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Docketed Date:	11/24/2021

Light-Duty Electric Vehicle Infrastructure Allocation Workshop

Funding Ideas for Light-Duty Electric Vehicle Charger Infrastructure Projects

Fuels and Transportation Division
December 2, 2021 | 1:00 pm

Workshop Agenda

Welcome and Introductions
- Housekeeping
- Commitment to Diversity
- Empower Innovation

CEC Light-Duty (LD) EV Infrastructure Funding
- Past and Current LDEV Infrastructure funded projects

Fiscal Year 2021 – 2022 Light-Duty EV Infrastructure Funding

Proposed Future Projects

Q&A and Public Comment

Housekeeping

- Workshop is being recording.
- Workshop Event Webpage: https://www.energy.ca.gov/events
- Virtual Participation through Zoom
  - Q&A period after the main presentation
  - Raise Hand or Q&A feature
- Written Comments to Docket # 20-TRAN-04: https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=20-TRAN-04
  Deadline: Tuesday, December 21, 2021 by 5:00 PM

Commitment to Diversity

The CEC adopted a resolution strengthening its commitment to diversity in our funding programs. The CEC continues to encourage disadvantaged and underrepresented businesses and communities to engage in and benefit from our many programs.

To meet this commitment, CEC staff conducts outreach efforts and activities to:

- Engage with disadvantaged and underrepresented groups throughout the state;
- Notify potential new applicants about the CEC's funding opportunities;
- Assist applicants to understand how to apply for funding from CEC's programs;
- Survey participants to measure progress in diversity outreach efforts.

Diversity Survey

Scan the code on a phone or tablet with a QR reader to access the survey.

One Minute Survey

The information supplied will be used for public reporting purposes to display anonymous overall attendance of diverse groups.

Zoom Participants, please use the link in the chat to access the survey or scan the QR code on the left of the screen with a phone or table to access the survey.

Survey will be closed at the end of the day.

Survey Link: https://forms.office.com/Pages/ResponsePage.aspx?id=RBI6rPQT9k6NG7qicUgZTiK5n71Bj-xKonSFbzOHxQpURDdSMTNRRjdVTkxLVFIwVkwyNjAxUlc5MS4u

Find a Partner on EmpowerInnovation.net

Empower Innovation strives to accelerate your clean tech journey with easy access to funding opportunities from the CEC and other funding providers, curated resources and events, and connections to people and organizations.

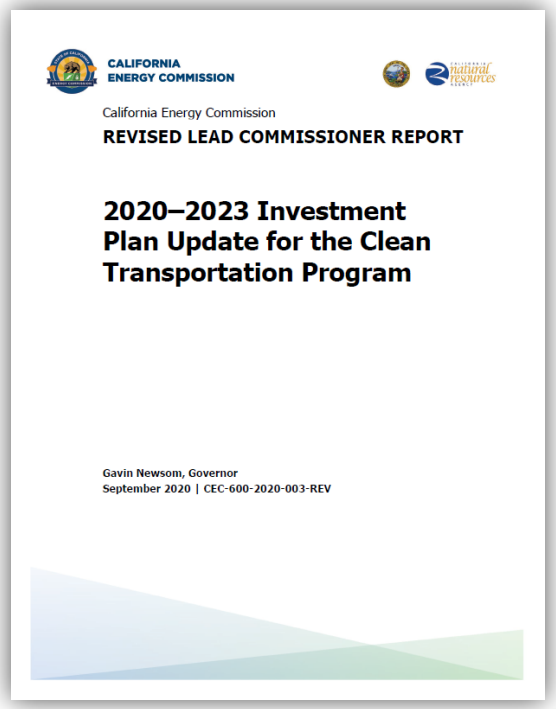
FIND A PARTNER	**RESOURCES & TOOLS**
Announce your interest in this funding opportunity and message other interested parties to find potential partners.	Browse the collection of resources for clean tech innovators including Resource Libraries, Funding Sources, Tools, and Databases.

