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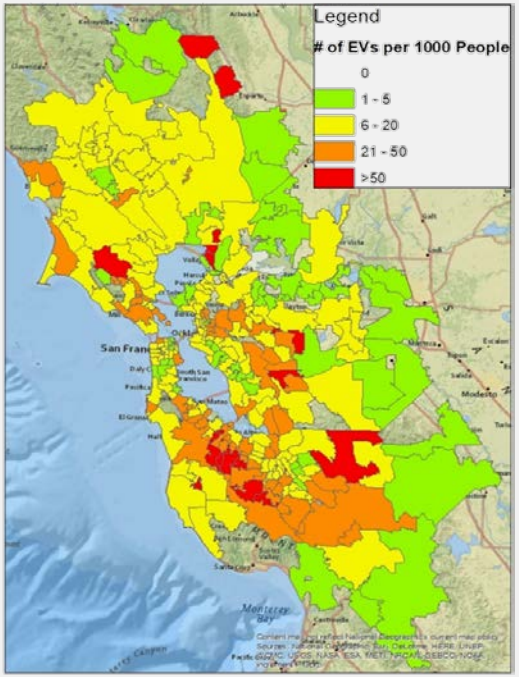
Clean Cars for All: New Incentives Program for Low Income Consumers

Technology Implementation Office (TIO)
Steering Committee Meeting
June 21, 2018

Outline

- Program Overview
- Replacement Options and Funding Levels
- Consumer Outreach and Support
- Next Steps

Expanding Electric Vehicle (EV) Adoption in Bay Area



TODAY

Goal: 90% EVs by 2050

2050?

Achieving Equitable Access to Clean Transportation and Technology

For Consumers

- Benefit from new technologies, e.g. fuel savings, lower maintenance, ride quality
- Improve air quality in disadvantaged communities and across Bay Area, aligned with AB 617

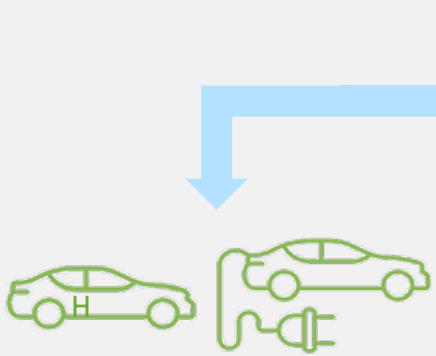
For Region & Climate

- Expand EV usage across the Bay Area, including expanded charging network
- Scale-up of EV market beyond early adopters
- Reduce demand and use of fossil fuels

Enhanced Fleet Modernization Program Plus-Up, aka “Clean Cars for All”

Funding from California Air Resources Board ($5M over 2 years)

Low-income residents in environmentally disadvantaged areas who turn in older vehicle



Advanced Technology

- Hybrid, plug-in, or electric vehicle
- Purchase or lease
- 8 years old or newer

Alternative Transportation

- Clipper card
- Voucher for bike sharing, car-sharing, vanpooling

Replacement Options and Funding Levels

Income	Hybrid Electric Vehicle*		Plug-In Hybrid	Battery Electric Vehicle	Alternative Transportation Mobility Options
	20+ MPG (Combined)	35+ MPG (Combined)			
Low Income ≤225% FPL	$6,500	$7,000	$9,500	$9,500 Plus $2,000 for EVSE	$4,500
Moderate Income ≤300% FPL	Not Available	$5,000	$7,500	$7,500 Plus $2,000 for EVSE	$3,500
Above Moderate Income ≤400% FPL	Not Available	Not Available	$5,500	$5,500 Plus $2,000 for EVSE	$2,500

*Only available for purchased vehicles
FPL: Federal Poverty Limit
EVSE: Electric Vehicle Supply Equipment, charging infrastructure

Consumer Outreach and Support

Targeted Outreach

- Workshops and mailers targeting low-income residents in disadvantaged communities
- Education about advanced automotive technologies, recalls, battery warranties, consumer protections, and vehicle maintenance

Transaction Assistance

- Provide support for application submission, vehicle selection, financial literacy
- Partner with financial institutions to provide low cost loans

Consumer Protection

- Strict guidelines with partner dealerships
- Connect applicants with organizations that offer credit counseling support
- Systems to protect consumer data

Case Manager Request for Proposals

Scope: Provide one-on-one assistance and support eligible consumers that apply to the Clean Cars for All Program.

