Projects and Contracts with Proposed Awards over $100,000

Mobile Source and Climate Impacts Committee Meeting
October 28, 2021

Karen M. Schkolnick, Director
Strategic Incentives Division
kschkolnick@baaqmd.gov
Outcome

• Provide status update of grant funds awarded since July 1, 2021, and information about new recommended awards greater than $100,000 and a proposed allocation increase to the Charge! program

• Obtain Committee’s support and approval to forward the recommended projects and an increased allocation to the full Board of Directors for approval
Outline

• Background

• Proposed projects with awards over $100,000 & proposed allocation increase

• Status of incentive funding
  o Revenue sources
  o Community benefits & project locations

• Recommendations
Requested Action

Recommend that the Board of Directors:

1. Approve recommended projects with proposed grant awards over $100,000 as shown in Attachment 1;

2. Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects; and

3. Allocate an additional $2 million for the electric vehicle (EV) infrastructure, Charge! program, for projects serving multi-unit dwellings in AB617 communities.
<table>
<thead>
<tr>
<th>Carl Moyer Program (CMP)</th>
<th>Funding Agricultural Replacement Measures for Emission Reductions (FARMER)</th>
<th>Community Health Protection Program (CHP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Air Resources Board</td>
<td>$34 million</td>
<td></td>
</tr>
</tbody>
</table>

Mobile Source Incentive Fund (MSIF)  
DMV Fees  
$12 million
Transportation Fund for Clean Air (TFCA)

- Statutory authority set forth in California Health and Safety Code Sections 44241 and 44242

- Funding provided by a $4 surcharge on motor vehicles

Regional Fund & Air District-Sponsored

60%

40%

County Program Manager Fund
• Recommend $840,300 in awards for four projects to replace equipment:
  ✓ engines for one charter fishing vessel
  ✓ three agricultural tractors/loaders
  ✓ one excavator

Emissions Reductions
  ❖ Over 2.9 tons per year of criteria pollutants

• Recommend a $2 million allocation increase to FYE 22 Charge! Program
Incentive Funding Awarded & Recommended Since July 2021 by Revenue Source (in Millions)
Funds Awarded & Recommended Since July 2021 by Project Category (in Millions)

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount (in Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light-duty Cars &amp; Infrastructure</td>
<td>$7.4</td>
</tr>
<tr>
<td>Trucks &amp; Buses</td>
<td>$0.1</td>
</tr>
<tr>
<td>School Buses</td>
<td>$11.3</td>
</tr>
<tr>
<td>Off-road Equipment</td>
<td>$2.3</td>
</tr>
<tr>
<td>Marine &amp; Rail</td>
<td>$8.0</td>
</tr>
<tr>
<td>Trip Reduction</td>
<td>$2.5</td>
</tr>
</tbody>
</table>

Total = $31.6M

List of projects is shown in Attachments 2 & 3

Mobile Source and Climate Impacts Committee
October 28, 2021
Funds Awarded & Recommended Since July 2021 (in Millions)

-$31.6 Million Awarded*

*$2 million has not yet been attributed

87% to CARE areas, disadvantaged and low-income communities, and low-income residents
### Climate Protection from 2020 Incentives

<table>
<thead>
<tr>
<th>Category</th>
<th>CO₂ Reduced (tons/year)</th>
<th>Awards (in Millions)</th>
<th># of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off-Road</td>
<td>279</td>
<td>$5.33</td>
<td>19</td>
</tr>
<tr>
<td>On-Road</td>
<td>5,598</td>
<td>$1.67</td>
<td>9</td>
</tr>
<tr>
<td>*Service or other</td>
<td>55,965</td>
<td>$11.56</td>
<td>45</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>61,842</strong></td>
<td><strong>$18.56</strong></td>
<td><strong>73</strong></td>
</tr>
</tbody>
</table>

*Primarily trip reduction, signal timing projects
**CO₂ reductions reported for ~$18 out of $75 million awarded

