Electric Vehicle Infrastructure Coordinating Council (EVICC) Meeting

January 8, 2024

Agenda

Opening

- Roll call, note on meeting minutes, meeting agenda, objectives, introduction of new EVICC consultant (10 min) – EEA

Updates

- Technical Committee Update – Fees and Policies Guide for Level 2 Charging Stations
- EDC midpoint modification filing
- MassCEC mobile charging program

Educational Presentations / Discussions

Medium-and Heavy-Duty Electrification and Charging Infrastructure

- Utility fleet advisory programs, Justin Eichenberger (ICF)
- MassFleet Advisor, Jennifer Kritzler (CALSTART)
- Case study: Medium duty commercial fleet use, Ezekiel Wheeler (Intelligent Labor & Moving)
- Q&A
- Guided Discussion

Public Comment

Meeting Objectives

- Update on charging resource guide development, EDC midpoint modification filing, and MassCEC mobile charging program

- Learn more about medium-and heavy-duty vehicle (MHDV) electrification and charging infrastructure efforts, and discuss how the state can further these efforts

Disclaimer: *The EVICC team invites presenters to speak about topics of interest to EVICC members and to the development of the second assessment to the Legislature. The Commonwealth is not endorsing any particular company or organization.*

Rules for Presentations / Public Comment

Presentations

- Presenters should keep to the assigned time
- The EVICC Chair will allow questions from EVICC members first and then the public if time remains

Public Comments

- Use the “raise hand” function to indicate your desire to speak at the appropriate time
- Identify yourself and affiliation prior to commenting
- Limit comments and questions to 3 minutes
- Please engage in constructive and respectful dialogue
- Be able to substantiate assertions or claims in support of comments

Updates

Electric Vehicle (EV) Charging Station Resource Guides

EVICC Electric Vehicle (EV) Charging Station Resource Guides

- As part of its work to support EVICC, the Technical Committee is developing a series of EV charging station related resource guides.

- These guides will provide recommended principles and best practices for fees, signage, siting and other important EV charging station topics.

- The first of these guides, *"Electric Vehicle (EV) Charging Station Owner-Operator Resource - Public Level 2 EV Charging Station Fees and Policies Guide"* is in final draft, with anticipated approval and public release next month.

- A version of this guide geared towards EV drivers will subsequently be released, followed by additional topic guides throughout 2025.

Public Level 2 EV Charging Station Fees and Policies Guide

Summary of Purpose, Value and Audience:

- **Purpose:** Offers guidelines for public EV charging station fees and policies.
- **Value:** Promotes optimal usage, accessibility, and financial sustainability of stations.
- **Audience:** EV charging station owners/operators and policymakers. (Public EV charging station driver guide to follow)

Key Recommendations:

- **Energy-Based Fees:** Set competitive, balanced rates (e.g., $0.30-$0.40/kWh).
- **Parking/Idle Fees:** Discourage extended parking (e.g., $3-$12/hour).
- **Alternative fees:** Risk inequities and inconsistent revenue if misapplied

Not included in this guide: Specific special use case fees and policies (such as Time of Use/peak, surge or seasonal, which can be custom developed by each organization), DCFC guidance signage, spaces, and siting guidance guidelines (to be covered by subsequent guides).

Electric Vehicle (EV) Charging Station Owner-Operator Resource:
Public Level 2 EV Charging Station Fees and Policies Guide

Resource Overview:

Appropriate usage and additional parking/idle fees at publicly accessible EV charging stations are necessary to ensure optimal usage of EV charging stations and positive customer experiences, both of which are vital to increased EV adoption. Below are typical EV charging structure types and principles for consideration in setting EV charging rates to deliver optimal usage and positive customer experience.

Signage at publicly accessible EV charging stations is also important to deliver these outcomes. Best practices on station signage design and language will be provided in a separate guidance document.

Recommended Fee Types for EV Charging Stations:

- **Energy-Based Charging Fee:** A fee based on the total amount of electricity (measured in kilowatt-hours, kWh) used by the vehicle while charging; the fee amount may vary based on time of day. This fee type is preferred for its predictable revenue for station owner-operators and predictable cost to vehicle owners.
- **Parking/Idle Fee:** Additional fee charged if the vehicle stays plugged in after it's done charging. This fee type encourages drivers to move their cars once charging is complete and is considered a best practice.

Best Practices for Setting EV Energy-Based Charging Fees

Energy-based fees should be set carefully, balancing affordability for users with the need to cover costs and, as applicable, achieve revenue goals. Multiple factors should be considered when setting an energy-based fee, including local electricity rates, operational expenses, and the competitive landscape.

Benefits of Balanced (i.e., Not Too High or Low) Energy-Based Fees for EV Charging Stations:

Benefits if the fee is not too low:
- Encourages drivers with access to home charging to primarily charge at home
- Helps ensure garage orphans (people without home charging) can access stations
- Reduces congestion so that public resources are available for drivers when needed (e.g., long trips, etc.)
- Financially supports the operation and maintenance of the charging station

Benefits if the fee is not too high:
- Increases site utilization percentage when rates are competitive compared with other options
- Enables garage orphans to transition to electric vehicles without being hindered by high charging costs

By setting energy-based fees thoughtfully, station owners can strike the right balance between affordability, utilization and optionally, profitability — ensuring sustainable and successful operation.

