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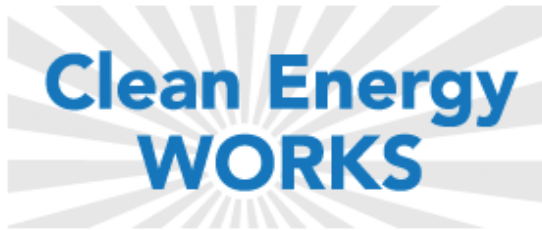
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RFI Response for Finance Solutions in Clean Transport

Thank you for the opportunity to respond to the CEC's RFI on mobilizing private investment for clean transport and related grid-edge assets. We would be delighted to provide more detail to stakeholders convened formally or informally in working groups. In particular, we are best prepared to support the CEC's expressed interest in introducing site specific investment and cost recovery in California by working with utilities on offering tariffed on-bill programs like those with a proven ability to mobilize capital at a ratio of 50:1 to public benefit funds.

Additional submitted attachment is included below.



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April 10, 2020

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 20-FINANCE-01
1516 Ninth Street
Sacramento, CA 95814

RE: Response to RFI on Strategies to Attract Private Investment in Zero Emission Vehicle Charging Infrastructure and Other Clean Transportation Projects

Clean Energy Works appreciates the opportunity to respond to the CEC's Request For Information based on our experience as a non-profit organization advancing innovations for accelerating investment in distributed energy solutions, including charging equipment and electric vehicles.

Our work focuses not only on scaling up investment but also advancing equity and expanding economic opportunity for both solution providers and their customers.

The Federal Reserve has consistently reported in multiple editions of its tri-annual survey of consumer finance that more than 40% of adults attest they do not have the capacity to pay for a \$400 emergency expenditure, leaving them to seek debt products or support from their mutual aid networks. Likewise, businesses with thin balance sheets and competing capital requirements will depend on financing solutions that remove the upfront cost barrier to acquiring electric vehicles and charging equipment.

Financing solutions that result in the systematic disqualification of counterparties and customers based on credit score, income, and property ownership will ultimately not serve the state well. Yet these criteria for access to capital are embedded in the most common financing instruments available in the financial services sector.

California's path to decarbonizing the transportation sector requires financing solutions to overcome the upfront cost barrier to participation, and it must take these economic challenges and conditions into account when considering the options for mobilizing private capital.

For these reasons, we want to emphasize the importance of economic inclusion as a criteria for evaluating the concepts that will be submitted in response to this Request for Information.

Introduction to Inclusive Financing with Site-Specific Investment & Cost Recovery

Clean Energy Works has focused on methods to enable the utility industry to mobilize large scale capital flows for site-specific investment with site-specific cost recovery on terms approved by utility regulators in multiple states. These terms set forth in a utility tariff are broadly inclusive because they do not depend on the income, credit score, or renter status of a customer, and as a result, they vastly expand the addressable market for all competitive solution providers in the field.

As a result of these qualities, tariffed investments that assure on-bill cost recovery have the potential to harness large-scale flows of private capital to catalyze much faster deployment of charging equipment and EVs. In addition, tariffed on-bill investments can capitalize any cost effective energy upgrades on the customer's side of the meter, including on-site renewable energy, storage and responsive technologies that add to grid flexibility.

Financial Performance in the Field

Utility regulators in New Hampshire, Hawaii, Kentucky, Kansas, and Arkansas have already approved tariffed terms for site-specific investment and cost recovery, specifically for resource efficiency upgrades in buildings. Regulatory oversight boards in Tennessee and North Carolina have also approved similar terms.

Altogether the utilities with experience have mobilized \$40 million to capitalize upgrades at 5,000 sites with a cost recovery rate of 99.9%, even in areas recognized by the federal government for persistent poverty.

This is a remarkable track record spanning more than 10 years across a diverse range of policy and regulatory contexts as well as a range of macroeconomic conditions.

The most complete data set capturing a snapshot of these tariffed on-bill programs in a peer-reviewed article was published through the Proceedings of the 2018 Buildings Study hosted by the American Council on an Energy Efficient Economy.

