Ibid*. p. 17.

Furthermore, all EVC 2 customers will be given information on available Demand Response (DR) programs and how they can participate. DR programs help reduce stress on the grid at peak demand periods. DR programs can also help with renewable energy integration by not increasing demand when marginal electricity demand is being supplied by fossil fuel power generation. Additionally, DR programs can help reduce the need for incremental grid upgrades compared to a scenario with unconstrained charging at peak times.

D. EVC 2 Objectives

PG&E seeks to deploy an infrastructure program at scale that accelerates light-duty EV adoption to support the State in reaching the ambitious goals laid out in EO N-79-20 and the CEC's AB 2127 Assessment. Accordingly, PG&E developed the following objectives for EVC 2 based on lessons learned (see Chapter 2) and more than 20 conversations with Community-Based Organizations; other Load Serving Entities; Local, State, and Tribal Governments and Agencies; Non-Profit Organizations; EV Service Providers; and MFH, workplace, and public destination customers:

1. Increase Access to EV Infrastructure by Deploying Approximately 16,000 L2 and DCFC Ports with Speed and Flexibility to Meet State Policy Goals and Customer Needs.

PG&E has based this program extension proposal on the current state of the TE market, while designing flexibility to adjust major parameters in the face of rapidly evolving market conditions and needs. In this way, the learnings will be relevant and helpful to the TE landscape at the end of this decade as the program draws to a close.

2. Enable Equitable EV Adoption by Deploying at Least 50 percent of Infrastructure Spend and Targeted Outreach and Support for AB 841 PCs.

Equity in EV programs is a critical enabler of scaling up EV adoption, as discussed in this Chapter. Furthermore, the Commission appropriately determined in D.21-07-028[42] that TE in California should be equitable.

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[42] D.21-07-028 Decision Setting Near-Term Priorities for TE Investments By Electrical Corporations, p. 71, COL 5.

3. Generate Ratepayer Benefit within the Lifetime of Installed EVC 2 Infrastructure.

PG&E has extensive experience evaluating site host applications to participate in utility TE programs, having evaluated over 1,000 applications since 2017. PG&E has become adept at working hand-in-hand with customers through multiple touchpoints to ensure ratepayer funding is being used efficiently to fund the right projects.

In developing EVC 2, PG&E aims to cost-effectively increase throughput (measured in kWh) with a goal of creating long-term downward pressure on utility rates. However, PG&E is seeking to optimize utilization, not maximize it. PG&E carefully considered which investments may efficiently drive electric use throughput. In some cases, this may mean investing at sites that will appeal to many EV drivers; in other cases, favorable sites may not be where the majority of charging happens, but their presence reassures and encourages potential EV buyers/users.[43] Cost-effective load growth may also mean encouraging load management and integration of renewable generation by working with site hosts and EV customers to incorporate ALM, adopt time-of-use rates, and participate in DR programs.

4. Provide an Excellent Customer Experience for Participating Site Hosts to Encourage EV Adoption.

PG&E aims to provide a seamless customer experience before, during, and after installation of EV infrastructure to encourage EV adoption at sites where infrastructure is installed and encourage word-of-mouth promotion of

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[43] "Lessons Learned on Early Electric Vehicle Fast-Charging Deployments" published by The International Council on Clean Transportation, p. 40: "Rural stations along highways face a more challenging business case initially because of their low use, so they require support and funding from government. Enabling long journeys is an important function of fast charging to give consumers confidence they can travel anywhere they wish in their electric vehicles even though rural stations may be lightly used initially." Available here: https://theicct.org/sites/default/files/publications/ZEV_fast_charging_white_paper_final.pdf (Accessed October 15, 2021); "Electric Vehicle Charging in China and the United States" published by Columbia Center on Global Energy Policy, p. 21: "EV drivers and potential EV drivers express strong interest in the availability of public charging infrastructure… Studies suggest the availability of public EV charging is an important factor in decisions on EV purchases in the United States." Available here: https://energypolicy.columbia.edu/sites/default/files/file-uploads/EV_ChargingChina-CGEP_Report_Final.pdf (Accessed October 15, 2021).

the positive EV customer journey. PG&E's experience in deploying TE programs over the past four years as well as consultation with stakeholders indicate that the following attributes are critical to creating excellent customer experiences: turnkey project delivery where feasible and a simplified customer journey with many customer touchpoints and minimal decision points. EVC 2 will provide an excellent customer experience by co-building projects with site hosts through a joint electrification plan, acting as a neutral third party to the Electric Vehicle Supply Equipment (EVSE) marketplace, fostering trust and comfort for the customer in their decision-making process, and ensuring that customers have access to expert utility consultation and support.

To achieve these four objectives in EVC 2, PG&E will:

- Provide program administration, incentives, and support installation of L2 and DCFC EV infrastructure at workplaces, MFH, and public destinations (Discussed in Chapters 3 and 4);
- Provide customers in AB 841 PCs with a utility-owned option for their EV infrastructure to streamline the EV infrastructure installation process and minimize logistics for customers (Discussed in Chapter 4);
- Focus utility support on L2 and DCFC charging in AB 841 PCs and L2 in non-AB 841 PCs (Discussed in Chapter 3);
- Provide for installation of MFH onsite charging for retrofits and new construction, L2 workplace and public charging, and DCFC public charging to serve MFH charging needs in AB 841 PCs (Discussed in Chapters 3 and 6);
- Offer a new construction rebate that encourages developers to go beyond state California Green Building Standards Code EV Capable mandates (Discussed in Chapter 3);
- Leverage customer willingness-to-pay and increase cost-share responsibilities for participants outside of AB 841 PCs as compared to those within AB 841 PCs (Discussed in Chapter 3);
- Employ various load management techniques, including offering ALM to each installation, requiring adoption of time-of-use rates, and providing education and outreach on automated DR programs (Discussed in Chapter 5);

- Implement a robust ME&O Plan to (1) encourage prospective customers to apply to be site hosts in EVC 2 and (2) provide education materials to site hosts to help encourage EV adoption (Discussed in Chapter 6);
- Provide additional support to site hosts after installation to encourage EV adoption and bolster ratepayer benefit from utility support (Discussed in Chapter 6);

In meeting these objectives, PG&E will ensure that the costs of EVC 2 are reasonable, manageable, and transparent by using competitive procurement processes and providing accurate accounting, reporting, and auditing of program costs as authorized by the Commission.

E. Interaction with PG&E's Proposed Low Carbon Fuel Standard TE Programs

In designing EVC 2, and taking guidance from past Commission decisions, PG&E takes a broad view of the types of customers in need of utility support to install EV charging infrastructure. While not all light-duty residential customers are provided targeted support in EVC 2, PG&E has been mindful to ensure that other programs within PG&E's TE portfolio do. This is mainly accomplished via programs in PG&E's proposed LCFS Implementation Plan, which include:[44]

- **Pre-Owned EV Rebate:** Rebate for customers purchasing a pre-owned EV, with the potential for up to $4,000 in rebates, depending on customer eligibility, based on income-level. This proposed LCFS program will be targeted at all PG&E customers, but EVC 2 will specifically provide ME&O to potential EV drivers at MFH, workplaces and public destinations where EVCN and EVC 2 infrastructure has been installed.
- **Direct Install Program**: Light-duty EV infrastructure program that will incentivize L2 charger installation for small businesses and low-port-count MFH site hosts, including those in underserved communities and rural areas, who have excess capacity to install charging. Customers will be eligible for either the Direct Install Program or EVC 2. PG&E will aim to redirect customers who apply to EVC 2 if they are more likely to benefit from the Direct Install Program, and vice versa.

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44 See, AL 6226-E, available online at: https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_6226-E.pdf. (Accessed October 15, 2021).

- **Residential Charging Solutions:** Incentive program to reduce upfront costs and complexity of installing a home or MFH charger, by incentivizing products that enable home or MFH charging without behind-the-meter electrical work. This LCFS program will target individual EV drivers and SFH or MFH residents. There will be no overlap between EVC 2 and Residential Charging Solutions eligibility, because EVC 2 will be offered to MFH site hosts and not individual EV drivers.

F. Conclusion

To mitigate the worst impacts of climate change, the state of California must accelerate a transition to transportation methods that decrease GHG emissions. While the EV market is growing, there is a continued unmet need for charging infrastructure for MFH residents to give these drivers confidence in making the switch to EVs. IOU programs play a critical role kick-starting this nascent market and helping to ensure EV adoption continues in an equitable fashion. EVC 2's objectives and program design are tailored to help meet customer needs and the state's policy goals.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 2

DEPLOYMENT STRATEGY

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CHAPTER 2
DEPLOYMENT STRATEGY

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A. Introduction

Pacific Gas and Electric Company (PG&E) learned many lessons through the implementation of the Electric Vehicle Charge Network (EVCN) and Electric Vehicle (EV) Fast Charge programs.[1] PG&E's EVCN program provided installation of light-duty EV charging infrastructure at multi-unit dwellings and workplaces and was completed in 2021. EV Fast Charge is an ongoing program that provides behind-the-meter (BTM) infrastructure and some charger rebates for Direct Current Fast Charger (DCFC) sites. PG&E's experience in assessing and constructing EV infrastructure for hundreds of sites, understanding customer demand and assessing utilization potential, program and application design, and executing on cost reduction strategies shaped the decisions for program design in PG&E's Electric Vehicle Charge 2 (EVC 2) application and will ensure PG&E is well-positioned to successfully deploy needed EV infrastructure in EVC 2.

This Chapter describes 13 key deployment strategies for EVC 2 informed by lessons learned through PG&E's experience with the EVCN and EV Fast Charge programs:

1) PG&E seeks a larger, longer EV program than previous programs to accommodate customer demand;
2) PG&E will offer an onsite turnkey solution, as well as workplace and public destination charging, to address the demands and needs from multi-family housing unit (MFH) Assembly Bill (AB) 841 Prioritized Communities (PCs) (AB 841 PCs)customers;
3) PG&E will focus installation of DCFC at public destinations as an additional means of serving MFH residents;
4) PG&E will effectively manage the overall EVC 2 budget by applying lessons learned from EVCN and creating segment specific cost targets;

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[1] EVCN Program was approved in D.16-12-065; EV Fast Charge was approved in D.18-05-040.

5) PG&E will create a sophisticated application format to effectively prioritize sites and minimize program administration costs;
6) PG&E will improve application evaluation times and conversion rates by increasing Electric Vehicle Service Provider (EVSP) involvement in the application process;
7) PG&E will utilize automated load management (ALM) more universally to keep costs low;
8) PG&E will leverage utilization data from EVCN to enhance prioritization and site selection;
9) PG&E will deploy innovative partnerships and education and outreach tactics for site hosts after installation to bolster EV adoption;
10) PG&E will focus on improving data sharing and alignment with other funding entities;
11) PG&E will coordinate with local organizations to facilitate site acquisition and increase customer awareness, notably in AB 841 PCs;
12) PG&E will support low-cost opportunities for futureproofing when they fit within program cost targets; and
13) PG&E will provide incentives to support installation of EV infrastructure during new building construction.

B. Details of EVC 2 Deployment Strategy Based on Lessons Learned

1. PG&E Seeks a Larger, Longer EV Program Than Previous Programs to Accommodate Customer Demand. (Chapter 2, Chapter 3)

The customer demand for EVCN and EV Fast Charge far exceeds each programs' size. In the case of EVCN, there were four times the number of program applicants as viable sites able to be served by the program.[2] The program was fully subscribed within 18 months of inception. As a result, there was frustration among customers who were not able to complete designs and contracts quickly enough to participate. EV Fast Charge has seen similarly strong demand within the first two years of the five-year program; there are three times the number of applicants as forecasted viable sites able to be served by the program.

[2] PG&E EVCN Quarterly Report: First Quarter 2021, p. 3.

The strong demand and short window for program participation—especially for EVCN—point to the need for additional EV charging programs with larger budgets and timelines to adequately address market demand. The demand for public DCFC, in particular, demonstrates the need for an expanded EVC 2 which enables access to more public direct current (DC) fast charging.

2. PG&E Will Offer an Onsite Turnkey Solution, as Well as Workplace and Public Destination Charging, to Address the Demands and Needs From MFH AB 841 PC Customers (Chapter 3)

MFH customers in EVCN demonstrated an overwhelming desire for a turnkey solution. PG&E defines a turnkey solution as one in which PG&E fully manages site design and construction and owns and maintains the to-the-meter infrastructure, BTM make-ready infrastructure, and the EV chargers. In the EVCN program, 100 percent of the 21 viable MFH applications located in disadvantaged communities (DACs), 77 percent of the 75 viable overall MFH applications, and approximately 60 percent of the 220 EVCN MFH applicants requested PG&E ownership.[3] In light of the strong demand for PG&E's turnkey solution offered with EVCN, PG&E anticipates there will continue to be strong demand for turnkey solutions in EVC 2 where PG&E is legally allowed to offer it.

This application limits the PG&E turnkey solution and utility-ownership of BTM make-ready to 50 percent of infrastructure costs in AB 841 PCs per Decision (D.) 21-07-028, which mandates that utility EV programs require customers to own the Electric Vehicle Supply Equipment (EVSE) and BTM infrastructure in all instances except for up to 50 percent of infrastructure costs in AB 841 PCs. The requirement for customer ownership can increase costs and project deployment responsibilities for many participating customers. There is a risk that customer satisfaction, particularly at MFH, will diminish in EVC 2 with the larger cost and technical complexities (such as construction design, project management, and procurement) customers must bear when PG&E is not permitted to offer a turnkey solution. The

[3] EVCN provided MFH customers with the option of owning the charger, or having PG&E own the charger.

program constraints imposed by D.21-07-028 may decrease customer demand and increase applicant attrition once customers receive a clear understanding of their costs and construction obligations. Program interest may diminish rather than grow over time. Pending program progress, PG&E may file a Tier 2 Advice Letter (AL), pursuant to D.21-07-028, requesting to eliminate the constraint on offering a turnkey solution.

PG&E also believes that additional support for charging at workplaces and public destinations will support MFH customers who may not be inclined to participate in EVC 2 without a turnkey option or utility-owned BTM make-ready option. PG&E will deploy a mix of workplace and public destination infrastructure in EVC 2 to ensure that communities receive sufficient EV charging support. If customers interested in installing EVSE on their property are unable to bear the increased costs and project deployment responsibilities imposed by D.21-07-028, access to nearby workplace or public chargers as an alternative will prove essential.

3. PG&E Will Focus Installation of DCFCs at Public Destinations as an Additional Means of Serving MFH Residents (Chapter 1, Chapter 3)

The challenges to EV adoption at MFHs are well-documented[4,5] and a trend has emerged among market and policy leaders to address MFH needs through MFH-serving locations, such as chargers within a short walking distance of MFHs and DCFC at key destinations with reasonable dwell times within a short travel time of one or more MFHs. To date, utilization at MFHs in DACs is the lowest across all EVCN charger types. Many parking spots at MFHs are dedicated to specific units, capping charger usage potential. However, site hosts and other stakeholders have emphasized to PG&E the importance of being able to offer charging at dedicated parking spots in our

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4 Report, Ecology Action, Innovations in Electric Vehicle Charging for Multifamily Dwellings, November 2020, https://ecoact.org/ea2020/wp-content/uploads/2020/11/Ecology-Action_Innovation-in-EV-Charging-for-MUDs_11.20.2020.pdf.

5 Report, University of California, Los Angeles (UCLA) Luskin School of Public Policy, Evaluating Multi Unit Resident Charging Behavior at Direct Current Fast Chargers, February 2021, https://innovation.luskin.ucla.edu/wp-content/uploads/2021/03/Evaluating-Multi-Unit-Resident-Charging-Behavior-at-Direct-Charging-Behavior-at-Direct-Current-Fast-ChargersCurrent-Fast-Chargers.pdf.

programs in part because some other funding agencies who help defray the costs of EV charging stations excluded dedicated parking spots. PG&E thus learned that to address the access barriers for MFHs, EVC 2 should be a hybrid program that supports installation of onsite MFH chargers for customers where it is feasible, while also supporting installation of public charging, which has potential for market lift by providing accessibility to the whole resident population, not just the occupants of specific units.

EVC 2 will address MFH barriers by including incentives to install charging at public destinations, including DCFC sites, that serve MFH residents, especially in AB 841 PCs. Such a program design benefits customer experience. Including a focus on public destination charging can provide a dual benefit of providing charging for MFH customers and drawing more customers to hosts' destinations, aiding California's prosperity by providing an incentive for drivers to patronage local stores and thus providing financial motivation for site hosts to invest in EV charging infrastructure. Focusing on deploying chargers at public destinations also helps overcomes the barrier of MFH residents and those who rent single family homes (SFH), whose building managers do not or cannot participate in EV charging programs. A meaningful percent of MFH residents in PG&E territory can have a new DCFC port within a short driving distance if DCFC ports are distributed strategically across the state.

Lastly, investment in public destinations, both L2 and DCFC, facilitates equitable access relative to onsite MFH charging. Investment in onsite MFH charging, while necessary and appropriate, limits the benefits of ratepayer investments to a smaller number of users. By taking a portfolio approach and enabling L2 and DC fast charging at MFH, workplaces, and public destinations, infrastructure installed in EVC 2 will benefit all community members.

4. PG&E Will Effectively Manage the Overall EVC 2 Budget by Applying Lessons Learned From EVCN and Creating Segment Specific Cost Targets (Chapter 3)

In April 2021, PG&E conducted research to evaluate EVCN projects completed at MFH and workplaces to better understand the overall customer experience and identify areas where PG&E can make

improvements in this extension program. Research was also conducted among customers who started the program, but whose projects were not completed for different reasons ("Non-Participants"). 245 total customers were emailed a survey invitation, resulting in 42 completed surveys (12 Program Participants and 30 Non-participants representing 17 MFH and 25 workplace customers). The full survey PG&E provided to customers can be seen in Attachment A to this chapter.[6] Survey responses highlight two key areas of consideration for future EV programs: lowest installation and ownership out-of-pocket costs possible and customer willingness-to-pay to install infrastructure. Most respondents (37 of 42) indicated they were likely to install charging stations with a future program like EVCN.

a. Simplicity and Lower Installation and Ownership Costs

Participants in EVCN expressed a preference for PG&E to take care of the entire project, from initial design to installation of chargers, both to simplify the process for customers and to reduce customer costs. The primary concern among both Participants and Non-Participants was keeping costs low. While Participants would like to see more rebates and grants, Non-Participants wanted greater transparency – especially in upfront costs. 32 of 42 respondents said that securing the lowest upfront cost to their organization was the most important consideration in pursuing an EV charging project, the next most important being a turnkey process.

PG&E is adept at spotting site conditions which may increase project costs beyond program targets based on implementing the EVCN and EV Fast Charge programs. Costs may be assessed on a per site, per port, and/or per kilowatt basis, and preliminary designs are performed with the goal of creating a viable project for customers that meet regulatory and program cost targets.

To optimize program funding and minimize customer costs, EVC 2 will focus on L2 charging sites with 20 or more ports and DCFC sites with four or more ports. PG&E will not exclude applicants that seek

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6 Report, UCLA Luskin School of Public Policy, Evaluating Multi Unit Resident Charging Behavior at Direct Current Fast Chargers.

fewer L2 ports or DCFCs; however, the likelihood of being able to serve these sites is diminished due to program cost constraints. PG&E will strive to serve smaller port count sites that are otherwise non-viable for EVC 2 through the following channels: (1) allow customers to pay more so that their projects fall within cost thresholds; and (2) refer customers to PG&E's complementary low-port count Low Carbon Fuel Standard (LCFS) Holdback program for small MFH and small businesses.[7]

b. Willingness-to-Pay to Install Infrastructure

Respondents were next asked to rate their likeliness of participation in EVCN had their costs been $2000, $4000, $6000, or $8000 per port. 20 of 42 respondents highly ranked their likelihood to participate at $2000 per port. After this contribution amount, the likelihood of customer participation decreases significantly; only 12 of 42 were willing to pay $4,000 per port or more. However, of the 42 participants, almost a third (29 percent) indicated they would be likely to participate if they were asked to pay more than $4,000 per port.

Via EVCN and EV Fast Charge, PG&E learned the importance of spreading fixed costs across an ideal number of EV chargers deployed at any given site in EVCN to ensure costs stay within targets; given that fixed costs do not scale proportionally with site size, increasing port counts to an optimal level maximizes cost-effectiveness.[8] Therefore, in EVCN and EV Fast Charge, PG&E established internal cost targets to determine which customers PG&E could cost-effectively serve within program budgets to meet program goals. Given customer survey responses that indicate there is some willingness-to-pay, PG&E has evolved these cost targets in EVC 2. In previous programs, PG&E turned customers away when projects became too expensive, in order to achieve program goals within allocated program budgets. PG&E

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7 PG&E proposed a complementary low-port count LCFS Holdback program in AL 6226-E which is currently awaiting California Public Utilities Commission approval.

8 PG&E works with customers to help them determine a number of chargers that will allow PG&E and the customer to optimally spread fixed costs associated with infrastructure installation, while still ensuring there are enough chargers for customers to grow into, such that chargers will be used and useful as EV adoption accelerates.

found that this was upsetting to customers—some of whom indicated they may have been willing to contribute more had they been given the opportunity. In EVC 2, PG&E varies cost coverage and rebate levels by customer segment, enabling a cost share between customers and PG&E for infrastructure. This will allow for more costly projects to proceed to construction if the customer is willing to pay.

5. PG&E Will Create an Application Format to Effectively Prioritize Sites and Minimize Program Administration Costs (Chapter 4)

PG&E aims to balance the simplicity of the program application with the value that can be derived from additional information so that applications can be effectively prioritized. In EVCN, PG&E did not collect information regarding utilization potential, estimated trench lengths, or accessible EV space and parking lot improvement requirements.[9] In contrast, the EV Fast Charge application includes more complex questions than EVCN; these questions address site conditions and utilization potential, among other items. By obtaining more information from applicants up-front, PG&E can more effectively prioritize cost-effective sites that have higher potential for future utilization. This approach also enables PG&E to save administrative and project management costs by ensuring that site walks and preliminary designs are performed on high potential sites, reducing the number of customers who find they are unable to participate due to higher costs or technical complexity, later in the process.

PG&E will continuously improve on previous program applications and further enhance site prioritization methodologies in EVC 2. This earlier prioritization can increase the quantity of applications evaluated, decrease evaluation time, increase program cost-effectiveness, increase customer satisfaction, remove non-viable sites more quickly, reduce site attrition post-contract, and balance the many objectives of an EV program.

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9 Improvements required by the local authority having jurisdiction sometimes included things like path of travel, access aisles or a prescriptive minimum number of standard, van or ambulatory spaces in relation to total number of EV spaces installed.

6. PG&E Will Improve Application Evaluation Times and Conversion Rates by Increasing EVSP Involvement in the Application Process (Chapter 4)

In EVCN, the site host completed the application. In EV Fast Charge, EVSPs complete program applications on a site's behalf, rather than the site host doing so themselves. The theory behind the EV Fast Charge application process is that it requires more sites to speak to their prospective EVSP and learn about the costs and complexities of EV charging hardware before applying to the program, leaving the customer more informed and prepared for participation in the program. This design also enables PG&E to collect more technical information in the application beyond what an average customer may feel knowledgeable about or comfortable providing, which leads to better site prioritization and reduced administrative and project management costs, as discussed in the previous section.

By also allowing EVSPs to complete applications on the customer's behalf, EVC 2 will benefit from a customer who is more educated about the market and the value the program is offering to them. The site eligibility and customer commitment process will also likely be expedited as time spent considering options and alternatives will have been done in advance of applying to the program.

7. PG&E Will Utilize ALM More Universally to Help Lower Costs (Chapter 5)

PG&E was an early advocate for the use of ALM to right-size the electrical capacity to match the charging behavior and needs of each individual site and reduce electrical upgrade costs for L2 sites. ALM is used to share available electrical capacity among charging stations to avoid the installation cost of additional electrical capacity. If all customer chargers are used at once, the ALM system limits the maximum amount of power that supplied to each charger. Sometimes a minor amount of ALM is needed per site (e.g., 95 percent of total charging capacity is dispensed), whereas in other cases the ALM might reduce the charger to around 50 percent of its rated charging capacity.

The EVCN program successfully utilized ALM to enable customers whose projects would otherwise be too expensive to participate in the

program. Using these load management technologies in EVCN, PG&E deployed charging infrastructure at sites in a manner that reduced the originally requested capacity by more than 50 percent to stay within the electrical capacity of the existing or lower cost infrastructure. This resulted in cost savings ranging from $30,000 to $200,000 per project.

To further reduce costs of EVC 2, PG&E intends to look to ALM as a cost-reducing measure from the beginning of each project design, rather than just when a project exceeds cost targets. PG&E will continue to advocate for the deployment of ALM technology in EVC 2 projects by working with site hosts to understand their charging needs, site conditions, and charging hardware capabilities; PG&E will target workplaces and MFHs with long dwell times. PG&E intends to continue leveraging ALM in EVC 2 to reduce costs to both site hosts and PG&E ratepayers and limit impacts to the local distribution system serving EVC 2 charging load.

8. PG&E Will Leverage Utilization Data from EVCN to Enhance Prioritization and Site Selection (Chapter 4)

Selecting sites which have a high probability of future utilization serves to benefit existing and potential EV drivers, as well as PG&E ratepayers. Though this should not be an explicit program goal given the market nascency and potential unintended consequences of prioritizing high-utilizing sites above others, increasing EV charger utilization does have the potential to decrease electric rates over time.

In the EV Fast Charge program, PG&E introduced the concept of evaluating utilization potential during the application and site selection process through indicative criteria such as regional EV adoption rates and EVSP-reported forecasts. More EV Fast Charge sites need to be energized and available to the public before actual utilization can be compared between sites and used to improve the utilization indicators employed during site ranking and selection. However, PG&E can leverage the data collected since EV Fast Charge program inception to enhance and grow this site evaluation methodology for EVC 2 implementation.

Further, as described in Chapter 4, PG&E proposes in EVC 2 to develop a site suitability screening tool that uses data and lessons learned from

EVCN and EV Fast Charge to assess and prioritize potential charge locations based on their ability to support program objectives.

9. PG&E Will Deploy Innovative Partnerships and Marketing, Education and Outreach Tactics for Site Hosts After Installation to Bolster EV Adoption (Chapter 6)

In evaluating EVCN site utilization, PG&E found that site hosts that performed "post-energization marketing, education, and outreach (ME&O)"[10] saw up to three times higher utilization than the program average. Some EVCN site hosts held publicity events once the chargers were energized, informing their residents and employees that there was access to EV charging infrastructure on site. These outreach activities correlated with higher kWh utilization per port per month. As PG&E's goal in deploying EVC 2 is to accelerate EV adoption, and as higher utilization may be indicative of EV adoption near installed infrastructure, PG&E is including post-energization outreach as a key component to the EVC 2 ME&O Plan.

10. PG&E Will Focus on Improving Data Sharing and Alignment With Other Funding Entities (Chapter 3)

Ancillary funding is often needed by site hosts in order to proceed with an EV charging installation. PG&E has experience stacking state and local incentives with its EV programs (EVCN, EV Fast Charge, EV Fleet, and EV Schools and Parks) to ensure customers receive the maximum amount of support without duplicating the efforts of any funding entities. Through PG&E's regular meetings with grant administrators, PG&E has learned the value of sharing grant or rebate recipient lists (and dollar values) between agencies to ensure customers receive the maximum level of support and to ensure that agencies are not paying customers in excess of customer project costs. If agencies, administrators, community choice aggregators (CCA), and utilities do not mutually share data, they run the risk of customer free ridership and claiming beneficial market intervention when none occurred in practice.

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10 Post-energization ME&O refers to ME&O conducted after chargers are installed and energized.

PG&E will continue to serve as the central aggregator of site information and disparate sources of funding for the EVC 2 program. PG&E will pursue partnerships with other organizations offering transportation electrification (TE) incentives and programs to explore how EVC 2 incentives can stack or complement with other TE program offerings, and vice versa. Partnership may include but need not be limited to discussion as part of quarterly PAC meetings. PG&E will begin by understanding what worked well and what could be improved on in the effort to share data between agencies in EVCN and EV Fast Charge. PG&E will then work with grant administrators, agencies, and CCAs to develop and improve standardized policies and procedures to freely exchange information and streamline the sharing of data to ensure program alignment.

PG&E is aware that some of the organizations it aims to partner with, including certain CCAs, are already working on vetting potential sites for EV charging, but may ultimately not have the funding to execute on the infrastructure installation themselves. Another way PG&E plans to partner with these organizations is to incorporate their pre-screened sites into PG&E's site prioritization process.