How to set an energy-based charging fee:

1. **Start with Local Residential Electricity Rates:** These rates provide a baseline for users' expectations since they are familiar with what they pay to charge their EVs at home and will likely continue to charge primarily at home if public charging rates are no less than their home charging cost.
2. **Incremental Adjustment for Additional Costs:** Charging station owners face additional costs beyond electricity, such as equipment maintenance, network fees, and property expenses. To account for these, the energy-based fee should be incrementally higher than residential rates—but not excessively so.
3. **Avoid Extreme Pricing:** Setting rates too low (e.g., below residential electricity rates) can impact the financial sustainability of charging stations and attract local drivers who would otherwise charge at home. Conversely, rates that are too high (e.g., significantly above residential rates) can deter EV drivers from using the station. High fees reduce station utilization and can lower total revenue despite the higher price.

Example 2024 EV Energy-Based Fee Range:

A reasonable range for energy-based charging fees in 2024 was **$0.30 to $0.40 per kWh**, depending on local electricity rates and site-specific factors. This range allows for sufficient cost recovery while remaining competitive and appealing to EV drivers.

Best Practices for Setting EV Parking/Idle Fees

Implementing parking or idle fees at EV charging stations encourages efficient use of charging infrastructure while promoting equitable access for all users. These fees are typically applied when vehicles remain parked beyond their charging session.

Benefits of EV Parking/Idle Fees:
- Discourages non-charging EVs from parking in the spots
- Reduces congestion and supports quick turnover for better availability
- Increases public understanding of EV charging etiquette and proper use
- Aligns with sustainability goals by ensuring chargers are used more efficiently
- Ensures station owners are compensated for lost opportunity for charging revenue

Ultimately, parking/idle fees can help address issues such as charger congestion and availability, supporting responsible use of EV charging resources and financial sustainability for charging stations.

How to set a parking or idle fee:

A parking/idle fee should start after the vehicle is fully charged or after a preferred amount of charging session time (such as 2 to 6 hours). The fee should be set high enough to cover the lost charging opportunity cost (i.e., the energy-based charging fee converted into a typical per minute or hour amount). It should also be set above any parking fee for non-EV charging spaces, as applicable. This will encourage turnover and discourage drivers from misuse by parking fully charged for extended periods.

Example 2024 EV Parking/Idle Fee Range: $3.00-$12.00 per hour (levied typically as $0.05 to $0.20 per minute)

Best Practice:

Implement a grace period (e.g., 15-30 minutes) after charging is complete before the idle fee starts, so drivers have time to move their vehicles. Communicate fee change through signage / messaging. Consider potential adverse customer experience of high idle fees; use a daily cap of fees above example range.

Alternative Fee Types

There are alternative approaches to charging service fees, each with unique considerations and applications. Three common alternative fee types, their use case scenarios, and potential impacts are outlined below. These fees are not typically recommended unless there is a clear policy rationale, such as enabling novel applications.

- **Time-Based Fee:** A fee based on how long the charging station is used and/or connected to the vehicle measured in minutes or hours. This fee is not tied to the amount of energy provided, creating potential inequities between charging and equivalent gasoline costs based on an EV's charging capabilities.
- **Connection Fee:** A set fee for connecting to the charger, no matter how much energy you use or how long you charge. This fee type can discourage use.
- **Flat Fee:** A single fixed amount charged per session, regardless of time or the energy used. This fee can result in inconsistent charging revenue and inequities between charging and gasoline costs.

Examples of time-based and flat fees to book charging services are emerging and may be appropriate. Such fees should be clearly communicated and converted into likely or actual, after-the-fact energy-based fees.

January 8, 2025

MassCEC: Medium and Heavy-Duty Mobile Charging Program

Devan DiLibero
Program Manager
ddilibero@masscec.com

MASSACHUSETTS CLEAN ENERGY CENTER

Medium- and Heavy-Duty Mobile Charging Solutions

- Consultant for this program is CALSTART and project kick-off is January 2025
- The Program aims to accelerate the electrification of MHD fleets (class 3-8) through the deployment of mobile charging stations for MHD fleets located in and/or servicing LIDACs
  - CALSTART will provide implementation support and technical assistance to a cohort of **4 MHD fleets** interested in testing out/right sizing MHD EVSE
  - CALSTART will provide cost parity monetary support for up to 4 new EVs per fleet
  - CALSTART will provide a maintenance and operations plan and recommendations for future charging solutions for cohort
  - CALSTART will create public facing resources for MHD fleet owners and operators interested in mobile charging solution
- Timeline: January 2025 – December 2026
  - EVSE will be in use for at least 6 months before the close of the program
- Next Steps for Engagement
  - Fleet Selection – Prioritizing MHD fleets located in or operating in LIDACs. CALSTART will develop an approach for communications with LIDAC fleets and other interested fleets.

