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Docket Number:	20-MISC-01
Project Title:	2020 Miscellaneous Proceedings.
TN #:	236817
Document Title:	Public Comments on January 25, 2021 CEC V2B Workshop
Description:	<p>Fermata Energy is pleased to submit comments in response to the January 25, 2021 CEC V2B Workshop. Please find our comments attached.</p> <p>As an electric vehicle service equipment (EVSE) manufacturer and service provider (EVSP), Fermata is one of very few technology companies actively working to advance commercial implementation of vehicle-to-grid ("V2G"), and vehicle-to-x ("V2X"), and specifically vehicle-to-building (V2B) technology. Fermata's comments discuss current regulatory barriers to V2X, which have been identified by Fermata and other V2X service providers and stakeholders, and ways these barriers may be addressed.</p> <p>Fermata greatly appreciates the work of the Commission and staff in organizing and leading the recent V2B Workshop. Thank you for the opportunity to provide comments to help advance the adoption of V2X technology in California.</p>
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Submitter Role:	Public
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February 16, 2021

Ms. Patricia Monahan, Lead Commissioner on Transportation
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Via: CEC Docket 20-MISC-01

Re: Public Comments on January 25, 2021 CEC V2B Workshop

Dear Commissioner Monahan,

Fermata Energy (Fermata) is pleased to submit comments in response to the January 25, 2021 CEC V2B Workshop. Fermata was created for the dual purposes of accelerating the adoption of electric vehicles (“EV”) and accelerating the transition to a renewable energy future. As an electric vehicle service equipment (EVSE) manufacturer and service provider (EVSP), Fermata is one of very few technology companies actively working to advance commercial implementation of vehicle-to-grid (V2G), vehicle-to-x (V2X), and specifically vehicle-to-building (V2B) technology.

Fermata greatly appreciates the work of the Commission and staff in organizing and leading the recent V2B Workshop on January 25, 2021. The workshop served as an invaluable opportunity for stakeholders, including academia, automotive OEMs, utilities, and industry members such as Fermata, to discuss market, technology, and regulatory needs and barriers to deploying bi-directional plug-in EVs and chargers that are capable of powering critical loads in commercial buildings and homes during electric grid outages such as public safety power shutoffs (PSPS). We fully support the Commission’s work to promote understanding around V2B advancement in California and commend the Commissioners and staff for their commitment to supporting this critical piece of the state’s transportation electrification framework.

Fermata believes the Commission should prioritize addressing current barriers to V2X, which have been identified by Fermata and other V2X service providers and stakeholders. Specifically, three areas need to be addressed:

1. **Pilot Funding Specifically for V2B use cases with light-duty fleet vehicles, such as V2H and V2B:** While V2G technology has been proven, its use in the California market needs to be developed. CEC pilot programs present an ideal venue for this to take place because CEC pilots are tied to the market adoption and use of technology. However, Fermata is ineligible for most CEC grant funding opportunities because our current charger is designed for use only with light-duty fleet vehicles. We have noticed that most CEC pilot funding programs have not been aligned with the light-duty vehicle V2B use cases that we can readily pilot, such as behind-the-meter demand charge management / customer

bill management, demand response, backup power, etc. Many V2B and V2G pilots have been designed for the medium-and-heavy (MHD) duty fleet use cases, for V2G/B pilots using bus, drayage, and yard trucks. While pilots for the MHD use cases are needed, pilot funding must also be directed toward light-duty V2B use cases to ensure that CEC funding is technology-neutral and keeps a level playing field. We therefore ask the Commission to consider V2B and V2H pilots for the light-duty vehicle for which Fermata’s current off-board, bidirectional DC system would be eligible.

We have already demonstrated the financial viability of demand charge management and frequency regulation with light-duty fleet vehicles through two successful pilot projects conducted in 2016 and 2019. A recent case study by E Source — a leading research and advisory firm — demonstrates the viability, commercial readiness, and savings potential of bidirectional charging technology. The study found that a bidirectional charger paired with a Nissan LEAF could save a commercial customer in southern Virginia on average \$1900/year electric bills — almost covering the cost of the lease or financing costs for the car. In other parts of the country (including California, Colorado, Indiana, Michigan, and the Northeast) savings can range from \$5000 - \$13,000 annually.¹ Pilots such as this one in Danville, VA, and the ones described below (please see Fermata Background, page 6), which are currently ongoing, are the types needed to pilot in California this year.