To search for funding opportunities, please go to this link:
https://www.empowerinnovation.net/en/custom/funding/directory

Please direct questions for the Empower Innovation platform to:
https://www.empowerinnovation.net/en/contact_us

Clean Transportation Program Background

- Established in 2007 by Assembly Bill 118 (2007).
- Extended to January 1, 2024 by Assembly Bill 8 (2013)
- Provides approximately $95 million of funding per year through 2023.
- Investment Plan to determine funding allocations across various categories.



Purpose of the Clean Transportation Program

Provides approximately $95 M of funding per year through the end of 2023

"…to develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies."

Complementary goals:

- Improve air quality
- Investments in low-income and disadvantaged communities
- Promote economic development
- Increase alternative fuel use
- Reduce petroleum dependence

Investment Plan Schedule

Milestones
Release Staff Draft Report
1st Advisory Committee Meeting
Release Revised Staff Draft
2nd Advisory Committee Meeting
Release of Lead Commissioner Report
Approved at CEC Business Meeting

2021-2023 **Zero-Emission Investments Funding Prioritizes**

$314M

Light-Duty Electric Vehicle Charging Infrastructure and eMobility

$690M

Medium and Heavy-Duty Zero-Emission Vehicles and Infrastructure

(battery-electric and hydrogen fuel cell)

$77M

Hydrogen Refueling Infrastructure

$25M

Zero and Near Zero Carbon Fuel Production and Supply

$243.8M

ZEV Manufacturing

$15M

Workforce Development

Total Clean Transportation Program (CTP) funding:

$238M

Total General Funding (administered through CTP):

$1.127B

Total Funding

$1.365B

General Funds from ZEV Package

to be Administered by the CEC

$250 million - for zero-emission drayage trucks

$25 million - for drayage truck and infrastructure pilot

$90 million - for transit buses

$50 million - for school buses

$250 million - for ZEV manufacturing grants

$500 million - for ZEV infrastructure

$785 million appropriated in Budget Act of 2021;

$380 million anticipated in FY 2022-23 and 2023-24

The budget prioritizes diesel emission reduction by earmarking funding to replace

- **1,125 Drayage Trucks**
- **1,000 School Buses**
- **1,000 Transit Buses**

with zero-emission alternatives and refueling infrastructure

And to accelerate **charging** and **hydrogen refueling** stations and promote ZEV-related **manufacturing**

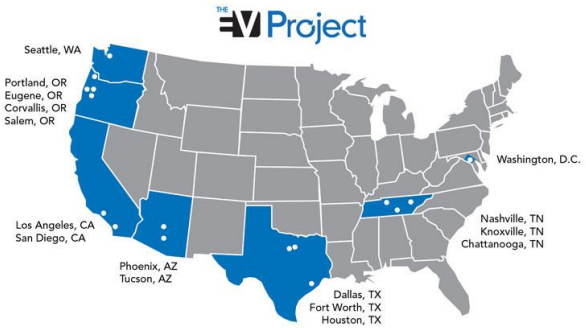
Combined Clean Transportation Program and General Fund Allocations in the Lead Commissioner Report

Clean Transportation Program + General Fund

Category	Funded Activity	2021-2022	2022-2023*	2023-2024*
Zero-Emission Vehicles and Infrastructure	Light-Duty Electric Vehicle Charging Infrastructure and eMobility	$270.1	$30.1	$13.8
Zero-Emission Vehicles and Infrastructure	Medium- and Heavy-Duty Zero-Emission Vehicles and Infrastructure (battery-electric and hydrogen fuel cells)	$391.35	$160.1	$138.8
Zero-Emission Vehicles and Infrastructure	Hydrogen Fueling Infrastructure	$47	$20	$10
Alternative Fuel Production and Supply	Zero- and Near Zero-Carbon Fuel Production and Supply	$10	$10	$5
Related Needs and Opportunities	Manufacturing	$118.75	$125	-
Related Needs and Opportunities	Workforce Training and Development	$5	$5	$5
	Total	**$842.2**	**$350.2**	**$172.6**