Incentive projects have significant climate protection potential

However, CO₂ reductions typically not evaluated. Other GHG benefits not evaluated: black carbon, CH₄, petroleum reduction, upstream emissions
Recommend that the Board of Directors:

1. Approve recommended projects with proposed grant awards over $100,000 as shown in Attachment 1;

2. Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects; and

3. Allocate an additional $2 million for the electric vehicle (EV) infrastructure, Charge! program, for projects serving multi-unit dwellings in AB617 communities.
Proposed Updates to the Transportation Fund for Clean Air County Program Manager Fund Policies for Fiscal Year Ending 2023

Mobile Source and Climate Impacts Committee Meeting
October 28, 2021

Ken Mak
Supervising Staff Specialist
kmak@baaqmd.gov
Outcome

- Provide summary of process and proposed updates to the Transportation Fund for Clean Air County Program Manager Fund Policies for Fiscal Year Ending 2023.

- Obtain Committee’s support and approval to forward the recommended policy updates to the full Board of Directors for approval.
Outline

• Background

• Proposed updates to County Program Manager (CPM) Policies for Fiscal Year Ending (FYE) 2023
  o Outreach & public input process
  o Summary of proposed updates
  o Next steps

• Recommendations
Requested Action

Recommend that the Board of Directors:

Approve recommended proposed updates to the Transportation Fund for Clean Air County Program Manager Fund Policies for Fiscal Year Ending 2023 as shown in Attachment A.
Transportation Fund for Clean Air (TFCA)

- TFCA funding authorized by State Legislature to help reduce on-road mobile source emissions
- $4 motor vehicle registration surcharge fee with 40% of funds distributed to the 9 Bay Area congestion management agencies
- Staff brings updates to TFCA CPM policies to Air District Board annually for approval
Timeline for Update to FYE 2023 Policies

- **May**: Draft polices issued for comment
- **June**: Workgroup meetings with CPMs
- **July**: Mobile Source Committee considers recommendation
- **August**: Board of Directors considers for adoption
- **September**: Policy Guidance issued

**Mobile Source and Climate Impacts Committee**
October 28, 2021

**Bay Area Air Quality Management District**
Summary of Proposed Updates for FYE 2023

General Policies

- Increase cost-effectiveness threshold for Infrastructure Improvements for Trip Reduction (policy #2)
- Rename “Shuttle/Feeder Bus Service” to “First- and Last-Mile Connections” for clarification purposes (policy #28 and 29)
- Increase the percentage of project cost for School Bus projects that are eligible for reimbursement from 90% to 100% (policy #24)
Next Steps for Future Cycles

Continue coordinating with CPMs on program refinements:

- Evaluate CE limit for select project categories
- Review mechanisms for project extension process
- Provide further guidance on evaluation of newer project categories
Recommend that the Board of Directors:

Approve the proposed updates to the Transportation Fund for Clean Air County Program Manager Fund Policies for Fiscal Year Ending 2023.
AGENDA: 5

Clean Cars for All Contractor Selection

Mobile Source and Climate Impacts Committee
October 28, 2021

Tin Le
Supervising Staff Specialist
tle@baaqmd.gov
Outcome

• Obtain Committee’s support to forward the Clean Cars for All program contractor recommendation to the Board of Directors for approval
Outline

- Background
- Request for Proposals (RFP) process
- RFP results
- Recommendations
Requested Action

Recommend the Board of Directors:

1. Approve the selection of GRID Alternatives Bay Area (GRID) as Clean Cars for All (CCFA) program contractor;

2. Authorize the Executive Officer/APCO to execute contracts with GRID for the CCFA program for up to $625,000 for a two-year term.