11. PG&E Will Coordinate with Local Organizations to Facilitate Site Acquisition and Increase Customer Awareness, Notably in AB 841 PCs (Chapter 3, Chapter 6)

PG&E held regular coordination meetings with interested organizations such as CCAs during EVCN, in addition to the quarterly PAC meetings to provide program status updates and solicit program feedback. CCAs helped spread awareness among their constituents about EVCN and regularly provided feedback and recommendations for program deployment strategies which increased customer education and program participation.

PG&E is seeking out increased engagement, feedback, and support from local organizations in EVC 2, such as by continuing to engage with CCAs and pursuing new partnerships with Community-Based Organizations (CBO). PG&E describes its local organization engagement strategy in Chapter 6, which includes focus groups, CBO microgrants[11] and CBO

[11] Referred to in Chapter 6 as CBO EV Advancement Funds.

support in charger siting and its site prioritization approach in Chapter 4, which includes engagement with local entities to site chargers. PG&E will continue to seek input, support, and collaboration opportunities on customer education and outreach from these potential partners to facilitate site acquisition, improve program participation, and enhance the customer experience, especially in AB 841 PCs.

12. PG&E Will Support Low-Cost Opportunities for Futureproofing When They Fit Within Program Cost Targets (Chapter 4)

PG&E has experience tactically deploying futureproofing solutions for a variety of customer segments through its EV programs and expects that this can save customers and ratepayers money in the long-term. Futureproofing refers to marginally increasing the scope of work in the present to enable additional or higher-powered chargers to be installed later. The scope generally refers to the installation of wider or additional conduit and may also extend to other features such as larger switchgear, meter panels and upstream equipment. The costs incurred today are expected to be more than offset by the foregone future costs which are no longer needed (e.g., asphalt does not need to be retrenched since multiple conduits were added the first time). PG&E will consider futureproofing BTM investments in EVC 2 when cost effective to do so. However, futureproofing should not be required in all instances as it can be an imprudent investment for some situations (e.g., a site host that wants to draw customers into their destination is unlikely to upgrade to an even faster charger in the future), as well as jeopardize site viability and project cost thresholds.

13. PG&E Will Provide Incentives to Support Installation of EV Infrastructure During New Building Construction (Chapter 3)

Nine sites involving new construction applied but were not accepted to EVCN because of the added complexity and longer timeframe associated with aligning EV project milestones with the broader new construction project milestones, which include much more complex designs. Specifically, PG&E project delivery engineers spent a disproportionate amount of time reviewing and analyzing technical construction drawings for simple information compared to constructed sites. Furthermore, EVCN was initially

approved as a three-year program, a duration which is shorter than many new construction timelines.

EVC 2 is a five-year program, enabling PG&E to consider new construction project timelines.[12] Additionally, PG&E will offer rebates for customer-owned infrastructure in EVC 2 as opposed to a utility-owned solution, to avoid creating the complexity the PG&E project delivery team encountered in EVCN due to the need to align with broader new building design and engineering requirements and schedules. Given the importance of the new building sector in helping California meet the charger goals as outlined in Chapter 1, EVC 2 will incentivize developers to exceed state CALGreen EV capable requirements. Indeed, as recently ordered in D.21-07-028, "It is reasonable to establish the new building sector as a near-term priority for Electrical corporation investments in TE infrastructure."[13] Enabling new construction sites to participate in EVC 2 will allow for over 4x cost savings because co-timing charger installation with the initial electric design of a building may avoid the need for future costly retrofits to accommodate EV charging.[14]

By incorporating rebates for new construction sites into EVC 2, PG&E can take advantage of the robust ME&O efforts and share program administration costs that will be deployed for the program, rather than proposing EV rebates for new construction under a separate application as authorized in D.21-07-028. Including new construction rebates in EVC 2 rather than treating as a separate program allows for a more efficient use of ratepayer funds.

C. Conclusion

PG&E's extensive experience and learnings gained through EV infrastructure program development and deployment informs the design and deployment strategies in this EVC 2 application. These strategies will enable EVC 2 to serve customers, effectively evaluate sites, and cost-effectively deliver

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12 Details for eligibility of new construction sites are described in Chapter 3 of this testimony.

13 D.21-07-028, p. 60 and p. 71, Conclusion of Law 4.

14 Report: Energy Solutions and PG&E, PEV Infrastructure Cost-Effectiveness Report for San Francisco Final, November 2016, p. 6.

on multi-tiered program success criteria to quickly and effectively meet California's rapidly growing demand for EV charging.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 2

ATTACHMENT A

EVC 2 PROGRAM DESIGN RESEARCH QUESTIONNAIRE

EVC 2 Program Design Research
Questionnaire Draft

WELCOME TEXT
PG&E is conducting research about our Electric Vehicle Charge Network (EVCN) program. Whether your project was completed or not, your valuable feedback will help us improve similar programs for our customers in the future. Please choose **one single project** as you answer questions throughout this survey, even if you submitted multiple applications to EVCN. The survey will take on average about 8 minutes to complete and all your answers will be kept confidential. **[SHOW LAST SENTENCE ONLY FOR NON-GOVT RESPONDENTS]** After you complete the survey, you will receive a $30 Visa gift e-card to show our appreciation for your time today. Please allow up to 4-6 weeks for e-card fulfillment.

A1. Is your building a…?

1. Residential multi-unit dwelling
2. Workplace

A2. Was your project completed under the Electric Vehicle Charge Network Program (EVCN), resulting in charging stations being installed at your site? Remember, please choose **one single project** as you answer questions throughout this survey, even if you submitted multiple applications to EVCN.

1. Yes
2. No

[ASK IF A2=1]
A3. Did your organization purchase your EV chargers ("EV Charge Owner") or did you have PG&E purchase the chargers on your behalf ("EV Charge Sponsor")?

1. We purchased them
2. PG&E purchased them for me

CUSTOMER TYPE DEFINITIONS:

- **MUD PARTICIPANT**
  - MUD (A1=1 Residential multi-unit dwelling)
  - Completed EVCN program (A2=1 Yes)
- **WP PARTICIPANT (WORKPLACE)**
  - Workplace (A1=2 Workplace)
  - Completed EVCN program (A2=1 Yes)
- **MUD NON-PARTICIPANT**
  - MUD (A1=1 Residential multi-unit dwelling)
  - Did not complete EVCN program (A2=2 No)
- **WP NON-PARTICIPANT (WORKPLACE)**
  - Workplace (A1=2 Workplace)
  - Did not complete EVCN program (A2=2 No)

GENERAL QUESTIONS – ALL RESPONDENTS

Remember, please choose **one single project** as you answer questions throughout this survey, even if you submitted multiple applications to EVCN. [Part of B1]

B1. How many available parking spaces are on site? Your best guess is fine.

1. Less than 25
2. 25 to 49
3. 50 to 99
4. 100 to 149
5. 150 to 199
6. 200 or more

B2. What proportion of the parking spaces (EV or non-EV) are assigned to individual tenants or employees? Your best guess is fine.

1. None – spaces are not assigned
2. <20%
3. 20 to <40%
4. 40% to <60%
5. 60% to <80%
6. 80% to 100%
7. Not sure

[ASK IF PARTICIPANT AND B2=2-6]
B3. Did you need to reassign/remove assigned parking spaces as a result of installing charging stations?

1. Yes
2. No

[ASK IF PARTICIPANT AND B3=1 YES]
B4. How did you handle the reassignment of parking spaces?

OPEN END

B5. Does your building share the parking facility with other organizations (e.g., not your own tenants or employees)?

1. Yes
2. No

[ASK IF B5 = YES]
B5a. Tell us more about your building sharing the parking facility with other organizations. Please describe any coordination of the parking facility performed in order to apply to or participate in EVCN.

OPEN END

B6. What were your primary motivations for installing or applying for charging stations? Select all that apply.

[RANDOMIZE; MULTI-SELECT]
1. Appeal to prospective tenants or prospective employees
2. Tenant or employee retention
3. Alignment with sustainability goals
4. Tenants or employees requested charging stations
5. Revenue opportunity
6. To be perceived as a leader in supporting clean vehicles
7. Other (specify):

B7. If you were to install charging stations in the future, who would you like to manage the project? Assume that neither the final price tag nor the project timeline would vary between scenarios. Please rank, where 1 is most preferred.

[RANDOMIZE]

1. PG&E takes care of the entire project, from initial design to installation of chargers.
2. PG&E takes care of the entire project, except installing the chargers themselves, which would be your responsibility to install.
3. An EV service provider company of your choosing from a qualified list delivers the entire project, from initial design to installation of chargers.
4. Your organization would fully self-manage the project, while coordinating with PG&E on "to the meter" construction, and file for a rebate from PG&E upon completion. ("To the meter" refers to the infrastructure required to deliver the new electric service to your property to enable you to add capacity to your customer infrastructure.)

[NON-PARTICIPANTS SKIP TO D SECTION]

PARTICIPANTS
Remember, please choose **one single project** as you answer questions throughout this survey, even if you submitted multiple applications to EVCN. [Part of C1]

C1. Tell us what you think about the following statement: *My installation of chargers contributed to tenants/employees purchasing EVs.*

1. I believe there was a substantial effect
2. I believe there was a small effect
3. I believe there was no effect
4. I'm not sure

C2. Please share any examples you have of tenants/employees purchasing EVs **and/or** describe your perceptions of how well utilized the charging infrastructure was.

OPEN END

C3. How likely are you to install additional charging stations with a program like EVCN in the future, assuming you qualify?

1 Extremely likely	2 Likely	3 Somewhat likely	4 Not likely	5 Not at all likely

C4. Please tell us how you feel about each of the statements below.

		5	4	3	2	1	

	[RANDOMIZE]	Completely agree				Completely disagree	Not sure
1	EVCN enabled me to spend less staff time planning and coordinating the project than if I had completed a similar project outside of a PG&E program.						
2	EVCN enabled me to avoid delays associated with procurement, contractor selection, obtaining engineering cost estimates.						
3	PG&E project managers provided me helpful expertise.						
4	Self-managing the project instead of working through PG&E would have given me more flexibility.						
5	Self-managing the project would have enabled me to execute it faster.						
6	I would not have pursued this project without the support of EVCN.						

[ASK IF C4.4 and/or C4.5 are rated 3 or higher]

C5. Please tell us more about the type of flexibility you would have preferred from a self-managed project.

OPEN END

C6. Which of the following were most important to you in pursuing an EV charging project? Please rank your top 3, where 1 is most important.

1. Turnkey process
2. Rapid project completion
3. Return on investment
4. Lowest upfront cost to your organization
5. Contractor choice
6. Hardware choice (e.g., the charging unit itself)
7. Software choice (e.g., charger's billing platform, etc.)

C7. Which of the following financial considerations played a key role in your decision to participate in EVCN? Please select all that apply.

[RANDOMIZE; MULTI-SELECT]

1. The total financial contribution was reasonable
2. My organization got a good deal (i.e., much of the project cost was covered)
3. Ability to secure grants that covered additional costs beyond what was covered by PG&E
4. Ability to secure favorable financing for my organization's portion of the project costs
5. Clear understanding of all costs involved
6. Other (specify):

[INTRO FOR C8]
Due to the importance of managing costs to ratepayers, PG&E is evaluating different structures for future charging programs.

C8. Please tell us the likelihood of your participation in EVCN if each of the following financial contributions was required by your organization. This would be in addition to the cost of the chargers themselves.

	[RANDOMIZE]	5 Definitely <u>would</u> have proceeded	4	3	2	1 Definitely <u>would not</u> have proceeded	Not sure
1	$2,000 per port						
2	$4,000 per port						
3	$6,000 per port						
4	$8,000 per port						

[If A3 = "PG&E purchased them for me"]
C9a. Due to the importance of managing costs to ratepayers, PG&E is evaluating different structures for future charging programs. Instead of having a predetermined, fixed participation payment, suppose your participation payment was a percentage of total construction costs

Prior to starting the project, PG&E produced a cost estimate for your organization's share of the costs, which you determined was within your budget. However, you also had to assume the risk of any project cost overruns. PG&E tells you that final project costs on average vary from -25% to +75% of the initial estimate. Your final participation payment thus might be lower or higher than initially quoted. Would you still consider moving forward with the project? Why/why not?

OPEN END

[If A3 = "We purchased them"]
C9b. Due to the importance of managing costs to ratepayers, PG&E is evaluating different structures for future charging programs. In addition to requiring you to purchase your own chargers, suppose you were asked to contribute a participation payment, calculated as a percentage of total construction costs.

Prior to starting the project, PG&E produced a cost estimate for your organization's share of the costs, which you determined was within your budget. However, you also had to assume the risk of any project cost overruns. PG&E tells you that final project costs on average vary from -25% to +75% of the initial estimate. Your final participation payment thus might be lower or higher than initially quoted. Would you still consider moving forward with the project? Why/why not?

OPEN END

C10. We're almost done. How can PG&E make future EV charging programs more appealing for your organization?

OPEN END

[PARTICIAPNTS SKIP TO E1]

NON-PARTICIPANT INTRO
Next, we would like to ask a few questions to better understand your experience with EVCN and your cancelled project. Your valuable feedback will help us understand how we can better support customers with future programs.

D1. How likely are you to install charging stations with a program like the EVCN in the future, assuming you qualify?

1 Extremely likely	2 Likely	3 Somewhat likely	4 Not likely	5 Not at all likely

D2. Which of the following were most important to you in pursuing an EV charging project? Please rank your top 3, where 1 is most important.

1. Turnkey process
2. Rapid project completion
3. Return on investment
4. Lowest upfront cost to your organization
5. Contractor choice
6. Hardware choice (e.g., the charging unit itself)
7. Software choice (e.g., charger's billing platform or online interface to monitor and manage chargers)

D3. What was the primary reason your project was never completed?

1. PG&E cancelled the project
2. My company/organization withdrew from the project
3. Other (specify):

[ASK IF D3=2 My company/org withdrew]
D4. What were the primary reason(s) your company/organization withdrew from the project? Please select up to 3.

[MULTI-SELECT; RANDOMIZE]

1. Costs were too high for us
2. Other grant funding fell through
3. PG&E proposed an alternate design that would have required us to install more charging ports than we were willing to pay for
4. The project ran into site design constraints

5. My project involved new construction which was not allowed
6. Could not get necessary internal approvals to proceed
7. Other (specify): **[ANCHOR]**

[ASK IF D3=1]
D5. For regulatory reasons, PG&E had to cancel some projects due to high costs for PG&E. Hypothetically, would your company/organization have been willing to pay for more project costs if doing so would have avoided project cancellation? Please explain.

OPEN END

[ASK IF D4<> 1 COSTS WERE TOO HIGH FOR US]
D6. Assuming the obstacles that prevented your project from being completed were resolved, please tell us the likelihood of your participation in the project if the following financial contribution was required by your organization. This would be in addition to requiring you to cover the cost of the chargers themselves. Please consider each price level.

	[RANDOMIZE]	Not sure	1 Definitely would not have proceeded	2	3	4	5 Definitely would have proceeded
1	$2,000 per port						
2	$4,000 per port						
3	$6,000 per port						
4	$8,000 per port						

D7. Please consider the following scenario. Prior to starting the project, PG&E produced a cost estimate for your organization's share of the costs, which you determined **was** within your budget. However, you also had to assume the risk of any project cost overruns. PG&E tells you that final project costs on average vary from -25% to +75% of the initial estimate. Your final participation payment thus might be lower or higher than initially quoted. Would you still consider moving forward with the project? Why/why not?

OPEN END

D8. We're almost done. What changes can PG&E make to improve similar programs in the future?

OPEN END

E1. Just one last question. Please enter the address of the site you had in mind during this survey. Feel free to skip this question.

OPEN END

CLOSING TEXT FOR NON-GOVERNMENT
That's it! Thank you again for making time to help PG&E improve our clean energy transportation offerings in the future. Please allow up to a few weeks to receive your $30 Visa gift e-card that will be sent via email.

CLOSING TEXT FOR GOVERNMENT
That's it! Thank you again for making time to provide your feedback and help PG&E improve our clean energy transportation offering in the future.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 3

PROGRAM OVERVIEW

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 3
PROGRAM OVERVIEW

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 3
PROGRAM OVERVIEW

A. Introduction

Pacific Gas and Electric Company (PG&E) proposes a longer and larger Electric Vehicle Charge (EVC) 2 extension program compared to the original Electric Vehicle Charge Network (EVCN) program, based on the customer demand for PG&E's EVCN and Electric Vehicle (EV) Fast Charge programs and the infrastructure needs identified in the AB 2127 report.[1] EVC 2 will support residential, light-duty EV adoption through infrastructure installation for approximately 16,000 Level 2 (L2) and Direct Current Fast Charger (DCFC) at Multi-Family Housing (MFH), workplaces, and public destinations over five years, to serve MFH customers with and without onsite access to charging infrastructure. At least 50 percent of infrastructure funding will be allocated to Assembly Bill (AB) 841 Prioritized Communities (PC) (AB 841 PCs).

This chapter provides the program overview for the infrastructure components of EVC 2. Section B explains the target customer segments for EVC 2, including the rationale for each target segment, the port goals, rebate and contribution amounts, and program eligibility. Sections C and D respectively describe PG&E's methodology for cost share amounts and summarize the key differences between the customer-owned and utility-owned infrastructure options stated in Section B. Section E details the data collection strategy and how it will inform any needed changes to the program during its five-year duration.

B. EVC 2 Target Customer Segments and Details

According to the California Energy Commission's (CEC) California Electric Vehicle Infrastructure Deployment Assessment Senate Bill (SB) 1000 Staff Report, less than half of EV drivers who live in apartments charge from home, compared to 66-83 percent of drivers who live in detached Single Family Homes (SFH).[2] The report concludes that EV chargers are absent or low in

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1 See Chapter 1.

2 SB 1000 Electric Vehicle Charging Infrastructure Deployment Assessment, pp. 10-11.

census tracts with high population density, which are predominantly residential.[3] EVC 2 is designed to help unlock the potential for EV adoption among PG&E's MFH customers by providing infrastructure support in four customer segment focus areas:

- L2 charging retrofits at existing MFH sites;
- L2 charging at new construction MFH sites;
- L2 charging retrofits at workplaces and public destinations, including MFH-serving public destinations; and
- DCFC charging retrofits at AB 841 PC public destinations, including MFH-serving public destinations.

PG&E defines a "MFH" as a building with five of more residential units on the premise. A "workplace" is a location with employees onsite, where employees are the intended users of the chargers. A "public destination" is a site designated by a property owner or lessee to be available to and accessible by the public. PG&E defines an "MFH-serving" site as a site that broadly promotes community usage and that is near to one or more MFHs whose residents will benefit from the charger installations. A site serving MFHs would be based in locations that are frequented by residents of that community.

In compliance with Decision (D.) 21-07-028, PG&E will spend at least 50 percent of its infrastructure spend in AB 841 PCs and will own no more than 50 percent of behind-the-meter (BTM) make-ready infrastructure and Electric Vehicle Supply Equipment (EVSE), on a cost basis. Utility-owned BTM infrastructure in EVC 2 will be limited to AB 841 PCs. All to-the-meter (TTM) work will be performed under PG&E's Rule 29: EV Infrastructure Rule[4] and is not included in this proposal, per Public Utilities Code Section 740.19. Table 1 below provides a summary of PG&E's EVC 2 proposal.

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3 Ibid., p. 25.

4 Resolution E-5167 PG&E, Southern California Edison Company, and San Diego Gas & Electric request approval to establish new EV Infrastructure Rules and associated Memorandum Accounts, pursuant to AB 841.

TABLE 3-1
SUMMARY OF EVC 2 PROGRAM PROPOSAL

Line No.	Customer Segment	Port Type	Approximate # of Ports	BTM Make-Ready Incentive	
				AB 841 PC	non-AB 841 PC
1	MFH Retrofits	L2[(a)]	~2,400	100 percent[(b)]	90 percent up to $12,000
2	MFH New Construction	L2	~4,000	100 percent up to $4,000[(c)]	100 percent up to $4,000
3	Workplaces and Public Destinations	L2	~8,500	90 percent up to $12,000	80 percent up to $10,000
4	Public Destinations	DCFC	~1,100	90 percent up to $67,000	N/A

(a) PG&E defines Level 2 (L2) charging as having a power output of between 7.2 kilowatt (kW) and 19.2 kW. PG&E defines DC Fast Charging (DCFC) as having a power output of 50 kW or more.

(b) PG&E will also cover the cost of EVSE and five years' worth of O&M for MFH retrofits in AB 841 PCs.

(c) Incentive is for the cost differential between an EV Installed and EV Capable space.

With this approach, PG&E aims to meet the diverse needs of MFH residents by providing a suite of assigned private, shared private, and public options for EV charging. PG&E's shared private and public options will also enable continued EV adoption for customers living in SFH by providing a network of destination chargers for customers to rely on.

EVC 2 will require all EV charging to be separately metered from other on-site load, except infrastructure installed for MFH new construction.[5] Separate metering enables PG&E to accurately track EV utilization for data analysis and forecasting for EV infrastructure needs. PG&E may leverage a non-residential submetering protocol to collect utilization data if a protocol is approved by the California Public Utilities Commission (CPUC or the Commission) at the time of program implementation and once PG&E has updated its internal IT systems to enable protocol implementation. No non-residential submetering protocol is under development at the time of writing.

PG&E requests flexibility to install more or less ports within the approved budget, depending on realized customer demand across each segment and by port type (L2 or DCFC). PG&E will consider ways to measure the trade-off of shifting chargers between segments and between L2 and DCFC. Metrics PG&E

5 Utility-grade submeters, when technically feasible, may also be used and for the purposes of EVC 2 may be considered separate meters. See Chapter 5 for further discussion of submetering.

may use include but are not limited to cost per kW. PG&E describes a site prioritization tool in Chapter 4 that can further contribute to this assessment, to the extent that it may inform optimal siting of DCFC versus L2. If necessary, PG&E will work with its Program Advisory Council (PAC) and submit a Tier 2 Advice Letter (AL) to further define which metrics PG&E will use to determine how to best allocate chargers within EVC 2.

1. MFH: Retrofits and New Construction

An often highlighted benefit of purchasing an EV versus a traditional Internal Combustion Engine Vehicle (ICEV) is the ability to refuel via electric charging conveniently at one's residence where the vehicle would typically be parked for large portions of the day.[6] This convenience is reflected in studies of current EV owners who overwhelmingly take advantage of at-home charging.[7] The ability to charge at one's residence has also been demonstrated as "the most important piece of infrastructure in convincing consumers to purchase a plug-in EV."[8] As discussed in Chapter 1, most EV adopters to-date own SFH and therefore have been able to take advantage of at-home charging, but a large proportion of PG&E's customers reside in MFHs. The installation of charging infrastructure at MFHs is therefore critical to meeting California's transportation electrification (TE) goals. However, for MFH customers, EV charging is often not as conveniently available as it is at SFH due to a number of potential issues, including a "split incentive" between the building owner and tenant, a lack of dedicated parking space for each resident, ability and desire to manage construction projects and/or charging equipment post-installation, and others.[9]

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6 https://www.edmunds.com/fuel-economy/how-to-get-the-best-home-charger-for-your-plug-in-car.html.

7 https://www.nrdc.org/experts/patricia-valderrama/electric-vehicle-charging-101.

8 A review of consumer preferences of and interactions with Electric Vehicle Charging Infrastructure, p. 518. Accessed at: https://phev.ucdavis.edu/wp-content/uploads/a-review-of-consumer-preferences-and-interactions-with-electric-vehicle-charging-infrastructure.pdf.

9 Electric Vehicle Charging Access for Renters: A Guide to Questions, Strategies, and Possible Next Steps, prepared for the Urban Sustainability Directors Network by Cadmus. Published November 2020 and available here: https://www.usdn.org/uploads/cms/documents/usdn_evchargingaccess_updatedreport_final_11.18.20.pdf pp.12-13.

EVC 2 will support infrastructure installation for approximately 2,400 L2 ports sited at MFH sites and will provide up to 4,000 new construction rebates for customers building new MFH. Together, these offerings represent 40 percent of the estimated 16,000 EVC 2-supported ports. This is consistent with EVCN, where 38 percent of ports were installed at MFH. As discussed in Chapter 2, EVCN received four times more applications than could be served through the program. Of unserved applications, 24 percent were for MFH, thus demonstrating the significant unmet demand for utility support for MFH charging installations.

a. MFH Retrofits

PG&E will offer the following options for customers to install L2 charging infrastructure onsite at an existing MFH building:

- Outside of AB 841 PCs: Rebate for 90 percent of BTM make-ready infrastructure costs, up to a cost target of $12,000 per port;
- Within AB 841 PCs: 100 percent BTM infrastructure cost coverage, either through a rebate for customer-owned BTM make-ready infrastructure and EVSE and five-years' worth of Operations and Maintenance (O&M) or through full cost coverage for utility-owned BTM make-ready infrastructure and EVSE owned and operated by PG&E.

Participating MFH site hosts outside of AB 841 PCs will own all BTM make-ready infrastructure and the EVSE. See Chapter 4 for details on BTM make-ready infrastructure. PG&E will rebate 90 percent of the BTM make-ready infrastructure costs, with an upper level BTM cost target of $12,000 per port. Customers will be responsible for the remaining 10 percent of BTM make-ready infrastructure costs or any costs in excess of the $12,000 BTM cost target, along with the cost of the EVSE. See Section C for cost share methodology.

Participating MFH site hosts in AB 841 PCs will have the option to either own the BTM make-ready infrastructure and EVSE or elect for PG&E to own the BTM make-ready infrastructure and EVSE. Regardless of which ownership option a customer chooses, PG&E will cover 100 percent of the BTM make-ready infrastructure and EVSE costs and five years' worth of O&M costs for sites in AB 841 PCs. To

enable PG&E to meet cost per port targets as required by D.21-07-028, PG&E will include cost thresholds in screening MFH retrofit applications from customers within AB 841 PCs.[10]

b. MFH New Construction

As discussed in Chapter 2, given the importance of the new building sector in helping California meet the charger goals as outlined in Chapter 1, EVC 2 will incentivize developers to exceed state California Green Buildings Standards Code (CALGreen) EV Capable requirements. PG&E will offer up to $4,000 per port to supporting installation of up to 4,000 L2 charging ports for new construction of a MFH building. These rebates are designed to cover 100 percent of the cost differential between an EV Installed and EV Capable space.[11] The rebate amount was calculated based on the estimated per port cost of chargers; wires, outlets, junction boxes, and receptables; ground markings and wheelstops; pedestal mounting; an electrician; incremental builder staff time on permitting and inspection; the incremental cost of permitting and inspection; and the charger itself. EV ADA signage and equipment protection bollards may be required for certain sites but not all sites; these costs will also qualify for the new construction rebate. The rebate will not exceed 100 percent of the installation and charging station costs. Only new construction MFH sites whose building permits are pulled during the course of EVC 2, which is currently expected to be from 2024 to 2028, will qualify for the rebate.

The current 2019 CALGreen code[12] lacks a clear definition of EV Capable. However, language is proposed for the 2022 CALGreen update that will add clarification to this term, if adopted. PG&E used the

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10 D.21-07-028 at p. 27 requires that "[a]ny proposed per port costs remain below the average per port cost threshold the Commission has adopted in recent TE decisions, to the extent applicable."

11 PG&E's proposal for incentivizing developers to exceed State CALGreen requirements is in line with D.09-05-037, which states, on page 30, "local ordinances that exceed state codes and standards can and should be part of carefully planned campaigns for market transformation. Therefore, incentives and savings in communities with 'reach' requirements should be no different from those in other communities, and not be treated as free riders."

12 https://codes.iccsafe.org/content/CAGBSC2019.

following 2022 CALGreen proposed definition when designing EVC 2:

EV CAPABLE SPACE. A vehicle space with electrical panel space and load capacity to support a branch circuit and necessary raceways, both underground and/or surface mounted, to support EV charging.

PG&E defines an EV Installed space as an EV Capable space with EVSE installed and energized. If these definitions change prior to the date that PG&E begins implementing EVC 2, or at any time during program implementation, PG&E will amend the definitions in EVC 2 to align with current CALGreen requirements. Further, PG&E will ensure that any rebates for MFH new construction reflect the most recent CALGreen updates throughout the program.

The California Building Code Part 11, often referred to as CALGreen, sets the statewide mandatory requirements for EV infrastructure. The 2019 CALGreen requirements will be in effect until January 1, 2023. The 2022 CALGreen requirements are expected to be adopted in December 2021 and are expected to be in effect for permits pulled between January 1, 2023 to December 31, 2025. PG&E anticipates that it will begin implementing EVC 2 when the 2022 CALGreen requirements are in effect.