Clean Energy Works has posed the simple question:

If site-specific investment and cost recovery on tariffed terms works in the building sector, could it unlock more private capital for electrification of the transportation sector?

Validators for Early Work on Clean Transport Applications

To date, site-specific investment and cost recovery on tariffed terms has drawn attention in the financial services sector with multiple endorsements and competitive awards, and each one has a dedicated page that explains the concept at a high level:

- Endorsement by the [Global Innovation Lab for Climate Finance](#) specifically for financing clean transport, starting with transit
- Design Award from the [Convergence Fund for blended finance](#), specifically for work on clearing barriers to electrification of transit bus fleets
- [Keeling Prize for Finance](#), 2019 Laureate specifically for integrating V2G into financial strategies for accelerating electrification of school bus fleets
- [Finance & Resilience \(FiRe\) Award](#) for high-impact innovation at the Bloomberg New Energy Finance, awarded at The Future of Energy Summit

CEC's Expressed Interests in Site-Specific Investment and Cost Recovery

The CEC first called on the CPUC and Publicly Owned Utilities to consider introducing demonstrations of tariffed on-bill in California in 2016. It was the first recommendation in the Financing section of the CEC's landmark [Barriers Study](#) mandated by the state government to identify and resolve barriers to energy efficiency and renewable energy facing low-income communities.¹

In addition, the CEC recently reiterated its call for California to introduce a statewide tariffed on-bill investment program for energy efficiency upgrades to buildings as part of its biannual [Energy Efficiency Action Plan](#).²

Referring to the work of validators in the prior section, tariffed on-bill investment in EV charging equipment and on-board batteries would be possible on terms similar to those that have already applied to heat pumps and thermal storage devices with dispatch switches, like water heaters.

CPUC's Interest in Pilot Results from Tariffed On-Bill Investment in Clean Transport

¹ CEC 2016. SB350 Barriers Study.

https://assets.ctfassets.net/ntcn17ss1ow9/3SqKkJoNlvtS2nYVPAOmGH/7bc56e2692769abda31a2aace7b00147/TN214830_20161215T184655_SB_350_LowIncome_Barriers_Study_Part_A_Commission_Financial_Report.pdf

² CEC 2019. Energy Efficiency Action Plan.

[https://ww2.energy.ca.gov/business_meetings/2019_packets/2019-12-11/Item_06_2019%20California%20Energy%20Efficiency%20Action%20Plan%20\(19-IEPR-06\).pdf](https://ww2.energy.ca.gov/business_meetings/2019_packets/2019-12-11/Item_06_2019%20California%20Energy%20Efficiency%20Action%20Plan%20(19-IEPR-06).pdf)

The CPUC released in February 2020 a staff proposal for a new [Draft Transportation Electrification Framework](#) that advised against pursuing tariffed on-bill *specifically citing lack of data from field pilots.*³

This rationale was a particularly ironic because [in 2017 the CPUC had taken no action on a proposal for a Priority Review Project to demonstrate tariffed on-bill investment in EV charging equipment and on-board batteries.](#) The proposal was designed specifically to eliminate the upfront cost barrier that has driven California's chronic dependence on state and federal government grants for EV transit buses even though the business case for electrification of transit buses is sound.

To offer more context, the CPUC had allocated up to \$20 million for Priority Review Projects in the PG&E service area as part of the SB350 Transportation Electrification program. After the utility submitted a proposal to devote \$8 million of its allocation to a set of undefined projects with unknown selection criteria, Greenlining, TURN, and EDF among other stakeholders contested the proposal and offered the CPUC an alternative specifically to introduce tariffed on-bill investment to leverage public funding with private financing for the conversion of transit bus fleets to EV buses.

The proposal included two options. The first would assure full cost recovery of the allocated funding, giving the state an opportunity to gain experience with a revolving instrument that could tap blended pools of public funding and private capital. The second dedicated the public funding in the project to a Reserve Fund that had [leverage above 100:1](#) for total capital committed to clean EV transit buses. In the proposal, New Energy Nexus in Oakland, California, offered to work with the state to set up and steward the Reserve Fund.