Inquiries? Contact Us via Email

Cleantransportation@masscec.com

Presentations

Agenda

1. Fleet Advisory Program Background
2. Customer Program Journey
3. Challenges to Medium- and Heavy-Duty Electrification
4. Utility Resources
5. Q&A

Fleet Advisory Program Overview

Program Objectives

Goals

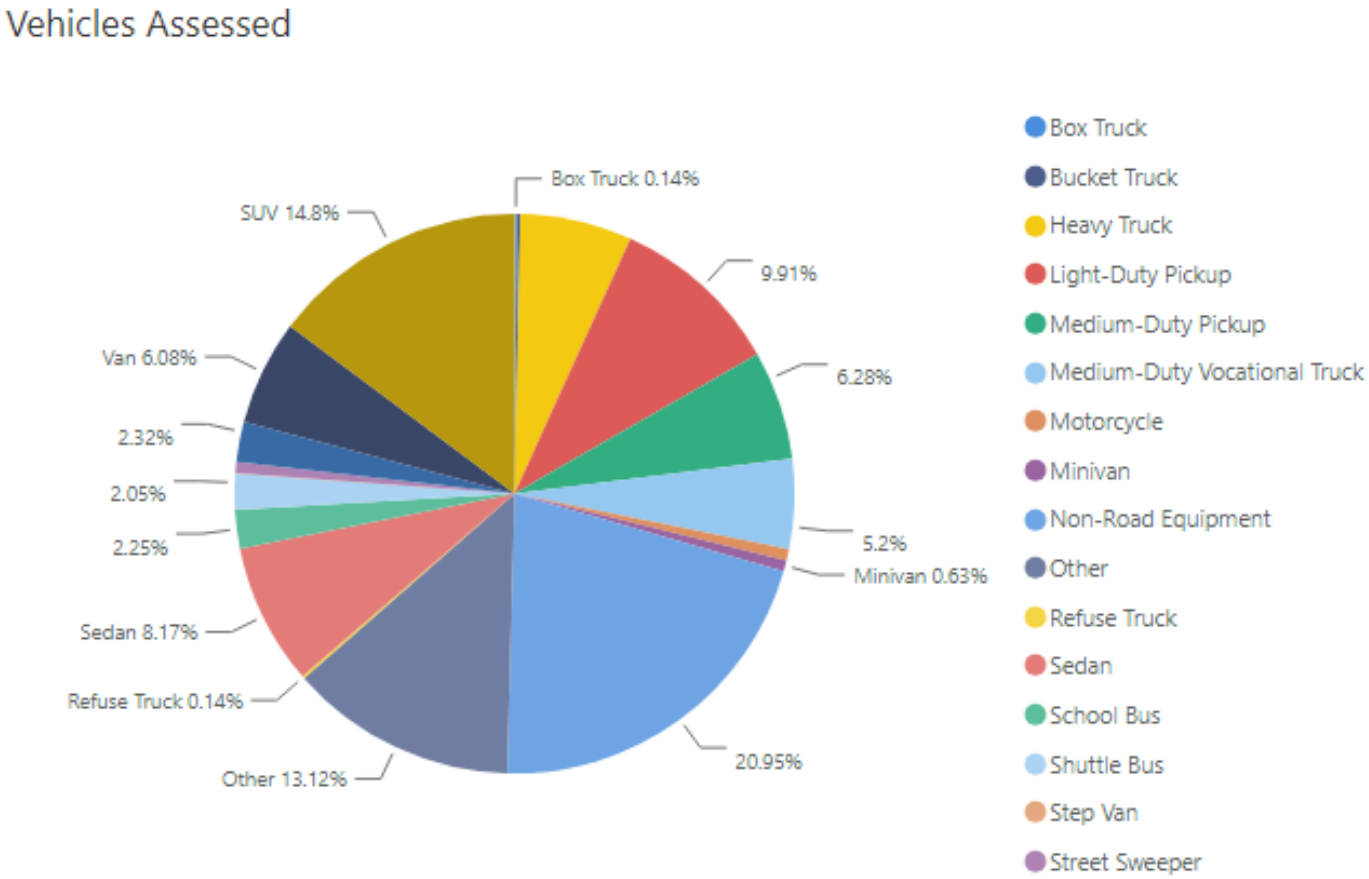
1. **Engage** Massachusetts fleets to evaluate the real opportunities for vehicle electrification. Eligible fleets include public transit, public university/college, and municipal, state, and federal government entities.
2. **Meaningfully contribute** to the Commonwealth's goals for vehicle electrification and carbon reduction.
3. **Serve** fleets in Environmental Justice (EJ) communities, as defined by Massachusetts Executive Office of Energy and Environmental Affairs (EEA).
4. **Encourage** fleet customer enrollment to National Grid and Eversource infrastructure programs
5. **Maintain** relationships with the fleet customers to educate on electric vehicles (EVs), refine their fleet electrification analysis, and assist in overcoming technical and logistical barriers to EV deployment.

