Technology Implementation Office Steering Committee Composition
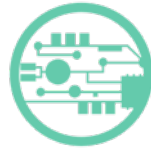
Technology Implementation Office Steering Committee Meeting
October 22, 2018

Ranyee Chiang
Technology Implementation Officer

Technology Implementation Office: Tackle Barriers for Emerging Climate Technologies

Connect **Emerging Technologies**
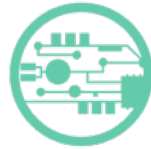
and

Customers

- Evaluate and share benefits and costs of emerging technologies

- Educate customers

- Loans, loan guarantees, grants and financing partnerships

Technology Focus Areas

Connect **Emerging Technologies** **and** **Customers**

Industrial Technologies

Light Duty Electric Vehicle Incentives

EV Partnerships and Outreach

TIO Steering Committee Advises Air District Staff

- Facilitate vision and strategy development

- Support execution of the strategy

- Provide recommendations on technologies, market readiness, emissions reduction impacts

- Raise profile and visibility of office and identify new partnership opportunities

Steering Committee Composition

- Additional expertise may be valuable for

  - Expanding and increasing impact of incentive programs

  - Identifying new public and private sector financing partners

  - Addressing community and equity goals

- Seeking input on priority candidates for up to 3 additional TIO Steering Committee members

Steering Committee Composition (cont'd)

- Next Steps:

  - Air District staff invite candidates based on priority list

  - Continue with invitations until 3 members confirm that they will join or priority list is exhausted

  - For candidates with limited time, option of informal or non-voting members of Steering Committee

Candidates

Orson Aguilar — President, Greenlining Institute

`equity` `NGO`

Catha Groot — Principal, Radicle Impact

`cleantech` `private` `finance` `startups`

Michael Montgomery — Assistant Director Water Division, EPA Region 9

`environment` `government` `finance`

Erin Kilmer Neel — Chief Impact Officer, Beneficial State Foundation

`equity` `foundation` `finance`

Marilyn Waite — Climate Finance Officer, Hewlett Foundation

`environment` `foundation` `finance`

Renee Webster-Hawkins — Executive Director, CA Pollution Control Financing Authority

`environment` `government` `finance` `small business`

Jetta Wong — Senior Advisor, Los Angeles Clean Tech Incubator

`cleantech` `NGO` `partnerships` `startups`

Technology Assessment and Outreach

Technology Implementation Office Steering Committee Meeting
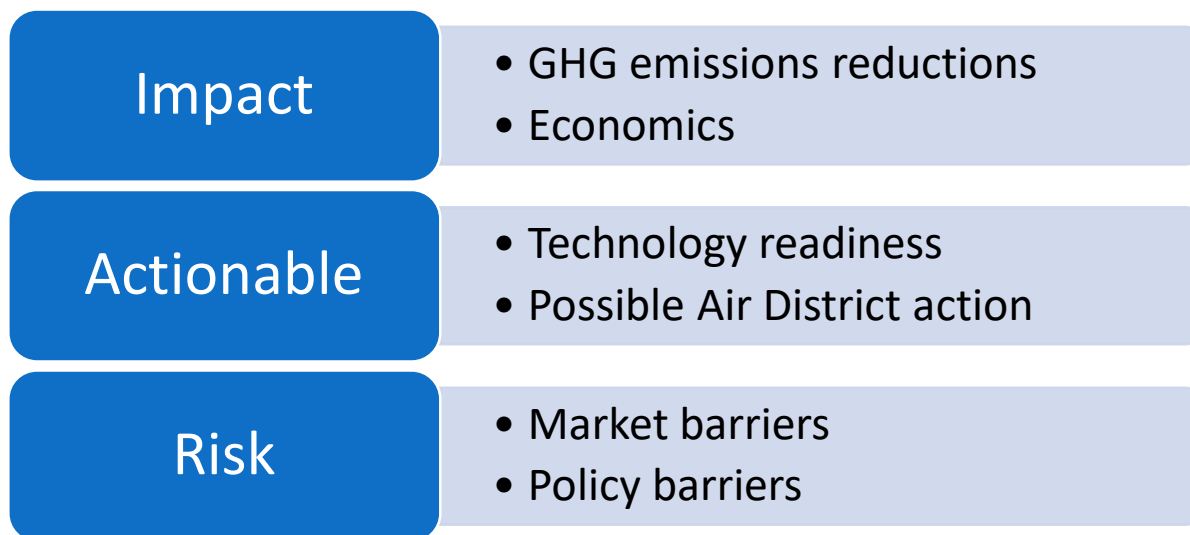October 22, 2018

