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2026 Annual Report

Load Management Standards Compliance Plan

PENINSULA CLEAN ENERGY

Table of Contents

Introduction

Peninsula Clean Energy Authority (PCE or PCEA) submits this report pursuant to 20 Cal Code Regulations §1623.1(a)(3)(C). This report outlines PCE's efforts to implement its Load Management Standard (LMS) Plan as submitted to the California Energy Commission (CEC) on March 21, 2025, and approved on May 8, 2025, in Docket 23-LMS-01.

PCE supports the overall objectives of the LMS Plan. These strategies are important for PCE's goal of serving its customers with 100% renewable energy on a high time-coincident basis in coming years. Since this requires the matching of load to the generation of PCE's contracted variable energy generation resources, load shifting is a critical strategy for PCE to achieve this goal. PCE looks forward to working with the California Energy Commission (CEC) in the coming years to develop cutting-edge and cost-effective approaches to achieving the overall goals of the standard.

1. PCE LMS Plan

1.1. Overview

To meet LMS goals, designing and implementing PCE Marginal Cost Based (MCB) rates is not cost-effective or technically feasible, as discussed below. However, PCE opted to participate in Pacific Gas & Electric (PG&E) Company's Real-Time Pricing (RTP) rate pilots, now known as Hourly Flex Pricing (HFP) pilots. This is a more effective approach to LMS-compliant rate offerings. PCE filed Advice Letter (AL) PCEA-039-E on November 1, 2024, providing notice to the California Public Utilities Commission (CPUC) that PCE was going to participate in PG&E's HFP pilots to fully comply with the LMS as approved by the CEC.

1.2. RTP Pilots

PCE is participating in PG&E's HFP pilots for residential, commercial, and commercial electric vehicle (EV) charging customers.[1]

1.2.1. Early Learnings, Milestones, and Challenges

PCE has 65 individual customers enrolled in HFP, totaling 168 accounts. Fifty-six percent of those accounts are from large customers with dedicated PCE and PG&E account management staff, receiving direct outreach and recruitment into the pilots. While the subscribed load is almost entirely large commercial and industrial (C&I) managed accounts, all customers should have received PG&E solicitations offering risk-free

[1] PCE opted not to participate in a HFP pilot for agricultural customers, because PCE has very few agricultural customers and even a highly effective pilot would not materially change PCEs peak loads.

enrollment. Outside of these large solicitations, PCE has seen approximately 4 accounts enrolled per month.

PCE supports the pilot design of a subscribed historical load shape, with dynamic pricing only applying to deviations from the historical load shape. This design requires customers to change their usage behavior during specific event days to in order to receive bill credits. This differs from full dynamic pricing where customers may pay less for the same usage due to a favorable load shape. In other words, requiring event-based behavioral changes provides real benefits to customers and the grid, rather than full dynamic pricing which can generally result in letting some customers opt into lower pricing for the same usage behavior.

During the first six months of operation, PCE noticed a critical issue with how HFP credits were applied to demand-metered customers. Under the original program design, the subscription (i.e. non-dynamic) charges were billed by scaling the historical load usage up or down to match the current usage for the billing period. Since this load profile is built using the averaged historical usage, it eliminated demand volatility and resulted in a large reduction to billed demand for participating accounts, regardless of any real usage changes. As large C&I customers are billed for their transmission, distribution, and Resource Adequacy (RA) costs almost entirely based on their billed demand, this resulted in bill discounts averaging 12% and as high as 63%.

Average Bill Savings Under HFP, Before & After Demand Changes, through 2/28/26

Demand Calculation	**Rates with Demand**	**Rates Without Demand**
Pre-Changes	12%	-1%*
Post-Changes	2%	0%

* Negative percentage indicates dynamic pricing resulted in increased bills

While the issue mentioned above was resolved, it was costly to PCE as it reduced generation revenue associated with demand without an equivalent reduction to operational costs. At least one participant was confused on why they were receiving such large credits despite taking no measures to change their load usage. While PG&E has since changed this methodology, so that billed demand charges under dynamic pricing use current demand instead of historical averages, it has elected to allow customers to keep these credits in full.