We strongly agree with other stakeholder recommendations in the CPUC SGIP-OIR that a combination of workshops to determine V2L and V2G use cases, develop program metrics, and most importantly get real pilot programs in the ground to determine next steps and answer questions (about GHG reductions, M&V, and permanence issues) are necessary.² As the VGIWG Final Report and SGIP party comments illustrate, the V2X permanence issue remains an open question that merits additional study and research. But without a performance-based incentive or CEC pilots to test specific V2G, V2H, V2M, and V2B use cases recommended by the VGI Working Group, concerns about VGI implementation metrics, including feasibility, cost-effectiveness, permanency, and GHG reduction, cannot be studied or satisfied. A well-designed CEC pilot program can address issues such as permanence and existing incentives.

CEC pilots targeted toward the V2B light-duty vehicle use case would enable Fermata and the industry to assess how V2B projects can perform on an on-going basis and what level of incentive is appropriate. Performance-based programs can directly support V2L and V2G activity by incentivizing EVs to charge and discharge similarly to stationary systems, which are linked to grid GHG emissions and do not duplicate the LCFS program’s financial benefits. We recommend funding pilots for V2B use cases that operate almost exactly like a stationary battery in order to address concerns about permanence and performance. Ideally, a variety of both V2L and V2G use cases should be piloted and studied.

¹ <https://www.fermataenergy.com/news-press/proven-results-and-cost-savings-with-v2g-technology>

² SCE comments on September 16, 2020 in SGIP-OIR at 8.

Our recommended V2L use cases use a bidirectional charger and an EV connected to a larger, permanent load such as a commercial building, apartment building, industrial site, single-family home, master-metered campus, or microgrid. These use cases are always behind a load to prevent backfeeding and can utilize an off-board DC charger that has a permanent, Rule 21 compliant inverter and interconnection agreement.³ CEC pilots can also focus on “unified” systems where the charger and EV are operated (and in some cases owned) by the same entity, such as fleets and private residences.

If low and moderate-income apartment complexes and buildings are targeted for V2L, bidirectional charging turns electric vehicles into revenue-generating assets for equity communities. With bidirectional charging, families and businesses can reduce—or in some cases, completely offset—the cost of owning of a vehicle. Parked vehicles could deliver real value for their owners for the first time. Families struggling to pay the bills and businesses looking to cut costs would both benefit. The benefits for disadvantaged communities would be especially strong, providing affordable mobility with clean vehicles that produce no air pollutants.

2. **Inclusion of Fermata EVSE eligibility for CALeVIP EVSE rebates:** [Only equipment specifically verified and approved by CALeVIP are eligible to receive rebates.](#) The unique electrical configuration of Fermata’s EVSE (480V/3 Phase, 15 kW, offboard DC, CHAdeMO) disqualifies it from the current CALeVIP rebate program. Fermata’s bidirectional charging equipment fits into neither the Level 2 nor DC Fast Charger Eligible Equipment categories. Because Fermata’s charger utilizes the bidirectional CHAdeMO EV charging standard, and does not use a SAE J1772 charging connector, it is automatically disqualified from Level 2 incentives. The requirement that DC Fast Chargers must have a minimum 50 kW power output with both CHAdeMO and CCS connectors disqualifies our lower-powered 15 kW DC charger from CALeVIP incentives. Even if Fermata were to pursue Energy Star Certification, these two barriers would prevent our equipment from qualifying for rebates. We would ask the Commission to expand CALeVIP rebates to include EVSE equipment that is classified as lower power DC (between 15-30 kW) and that is designed for the CHAdeMO bidirectional charging standard. Moreover, V2G systems do not currently receive direct incentives or support for their incremental cost; they are excluded from utility and SGIP incentives. However, various V2G use cases (especially Vehicle-to-Load, which is ready now) should be eligible for some sort of direct incentives or support for their incremental cost, whether that be utility “make-ready” funding programs, CALeVIP incentives, or some other form of direct incentive such as SGIP.
3. **Address exclusion of V2B installations from utility “make-ready” funding programs:** Some forms of V2L, such as V2B, which can provide critical services such as backup power/resiliency, do not qualify for make-ready funding.⁴ Many IOU make-ready

³ One example is an EVSE mounted on a pedestal and installed on a concrete pad, or wall-mounted, either at a home or business, with a 10-year useful life similar to other Behind-the-Meter (BTM) systems.