If the 2022 CALGreen language is adopted as it stands at the time this was written,[13] the new mandatory requirements for multifamily properties will include:

- 10 percent of the total number of parking spaces on a building site shall be EV Capable;
- 25 percent of the total number of parking spaces on a building site shall be EV Ready "Low Power Level 2";

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[13] State of California Building Standards Commission, "45-Day Initial Statement of Reasons for Proposed Building Standards of the California Department of Housing and Community Development Regarding the 2022 California Green Building Standards Code, California Code of Regulations, Title 24, Part 11 (HCD 03/21)," published July 27, 2021. On October 11, 2021, the Building Standards Commission also released "Additional 15-Day Express Terms and Rationale for Proposed Building Standards of the Department of Housing and Community Development Regarding the 2022 California Green Buildings Standards Code, California Code of Regulations, Title 24, Part 11 (HCD 03/21)." The proposed 2022 requirements referenced above remain unchanged from those included in the 45-Day Initial Statement of Reasons.

- Five percent of the total number of parking spaces on a building site shall be equipped with L2 EVSE[14] for buildings with ≥ 20 dwelling units or guest rooms
- In existing buildings where new parking facilities are added or significant electrical or lighting alterations that require permitting for parking facilities take place, 10 percent of the parking spaces added or altered shall be EV Capable.

The pending 2022 CALGreen updates demonstrate that there is some statewide progress towards increasing EV charging infrastructure for MFH. However, it is likely not enough to support an equitable TE transition. With a requirement of five percent L2 EVSE, a 20-dwelling unit building would only be required to include a single installed EV charger, while a building with 75 dwelling units would be required to install just four EV chargers. Given California's EV growth targets, this lack of charging infrastructure may adversely impact MFH residents who face significant obstacles to installing EV chargers, including obtaining building owner approval and the cost. Support for increasing access to additional L2 ports for MFH, which are most often rental properties, is essential in encouraging EV adoption and preparing for increased mandatory requirements in future code cycles.

Based on EV cost studies,[15] stand-alone EV charging retrofit costs are typically three to five times greater than the cost of new construction infrastructure, making access to charging more difficult for residents. PG&E's MFH new construction rebates are a cost-efficient method to encourage EV adoption by providing customers with visible chargers in residential parking lots without having to retrofit existing parking lots.

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14 Ibid. As of July 27, 2021 "EVSE" in the 45-day language for the 2022 CALGreen update is defined as "LEVEL 2 ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). The 208/240 Volt 40- ampere branch circuit, and the electric vehicle charging connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle."

15 Energy Solutions. 2019. "Electric Vehicle Infrastructure Cost Analysis Report for Peninsula Clean Energy (PCE) & Silicon Valley Clean Energy (SVCE)". November 20, 2019.

PG&E proposes to offer up to 4,000 rebates for new construction MFH, which represents approximately 13 percent of the forecast EV Capable parking spaces to be installed in the State over the course of EVC 2 if the 2022 CALGreen updates are adopted.[16]

2. L2 Charging at Workplaces and Public Destinations

California has seen a dramatic growth in EV sales over 2020 numbers.[17] As this trend continues, the demand for both workplace and publicly accessible charging infrastructure is expected to increase. EV adopters to-date are primarily SFH owners that often can charge at home and overnight. However, given the sizable number of Californians who do not reside in owner-occupied SFH, future EV purchasers are more likely to reside in rented SFH or MFH that may not offer the ability to charge onsite. This large segment of California's driving population will therefore need non-residential locations to charge. This is further described in Chapter 2.

Additionally, as EV battery technology improves and mileage range on single charge increases over time, customers will likely trust EVs to become the sole means of transportation, further increasing the need for non-home-based charging infrastructure. Many early adopters have multiple vehicles and may only use an EV for short or predictable trips. For customers looking to adopt EVs as a sole vehicle, a prospective EV owner will need confidence that their EV could be used for predictable day-to-day driving as well as ad-hoc and longer regional trips, much in the same way that ICEV drivers can easily refuel when needed. Without visible charging located in public destinations and workplaces, it is unlikely drivers considering an EV will feel confident to make the switch. Thus, PG&E is

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16 State of California Building Standards Commission, "45-Day Initial Statement of Reasons for Proposed Building Standards of the California Department of Housing and Community Development Regarding the 2022 California Green Building Standards Code California Code of Regulations, Title 24, Part 11 (HCD 03/21)". In its Initial Statement, HCD found that the proposed code would add an additional 18,000 L2 capable spaces to multifamily buildings between 2023-2025 (See pp. 8-9). Extrapolating this results in 30,000 new EV Capable spaces forecast for California over the EVC 2 program period. PG&E proposes to support the conversation of up to 4,000, or 13 percent, of these EV Capable spaces to EV Installed spaces.

17 According to Electric Power Research Institute, there have been 103,879 new EV registrations in California year-to-date in 2021, compared to 52,656 new EV registrations in California in 2020.

proposing to add public destinations as a qualifying segment for L2 utility-support in EVC 2. In EVC 2, PG&E will offer incentives to install L2 charging infrastructure at locations available to the public such as city-owned parking lots, county-owned park and rides, shopping malls, or retail parking that can reliably serve MFH customers and EV-only owners.

As discussed in Chapter 2, EVCN received four times more applications than could be served through the program. Of unserved applications, 76 percent were for workplaces, thus demonstrating the significant unmet demand for utility support of L2 workplace charging installations and justifying the inclusion of workplaces as a qualifying segment once again for EVC 2.

EVC 2 will support installation of approximately 8,500 L2 ports sited at workplaces and public destinations. This represents 53 percent of the estimated number of installed EVC 2 ports.

PG&E will offer the following options for customers who desire to install L2 charging infrastructure at public destinations and workplaces:

- Outside of AB 841 PCs: Rebate for 80 percent of customer-owned BTM make-ready infrastructure costs, up to a cost target of $10,000 per port; and
- Within AB 841 PCs: Rebate for 90 percent of customer-owned BTM make-ready infrastructure costs or 90 percent cost coverage for utility-owned BTM make-ready infrastructure, up to a cost target of $12,000 per port.

Participating workplace and public destination sites outside of AB 841 PCs will install and own all BTM make-ready infrastructure and the EVSE. PG&E will rebate 80 percent of the BTM make-ready infrastructure costs, up to a BTM cost target of $10,000 per port. Customers will be responsible for the remaining 20 percent of BTM make-ready infrastructure costs or any costs in excess of the $10,000 BTM cost target, along with the cost of the EVSE. See Section C for cost share methodology.

Participating workplace and public destination sites in AB 841 PCs will have the option to either install and own the BTM make-ready infrastructure or elect for PG&E to install and own the BTM make-ready infrastructure. Regardless of which ownership option a customer chooses, PG&E will cover

90 percent of the BTM make-ready infrastructure costs, up to a cost target of $12,000 per port for sites in AB 841 PCs. Customers will be responsible for the remaining 10 percent of BTM make-ready infrastructure costs or any costs in excess of the $12,000 cost target, along with the cost of the EVSE. See Section C for cost share methodology.

All workplace and public destination site hosts will be responsible for procuring and owning the EVSE. As specified in D.20-08-045 and again in D.21-07-028, Fortune 1000 companies sited in AB 841 PCs will not be eligible for incentives.[18]

PG&E will require that the EVSE installed at public destinations be available to the public 24 hours per day and seven days per week, except for emergencies, maintenance, and other reasonable planned outages.

PG&E expects a significant portion of L2 public destination ports to be MFH-serving. PG&E will help realize this expectation through the application evaluation process and targeted marketing, education, and outreach (ME&O), outlined in Chapter 4 and Chapter 6, respectively.

3. DC Fast Charging at Public Destinations

59 percent of MFH operators say they have no existing budget for EVSE installation,[19] and according to the University of California Los Angeles (UCLA) Luskin School of Public Policy, 43 percent of MFH residents say public DCFC is their primary charging solution.[20] A 2018 study from the International Council on Clean Transportation reveals that there is an emerging trend of EV drivers using fast chargers close to home. The study authors conclude this is likely from drivers who do not have access to home charging and recommend urban fast-charging plazas as a way to meet the needs of these EV drivers while complementing workplace and home charging.[21]

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18 D.20-08-045 p.142 Conclusion of Law (COL) 23 and D.21-07-028, p. 73, COL 23.

19 2020 Ecology Action Report – Innovations in Electric Vehicle Charging for Multifamily Dwellings.

20 UCLA Luskin School of Public Policy, Evaluating Multi Unit Resident Charging Behavior at Direct Current Fast Chargers.

21 Lessons learned on early electric vehicle fast-charging deployments (theicct.org).

To support PG&E customers who are MFH residents in AB 841 PCs, and to complement PG&E's MFH retrofit and new construction offerings, PG&E will incentivize public DCFC in EVC 2.[22] According to the CEC's SB 1000 Report, "low-income communities on average have the fewest public Level 2 and total chargers per capita, and high-income communities have the most."[23] Additional research has concluded that "public EV charger access disparities are found based on race and income in California" and specifies that this gap is larger in areas with more MFHs and in Black and Hispanic majority-neighborhoods.[24] This research further cautions that "if the planning of public EV charger infrastructure lacks a focus on social equity, it will amplify existing inequities, causing harm to the excluded population."[25] Therefore, PG&E will only incentivize public DCFC in AB 841 PCs.

PG&E will encourage site hosts whose locations are near high-density MFH to apply, with a goal of serving a multitude of MFH customers close to home via MFH-serving public DCFC. Site hosts taking advantage of this offering must allow any EV driver to access chargers. PG&E will require that the EVSE be available to the public 24 hours per day and seven days per week, except for emergencies, maintenance, and other reasonable planned outages.

DCFC charging will also help California meet its environmental and TE goals. The CEC AB 2127 report cites a 2020 National Renewable Energy Laboratory Study that determined that plug-in EV customers could realize thousands of dollars in value from public charging.[26],[27] The report

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22 Please see Chapter 2, #3 for additional information.

23 California Energy Commission – Staff Report, "California Electric Vehicle Infrastructure Deployment Assessment: Senate Bill 1000 Report", 2021.

24 "Public electric vehicle charger access disparities across race and income in California" by Chih-Wei Hsu and Kevin Fingerman. Published in January 2021 in Volume 100 of Transport Policy. Accessed at: https://www.sciencedirect.com/science/article/pii/S0967070X20309021.

25 Ibid.

26 California Energy Commission – Commission Report "Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment", 2021.

27 California Energy Commission - Consultant Report, "Quantifying the Tangible Value of Public Electric Vehicle Charging Infrastructure", 2020.

goes on to detail the following benefits of public DCFC infrastructure specifically:

- Fuel costs savings when compared to gasoline;
- Reduced charging anxiety resulting in an increased likelihood of battery EV purchase; and
- Increases customers confidence that EV's are here to stay with increased public visibility of charging stations.[28]

EVC 2 will support infrastructure installation for approximately 1,100 DCFC ports, 50 kW or higher, at public destinations including MFH-serving public destinations. This represents seven percent of the estimated number of installed EVC 2 ports.

As discussed in Chapter 2, EV Fast Charge has already received three times more applications than can be served through the program, just two years into the five-year program. PG&E believes there will be ongoing demand from site hosts at public destinations wishing to install DCFC.

PG&E will only offer incentives to install DCFC charging infrastructure at public destinations within AB 841 PCs. Participating public DCFC site hosts in AB 841 PCs will have the option to either install and own the BTM make-ready infrastructure or elect for PG&E to install and own the BTM make-ready infrastructure. Regardless of which ownership option a customer chooses, PG&E will cover 90 percent of the BTM make-ready infrastructure costs up to a BTM cost target of $67,000 per port. Customers will be responsible for the remaining 10 percent of BTM make-ready infrastructure costs or any costs in excess of the $67,00 BTM cost target, along with the cost of the EVSE. See Section C for cost share methodology.

All public DCFC site hosts will be responsible for procuring and owning the EVSE.

PG&E expects a significant portion of DCFC public destination ports to be MFH-serving. PG&E will help realize this expectation through the application evaluation process and targeted ME&O, outlined in Chapter 4 and Chapter 6, respectively.

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28 California Energy Commission – Commission Report, "Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment", 2021. p. 29.

C. Cost Share Methodology

PG&E designed EVC 2 to maximize customer willingness-to-pay[29] and to meet the average cost per port requirement of D.21-07-028, which requires that "Any proposed per port costs remain below the average per port cost threshold the Commission has adopted in recent TE decisions, to the extent applicable."[30] EVC 2 will enforce cost targets for PG&E financial support, to ensure the program meets its goals within the budget. Cost targets will be measured and enforced on a program-wide basis, and additionally may be measured and enforced on a per segment, per site, per port, and/or per kW basis as needed. PG&E performed extensive research and customer outreach to determine customer willingness-to-pay. As detailed in Chapter 2, during PG&E's EVC 2 program design phase, PG&E conducted a survey of (1) MFH and workplace site hosts who participated in EVCN and (2) customers who started the program, but whose projects were not completed. Key insights related to willingness-to-pay were as follow:

- 76 percent of respondents indicated that their most important consideration for pursuing an EV charging project was lowest upfront cost to the organization; and
- project participation is less likely once customers are asked to pay over $2,000 per port.

In addition to surveys, PG&E reviewed EVCN and EV Fast Charge lessons learned, completed research, and held meetings with customers representing the various customer segments PG&E is targeting in EVC 2. This research shows MFH site hosts likely have the lowest willingness-to-pay for EV infrastructure upgrades compared to all eligible customer segments for EVC 2. According to a November 2020 Ecology Action Report, Innovation in EV Charging for Multi-Unit Dwellings, 59 percent of surveyed MFH operators indicated they had no existing budget for EVSE installation.[31] In contrast,

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29 In EVCN, some customers were unable to be served by the program due to high costs even when a customer had expressed willingness-to-pay for some costs. See Chapter 2.

30 D.21-07-028, p. 27.

31 2020 Ecology Action Report – Innovations in Electric Vehicle Charging for Multifamily Dwellings.

according to research by the Presidio Graduate School, the case for EVSE at workplaces lies in the benefits employers realize from offering this service to employees (i.e. meeting sustainability goals, attracting and retaining talented employees, and aligning actions with organizational mission and values) and that "Employers are worried less about upfront costs and are thinking long-term about strategies to future-proof their investment."[32] Overall, PG&E's EVCN survey respondents showed similar preferences, with the majority of workplace respondents indicating their primary reason for participating in EVCN was alignment with sustainability goals.[33]

Based on this research, PG&E designed EVC 2 to limit cost exposure for PG&E ratepayers and capture differentiated cost sharing from participating customers using a tiered incentive policy, with customer participation payments and rebates based on customer segment and AB 841 PC status. For example, PG&E will cover 100 percent of the costs of charging infrastructure for MFH customers in AB 841 PCs, but only 80 percent of the BTM make-ready infrastructure costs for workplace site hosts outside of AB 841PCs, who PG&E expects will have a higher willingness-to-pay.

1. L2 MFH Retrofits

In AB 841 PCs: In order to fill a key market gap of charging infrastructure at MFH in AB 841 PCs, and given the lowest willingness-to-pay expected in this segment, PG&E will cover all costs for BTM make-ready infrastructure and EVSE. PG&E will evaluate initial applications for cost reasonableness based on cost data from EVCN, which PG&E defines as falling within an upper level BTM cost target of approximately $16,500 per port, and escalated by year. For this customer segment only, the BTM cost target includes both BTM make-ready infrastructure and EVSE. The cost target is calculated based on actual

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32 Presidio Graduate School Workplace Charging Report (chargepoint.com).

33 19 out of 25 workplaces indicated that "alignment with sustainability goals" was one of their "primary motivations for installing or applying for charging stations." This was the most frequently cited motivation among respondents.

costs of the BTM portion[34] of EVCN MFH projects in disadvantaged communities (DAC), excluding the most expensive to protect ratepayers. This incentive will be administered either as a rebate, in the case of customer-owned BTM, or as up-front cost coverage, in the case of utility-owned BTM.

For customers in this segment who choose a customer-ownership pathway, PG&E will provide a separate lump sum rebate for five years' worth BTM O&M, calculated based on cost data from EVCN.[35] PG&E will cover the O&M for all infrastructure it owns under a utility-ownership pathway.

Outside of AB 841 PCs: In order to fill another market gap of charging infrastructure at MFH outside of AB 841 PCs, and given the higher willingness-to-pay expected in this segment compared to MFH in AB 841 PCs, PG&E will cover 90 percent of BTM make-ready infrastructure, up to an upper level BTM cost target of $12,000. To get to a 90 percent utility cost coverage share, PG&E started with an expected average per port willingness-to-pay (excluding EVSE) of $1,000 based on a triangulation of sources including Ecology Action's Innovation in Electric Vehicle Charging for Multi-Unit Dwellings Report, results of PG&E's EVCN participant and non-participant survey, and revealed willingness-to-pay in EVCN. $1,000 represents approximately 10 percent of the BTM portion of MFH costs, based on the average cost of EVCN MFH projects outside of DACs, and $12,000 represents approximately 90 percent of the BTM portion of costs. This incentive will be administered as a rebate.

2. L2 Workplaces and Public Destinations

In AB 841 PCs: PG&E held one-on-one interviews with several large potential public destinations participants who saw a substantial value proposition from increased dwell time of customers in stores, competitive

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34 Because many cost categories in EVCN were not recorded as either BTM- or TTM-specific, for the purposes of calculating EVC 2 cost targets, the BTM portion of costs from EVCN are calculated based on the ratio of BTM labor to TTM labor.

35 In the final stages of preparation for this application, PG&E identified minor changes to its O&M assumptions (~$100,000) which have not been reflected in Chapter 7, Section C. PG&E will provide updated workpapers that include this change after submission of this application.

advantage in recruiting customers, or alignment with company sustainability goals. Based on a literature review and supported by participant and non-participant survey, PG&E found that installing workplace charging offers benefits from multiple value streams for employers, notably employee retention and alignment with company sustainability goals resulting in a stronger brand. Survey results indicated a higher willingness-to-pay for workplaces than for MFH. Based on these sources, adjusted for an expected lower willingness-to-pay in AB 841 PCs compared to outside of AB 841 PCs, PG&E estimates an expected average per port willingness-to-pay (excluding charger) of $1,500. $1,500 represents approximately 10 percent of the BTM portion of a project, based on the average cost of EVCN workplace projects in DACs.[36] PG&E will cover the remaining costs for BTM make-ready infrastructure, up to an upper level BTM cost target of $12,000, which is approximately 90 percent of the BTM portion of costs. This incentive will be administered either as a rebate, in the case of customer-owned BTM, or as up-front cost coverage, in the case of utility-owned BTM.

Outside of AB 841 PCs: Based on the same sources listed above, adjusted for an expected higher willingness-to-pay outside of AB 841 PCs compared to in AB 841 PCs, PG&E estimates an expected average per port willingness-to-pay (excluding charger) of $2,500. $2,500 represents approximately 20 percent of the BTM portion of a project, based on the average cost of EVCN workplace projects outside of DACs. PG&E will cover the remaining costs for BTM make-ready infrastructure, up to an upper level BTM cost target of $10,000, which is approximately 80 percent of the BTM portion of costs. This incentive will be administered as a rebate.

DCFC Public Destinations

In AB 841 PCs: To inform PG&E's understanding of public destinations' willingness-to-pay for DCFC projects in AB 841 PCs, PG&E spoke with customers and EVSPs, and conducted a literature review. PG&E found

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36 $1,500 represents 10 percent of the BTM of workplace projects in DACs in EVCN, whereas $1,000 represents 10 percent of the BTM of MFH projects outside of DACs as referenced earlier in this section; this is due to the higher average cost per port for the workplace in DAC segment.

insufficient data to support a single willingness-to-pay dollar value. However, based on lessons learned from EV Fast Charge through direct feedback from EVSPs, PG&E knows that customers are indeed willing to pay a portion of DCFC costs in order to meet program cost thresholds. Thus, PG&E decided for simplicity of program offering to cover the same percentage of costs as for L2 workplaces and public destinations in AB 841 PCs, or 90 percent. PG&E then used EV Fast Charge cost estimates to calculate an upper level BTM cost target of $67,000, which is approximately 90 percent of the BTM portion of costs.[37] This incentive will be administered either as a rebate, in the case of customer-owned BTM, or as up-front cost coverage, in the case of utility-owned BTM.

As noted above, utility cost share levels are based on segment-specific customers' anticipated willingness-to-pay, PG&E's lessons learned from EVCN, customer and stakeholder conversations, and literature review. These cost share percentages and/or cost targets may be adjusted during the program to respond to evolving market conditions. If PG&E determines that these cost targets should be amended, PG&E will submit a Tier 2 AL to the CPUC detailing the market conditions that triggered the change, along with program data and any additional research to corroborate the change and a detailed process for implementing the change within the program.

D. Implementation of Customer-Owned and Utility-Owned Infrastructure Options

Customers may participate in EVC 2 via the following two pathways:

- Customer-Owned Pathway: PG&E will provide a rebate for the BTM make-ready infrastructure and, where applicable, the EVSE and an upfront rebate for five years' worth of O&M. The customer-owned pathway is available to customers in AB 841 PCs and those outside of AB 841 PCs, as described in this Chapter. If a customer selects this pathway, they will assume ownership and O&M responsibilities for the BTM make-ready infrastructure and EVSE;

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37 Due to limited data points of PG&E's existing EV Fast Charge Program, an analysis of actual average cost per port data was not possible. As an alternative, for EVC 2 DCFC cost targets, PG&E analyzed EV Fast Charge Program cost estimates for submitted project to get an estimated average cost per port.

- Utility-Owned Pathway: Only customers in AB 841 PCs can select the utility-owned pathway. Those outside of AB 841 PCs are not eligible for the utility-owned pathway. If a customer selects this pathway, they are opting to have PG&E design, construct, install and own all BTM make-ready infrastructure, and where applicable, the EVSE. Customers will be required to pay a participation payment according to the EVC 2 tiered incentive structure, based on customer segment. These customer incentives are considered Contributions in Aid of Construction and will be classified as such.

E. Program Data Collection, Evaluation, and Continuous Improvement

PG&E has been working with the other investor-owned utilities (IOU) to align cost tracking approaches and will continue to work with the other IOUs to further align program evaluation and reporting. PG&E will monitor and report EVC 2 program-wide data and metrics, including but not limited to:

1) Cost per port;
2) Percentage of spend in AB 841 PCs;
3) Percentage of BTM infrastructure owned by customers;
4) Percentage of customers using ALM;
5) At activation, number of site host customers that opt out of passing through time-of-use (TOU) rate signals and the alternative pricing signals they report using;
6) Usage data for sites that have elected to opt out of the default TOU pricing;
7) Utilization;
8) Quantity of sites and ports in each segment; and
9) Overall budget.

PG&E will file and serve its reports on to the service list for this proceeding. For consistency with the data collection and reporting requirements for the Charge Ready 2 program adopted in D.20-08-045, PG&E will use the data collection and reporting templates available on the CPUC website (http://www.cpuc.ca.gov/sb350te/) under the “reporting requirements” section of the page. As per D.21-07-028, the entirety of PG&E’s data collection and reporting will be consistent with those adopted in D.20-08-045.

Throughout the program lifecycle, PG&E will continue to use existing forums to report out on EVC 2 progress, like PG&E’s PAC, which meets quarterly with a

diverse set of TE stakeholders to review PG&E TE program progress, and quarterly and annual EVC 2 reports.

As noted in Chapter 2, PG&E will pursue partnership with other TE program administrators to explore how EVC 2 incentives can stack or complement with other TE program offerings. To achieve such partnership, PG&E will seek out and host conversations as part of and in addition to quarterly PAC meetings.

In support of these assessment efforts, PG&E is seeking 1 percent of the EVC 2 budget specifically for evaluation. After escalation, this comes to a total of $2.96 million. Evaluation efforts will be focused on collecting and reviewing data so that the Commission and stakeholders can evaluate the effectiveness of the EVC 2 program in relation to future light-duty charging infrastructure programs. Consistent with Southern California Edison Company's Charge Ready 2 and San Diego Gas & Electric Company's PYD2 Decisions, PG&E will consider conducting a competitive solicitation to select a neutral third-party evaluator to collect data on and evaluate the EVC 2 program. PG&E will consider contracting with this neutral third-party within one year of an adopted decision date to allow the evaluator to identify all data and information that must be collected throughout the program to ensure they can accurately assess progress toward program goals at the completion of EVC 2.

PG&E is committed to studying the data associated with the EVC 2 program, to continuously monitor program progress and adjust program elements as needed. This continuous improvement approach will ensure that PG&E is able to adjust to a rapidly changing market in the five-year deployment of EVC 2. PG&E designed a flexible program by proposing to file ALs when necessary to make adjustments based on future market or programmatic data.[38]

F. Conclusion

EVC 2 has been designed to serve MFH residents with and without access to on-site charging infrastructure. EVC 2 will support residential, light-duty EV

[38] For example: In Chapter 3, PG&E proposes to file a Tier 2 AL, pursuant to D.21-07-028, to eliminate the restriction on the utility-owned pathway, or to file a Tier 2 AL to determine how to best allocate chargers within EVC 2. In Chapter 4, PG&E proposes to file a Tier 2 AL to amend the cost share cost targets if it finds customers are unwilling to pay to participate in the program or to file a Tier 3 AL to amend its data collection process or targeted program goals.

adoption of MFH residents through infrastructure installation over five years for approximately 16,000 L2 and DCFC ports at new and existing MFH, existing workplaces, and existing public destinations. At least 50 percent of infrastructure funding will be allocated to AB 841 PCs. PG&E will offer rebates to customers who select a customer-ownership pathway. PG&E will, up front, cover a certain amount of project costs for customers in AB 841 PCs who select a utility-ownership pathway. The cost share for EVC 2 is founded on lessons learned from EVCN and EV Fast Charge, and additionally informed by participant and non-participant surveys, customer conversations, and industry reports to optimize utility support with customer willingness-to-pay.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 4

PROGRAM IMPLEMENTATION

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 4
PROGRAM IMPLEMENTATION

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 4
PROGRAM IMPLEMENTATION

A. Introduction

This chapter describes the two main components for Electric Vehicle Charge 2 (EVC 2) implementation: (1) the program application process and (2) the post-contracting design and construction process. The program application process includes meaningful Pacific Gas and Electric Company (PG&E) program administration support to maximize cost-effective site selection and prioritization of applications. The design and construction process includes two potential pathways: a customer-owned infrastructure pathway (wherein PG&E provides a rebate) and a utility-owned infrastructure pathway (wherein PG&E pays up to a certain amount of costs). PG&E is requesting $1.14 million to develop the Grid Visibility Tool (GVT) tool to help customers identify where there is sufficient hosting capacity for their electric vehicle (EV) projects. PG&E is also requesting the authority to modify Rule 29 to clarify that non-residential customer equipment in Assembly Bill (AB) 841 Prioritized Communities (PC) may be owned by PG&E under this program. PG&E is requesting $20.63 million in program administration expenses over the life of the program for internal labor needed to acquire and support site hosts during the customer acquisition process and for program implementation work done by the project delivery team and the program management office. The costs in this chapter are referenced in Chapter 7, Table 7-3.

PG&E will build on the lessons learned and expertise from reviewing over 1,000 applications over the past four years and administering the Electric Vehicle Charge Network (EVCN) program, EV Fast Charge, EV Fleet, and EV Schools and Parks Programs. As done successfully in these other programs, PG&E is able to provide access to charging infrastructure in otherwise hard-to-reach segments and geographies by utilizing a customer-centric approach while balancing program costs with strategic market interventions to drive EV charging adoption and utilization.

PG&E's program administration approach has matured over the past four years as PG&E has gained extensive transportation electrification (TE) program

management experience. This chapter will describe PG&E's fine-tuned approach, which consists of a detailed application and site host acquisition process that considers customer's onsite electrification needs, costs to electrify, and future potential charger usage as well as a program design and implementation model that seeks to minimize costs while maximizing customer value, as PG&E develops an electrification plan hand-in-hand with the site host, via multiple customer touchpoints. This approach positions PG&E well to cost-effectively intake, rank, and deliver projects for customers while achieving the EVC 2 objectives as defined in Chapter 1 and meeting the 32 compliance criteria required by Decision (D.) 21-07-028 (for an expedited application and equity elements for any TE application) and D.20-12-029 (for Vehicle-Grid-Innovation elements in any TE application).

B. Program Application Process

The EVC 2 application process is modeled after that of other PG&E EV programs, with the addition of allowing Electric Vehicle Service Providers (EVSP) to submit applications on behalf of customers as well. Once customers have applied, PG&E's EV Customer Onboarding Team is instrumental in the customer onboarding process, from application receival and review to the site eligibility and evaluation process. Having EV charging experts at PG&E serve as the primary customer point-of-contact through this process provides the customer a no-cost, unbiased, expert EV charging consultation. The onboarding framework ensures both that a variety of customer types with various levels of experience with electric construction projects can smoothly be onboarded, and that projects can be designed to meet the mutual goals of the site hosts, their customers, PG&E, and the public while increasing customer satisfaction and decreasing post-contract attrition and costs. The following sections detail the customer onboarding process.