3. Authorize the Executive Officer/APCO to extend these services and budgets for an additional three years, at the Air District’s discretion, based on contractor performance.
Program Overview

Income qualified residents* who turn in an older vehicle

Advanced Technology
- Purchase (new or used) or lease
- Hybrid, plug-in hybrid, electric vehicle, fuel cell electric vehicle
- Home charger or portable charger & public charging for plug-in and electric vehicles

Mobility Options
- Public Transit Card (PEX Visa)
  - Clipper, bike sharing
- Electric bicycles

* ≤400% Federal Poverty Level
• 2018
  o $5M in CA Climate Investment (CCI) funds
• 2019
  o $5M in Volkswagen Mitigation funding
• 2020
  o $4M in CCI funds
  o $10M in Transportation Fund for Clean Air (TFCA) funds
• 2021
  o $3M in AQIP funding
  o $8.33M in CCI funding
Application Trends

Mobile Source and Climate Impacts Committee
October 28, 2021

Bay Area Air Quality Management District

7
CCFA contractor provides case management and applicant support:

- Multi-lingual and multi-cultural applicant assistance
- Case management
- Targeted outreach & marketing
- EV charging outreach & support
- Consumer education & support
Issued RFP
- Notified 30 companies
- Posted on District website

Sep 27
RFP closed

Sep 28 – Oct 7
Panel evaluation & scoring

CCFA Contractor
up to 1,500 vehicle replacements per year

Aug 26

Two proposals were submitted.
Proposals evaluated by:
  - Expertise
  - Experience
  - Cost
  - Conflict of interest
  - Approach

Panel evaluation/ scoring results:

<table>
<thead>
<tr>
<th>Name</th>
<th>Points (100 possible points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRID Alternatives Bay Area</td>
<td>93.67</td>
</tr>
<tr>
<td>Center for Sustainable Energy</td>
<td>84.33</td>
</tr>
</tbody>
</table>

Mobile Source and Climate Impacts Committee
October 28, 2021
Recommend the Board of Directors:

1. Approve the selection of GRID Alternatives Bay Area as Clean Cars for All (CCFA) program contractor;

2. Authorize the Executive Officer/APCO to execute contracts with GRID Alternatives Bay Area for the CCFA program for up to $625,000 for an initial two-year term.

3. Authorize the Executive Officer/APCO to extend these services and budgets for an additional three years, at the Air District’s discretion, based on contractor performance.
Electric Transportation

State of the market and preparing for the future

Dan Bowermaster
Sr. Program Manager, Electric Transportation
dbowermaster@epri.com
(650) 701-5099

October 28, 2021
Air District Mobile Source & Climate Impacts Committee
Bay Area Air Quality Management District
2021 EV Market Highlights
EV sales increase exceeded overall automotive market

1. EV goals increasing
2. Electric pickups coming
3. Electrifying fleets
4. Customer experience
5. Hype versus reality
6. Major federal ET push
EVs are a huge opportunity for new load and customer interaction

What segment of transportation uses the most energy and pollutes the most?

Number of Vehicles (millions) 265

- SUV and Pickup Trucks: 119, 45%
- Passenger Cars: 122, 46%
- Others (light commercial/school/transit): 13, 5%

Final Energy Use (quad BTUs) 22.5

- Heavy and Medium Freight: 5.6, 25%
- Others (light commercial/school/transit): 6.5, 29%
- Passenger Cars: 9.2, 41%

Source: 2013 US Highway Transportation Data
Lessons learned from the past two decades of EVs

EVs and charging

- EV technology improvements
- Decreased battery costs
- Impact of policy and incentives
- Importance of customer choice
- Compelling emotional reasons to drive an EV
- Charging can be as easy a 120V wall outlet
- Grid impact is minimal, but further work is required

Photos: [Ford.com](https://www.ford.com) accessed 7/7/2021; Dan Bowermaster, EPRI
Global trends today
Government policy and corporate EV business plans increasingly support EVs

New ICE Car Proposed Sales Ban

<table>
<thead>
<tr>
<th>Year</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>2025</td>
<td>Norway, South Korea</td>
</tr>
<tr>
<td>2030</td>
<td>Denmark, Germany, Iceland, India, Ireland</td>
</tr>
<tr>
<td>2035</td>
<td>Israel, Netherlands, Slovenia, Sweden, UK, Scotland, Japan, California, Massachusetts, New York State</td>
</tr>
<tr>
<td>2040</td>
<td>China, France, Spain, Portugal, Singapore, Sri Lanka</td>
</tr>
<tr>
<td>2045</td>
<td>Costa Rica</td>
</tr>
<tr>
<td>2050</td>
<td>Colorado</td>
</tr>
</tbody>
</table>

Source: EPRI research; https://www.caranddriver.com/news/g35562831/ev-plans-automakers-timeline/
Despite global pandemic, EV sales grew especially where supported by strong policy and EV supply.
But purchasing decisions are made locally

Adoption — What does it take for a customer to buy an EV?