*Subject to appropriation by the Legislature

Light-duty Charging Infrastructure

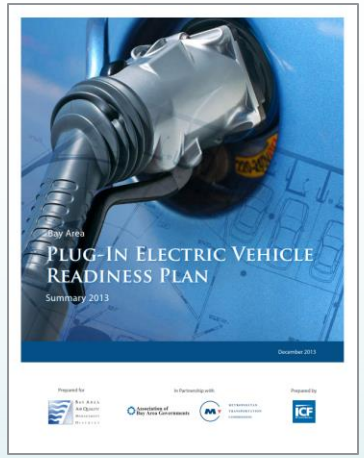


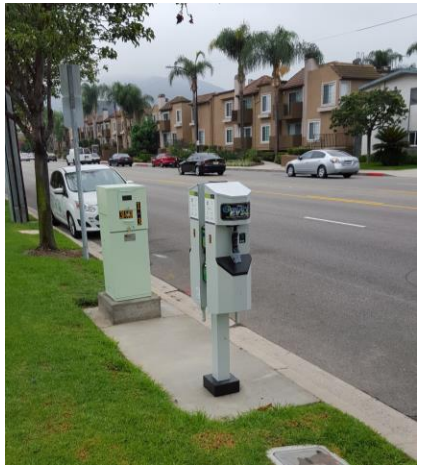
2010

Partner with the US Department of Energy for American Recovery and Reinvestment Act Projects

2012

Partner with local coalitions for Regional Readiness Planning. Upgrade Legacy Chargers.





2014

Fund chargers to increase numbers and meet local specific charging needs.

2016

Fund fast charging along major highway corridors to allow travel from Oregon to Baja and from coast to eastern border.

WEST COAST ELECTRIC HIGHWAY

Light-duty Charging Infrastructure

2017

Block grant administrator awarded.
CALeVIP launches first project in Fresno County.

2018

AB 2127 (Ting, Chapter 365) requires the CEC to assess numbers and types of infrastructure necessary to meet 5 million ZEV goal by 2030.

SB 1000 (Lara, Chapter 368) requires the CEC to assess whether chargers are disproportionately deployed, as defined.

2019

9 EV Ready Communities Challenge Blueprints successfully completed.

2020

EV Ready Communities Challenge Phase II

BESTFIT

EVI-Pro 2, EVI-Pro RoadTrip

2021

CALeVIP
On-demand transportation services
Multifamily Housing
Rural

2022

?

Fiscal Year 2020 – 2021 Funding

Total	$92.7 million
CALeVIP	$74.8 million
BESTFIT	$0.9 million
CARTS (On-Demand Transportation Services)	$3.7 million
REV (Rural)	$4.8 million
REACH (Multifamily housing)	$8.5 million

Microgrids, Resiliency, and Charging

Raja Ramesh, Air Pollution Specialist (VGI Unit)

Why microgrids?

- Goal: Accelerate deployment of resilient charging infrastructure in energy-vulnerable communities and at critical facilities
- Demand for resiliency considering wildfires and high summertime grid stress
- Reduce peak grid demand of project for quicker interconnection
- Higher power charging at lower cost by sharing “make-ready” components of charging infrastructure

Technical Background

- Focus is on deploying commercial, off-the-shelf technologies. Innovation is in system integration.
- Proposals could include generation, storage, and VGI-capable chargers, along with software/controller to orchestrate the microgrid's functioning
- Should demonstrate replicability (i.e., not be too site-specific)

Questions

- Should this program only be open to existing CEC-funded microgrid projects to help them expand their EV charging capabilities?
- What should be the relative focus on V1G vs V2G technologies?
- What key questions need to be answered to help microgrid-integrated charging scale up?
- Should funding for the whole microgrid or just charging aspects be available through this program?

Local Government Fleet Charging

Akasha Kaur Khalsa, EV Infrastructure Deployment Unit

Funding Set Aside for Local Government Fleets

Who?