Schedule

Released April 3, 2018

Deadline May 17, 2018

Panel review May 18 – June 7

Scoring Panel: Staff from TIO, Community Engagement Office, Strategic Incentives Division, Community Member.

Scoring of Proposals and Panel Recommendation

Criteria	Total Points Possible	GRID Alternatives	Opus Inspection, Inc.
Expertise	30	24.2	21.6
Approach	30	24.4	18.6
Cost	30	25	17.8
Conflicts of Interests	5	4.4	5
Organization's Specialty Focus Area	5	2.5	0
Total points	100	80.5	63

GRID ALTERNATIVES

- Expertise working with low income consumers in disadvantage communities in the Bay Area
- Thoughtful approach that included anticipated challenges and mitigation strategies
- Cost proposal included significant cost sharing

Next Steps

Set up components required for opening program to the public

Application & Website

Case Managers

Partnerships

with dealers, scrappers, alternative transportation, financial institutions

Engagement

with stakeholders in disadvantaged communities

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Mission and Customer Discovery

Technology Implementation Office (TIO)
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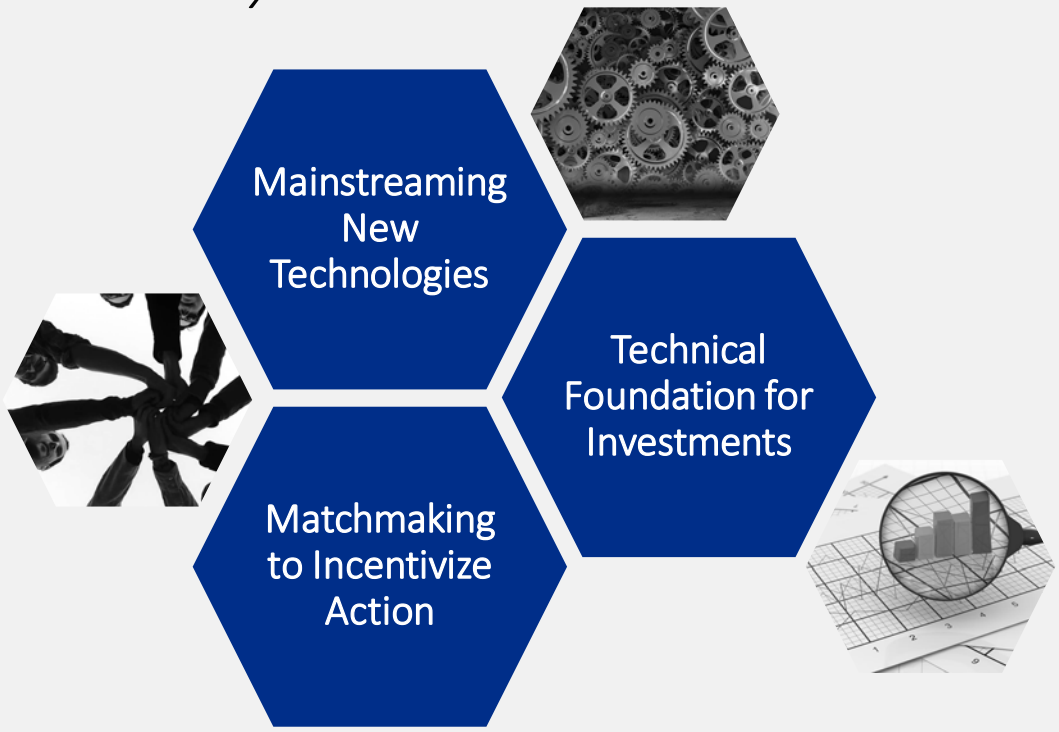
Technology Implementation Office (TIO)

Mission Statement

Catalyze innovation to combat climate change by incentivizing disruptive, low-cost technologies that reduce greenhouse gas emissions for mobile and stationary sources

3 priorities

identified through initial stakeholder engagement w/ researchers, technologists, incubators, utilities, facilities, partner agencies, financing authorities



Benefits to Partners with Air District TIO

Technology Developers and Companies

Accelerated awareness and mainstreaming of new technologies

Financing Authorities

Expanded customer base

Co-funding to cover higher risk or newer technologies

Increased confidence in project technical viability and payback periods to enable more investment

Stationary Facilities

Information about technology and financing opportunities

Access loans for technology upgrades

Getting out in front of permitting and regulatory requirements

Customer Discovery

Following the March Steering Committee meeting, conducted additional interviews to refine where TIO has greatest value:

Stationary facilities, to understand what customers need, technology opportunities, and financing barriers