⁴ SCE: https://www.sce.com/sites/default/files/inline-files/4950_SCE_ChargeReadyFactSheet_20160412_1.pdf

infrastructure programs are front-of-the-meter based, requiring chargers to use a separate service drop and to be individually metered on an EV rate.⁵ Because V2L systems are designed to power buildings for PSPS and other outage events, they require a direct connection to a building's electrical panel and are considered behind-the-meter. As a result, they do not qualify for many of these programs or BTM incentives in SB 350 programs. While the site preparation/installation costs for a bidirectional charger are comparable to that of V1G EVSE, without access to make-ready funding, bidirectional EVSE are at a major disadvantage. A solution to this problem could be to let certain V2L use cases to qualify for make-ready programs if they participate in monitored SGIP performance programs and CEC pilots.

We strongly believe that certain V2B use cases, such as customer bill management, demand response, and backup power, must be eligible for CEC pilots. If pilot funding is not made available for these light-duty V2B use cases, it will create a significant market barrier for the growth and adoption of V2B technologies that can provide cost effective solutions to PSPS, peak reduction, and the transition to renewable energy in California.

Pursuant to Item 1 of our comments, we see an urgent and immediate need for grant funding in the \$10M-\$15M range from the Energy Commission for V2B pilot programs. The CEC could immediately address the inclusion and approval of V2X equipment in CALeVIP and begin to break down a significant barrier to this key technology. We would also respectfully request CEC communications to the CPUC to help align programs and eliminate the make-ready exclusion from IOU programs. Thank you for the opportunity to provide comments to help advance the adoption of V2X technology in California. We look forward to discussions with you and CEC staff on further review and implementation of these programs and would be happy to provide a complete briefing.

Sincerely,



John Wheeler
CFO & Co-founder
Fermata Energy

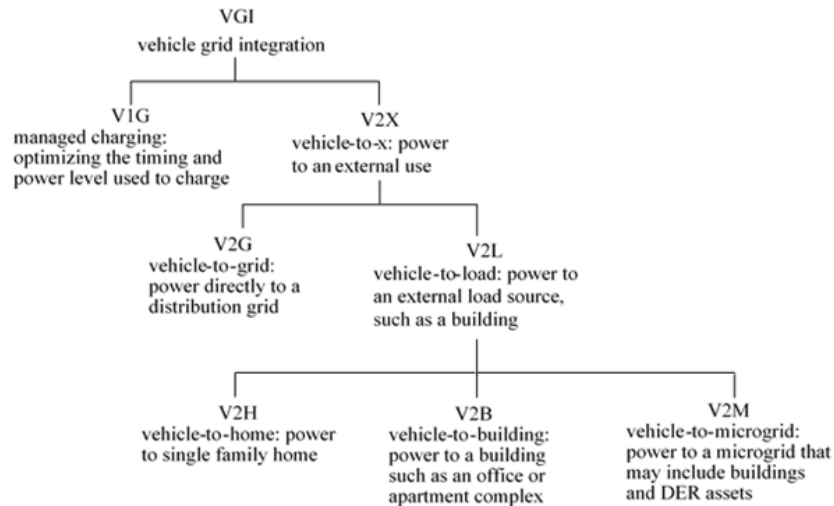
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SDG&E: Power Your Drive Program is fully subscribed, but did require a separate service drops for EVSE installations.

⁵ Chargers installed through SDG&E's Power Your Drive Program (for Multi-Unit Dwellings or MUDs) draw power directly off of SDG&E service or transformer. Chargers installed through PG&E's EV Charge Network Program (for MUDs) are served by a dedicated meter on a commercial rate. SCE's Charge Ready Program, now fully subscribed, requires that all charging stations must be installed on a new dedicated circuit deployed by SCE (with its own panel, meter, and service).