Community Choice Aggregation (CCA) participation incentives will also be lower than expected. That is, recruitment of very large C&I customers has caused enrolled load to exceed the incentives allotted, resulting in a pro-rata distribution of partial payments. Combined with the demand issue above, PCE expects that credits granted to customers will exceed the incentives PCE receives during the first year of the pilot. Another issue identified revolves around new customers who do not have historical data from which to generate a baseline subscribed load. New customers are therefore evaluated compared to typical loads of their customer class within PG&E's service area. If that same customer

does “better” than the baseline that was evaluated for them, they will earn credits even when no load reductions or price-induced response occurred. This is an inequitable outcome to customers that are achieving load reductions compared to their historical data and are being responsive to prices. PCE therefore recommends that the program be updated to require 12 months of historical data before customers are eligible for enrollment. Moreover, PCE recommends that the HFP pilot be kept as a subscription-based program, allowing Automation Service Providers (ASP) the opportunity to continue to adapt to its price signals.

2. MIDAS & RIN

PCE has limited input on the design and placement of Rate Identification Numbers (RINs) on the customer billing statements since those are controlled and printed by the Investor-Owned Utility (IOU) billing agent (PG&E in this case). However, PCE is working with its third-party provider (Calpine Energy Solutions, or Calpine) for data management and billing services and PG&E to comply with LMS requirements for RINs. Attachment A includes PCE’s list of RINs as well as applicable tariff and rate modifiers, and customer class.

2.1. Market Informed Demand Automation Server (MIDAS)

As PCE’s data management and billing services provider, Calpine is performing its regular MIDAS rate maintenance uploads as well as new uploads required when PCE updates its electric rates. These uploads contain all required rate tariffs and modifiers (2016 & 2022 Power Charge Indifference Adjustment (PCIA) vintages) and are confirmed with validation reports to verify the RINs sent by Calpine match the RINs in the MIDAS database.

2.2. RINs and QR Codes on Customer Bills

RINs are now present on PCE customer bills and are added to the billing statements by PG&E. Customers can see the PCE MIDAS rate identification number in both text and QR code form in the upper right portion of the swimlane on the PCE page of the PG&E billing statement. The codes come with a short description of how customers can program their smart devices through guided online instructions accessible on the PG&E RIN webpage.

3. Load Flexibility Programs

3.1. Overview

Load flexibility and grid reliability are key elements of PCE’s decarbonization strategy. PCE has multiple offerings currently and is exploring a number of additional leading-edge options for its customers. Although these programs are not strictly how PCE complied with the requirements of the LMS (the HFPs remain the primary compliance measure), these programs still play a central role in PCE’s load-shifting strategy to meet the objective of the

LMS, especially given ongoing uncertainties in the future of the PG&E HFP pilots and whether MCB rates will prove cost effective or feasible in future.

PCE has established the following objectives for its distributed energy resource (DER) programs:

- Provide grid benefits, especially peak shaving, to reduce wholesale costs and carbon intensity, aiding further penetration of renewables.
- Enable resilience.
- Lower operating costs for customers.
- Make electrification more economically beneficial.
- Create scalable deployment through sustainable models.

PCE's approach includes a focus on avoiding unnecessary electric panel capacity increases, which can result in added costs and reliability challenges. By focusing on *"right-sizing"* of equipment and infrastructure such as guidelines for residential electrification within 100-amp service,[2] use of low-power charging in multi-family buildings, and fleet infrastructure planning,[3] the state can improve affordability outcomes by avoiding unnecessary costs from being added to the rate base. As one example, PCE has facilitated the installation of over 760 low-power Level 1 charging in multifamily overnight parking which provides EV charging at lower cost and "automatic" load shaping through a flat load profile.[4] This delivers load shaping at $2,700 per port and with comprehensive participation of all users of this charging infrastructure in contrast to expensive EV load shaping approaches, which typically garner low participation rates and very low load shaping benefit.[5]