Throughout EVC 2, PG&E will engage with active program participants to gauge customer experience and program satisfaction. In addition to surveying active program participants, PG&E will also survey ineligible program applicants when they are deemed ineligible and again six months after ineligibility to assess the types of support they require to proceed with EV infrastructure installation. This will enable PG&E to continuously improve the program application process, better understand customer barriers to EV infrastructure deployment, and

potentially design complimentary programs to address barriers that EVC 2 is not designed to address.

In summary, PG&E will provide the follow program administration activities to acquire and support site hosts, at a minimum:

- Consultation in determining onsite charging requirements;
- Explanation of program requirements to applicants and their decision makers throughout the entire process;
- Tools and resources for applicants to assist in their decision making; and
- Continuous improvement of processes, tools and resources to make for a better experience for subsequent applicants.

These program administration tasks are key to successful implementation. PG&E requests $20.6 million in program administration expenses over the life of the program to fund internal labor related to these efforts.

1. Site Eligibility

PG&E is now adept at establishing clear site eligibility criteria, having installed 4,827 ports in EVCN. Strategic questions on the application assist in initially vetting sites. As described in Chapter 3, EVC 2 will be available to Multifamily Housing (MFH) retrofits, MFH new construction, workplaces, and public destinations. Sites that meet multiple criteria can pick which path to apply under, like a workplace whose parking lot is used by both employees and shoppers. As detailed in Chapter 6, PG&E will rely on its internal Business Energy Solutions (BES) team, as well as a myriad of Marketing, Education and Outreach (ME&O) tactics to recruit potential eligible customers to apply to EVC 2. The BES team will work to:

- Identify and secure approximately 450 – 750 sites to host approximately 10,900 L2 ports and approximately 200 – 350 sites to host approximately 1,100 Direct Current Fast Charger (DCFC) ports on their property under PG&E's overall supervision and program terms and conditions;
- Recruit new construction sites eligible for rebates to incentivize the provision of up to 4,000 L2 charging ports at newly constructed MFH;
- Invest at least 50 percent of infrastructure funding in AB841 PCs; and
- Partner with customers to install charging station infrastructure that considers the customer's needs and program constraints.

2. Site Prioritization and Customer Acquisition

When potential site hosts have been identified via the ME&O process (described in more detail in Chapter 6), they will complete an online application that will be accessed through PG&E's website. The BES team will work with potential site hosts to help them to complete the online application and introduce them to the Customer Onboarding team who can support the customer once an application is completed. If a customer is working with an EVSP already, the EVSP may also assist the customer in applying for the program and support them through the process. The point of contact will always at least be with the customer and may also include the EVSP at the customer's request.

PG&E is also requesting $1.15 million to upgrade the EV Savings Calculator tool, available to all and specifically provided to customers during the customer acquisition phase of EVCN. The tool is a centralized place where customers can go to understand the total cost of ownership of an EV. The tool will be updated to respond to feedback we have received from customers, responding to their needs, and growing the tool to support customers during all parts of the customer journey.

PG&E will implement an application process meant to gather key data points from site hosts that enables all sites which apply for EVC 2 to be evaluated against a set of program evaluation criteria to prioritize the application. Sites may be evaluated by criteria such as, but not limited to: AB841 PC status, utilization potential, partnership potential, various cost criteria, community support or opposition, and/or certainty of project viability. PG&E will also engage with local entities, like Community Based Organizations and Community Choice Aggregators during the site selection process. PG&E will develop an EV Site Prioritization Tool for EVC 2 to efficiently enable the Customer Onboarding Team to assess the various measures that could impact site prioritization. PG&E will also prioritize sites to manage against overall cost targets and our process then proceeds to cost-effectively determine site eligibility in a specific sequence of progressively more rigorous stages (e.g., application, introductory call, desktop review, site walk, preliminary design, etc.). The Customer Onboarding Team's direct customer communication and guidance through

the process improves customer satisfaction while ensuring quality sites that meet all eligibility criteria, proceed to program participation. PG&E will aim to provide a streamlined customer journey with multiple touchpoints and few decision points for site hosts.

a. EV Site Prioritization Tool

PG&E will develop a site suitability screening tool to assess and prioritize potential charger locations based on their ability to support program objectives. This tool will be used internally to evaluate potential EVC 2 sites.

There is a range of data relevant to assessing the suitability of a site for charger deployment. The screening tool will leverage datasets like urban (e.g., building type, travel behavior), socio-demographic (e.g., household and community income, air quality), grid asset (e.g., capacity of local feeder), and EV market (e.g., existing public chargers) data to create a composite territory-wide assessment of charger suitability. The various data layers will be built into a web application with detailed mapping of PG&E's service territory and the underlying data of the tool will be organized and made accessible such that sites can be evaluated based on aggregate or individual suitability or community characteristics. PG&E will utilize the tool to review and assess EVC 2 applications to aid in the scoring of sites based on their EV charger suitability.

PG&E is requesting $1.73 million to build and deploy the EV Site Prioritization Tool as described above for the duration of EVC 2. All the costs in this section are referenced in Chapter 7, Table 7-3.

b. Site Prioritization to Meet Cost Targets

In addition to the various factors detailed above, PG&E will also prioritize sites to manage against overall cost targets. One specific mechanism that will be employed to manage against overall cost targets includes a tiered incentive policy. As detailed in Chapter 3, this tiered incentive structure will vary by charger type and customer segment. PG&E will utilize these tiered cost targets, as well as internal cost targets in the case of MFH in AB841 PCs where PG&E provides

100 percent cost coverage, to support go/no-go decisions for specific projects. Given PG&E's cost share methodology approach, in many cases, projects that would exceed PG&E's cost targets may still be able to proceed, as long as the site host is willing to pay any project costs that exceed the segment-specific cost target.

PG&E will monitor program, sector, and project costs, prioritize sites based on prior lessons learned, and build flexibility into the evaluation process such that new lessons learned can be applied as well. PG&E's process for assessing application viability and cost targets may evolve as needed and as program implementation data is collected. As noted in Chapter 3, if PG&E determines that these cost targets should be amended, PG&E will submit a Tier 2 Advice Letter (AL) to the California Public Utilities Commission (CPUC or Commission).

3. Preliminary Design and Rough Order of Magnitude Process

After completing initial site prioritization and PG&E confirms the site meets key eligibility criteria, through an introductory call with the customer, PG&E then conducts a "desktop review" to evaluate the site's suitability remotely. Once the desktop review is complete, an exploratory site walk will be conducted by design engineers and other key evaluators. The site walk[1] is intended to provide a hands-on opportunity to inspect site conditions and evaluate existing infrastructure equipment being considered for use in the project.

The products of the site walk are a preliminary design and a cost estimate using the rough order of magnitude (ROM) tool.[2] PG&E has included a budget of $3.71 million in funding for the Preliminary Design and ROM Process.

The preliminary design will consider the charger placement requirements, electrical demand and other reasonable site host accessibility

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1 All in-person interactions are done according to safety standards, including adherence to Coronavirus (COVID-19) safety protocol in effect.

2 The preliminary design and ROM tool were improved many times over during the implementation of EVCN under a continuous improvement model. Some improvements since the ROM tool was first developed include more articulate job estimating capabilities and material rates being updated regularly to reflect true market prices.

requests, including charger equipment and site specifications for accessible EV parking spaces at the time of placement.

The goal of developing a preliminary design and ROM tool for each site at this very early stage of a project is to make the most informed decision about project scope and cost, without the time and cost investment of a full construction design. Utilizing the continuously improved preliminary design and ROM tools allows for reduced attrition after this point in a project, which improves program cost-effectiveness. If a project is predicted to be significantly above the cost targets that PG&E has determined in the tiered incentive structure based on the preliminary design and ROM, the customer will be provided an option to add the costs to their portion of the cost sharing for the project.

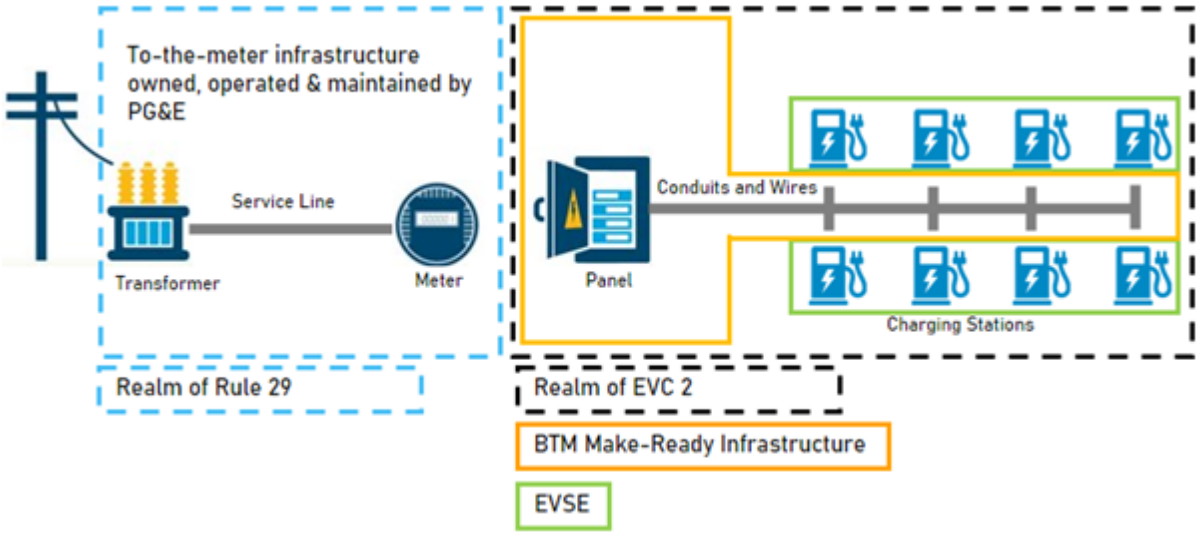
PG&E utilizes the preliminary design to align with the customer on project scope and the ROM to make contract issuance decisions. If a site is deemed viable for the program, a contract commensurate with the tiered cost sharing model will be offered to the program applicant and the customer's commitment and participation costs are made clear to them. There are no financial costs for the customer before this stage. After signing the program terms and conditions, customers commit to program requirements and become financially accountable for their commitments (such as utilizing the Electric Vehicle Supply Equipment (EVSE) for five years and covering all final costs in excess of PG&E's cost share).

C. Final Design and Construction of EV Supply Infrastructure

Upon acceptance into the program, and after the site host and PG&E have mutually entered into a contract for a particular site, PG&E will proceed with designing the to-the-meter (TTM) EV service connection and, if applicable, the customer-side make-ready infrastructure, also called behind-the-meter (BTM) make-ready infrastructure. A depiction of the proposed EVC 2 service connection and supply infrastructure can be seen in Figure 1, below. All TTM work will be performed under PG&E's Rule 29: EV Infrastructure Rule and is not included in this proposal, per Public Utilities Code Section 740.19. EVC 2 has been designed to complement Rule 29 as proposed in AL 6102-E and 6102-E-A and as approved in Resolution E-5167. If the Commission elects to introduce a customer contribution that would otherwise change the customer experience for

participation in EVC 2 in the future, PG&E requests the ability to submit a Tier 2 AL proposing changes to EVC 2. PG&E will manage all EV service connections in adherence with policies and procedures outlined in existing PG&E Electric Operations procedures.

FIGURE 4-1
EVC 2 INFRASTRUCTURE DEPICTION



The following are safety considerations that will be applied to each project in EVC 2, demonstrating PG&E's commitment to promote public safety and defining PG&E's protocols and practices related to the execution of EVC 2 program implementation.

All projects involve the following safety measures:

- Programmatic Safety Plan;
- COVID-19 Site Specific Safety Plan;
- Daily Tailboards (Job Safety Analysis);
- Worksite Sign In/Check In;
- Required Personal Protective Equipment;
- Adherence to Electric Operation Utility Standards; and
- Qualified Electrical Worker Inspector presence and validation or work procedures.

PG&E safety personnel, as well as vendors hired by PG&E to conduct safety compliance audits, will visit construction sites quarterly to monitor conformance with safety protocol which includes the wearing of proper personal

protective equipment. As described below, all contractors overseeing the infrastructure installation are required to be certified by the EV Infrastructure Training Program.

As described in Chapter 3, EVC 2 offers a customer-owned pathway, as well as a utility-owned pathway in AB841 PCs, for BTM make-ready infrastructure. The design and construction for each pathway is described below, followed by a description of how engineering and construction vendors will be selected.

1. Customer-Owned Pathway

Under Rule 29, PG&E will design and install the TTM EV service connection for all EVC 2 customers. As discussed in Chapter 3, customers outside of AB841 PCs are required, and customers within AB841 PCs have the option, to own the BTM make-ready infrastructure. Customers who own the BTM make-ready infrastructure installed as part of EVC 2 will be expected to perform the following work:

- All BTM work, which includes the site preparation and installation of components to enable the operation of EVSE from the meter cabinet to the intended location of the EVSE. Such components may include, but are not limited to; meter panel/switchgear, meter panel foundation pad, listed raceway (conduit), expanded electrical panel capacity, overcurrent protection, wire, and suitable termination points such as a junction box with a service loop or directly landed (i.e., Full Circuit);
- BTM work must be completed in compliance with applicable PG&E Greenbook,[3] National Electrical Code (NEC), Authority Having Jurisdiction (AHJ), and California Building code requirements;
- PG&E will work with the customer to ensure that their BTM work is completed first and is compatible with the TTM infrastructure to be installed;
- The customer will also be responsible for procurement, installation, activation, and commissioning of the EVSE; and
- PG&E will require that the customer install a charger brand from an eligible product list. The development of the eligible product list and recruitment of EVSPs is described below.

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[3] PG&E Electric and Gas Service Requirements (Greenbook); www.pge.com/greenbook.

PG&E will require that all EV charging infrastructure and equipment installations performed on behalf of the participating EVC 2 customers on the customer side of the electric meter, be installed by a contractor with the appropriate license classification, as determined by the Contractors' State License Board, and have at least one electrician on each crew, at any given time, who holds an EV Infrastructure Training Program certification. Installation of a charging port supplying 25 kilowatts or more to a vehicle must have at least 25 percent of the total electricians working on the crew for the project, at any given time, hold an EV Infrastructure Training Program certification as required by AB 841.[4]

2. Grid Visibility Tool

As customers make the decision to install EV charging infrastructure on site, an important consideration is the capacity of the local grid at the location at the time they are looking to install. Information on some of the factors that affect interconnection complexity and costs, such as hosting capacity and grid needs, are illustratively shown on PG&E's GVT map.[5] However, the GVT map has limited usability for customers who do not have an understanding of technical grid needs and lacks the ability to show available capacity relative to anticipated EV load at a site and to compare different sites to each other.

Some customers may have flexibility in where they site their EV infrastructure project and with information about the potential available hosting capacity for each site could select a location that best meets the customer's needs and allows for more streamlined interconnection by avoiding grid constrained areas. While PG&E will be able to provide design and engineering services to support customers who elect for the utility-owned pathway and can help provide insight into hosting capacity, customers who pursue a customer-owned pathway will have less visibility into PG&E grid conditions. The customers who pursue a customer-owned pathway will need to apply for service through the utility's traditional

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4 AB 841 Section 740.20(a).

5 https://www.pge.com/en_US/for-our-business-partners/distribution-resource-planning/distribution-resource-planning-data-portal.page?ctx=large-business.

interconnection process, and the timelines for grid interconnection can vary significantly based upon customer needs and potential grid capacity limitations to serve the proposed EV load at the customer's specific location at the time of application. All of this adds up to more time to be able to make informed decisions about where to invest resources into site development for EV charging infrastructure.

Therefore, PG&E is scoping a customer facing tool in EVC 2 that will build off the existing GVT map and develop a more user-friendly tool to support a customer's selection of specific sites for the EVC 2 program application. This tool will be available to EVC 2 applicants as well as all PG&E EV customers who seek interconnection through PG&E's Service Planning and Design organization. This tool will be hosted on the EVC 2 program page, PG&E EV landing page, and PG&E GVT map page, and will be linked to through the EV Savings Calculator.

The tool will utilize a map interface where users can input multiple addresses and compare the estimated hosting capacity at each site. Users will also be able to import information from PG&E's EV Savings Calculator or manually input information about their expected EV charging infrastructure demand based on their daily EV travel needs and the power level of the chargers installed and see whether there is sufficient available capacity to meet their expected EV infrastructure load. The grid capacity information in the map is directional and is updated monthly as PG&E's distribution system is dynamic and the customer will still need to work with PG&E directly to obtain information about interconnection. While illustrative, this tool can provide customers with useful information about a specific location's current and potentially forecasted hosting capacity compared to other potential sites and guide their decisions about infrastructure installation.

PG&E has included a budget of $1.14 million in funding to develop the Tool described above.

3. Utility-Owned Pathway

This section describes PG&E's plan to manage the final design and construction of the BTM EV supply infrastructure for EVC 2 projects in AB841 PCs that have elected the utility-owned pathway.

When PG&E owns and installs the BTM, the EV service connection and supply infrastructure typically include the following PG&E activities:

- Site preparation and installation of components to enable the operation of the EVSE from the meter cabinet to the intended location of the EVSE. Such components may include, but are not limited to; switchgear, meter foundation pad, listed raceway (conduit), expanded electrical panel capacity, overcurrent protection, wire, and suitable termination points such as a junction box with a service loop or directly landed (i.e., Full Circuit).
- BTM work must be completed in compliance with applicable PG&E Greenbook, NEC, AHJ, and California Building code requirements.
- BTM construction work will be performed by union represented labor.
- Where applicable,[6] PG&E will procure, install, activate, and commission the EVSE as a part of the supply infrastructure work.
- PG&E will require all EVSE installations performed on behalf of PG&E to be done by International Brotherhood of Electrical Workers signatory contractors certified through the Electric Vehicle Infrastructure Training Program.
- PG&E will award separate materials and services contracts to service providers to install EVSEs at applicable sites.
- The EVSE physical equipment will be procured through a competitive bidding and contracting process. One or more contracts will be awarded to the vendor or vendors who best meet PG&E's technical and commercial requirements for the EVSEs.

Under Rule 29, PG&E will design and install the TTM EV service connection for all EVC 2 customers. However, Rule 29 specifies that an applicant "shall be solely responsible to plan, design, install, own, maintain, and operate facilities and equipment beyond the Service Delivery Point."[7] PG&E is requesting in this application authorization to modify Rule 29, section E.1.b. to provide an exception for non-residential Applicants

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6 MFH site hosts in AB841 PCs who elect for the utility-ownership option will also have their EVSE owned by the utility, as described in Chapter 3.

7 AL regarding Rule 29, Section E.1.b. (February 26, 2021) Available online at: https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_6102-E.pdf.

receiving PG&E-owned chargers through the EVC 2 program (that would otherwise be Rule 29-eligible).

4. Design Vendor and Construction Vendor Selection

PG&E will select engineering design services partners to produce both preliminary and final engineering designs. PG&E will issue Request for Proposals soliciting Engineering, Procurement, and Construction (EPC) service partners. Successful bidders of the solicitation will have job quality measured on a regular basis, including on safety, quality and cost measures reported out on monthly through a performance metrics review process. EPC service partners, as a part of the general conditions of the Master Service Agreement, will be held to wage and benefit standards such as accounting for basic hourly wages, payroll taxes, and employer benefit payments for health and welfare, pensions, vacations/holidays, supplemental dues, and training, plus any other benefits or payments required by law or applicable collective bargaining agreements in their basic labor rates.

Procurement of most materials, equipment, construction permits, and local zoning approvals associated with the EV infrastructure installation will be the responsibility of the selected EPC services partners. PG&E may choose to award separate materials and services contracts or award to service providers. PG&E will monitor material and permit acquisition by the service partners and will leverage competitive procurement processes to ensure reasonable costs of materials purchased.

5. Charging Equipment Selection

PG&E will specify technical requirements for charger equipment procured for EVC 2. Each charger will be required to meet varied environmental operating conditions that are present across PG&E's service area including extreme temperatures, relative humidity, varying altitude, and enclosures. Robust outdoor-rated enclosures and component requirements will ensure charger reliability and enhance the electric fueling experience. Charger enclosures may be available as wall mount units or free-standing pedestals in order to meet varied site requirements and characteristics. EVSE will adhere to safety requirements such as outdoor-mounted EVSE

rated to be installed for outdoor use, bollard equipment protection installed where appropriate as defined by utility design standards, AHJ requirements, etc.

Connector specifications for both L2 and DCFC stations are based on commercially available plug-in EVs and are intended to ensure the maximum compatibility options for EV drivers. Chargers will be specified to use industry standard connectors and specifications such as the Society of Automotive Engineers (SAE) J1772 for L2 chargers and CHAdeMO and SAE Combo Connectors for DCFCs. PG&E will assess the current state of the market when EVC 2 is launched to determine which standards are applicable. For those EV models not compatible with the proposed connectors, after-market or original equipment manufacturer adaptors may be available to enable compatibility, but they are outside the immediate scope of the EVC 2 program.

PG&E will conduct Request for Qualifications (RFQ) or rely on a third party to establish a list of eligible EVSP vendors for customers to select. Hardware, software, and network management requirements will mirror prior program RFQ requirements[8] and ensure that all vendors meet minimum standards consistent with PG&E's existing TE programs. PG&E will continue to alert the vendor community to program requirements and qualification opportunities through program websites, collateral, Program Advisory Councils, and PG&E Sourcing webpages when applicable. PG&E has previously approved over 30 EV charging vendors for EV infrastructure programs and has a good relationship with the vendor community and key market participants.

D. Operations and Maintenance

BTM infrastructure that is owned by PG&E will be operated and maintained using established PG&E Operations and Maintenance (O&M) processes and procedures. PG&E will conduct periodic inspections of the BTM infrastructure installed and owned by PG&E in EVC 2 and address service or maintenance needs, such as replacement or repair of damaged components. Once EVC 2

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8 PG&E EV Charge Network Quarterly Report Q2 2018, p. 7; Available online at https://www.pge.com/pge_global/common/pdfs/solar-and-vehicles/your-options/clean-vehicles/charging-stations/program-participants/PGE_EV-REPORT_Q2-2018.pdf.

deployment is complete, EV supply infrastructure, O&M activities, and annualized costs will be included in PG&E's General Rate Case (GRC), as detailed in Chapters 7 and 8.[9]

Each EVSE owned by PG&E will include network equipment that will communicate with a centralized cloud-based network service. PG&E follows cybersecurity best practices for all TE equipment, such as those identified in California Energy Systems for the 21st Century and the National Institute of Standards and Technology's Framework for Improving Critical Infrastructure Cybersecurity.

EVSE that is owned by PG&E will be maintained after the activation and commissioning is complete. All network-related O&M will be performed by selected EVSPs. The network operator will also provide robust customer service capability for troubleshooting and maintenance prioritization. PG&E will select vendors to provide network operations services and maintenance to cover all the associated servicing of network equipment, transactions, data collection and reporting, and customer service functions as necessary. All hardware-related O&M activities will be coordinated through the EV Project Delivery team for the duration of EVC 2. Once EVC 2 deployment is complete, the EV charger equipment O&M activities and annualized costs will be included in PG&E's GRC, as detailed in Chapter 7 Cost Recovery.

E. Additional Costs Associated with Program Implementation

Cancelled Projects As mentioned earlier in this Chapter, PG&E's program application strategy will not only drive participation in EVC 2 but also increase PG&E's ability to cost-effectively deliver projects by reducing attrition and providing necessary data to evaluate potential sites against EVC 2 objectives and program success criteria. Inevitably, there will be instances where program participants may fall out of the program and result in cancelled projects. Based on lessons learned from the EVCN program, PG&E has included a budget of $1.1 million in funding for these scenarios.

Information Technology (IT) With a high number of anticipated applicants and program participants, PG&E has included a budget of $4.26 million in

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9 Specifically, PG&E plans to account for capital and expense costs in the proposed new subaccount of the Transportation Electrification Balancing Account through 2030. Beginning in 2031, amounts will be included in the 2031 GRC request.

funding to enhance and maintain its IT platforms. This will include, but not be limited to, iterating on our core IT platforms, expanding systems to capture program-specific metrics, enhancing current IT platforms to accommodate increased volume from new program participants, operating and maintaining systems, creating file back-ups and data storage, enabling reports and analytics, IT administrative support, and user licenses.

Site Host Data Application Programming Interface (API) To enable the collection of EVC 2 charging session data from EVSPs, PGE has included a budget of a $1.12 million in funding to enhance its Site Host Data API. The API will enable PG&E to gather utilization data from site host charging stations.

Program Survey To support continuous improvements through collection of lessons learned from EVC 2, and especially to inform post-energization ME&O in the later years of the program, PG&E has included a budget of $150,000 in funding for a program survey. PG&E will develop and administer this survey to program participants and those who applied to but did not have projects installed under the program on a rolling basis as their projects are completed or cancelled. Potential topics may include experience with PG&E's project delivery team and site hosts' plans for engaging with EV drivers, among others.

F. Conclusion

The targeted program administration and application process, scoping of EV service connections and supply equipment and ongoing O&M processes described in this chapter are critical to the success of EVC 2. PG&E's program application strategy will not only drive participation in EVC 2 but also increase PG&E's ability to cost-effectively deliver projects by reducing attrition and providing necessary data to evaluate potential sites against EVC 2 objectives and program success criteria. PG&E's deep experience designing and installing infrastructure will enable PG&E to safely and efficiently install or rebate BTM make-ready infrastructure and, where applicable, EVSE. To take advantage of PG&E's progression down the learning curve and minimize the gap between utility programs, PG&E is looking forward to working with the CPUC and key stakeholders to get EVC 2 approved on an expedited timeline, per D.21-07-028. Finally, PG&E's ongoing O&M approach will ensure ongoing customer support where PG&E owns assets.

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CHAPTER 5

VEHICLE-GRID INTEGRATION APPROACH

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CHAPTER 5
VEHICLE-GRID INTEGRATION APPROACH

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 5
VEHICLE-GRID INTEGRATION APPROACH

A. Introduction

Pacific Gas and Electric Company (PG&E) will incorporate a holistic portfolio of Vehicle-Grid Integration (VGI) customer offerings in Electric Vehicle Charge 2 (EVC 2). VGI is a set of applications that aim to integrate EVs into the grid by adjusting the time, rate, or location of charging/discharging to maximize value for the electrical grid and our customers.[1] VGI includes one-directional (V1G) and bidirectional (V2G) charging and has the potential to reduce energy demand and increase energy supply, reduce customer electricity bills, and defer costly grid upgrades. Other benefits that VGI can provide include resiliency, reliability, energy services, and additional customer revenue. If properly leveraged, VGI may lower the total cost of ownership of electric vehicles (EV) and thereby, accelerate EV adoption.

This chapter details PG&E's approach to VGI in EVC 2. In designing EVC 2 VGI elements, PG&E considered what approaches and technologies are available and effective today, including Automated Load Management (ALM), time-of-use (TOU) rates, and existing or near-future demand response (DR) programs. PG&E also designed the EVC 2 VGI approach to consider rapidly evolving approaches, technologies, and business models, to support bidirectional charging applications, some of which PG&E is proposing to test through its pending VGI Pilots Advice Letter (AL)[2] submission pursuant to Decision (D.) 20-12-029.

Additionally, D.20-12-029 requires PG&E to adhere to several VGI-related requirements in any future transportation electrification applications, which are summarized in the program application and addressed throughout this prepared testimony, including in this chapter.

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1 California Joint Agencies VGI Working Group Report (June 2020), available at: GW_VehicleGrid-Integration-Working-Group.pdf (gridworks.org) (Accessed October 15, 2021).

2 AL 6952-E (July 15, 2021).

B. Automated Load Management

ALM is used to share available electrical capacity among charging stations to avoid the installation cost of additional electrical capacity. PG&E will build off the successful use of ALM in Electric Vehicle Charge Network (EVCN), whereby costs were reduced and physical design constraints were overcome at customer sites that were deemed a good fit to use this technology. PG&E will use a standard evaluation criteria (Attachment A to this chapter) to make this determination.

PG&E will include site load management considerations in EVC 2 by assessing ALM potential during preliminary site design, as follows:

1) Upon application to the program, PG&E will request from the site host what their expected charging requirements are (e.g., how many vehicles they expect to serve, how long vehicles typically dwell at the location and over what hours per day, and how much of a charge vehicles are expected to require, etc.).
2) Based on these charging requirements, PG&E will utilize a standard evaluation criteria (Attachment A to this chapter) to determine and recommend a level of ALM that could best meet site host charging needs while lowering costs.
3) If ALM evaluation results in cost savings, PG&E will present a proposal with ALM options to the customer for sign-off.
4) If sign-off is received, PG&E will execute installation with ALM; if costs per port come in below the program cost thresholds, savings will be shared with the host customer via the cost share methodology and tiered incentive structure of EVC 2.
5) A customer can decline to use ALM, but may then be required to pay the difference if the necessary electrical capacity infrastructure work exceeds cost targets.