Financing partners, to understand risk and financing structures, and how Air District program can fit into existing landscape

Outreach to Stationary Facilities

Staff conducted outreach to potential borrowers and interviewed nine facilities/trade organizations:

- Public sector
  - solid waste
  - wastewater
  - universities
- Private sector
  - operators
  - consultants
  - facilities

Facilities: Needs & Wants

Awareness

- A **clearinghouse** of emissions-reducing technologies
- Events and opportunities for **matchmaking**

Technology Fit

- Target facilities that have **current or planned** construction or rehabilitation
  - Harder for public facilities to upgrade equipment at other times due to backlog of deferred maintenance
- New technologies should be **low-maintenance**

Facilities: Needs & Wants (continued)

Financing

- **Public** facilities are very interested in financing options
- **Private** facilities may have internal financing but are still interested in technology assessment and matchmaking
- **Longer loan terms** preferred (~30 years)
- Currently difficult to secure financing for **equipment, heavy administrative burdens and/or cash flow constraints** (payment in arrears)

Interviews with Financing Partners

Staff conducted 14 interviews with financing partners

- government
- green banks
- commercial banks
- venture capitalists
- impact investors
- startup accelerators

Financing Landscape

Equity

- Invest in technology developers, not project finance for individual facilities
- Preference for technologies for enterprises and consumer markets
- 5 – 10 year timeframe
- Evaluate: revenue, team, customers, “traction”

Debt

- Focus on commercial and economic viability, avoid high technology risk
- Interested in standardized metrics for climate benefits and loan guarantees to reduce transaction costs and exposure
- Evaluate: repayment ability based on revenue and available funds, also relationships with developers, contractors, suppliers, and ecosystem

“Take risk where we add value”

	Private Financing
Key Metrics	Benchmark returns; repayment ability
Financing Rates	Market rate
Timeline	~7 years
Technical Expertise	Limited; interested in results of technology assessment
Approach to New Technologies	Without first customer or deployment, assume “market entry costs” which raise financing rates

“Take risk where we add value”

	Private Financing	Stationary Facilities
Key Metrics	Benchmark returns; repayment ability	Cost; compliance
Financing Rates	Market rate	3.5%+ for bonds
Timeline	~7 years	~30 years
Technical Expertise	Limited; interested in results of technology assessment	Intimate knowledge of processes; interested in results of technology assessment
Approach to New Technologies	Without first customer or deployment, higher financing rates	Timing and maintenance requirements are key considerations

“Take risk where we add value”

	Private Financing	TIO Financing	Stationary Facilities
Key Metrics	Benchmark returns; repayment ability	CO_2e reductions per cost; IBank underwrites loan on repayment ability	Cost; compliance
Financing Rates	Market rate	0% for Air District funds; 2-3% for IBank portion	3.5%+ for bonds
Timeline	~7 years	Air District funds repaid first	Up to 30 years
Technical Expertise	Limited; interested in results of technology assessment	Air District will perform technical due diligence and leverage technology assessment	Intimate knowledge of processes; interested in results of technology assessment
Approach to New Technologies	Without first customer or deployment, higher financing rates	Active matchmaking between new technologies and customers that need climate technologies	Timing and maintenance requirements are key considerations

Global Climate Action Summit Affiliate Event

Climate Tech Marketplace

Follows the Air District's Bay Area Climate Leadership Forum to offer concrete solutions and partnerships for implementing commitments

Thursday September 13, 4:00 p.m.

Bay Area Metro Center, 375 Beale St, San Francisco, CA

Attendees

- **Global Summit participants:** Connect with thriving Bay Area technology industry
- **Technology developers:** Showcase technologies, identify partners and customers
- **Governments and businesses:** Identify new technologies that can help them meet climate commitments

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Proposed Loan Relationship and Terms

Technology Implementation Office (TIO)
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Stationary Loan Program: Proposed Financing Relationship with IBank

Expand current programs

- Leverage funding, guidelines and administration
- Reporting on funds and projects

Make it easier for facilities to implement new technologies

- Support newer technologies
- Identify new borrowers
- Lower interest rates and cover fees (for first few years)
- Providing engineering evaluations, technical assistance to borrowers, inspections of projects

Key Terms of Proposed Loan Program

$4M initial TIO loan fund

- Deployed at $1-2M per year over next 3 years
- # projects/year: 5 - 10

IBank Current programs

Loans for municipalities, universities, schools, hospitals

- $500K to $30M
- 2% to 3% interest

Loan guarantees for small businesses

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

"Sweetening the deal"

