

Regional Working Group – 2nd Meeting



Municipal Fleet Electrification Study for the City of Fremont

June 4th, 2020

Meeting Purpose

1. Share conclusions & lessons learned from the vehicle portion of Fremont's Fleet Electrification Study
2. Introduce beta version of EVFleet.tools
3. Collect input from regional stakeholders on the design & analytical scope of the "Facilities Assessment Tool"

Agenda & Housekeeping

- Welcome, Project Background (9:30a – 9:35a)
- Conclusions & Lessons Learned from City of Fremont Fleet Analysis (9:35a - 9:50a)
- Introducing EVFleet.tools: Free Resources for Municipal Staff (9:50a - 10:00a)
- Q&A (10:00a – 10:15a)
- Facility Assessment Tool Introduction (10:15a – 10:25a)
- Break-out Groups: Facility Assessment Tool Scoping (10:25a – 10:50a)
- Closing (10:50a – 11:00a)

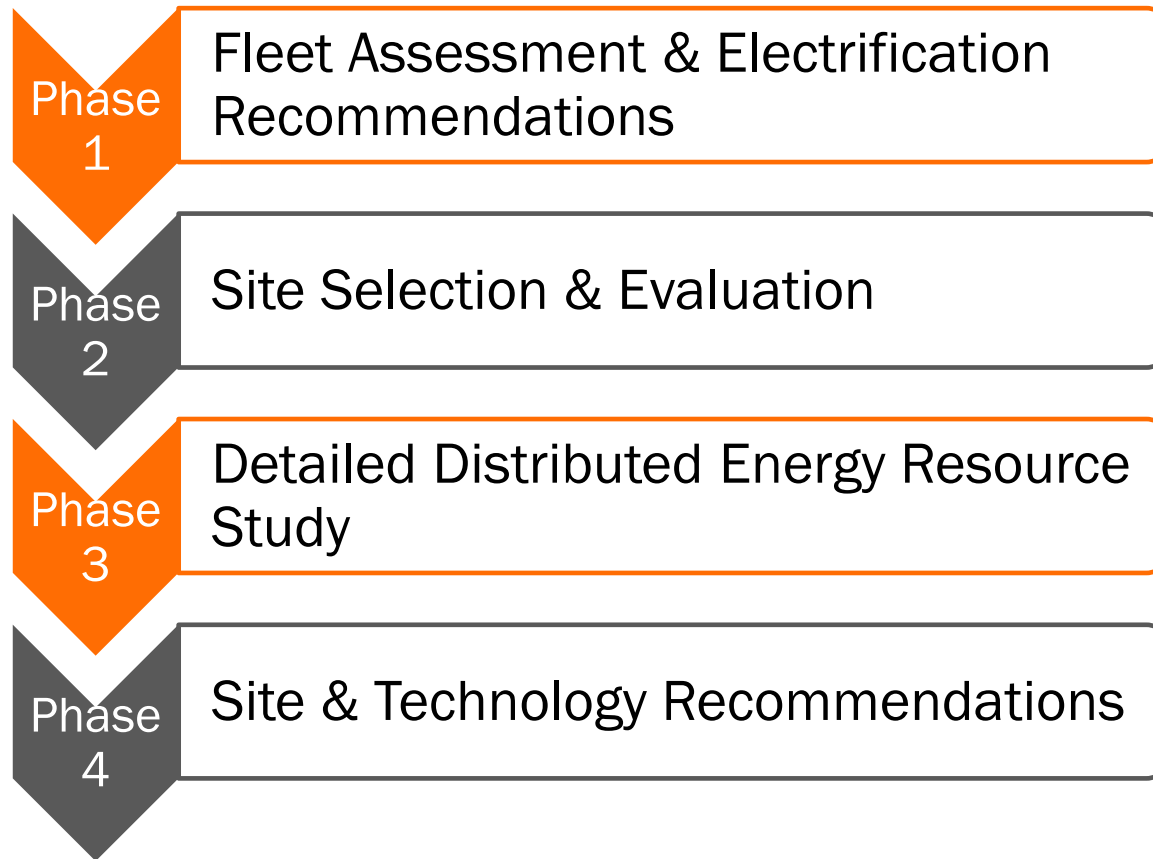
PROJECT BACKGROUND

- Funded through the Bay Area Air Quality Management District Climate Protection Grant program
- Purpose: To help the City of Fremont think strategically about ways to achieve robust decarbonization across fleet and facilities, share conclusions and best practices with the region
- Supports Air District goals of reducing air pollution and the impacts of climate change