C. EVC 2 Rates and Pricing

Like EVCN, EVC 2 will include the requirement that all separately metered chargers installed under the program are required to take utility service on TOU rates. TOU rates use price signals to incent customers to limit charging during peak periods and instead charge when the grid has excess capacity and/or

when low-cost renewable electricity is plentiful, thus advancing grid reliability and renewable integration goals.

In EVC 2, PG&E will default customers onto the Business Electric Vehicle (BEV) TOU rate, which PG&E rolled out in 2020. PG&E offers two BEV rate plans for business customers with on-site EV charging. These rates are specifically designed for customers with separately metered EV charging at locations such as multi-family housing and workplaces, as well as sites with fleets and fast charging stations. The BEV rates operate with a subscription-style structure, similar to a cell phone data plan; the rates have simpler TOU periods than existing commercial rates and on average offer an eGallon equivalent price of $1.83.[3] EVC 2 customers can opt-out of the BEV rate, as long as they select another applicable rate with TOU pricing.

PG&E also proposed to the California Public Utilities Commission (CPUC or Commission) to pilot a Commercial EV Day Ahead Hourly Real-Time Price (DAHRTP) Pilot Rate[4] that, if approved, will provide business customers with an optional rate with a similar subscription structure to the BEV and varying hourly volumetric pricing based on California Independent System Operator day-ahead pricing. If the DAHRTP is approved and the pilot timing is aligned with EVC 2 implementation, EVC 2 customers could also select this rate option.

As in EVCN, PG&E will allow site hosts to either create their own custom pricing for EV charging ("Custom Pricing Plan"), or simply pass through PG&E's rates ("Pass-through Pricing Plan"). To encourage load management and minimize EVC 2 grid impacts, PG&E will strongly encourage site hosts to pass through PG&E's TOU signals. PG&E further details Marketing, Education and Outreach (ME&O) tactics to encourage pass-through pricing of TOU rates in Chapter 6. If site hosts choose not to pass PG&E's TOU signals at EVC 2 infrastructure to EV drivers, PG&E will require the site host to submit a load management plan. If a site host agrees to implement PG&E's ALM design, as detailed in Section B, this will qualify as a load management plan.

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3 Business Electric Vehicle (EV) rate plans (pge.com). (Accessed October 15, 2021).

4 https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M349/K267/349267730.PDF. (Accessed October 15, 2021).

Finally, PG&E continues to explore ways to ensure equitable electric fuel pricing at all EVC 2 ports, both L2 and DCFC. As the Draft Transportation Electrification Framework notes,

> If customers lack access to private, private but shared, or dedicated workplace charging, they may have to rely solely on public charging stations," and, "[DCFC] charging rates are subject to the EVSPs or site hosts operating them and tend to be more expensive due to higher capital and operating costs.[5]

PG&E is considering several ways to encourage equitable pricing, particularly at DCFC ports in Assembly Bill 841 Prioritized Communities (AB 841 PCs), including but not limited to: targeted ME&O to educate EV drivers on peak and off-peak pricing; contractual requirements with Electric Vehicle Service Providers (EVSP) to limit prices during off-peak hours or location-based pricing based on Area Median Income, and complimentary programs to EVC 2 that can help reduce the price of charging for those customers most in need. PG&E will engage with key stakeholders to further explore these possibilities and work with the Program Advisory Council (PAC) during the launch of EVC 2 to address potential pricing inequity. PG&E will also work to align with CPUC Code Section 740.12 so customers have the opportunity to access electricity as a fuel at a price that is less costly than gasoline.

D. Demand Response

PG&E will perform ME&O to help EVC 2 customers understand available DR program enrollment options. In particular, PG&E will share Automated Demand Response (ADR) Program information with qualifying EVC 2 customers. ADR can provide incentives up to $200/kilowatt of load shed for installation of EV hardware or software that enables energy management and DR.[6] ADR requires enrollment in an eligible DR program, which will provide ongoing incentives for responding to acute DR events. These incentives are specific to the customer, its ability to respond, and the DR program selected.

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5 CPUC, Draft Transportation Electrification Framework, February 2020, p. 52.

6 Automated Demand Response Program – PGE – ADR. (Accessed October 15, 2021).

E. Bidirectional Charging

Given the current VGI market landscape as of the time of this application (October 2021), most of PG&E's EVC 2 VGI program elements are considered V1G. However, PG&E proposes flexibility to incorporate vehicle-to-anything elements into EVC 2 during the course of the program. PG&E is closely following the continued market maturation of bidirectional charging technologies to enable new VGI use cases[7] and is actively exploring V2X applications, such as EV backup power for Public Safety Power Shutoff mitigation (V2H, V2B) and EV export for grid services (V2G) through its recent VGI Pilots AL[8] submission pursuant to D.20-12-029.

Unidirectional Electric VSEs can facilitate V1G services, but they are not capable of enabling onsite backup power (V2B) for customers due to their one-way power flow architecture. Bidirectional Electric Vehicle Supply Equipment (EVSE) could theoretically be installed to allow an EV to provide onsite backup power to a co-located or adjoining facility or building through the use of utility-grade submeters as provided for in the Commission's approval of Rule 29. However, prior to implementation of this approach to allow for onsite backup power functionality, PG&E will first need to, at a minimum, update customer rate analysis tools as well as billing systems to send correct usage to Third-Party Billing for Direct Access and Community Choice Aggregation customers. Pending such changes, or, alternatively, approval and implementation of a non-residential submetering protocol (which could then enable PG&E to gather charge session data without requiring a separate meter), and in consultation with PG&E engineers, PG&E may consider enabling this functionality of onsite backup power for EVC 2 customers at some point during the program.

In addition, product and vendor options in the bidirectional EVSE market are small in comparison to the unidirectional EVSE market. Despite its nascency,

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7 California Joint Agencies VGI Working Group Report (June 2020) lists and ranks VGI use cases, available at: GW_VehicleGrid-Integration-Working-Group.pdf (gridworks.org) (Accessed October 15, 2021).

8 AL 6952-E (July 15, 2021).

there still exist vendors supplying Underwriters Laboratories (UL)-certified[9] and Electric Rule 21-compliant bidirectional Direct Current EVSEs. Customers who are interested in owning bidirectional equipment or having PG&E-owned bidirectional equipment at their site and who are willing to export energy to the grid may be eligible to participate in EVC 2 if it is technically feasible, if the equipment meets all necessary certifications and is Rule 21 compliant, and if they are approved to interconnect per PG&E's interconnection evaluation process.[10]

PG&E will continue to monitor advancements in bidirectional charging between the time of this program application and program launch, and may consult with the PAC to determine if any adjustments should be made to PG&E's VGI customer offerings. PG&E will file a Tier 1 AL to notify the Commission of any program modifications to incorporate V2X capabilities in EVC 2 during the program.

F. Conclusion

PG&E recognizes that the VGI market is constantly developing and evolving, and therefore has proposed areas of program flexibility in this application in order to account for future VGI market changes occurring in the time between the application filing date and program launch or over the course of the five-year program. Existing VGI strategies available to customers today of which PG&E will encourage adoption in EVC 2 include ALM, TOU rates, and ADR. Areas that will require revisitation prior to and during program launch include bidirectional EVSE adoption and enablement of bidirectional use cases, such as onsite backup power and EV export for grid services (V2G).

VGI can provide many benefits to customers and the grid. Among them include the minimization of ratepayer and program participant costs, the

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9 UL is an Occupational Safety and Health Administration-accredited Nationally Recognized Testing Laboratory that tests products, including EV charging stations. In compliance with California's interconnection regulation, Rule 21, bidirectional Direct Current chargers need to be UL 1741SA certified in order receive approval for utility electrical grid interconnection.

10 PG&E's Interconnection Portal: Sign In (yourprojects-pge.com). Customers interested in exporting energy to the grid would need to apply through PG&E's interconnection portal. The Interconnection team would evaluate their site and approve or decline the interconnection application. Costs associated with the evaluation would be assumed by the customer.

reduction of Greenhouse Gas emissions, and, indirectly, the acceleration of EV adoption. PG&E's approach to leveraging VGI for ratepayer and program participant benefits, described in this chapter, is key to helping California achieve its climate policy goals. PG&E will leverage years of experience managing customer programs involving VGI (all V1G to-date) and the technical expertise gained through active participation in many industry working groups (i.e., 2020 VGI Working Group, V2G Technical Advisory Board) to successfully execute VGI strategies in EVC 2.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 5

ATTACHMENT A

AUTOMATED LOAD MANAGEMENT CRITERIA

Chapter 5 Attachment

Automated Load Management Criteria

Automated Load Management (ALM) is used to share available electrical capacity among charging stations to avoid the cost of installing additional electrical capacity at a project site.

The Load Management Level, expressed as percentage, is a ratio of the electrical capacity compared to installed charger capacity. A location with four charging stations and electrical capacity for two charging stations at rated power would be considered a 50% Load Management Level.

As an example, the following table demonstrates the approximate charge time for a L2 charger (rated 7.2 kW) to achieve a 50-mile charge based on the Load Management Level when all chargers are in use. To achieve a 100-mile charge, the charge times would be doubled.

Table 1. L2 (7.2 kW) Charge Time for 50 Miles at Different Load Management Levels

Load Management Level	Charge Time
Unrestricted	2 h
90%	2h 15 min
50%	4 h
25%	8 h

The suitability of ALM technology and the associated Load Management Level is site specific and depends on both the local electrical capacity and the charging requirements of the EV drivers at that location (energy and charge time requirements).

Following are the proposed evaluation procedure and criteria for ALM in the EVC 2:

1. The following information will be requested on the Site Host Application to the Program.

Please provide the average "dwell time" for vehicles parked at this location:

☐ < 2 Hours ☐ 3 Hours ☐ 4 Hours ☐ 6 Hours ☐ 8 Hours ☐ 10+ Hours ☐ Varies (please describe)

<Please provide further details on parking lot use and typical vehicle dwell time>

Please provide the average mileage needed per charge session for vehicles parked at this location:

☐ 10 miles ☐ 25 miles ☐ 50 miles ☐ 75 miles ☐ 100+ Miles ☐ Varies (please describe)

<Please provide further details on expected charge mileage for a single charge>

2. Using information from the application, a Minimum Charging Demand requirement will be determined during application review using the following equation:

   Average mileage per charge / 3.5 miles per kWh / dwell time (hrs) = Min Charging Demand (kW)

If a customer selects 6-hour dwell time and a 50-mile charge requirement, the Min Charging Demand would be 2.4 kW or 33% Load Management Level for a 7.2 kW rated EVSE.

Note: Customer outreach will be performed if any clarification is needed on the application. For example, most MUD have expected dwell time on the order of 10+. hours, if a Site Host selected < 2 hours dwell time Customer outreach would be performed prior to design to ensure the dwell time is reflective of the true customer needs. For all customers, ALM will be discussed during initial phone screen and the dwell time and charging requirements will be confirmed.

3. During the application screening phase, PG&E engineering determines the electrical capacity based on the existing electrical infrastructure and investments required to serve a specified load. The lesser value of the calculated Min Charging Demand and the Charger Rated Capacity (e.g. 7.2 kW) will be used as the design load.

   For certain opportunistic scenarios, if physical constraints or significant cost can be avoided through use of even lower charging demand PG&E will present this as an Opportunistic ALM scenario for customer review.

   The following table describes the application criteria for Minimum Charging Demand & Opportunistic ALM for key design scope impacted by ALM:

Scope Element	**Definition**	**Minimum Charge Rate**	**Opportunistic ALM**
Conduit and Conductor to Charger	Feeder circuit between the panel and charger pedestal. Note: Design of this scope is impacted most by ALM when pedestal level ALM is utilized where-by one circuit is run to support two charging ports.	Pedestal level ALM will only be considered for projects where the Load Management Level is <50%. For all projects, circuits and conduits will be sized based on Minimum Charging Demand.	In large (>20 port) indoor garages identify any opportunity for significant cost reduction by minimizing the quantity of above ground conduit.
Sub Panel and Step-Down Transformer	Power distribution equipment behind the meter, only applicable on large projects that utilize sub panels and step-down tx. Note: Design is only impacted when ALM is	Panel level ALM will be considered for large project that utilize sub panels. For all projects, sub panels and transformers will be sized based on	In large (>20 port) indoor garages identify any opportunity for cost or space savings by minimizing sub panel size.

	implemented at the sub panel level.	Minimum Charging Demand.	
Meter Panel & Service	Main meter panel and associated supply equipment including disconnects, and incoming service conductors/ conduit Note: Meter panels come in discrete sizes e.g. 400 A, 600 A, 800 A, 1000 A, 1200 A, 1600 A, 2000 A.	Load used for sizing the meter panel and service will be based on Minimum Charging Demand.	Identify if the calculated meter panel size is slightly over the nearest discrete size and a smaller panel could be used with add'l load management. Identify if there is a physical constraint and the meter panel or supply would need to be a smaller size for project feasibility.
Service Transformer (TX)	New meters are served from a service tx secondary. The project will use either an existing tx, replacement or new tx. Existing tx capacity is site specific and depends on historic loading. Note: Tx come in discrete sizes e.g. 150 kVA, 300 kVA, 750 kVA, 1000 kVA, 1500 kVA.	Load used in evaluation of existing tx capacity and/or sizing a new tx will be based on the Minimum Charging Demand.	Identify if the calculated tx load is over the existing tx capacity (or nearest discrete new tx size) and could be used with add'l load management. Identify if there is a physical constraint and the tx would need to remain on the existing tx for project feasibility.
Service / Network Upgrades	PG&E system upgrades required for new load. Site specific scope may include junction box, interrupter, re-route of existing facilities. For very large projects on constrained lines, may be dependencies w/ dx capacity projects.	Load used in evaluation of system impacts will be based on the Minimum Charging Demand.	Identify if any known system constraints or project upgrades can be avoided with add'l load management.

4. If any Opportunistic ALM scenarios are identified during the application screening phase, the minimum charging demand impacts will be presented for customer review and approval.

5. For all ALM, PG&E will implement ALM only when the customer agrees, and a formal agreement is signed.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 6

MARKETING, EDUCATION, OUTREACH AND EQUITY INITIATIVES

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CHAPTER 6
MARKETING, EDUCATION, OUTREACH AND EQUITY INITIATIVES

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 6
MARKETING, EDUCATION, OUTREACH AND EQUITY INITIATIVES

A. Introduction

This chapter describes the Marketing, Education, and Outreach (ME&O) plan and Equity Initiatives in Electric Vehicle Charge 2 (EVC 2). The ME&O Plan will (1) encourage prospective customers to apply to be site hosts in EVC 2 and (2) provide education materials to site hosts to help encourage electric vehicle (EV) adoption. The ME&O elements detailed in this section precede the program implementation and program application process described in Chapter 4, "Program Implementation".

The Equity Initiatives described in this chapter are based on Pacific Gas and Electric Company's (PG&E) engagement with eight Community-Based Organizations (CBO) and Tribal Communities throughout the development of EVC 2. In consultation with these organizations, PG&E designed EVC 2 Equity Initiatives to address the unique needs of Assembly Bill (AB) 841 Prioritized Communities (PC) (AB 841 PCs), including direct and ongoing engagement with customers and CBOs during the application and construction process, as well as helping customers learn about various ways to lower their total cost of ownership when switching to an EV.

PG&E requests $9.61 million in expense costs for its ME&O budget and $4.48 million in expense costs for its Equity Initiative budget. This amounts to approximately seven percent of the overall program's request for funding in the same time period. Tables 6-3 and 6-4 in the sections below outline the forecasted costs in more detail.

B. Marketing, Education, and Outreach Plan [Witness: Bruce Gollicker]

1. Lessons Learned From EVCN That Inform the EVC 2 ME&O Plan

PG&E's Electric Vehicle Charge Network (EVCN) program results and outreach strategy inform PG&E's outreach plan for EVC 2. These key learnings are discussed in Chapter 2 Deployment Strategy, and below.

a. Demand Exists Within AB 841 PCs

As noted in Chapter 2, EVCN had strong customer demand, achieving over 38 percent of total sites in Disadvantaged Communities (DAC) and over 37 percent of sites in MFH. That said, the program was oversubscribed and had a waitlist with 35 percent of sites located within DACs and 25 percent within MFH. This data indicates a potential for continued program demand among AB 841 PCs in EVC 2. In addition, EVC 2 proposes to expand eligible communities from EVCN's California Environmental Protection Agency (CalEPA)-identified DACs to also include the customer segments identified and prioritized for investment in AB 841.[1] Prioritization of these segments in AB 841 further indicates unmet demand.

b. Engagement Plans Specific to the Target Audience

Interest in EVCN was strong within municipalities and local governments. However, developing local Zero Emissions Vehicle readiness plans, selecting sites, and managing long budgetary timelines delayed this target audience from completing program applications before the funding was fully subscribed. In contrast, workplaces comprised two thirds of all EVCN applications. In EVC 2, PG&E plans to monitor application results by segment. PG&E will adjust outreach weight by segment, when needed, to help balance applications received by audience type and hit program targets.

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[1] AB 841 (Ting – 2020) establishes criteria for future transportation electrification programs to serve "underserved communities." AB 841 defines "underserved communities" as inclusive of any of the following: Is a "disadvantaged community" as defined by subdivision (g) of Section 75005 of the Public Resources Code; Is included within the definition of "low-income communities" as defined by paragraph (2) of subdivision (d) of Section 39713 of Health and Safety Code; Is within an area identified as among the most disadvantaged 25 percent in the state according to the CalEPA and based on the most recent California Communities Environmental Health Screening Tool, also known as CalEnviroScreen; Is a community in which at least 75 percent of public school students in the project area are eligible to receive free or reduced-price meals under the National School Lunch Program; Is a community located on lands belonging to a federally recognized California Indian tribe. PG&E refers to the communities identified in AB 841 as AB 841 prioritized communities, "AB 841 PCs," rather than "underserved communities." PG&E believes this change in nomenclature is important as it takes away any potential negative stigma associated with these communities and instead highlights these communities in a positive light as areas of priority.

In addition, PG&E will tailor engagement strategies based on the customer segment need. For instance, PG&E plans to engage with municipalities and local communities earlier than other segments in EVC 2 through PG&E's Public Affairs relationships and targeted direct-to-customer outreach (i.e., e-mail and direct mail). This proactive engagement will enable these customers to plan, select, and mobilize in a timely fashion. Based on conversations with municipal and regional customers, PG&E also anticipates the proposed expanded scope and longer timeline for EVC 2 will align better with their timelines compared to EVCN. As another example, PG&E will perform specific outreach to encourage customers to apply for EVC 2's new construction rebate, which is a new program offering compared to EVCN.

c. One on One Relationship Management Is Effective

Customers take many considerations into account before committing to EV infrastructure. To address those considerations, PG&E customer relationship managers and customers engage in in-depth phone conversations to move a customer's specific business needs forward. The majority of EVCN applications were driven by PG&E Business Energy Solutions (BES) customer relationship managers, accounting for almost 60 percent of the total applications. As a result, developing strong customer relationships and high touch (1-on-1) communications will continue to be used in EVC 2. Additionally, EVC 2 will expand this customer acquisition approach by utilizing CBOs to engage in informative conversations with potential site hosts.

2. ME&O Objectives

EVC 2's ME&O Plan will drive customer awareness and engagement to build a customer funnel to support EVC 2's port and site goals (listed below). Once customers have applied to EVC 2, PG&E will review applications and prioritize sites as described in Chapter 4.

- Retrofits at MFH: Approximately 2,400 ports or ~80-120 sites;

- New Construction MFH: Distribute up to 4,000 new construction rebates to encourage developers to go beyond CALgreen EV Capable mandates;
- Workplaces and Public Destinations (L2): Approximately 8,500 ports or ~370-630 sites;
- Public Destinations (Direct Current Fast Charging (DCFC)): Approximately 1,100 ports, or ~250-350 sites;

The ME&O Plan will also aim to support the following items:

- 50 percent of program funding supports EV charging infrastructure within AB 841 PCs;
- Educate MFH residents in lower utilized site locations using tools and resources to consider EV adoption; and
- At least 25 percent of the ME&O budget is dedicated to CBOs.

3. Outreach Strategies

EVC 2 ME&O will leverage successful strategies from EVCN to be cost effective. PG&E will use customer attributes from EVCN waitlisted customers to inform initial audience weighting and segment targeting in EVC 2. Outreach by audience segments may shift over the course of the program, based on in market results and applications received. Revising existing outreach materials from EVCN instead of creating new materials will provide for some cost efficiencies and help PG&E get to market quickly and achieve results.

Outreach types will vary. PG&E will use a mix of low-touch (one-to-many where PG&E is sending outreach to many customers all at once) and high touch (one-to-one where PG&E is communicating with one customer at a time) methods to maximize effectiveness. High-touch outreach methods, such as one-on-one phone calls with customers, will use key internal and external partnerships to capitalize on existing relationships with customers as executed in EVCN.

A large focus of PG&E's EVC 2 effort will be driving potential enrollments within AB 841 PCs. While EV adoption is nascent within these communities, one way to help increase EV penetration rates is to test targeting AB 841 PCs adjacent to communities with high EV penetration rates. This approach is based on the documented "neighbor effect" in the

solar rooftop industry, where influence of your community impacts the decision to go solar.[2] PG&E expects EVs to have a similar effect.

However, PG&E recognizes that many AB 841 PCs may be further away from communities with high EV penetration rates and may not have the opportunity to benefit from the "neighbor effect". Developing these geographic markets could be an important contribution to the long-term success of the state's electrification efforts (priming future audiences for EV adoption beyond the current early adopter segments). PG&E's understanding is that proximity to a new clean energy technology can help new audiences identify with new EV and charging technology and influence customer purchase and need for related infrastructure. To ensure an equitable rollout of EVC 2 infrastructure, PG&E proposes enhanced outreach efforts to AB 841 PCs, which are detailed in Section C. The "neighbor effect" approach is just one way we plan to target AB 841 PCs and not the only way. Outreach detailed further in this ME&O testimony will be inclusive of AB 841 PCs across the PG&E service area to ensure fair access to program incentives.

4. Target Audiences

PG&E identifies the decisionmakers by customer segment in Table 6-1. Within each customer segment, PG&E will prioritize efforts to AB 841 PC decisionmakers to meet equity goals. Information on PG&E's proposals to engage and drive EV adoption within AB 841 PCs is further detailed in Section C.

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[2] Spatial Patterns of solar photovoltaic system adoption: The Influence of neighbors and the built environment Marcello Graziano and Kenneth Gillingham. Journal of Economic Geography, Oxford University Press October 7, 2014 built New Haven, CT.

TABLE 6-1
DECISION MAKERS BY CUSTOMER SEGMENT

Line No.		Workplaces	Multi-Family Housing	Public Destinations
1	Types of locations	Office buildings Office Parks Government facilities	Apartment complexes Condominiums Mixed use space Mobile Home Communities	Retail Hospitality Food service Health services Education sites Government facilities Transportation Corridors
2	Audience Size	~91,000	~6,300	~260,000
3	Types of Decision Makers	Fleet managers Facilities managers Energy and sustainability leaders Corporate executive leaders and business owners Financial decision makers City council members/city managers Tribal Communities	Management -Companies -On-site managers -Property managers -Sustainability managers Trade Organizations -Apartment owner associations -Non-profit housing developers Rent Stabilization Boards HOA Boards Municipal housing authorities Tribal Communities	Facilities managers Sustainability managers Tribal Communities
4	Targeting considerations*	50+ employees on site	20+ unit dwellings	Proximity to high-potential EV ownership penetration

Note: PG&E recognizes EVC 2 program design may prevent some audiences from participating in this program (i.e., small businesses). In 2021, PG&E proposed complementary LCFS holdback programs to support lower port count sites. At the time of writing, PG&E is still awaiting a decision on AL 6226-E.[3]

[3] Proposed Advice Letter (AL) 6226-E. Submitted on June 15, 2021. PG&E's 2021 Low Carbon Fuel Standard Implementation Plan. https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_6226-E.pdf. (Accessed October 15, 2021).

5. Messaging Approach

Prior to being in market for EVCN, PG&E conducted customer research to learn what messages resonated best with decisionmakers within our target audiences. From the research, PG&E developed the following key message areas: futureproofing your business, attracting desired customers to your business, showing environmental leadership, and taking advantage of limited-time program funds to add charging to your business. While these messages were used in EVCN, the program was fully subscribed before in-market message testing was done by audience segment. EVC 2 offers the opportunity to implement an in-market "test and learn" plan using these messages and optimizing positive results for effective outreach.

In addition, PG&E conducted qualitative research among customers who applied for EVCN and those that did not move forward, in preparation for EVC 2. Customers were asked about their top motivation for installing charging stations. The top two reasons cited by these customers was (1) being perceived as a leader in supporting clean vehicles and (2) aligning with sustainability goals. These findings will also help influence EVC 2 messaging.

6. Tactics

Table 6-2 below summarizes the categories and tactics that PG&E may use once the program is approved, based on the state of the market at the time of implementation. Each category is described further below.

TABLE 6-2
PROPOSED TACTICS

Line No.	Initiative	Tactics
1	Core Marketing	Teleservices, digital media, targeted direct mail, e-mail, PG&E website, content marketing, newsletters, events, and social media
2	Relationships/Partnerships	Internal PG&E relationships (BES, Division Leadership Teams, Contact Center, Corporate Relations, and Local Public Affairs) with Customers External relationships with EV charging equipment and service providers, Community Choice Aggregators (CCA), state and local agencies, CBOs, site hosts, and car share companies and advocates
3	Promotional Support Materials	Revise/Update EVCN promotional kits to help enroll targeted customers. Kits include collateral (e.g., brochures, e-mail templates, case studies, etc.), and sales training support Educational materials for site hosts to promote EV adoption within AB 841 PCs (signage and partner packet with pre-approved messages) Digital materials to support rates education, demand response and VGI program communications to site hosts

a. Core Marketing

Core marketing tactics that PG&E is considering include e-mail, direct mail, web, and social media. This may include:

- **Teleservices**: One-to-one phone call from trained representatives to have a deeper conversation with customers about the program details, drive program interest and encourage application submission. Identified leads that are not ready to submit an application would be nurtured over time with PG&E BES customer relationship managers;
- **Digital Media:** Online targeting audience segments connecting them with digital content and the customer interest form on PG&E's website.
- **Direct Mail:** Mailers to site hosts targeting key messages will provide an entry point into the conversation with customers and continue to educate on the program over time;

- **E-mail:** Multi-touch e-mail campaign to engage the target audience on the program, identify key decision makers, and drive customer acquisition online;
- **PG&E website:** Includes updates on the program tailored by target audience segment;
- **Events:** Select sites in communities with lower utilization rates and work with the site host to execute events to educate the local community on the benefits of EV adoption, as well as promote the charging infrastructure to increase utilization;
- **Social Media:** Includes targeted paid posts to key customer segments helping to promote program participation; and
- **Content Marketing and Newsletter inclusion:** Ongoing PG&E digital outreach to non-residential customers through monthly newsletters and packaged content by industry segment enabling EVC 2 promotion opportunity

b. New and Existing Relationships

PG&E plans to leverage relationships with potential site hosts, customers, EV companies, and non-profit and government organizations to help promote program participation. These relationships can also help to promote general education and awareness of the program, including the benefits of EV ownership and EV charging.

PG&E's BES representatives, Division Leadership Teams, Contact Center support, and Local Public Affairs will coordinate to support EVC 2. These PG&E teams have already established strong relationships with many potential site hosts and will utilize educational materials and sales collateral to help drive program enrollment. They will work directly with customers to provide information about the program, answer questions, provide application assistance, and provide guidance on how this program can tie into more comprehensive electrification efforts. PG&E's relationships with potential site hosts and customers will continue to have a significant role in driving EVC 2 applications.

Other key relationships to EVC 2 include, but are not limited to, EV charging equipment and Electric Vehicle Service Providers (EVSP),

CCAs, environmental justice and CBOs, state/regional/local agencies, EV car share companies and advocates. PG&E plans to foster these strategic relationships to amplify the messaging and expand program rollout and adoption. Relationships will focus on working with organizations and associations, participating in speaking engagements or panel participation, and leveraging key influencers to help educate customers about the program and ultimately drive program enrollment. PG&E plans to utilize the customer and sales network of these partners to expand program messaging.

Despite EVSPs not playing a large role in EVCN application success for Level 2 charging, PG&E believes EVSPs can drive applications in the DCFC portion of the program, given their success in PG&E's EV Fast Charge program. EVSP's submitted 250 EV Fast Charge applications for that program as of October 18, 2021, nearly five times the sites needed to meet the program's 52 target sites. Additionally, of the 15 approved EVSPs, five were responsible for a large portion of all DCFC applications submitted. PG&E will engage with these EVSP's for EVC 2 customer acquisition.