1. **Automotive OEMs**

2. **Car Dealers**

3. **Customers**
   - Does it meet my needs?
   - Do I like it?
   - Can I afford it today?
   - How do I fuel it?

Of the top 25 best-selling vehicles in the U.S., only three have a plug-in option today

**Wild Card**
Impact of COVID 19 and supply issues

Photo credit: Dan Bowermaster, EPRI
Over 2.1M EVs have been sold since December 2010

U.S. EV sales through June 2021

This is ~5.25 TWh of largely moveable, new load

Source: EPRI analysis of IHS data, August 2021

Nationwide avg new EV market share: 2.9%

Top 5 counties in CA and Top 15 counties outside CA

<table>
<thead>
<tr>
<th>County, State</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa Clara, CA</td>
<td>19.5%</td>
</tr>
<tr>
<td>Marin, CA</td>
<td>19.2%</td>
</tr>
<tr>
<td>San Francisco, CA</td>
<td>17.3%</td>
</tr>
<tr>
<td>Alameda, CA</td>
<td>15.8%</td>
</tr>
<tr>
<td>San Mateo, CA</td>
<td>13.5%</td>
</tr>
<tr>
<td>Boulder, CO</td>
<td>11.8%</td>
</tr>
<tr>
<td>San Juan, WA</td>
<td>11%</td>
</tr>
<tr>
<td>King, WA</td>
<td>8.9%</td>
</tr>
<tr>
<td>Jefferson, WA</td>
<td>8%</td>
</tr>
<tr>
<td>Benton, OR</td>
<td>7.8%</td>
</tr>
<tr>
<td>Summit, UT</td>
<td>7.8%</td>
</tr>
<tr>
<td>Multnomah, OR</td>
<td>7.7%</td>
</tr>
<tr>
<td>Washington, DC</td>
<td>7.3%</td>
</tr>
<tr>
<td>Falls Church City, VA</td>
<td>7.3%</td>
</tr>
<tr>
<td>Orange, NC</td>
<td>7.2%</td>
</tr>
<tr>
<td>Broomfield, CO</td>
<td>7.1%</td>
</tr>
<tr>
<td>Honolulu, HI</td>
<td>7.1%</td>
</tr>
<tr>
<td>Arlington, VA</td>
<td>6.8%</td>
</tr>
<tr>
<td>Clackamas, OR</td>
<td>6.7%</td>
</tr>
<tr>
<td>Charlottesville City, VA</td>
<td>6.4%</td>
</tr>
</tbody>
</table>

*CO will become a ZEV state in 2022. WA and MN will become ZEV states in 2024. NM, NV, and VA have announced that they intend to become ZEV states in the future.
U.S. EV launches (at dealers) and what’s expected for 2021

- Here at dealers now:
  - Ford Mach-E BEV, VW ID.4 BEV, Jeep Wrangler 4xe, Volvo XC40 Recharge BEV, Polestar 2 BEV

- Coming in 2021 to a dealer near you:
  - Ford Escape, Lincoln Corsair Grand Touring, Rivian R1T, Rivian R1S, Audi Q4 etron, Audi Q4 Sportback, Hyundai Ioniq 5, Kia EV6, GMC Hummer EV, Ford eTransit, Kia Sorrento PHEV, Hyundai Santa Fe PHEV, Jeep Grand Cherokee 4xe

- Delayed until 2022
  - Nissan Ariya
Trend: bigger EVs

Photo credits: Mark Kosowski, Dan Bowermaster
Electric School Buses being deployed across the U.S.