- Offer Air District funds at 0% to lower interest rates
- 10% - 25% of total loan plus fees (1% origination, 0.30% annual)

- Increase IBank's standard loan guarantee amounts to encourage more banks to provide loans
- Up to additional 10% loan guarantee

Proposed Project Selection Process

Project Identification

- Steering Committee provides guidance on loan strategy
- TIO conducts outreach to prospective facilities and identifies technology opportunities

Due Diligence

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

Project Recommendation

- TIO proposes financing for project based on results of due diligence and portfolio approach
- IBank staff reviews project proposal; underwrite and finalize financing terms on project-by-project basis

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Update on Technology Assessment Results

Technology Implementation Office (TIO)
Steering Committee Meeting
June 21, 2018

Technology Assessment - What are the key technologies and facilities to incentivize?

- Energy efficiency
- Alternatives to gas turbines and diesel ICEs (e.g. gas microturbines, hydrogen FCs)
- Cooling and heating (e.g. geothermal, electric heat pumps)
- Carbon sequestration and use
- Methane capture and use
- Waste-to-energy

- Zero emissions vehicles and infrastructure (lifecycle)
- Autonomous electric vehicles
- Renewable fuels (e.g. renewable diesel, renewable natural gas)

Cross-cutting

- Smart/connected technologies (sensors, leveraging mobile networks, big data, artificial intelligence, Internet of Things (IoT), industrial IoT, software or applications)
- Battery storage for renewable power

Technology Assessment Goal

To have an updatable tool to guide
Air District's matchmaking and incentives:

Where can the Air District and TIO make the most **impact** per **$**?	• GHG emissions reductions • Cost
How can we balance **incentives** with current and future **regulation**?	• Improvements over existing alternatives • Time to commercialization
What technologies could be **replicated** and **scaled** outside the Bay Area?	• Risk (technology, market) • Barriers to success

203 Technologies Assessed (ongoing)

	# of Technologies
Alternatives to turbines	1
Carbon sequestration and use	9
Cooling and heating	13
Distributed generation	13
Energy efficiency measures	47
Energy storage	2
Equipment leaks	3
Fuel Switching	5
GHG Destruction	6
Heat recovery	8
Methane capture and use	9
Operations & Maintenance	14
Process efficiency	42
Smart/connected technologies	19
Waste-to-energy	12

	# of Technologies
Agriculture	11
Buildings	54
Carbon Dioxide Supply and Injection	1
Distributed Generation	13
Electronics Manufacturing	10
Industrial Gas Suppliers	1
Metals	6
Minerals	23
Miscellaneous Combustion Sources	9
Petroleum and Natural Gas Systems	1
Petroleum Refining	31
Power Plants	2
Transportation	5
Waste	36

Key Comparison Variables

Emissions Reductions Possible

- % emissions reductions vs. baseline process
- District and national emissions impact ranking

Technology Readiness

- Pre-TRL 7; TRL 7-9; Commercial; TPC-CAT (Theoretical Process Change using Commercially Available Technology); O&M (Operations & Maintenance)

Economics

- Investment scale per individual deployment, cost relative to baseline, economic viability

Key Comparison Variables (continued)

Barriers, Dependencies, & Risks

- Technology Barriers Score (extent of testing/proof in commercial environments)
- Economic Market Barriers Score (incentive for emissions source to adopt technology)
- Policy Barriers Score (extent to which existing policy encourages or inhibits adoption)

Possible District Action

- Incentivize, Regulate, Educate, Monitor

Preliminary Technologies of Interest

Energy /Energy Generation	• Biomass-to-energy microgrid systems with storage • CHP microturbines • Electrification of equipment/Batteries
Buildings/ Facilities	• Built-in photovoltaics (BIPV) windows • CO_2 heat pump water heaters (HPWHs) • Absorption heat pump water heaters
Cement	• CO_2-derived limestone and calcium carbonate replacements
Composting and Waste-to-energy	• Aerated Static Piles (ASP) composting • Modular in-vessel composting

Technology assessment is in progress, and other technologies may be added to this list

Next Steps

June

- Fiscal Year Ending 2019 Budget approved

July

- Technology Assessment completed and dissemination
- Finalize legal agreement for IBank partnership

Q3 2018

- Identify initial projects for financing
- Climate Tech Marketplace September 13
- TIO Steering Committee October 22 at 9:30 am

Q4 2018 -2019

- Ongoing project financing
- Convene technology developers and customers
- Identify additional funding opportunities