In addition, the PCE Strategic Plan for 2026-2030 includes a target of accelerating DER adoption by adding at least 15 MW of local solar and 35 MWh of storage at customer sites, while also launching a 10 MW virtual power plant (VPP) that delivers value to customers, communities, and the grid. PCE has made progress towards this goal by developing multiple iterations of residential and non-residential solar + battery storage programs as further described below. Under all of its Energy Programs, PCE has focused on developing a portfolio of flexible and active load-shaping technologies aimed at significantly reducing grid peak loads. At this time, PCE programs emphasize continuous load shaping, in

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[2] Blake Herrschaft, *Design Guidelines for Home Electrification*, 7-12 (2023), https://library.peninsulacleanenergy.com/m/5a0e507f4178d7c2/original/Design-Guidelines-for-Home-Electrification.pdf

[3] *San Carlos Case Study: EV chargers for your fleet, less is more*, Peninsula Clean Energy, https://www.peninsulacleanenergy.com/san-carlos-case-study-ev-chargers-for-your-fleet-less-is-more/; *Access to slow EV chargers could speed up EV adoption among renters*, Canary Media, https://www.canarymedia.com/articles/ev-charging/access-to-slow-ev-chargers-could-speed-up-ev-adoption-among-renters

[4] https://www.peninsulacleanenergy.com/pce-resources/ev-ready-program-strategy-overview/

[5] https://www.peninsulacleanenergy.com/pce-resources/pce-ev-managed-charging-pilot-results/

contrast to event-driven curtailment, to maximize the benefits of load shaping for customers and the grid.

PCE has worked to innovate with technology and software providers to advance functionality that will allow for broad participation and help maximize potential resources, optimized for customer and grid needs. Multiple approaches are being continually assessed and PCE is learning from these initiatives to inform future program designs and implement the technology needed to scale adoption.

The following is a list of current and planned program offerings for reliability, load reduction, and grid services.

3.1.1. Solar and Storage for Public Buildings

Overview: Public agencies have significant interest in the deployment of solar and storage systems to reduce costs and provide resilience for power outages and emergencies. PCE operates a solar and storage program aimed at improving the economics of distributed solar and storage for public agencies, called the GovPV Program. This program operates in cohorts in which PCE assumes the role of developer, providing upfront project development services, procurement, and financing under a PCE-supplied power purchase agreement (PPA) for the local government agency. Systems are then installed by a construction firm under contract with PCE. PCE owns the systems, where it leverages and provides ongoing operations and maintenance support with a performance guarantee.[6] PCE initially prioritized installing solar at these facilities, and will focus on adding battery storage in 2026-2028, which will provide backup power for outages and dispatch for peak load reduction.

Status: At this time, 15 solar systems are operational, and an additional 21 are near completion, representing over 5 MW of solar in total. Battery retrofits and new solar + storage projects have begun development and are projected to provide an additional 2 MW / 4.8 MWh of storage capacity. Dispatch will be optimized for grid support and will be administered directly through PCE's existing distributed energy resource management system (DERMS), provided by Lunar Energy (i.e., the Lunar Gridshare Platform).

3.1.2. Residential Solar and Storage

Overview: Residential storage systems, typically paired with solar, are growing in popularity. In early 2025, there were approximately 6,500 accounts with battery storage systems with a capacity of approximately 88 MWac in PCE's service area.[7] With the state's

[6] *US climate law introduces billion-dollar 'game-changer' for nonprofits*, Canary Media https://www.canarymedia.com/articles/climatetech-finance/us-climate-law-introduces-billion-dollar-game-changer-for-nonprofits

[7] Q1 2025 PG&E Interconnection Data for Peninsula Clean Energy service territory.

adoption of the Net Billing Tariff, PCE observed a significant increase in the solar + storage attachment rate in our service territory. PCE has had a residential solar + storage program since 2020, and since 2022, has been providing daily load shaping data into a reduced annual load forecast submitted to the CEC. That program has approximately 550 residential systems actively dispatching daily for an average capacity of 1.6 MW / 3.3 MWh.