To engage external stakeholders, PG&E plans to provide co-marketing opportunities that may consist of creating or hosting joint webinars along with co-branding of sales materials. Co-marketing helps fulfill a mutual benefit of extending target audience reach and amplifying efforts to acquire EV charger installations.

PG&E will use the education strategy and outreach channels described in Section 6.a Core Marketing to communicate and engage target audiences within AB 841 PCs throughout its service area. PG&E will work with community- and faith-based organizations to tap into their strong customer relationships to influence program participation and ultimately help their communities gain access to EV charging. Additional details for outreach and budget for AB 841 PCs are provided within Equity Section C of this chapter.

c. Promotional Support Materials

PG&E plans to update existing marketing materials to send directly to customers or to be distributed by external partners (e.g., EVSPs,

car share companies) to generate awareness of the program and enroll customers using the online web application. These materials will be differentiated by target audience types in an effort to make the materials as relevant and relatable as possible. Materials may include, but are not limited to, brochures and collateral. PG&E will continue engagement efforts after charger construction is complete to educate site hosts on how to manage EV charging loads and encourage EV adoption. Outreach materials will highlight money saving opportunities through rates, ALM, and DR programs as well as help site hosts educate their customers on the benefits of EV adoption.

d. Manage EV Charging Load

As part of the customer journey, PG&E team members will educate site hosts on the various opportunities to manage their charging loads and ultimately save costs. In addition, PG&E will provide information on (1) how to efficiently pass-through PG&E's Business EV rate pricing to customers; and (2) how ALM and DR program participation can save site hosts money. Although these opportunities may not be the deciding factor for a customer to electrify, additional support messaging at the right time in the customer journey can help increase the likelihood of participation in ALM offerings and DR programs, and help the customer save more money in both initial installation costs and operation over time. Digital outreach materials will be developed so PG&E internal teams can use to discuss these programs with site hosts.

e. Encourage EV Adoption

PG&E will continue to engage select site hosts, particularly at MFH and after charger energization, to provide education and outreach to site hosts to encourage their customers to adopt EVs. As noted in Chapter 2, several site hosts that performed "post-energization ME&O" saw three times higher utilization than the program average.

PG&E plans to support EV adoption with educational materials that can be used by site hosts to promote EV adoption. Materials can include items such as signage or a packet of materials with pre-approved content for use in site-host newsletters, social media,

e-mail, and direct mail. Key messaging will include total cost of ownership savings potential, PG&E tools and resources such as the EV Savings Calculator, and EV rates options. (PG&E has included $1.15 million in its budget to make improvements to its EV Savings Calculator. See Chapter 7 for more detail.) Language preference will be considered in development of materials to reflect diverse populations across the service territory. In addition, PG&E would like to include related program messages making EV adoption more attainable such as the used EV rebate within the Low Carbon Fuel Standard filing that is currently in review for California Public Utilities Commission (CPUC) approval.[4]

Since it will take some time after program approval before the first EVC 2 site is energized, PG&E will work with existing EVCN site hosts to pilot ways to promote EV adoption and infrastructure usage in select communities. This will provide PG&E with an opportunity to pilot events and education to determine what works and where changes are needed in EVC 2. Once EVC 2 projects come online, PG&E can utilize the improved methodologies to engage select site hosts to provide post-energization education and outreach.

7. Budget

PG&E proposes the following budget for the ME&O Plan expenses. The allocations of budget between channels and years may change based on program needs.

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4 Proposed AL6226-E. Submitted on June 15, 2021. PG&E's 2021 Low Carbon Fuel Standard Implementation Plan. https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_6226-E.pdf. (Accessed October 15, 2021).

TABLE 6-3
ME&O EXPENSE COST SUMMARY
($M'S AFTER ESCALATION & CONTINGENCY – IF APPLICABLE)

Line No.	Description	2023	2024	2025	2026	2027	2028	2029	Total
1	Direct-to-Customer (E-mail, Direct Mail, Teleservices)	$0.55	$0.56	$0.46	$0.35	$0.24	–	–	$2.16
2	Digital Media	0.55	0.28	0.17	–	–	–	–	1.00
3	Relationship Management Support (BES/Public Affairs)	0.28	0.34	0.34	0.29	0.24	–	–	1.48
4	Non-AB 841 PC Utilization Site Events and Stakeholder Outreach	0.33	0.11	0.23	0.18	0.18	$0.12	$0.12	1.27
5	PG&E Marketing Labor Support	0.28	0.28	0.29	0.29	0.24	0.03	0.03	1.43
6	Agency Creative and Execution and Support Materials	0.52	0.45	0.46	0.35	0.36	0.06	0.06	2.26
7	Total Expense Costs	$2.50	$2.02	$1.95	$1.46	$1.25	$0.21	$0.22	$9.61

Notes: Equity focused outreach is not included in this table. Please see detailed costs in Section C, Table 6-4.

Numbers in table are presented rounded to the nearest ten thousandth; thus, summing listed rounded values do not necessary produce the same listed rounded number shown in the rightmost column or bottommost row.

C. Equity Initiatives [Witness: Claire Coughlan]

PG&E will deploy at least 50 percent of EVC 2 infrastructure investments in AB 841 PCs, per Decision (D.) 21-07-028. Extensive ME&O efforts in addition to that described in Section B will be necessary to reach this goal, and to help drive EV adoption in AB 841 PCs. CBOs will play a pivotal role in just program implementation and equitable infrastructure deployment. Accordingly, 27 percent of the total budget requested in this chapter ($9.61 million for ME&O plus $4.48 million for Equity Initiatives) is dedicated to CBOs.[5] This also

[5] Dedicated funding for CBOs is reflected in the following line items of Table 6-4: CBO Partnership for Customer Outreach, CBO EV Advancement Funds, and CBO Partnership for AB 841 PC Post-Energization ME&O.

complies with D.21-07-028,[6] which requires at least 25 percent of an Expedited Application's ME&O budget be dedicated to CBOs.

PG&E assessed customer needs, established objectives, and developed focused initiatives, which are described in the sections below.

1. Studies and Community Feedback That Inform PG&E's EVC 2 Equity Initiatives

There are numerous studies, plans, and policies demonstrating that the transition to a clean energy economy must be equitable to all communities. The following documents highlight this necessity and were instrumental in developing an EVC 2 proposal that supports an equitable transition for all.

a. CARB's "Low-Income Barriers Study, Part B: Overcoming Barriers to Clean Transportation Access for Low-Income Residents"

This study identified several recommendations to overcome barriers faced by AB 841 PCs. Two key barriers include (1) accessibility and reliability barrier, as clean vehicles are not viewed as an option due to higher initial costs, lack of convenient home, workplace and public charging, reduced range compared to gas vehicles, and fewer models available that can carry multiple passengers and equipment[7] and (2) convenience barrier, where clean vehicles are considered less convenient than traditional vehicles due to limited range, lack of charging infrastructure and limitations in transporting multiple passengers and work equipment.[8]

As a way to overcome the barriers associated with a lack of charging access, the study recommends incentive support for charging infrastructure installation, including in existing MFH, for low-income residents[9] and in private locations (e.g., places of employment, grocery stores, and hospitals) and in public and right of way locations (e.g., rest

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6 D.21-07-028, pp. 73-76, OP 1.

7 Low-Income Barriers Study (specifically Part B: Overcoming Barriers to Clean Transportation Access for Low-Income Residents) (February 21, 2018), p. 26.

8 *Ibid*., p. 27.

9 *Ibid*., p. 57.

stops, Park and Rides) and to increase access for low-income residents and DACs across the State.[10]

EVC 2 meets these program recommendations by allocating at least 50 percent of the infrastructure budget to fund 100 percent of the EV infrastructure costs in AB 841 PCs at MFH, workplaces, and public destinations. EVC 2's ME&O Plan, discussed above, in combination with the Equity Initiatives discussed below, will also provide significant customer outreach and education to better understand how to shop for EVs, locate chargers, optimize charging for time and cost, and more.

b. CPUC's Tribal Consultation Policy

In 2018 "the CPUC adopted a Tribal Consultation Policy to better communicate and consult with California Indian Tribes."[11] One of the policy goals included is to "encourage investments by tribal governments and tribal members in onsite renewable energy generation, energy efficiency; low carbon transportation and energy storage."[12] In line with the CPUC's Tribal Consultation Policy, PG&E will support tribal communities by undertaking dedicated outreach efforts to customers within these areas to encourage participation in EVC 2. This outreach will also inform tribal customers of eligibility to participate in complementary EV program offerings, such as the Low Carbon Fuel Standard credit revenue funded California Clean Fuel Reward EV rebate and PG&E's Pre-Owned EV rebate, once approved.

c. CPUC's Environmental and Social Justice (ESJ) Action Plan

The CPUC's initial ESJ Action Plan includes guiding principles to advance equity in ESJ communities. As defined in this plan, "environmental and social justice seeks to come to terms with, and

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10 *Ibid*., p. 57.

11 https://www.cpuc.ca.gov/about-cpuc/divisions/news-and-public-information-office/business-and-community-outreach/tribal-office/tribal-consultation-policy. (Accessed October 15, 2021).

12 Adoption of Tribal Consultation Policy Memorandum, dated April 6, 2018, p. 1. Tribal Consultation Policy Approved at: https://www.cpuc.ca.gov/about-cpuc/divisions/news-and-public-information-office/business-and-community-outreach/tribal-office/tribal-consultation-policy (Accessed August 21, 2021).

remedy, a history of unfair treatment of communities, predominantly communities of people of color and/or low-income residents. These communities have been subjected to disproportionate impacts from one or more environmental hazards, socio-economic burdens, or both. Residents have historically been excluded in policy setting or decision-making processes and have lacked protections and benefits afforded to other communities by the implementation of environmental and other regulations, such as those enacted to control polluting activities."[13] EVC 2 will aid the CPUC in meeting the goals of its ESJ Action Plan, specifically:

- Goal 1: Consistently integrate equity and access considerations throughout CPUC proceedings and other efforts;
- Goal 2: Increase investment in clean energy resources to benefit ESJ communities, especially to improve local air quality and public health; and
- Goal 5: Enhance outreach and public participation opportunities for ESJ communities to meaningfully participate in the CPUC's decision-making process and benefit from CPUC programs.

d. Greenlining Institute's Playbook for Clean Mobility Equity

The Greenlining Institute's *Playbook for Clean Mobility Equity* identifies recommendations for effective equitable program design. This document presents best practices for equitable inclusion of community voice in program design and the decision-making process. Specifically, Greenlining shares that equitable program development must include outside the box thinking on how to proactively maximize the value to AB 841 PCs.

PG&E's EVC 2 Equity Initiatives discussed below will leverage the expertise of CBOs to ensure community voices are heard in the program design and implementation, with ample opportunity for course correction based on community feedback.

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13 ESJ Action Plan, p. 6.

e. Additional Stakeholder Recommendations

In addition to reviewing policy and study documents, PG&E engaged key stakeholders such as CBOs, environmental justice organizations and Tribal partners for guidance and input while developing the EVC 2 AB 841 PC initiatives. These conversations highlighted the importance of incorporating flexibility in program design to meet community needs and re-enforced that customer and community outreach be at the forefront of EVC 2 equity considerations. Stakeholders emphasized that investor-owned utilities and other program designers should actively engage the community to understand their transportation needs.

The EVC 2 Equity Initiatives described below both collaborate with CBOs to actively engage communities to understand their needs from the start of the program and provide an opportunity to solicit feedback from CBOs midway through the program to make changes as necessary. This flexibility will help ensure AB 841 PCs are effectively served through this program.

2. Equity Initiative Objectives

PG&E aims to address the barriers, goals and stakeholder insights discussed above with the EVC 2 program proposal and developed the following guiding principles to help to advance an equitable transition to EVs:

- Increase awareness of EVC 2 program by marketing to potential eligible site hosts and AB 841 PCs, educating site hosts and customers on available incentives, and assisting with program applications:
  - Coordinate marketing and education with other existing equity programs which may be complimentary and/or targeting the same customer segment, such as the Solar on Multifamily Affordable Housing Program.
- Engage with customers and community stakeholders to assist in determining charger placement.
- Help reduce total cost of ownership through charger cost coverage for MFH sites in AB 841 PCs and MFH-serving public charging sites.
- Encourage EV adoption near installed EVC 2 infrastructure by:

- Increasing exposure and access to EVs through car share partnerships and other programs such as ride and drive events and extended test drives.
- Expand and tailor education and outreach efforts to address barriers common to renters, low-income customers, and other customer segments within the AB 841 PC umbrella.
- Develop multi-language resources and tailor messaging to resonate with a diverse audience to fully explain the benefits of EV ownership and the EV adoption journey.

3. Equity Initiative Programs

A core focus of EVC 2 is to increase access to EV charging infrastructure for PG&E customers where the EVSP market has not served, especially AB 841 PCs. PG&E will meet this goal of serving AB 841 PCs by (1) ensuring that at least 50 percent of infrastructure spending is in AB 841 PCs and (2) establishing programs to educate and encourage site host participation and customer EV adoption in AB 841 PCs. PG&E has developed a robust set of supporting programs, detailed in the following sections, to fully support an equitable transition for EVC 2 AB 841 PC participants.

PG&E believes that an equity-centered approach depends on improving program access for customers who experience the largest barriers in transitioning to a clean energy economy. To address a potential outreach gap, PG&E will collaborate extensively with CBOs to address barriers to participation for those most in need. Accordingly, PG&E will spend a minimum of 25 percent of its ME&O budget for EVC 2 on assistance from CBOs. PG&E envisions that CBOs will take an active role in supporting EVC 2 through many of the initiatives described below.

a. Focus Groups

PG&E proposes to conduct focus groups to solicit input from AB 841 PCs following program approval and before any site acquisition has begun. These focus groups will be organized around PG&E's five regions,[14] and will include community leaders, CBOs and other key

[14] A.20-06-011, PG&E's Updated Regionalization Proposal (February 26, 2021), p. 4.

stakeholders and decision makers. The focus groups will be conducted twice during EVC 2: during the first year after program approval to get initial input and approximately midway through the program to collect feedback on program successes, challenges and any recommended program pivots. The goal of these focus groups will be to gather input on where geographically to target EVC 2 infrastructure rollout and what specific types of sites within those communities to target, as well as provide broader feedback on issues such as access challenges and concerns and willingness to adopt EVs. For example, PG&E heard through stakeholder outreach that targeting sites such as community colleges would best serve some AB 841 PCs. These focus groups would provide a forum for collecting similar feedback so that the EVC 2 infrastructure is used and useful for the target audiences. In addition, these focus groups could seek feedback on how to design and implement new EV technologies, such as VGI, in a way that appropriately considers AB 841 PCs.

PG&E requests $0.15 million to conduct focus groups. This funding is necessary to solicit community input for a successful and equitable program rollout, and will be used for items such as collateral, participant recruitment and incentives, language translation, moderator fees, and other facilitation costs.

b. CBO Partnership for Customer Outreach

The objective of the Focus Groups described above is to identify specific communities to target as potential EVC 2 site locations. PG&E proposes to conduct a more extensive round of outreach to build on the results of the focus groups and provide an additional feedback loop for customers and community leaders who were unable to participate.

CBO Partnership for Customer Outreach will be conducted twice in the EVC 2 program. The first outreach event will occur during the first two years of program rollout to gather initial feedback and share information about the program. The second outreach event will occur midway through EVC 2 as an opportunity for input on successes and challenges of the program so far. The second outreach will enable PG&E to pivot infrastructure and program rollout if needed for the

second half of EVC 2. PG&E aims to develop a circular feedback loop that ensures community voices are incorporated into siting chargers and greater transparency on program feedback is established.

PG&E requests $0.58 million to conduct customer outreach in partnership with CBOs. The budget will be used to fund contracts for CBOs to conduct the outreach sessions. This funding is necessary to achieve the deeper level of customer engagement for more equitable program rollout. Similar to the Focus Groups, the Customer Outreach program will also be based on the PG&E regional model—with an outreach contract for each region proposed for each year of outreach, totaling four contracts per region through the life of the program.

c. Car Share Pilot

PG&E looks forward to providing increased access to charging infrastructure with EVC 2, but also recognizes that the cost of purchasing an EV will remain a barrier for some customers. To address this barrier, PG&E will partner with car share companies to pilot car sharing at MFH sites in AB 841 PCs. Car share programs are an attractive option for customers who may be either hesitant to purchase a vehicle or unable to afford the cost of ownership or leasing, providing both an opportunity for customers to become familiar with and to access the technology, and a readily available, zero-emission, low-cost transportation option. PG&E anticipates starting with only a few sites and then expanding in the later program years if the pilot proves successful. PG&E received positive feedback from stakeholders on the Car Share Pilot concept, and intends to continue engaging these groups to encourage a successful rollout. In addition, PG&E will also incorporate lessons learned from other car share programs into the EVC 2 Car Share Pilot.

The Car Share Pilot will be designed as a partnership between PG&E, site hosts, and eligible car share companies. PG&E will identify potential sites and act as the liaison between the site owners and car share companies to enable car share companies to utilize the charging infrastructure being provided via EVC 2 to benefit MFH residents.

PG&E requests $0.50 million to launch the Car Share Pilot. This funding will enable PG&E to pilot alternative options for customers to access EVs and will be used for items such as PG&E employee support and participation incentives, among other items.

d. CBO EV Advancement Funds Program

PG&E proposes to launch the CBO EV Advancement Funds Program to increase EV awareness and adoption in AB 841 PCs. CBOs can bring unique knowledge and expertise on community needs in AB 841 PCs. For example, one CBO suggested that it could use funding to create paper maps of EV charging locations in areas that have unreliable phone network service or where residents are unfamiliar or uncomfortable with using new smartphone applications. CBO ideas such as this help promote broader EV adoption, because CBOs have unique knowledge and experience working in specific communities. PG&E expects that by providing funding opportunities to help advance the broader goal of increasing EV adoption, CBOs will be able to provide creative ideas that will have a measurable impact in AB 841 PCs.

The CBO EV Advancement Funds Program will be offered once a year starting in the second year of EVC 2 in each of PG&E's five regions through a competitive application process. PG&E will provide one grant per region for each of PG&E's five regions to CBOs to help drive adoption of EVs. Building on strong community relationships and effective outreach channels, selected CBOs will help PG&E inform customers about pathways to EV ownership (including numerous incentive programs and rebates), EV operation, and availability of public charging. PG&E and its selected CBOs will work collaboratively with state and regional agencies, including the CA Air Resources Board, to ensure CBOs are well-versed and working in tandem with the existing ecosystem of incentives, rebates, and related EV-equity programs. PG&E will develop appropriate metrics to measure program success that are feasible, informative, and not overly burdensome, and will file the proposed metrics in a Tier 1 AL prior to program launch.

PG&E requests $0.60 million to fund the CBO EV Advancement Funds Program. This funding will enable CBOs to implement creative

solutions to encourage EV adoption in AB 841 PCs, which supports the broader goal of driving utilization of EVC 2 infrastructure.

e. CBO Partnership for AB 841 PC Post-Energization ME&O

PG&E will work with CBOs to hold post-energization ME&O events at charger locations throughout AB 841 PCs. CBOs will be instrumental in helping PG&E to inform communities about charger placement, access, and charging rates at special events based around new charging infrastructure. Recognizing that charging is a different experience from fueling a gasoline powered car, it is important for PG&E to help its customers adapt to the charging experience. CBOs can help to educate communities about the nuances of public charging, including how to locate a charger, how to sign up for EVSP networks, time other activities around charging, and understand public charging rates at sites added through EVC 2. PG&E anticipates building from established best practices and documented lessons learned through existing outreach programs and channels. For example, Access Clean California established a strong network of CBO partners to advance EV access. PG&E plans to learn from and collaborate with such programs to maximize outreach effectiveness. PG&E also intends to promote post-energization events in collaboration with other events to drive a greater audience, such as Drive Electric Week and Earth Day.

PG&E requests $2.64 million to fund CBO Partnership for AB 841 PC post-energization ME&O. This funding is necessary to provide more education on available incentives and rebates for purchasing an EV and is anticipated to help drive greater utilization at charger locations. This funding will be used to fund contracts for CBOs, and could cover items such as marketing collateral, language translation services, event promotion, event preparation and staffing and more.

4. Budget

PG&E proposes the following budget for the Equity Initiative expenses.

TABLE 6-4
EQUITY INITIATIVES EXPENSE COST SUMMARY
($M'S AFTER ESCALATION & CONTINGENCY – IF APPLICABLE)

Line No.	Description	2023	2024	2025	2026	2027	2028	2029	Total
1	Focus Groups	–	$0.07	–	–	$0.08	–	–	$0.15
2	CBO Partnership for Customer Outreach	–	0.14	$0.14	–	0.15	$0.15	–	0.58
3	Car Share Pilot	–	–	–	$0.11	0.12	0.13	$0.14	0.50
4	CBO EV Advancement Funds	–	–	–	0.15	0.15	0.15	0.15	0.60
5	CBO Partnership for AB 841 PC Posts-Energization ME&O	$0.11	0.11	0.11	0.23	0.48	0.73	0.87	2.64
6	Total Expense Cost	$0.11	$0.33	$0.26	$0.49	$0.97	$1.16	$1.16	$4.48

Note: Numbers in table are presented rounded to the nearest ten thousandth; thus, summing listed rounded values do not necessary produce the same listed rounded number shown in the rightmost column or bottommost row.

D. Conclusion

The Marketing, Education and Outreach and Equity Initiatives focus on increasing EV charging access across PG&E's service area and diverse customer base. PG&E will apply learnings from EVCN to maximize effectiveness for EVC 2. Through an integrated and layered approach, PG&E's outreach and education messages will be developed and shared in ways to meet customers where they are and help drive participation in EVC 2. Ultimately, EVC 2 ME&O and Equity Initiatives will enable communities to electrify the transportation system in an equitable and ambitious manner.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 7

PROGRAM COSTS AND RESULTS OF OPERATIONS

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 7
PROGRAM COSTS AND RESULTS OF OPERATIONS

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 7
PROGRAM COSTS AND RESULTS OF OPERATIONS

A. Introduction

The purpose of this chapter is to provide Pacific Gas and Electric Company's (PG&E) 2023-2029 capital and expense forecast associated with PG&E's Electric Vehicle Charge 2 (EVC 2) program application. This chapter also presents the revenue requirements needed to support EVC 2 for 2023 through 2030.[1] EVC 2 contains multiple elements, including but not limited to: program implementation; installation and ongoing operations and maintenance (O&M);[2] ongoing Program Management Organization (PMO) to manage EVC 2; program data collection, evaluation, and continuous improvement, and Marketing, Education, and Outreach (ME&O) and Equity Initiatives.

All EVC 2 costs forecasted here are incremental to, and were not requested in, existing General Rate Case (GRC)-approved funding or PG&E's pending 2023 GRC. PG&E is requesting that the California Public Utilities Commission (CPUC or Commission) approve a total of $95.89 million in capital expenditures and $179.94 million in expense amounts as shown in Tables 7-1 (Capital) and 7-2 (Expense) below.

As discussed in Chapter 8, during the program, the revenue requirement will be trued-up to recover actual costs through a new Transportation Electrification Balancing Account (TEBA) subaccount. The revenue requirement establishing the final cost recovery will be established based on a recorded revenue requirement calculation using the same Results of Operations (RO) assumptions presented here, updated as appropriate for authorized financial factors and tax

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1 The EVC 2 costs being recovered are assumed to occur from 2023 through 2029. This timing may change depending on when the program is approved. Ongoing cost recovery beyond 2029 continues for capital investments since those costs are recovered over the life of the asset.

2 In the final stages of preparation for this application, PG&E identified minor changes to its O&M assumptions (~$100,000) which have not been reflected in Chapter 7, Section C, Results of Operations. PG&E will provide updated workpapers that include this change after submission of this application.

parameters. This chapter supports the cost basis on which the EVC 2 rates are calculated for forecast purposes.

B. EVC 2 Costs [Witness: Brandon Jazmin]

1. Summary of Request

For the purposes of this application, PG&E is assuming that the EVC 2 start date is January 1, 2023 and that deployment will take five years. PG&E assumes that it will take one year to set up and launch the program, and the five-year program window will begin when construction begins. PG&E budgeted some funding for one year after the last port is expected to be installed, to provide post-energization support to customers with ports installed in the last year of the program, to complete program evaluation, and to account for ongoing O&M prior to PG&E's next GRC cycle. The EVC 2 start date is contingent upon the date EVC 2 is ultimately approved by the Commission. To the extent Commission approval is received earlier than or after January 1, 2023, EVC 2 will start at an earlier or later date, respectively, and the timing of EVC 2 expenditures and cost recovery will be subsequently altered as well.

2. EVC 2 Deployment Plan

PG&E plans to deploy EVC 2—supporting infrastructure installation for approximately 16,000 L2 and Direct Current Fast Charger (DCFC) ports. This includes approximately 14,900 L2 ports and 1,100 DCFC ports over the course of five years, starting after the Commission approves EVC 2 funding (EVC 2, Year 1). Due to the nature and volume of the individual projects that make up EVC 2, the deployment plan involves a phased approach to ensure measured steps are taken in the roll out of EVC 2. The deployment plan assumes an increasing number of site installations, starting with the following approximations: 5 percent by the end of Year 2, 12 percent in Year 3, 22 percent in Year 4, 29 percent in Year 5, and 32 percent in Year 6.

3. Contingency

It is appropriate to include a contingency in the approved EVC 2 funding to address unforeseen issues that are likely to arise as well as estimating uncertainties. The contingency reserve is approximately $5.72 million for capital and $2.69 million for expense. The contingency for expense covers

multiple elements, including but not limited to: 20 percent of Information Technology (IT) costs, and 10 percent of cancelled projects, EV Savings Calculator, and EV Site Prioritization Tool, and ME&O Plan and Equity Initiative costs.

4. EVC 2 Costs Are Incremental to Other PG&E Funding

In establishing the incremental nature of EVC 2 costs identified above, PG&E has included only estimated costs incremental to activities that have already been requested by PG&E and are either pending approval or have been approved by the Commission in previous proceedings.

Per Assembly Bill (AB) 841,[3] PG&E requested funding in its 2023 GRC for to-the-meter costs associated with EVC 2. This application consists of only behind-the-meter (BTM) costs and program costs. Therefore, for the purposes of this testimony, PG&E considers all costs outlined herein to be incremental and generated exclusively by the deployment of EVC 2.

TABLE 7-1
TOTAL EVC 2 CAPITAL COSTS
(MILLIONS OF DOLLARS AFTER ESCALATION IF APPLICABLE)

Line No.	Description	2023	2024	2025	2026	2027	2028	2029	Total
1	BTM Project + PM Capital Costs	–	$4.46	$10.77	$19.84	$26.14	$28.96	–	$90.17
2	BTM Project + PM Capital Contingency Costs	–	0.28	0.68	1.26	1.66	1.85	–	5.72
3	Total EVC 2 Capital Costs	–	$4.74	$11.45	$21.10	$27.80	$30.80	–	$95.89

Notes: PM stands for Project Manager.

Numbers in table are presented rounded to the nearest ten thousandth; thus, summing listed rounded values do not necessary produce the same listed rounded number shown in the rightmost column or bottommost row.

[3] AB 841 (2020) is codified in the Public Utilities Code Section 740.19.

TABLE 7-2
TOTAL EVC 2 EXPENSE COSTS
(MILLIONS OF DOLLARS AFTER ESCALATION IF APPLICABLE)

Line No.	Description	2023	2024	2025	2026	2027	2028	2029	Total
1	BTM + Program Expense Costs	$6.12	$14.42	$24.03	$36.66	$46.37	$47.29	$2.36	$177.25
2	BTM + Program Expense Contingency Costs	0.53	0.51	0.44	0.34	0.38	0.30	0.19	2.69
3	Total EVC 2 Expense Costs	$6.66	$14.93	$24.47	$37.01	$46.75	$47.58	$2.55	$179.94

Note: Numbers in table are presented rounded to the nearest ten thousandth; thus, summing listed rounded values do not necessary produce the same listed rounded number shown in the bottommost row.