Brian Butler
Staff Specialist

Climate Technology Review

Technology Implementation Office (TIO) evaluated 188 emerging technologies:

Impact	• GHG emissions reductions • Economics
Actionable	• Technology readiness • Possible Air District action
Risk	• Market barriers • Policy barriers

Sectors: Agriculture, Buildings, Cement, Combined Heat and Power/Power Generation, Iron and Steel, Petroleum, Semiconductors, Waste

Actions to accelerate technologies

For each sector, identified top three technologies and recommended most suitable Air District action:

Regulate   **Incentivize**   **Educate**

Regulate: An Example Measure

Boiler maintenance in petroleum systems

- Boiler emissions come from fuel use and the boiled substances themselves

- Reducing leaks and buildup on burners can achieve 10% fuel savings

- No new installation cost; recurring maintenance cost but can be positive return on investment

- Air District could make boiler maintenance a permit condition

Educate: An Example Measure

Low-emissivity window coatings for commercial buildings

- These coatings reflect heat and can reduce HVAC loads by 21%

- Can be manufactured in new windows or applied as retrofit

- Along with other building measures, may be relevant to stakeholders who can regulate or incentivize new building technologies

Incentivize: An Example Technology

Battery backup and hydrogen fuel cells to replace diesel generators

- Higher capital costs than diesel generators but lower operating costs, less maintenance, and zero emissions

- Emerging technologies using second-life batteries

- Large base of potential customers

- Key technology solutions for Diesel Free commitments

Incentivize: An Example Technology

Shortcut nitrogen removal ("anammox") for wastewater treatment

- Bacterial process that eliminates the need for aeration and lowers sludge volumes

- Sharply reduces energy use and can result in net consumption of CO_2

- Demonstration unit has shown promising results for rapid return on investment

Outreach Goals

- Increase awareness of and participation in the Air District's Climate Tech Finance Program.

- Establish the Air District as a trusted resource for climate technologies and financing.

Outreach Approach

Flexible to technology landscape and stakeholder needs

- Engage diverse group of stakeholders

- Utilize activities to inform and engage stakeholders

- Provide clear, targeted information tailored for specific stakeholders
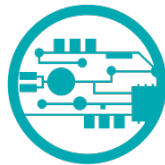
- Maintain climate technology review

Stakeholders

Facilities   *e.g. small businesses, municipalities, universities, hospitals, schools*

- Share suitable technology opportunities reduce greenhouse gas emissions

- Identify initial loan projects for "Climate Tech Finance" program

Technology Companies   *e.g. energy storage, waste management, power generation, efficiency, heating, cooling, Internet of Things, AI*

- Share financing opportunities with technology companies

Stakeholders (cont'd)

Ecosystem Partners

e.g. governments, regulatory and funding agencies, trade groups, incubators, accelerators, investors, banks, foundations, community stakeholders

- Identify financing partners

- Encourage regulatory, policy, and funding action

Outreach Channels

- Host quarterly events tailored to specific industrial sectors and to showcase technologies

- Sponsor and attend relevant conferences and events

- Provide targeted stakeholder briefings

- Promote via newsletters, webinars, partner websites

- Utilize social media

Climate Tech Marketplace
September 13, 2018

- Event for TIO to strengthen connections with technology, facility, local government, and industry accelerator partners