In short, the CPUC did not take the opportunity three years ago to fund a pilot project that would demonstrate an innovative financing mechanism that now the Commission staff are citing as critical before the Commission can consider including it in the state's Transportation Electrification Framework.

This opportunity remains available to California, and it appears to be as urgent as ever - whether the CEC or the CPUC choose to act first.

Clean Energy Works and New Energy Nexus (then CalCEF) both supported Greenlining Institute in the development of that 2017 concept proposal for the Priority Review Project. Each of these parties remain available to support the state in introducing an innovative financing solution that could better leverage public funding with private capital in the transportation sector.

³ <https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442463904>

Concept Proposals with Multiple Variants on the 2017 Priority Review Project Proposal

EV Transit Buses

Clean Energy Works proposes that the CEC introduce a pilot program akin to the one focused on transit bus fleets described in the [Priority Review Project first proposed to the CPUC in 2017 by Greenlining Institute](#) as part of the SB350 Transportation Electrification Program.

Since then, further work on this concept has been advanced by stakeholders in North Carolina, who have developed financial analysis for both a candidate transit agency as well as the utility that serves it. The case is called Lake City Transit, which is a pseudonym for a real transit system serving a major metropolitan region in the state. Financial analysis - as well as environmental benefits - for both the [transit agency](#) and the [utility](#) reflected in these documents was completed by a team in California at Cadmus, a well-regarded industry advisory firm.

Residential Level 2 EV Chargers - including renters

More recently, Clean Energy Works has explored the application of tariffed on-bill investment to residential Level 2 EV charging equipment. The largest utility serving Minnesota, Xcel, has already received approval from the utility commission for a Residential EV Service Pilot Program that allows the utility to capitalize a Level 2 EV charger for customers and recover its costs on the bill with a monthly charge. The utility was able to offer this program to customers without regard to their income or credit score. Furthermore, it proposed to expand to renters in its proposed permanent program following the pilot.

Of interest to policy-makers in California: The small pilot program in Minnesota was oversubscribed in the first 2 days, and the first annual report on the program performance showed that 3/4 of the participants chose to decline to pay for the equipment upfront in favor of having the utility capitalize the cost of the EV charger as well as its installation. Instead, they agreed to sign up for a tariff that authorized the utility to recover its costs on terms that also assured the customer would have a pathway to ownership at the end of the pilot program. The utility has proposed a permanent program with similar aims that would use 100% private capital with *no public funding* to provide any EV driver in its service area with a wifi-enabled Level 2 EV charger at no cost upfront. We would underscore that the lessons learned from the utility's *subsequent challenges* with designing an implementation path for a full scale permanent program provides lessons learned that are vital to heed.

V2G Light Duty Vehicles: Chargers

Last month, the very first UL-listed EV chargers capable of bidirectional current for passenger vehicles was announced, and Clean Energy Works is partnering with a utility that already has experience with tariffed on-bill investment to accelerate deployment of that technology. We urge the CEC to consider a similar concept for a pilot project in California.

EV School Buses: V2G chargers and on-board batteries

The V2G capability of that initial Level 2 charging product has even more value when paired with EV school buses, and the CEC's initial School Bus Replacement Program was 100% funded with grant funds, 0% private capital or financing of any type. We urge the CEC to consider revisiting the School Bus Replacement Program to work with utilities on capitalizing the portion of the EV school buses that would be cost effective when the V2G value streams are included along with the fuel and maintenance savings. Depending on whether the state decides to capitalize the incremental upfront cost directly or instead capitalize a reserve fund to de-risk private capital flows that could perform that function, the state could achieve leverage of up to 100:1 - similar to the proposed transit EV bus pilot project above.

Reserve Funds

The very first candidate application in this section is the 2017 Concept Proposal for a Priority Review Project submitted to the CPUC for EV transit buses. However, we want to draw attention that the proposal includes embedded in it a proposal for the state to authorize capital for a Reserve Fund in order to attract private capital to the project. For any of the applications proposed in this section, the use of public funds to capitalize a Reserve Fund would be highest leverage use of public funds in a tariffed on-bill investment program.