Fermata Backgrounder – February 2021

Fermata Energy designs, supplies, and operates technology that integrates EVs with buildings and the electricity grid, turning EVs into valuable storage assets that combat climate change, increase energy resilience, and reduce energy costs. Fermata enables utilities to add more renewable energy to the grid more quickly, and V2G, V2L, and V2X revenue makes clean electric vehicles more cost-effective. Fermata offers a solution to two major challenges we face today: the integration of clean, renewable energy, and the adoption of clean transportation. See the diagram below for our proposed typology:



Because of Fermata’s leadership position in V2X, we served as a major content contributor to the California Vehicle-Grid Integration Working Group (“VGIWG or VGI Working Group”). Fermata has identified California’s critical need for cost effective solutions to PSPS, peak reduction, and the transition to renewable energy as key market applications for V2L and V2G. As a provider of V2X technology and services, the outcome of this proceeding will impact Fermata’s ability to introduce this technology to the California market where it is most needed.

Fermata is unique from other V2X services providers because we have the only commercially available, UL-certified off-board bidirectional Direct-Current (DC) V2X charger for light-duty fleet vehicles. Most V2X companies are offering AC onboard mobile inverters, while Fermata and Rhombus are offering V2B technology with DC off-board bidirectional chargers. Fermata’s FE-15 bidirectional charger is the first UL 9741 certified bidirectional charger in the world. Fermata is the only fully vertically integrated V2X services provider in the industry, with proprietary cloud-based software, a UL-certified bidirectional DC fast charger, and full enterprise operations. In addition to developing hardware and software required to perform V2X activities, Fermata Energy has spent nearly 10 years studying the value streams that V2X can unlock from an EV, which of these value streams are commercially viable today without regulatory intervention, and how to best monetize these value streams. Fermata has extensive experience with analyzing use cases, monetization mechanisms, and business models to maximize the benefits of V2X technologies. Our revenue model includes system sales and recurring sources of income.

Fermata Energy's V2X solutions integrate not only proprietary hardware and software, but also a network of strategic partnerships. In 2018, Nissan Motor Company announced that they chose Fermata Energy for a major V2G pilot project at their North American Headquarters. And in 2019, TEPCO Ventures, the investment arm of Tokyo Electric Power Company Holdings, Inc., made a [\\$2.5M strategic investment](#) in Fermata Energy.

Many V2X startups focus on publicly-funded pilots and academic partnerships to prove the business case of their technology. Fermata's "straight to commercial" go-to-market strategy of commercial deployments and privately-funded pilot projects with utility, municipal, and commercial fleet partners also differentiates us from other V2X startups in the industry. We are currently launching our product with several utility partners and fleet customers across the U.S.

Fermata currently has seven publicly announced pilot projects across the US, and many more deployments with utility and fleet partners planned for 2021. Most notably, we have active pilots with the City of Boulder, Colorado; Green Mountain Power (an electric utility in Vermont); Roanoke Electric Cooperative (a rural electric cooperative in North Carolina); and Bigelow Tea Company.

Previous Pilot Projects:

- **2016 City of Danville, VA** – V2G Frequency Regulation Pilot Demonstration at Wastewater Treatment Plant and City Courthouse

Active Fermata Pilot Projects

- [2019 Danville, VA: V2B Demand Charge Management Demonstration Project at a Commercial Site](#)
- [2020 Green Mountain Power, Colchester, VT: Utility Partner Demonstration of System-Wide Load Management and DERMs Integration with Virtual Peaker](#)
- [2020 City of Boulder, Boulder, CO: V2B Demand Charge Management Pilot](#)
- [2020 Roanoke Electric Cooperative, Aulander, North Carolina: Utility Partner Demonstration of V2B Demand Charge Management, System-Wide Peak Shaving, and DERMs Integration](#)
- [2020 Bigelow Tea Company, Louisville, KY: V2B Demand Charge Management Pilot](#)

Future Pilot Projects

- [2021 Alliance Center, Denver CO: V2B Demand Charge Management Pilot - installation scheduled for Q1 2021](#)
- [2021 Center at Donaldson, Plymouth, IN: V2B Demand Charge Management Pilot - installation scheduled for Q4 2021](#)
- **2021** - Pilot with Investor Owned Utility in Texas (not yet announced)
- **2021** - Pilot with Municipal Utility in Florida (not yet announced)
- **2021** - Several commercial V2B demand charge management and utility demand response pilots in the Northeast with private partners (not yet announced)