Fleet Advisory Program Metrics Metrics

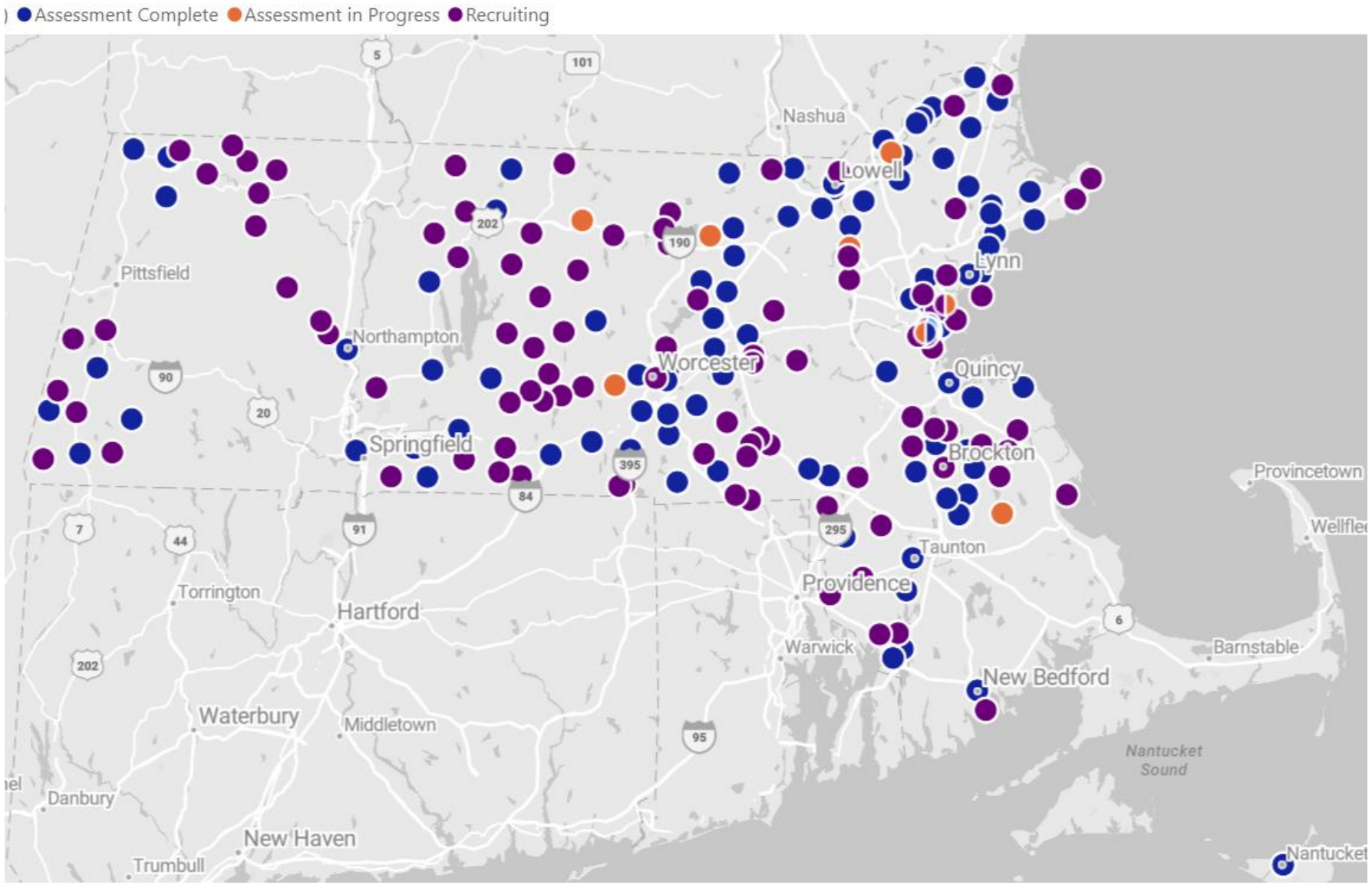
Over 100 public fleet customers across Massachusetts have participated in the program.

Results of the assessments include:

- Fleet Customers Participated: **~104**
- Vehicles Assessed: **~16,700**
- EVs Recommended: **~7,300+**
- L2 Chargers Recommended: **~5,400**
- DC Fast Chargers Recommended: **~1,300**
- Total Potential TCO Savings: **~$320,400,000+**
- GHG Emission Reductions: **~1,100,000 MT**