- Followed the Air District's Diesel Free by '33 signing ceremony by offering concrete solutions and partnerships

- Increased awareness about Air District grant and loan opportunities for mobile and stationary technologies

Loan Program Agreement

Technology Implementation Office Steering Committee Meeting

October 22, 2018

Derrick Tang
Manager

Climate Tech Finance Program Overview

Financing + Technology Evaluation

Goal: Address critical barriers for facilities to implement new technologies

Barriers	Technology Implementation Office (TIO) Added Value
Awareness of technologies	Identify new technologies and provide engineering review and project inspections
Awareness of financing programs	Identify new borrowers and provide technical assistance
Availability and terms of financing	Lower interest rates and cover initial fees

Bay Area Air Quality Management District (Air District) - IBank Timeline

- Discussed and drafted agreement with IBank

- Air District Board has authorized the Air Pollution Control Officer (APCO) to execute the final agreement with IBank (August 1, 2018)

- IBank is currently reviewing the draft

- Once executed, the Air District-IBank collaboration will create an initial $4M revolving loan and loan guarantee fund – Climate Tech Finance

Climate Tech Finance Program

$4M initial TIO revolving loan fund

- Deployed at $1-2M per year over next 3 years
- # projects/year: 5-10
- $3M in loans and $1M in loan guarantees

IBank **Current programs**   **Climate Tech Finance**

Loans for municipalities, universities, schools, hospitals

- $500K to $30M
- Subsidized interest rates
- Up to 30 year terms

- Up to 25% of total loan
- Offer Air District funds at 0% interest
- Cover fees for first 8 loans (Air District portion)

Loan guarantees for small businesses

- Up to 80% guarantee
- Up to $2.5M

- Up to additional 10% guarantee
- Cover fees for first 10 loan guarantees

Program Guidelines

Projects must meet these guidelines to be eligible for Air District financing:

- Facility located in Bay Area

- Technology supported by Technology Assessment Matrix
  - ➢ Emerging technology (TRL 7-9)
  - ➢ Emissions reduction potential, economic viability

- Maximum Air District participation per project
  - ➢ $1M in a single loan or $250k in a single loan guarantee