In North Carolina, the Energy Solutions Reserve Fund was established by the N.C. Sustainable Energy Association specifically for tariffed on-bill programs offered by utilities in three states that are investing in building energy upgrades. (While none yet are incorporating EV chargers at this time, the first of the three is considering it now.) We want to underscore that the leverage on private capital for each dollar in the Energy Solutions Reserve Fund is 50:1.

The basis for this high degree of leverage is traced to the level of cost recovery reported by utilities that have now deployed \$40 million through such programs with 99.9% cost recovery over a period that spans more than a decade. This remarkable financial performance is not a fluke or an accident, as it has been repeated now in more than 6 states in widely varying contexts. Even though each of these sites would be considered a microenvironmental compared to the scale of the California market, it is also important to point out that only one of the existing programs is a pilot and the rest are operating at a full scale with some reaching approximately 2% of the addressable market annually - *without* any of the benefit of the

complementary policies available in California. In California, that would translate to reaching 20% of the market by 2030 - and more if the complementary policies are taken into account.

As we observe the CARB HVIP funds being chronically oversubscribed and depleted, it is clear that the state would benefit from considering the use of public funds to leverage private capital flows at scale one or two orders of magnitude larger by funding a Reserve Fund rather than capitalizing the upfront cost of EV chargers or the incremental upfront cost of EVs directly.

Getting Started in California

No entity yet has sponsored a financial analysis for any of the candidate concept proposals in this section for first-movers in California. Our top recommendation to move forward would be to determine which among the possible applications is the highest priority to explore and which utilities have the most interest in benefiting from the opportunity to gain experience. With those two deductive decisions, companies like Cadmus have the analytic capabilities to construct a financial analysis that quantifies the value streams for all parties involved.

Clean Energy Works has worked initially with Twin Rivers Unified School District in Sacramento with coordinating support from UC-Davis to develop the first stage of a financial analysis for tariffed on-bill investment to eliminate the upfront cost barrier the upfront cost of EV school buses compared to diesel buses. We found that the value of V2G services was an important source of uncertainty to resolve for their market context, and Twin Rivers USD is now working directly with SMUD to quantify those value streams. This case would be an excellent first choice for completing a financial analysis that explores the application of tariffed on-bill investment for the state's largest public transportation system: 25,000 school buses.

Intersectional Work on Financing Solutions

The financing solutions that will unlock more private capital investment for clean transport are not isolated from instruments that would be applicable to any other cost-effective equipment at the grid-edge. We appreciate that the RFI specifically seeks input on the integration of financing solutions for renewable energy, storage assets, and demand responsive loads that add flexibility to the grid.

In particular, we note that the Building Decarbonization Coalition based in California has commissioned an Accessible Financing Project to address barriers to participation in the clean energy economy that would affect the pace of private capital investment in building upgrades to replace fossil fuel use in buildings. The final report for that project is due to be complete this month, and we urge the CEC to consider its findings closely as many aspects are applicable to transportation electrification as well.

Working Group Participation

Clean Energy Works would welcome the opportunity to collaborate with other stakeholders convened formally or informally by the CEC to develop a slate of pilot projects that would introduce site specific investment and cost recovery via utility tariffed on-bill investment in California through any one of the transportation applications described in the prior section.

Clean Energy Works would welcome the opportunity to participate in and contribute to working groups formed by the CEC to explore innovative financing solutions to mobilize more private capital for clean transport as well as its intersections with vehicle-grid applications as well as on-site renewable energy, storage, and demand flexibility solutions.

Respectfully,

Holmes Hummel, PhD
Principal, Clean Energy Works

Key References:

1. [Instrument Analysis of PAYS for Clean Transport by Global Innovation Lab for Climate Finance](#)
2. [Priority Review Project for Transportation Electrification proposed to the CPUC by Greenlining Institute for clean transit in California](#)
3. [Results of the Lake City Transit analysis of tariffed on-bill investment in clean transit](#)
4. [Results of the utility cost analysis for tariffed on-bill investment in the Lake City Transit electrification case](#)
5. [What is Inclusive Financing?](#) Proceedings of the 2018 ACEEE Buildings Study