Customer Map

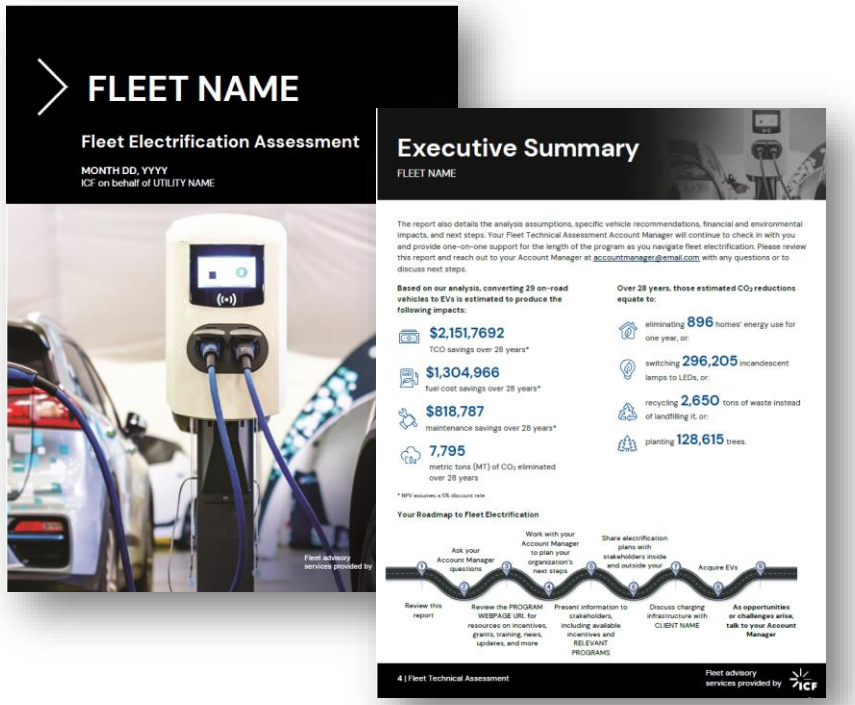


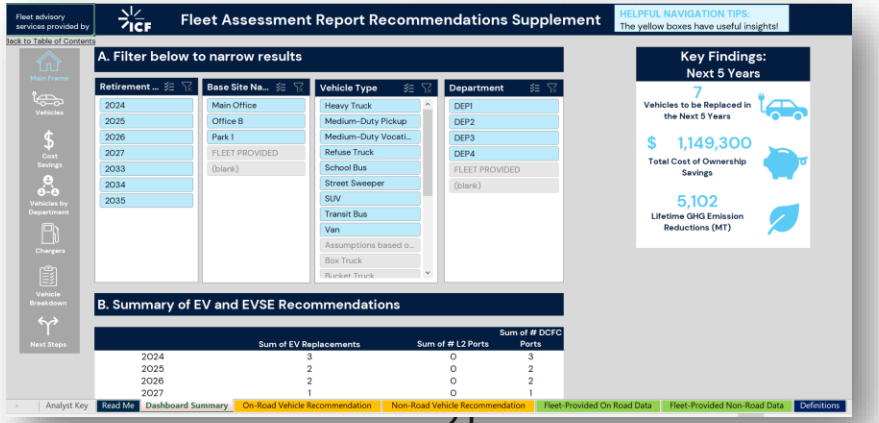
Fleet Customer Journey

Customer Deliverables

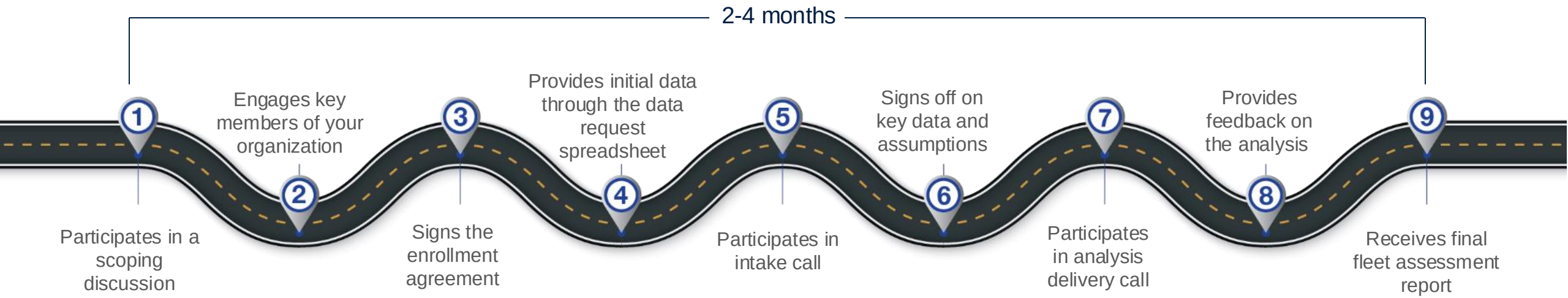
- Primary Deliverables
  - Customized report
  - Supplementary recommendations file
  - Assessment analysis presentation
- Additional Benefits*
  - Access to the fleet advisory web portal with references, materials, resources, and trainings.
  - Support through regular, one-on-one check-ins for the duration of the program
  - Monthly office hours with presentations from OEMs, charging vendors, procurement experts and more!
  - Help finding and applying for financial assistance to help offset the cost of switching to EVs
  - Direct assistance from utility representatives for Make-Ready Upgrades, charging station rebates, and more