Status: In recent years, PCE has further developed its residential solar and storage efforts. In 2024, PCE expanded its residential solar + storage programming to low-income customers, leveraging funding from the state's Self-Generation Incentive Program (SGIP). Under the Solar + Battery Savings (SBS) Program, PCE is facilitating the installation of solar + storage or standalone storage systems at nearly 250 low-income customer homes at no cost to the customer. In aggregate, the storage systems under the program are expected to provide approximately 2 MW of dispatchable capacity, controlled and managed under PCE's DERMS platform. At this time, integration work is being finalized and PCE expects to actively manage residential batteries via its DERMS platform by summer 2026.

In addition, PCE plans to launch a general market residential solar and storage program leveraging third-party financing in 2026. Storage systems installed under the general market programs are also expected to be coordinated through the DERMS platform to further PCE's ability to provide grid services through its VPP.

3.1.3. FLEXmarket

Overview: PCE offers an innovative energy efficiency (EE) program, called "FLEXmarket," to provide incentives to project implementers based on the energy savings measured at the customer's meter. The program utilizes Normalized Metered Energy Consumption (NMEC) methodology to assess EE projects based on their actual performance weighed against grid benefits with the Avoided Cost Calculator (ACC). PCE is implementing this approach as the program values grid benefits (via the ACC) which allows targeting EE measures that have load-shaping benefits. This program operates across all customer classes for permanent load shifting achieved by targeted EE and electrification. The FLEXmarket program is a CPUC-funded program.

Status: PCE launched its FLEXmarket program in 2022 primarily for the commercial sectors. Eleven commercial projects were completed in the first iteration of the program yielding over 1,600 MWh of savings and over 100 kW of peak reduction. PCE recently received approval from the CPUC to extend the program through 2027 and is currently working on its re-launching.

3.1.4. Residential Electrification

Overview: PCE operates a residential electrification "Home Upgrade Service" program – replacing aging, polluting methane gas systems with efficient electric alternatives. This program includes a no-cost direct install offering for income-qualified customers. The

program has upgraded over 350 homes with heat pump systems and other efficient electric measures. PCE also piloted whole-home electrification of 9 single-family homes to assess costs and demonstrate electrification through right-sizing that minimizes grid impacts by fully electrifying within existing electric panel capacity (typically 100 amps).[8] Finally, PCE has also piloted an advanced load-shaping technology in space and water heating combo systems which can shift load in both applications through the thermal storage of the water tank and the advanced system logic of load shifting away from on-peak usage.[9] PCE currently provides incentives to customers for the installation of load-shaping combo systems.

Status: The HUS program expanded in 2024 to allow for whole-home electrification. Numerous innovations are being incorporated into this program including electrification within 100 amps of the electric service panel through right-sizing, use of advanced combo systems, and integration of battery-enabled ranges and other advanced technology. Load shaping through smart thermostats, battery backed HVAC, heat pump water heaters (HPWHs) and other devices is envisioned, possibly managed through the PCE DERMS.

3.1.5. GovEV

Overview: The GovEV Program helps municipal fleet owners plan for fleet electrification by providing technical assistance for vehicle replacement purchasing and the installation of EV chargers. As a component of this program, PCE produces a charging optimization plan, which outlines the cost potential of managed charging for their specific fleet. PCE is also offering program participants the ChargePilot charge management system by The Mobility House free of charge for one year. The ChargePilot system will help shift more fleet charging to occur during off-peak hours and mitigate demand charges, as well as provide insights into EV charging metrics for fleet managers.

Status: The program is open and 15 fleets are currently enrolled.

3.1.6. Electric Vehicle Managed Charging

Overview: PCE territory has one of the state's fastest adoption rates for EVs with over 64,000 EVs on the road today with EVs accounting for over a quarter of total new vehicle sales. Managing EV charging is a high priority for PCE with an emphasis on residential sector. Moreover, since most EV charging is occurring in the evening, PCE is also focused on shifting EV charging out of the evening peak. Going beyond the evening peak, PCE is also prioritizing minimizing the secondary midnight peak (also called a "timer peak" or

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[8] *Case Study of Whole-Home Electrification in San Mateo County,* https://library.peninsulacleanenergy.com/m/24e2e90876980d43/original/Case-Study-of-Whole-Home-Electrification-in-San-Mateo-County.pdf

[9] TRC / Rupam Singla, *Harvest Thermal Pilot: Measurement and Verification Report* (2023), https://library.peninsulacleanenergy.com/m/18f5ffa02aa0f10b/original/Harvest-Thermal-Pilot-Independent-Verification-Report.pdf?_gl=1*n1uomn*_gcl_au*MzAwNTA1MjcyLjE3Njk1MzM1Nzc.