TABLE 7-3
TOTAL EVC 2 BTM + PROGRAM EXPENSE COST DETAILS
(MILLIONS OF DOLLARS AFTER ESCALATION & CONTINGENCY IF APPLICABLE)

Line No.	Description	2023	2024	2025	2026	2027	2028	2029	Total
1	Cancelled Projects	–	$0.05	$0.13	$0.24	$0.32	$0.36	–	$1.10
2	Customer-Owned, BTM Rebate	–	6.35	15.17	27.84	36.67	40.43	–	126.47
3	Customer-Owned, BTM O&M Rebate	–	–	–	–	–	–	–	0.01
4	Equity Initiatives	$0.11	0.33	0.26	0.49	0.97	1.16	$1.16	4.48
5	EV Savings Calculator	0.17	0.28	0.29	0.12	0.12	0.12	0.06	1.15
6	EV Site Prioritization Tool	0.25	0.42	0.43	0.18	0.18	0.18	0.09	1.73
7	Grid Visibility Tool	–	0.67	0.23	0.06	0.06	0.06	0.06	1.14
8	Internal Labor (Customer Acquisition)	1.26	2.22	2.65	2.74	2.84	1.47	0.37	13.54
9	Internal Labor (PMO+Proj Delivery)	0.51	0.85	1.18	1.38	1.39	1.48	0.30	7.09
10	IT	1.33	0.77	0.56	0.50	0.45	0.39	0.26	4.26
11	ME&O	2.50	2.02	1.95	1.46	1.25	0.21	0.22	9.61
12	Preliminary Design and ROM Process	–	0.17	0.43	0.80	1.08	1.22	–	3.71
13	Program Evaluator	0.14	0.34	0.64	0.86	0.97	–	–	2.96
14	Program Survey	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.15
15	Site Host Data API	0.37	0.37	0.38	–	–	–	–	1.12
16	Utility-Owned, BTM O&M	–	0.07	0.17	0.31	0.42	0.47		1.43
17	Total BTM + Program Expense Costs	$6.66	$14.93	$24.47	$37.01	$46.75	$47.58	$2.55	$179.94

Note: Numbers in table are presented rounded to the nearest ten thousandth; thus, summing listed rounded values do not necessary produce the same listed rounded number shown in the rightmost column or bottommost row.

C. Results of Operations [Witness Name: Mickey Pun]

1. Summary of Proposal

PG&E's EVC 2 cost of service, as expressed in the revenue requirement, is calculated based on PG&E's planned capital expenditures and expenses. EVC 2 implementation is assumed to begin January 1, 2023. Operating expenses and capital investments for the EVC 2 program

through 2030 will be recovered through the new TEBA subaccount proposed in Chapter 8 until 2030. Ongoing operating expenses after 2030 to support and maintain the capital investments will be moved for recovery to the 2031 GRC. Additionally, the rate impact of capital deployed through EVC 2 will extend beyond the 2030 window of the proposed EVC 2 program. The rate impact of capital beyond the 2030 window will be recovered in the 2031 GRC and beyond.

As a result of this methodology and these assumptions, PG&E shows the revenue requirements presented in Table 7-4.

TABLE 7-4
2023-2030 REVENUE REQUIREMENT REQUEST
(THOUSANDS OF DOLLARS)

Line No	2023	2024	2025	2026	2027	2028	2029	2030	Total
1	$6,728	$15,375	$25,970	$40,567	$53,298	$57,588	$13,794	$11,117	$224,436

Note: Numbers in table are presented rounded to the nearest thousandth; thus, summing listed rounded values from years 2023 to 2030 do not produce the same listed rounded number shown in the rightmost column.

2. Operations and Maintenance Expenses

The O&M expense estimates for 2023 through 2029 as shown in Table 7-2 include labor, materials, supplies, contracts, rebates, ME&O, and other expenses related to implementing EVC 2. These expenses are estimated in nominal dollars. This is consistent with the method PG&E uses in its GRC applications, including its most recent 2023 GRC Application (A.) 21-06-021. The escalation rates used to develop the nominal dollar forecasts are based on IHS Markit, third quarter 2021 for materials and rates for labor consistent with those adopted in the 2020 GRC. All incremental PG&E labor includes standard burdens such as payroll taxes and direct benefits. Indirect employee benefits such as those associated with postretirement, long term disability, workers compensation and casualty insurance are excluded.

3. Capital Related Inputs

The primary capital related inputs to the revenue requirement or cost of service calculation are summarized in Table 7-1. Infrastructure capital costs are grouped by the following classifications: (1) BTM Make-Ready Infrastructure; and (2) Charging Stations. The tax treatment is discussed in Section 4.b.

4. Elements of the RO Calculation

EVC 2 annual revenue requirement calculations show the revenues that PG&E needs to cover the expenses for 2023 through 2029. These calculations also include the revenues that PG&E needs to cover the capital related costs that will go into service in 2024 through 2028.

The annual revenue requirement calculations for the EVC 2 as presented in Table 7-4 show the revenue requirements that PG&E needs to cover program expenses and capital-related costs for 2023 through 2030.

a. Expense

In addition to the expenses described above, the revenue requirement also includes Revenue Fees and Uncollectibles (RF&U). PG&E applied a RF&U factor of 0.010869 (electric) to the revenue requirement. This RF&U factor was determined using the methodology adopted in PG&E's 2020 GRC Decision (D.) 20-12-005 using the latest available data for the year 2021. The recorded revenue requirement will utilize an updated factor for 2023 and beyond.

b. Capital

The various capital related components of the RO calculation are discussed below.

1) Depreciation

- Depreciation is included in the cost of service calculations as both depreciation expense and accumulated depreciation.
- Depreciation expense is calculated using depreciation accrual rates based on the straight line, remaining life method in accordance with the Commission Standard Practice U-4, *Determination of Straight Line Remaining Life Depreciation Accruals*. Depreciation expense is the recovery of the

original cost of fixed capital less estimated net salvage over the useful life of the property. The purpose of depreciation expense is to distribute the original cost of tangible capital assets (less net salvage) used in providing service, in a systematic and rational manner, over the useful life of the assets.

- PG&E classified the capital additions by plant type and asset account, thereby assigning the appropriate depreciation rate. These classifications are shown in Table 7-5. For each classification, PG&E estimates depreciation expense by multiplying the weighted average plant in service by the corresponding book depreciation rates. PG&E estimates the depreciation expense using the depreciation rate schedule as proposed in the 2023 GRC Decision.[4] By using the depreciation schedules, Table 7-5 summarizes the depreciable lives and depreciation rates that PG&E proposes for its EVC 2 assets.

TABLE 7-5
BOOK DEPRECIATION ASSUMPTIONS

Line No.	Asset	Life (Years)	Rate (%)
1	EDP37102 – Distbn Plant: EVC Infrastructure on Customer Premise	40	3.66%
2	EDP37101 – Distbn Plant: Electric Charging Station	10	9.65%

- Accumulated depreciation is calculated by adding estimated depreciation expense and net salvage value to the prior year's end of year reserve balance and subtracting the forecast asset retirements.

2) Rate Base

The elements of rate base included for EVC 2 costs are: EVSE plant in service, less deferred taxes, and less accumulated depreciation. Plant in service consists of the accumulated undepreciated investment in plant and equipment that is used and

4 2023 PG&E GRC A.21-06-021.

useful in rendering the services that are required by EVC 2. In developing the associated rate base, certain deductions are made. A deduction is made for the accumulated deferred taxes associated with these assets. These deferred taxes result from following the Modified Accelerated Cost Recovery System (MACRS) tax depreciation method for Federal Income Tax (FIT) purposes. Due to the timing differences that result from the use of this tax depreciation method, taxes that have been paid for by the customer are not paid to the Internal Revenue Service until a later date. Finally, plant is reduced by the amount of depreciation reserve (i.e., the accumulated depreciation already taken in prior years).

3) Rate of Return

PG&E multiplies the currently adopted composite Rate of Return (ROR) of 7.34 percent by the EVC 2 average rate base for each year to calculate the return on rate base. This calculation uses the cost of debt, equity and capital ratios adopted in PG&E's 2020 authorized Cost of Capital (COC) decision.[5] On August 20, 2020, CPUC approved PG&E's Advice letter (AL) 4275-G/5887-E to update its COC effective July 1, 2020. This application uses the updated cost of debt from this AL. PG&E will update the return on rate base if the Commission authorizes a new COC as part of a future COC proceeding.

Subsequent calculations of recorded revenue requirements for entry into the new TEBA subaccount will incorporate the latest authorized ROR for capital revenue requirements.

4) Property Tax

Property tax calculations are determined by multiplying the taxable Plant Less Depreciation (Net Plant) by the property tax factor. The property tax factor is comprised of the adjusted base year market-to-cost ratio multiplied by the composite tax rate. The adjusted market-to-cost ratio is the relationship between the most current assessment (adjusted) for fiscal year and the taxable

[5] D.19-12-056.

Net Plant. For EVC 2 property tax calculation, PG&E uses estimated composite property tax factor for 2023-2026 as presented in PG&E's 2023 GRC.

5) Income Tax Depreciation Assumptions

This section describes the assumptions and calculations used in the revenue requirement calculations to estimate depreciation for income tax purposes. PG&E estimates California Corporation Franchise Taxes and FITs on net operating income before income taxes. FIT expense is the product of the currently effective corporate income tax rate (21 percent) and federal taxable income. Likewise, state income tax expense is the product of the statutory rate (8.84 percent) and the state taxable income.

FITs are computed on a normalized basis. This allows PG&E to recognize the timing differences between book and federal tax depreciation. This difference multiplied by the federal tax rate is called deferred FITs, and is included as a credit to rate base.

State income taxes are calculated on a flow-through basis. Therefore, the customers receive an immediate benefit from the use of accelerated state tax depreciation. There is no associated rate base deduction for deferred state taxes.

PG&E followed MACRS and Asset Depreciation Range[6] guidelines for classifying EVC 2 capital additions and calculating federal and state tax depreciation.

Table 7-6 summarizes the federal and state tax depreciation methods used in the RO calculations. Subsequent calculations of capital-related revenue requirements for entry into the new TEBA subaccount will incorporate the latest authorized or best available tax accounting parameters.

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6 Uses Sum of Years Digits (SYD) method.

TABLE 7-6
TAX ASSUMPTIONS

Line No.	Asset	Tax Method	
		Federal	State
1	EDP37102 – Distbn Plant: EVC Infrastructure on Customer Premise	7-Year MACRS	12-Year SYD
2	EDP37101 – Distbn Plant: Electric Charging Station	7-Year MACRS	12-Year SYD

D. Conclusion

PG&E respectfully requests the commission to approve the operating expenses, capital expenditures and revenue requirements presented in this chapter. The revenue requirement set forth in this filing is calculated using the RO model for separately funded rate case applications and is based on costs and assumptions presented in this chapter. The revenue requirement calculation is provided in the workpapers supporting this chapter.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 8

COST RECOVERY AND RATE DESIGN

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 8
COST RECOVERY AND RATE DESIGN

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 8
COST RECOVERY AND RATE DESIGN

A. Introduction

In accordance with Decision (D.) 21-07-028, *Decision Setting Near-Term Priorities for Transportation Electrification Investments by the Electrical Corporations*, this chapter presents Pacific Gas and Electric Company's (PG&E) proposal for tracking, recording, and recovering the cost of PG&E's proposed Electric Vehicle Charge 2 (EVC 2) program and evaluates the expected impact on customer rates.

As described in Chapters 2 through 7, EVC 2 costs will include incremental capital and expenses related to infrastructure investments and the associated operations and maintenance (O&M) costs, Marketing, Education and Outreach (ME&O) costs, and program evaluation costs over the term of EVC 2. Adoption of PG&E's ratemaking proposal for EVC 2 will assure timely recovery of the reasonable cost of the EVC 2 program.

PG&E requests that the California Public Utilities Commission (CPUC or Commission) adopt its ratemaking proposal for EVC 2, which would establish a cost cap for total incremental behind-the-meter EVC 2 spending[1] and allow PG&E to track and record the revenue requirements associated with actual EVC 2 program costs in a new one-way subaccount of the Transportation Electrification Balancing Account (TEBA) up to the level of the cap. PG&E requests that the Commission make a finding upfront that spending for EVC 2 at or below the approved cost cap is reasonable. PG&E may also spend less than the current forecast projections if market conditions or other factors indicate that it would not be prudent to fully implement the program as forecast. In this situation, PG&E would suspend or terminate deployment or request to modify EVC 2 via a Tier 2 Advice Letter with notice to stakeholders and approval by Energy Division or the Commission.

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[1] As described in Chapter 7, PG&E requested funding of all to-the-meter costs associated with the EVC 2 program in its 2023 General Rate Case (GRC).

The new TEBA subaccount would be in effect over the term of EVC 2 and record the revenue requirements associated with actual costs up to a cost cap of $276 million. PG&E's request is to recover these costs in distribution rates and to begin recovery once the application is approved and until the revenue requirements are included in the GRC.

Adoption of PG&E's ratemaking proposal for EVC 2 will assure timely recovery of the reasonable cost of installing, owning, and operating the EV charging facilities once the facilities commence commercial operation.

B. Summary of Costs [Witness: Shannon Sims]

The cost forecast for this program assumes that PG&E would launch the program in 2023, shortly after approval. Since the EVC 2 program won't be completed before the 2027 GRC, PG&E proposes to keep the new TEBA subaccount open through 2030, which is the end of the 2027 GRC cycle. This will allow the utility to record the revenue requirement associated with actual incremental capital and expense until the costs are rolled into base rates in the GRC or through the end of the EVC 2 program. Ongoing capital revenue requirements after 2030 would be included in the 2031 GRC for recovery in base rates.

In summary, PG&E is proposing the following treatment for EVC 2 program costs:

- All EV infrastructure capital and ongoing O&M in-service between January 1, 2023 and December 31, 2030 would be tracked and recorded in the new TEBA subaccount.
- Other incremental expenses, including ME&O, rebates, and program evaluation costs, will be recorded in the TEBA throughout the program period.
- All EV infrastructure capital and ongoing O&M after 2030 will be recovered in PG&E's 2031 GRC.

C. Cost Recovery Proposal

This chapter proposes a cost recovery framework that builds upon the cost recovery framework approved in PG&E's EV Charge Network (EVCN) program. On December 21, 2016, the Commission issued D.16-12-065 which approved

EVCN, the Charge Smart and Save Program.[2] On January 31, 2017, PG&E filed Advice 5008-E to establish a one-way Electric Vehicle Program Balancing Account (EVPBA).[3] On January 26, 2018, PG&E filed Advice 5222-E to establish the TEBA[4] and merge the EVPBA as a subaccount within the TEBA.[5] The purpose of the EVPBA was to track and record the difference between the adopted EV revenue requirement and the actual revenue requirement up to the adopted amount. The balance is transferred to PG&E's Distribution Revenue Adjustment Mechanism (DRAM) for true-up in rates through the Annual Electric True-Up (AET) Advice Letter process.

Similarly, in this application, PG&E proposes to establish a new one-way "EVC 2" subaccount within the TEBA to track and record the revenue requirements associated with EVC 2. Specifically, the EVC 2 subaccount will track and record the difference between: (1) actual expenses incurred and the capital revenue requirement associated with actual capital expenditures, and (2) the total adopted revenue requirement associated with spending up to $276 million.[6] If the adopted amounts exceed PG&E's actual costs, PG&E will refund the excess to customers at the end of the rate case cycle in distribution rates through the next AET Advice Letter, or through another advice letter as approved by the Commission. If PG&E's actual costs exceed the adopted amounts, the excess will not be recorded in the new EVC 2 subaccount.[7]

PG&E is proposing to include in distribution rates the forecast revenue requirement approved in this proceeding beginning in 2023. Thus, the distribution rate will recover revenues related to the program which will be recorded to the DRAM. As described above and consistent with the approach

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2 D.16-12-065, p. 84, Ordering Paragraph 4: "Pacific Gas & Electric Company is authorized to recover the revenue requirements associated with up to $130 million of capital, O&M, rebate, and education and outreach expenditures for implementation of Phase 1 of its Charge Smart and Save Program."

3 On March 22, 2017, the CPUC approved Advice 5008-E, with an effective date of January 31, 2017.

4 See Electric Preliminary Statement Part HH..

5 On February 23, 2018, the CPUC approved Advice 5222-E with an effective date of January 11, 2018.

6 PG&E's forecast revenue requirement is presented in Chapter 7, Table 7-4.

7 One way balancing accounts require that overcollections are refunded to customers. However, customers do not pay for undercollections.

approved in PG&E's EVCN Program, PG&E is seeking authority to establish and record the actual revenue requirements associated with EVC 2 in the proposed new EVC 2 subaccount of the TEBA. At the end of the rate case cycle, any overcollected balance in the subaccount would be transferred to the DRAM as part of the AET process at the end of the year for rates effective January 1 of the following year. Pro forma preliminary statements of the proposed modifications to the DRAM and the TEBA are included in Attachments A and B to this testimony.

PG&E expects to implement the program in 2023, with this cost recovery proposal commencing in the same year the program is implemented. If the Commission modifies the implementation or other aspects of the program proposed in this application, PG&E reserves the right to seek recovery of any additional costs incurred.

D. Cost Reasonableness

In D.21-07-028, the Commission indicated that additional investment by PG&E and other electric utilities is necessary to meet California's policy goals.[8] Total costs forecasted for EVC 2 are projected to be no more than $276 million. PG&E requests that initial revenue recovery of EVC 2 be based on the estimated cost cap submitted in this Application. If the actual total capital and O&M costs over the EVC 2 deployment period are at or below the authorized cost cap, PG&E requests that the costs be found reasonable in accordance with D.21-07-028, which states:

> Given the urgent need to meet the state's EV policy goals by 2025, it is reasonable to allow expedited application proposals for TE investments to extend existing programs and avoid gaps in existing program offerings.[9]

If this or a future Commission should change its view about the implementation of EVC 2, or the scope of EVC 2 as proposed by PG&E in this application, then there is a possibility that parts of this project would be abandoned or become obsolete and would not meet the traditional "used and

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8 See D.21-07-028, p. 11: "…some incremental investments by the Electrical Corporations beyond what has already been authorized over the next four years for light-duty EV charging and medium- and heavy-duty EV charging will be necessary to meet the State's policy goals." See also p. 70, Findings of Fact 3.

9 See D.21-07-028, p. 71, Conclusion of Law 3.

useful" standard for rate recovery. PG&E's shareholders should not be at risk for having all or part of their investment stranded, because such an outcome would not be due to any imprudent action by PG&E. To provide reasonable certainty that PG&E will recover costs of EVC 2, the Commission should adopt a policy that PG&E should be allowed to recover its costs (including cancelled project costs) as long as the expenditures were made pursuant to, and consistent with the specific EVC 2 spending authority and guidance provided by this Commission.

E. Rate Design [Witness: Ben Kolnowski]

PG&E proposes that the annual revenue requirement adopted in this proceeding be recovered in electric distribution rates based upon the Commission-adopted revenue allocation and rate design for transportation electrification (TE) costs, as determined by the Commission in GRC Phase II proceedings. PG&E's 2020 GRC Phase II proceeding (Application (A).19-11-019) is currently active with a final decision expected in November 2021. Recovering these costs within electric distribution rates using standard distribution allocation factors is consistent with the recovery of those costs in rates today and is also consistent with the multi-party Revenue Allocation settlement filed in PG&E's pending 2020 GRC Phase II proceeding.[10] Ultimately, PG&E will allocate the costs contained in this application as directed by a final decision in A.19-11-019.

F. Conclusion

PG&E requests that the Commission approve its revenue requirement, cost recovery and rate design for EVC 2 program costs. Additionally, PG&E requests approval to create a new one-way EVC 2 subaccount in the TEBA to track and record actual EVC 2 program costs up to the adopted amount. Recovery of the balance in the account would be through distribution rates through PG&E's AET or as otherwise authorized by the Commission.

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10 Page 8 of "Motion of Pacific Gas and Electric Company for Adoption of Revenue Allocation Supplemental Settlement Agreement" submitted in A.19-11-019 (April 8, 2021).

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 8

ATTACHMENT A

ELECTRIC PRELIMINARY STATEMENT PART CZ

ELECTRIC PRELIMINARY STATEMENT PART CZ Sheet 1
DISTRIBUTION REVENUE ADJUSTMENT MECHANISM

CZ. DISTRIBUTION REVENUE ADJUSTMENT MECHANISM (DRAM)

1. PURPOSE: The purpose of the DRAM is to record and recover the authorized distribution revenue requirements and certain other distribution-related authorized costs. The DRAM will ensure dollar-for-dollar recovery of these Commission-authorized distribution amounts.

2. APPLICABILITY: The DRAM shall apply to all customer bills for service under all rate schedules and contracts for electric distribution service subject to the jurisdiction of the Commission, except for those rate schedules or contracts specifically excluded by the Commission.

3. REVISION DATE: Disposition of the balance in this account shall be determined through the advice letter process.

4. DISTRIBUTION RATES: The distribution rates are included in the effective rates set forth in each rate schedule.

5. ACCOUNTING PROCEDURES: The following entries shall be made each month, or as applicable. (P)
Note that all debits and credits described below, except for item 5.v., include an allowance for (P)
Revenue Fees and Uncollectible (RF&U) account expense. (T) / (P)

   a. A debit entry equal to the annual authorized distribution revenue requirements divided by twelve.

   b. A debit or credit entry equal to the total of the distribution-related regulatory account balances at the rates authorized in PG&E's most recent GRC, transferred to the DRAM, as authorized in the Electric Annual True-up Proceeding or other proceeding expressly authorized by the Commission. (P)

   c. A debit entry equal to the costs of the remaining customer education efforts associated with the Electric Education Trust (EET) per Decision 01-05-091, up to the amount authorized for PG&E by the Commission at the rates authorized in PG&E's most recent GRC. (P)

   d. A credit entry equal to the revenue from the distribution rates less the recorded California Public Utilities Commission Reimbursement Fee revenue (defined in Part E of PG&E's electric Preliminary Statement), the Customer Energy Efficiency Incentive revenue (defined in Part P of PG&E's electric Preliminary Statement), the Demand Response Revenue Balancing Account revenue (defined in Part I of PG&E's electric Preliminary Statement), and the SmartMeter Balancing Account revenue (defined in Part I of PG&E's electric Preliminary Statement).

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART CZ Sheet 2
DISTRIBUTION REVENUE ADJUSTMENT MECHANISM

CZ. DISTRIBUTION REVENUE ADJUSTMENT MECHANISM (DRAM) (Cont'd.)

5. ACCOUNTING PROCEDURES: (Cont'd.)

e. A credit entry equal to the debit entry in the California Alternate Rates for Energy Account (CAREA) that corresponds to the actual CARE revenue shortfall. The corresponding debit entry is defined in PG&E's electric Preliminary Statement Part M, Item 5a.

f. A credit entry equal to the debit entry in the Family Electric Rate Assistance Balancing Account (FERABA) that corresponds to the actual FERA revenue shortfall for the California Solar Initiative. The corresponding debit entry is defined in PG&E's electric Preliminary Statement Part DX, Item 5.b.

g. A credit entry equal to the recorded amount of revenue cycle services credits given to customers for revenue cycle services provided by entities other than PG&E.

h. A credit entry equal to the amount of Shareholder Participation, as defined in Section 6 below.

i. A debit entry equal to the payment to fund PG&E Environmental Enhancement Corporation, pursuant to the Chapter 11 Settlement Agreement Paragraph 17c adopted in Decision 03-12-035.

j. A debit or credit entry, as appropriate, to record the transfer of amounts from other accounts to the DRAM for recovery in rates, upon approval by the CPUC.

k. A debit entry equal to one-twelfth of the electric portion of the current year Self Generation Incentive Program (SGIP) revenue requirement authorized by the CPUC.

l. A debit entry equal to one-twelfth of the current-year California Solar Initiative (CSI) revenue requirement authorized by the CPUC.

m. A debit entry equal to one-twelfth of the electric portion of the Demand Response revenue requirement, as authorized by the CPUC.

n. A credit or debit entry, as appropriate, to record any net activities resulting from bidding PG&E's Demand Response Programs into the CAISO. (T)

o. A debit or credit entry, as appropriate, to record any shareholder rewards or penalties under the Reliability Incentive Mechanism adopted in D.04-10-034.

p. A debit entry equal to the amounts paid to the Commission for reimbursement of rate case expenses billed to the Utility pursuant to Public Utilities Code Section 631, plus an allowance for RF&U account expense.

q. A debit entry equal to the intervenor compensation payments authorized by the Commission, recorded during the month.

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART CZ Sheet 3
DISTRIBUTION REVENUE ADJUSTMENT MECHANISM

CZ. DISTRIBUTION REVENUE ADJUSTMENT MECHANISM (DRAM) (Cont'd.)

5. ACCOUNTING PROCEDURES: (Cont'd.)

q. A debit or credit entry, as appropriate, to record the gain or loss on the sale of an electric distribution non-depreciable asset, as approved by the Commission.

r. A debit entry equal to the electric portion of incremental administrative costs and amounts written off as uncollectible associated with the payment deferral plan for qualifying citrus and other agricultural growers pursuant to Resolution E-4065 at the rates authorized in PG&E's most recent GRC for the incremental administrative costs. (D) (D)

s. A debit entry equal to the costs that PG&E will reimburse the Division of Ratepayer Advocates (DRA) for work performed by the retained IT consultant(s) in Application (A.) 10-02-028 as authorized by the Commission, recorded during the month. The costs that PG&E will reimburse DRA shall not exceed $240,000 (excluding an allowance for RF&U), subject to revision by the Commission. (T)

t. A debit or credit entry, as appropriate, to record the aggregate net revenues collected from the Conservation Incentive Adjustment unbundled rate component of residential electric rates. (T)

u. A credit entry equal to the Family Electric Rate Assistance (FERA) revenue shortfall from paying residential Tier 2 rates for Tier 3 usage. The corresponding debit entry is defined in PG&E's electric Preliminary Statement Part DX, Item 5.a. (T)

v. A debit entry equal to one-twelfth of the authorized amount recorded in the California Energy Systems for 21st Century Balancing Account – Electric (CES21BA-E). (T)

w. A debit entry equal to one-twelfth of the annual revenue requirements recorded in the Smart Grid Line Sensor subaccount, Volt/VAR Optimization subaccount, and Detect & Locate Faults subaccount of the Smart Grid Pilot Deployment Project Balancing Account (SGPDPBA). (T)

x. A credit entry equal to the amount of employee transfer fees allocated to PG&E's electric ratepayers. (T)

y. A debit entry equal to one-twelfth of the authorized revenue requirement for the Residential Rate Reform Program. The corresponding credit entry is defined in PG&E's Electric Preliminary Statement Part GS, Residential Rate Reform Memorandum Account. (T)

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART CZ Sheet 4
DISTRIBUTION REVENUE ADJUSTMENT MECHANISM

CZ. DISTRIBUTION REVENUE ADJUSTMENT MECHANISM (DRAM) (Cont'd.)

5. ACCOUNTING PROCEDURES: (Cont'd.)

aa. A debit entry equal to the billed revenue for Schedule LS-1 decorative street light conversion to LED lights.

bb. A debit entry to record one-twelfth of the authorized annual revenue requirement, for the Transportation Electrification Balancing Account subaccounts associated with (1) the Charge Smart and Save Program, authorized in Decision (D.)16-12-065, (2) four Priority Review Projects and one evaluation expense subaccount, authorized in D.18-01-024, (3) the Direct Current Fast Charger (Fast Charge) Make-Ready Program, the Medium and Heavy-Duty Vehicle Charging (Fleet Ready) Program, and Program Evaluation expenditures approved in D.18-05-040, (4) the Empower Electric Vehicle Charger Incentive and Education Program, authorized in D.19-09-006, ~~and~~ (5) the Electric Vehicle (EV) Charge Parks and EV Charge Schools Pilot Programs, authorized in D.19-11-01; and (6) the EV Charge 2 (EVC 2) Program authorized in D.XX-XX-XXX. .

cc. A debit entry to record PG&E's prorata portion of the authorized Essential Usage Study (EUS) related revenue requirements, exclusive of the Enhanced Web Tool portion and inclusive of RF&U, over the period from when the revenue requirements begins and the completion of the schedule of activities. A corresponding entry is included in the EUSEBA, which excludes an allowance for RF&U.

dd. A debit entry to record PG&E's prorata portion of the authorized Enhanced Web Tool portion of the EUS related revenue requirements, inclusive of RF&U, over the period from when the revenue requirements begins and the completion of the schedule of activities. A corresponding entry is included in the EUSEBA, which excludes an allowance for RF&U.

ee. A debit entry equal to one-twelfth (or amortization period approved) of the electric distribution portion of the interim rate relief as authorized by the CPUC in D.19-04-039, D.20-10-026, or future interim rate relief Decisions as authorized by the Commission.

ff. A debit entry to record one-twelfth (or amortization period approved) of the adopted Critical Peak Pricing related revenue requirement for the implementation of the new event hours, inclusive of RF&U, over the period from when the adopted revenue requirement begins and the completion of the schedule of activities. A corresponding entry is included in DREBA, which excludes an allowance for RF&U.

gg. An entry equal to interest on the average balance in the account at the beginning of the montffand the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 8

ATTACHMENT B

ELECTRIC PRELIMINARY STATEMENT PART HH

ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 1
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT

fHH. Transportation Electrification Balancing Account (TEBA)

1. PURPOSE: The purpose of the Transportation Electrification Balancing Account (TEBA) is to track the difference between the actual revenue requirements incurred and the forecast revenue requirements by establishing subaccounts for (1) the Charge Smart and Save Program, authorized in Decision (D.)16-12-065, (2) four Priority Review Projects and one evaluation expense subaccount, authorized in D.18-01-024, ~~and~~ (3) the Direct Current Fast Charger (Fast Charge) Make-Ready Program, the Medium and Heavy Duty Vehicle Charging (Fleet Ready) Program, and Program Evaluation expenditures approved in D.18-05-040, and (4) Electric Vehicle Charge 2 (EVC 2) costs, authorized in D.XX-XX-XXX .