- Cities
- Counties
- School districts
- Ports

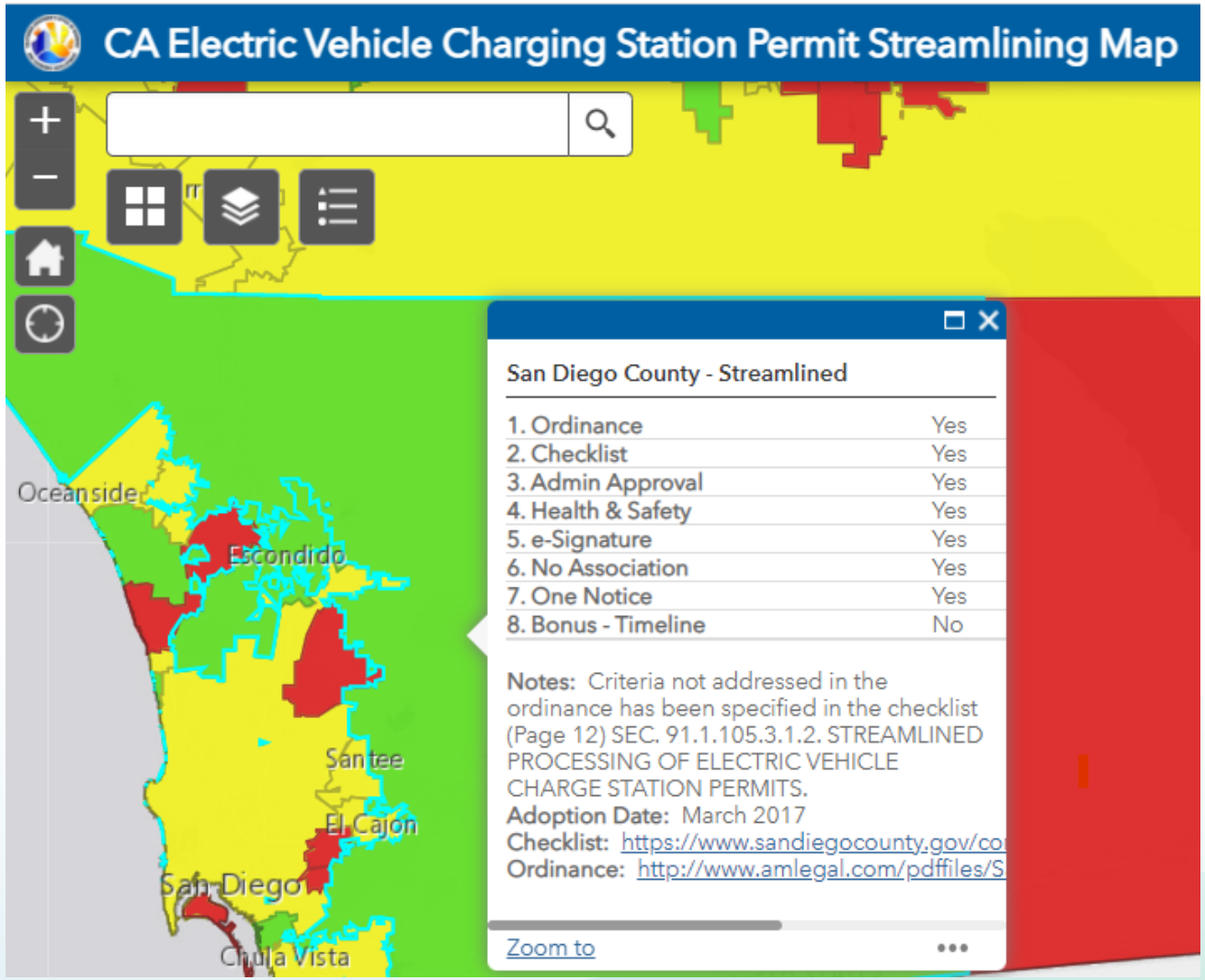
What funding criteria?

- Strong ZEV adoption policies
- 50% Match Share
- In Priority Communities

Where?