"shadow peak") that can affect local distribution networks. To do this, PCE has focused on leading-edge strategy by using vehicle telematics, which controls EV charging through the vehicle as opposed to charger-based load management. Since the installed base of smart chargers is very small and such chargers are costly, the telematics approach holds greater promise because nearly all vehicles can participate without special equipment. PCE has completed two phases of managed charging pilots. In 2020, the first phase was a successful proof of concept executed with 7 vehicles. From 2023 to 2024, PCE executed its second-phase pilot demonstrating scaled operation of EV-managed charging working with the University of California at Davis (UC Davis) as a research partner to evaluate incentive structures and assess outcomes.

Status: About 700 vehicles participated in the second-phase pilot which included extensive evaluation of incentive structures. The UC Davis (UCD) Energy and Economics Program's (DEEP) research team completed its analysis and recently published its results via the National Bureau of Economic Research.[10] The UCD results, which matched PCE's own analysis,[11] indicate that the technology works and provided some benefits, especially for the midnight peak. However, enrolling participants is extremely challenging. Opt-in managed charging programs produce significant self-selection bias among participants. The drivers who tend to enroll are technology savvy customers typically already timing their charging. As a consequence, very little evening peak reduction is produced and cost is high. The research strongly suggests the assumptions that EV load shaping can or should occur through shifting Level 2 charging is very unlikely to be successful given the challenges with EV managed charging. At this time, PCE's approach to right-sizing has demonstrated that Level 1 charging provides scalable load shaping through passive means and active managed charging will likely need a mechanism for vehicles to be sold "pre-enrolled" in some form to successfully scale. PCE is continuing to investigate the best options for additional management of EV charging.

3.1.7. Program Design to Meet LMS Goals

As mentioned in its LMS Plan, each of these programs is envisioned to incorporate remote dispatch DERMS or comparable technologies, which will enable all of these programs to become automated MCB signal responsive programs, as envisioned in 20 Cal. Code Regs. § 1623.1(a)(1)(B).

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[10] Burlig, Fiona, Bushnell, James B., & Rapson, David S. (2026). If You Build It, They May Not Come: Willingness to Participate in Managed EV Charging. *National Bureau of Economic Research*. https://www.nber.org/system/files/working_papers/w35086/w35086.pdf

[11] *PCE EV Managed Charging Pilot Results,* https://library.peninsulacleanenergy.com/m/91b5939732755c7/original/EV-Managed-Charging-Pilot-Final-Report.pdf?_gl=1*9k5pl8*_gcl_au*MjA0OTEyMjMzMi4xNzY5NTUwNjk2

4. Conclusion

In summary, through participation in PG&E's HFP pilots, PCE has gained some valuable insights. As mentioned earlier, the following recommendations are provided to improve the program:

- Update the HFP pilots to require 12 months of historical data before customers are eligible for enrollment.
- That the HFP pilots be kept as a subscription-based program, allowing ASPs the opportunity to continue to adapt to its price signals.

Moreover, PCE's decarbonization strategy includes key elements like load flexibility and grid reliability, where several programs play a central role in PCE's load-shifting strategy to meet the objective of the LMS. From solar + storage for public buildings to electric vehicle managed charging, PCE aims to enable continuous load shaping, in contrast to event-driven curtailment, to maximize the benefits for customers and the grid.

PCE looks forward to continued collaboration with the CEC regarding furthering the goals of LMS. Whether that is through sharing PCE’s implementation experience of RTP pilots or assessing the benefits of load reflexibility programs on reliability, load reduction, and grid services, PCE is ready and willing to be a thought partner in this effort.