**Program benefits vary between utility advisory program. These are not specific to one program.*





Customer Roadmap



Fleet Electrification Barriers & Challenges

Fleet Identified Barriers

Cost and Infrastructure

- High Upfront Costs
  - High EV cost
  - Expensive infrastructure installation
- Lack of existing infrastructure network
- Grid capacity

Organizational

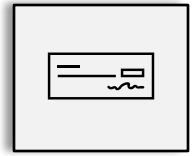
- Internal EV resistance
- Departmental Concerns
  - Police EV availability
  - DPW plow availability
  - Fire EV reliability
- Difficulty finding & applying to grants
- Purchasing & procurement constraints
- Lack of electrification plan

Electric Vehicle

- EV operational effectiveness and usability
  - Time to charge, vehicle applications, etc.
- Maintenance
- Range anxiety
- Reliability and battery performance
- Model availability

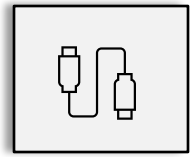
Mitigation Strategies

Cost & Infrastructure



Leverage financial support programs

- Utilize purchase subsidies for MHDEVs
- Cost sharing incentives

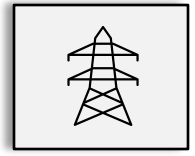


Implement smart charging solutions

- Networked charging and energy management systems
- Employ time-switching tools to mitigate peak demand

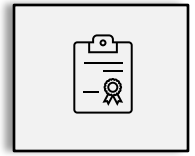
Explore alternative financing models

- Battery leasing options to reduce initial vehicle costs
- public-private partnerships for infrastructure development



Enhance utility engagement

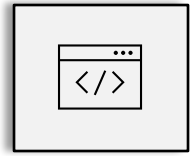
- Engage early
- Conduct proactive assessments



Streamline grant processes

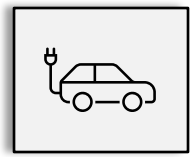
- Dedicate a team or position for identifying and applying for grants
- Develop partnerships with organizations experienced in EV grant applications

Organizational and Electric Vehicles



Develop targeted pilot programs

- Start with specific departments or use cases to demonstrate effectiveness
- Address unique needs of police, DPW, and fire departments separately

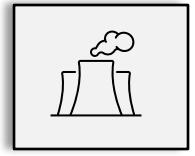


Optimize fleet management

- Utilize route planning software to account for vehicle range and charging needs
- Implement strategic charging schedules to maximize vehicle availability

Develop specialized maintenance programs

- Train existing staff or hire specialists for EV maintenance
- Establish partnerships with EV manufacturers for ongoing support and training



Engage with manufacturers

- Communicate specific fleet needs to EV manufacturers
- Participate in pilot programs for new MHDV models

Update procurement policies

- Revise purchasing guidelines to accommodate EV-specific requirements
- Implement total cost of ownership (TCO) analysis in procurement decisions

Utility Support Programs

National Grid

1. Fleet Programs
    a. Fleet Advisory Services Program
    b. Fleet EV Charging
    c. MA Fleet Off-Peak Charging Program
2. Demand Charge Alternative
3. Public/Workplace Charging Program
4. Multi-Unit Dwelling (MUD) Program

Eversource

1. Electric Vehicle Information
2. Fleet Advisory Services Program
3. EV Charger Rebates
    a. Make-Ready
    b. Hardware Rebates
4. Multi-Unit Dwellings

Questions?

Mass Fleet Advisor Presentation to EVICC

January 8, 2025

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CALSTART

PowerOptions

What is Mass Fleet Advisor?

- Mass Fleet Advisor provides free technical assistance for medium- and heavy-duty fleets interested in exploring their fleet electrification options
- The Mass Fleet Advisor Program is designed and funded by the Massachusetts Clean Energy Center
- CALSTART serves as Lead Consultant, manages the program, and prepares each fleet's report
- For nonprofit fleets, PowerOptions works with CALSTART to serve as the Fleet Relationship Manager
- The program has expanded to include up to 200 fleets, as our original 65 spots are filled

Fleets can sign up to participate at massfleetadvisor.org

MASS FLEET ADVISOR

Who is Eligible?

- Any private or non-profit fleet operating or with a depot in Massachusetts is eligible for this free, no obligation support
- Municipalities served by a MLP are now eligible
- Each fleet must have at least three vehicles, one of which is medium or heavy duty
- Fleets are not required to purchase any electric vehicles




Sign up to participate at massfleetadvisor.org

What's Provided by the Program?

Personalized Fleet Electrification Report provided to each fleet includes:

- One-to-One electric vehicle replacement options
- Total Cost of Ownership Calculations
- Infrastructure upgrades and Electric Vehicle Supply Equipment (EVSE) recommendations
- Site assessment from electrical contractor
- Customized charging plan
- Recommendations for short- and long-term electrification of your vehicles
- Information about available financial incentives

MASS FLEET ADVISOR

YOUR FLEET ELECTRIFICATION ASSISTANT.

Participating Fleet Results

64 Fleets have signed up for the program, 34 reports have been delivered

Program Takeaways:

Medium duty vehicles are rapidly approaching cost parity due to competitive purchase price.