- Fleet yard
- Curbside charging
- Parking garages

EVCS Permit Streamlining Map

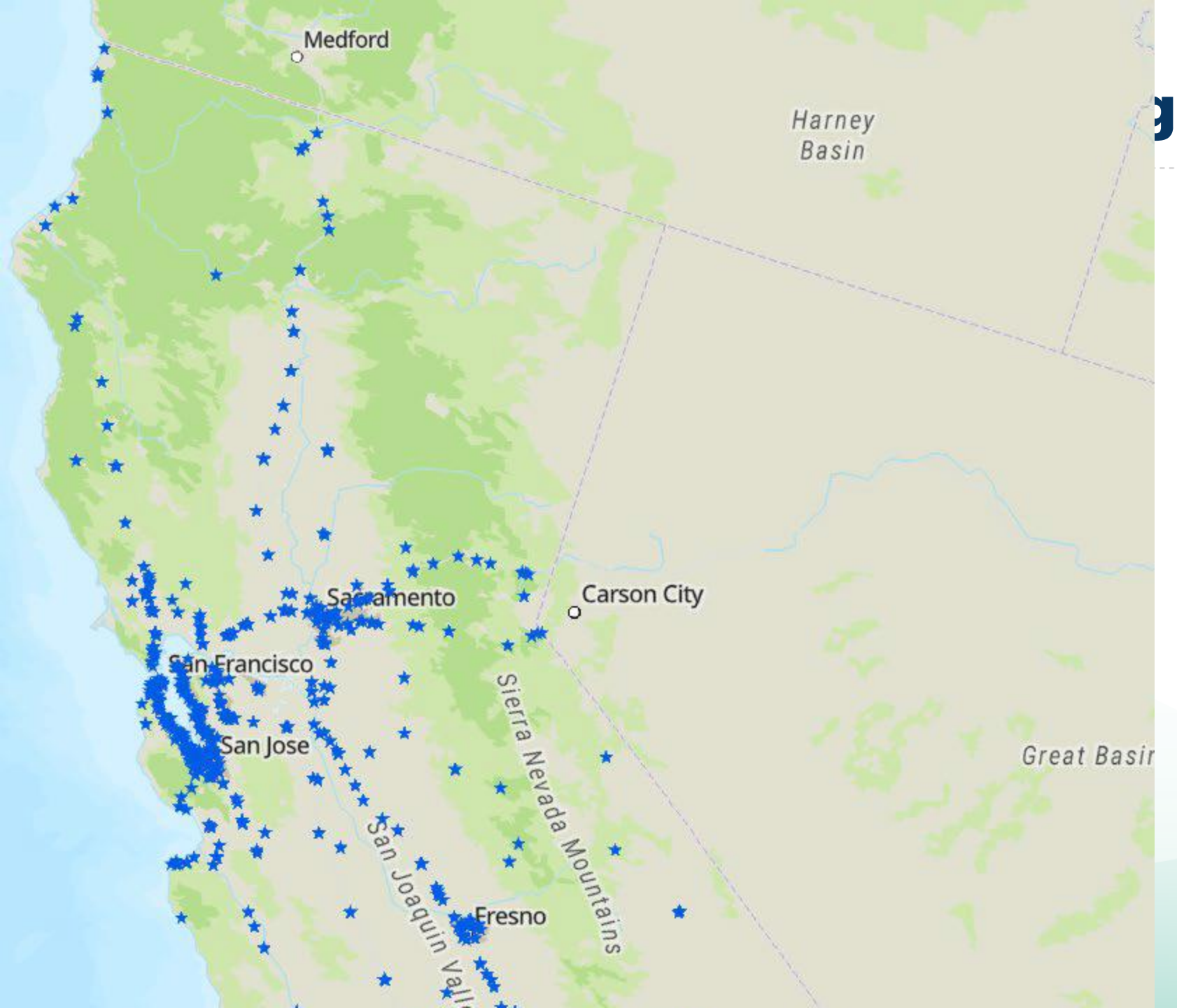


Questions

1. Restricted fleet charging or include public charging?
2. First-come, first-served? Or competitive solicitation?
3. Equity by air district? By region? By size?
4. Reward implemented streamlined permits for chargers?
5. Should fund the whole electric supply or just the vehicle charging?