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

PROJECT OVERVIEW



Working Group &
Tool Creation





Contact: Rbattersby@oaklandca.gov



LESSONS LEARNED: FLEET ELECTRIFICATION ANALYSIS

ANALYSIS GOALS

1. Identify a replacement timeline for the City's vehicles
2. Identify an electric alternative for each vehicle
3. Analyze Total Cost of Ownership of vehicle electrification
4. Analyze potential emissions reductions
5. Analyze charging requirements needed to support electrification

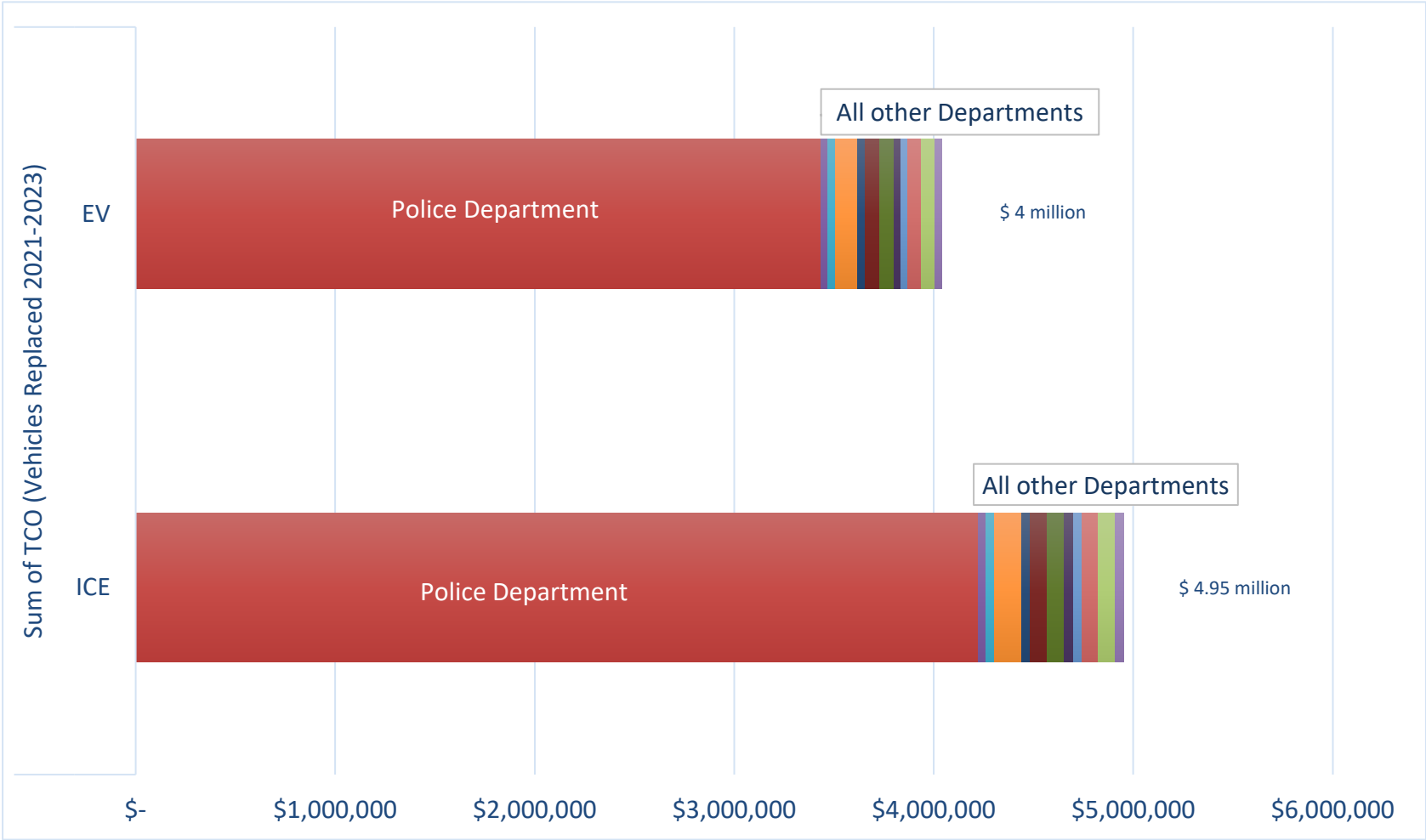
CHALLENGES & LESSONS LEARNED

1. Balancing multiple timelines: Vehicle Replacement Timeline vs. Market Progression
2. Reassessing EV suitability analyses will be necessary to implement scaled fleet electrification
3. Pick-ups & medium-duty (Class 3-6) pose a significant challenge for fleet electrification in fleets like Fremont's due to prevalence and lack of market options