Moderate daily driving range (50-150) miles adds daily fuel savings and contributes to TCO parity.

Regular overnight dwell time is ideal for charging – managed charging can reduce total electrical power needed.

Some fleets do not have enough existing space on their electrical service to fully electrify or add multiple level 2 chargers.

Electric vehicle replacements are available for nearly all duty cycles.

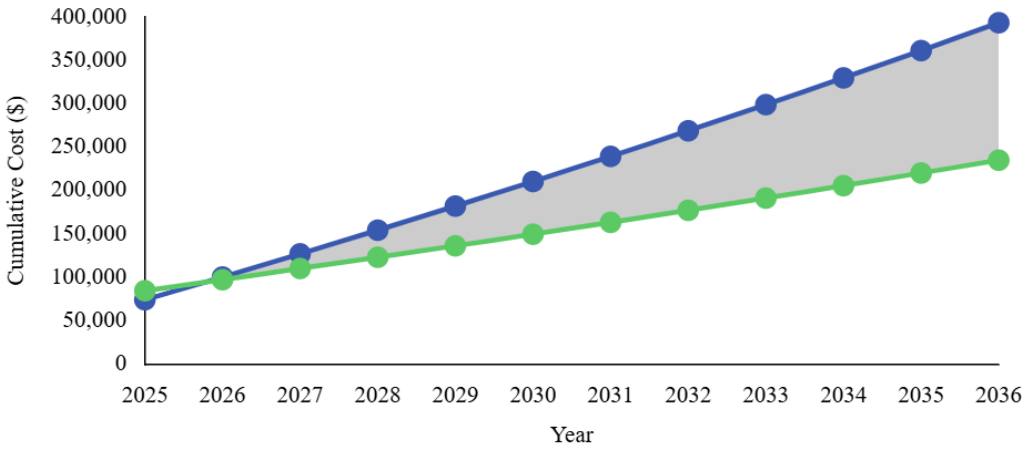
Participating Fleet Experiences

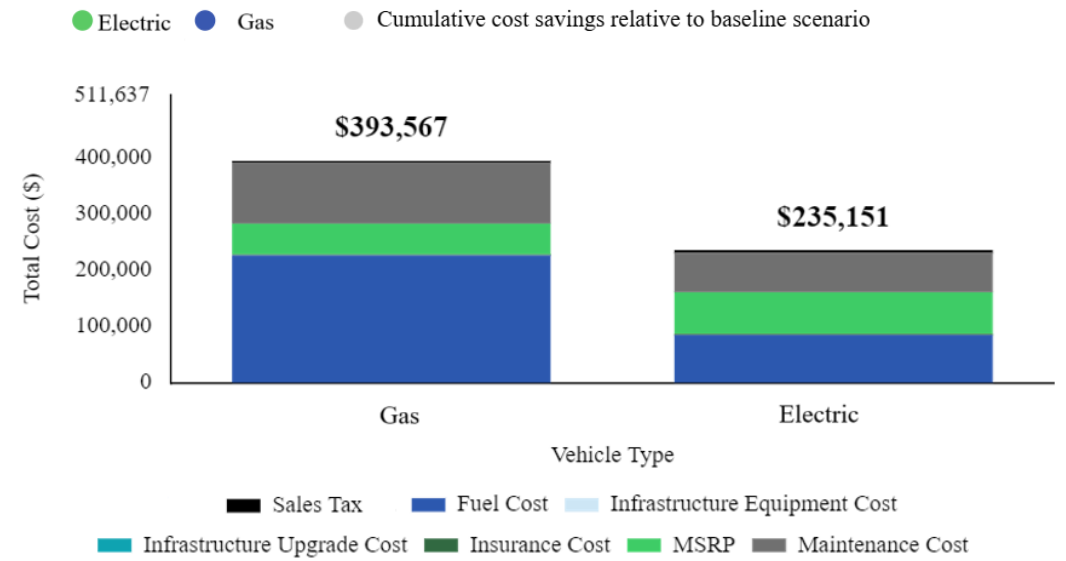
Delivery vans are excellent targets for electrification:

Total cost of ownership is lower for the electric vehicle

Low purchase price of the EV model, for example, Ford E-Transit, when compared to the traditional gas/diesel model

Vehicle Group	Van						
Electric Vehicle	GreenPower	Cenntro	Ford	Rivian		Mercedes-Benz	BrightDrop
	EV Star Cargo	Logistar 260	E-Transit	Delivery 700	Delivery 500	eSprinter	Zevo 400/600
Availability	Coming 2025	Now	Now	Now	Now	Now	Now
Class/Size	Class 4	Class 2a	Class 2b	Class 2b	Class 2b	Class 2b	Class 3
Range	150 miles	168 miles	143-159 miles	153 miles	161 miles	206 miles	250 miles
Payload	6,300 lbs.	2,822 lbs.	2,799-3,249 lbs.	2,513 lbs.	2,734 lbs.	2,600 lbs.	3,580 lbs./3,180 lbs.
Cargo Volume	N/A	264 ft³	311.9-536.4 ft³	900 ft³	700 ft³	488 ft³	412 ft³/615 ft³
Energy Capacity	118 kWh	43.5 kWh	89 kWh	N/A	N/A	113 kWh	173 kWh
Level 2 Charging Time	8 hours	8 hours	8 Hours	N/A	N/A	12 hours	10 hours
Website	EV Star	Logistar 260	E-Transit	Delivery 700	Rivian	eSprinter	Zevo
Vehicle Photo							