DC Fast Charger Corridors

g Corridors


Medford
Harney Basin
Sacramento
Carson City
San Francisco
San Jose
Sierra Nevada Mountains
Great Basin
San Joaquin Valley
Fresno

Possible Concepts

1. Additional corridors
   - New corridors with little or no DCFCs
   - Rural
2. Identify and fill corridor charging gaps
   - Reduce distances between charging stations
   - Build “range confidence”
3. Utilize stub outs for expansion
   - CEC installations included high-powered stub-outs
   - Reduce charger congestion
4. Drive-thru / Parallel charging stations
   - Accommodate pickups and trailers
   - Pull through

Questions

1. From the presented four possible concepts, how would you order them for level of importance?
2. Which corridors with little or no DC fast charging currently available would you prioritize and why?
3. What should the minimum power level for DC fast chargers on corridors?
4. Are there other DC fast charger corridor concepts we should consider?

BESTFIT 2

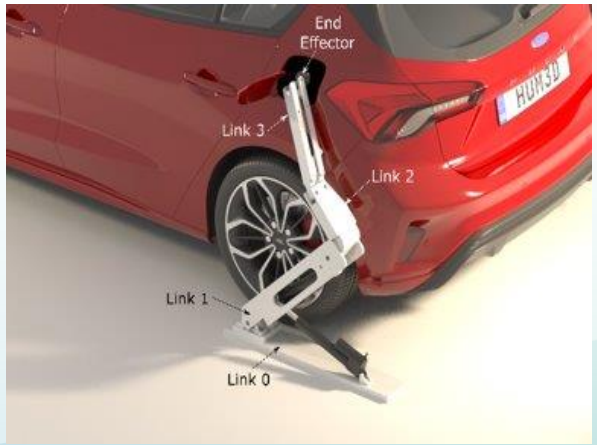
Background: BESTFIT

- Original BESTFIT solicitation (GFO-20-605) released in August 2020

- 3 Areas of Focus:
  1) Increase Utilization
  2) Minimize Operation, Purchase, and/or Installation Costs
  3) Demonstrate Advancements in Customer or Charging Interface

- 9 LD and 6 MD/HD projects funded ($16.5M total)

Rhombus Energy Solutions



ConnectMyEV

Flo

BESTFIT 2

- **Rapid evolution of the EV charging industry requires continued support for emerging innovative charging solutions**
- Replicate and improve original BESTFIT solicitation
- Specifically focus on light-duty charging solutions

Questions

- Should any changes or improvements be made to the design of the BESTFIT solicitation?
- Should the 3 Areas of Focus remain the same, or are there other challenges we should consider addressing?
- Is a maximum award of $1M the right amount?
- Should we have a 2-phase application process (initial 5-page abstract, followed by a full application if the abstract passes)?

High Density Level 2 Charging

Background

- **Large scale** Level 2 charging installations
- Chargers located in **dense urban** areas
- **Highly visible** installations
- Increase **charging confidence** for EV drivers

Source: CALeVIP

Project Examples

Curbside Charging/Downtown

- Closely located charging network
- Next to areas of interest
- Convenient and easy to access

Parking Garage

- Large scale deployment
- Highly visible
- Close to arenas, retail or workplace

Transportation Hubs

- Highly utilized hubs
- Supports multi-mode commuters

Questions

1. Which project type is most visible to drivers?
2. Which project gives drivers the most charging confidence?
3. What are the characteristics of the charging environment needed to shift a driver's attitude from **uncertain** about charging availability to **confident** about charging options?
4. Are there other project types we should be considering?

Low-Income Residential Charging

Considerations for Low-Income Residential Charging

- High costs of installing electric vehicle service equipment (EVSE)
  - Older housing stock requires significant electrical upgrades
- “Chicken and egg” (EVSE vs. vehicle acquisition)

Possible Concepts

1. Consumer rebate for at-home installation
    - Block grant implementation?

2. Funding electric vehicle service providers to find sites for and install charging
    - Peer-to-peer network chargers in driveways of low-income residences?

Questions

- Are there target applicants besides the electric vehicle service providers (EVSPs) or residents that we should be considering?
- How can we provide EVSE options to garage-less or driveway-less residents?
- What are the best approaches to low-income verification?
- When focusing on low-income communities, how can we avoid green gentrification?