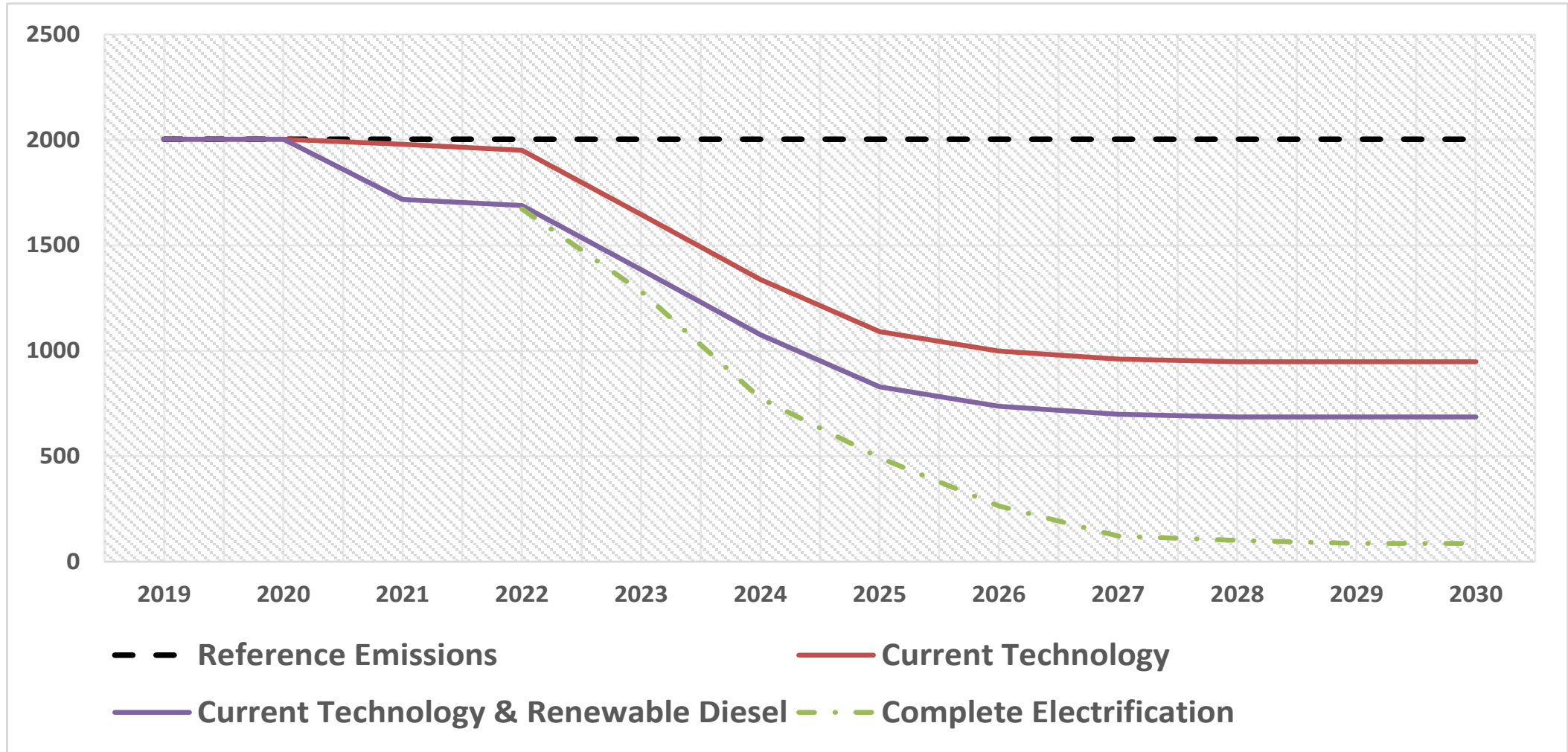
CONCLUSIONS

1. Range is not a limiting factor – 90% of vehicles electrifiable today had at least one EV option currently available that could satisfy 100% of its historical driving behavior
2. Total Cost of Ownership analysis reveals significant cost saving opportunities
3. Existing technology (including renewable diesel) is sufficient to meet Fremont’s 2030 emissions goal (55% below 2005 levels 2030)
 - More technology development needed to reach long-term goals

TOTAL COST OF OWNERSHIP (2021 – 2023)



CARBON EMISSIONS REDUCTIONS



CHARGING INFRASTRUCTURE

Highlights of the preliminary results are as follows;