• Successfully demonstrated in Massachusetts, Minnesota, Virginia, California, etc.

• Federal EPA offering $7M in grants to school districts

• Can charge at 240V AC

• Hawaii example:
How can data help support electrified transportation?

...when fully electrified, electric transportation will demand 25% of all energy needed in the USA

Vehicle Behavior
- Miles driven
- Charging locations (H,W,P)
- Charging power
- Timing
- Coincident charging

Adoption Patterns
- Regional differences
- Demographic differences
- Reactions to incentives/actions

Grid Capacity
- What is the grid capacity (local/distribution)
- What is the current load?
- How does this vary with climate variations and technology shifts?

Wisconsin example
Utilities play a key role in helping the EV market grow

What are utilities doing today to support?

1. Staffing up Electric Transportation teams
2. Reviewing service planning processes for residential and fleet customers
3. Reviewing EV rate options for residential and fleet customers
4. Ensuring forecasted ET load is incorporated into:
   • Short- and long-term procurement
   • Distribution planning
   • Transmission planning
5. Reviewing the cost allocation for grid upgrades for ET fleets
6. Evaluating role in supporting or providing charging infrastructure
North American utilities proposing ~$3.4B in EV infrastructure

Key Challenges
- EV awareness
- Customer education
- Easy and reliable public charging infrastructure (to find, access, use, and pay)

Key stats
- $3.429B
- 38 states
- 45 programs
- 37 utilities

Legend (Budget $)
- $10.0M
- $20M
- $43.5M
- $0.24M
- $45M
- $30M
- $250M
- $9M
- $1.7M
- $14.9M
- $15M
- $364M
- $3.7M
- $10.0M
- $0.1M
- $11M
- $5.6M
- $0.5M
- $6M
- $18M
- $1.5M

Make-ready / rebate
- $0.4M

Utility-owned
- $8M

Hybrid
- $72M

Updated: 9/13/2021, Source: North American Utility Electric Transportation Charging Infrastructure: Program Overview, EPRI, March 2021; individual utility interviews
Conclusion: where is the EV market in the U.S?
Facts and challenges

- EV ownership is rising in almost every region of the U.S., even states with cold/snowy winters.
- Medium-duty and heavy-duty electrification is still at the very early stage, but has the potential to increase quickly.
- Reports on demonstration and pilots lag currently available generation of EVs.
- Gasoline refueling has 100+ years; EV charging has 10 years.
- EV charging has minimal to no grid impact, but service can be lengthy and expensive.
- Smart charging and V2G is being pushed by grid outages (V2H), but awareness, commercialization, codes and standards, and the market all lag.
Electric pickup trucks soon to be an option for customers
Update: Rivian receives EPA range; Tesla Cybertruck delayed to 2023

<table>
<thead>
<tr>
<th>2021 (range in miles)</th>
<th>2022 (range in miles)</th>
<th>2023 (range in miles)</th>
<th>2024 (range in miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivian R1T (314)</td>
<td>Ford F-150 Lightning (300*)</td>
<td>Chevrolet Silverado EV (300*)</td>
<td>Ram 1500 Electric (500*)</td>
</tr>
<tr>
<td>GMC Hummer EV (300*)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = estimated

Hot Topic: Vehicle-Grid Integration

V2H Issues To Be Considered

- Tie-in with home energy management systems
- Use in multi-family dwelling situations

In case of outage how will you sectionalize & transfer power from vehicle?

Outage/Restoration Sensing

CHAdeMO vs. Combo

Need for Additional Controls or Interlocks on Vehicle

Power Quality

Duty Cycle Issues for Vehicle Systems

Electric safety (NEC Article 702) for standby generators
Insight From Ford for V2H
The grid charges the F-150 Lightning at up to 19.2 kW AC
Insight From Ford for V2H
F-150 Lightning exports up to 9.6 kW DC to house

Photos: Ford.com (media), accessed 7/15/2021