MIDAS/ELRP-Integrated Charging

Raja Ramesh, Air Pollution Specialist (VGI Unit)

MIDAS and ELRP

- The CEC's Market Informed Demand Automation Server (MIDAS) is a database of:
  - current and future time-varying rates
  - greenhouse gas (GHG) emissions associated with electrical generation
  - California FlexAlert Signals
- Database is publicly accessible at midasapi.energy.ca.gov

- 10/29/2021 Proposed Decision on Phase 2 Summer Reliability (R.20-11-03)
  - CPUC would authorize IOUs to expand Emergency Load Reduction Program (ELRP) to compensate VGI aggregators

Goal Statement

Help electric vehicles be better citizens of the grid by funding integration demonstrations with new DER structures.

Technical Background

- Two recent, interrelated opportunities for VGI have recently been deployed/announced (see previous slide)
- New EVSE or adapters at a public site, fleet depot, or multifamily residence with several chargers
- Scale up the integration of these structures with existing VGI technologies
- Consider automating responses to TOU rates, FlexAlert signals, and ELRP events

13 lines (12 sloc) | 477 Bytes

```
1  import requests
2  import json
3  # parameter signaltype acceptable values:
4  # 0 = All signal types
5  # 1 = Tariff signals only
6  # 2 = Green House Gas Emissions only
7  # 3 = Flex Alerts only
8
9  def GetRINList(token, signaltype):
10     headers = {'accept': 'application/json', 'Authorization': "Bearer " + token}
11     url = 'https://midasapi.energy.ca.gov/api/valuedata?signaltype=' + signaltype
12     list_response = requests.get(url, headers=headers)
13     return (json.loads(list_response.text))
```

Questions

- How could the VGI user experience be improved through this solicitation?
- What type of enabling technologies are needed to help EVSEs take advantage of MIDAS and ELRP? Some examples: Software development, customer understanding, transceiver innovation, etc.
- What are the best charging installation types/locations for this program? Should eligibility be statewide?
- What other VGI technologies do MIDAS and ELRP complement or duplicate?

Block Grants for Light-Duty EV Charging Infrastructure

Second Block Grants

Goal: Quickly & efficiently fund and deploy EV charging station installations.

- "Fast Track"
- Higher requirements to apply
- Strict installation timelines

- "Jump Start"
- Lower requirements to apply
- Higher technical assistance

Second Block Grants – Project Concepts

- Regionally targeted
- Statewide
- Site or applicant specific
  - Multi-family housing
  - Disadvantaged / Low-income communities
  - Schools
  - DCFC corridors
  - Public agencies

Second Block Grants – Next Steps & Questions

Next Steps

- Develop project concepts
- Develop / enhance project platforms
- Public workshops – Q1 / Q2 2022
- Project launches – Q3 / Q4 2022

Questions

- Are there other ways to differentiate the two future Block Grants?
- Should projects be regionally targeted, statewide, or offer both?
- What other project concepts should be considered for light-duty EV charging infrastructure incentive projects?

Expanded Use of Physical Signs at EV Charging Sites to Promote ICE Driver Awareness

Jim McKinney
Senior Policy Analyst
Fuels and Transportation Division
California Energy Commission

Signage Project: Purpose and Background

- **Increase ICE Driver Awareness of Existing EV Charging Network Through Expanded Placement of EV Charging Signs**
  - Enhance Consumer Awareness of California's vast charging network and the viability of EV use
  - Decrease Concerns About Range Anxiety
- **Help Meet State Policy Goals for EV Adoption**
  - 1.5 million ZEVs by 2025
  - 5 million ZEVs by 2030
  - Shift to 100% ZEV sales by 2035
  - Current On-Road ZEV Count: 635,602
    - Total Cumulative Sales: 991,494 through Q3 2021

EV Charger Network: Perception and Reality

- **Total Installed Chargers: 73,443**
  - L1: 665
  - L2: 66,770
  - DC Fast: 6,008
- **Existing Signage Estimates**
  - About 200 total freeway signs
  - About 50 indicate Fast Chargers
- **Significant Imbalance between Chargers and Signs**
  - Fossil fuel drivers do not use on-line charger locator maps. No awareness of large existing charger network. Just physical cues like stations and signs.