1. Long dwell times and low mileage mean Level 2 charging (7.2 kW) is generally sufficient
2. Vehicle to charger ratios range from 2:1 to 12:1 in some cases
3. DC Fast charging only needed to provide redundancy to Police operations, not required for core charging needs



MyFleetBuy For Fleet Electrification

MyFleetBuy Software for Fleet Electrification

- 1** Working with your fleet data
- 2** Using MyFleetBuy for annual procurement decisions
- 3** Identifying Electric alternatives
- 4** Accounting for auxiliary loads

Problem: Only Some Fleet Vehicles Are Connected

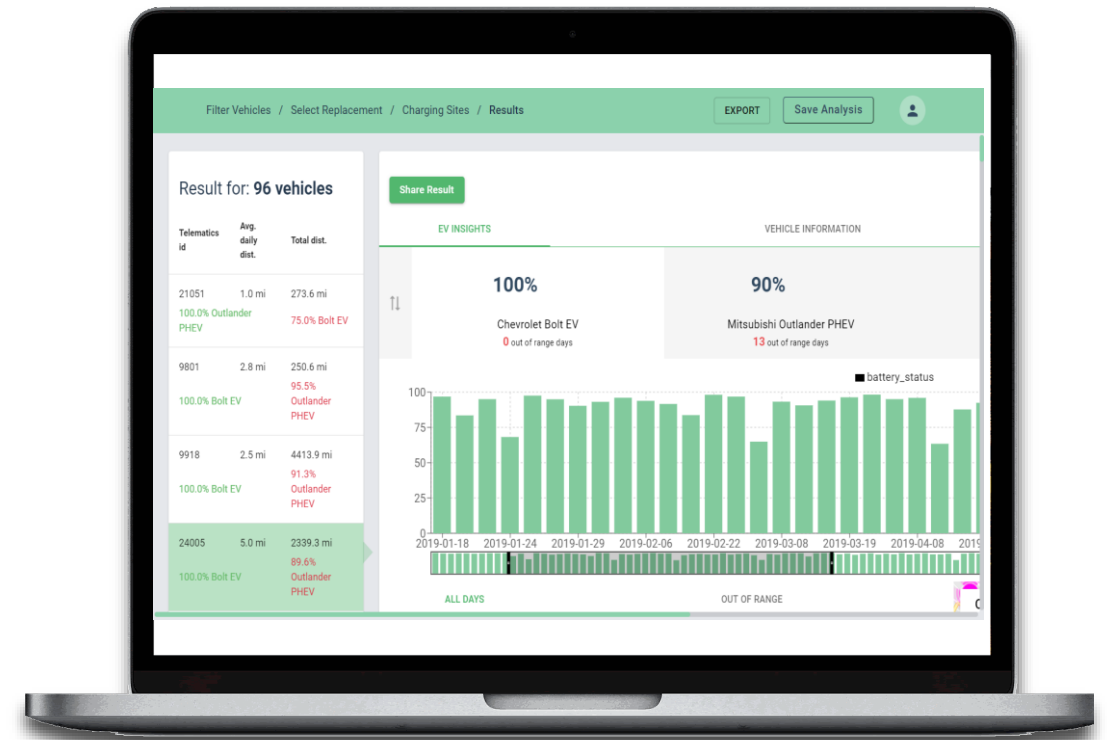
Solution: Simplify EV Decisions Using Existing Fleet Data