- Air District funds are drawn down on project-by-project basis

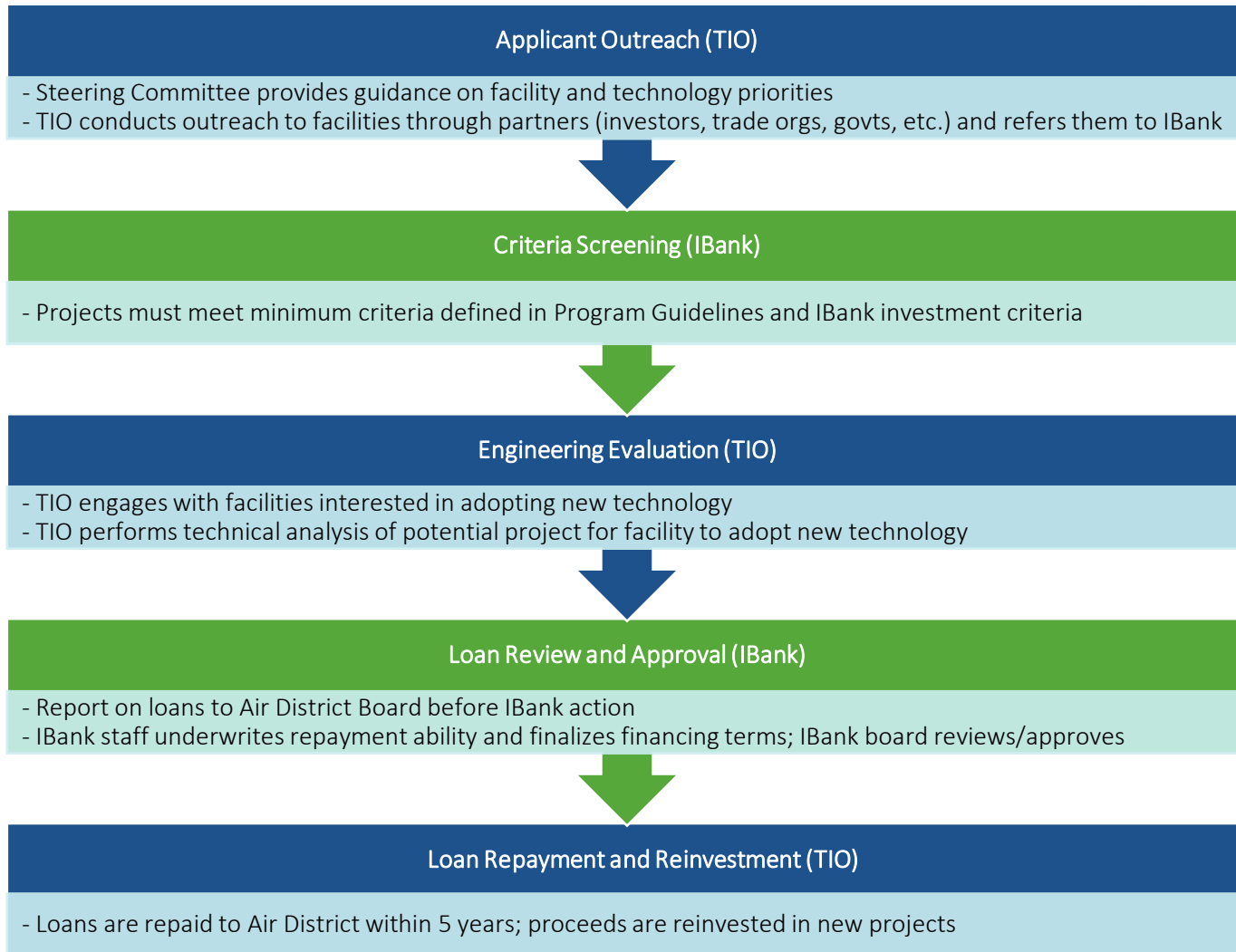- Air District portion of loan is repaid in 5 years or less

Program Guidelines (cont'd)

Program Guidelines, continued:

- Air District portion of losses in loans and loan guarantees are borne by the Air District

- Air District liability cannot exceed Air District's portion of loans and loan guarantees

- Air District may terminate program and remaining unallocated funds are not committed

- Mechanism to update Program Guidelines periodically

- Projects that do not meet Program Guidelines may still be eligible for other IBank programs

Financing Process

Applicant Outreach (TIO)

- Steering Committee provides guidance on facility and technology priorities
- TIO conducts outreach to facilities through partners (investors, trade orgs, govts, etc.) and refers them to IBank

Criteria Screening (IBank)

- Projects must meet minimum criteria defined in Program Guidelines and IBank investment criteria

Engineering Evaluation (TIO)

- TIO engages with facilities interested in adopting new technology
- TIO performs technical analysis of potential project for facility to adopt new technology

Loan Review and Approval (IBank)

- Report on loans to Air District Board before IBank action
- IBank staff underwrites repayment ability and finalizes financing terms; IBank board reviews/approves

Loan Repayment and Reinvestment (TIO)

- Loans are repaid to Air District within 5 years; proceeds are reinvested in new projects

Long Term Goals

- Initial projects evaluated as pilots to inform future loan projects and update program guidelines