In Comparison:
Over 8,000 Retail Gas Stations

CTP Tools for Signage Augmentation

- **Regional Readiness Grants**
  - Planning grants issued to city and county governments to fund EV and H2 infrastructure planning
  - Could be issued to local governments to fund planning and installation of wayfaring signage for previously installed chargers
    - Main tool for retroactive signage

- **Charging Infrastructure Grants**
  - **Option 1:** Recipients could be required to fund and install wayfaring signs for fast chargers within 3 miles of freeways and highways.
  - **Option 2:** CTP could issue follow-on Regional Readiness-type grant to enable willing grantees to install signs as they develop their charger installation projects.
    - Recipients could also be required to work with CalTrans for General Service signage opportunities as allowed by CalTrans regulations

Questions

1. What is your perspective on how effective this proposal could be in increasing ICE driver awareness of available and nearby chargers?

2. Does your company or organization have any experience and lessons-learned from signage installations with local government and CalTrans District Offices?

3. How useful would General Service signs – with a company logo and name – be to increasing brand value for your firm?

Community-Led EV Infrastructure Projects

Examples of Community-Led Programs

Kern County Electric Vehicle Charging Station Blueprint

EV Ready Communities Challenge: Phase I Blueprint Development; Phase II Implementation

AB 617 Community Emissions Reduction Programs in communities most impacted by pollution

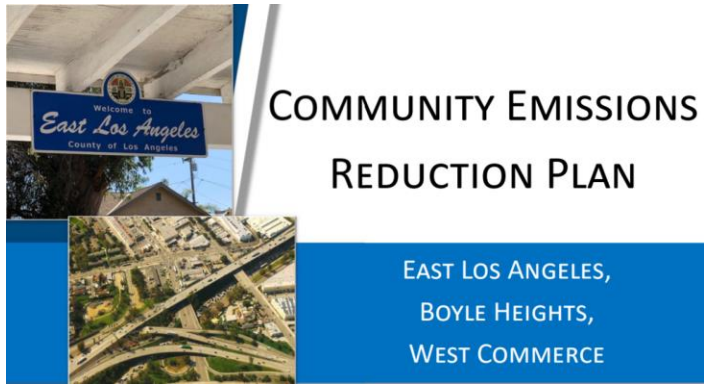
Clean Mobility Options Voucher Pilot Program (CMO) to provide funding for zero-emission mobility in historically underserved populations

Goals

- Empower communities to lead the planning and implementation of EV infrastructure projects impacting their neighborhoods
- Facilitate integration of community vision on EV readiness amongst community collaboratives
- Target California's historically underserved communities

Project Examples

Development and implementation of EV Blueprints



Implementation of EV Infrastructure from approved AB 617 Community Emission Reduction Plans

Targeted and facilitated community engagement and outreach to support charging installations

Chargers for zero-emission school buses

Chargers for heavy-duty electric trucks at distribution centers, warehouses, or other freight facilities

Chargers for Dial-A-Ride EVs

Chargers and vehicles for EV car-sharing programs

Questions

1. What kinds of projects should the CEC consider to empower community-led and owned EV infrastructure?

2. Are there communities, locations, and/or types of lead applicants we should target?

3. What factors should the CEC consider to make clean transportation planning applicable in California Native American Tribes?

4. What scale of project would enhance charging access, promote e-mobility, and reduce emissions across communities? Minimums and maximums?

5. Are there other concepts or processes we should consider to support community-led and owed EV infrastructure projects?

Public Comment/Discussion Period

Zoom Participants

- Use the "raise hand" feature to make verbal comments
- Use the Q&A feature to type in your question

Telephone Participants:

- Dial *9 to raise your hand
- Dial *6 to mute/unmute your phone line.

Written Comments

https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=20-TRAN-04

Deadline for comment: Tuesday, December 21, 2021 by 5:00 pm.

Submit Comments to Docket 20-TRAN-04

Electronic Commenting System

Visit the comment page for this docket at:
https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=20-TRAN-04

Comment by E-mail

E-mail: docket@energy.ca.gov

Subject Line: "20-TRAN-04 LDEV Allocation"

All comments due by 5:00 pm on December 21, 2021

Thank you for participating remotely.