Vehicle
Inventory list

Fuel Reports

Fleet Telematics

Odometer
readings



Problem: EV Market is Changing Quickly

Solution: Make EV Decisions on an Annual Basis

Fleet Analysis

Result for: 12 vehicles

Telematics id	Avg. daily dist.	Total dist.
214021	2.9 mi	3483.9 mi
100.0% Kona Electric		
100.0% Model Y Performance AWD		
214024	3.3 mi	2335.1 mi
100.0% Kona Electric		
100.0% Model Y Performance AWD		
211003	2.4 mi	4581.2 mi
100.0% Kona Electric		
100.0% Model Y Performance AWD		
211004	2.5 mi	4615.1 mi
100.0% Kona Electric		
100.0% Model Y Performance AWD		
212006	1.4 mi	4595.6 mi
100.0% Kona Electric		
100.0% Model Y Performance AWD		
218009	3.0 mi	3003.6 mi
100.0% Kona Electric		
100.0% Model Y Performance AWD		
218012	3.8 mi	4886.4 mi
100.0% Kona Electric		
100.0% Model Y Performance AWD		
219012	3.4 mi	2083.6 mi
100.0% Kona Electric		
100.0% Model Y Performance AWD		
29023	3.4 mi	2515.6 mi
100.0% Bolt EV		
100.0% Soul Electric		

Share Result

EV INSIGHTS

100%

Hyundai Kona Electric

0 out of range days

VEHICLE INFORMATION

100%

Tesla Model X 75D

0 out of range days

100%

Tesla Model Y Performance AWD

0 out of range days

Legend: ■ battery_status

ALL DAYS OUT OF RANGE

2018-12-03 18mi → 96.2% battery

2018-12-04 41mi → 90.8% battery

- 7mi → -2.8% battery usage
- 6mi → -2.4% battery usage
- 1mi → -0.5% battery usage
- 1mi → -0.3% battery usage

Map: Carte, Satellite

Problem: EV Decisions can be Overwhelming

Solution: Created User Friendly Search and Filtering

1. Filter Your Vehicle Data

Search for vehicles using your custom filters

Date is 2018-12-05 to 2020-02-06 MFB-Vehicle Type is sedan ✕

Add filter

MFB-Vehicle Type is

su

suv

Toggle Columns

<input checked="" type="checkbox"/>	Equipment ID	VIN	Make	Model	Model Year	Purchase Year	Department	MFB-Vehicle Type	Total Distance	Ave Dis
<input checked="" type="checkbox"/>	218004	3FA6P0UU5JR125344	FORD	FUSIONSH	2018	2017	COMMUNITY DEVELOPMENT	Sedan	250.7 mi	3.7

Rows per page: 10 1-1 of 1

2. Find EV Alternatives

✕

Search by custom filters:

Make is Model is Year is Powertrain is Body Type is MSRP is EPA Range is

Make Model Year

Search by keyword:

Start typing vehicle name

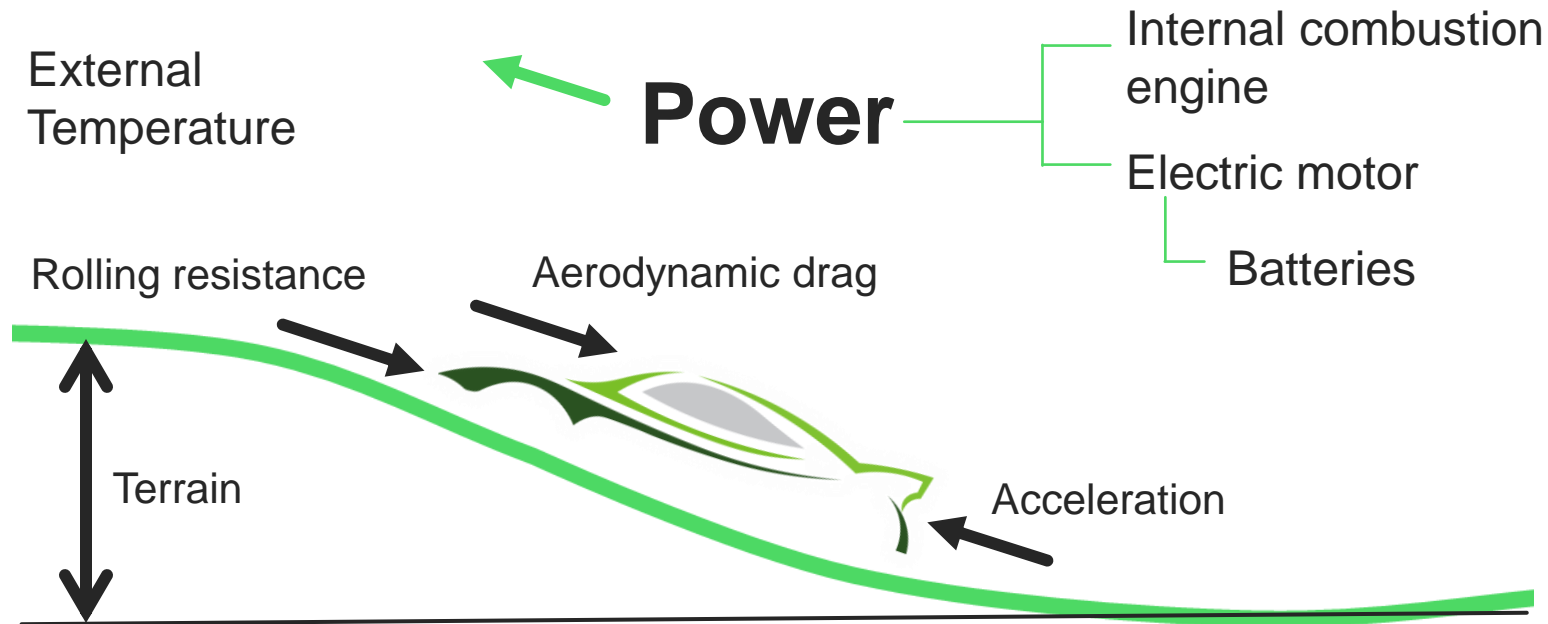
Model Year Mak

Search by: Make, Year, Powertrain, Body Type, etc.

Problem: Vehicle Equipment Also Consumes Energy

Solution: Created Additional Input for Battery Drain

Process for Connected Vehicles



16,000 unique car models online to date

Process for Other Vehicles

When data is unavailable, measure load based on Equipment Type:

- Laptop,
- Camera,
- Spotlight,
- Data Transmitter,
- Car Radio,
- HVAC, etc.



Want to see a live demo of
MyFleetBuy?

Click here to
sign up

Or contact us to learn more:

operations@greenlight-labs.com

JUNE 2020



EVFLEET.TOOLS

SUMMARY OF RESOURCES AVAILABLE/UNDER DEVELOPMENT

1. Municipal Fleet Planning Tool
2. Facilities Assessment Tool (*not currently available*)
3. Best Practices & Resources on:
 - “EV First” Purchasing Policies
 - Telematics
 - Licensed EV Identification tools
 - EV Procurement
4. Project Updates



MUNICIPAL FLEET PLANNING TOOL -- APPROACH

1. Designed to address two-prongs of fleet electrification decision making:
 - Decision to electrify a single vehicle
 - Long-term strategic planning for vehicle electrification
2. User flow combines qualitative information & instructions with Excel-based tool