- Identify opportunities to expand collaborations with IBank

- Identify new financing partners and resources

- Evaluate alternative financing models

8

Climate Tech Finance

baaqmd.gov/CTF

Electric Vehicle Infrastructure and Fleet Incentive Programs

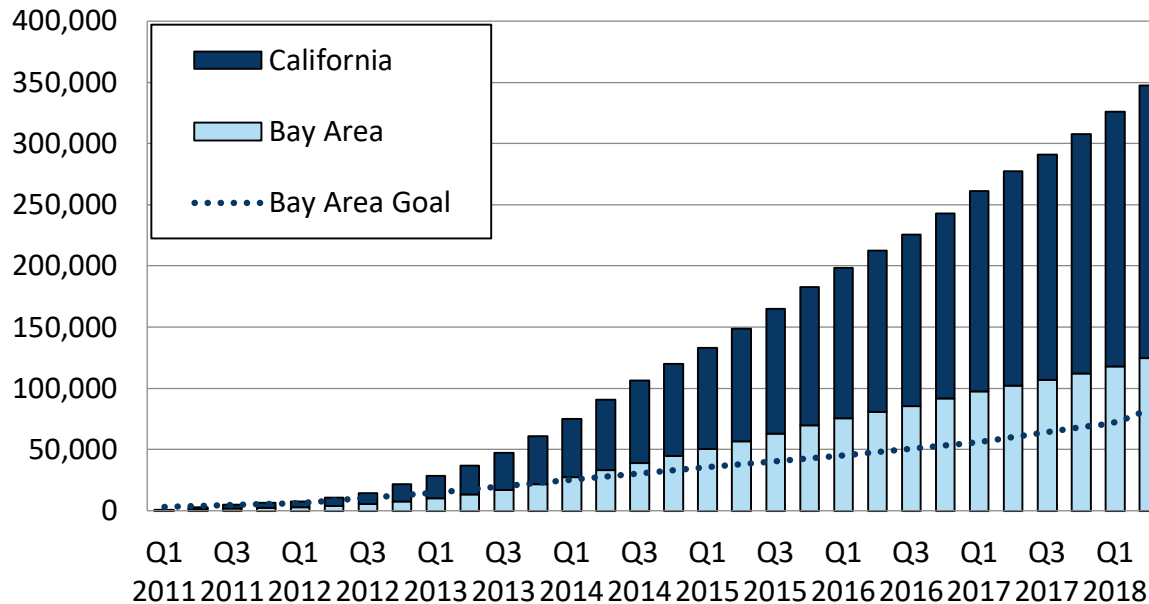Technology Implementation Office Steering Committee Meeting
October 22, 2018

Mark Tang
Staff Specialist

Adoption of EVs in Bay Area and California

**Current Adoption:
~125,000 EVs
2% of Bay Area fleet**

**2017 Clean Air Plan
EV Goal:
90% of fleet by 2050**

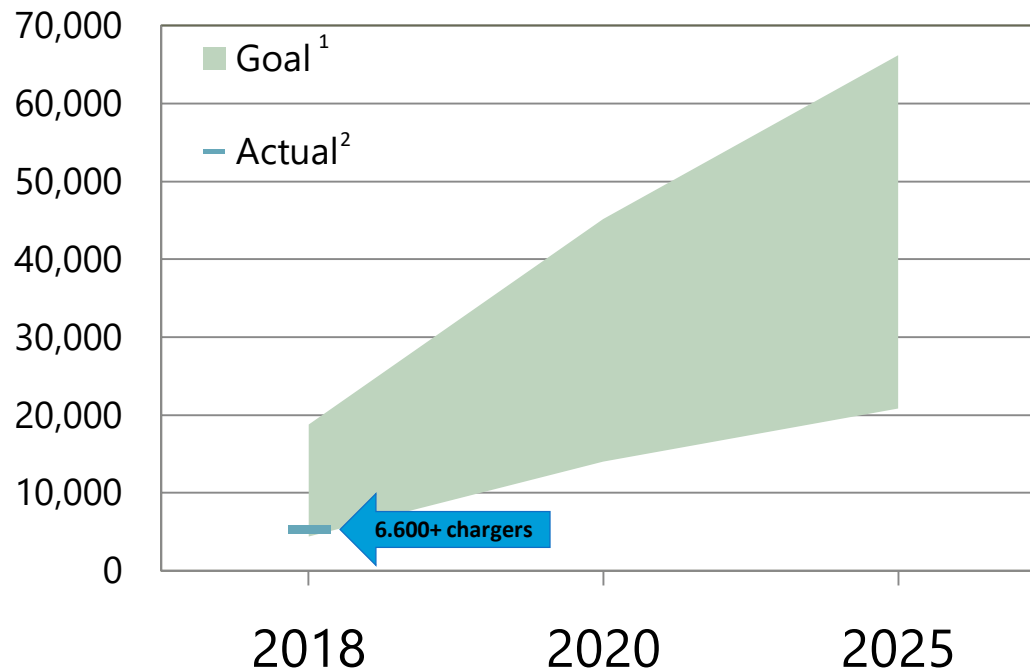Estimated from Clean Vehicle Rebate Program data