   D.16-12-065 authorized a cap of up to $130.0 million in capital, O&M, expense, rebate and education and outreach costs for the Charge Smart and Save Program. Of the $130.0 million, there is a $10.0 million cap authorized for Education and Outreach proposal costs.

   D.18-01-024 authorized the following for the Priority Review Projects :(1) Medium Duty/Heavy Duty (MD/HD) Fleet Customer Demonstration Project with a total capital expenditure and expense cap of $3.355 million, (2) School Bus Renewables Integration Project with a total capital expenditure and expense cap of $2.2095 million, (3) Idle Reduction Technology Demonstration Project with a capital expenditure and expense cap of $1.7194 million, (4) Home Charger Information Resource Project with an expense cap of $500,000, and (5) Evaluation expense subaccount with an expense cap of $311,356.

   D.18-05-040 authorized the following for the Standard Review Projects: (1) Fast Charge Program with a total capital expenditure and expense cap of $22.394 million, (2) Fleet Ready Program with a total capital expenditure and expense cap of $236.325 million, and (3) Evaluation expense subaccount with an expense cap of $10.349 million.

   Ordering Paragraph (OP) 7 of the Assigned Commissioner's Scoping Memo and Ruling in *the Order Instituting Rulemaking to Continue the Development of Rates and Infrastructure for Vehicle Electrification (R.18-12-006)* requires the Investor Owned Utilities (IOUs) to record and track costs associated with hiring a technical facilitator that will organize and facilitate the interagency VGI Working Group. Such costs shall include, but are not limited to: (1) labor costs for Facilitator's staff and supporting staff, (2) meeting facility rental costs, (3) meals, and (4) travel. PG&E shall track these costs in a separate subaccount within the TEBA.

   Note that disposition of the balance in the VGI Working Group subaccount will be established by a Commission decision through a subsequent application or through other appropriate filings as otherwise authorized by the Commission.

   D. 19-09-006, *Decision Approving the Application of Pacific Gas and Electric Company for the Empower Electric Vehicle Charger Incentive and Education Program* authorized PG&E to establish a new "Empower EV" sub-account in the TEBA to track the difference between the actual revenue requirement incurred and the forecast revenue requirement for the EV Empower Program. Pursuant to Decision D. 19-09-006, PG&E is authorized to recover a revenue requirement associated with up to $4.13 million in expense for the Empower EV Program.

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 2
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT

1. PURPOSE (Cont'd): D. 19-11-017, Decision on the Transportation Electrification Pilots for Schools and Parks Pursuant to Assembly Bills 1082 and 1083 authorized PG&E to establish two new subaccounts in the TEBA to track the difference between the actual revenue requirements incurred and the forecast revenue requirements for EV Charge Parks and EV Charge Schools. Pursuant to Decision D. 19-11-017, PG&E is authorized to recover revenue requirements associated with up to $5.54 million and $5.76 million in capital and expense for the EV Charge Parks and EV Charge Schools Pilot Programs, respectively. In addition, the Commission directed PG&E to contribute an amount equal to four percent of the total approved pilot budgets to support evaluation efforts.

   D.XX-XX-XXX authorized a cap of up to $276 million in capital and expense for the EVC 2 program.

2. APPLICABILITY: The TEBA shall apply to all customers under all rate schedules and contracts for electric service subject to the jurisdiction of the Commission, except for those schedules or contracts specifically excluded by the Commission.

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 3
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT

3. REVISION DATES: Disposition of the balances in this account's subaccounts shall be through the Annual Electric True-Up advice letter process, or as otherwise authorized by the Commission.

   Note that disposition of the balance in the VGI Working Group subaccount will be established by a Commission decision through a subsequent application or through other appropriate filings as otherwise authorized by the Commission.

4. RATES: None of the subaccounts in the TEBA have a separate rate element.

5. Charge Smart and Save Program Subaccount

   PURPOSE: The purpose of the one-way Charge Smart and Save subaccount is to track the difference between the revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.)16-12-065, PG&E is authorized to recover a revenue requirement associated with up to $130 million in capital, O&M, expense, rebate and education and outreach costs for the Charge Smart and Save Program. Of the $130.0 million, there is a $10.0 million cap authorized for Education and Outreach proposal costs.

   ACCOUNTING PROCEDURE: The following entries shall be made:

   a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $130 million revenue requirements associated with the capital, O&M, expense, rebate and education and outreach costs for the Charge Smart and Save Program. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

   b. A debit entry each month equal to actual expenses incurred, and net of the participation payments received from site hosts, if any, for the Charge Smart and Save Program;

   c. A debit or credit entry each month equal to the capital-related revenue requirement based on the recorded capital costs, net of RF&U, associated with the Charge Smart and Save Program. Capital-related revenue requirements include depreciation expense, return on investment, federal and state income taxes, and property taxes associated with the costs of installed equipment;

   d. A debit or credit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and

   e. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 4
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT

6. MD/HD Fleet Demonstration Project Subaccount

PURPOSE: The purpose of the one-way MD/HD Fleet Demonstration Project subaccount is to track the difference between the actual revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.)18-01-024, PG&E is authorized to recover a revenue requirement associated with a total expenditure cap of $3,355,000 in capital and expense, costs in the MD/HD Fleet Demonstration Project subaccount.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $3,355,000 expenditure cap associated with capital, and expense costs for the MD/HD Fleet Demonstration Project subaccount. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry each month equal to actual expenses incurred:

c. A debit or credit entry each month equal to the capital-related revenue requirement based on the recorded capital costs, net of RF&U, associated with the MD/HD Fleet Demonstration Project. Capital-related revenue requirements include depreciation expense, return on investment, federal and state income taxes, and property taxes associated with the costs of installed equipment;

d. A debit or credit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and

e. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

7. School Bus Renewables Integration Subaccount

PURPOSE: The purpose of the one-way School Bus Renewables Integration Project subaccount is to track the difference between the actual revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.)18-01-024, PG&E is authorized to recover a revenue requirement associated with a total expenditure cap of $2,209,500 in capital and expense in the School Bus Renewables Integration subaccount.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $2,209,500 expenditure cap associated with capital and expense costs for the School Bus Renewables Integration Project subaccount. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry each month equal to actual expenses incurred;

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 5
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT

7. School Bus Renewables Integration Subaccount (Cont'd)

ACCOUNTING PROCEDURE: The following entries shall be made (Cont'd):

c. A debit or credit entry each month equal to the capital-related revenue requirement based on the recorded capital costs, net of RF&U, associated with the School Bus Renewables Integration Project. Capital-related revenue requirements include depreciation expense, return on investment, federal and state income taxes, and property taxes associated with the costs of installed equipment;

d. A debit or credit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and

e. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

8. Idle Reduction Technology Demonstration Project Subaccount.

PURPOSE: The purpose of the one-way Idle Reduction Technology Demonstration Project subaccount is to track the difference between the actual revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.)18-01-024, PG&E is authorized to recover a revenue requirement associated with a total expenditure cap of $1,719,400 in capital and expense in the Idle Reduction Technology Demonstration subaccount.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $1,719,400 expenditure cap associated with capital and expense costs for the Idle Reduction Technology Demonstration Project subaccount. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry each month equal to actual expenses incurred;

c. A debit or credit entry each month equal to the capital-related revenue requirement based on the recorded capital costs, net of RF&U, associated with the Idle Reduction Technology Demonstration Project. Capital-related revenue requirements include depreciation expense, return on investment, federal and state income taxes, and property taxes associated with the costs of installed equipment;

d. A debit or credit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission;

e. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 6
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT

9. Home Charger Information Resource Project Subaccount

PURPOSE: The purpose of the one-way Home Charger Information Resource Project subaccount is to track the difference between the actual revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.)18-01-024, PG&E is authorized to recover a revenue requirement up to an expenditure cap of $500,000 in expense in the Home Charger Information Resource Project subaccount.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $500,000 expenditure cap associated with the expenses for the Home Charger Information Resource Project subaccount. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry each month equal to actual expenses incurred;

c. A debit or credit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and

d. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

10. TEBA Priority Review Projects' Evaluation Expense Subaccount

PURPOSE: The purpose of the one-way TEBA Priority Review Projects' Evaluation Expense subaccount is to track the difference between the actual revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.)18-01-024, PG&E is authorized to recover an evaluation expense revenue requirement up to an expenditure cap of $311,356 for the priority review projects.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $311,356 evaluation expense cap for the priority review projects. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry each month equal to actual evaluation expenses incurred for the priority review projects;

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 7
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT

10. TEBA Evaluation Expense Subaccount (Cont'd)

ACCOUNTING PROCEDURE: The following entries shall be made: (Cont'd)

c. A debit or credit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and

d. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

11. Fast Charge Program Subaccount.

PURPOSE: The purpose of the one-way Fast Charge Program subaccount is to track the difference between the actual revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.)18-05-040, PG&E is authorized to recover a revenue requirement up to an expenditure cap of $22,394,041 in capital and expense in the Fast Charge Program subaccount.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $22,394,041 expenditure cap associated with capital and expense costs for the Fast Charge Program subaccount. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry each month equal to actual expenses incurred;

c. A debit or credit entry each month equal to the capital-related revenue requirement based on the recorded capital costs, net of RF&U, associated with the Fast Charge Program. Capital-related revenue requirements include depreciation expense, return on investment, federal and state income taxes, and property taxes associated with the costs of installed equipment;

d. A debit or credit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and

e. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

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ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 8
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT

12. Fleet Ready Program Subaccount

PURPOSE: The purpose of the one-way Fleet Ready Program subaccount is to track the difference between the actual revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.)18-05-040, PG&E is authorized to recover a revenue requirement up to an expenditure cap of $236,324,660 in capital and expense in the Fleet Ready Program subaccount.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $236,324,660 expenditure cap associated with capital and expense costs for the Fleet Ready Program subaccount. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry each month equal to actual expenses incurred;

c. A debit or credit entry each month equal to the capital-related revenue requirement based on the recorded capital costs, net of RF&U, associated with the Fleet Ready Program. Capital-related revenue requirements include depreciation expense, return on investment, federal and state income taxes, and property taxes associated with the costs of installed equipment;

d. A debit or credit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and

e. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 9
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT

13. TEBA Standard Review Programs' Evaluation Expense Subaccount

PURPOSE: The purpose of the one-way TEBA Standard Review Programs' Evaluation Expense Subaccount is to track the difference between the actual revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.)18-05-040, PG&E is authorized to recover an evaluation expense revenue requirement up to an expenditure cap of $10,348,748 for the standard review programs.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $10,348,748 evaluation expense cap for the standard review programs. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry each month equal to actual evaluation expenses incurred for the standard review programs;

c. A debit or credit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and

d. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

14. Vehicle-Grid Integration (VGI) Working Group Memorandum Subaccount

PURPOSE: The purpose of the VGI Working Group Memorandum Subaccount is to record and track costs associated with hiring a technical facilitator that will organize and facilitate the interagency VGI Working Group. Such costs shall include, but are not limited to: (1) labor costs for Facilitator's staff and supporting staff, (2) meeting facility rental costs, (3) meals, and (4) travel. Pursuant to Ordering Paragraph (OP) 7 of the Assigned Commissioner's Scoping Memo and Ruling in *the Order Instituting Rulemaking to Continue the Development of Rates and Infrastructure for Vehicle Electrification (R.18-12-006),* the Investor Owned Utilities (IOUs) are authorized to create a memorandum account to track the costs associated with hiring a facilitator for a six-month period, with possible extension, and may seek to recover the associated costs by filing a Tier 2 Advice Letter with the Commission.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A debit entry each month equal to expenses incurred;

b. A credit entry to transfer all or a portion of the balance in the VGI Working Group Memorandum Subaccount to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission for future rate recovery; and

c. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

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ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 10
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT

15. Empower EV Subaccount

PURPOSE: The purpose of the one-way EV Empower subaccount is to track the difference between the revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.) 19-09-006, PG&E is authorized to recover a revenue requirement associated with up to $4.13 million in expense, comprised of rebate incentives, IT costs, program administration, marketing, education, and outreach for the EV Empower Program.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $4.13 million revenue requirements associated with the expenses for rebate incentives, IT costs, program administration, marketing, education, and outreach for the EV Empower Program. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry equal to recorded program expenses incurred;

c. A debit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and

d. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

16. EV Charge Parks Subaccount

PURPOSE: The purpose of the one-way EV Charge Parks subaccount is to track the difference between the revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.) 19-11-017, PG&E is authorized to recover a revenue requirement associated with up to $5.54 million in capital and expense for the deployment of the EV Charge Parks pilot program and ongoing costs necessary to support and maintain the program investments placed in service. In addition, the Commission directed PG&E to contribute an amount equal to four percent of the total approved pilot budget to support evaluation efforts.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $5.54 million expenditure cap associated with capital and expense costs for the EV Charge Parks pilot program. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry each month equal to actual expenses incurred, including expenses for Commission related evaluation activities;

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 11 (N)
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT (N)

16. EV Charge Parks Subaccount

c. A debit or credit entry each month equal to the capital-related revenue requirement based on the recorded capital costs, net of RF&U, associated with the EV Charge Parks pilot program. Capital-related revenue requirements include depreciation expense, return on investment, federal and state income taxes, and property taxes associated with the costs of installed equipment;

d. A debit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and

e. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

17. EV Charge Schools Subaccount

PURPOSE: The purpose of the one-way EV Charge Schools subaccount is to track the difference between the revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.) 19-11-017, PG&E is authorized to recover a revenue requirement associated with up to $5.76 million in capital and expense for the deployment of the EV Charge Schools pilot program and ongoing costs necessary to support and maintain the program investments placed in service. In addition, the Commission directed PG&E to contribute an amount equal to four percent of the total approved pilot budget to support evaluation efforts.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $5.76 million expenditure cap associated with capital and expense costs for the EV Charge Schools pilot program. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry each month equal to actual expenses incurred, including expenses for Commission related evaluation activities;

c. A debit or credit entry each month equal to the capital-related revenue requirement based on the recorded capital costs, net of RF&U, associated with the EV Charge Schools pilot program. Capital-related revenue requirements include depreciation expense, return on investment, federal and state income taxes, and property taxes associated with the costs of installed equipment;

(Continued)

ELECTRIC PRELIMINARY STATEMENT PART HH Sheet 12
TRANSPORTATION ELECTRIFICATION BALANCING ACCOUNT

17. EV Charge Schools Subaccount (Cont'd)

ACCOUNTING PROCEDURE: The following entries shall be made:

d. A debit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and;

e. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

18. EVC 2 Subaccount

PURPOSE: The purpose of the one-way EVC 2 subaccount is to track the difference between the revenue requirement incurred and the forecast revenue requirement. Pursuant to Decision (D.) XX-XX-XXX, PG&E is authorized to recover a revenue requirement associated with up to $276 million in capital and expense, including but not limited to rebates and Marketing, Education & Outreach (ME&O) costs, for the EVC 2 program.

ACCOUNTING PROCEDURE: The following entries shall be made:

a. A credit entry each month equal to the monthly portion of the forecast revenue requirement, net of Revenue Fees and Uncollectible (RF&U) accounts expense, based on the adopted $XXX million revenue requirements associated with the capital, O&M, expense, rebate, and ME&O costs for the EVC 2 program costs. A corresponding debit entry is defined in PG&E's electric DRAM Preliminary Statement Part CZ.

b. A debit entry each month equal to actual expenses incurred, including cancelled project expenses;

c. A debit or credit entry each month equal to the capital-related revenue requirement based on the recorded capital costs, net of RF&U, associated with the EVC 2 Program. Capital-related revenue requirements include depreciation expense, return on investment, federal and state income taxes, and property taxes associated with the costs of installed equipment;

d. A debit or credit entry to transfer the balance to the Distribution Revenue Adjustment Mechanism (DRAM) or to any other regulatory balancing account as authorized by the Commission; and

e. An entry equal to interest on the average balance in the account at the beginning of the month and the balance after the above entries, at a rate equal to one-twelfth of the interest rate on three-month Commercial Paper for the previous month, as reported in the Federal Reserve Statistical Release, H.15 or its successor.

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PACIFIC GAS AND ELECTRIC COMPANY

APPENDIX A

STATEMENTS OF QUALIFICATIONS

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF SUNCHETH BHAT

Q 1 Please state your name and business address.

A 1 My name is Suncheth Bhat, and my business address is Pacific Gas and Electric Company, 77 Beale Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am the director of the Clean Energy Transportation group, within the Customer Care department at PG&E. My responsibilities include overseeing teams focused on implementing Electric Vehicle infrastructure and non-infrastructure pilots and programs and developing transportation electrification policy and regulatory proceedings.

Q 3 Please summarize your educational and professional background.

A 3 I received a Bachelor of Arts degree in business-economics from the University of California, Los Angeles and a Master of Business Administration degree from The Wharton School, University of Pennsylvania. I began my career with PG&E in 2006 and have been in various roles in the Finance, Regulatory Affairs, and Customer Care departments including senior business planner, senior regulatory case manager, regulatory manager, chief of staff to the chief financial officer, director of business finance, and director of clean energy programs. In 2019, I began my current responsibilities overseeing the Clean Energy Transportation group. Prior to PG&E, I worked at Bechtel Corporation for two years as a senior project controls analyst on the construction of wireless telecommunications infrastructure.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's 2021 Electric Vehicle Charge 2 Prepared Testimony:

- Chapter 1, "Policy and Program Objectives."

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF CLAIRE COUGHLAN

Q 1 Please state your name and business address.

A 1 My name is Claire Coughlan, and my business address is Pacific Gas and Electric Company, 245 Market Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am a Manager in the Income Qualified Programs & Disadvantaged Communities Department. My responsibilities include overseeing a team responsible for developing and conducting pilot programs and studies to improve PG&E's programs and policies impacting income qualified customers and customers residing in disadvantaged communities.

Q 3 Please summarize your educational and professional background.

A 3 I received a Bachelor of Science degree in Civil Engineering from Loyola Marymount University in 2008, and a Master's degree in Business Administration from the University of Notre Dame in 2014. I have worked at PG&E since 2014 and have held various positions across the organization in addition to my current role. These positions include: Principal Program Manager for Disadvantaged Communities, Principal Electric Program Manager, Manager of MBA Leadership Program, Principal of Regulatory Strategy, and MBA Leadership Associate. Prior to PG&E, I was a design engineer with a small consulting firm that provided water resources management and civil engineering design services.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's 2021 Electric Vehicle Charge 2 Prepared Testimony:

- Chapter 6, "Marketing, Education, Outreach and Equity Initiatives":
  - Sections A, C, and D.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF BRUCE J. GOLLICKER JR.

Q 1 Please state your name and business address.

A 1 My name is Bruce J. Gollicker Jr., and my business address is Pacific Gas and Electric Company, 245 Market Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am a Principal Marketing Strategist for PG&E's Clean Energy Programs. I am the marketing lead for strategic planning, development, and implementation of customer marketing, education and outreach plans for Clean Energy Transportation residential and non-residential, Self-Generation Incentive Program, and Distributed Generation programs.

Q 3 Please summarize your educational and professional background.

A 3 I received a Bachelor of Science degree in business administration, with concentration in marketing from the University of Delaware.

Prior to working for PG&E, I spent more than 15 years in advertising and marketing services agencies leading consumer brand and product campaigns across a variety of business types. During this time, I developed and implemented advertising campaigns focused on sales increases year over year and brand affinity in broadcast, digital and print communications.

In 2014, I accepted the contract position of program marketing manager with PG&E and became a full time employee in 2015. From 2014-2015, I was responsible for improving the customer experience for first year solar customers. In 2016, my responsibilities evolved to include Solar Choice where I developed and executed a marketing outreach plan. In 2018, responsibilities were added to include residential Electric Vehicle (EV) outreach focused on the clean fuel rebate and promotion of the EV Savings Calculator tool. In 2019, I added Self Generation Incentive program marketing strategy and execution to my responsibilities with the focus on promoting batteries to customers on Medical Baseline. Late last year, I began leading marketing strategy and execution for the EV Fleet program. I continue to support all programs and lines of business list above while also

being the Electric Vehicle Charge 2 witness for Marketing, Education and Outreach.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following marketing specific testimony and supporting workpapers in PG&E's 2021 Electric Vehicle Charge 2 Prepared Testimony:

- Chapter 6, "Marketing, Education, Outreach and Equity Initiatives":
  - Section B; and
- Workpapers supporting Chapter 6, Section B, "Marketing, Education, Outreach and Equity Initiatives."

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF BRANDON JAZMIN

Q 1 Please state your name and business address.

A 1 My name is Brandon Jazmin, and my business address is Pacific Gas and Electric Company, 77 Beale Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am a Business Analyst, Expert for PG&E's Clean Energy Transportation (CET) team. Within the CET organization, I support the Program Management Office (PMO) where I focus on PG&E's light-duty pilot, Electric Charge Vehicle Network (EVCN).

Q 3 Please summarize your educational and professional background.

A 3 I graduated from the University of California (UC), Davis with a Bachelor of Arts degree in Economics. Following my undergraduate education at UC Davis, I worked for a number of consulting firms where I focused on economic consulting engagements. In 2015, I joined PG&E and supported a number of different internal organizations in a finance capacity. In 2020, I joined CET's PMO team.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's 2021 Electric Vehicle Charge 2 Prepared Testimony:

- Chapter 7, "Program Costs and Results of Operations":
  - Section A.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF BENJAMIN KOLNOWSKI

Q 1 Please state your name and business address.

A 1 My name is Benjamin Kolnowski, and my business address is Pacific Gas and Electric Company, 77 Beale Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am the Manager of Electric Rates within the Regulatory and External Affairs organization at PG&E. In this capacity, I am responsible for overseeing the development of electric rates, including rate design proposals for presentation, review, and approval by the California Public Utilities Commission.

Q 3 Please summarize your educational and professional background.

A 3 I received a Bachelor of Science degree in Mechanical Engineering from University of California, Los Angeles in June 2012. From 2012 through 2015, I worked as an Engineer in PG&E's Gas System Planning Department. From 2015 through 2016, I joined the Strategy, Technology, and Support team at PG&E, where I developed technology, processes, and procedures to support the Gas System Planning Department.

I received a Master's degree in Business Administration (MBA) from the Anderson School of Business at University of California, Los Angeles in June 2018. After completing this degree, I rejoined PG&E in September 2018 as an MBA Associate, working in the Rates Department within the Regulatory and External Affairs organization on rotation. In April 2019, I permanently joined the Rates Department as an Expert Data Scientist. One of my main responsibilities in both roles had been to develop the electric sales and customer forecasts used for electric rate design. In February 2020, I entered my current role managing the Electric Rates team and have sponsored PG&E rate design proposals in various proceedings including the Energy Resource and Recovery Account Forecast proceeding and General Rate Cases.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's 2021 Electric Vehicle Charge 2 Prepared Testimony:

- Chapter 8, "Cost Recovery and Rate Design":
  - Section E.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF MEREDITH MORFORD

Q 1 Please state your name and business address.

A 1 My name is Meredith Morford, and my business address is Pacific Gas and Electric Company, 77 Beale Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 As Manager of Clean Energy Transportation Project Delivery, I oversee the Engineering, Construction, Project Management and Contract Management teams who execute much of the work for the Clean Energy Transportation Department.

Q 3 Please summarize your educational and professional background.

A 3 I graduated with a Bachelor of Science degree in Business Administration, with an emphasis in Finance from California State University, Chico. I earned a Master of Business Administration degree, with an emphasis in Marketing from Saint Mary's College of California. I've earned a Professional Certificate in Energy Innovation and Emerging Technologies from Stanford University, a Project Management Certificate from University of California, Los Angeles, and a Strategic Human Resources Leadership Certificate from Cornell University. I started my professional career working for Pacific Gas and Electric Company in 2007 as an Associate Business Planner. Throughout my tenure at Pacific Gas and Electric Company, I have supported the Finance, Power Generation, Human Resources and Customer Care departments in various roles with increasing responsibility. I have been a part of the transportation electrification team since 2018 supporting customer acquisition and onboarding as well as in my current role supporting project delivery. My varied experience in finance, operations human resources and customer care help me to lead the diverse employees on the Project Delivery team to delivery results with the customer in mind.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's 2021 Electric Vehicle Charge 2 Prepared Testimony:

- Chapter 2, "Deployment Strategy"; and

- Chapter 4, “Program Implementation.”

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF MICKEY PUN

Q 1 Please state your name and business address.

A 1 My name is Mickey Pun, and my business address is Pacific Gas and Electric Company, 77 Beale Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am Regulatory Analyst, Senior in the PG&E's Revenue Requirements and Results of Operations team. Within the team, I support the incremental case Electric Charge Vehicle Network.

Q 3 Please summarize your educational and professional background.

A 3 I graduated from University of South Carolina with a Bachelor of Science in Business Administration with concentration in Finance. I also received a Master's degree in Business Administration at Winthrop University with additional course work at Duke Law School and Harvard University. I have worked in Finance and Analytical roles at Safeway, WalmartEcommerce, Genentech and Google. I joined PG&E in May 2021 in Revenue Requirements team.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's 2021 Electric Vehicle Charge 2 Prepared Testimony:

- Chapter 7, "Program Costs and Results of Operations":
  - Section B.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF MARIA SANZ

Q 1 Please state your name and business address.

A 1 My name is Maria Sanz, and my business address is Pacific Gas and Electric Company, 77 Beale Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I work on the Vehicle Grid Integration (VGI) Team within PG&E's Integrated Planning and Innovation (IGPI) Team. In my role, I lead PG&E's VGI efforts.

Q 3 Please summarize your educational and professional background.

A 3 I received an MS degree in Electrical Engineering from University of Valladolid, Spain, and an MS degree in Automation and Energy Systems form the University of Manheim, Germany. I have worked at PG&E since 2018 and held roles in Energy Procurement and IGPI. Prior to PG&E, I had various positions in the energy field including one focused on power engineering for advanced power infrastructure projects.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's 2021 Electric Vehicle Charge 2 Prepared Testimony:

- Chapter 5, "Vehicle-Grid Integration Approach."

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF SHANNON L. SIMS

Q 1 Please state your name and business address.

A 1 My name is Shannon L. Sims, and my business address is Pacific Gas and Electric Company, 77 Beale Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am an Expert Regulatory Analyst and Forecasting Analyst in the Energy Accounting Department at PG&E. My responsibilities include developing testimony in support of proceedings filed at the California Public Utilities Commission on matters related to cost recovery.

Q 3 Please summarize your educational and professional background.

A 3 I received a Bachelor of Science degree in business administration, with emphases in accounting and marketing, from the University of California at Berkeley. I received my certified public accountant license in the state of California while working for Deloitte & Touche LLP. I began my career with PG&E in 2001 as a Senior Accounting Analyst within the Technical Accounting section of the Controllers' Department. I joined the Regulatory Affairs Department in 2004. In this department, my responsibilities included project managing and drafting PG&E's Annual Electric True-Up and Annual Gas True-Up advice letters. I rejoined the Controllers' Department in 2017 and assumed my current position in 2019.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's 2021 Electric Vehicle Charge 2 Prepared Testimony:

- Chapter 8, "Cost Recovery and Rate Design":
  - Sections A, B through D, and F.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF MAYA WOLF

Q 1 Please state your name and business address.

A 1 My name is Maya Wolf, and my business address is Pacific Gas and Electric Company, 77 Beale Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I work on the Regulatory, Compliance, and Pilots team within PG&E's Clean Energy Transportation group. In my role, I have led the development of this EV Charge 2 program proposal. I additionally work on the Utility's transportation electrification resiliency strategy. Outside of the Clean Energy Transportation group, I serve as Deputy Temporary Generation Branch Director for PG&E's Emergency Operations Center.

Q 3 Please summarize your educational and professional background.

A 3 I received a Bachelor of Arts degree from Reed College and a Master's degree in Business Administration from Cornell University. I have worked at PG&E since 2018 and held roles in Power Generation and Energy Procurement. Prior to PG&E, I managed fundraising and engagement campaigns to stop industrial water pollution in San Francisco Bay and, earlier, to mobilize business executives to invest in clean energy technologies.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's 2021 Electric Vehicle Charge 2 Prepared Testimony:

- Chapter 3, "Program Overview":
  - Sections A through F.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.