MUNICIPAL FLEET PLANNING TOOL -- FUNCTIONALITY

Basic Functionality

Data Acquisition & Organization

Vehicle Replacement Timeline

Potential EV Replacement Analysis

Total Cost of Ownership

Emissions Reductions


MUNICIPAL FLEET ASSESSMENT TOOL FEATURES

Feedback Received	Tool Feature/Approach
Data collected differs, collection processes vary widely	<ul style="list-style-type: none"> -Data template -Telematics information (<i>Coming soon</i>)
Consider vehicle class & usage (identify specialty vehicles)	<ul style="list-style-type: none"> -EV Type identification considers department, body type and daily mileage
Account for auxiliary power loads	<ul style="list-style-type: none"> -Option to consider auxiliary power (uses representative data from Fremont's analysis)
Right-sizing both fleets & vehicles	<ul style="list-style-type: none"> -Conversations with staff prompted throughout user journey
Importance of TCO (even if high level)	<ul style="list-style-type: none"> -Include TCO by vehicle/department -Link to other resources
Lease vs Buy	<ul style="list-style-type: none"> -Resources on purchase/ownership options
Importance of policy to institutionalize EV purchasing	<ul style="list-style-type: none"> -Resources on "EV First" policies


DEMO


EV Fleet Tools


[Home](#) [Fleet Tool](#) [Best Practices](#) [Project Updates](#) [Contact](#)




Welcome to EVFleet.tools
Free tools for municipal fleet managers


Facilities Assessment
Analyze your facilities to screen the best candidates for hosting EV infrastructures


Fleet Assessment
Follow a guided process for analyzing your fleet and build an EV purchasing policy


Best Practices
View additional resources and materials from the Regional Working Group


Project Updates
Take a look at what the Regional Working Group has accomplished so far

FEEDBACK WELCOME

1. Seeking user feedback from fleet/sustainability managers.

- 3 volunteers, first come first serve basis
- Email Tina.hu@prospectsv.org or sam.hill-cristol@optonyusa.com

2. Other next steps;

- Feedback from industry
- Exploring integration with other BAAQMD resources



QUESTIONS?



FACILITIES ASSESSMENT TOOL BRAINSTORMING

FACILITIES ASSESSMENT TOOL - INTRODUCTION

- *Theory: Approach and plan for EVSE development in concert with DER development*
- *Tasked with leveraging project methodology to “develop tools for local governments’ screening of decarbonization opportunities in municipal buildings and fleets”*
- *“A checklist & Excel-based tool”*



OPTIONAL PARTICIPATION

Breakout groups are geared toward municipal staff, optional for other attendees:

- Industry, other stakeholders welcome to participate and inform conversation on how the Facility Assessment Tool can best align with existing sales processes

FACILITIES ASSESSMENT TOOL - INTRODUCTION

Tool Goals (what we know):

- *Similar in user experience to the Fleet Planning Tool:*
 - *As user clicks moves through tool, there will be informational & analytical “pull-offs” & “off-ramps”*
 - *“Pull-offs” provide additional information or analytical insight within tool*
 - *“Off-ramps” link to external resources or other tools*
- *Conclusions from Fleet Planning Tool can directly inform facilities screening*
- *NOT an optimization tool*

FACILITIES ASSESSMENT TOOL - INTRODUCTION

What we don't know:

- *Exact scope, what questions are the most useful to answer for users?*
- *How to ensure it is complimentary, not redundant, to existing tools*

FACILITIES ASSESSMENT TOOL - DESIGN ACTIVITY OBJECTIVES

Task for breakout groups is twofold:

- *Review Concept Flowchart for improvements to flow and opportunities for more information and analytical insight (“pull-offs”/”off ramps”)*
- *Brainstorm and prioritize data inputs and analytical/informational outputs based on tool concept and/or “pull-off” opportunities identified*



FACILITIES ASSESSMENT DESIGN ACTIVITY

NEXT STEPS

WORKING GROUP MEETINGS – MEETING #3

Tentatively: 1st week of October 2020**

Part 1: Phase 3 Progress, feedback on draft Facility Assessment Tool

Part 2: Brainstorming session on regional scaling opportunities and strategies

Target Audience: Local Government Facility Planners, Facility Managers and Sustainability Staff, Regional LSEs, EVSE Suppliers, DER solutions providers

** Exact date subject to change.



THANK YOU!

QUESTIONS?

Email tina.hu@prospectsv.org or sam.hill-cristol@optonyusa.com