Adoption of EVs in Bay Area
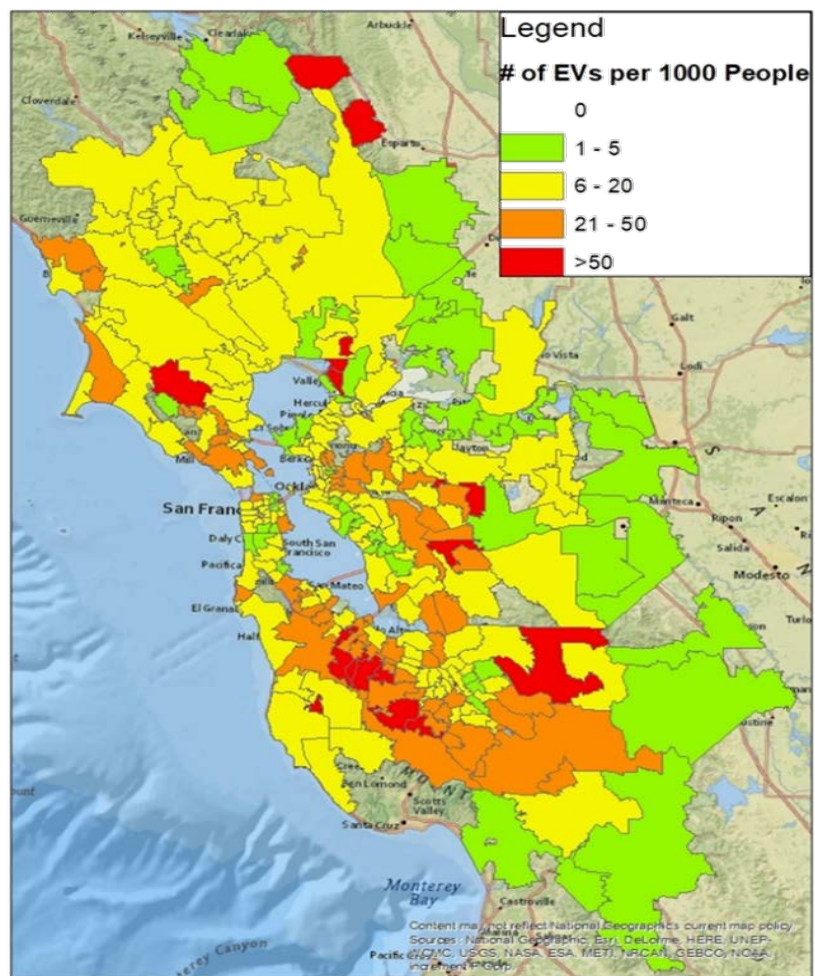
Department of Motor Vehicles data (2017)

Current and Needed EV Charging Infrastructure

Chargers

Goal[1]

Actual[2]

6.600+ chargers

2018   2020   2025

[1] Based on estimated demand for publicly-available Level 1 and 2 chargers using ICF and EPRI Method Estimates from the Bay Area PEV Readiness Plan: http://www.baaqmd.gov/~/media/files/strategic-incentives/ev-ready/bay-area-pev-readiness-plan-summary-2013-web-pdf.pdf?la=en.

[2] Based on Department of Energy, Alternative Fuels Data Center. Retrieved October 14, 2018 from https://www.afdc.energy.gov/stations/#/find/nearest?fuel=ELEC&ev_levels=2&ev_levels=dc_fast&ev_levels=1.

Transparameters Fund for Clean Air

- Authorized in 1991

- $4 DMV surcharge to cost-effectively reduce tailpipe emissions

- ~ $22 million available for Fiscal Year Ending (FYE) 2019

Trip Reduction

Clean Vehicle & Infrastructure
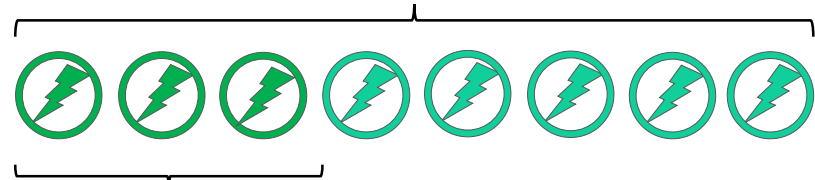

Bicycle Facilities

Charge! Program

- Rapidly expand publicly accessible EV charging stations

- Transition Bay Area vehicles away from fossil fuels

- Grants to public and private organizations

- Additional funding ("plus-up") to encourage clean energy production, multi-port charging stations and 24/7 DC Fast along transportation corridors

http://www.baaqmd.gov/charge

Impact of Air District Funding on Bay Area Public Charging Stations

Bay Area Charging Stations
- Received BAAQMD Funding
- Other
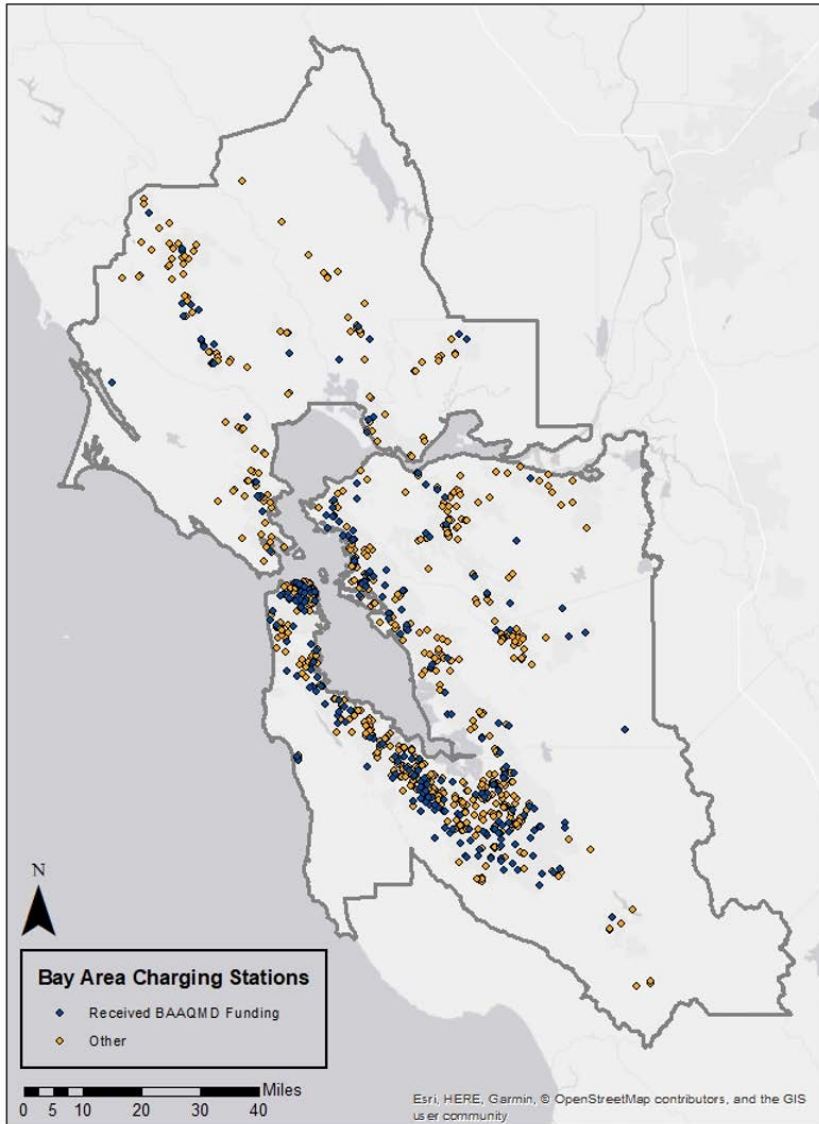
- 6,615+ Public Stations

36% Received Air District Funding (2013-2017)

Charge! Program 2017 - 2018

$ 6.5 MILLION = 2,000+ EV CHARGING STATIONS = 9,484 TONS PER YEAR CO$_2$ = 968,126 GALLONS OF GAS

FACILITY TYPE

Facility	Percent
Workplace	61%
Destination	29%
Apartments	4%
Transit Parking	3%
Transportation Corridor	3%
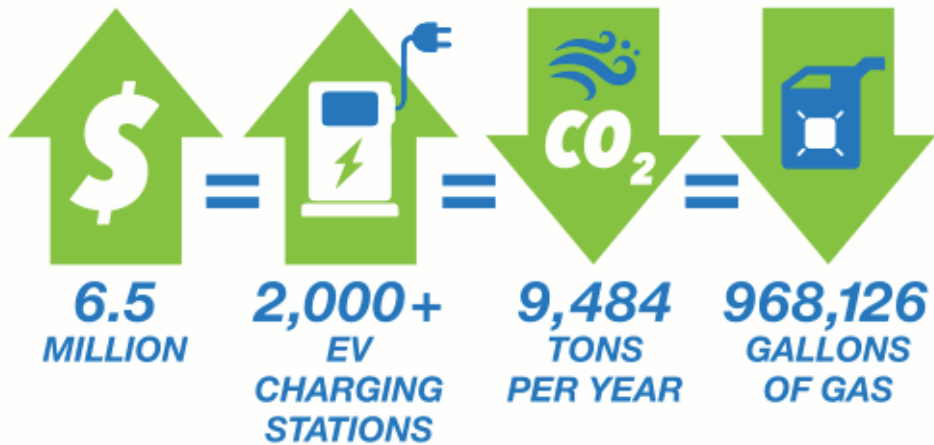
Charge! Program FYE 2019
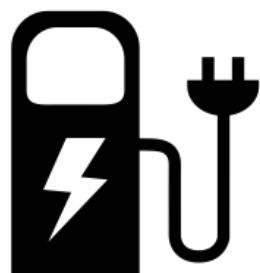
Level 1	$750
Level 2	$3,000
DC Fast	$18,000

Solar	$1/W up to $4,000
Multi-port	$1,000 per additional port
Transportation Corridor	$7,000
Multi-dwelling Unit	$4,000 per charger

Open October 25, 2018 – June 30, 2019
www.baaqmd.gov/charge

Clean Fleets FYE 2019

motorcycles

light-duty
vehicles

$1,000

Electric or Hydrogen
Fuel Cell
10 Vehicles minimum
Purchase or lease

Focusing on:

Ride-hail, Car-share
Taxi & other TNC's

Municipal &
Private fleets

Police & Parking
Agencies

Open August 28, 2018 – January 31, 2019
www.baaqmd.gov/cleanfleets

Outreach Activities

- Email notifications and social media
- Events
  - Ride and drives
  - Conferences and workshops
- Associations and newsletters
  - Multi-dwelling units
  - Fleet organizations
- Transportation Network Companies (TNC)
  - Ride-hail, car-share, pooling, shared mobility
- Car rental organizations