Participating Fleet Experiences

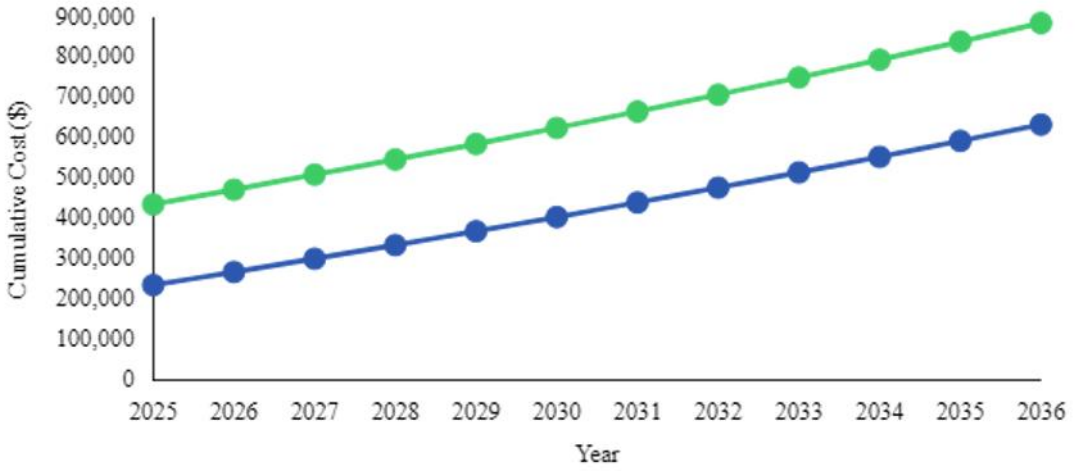
Class 8 Vehicle Analysis Results

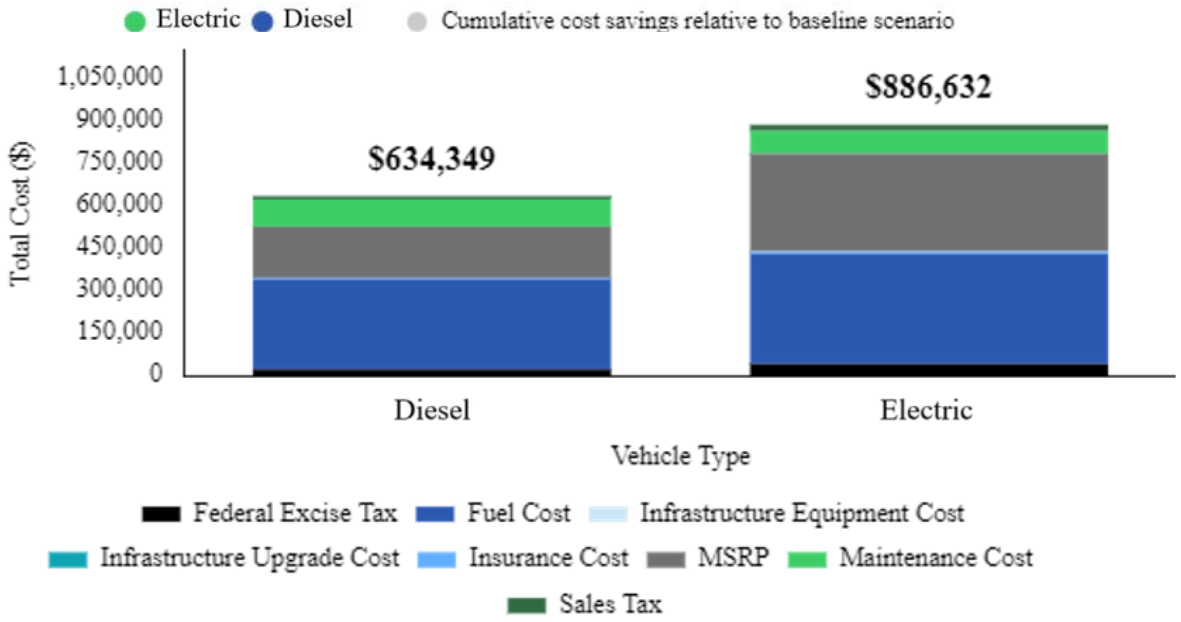
Heavy duty trucks, such as the Class 8 modeled here, do not achieve cost parity during an expected 12- year life

High capital procurement cost leads to higher lifetime cost

Additional point of sale purchase incentives and reduced capital cost from OEM can bring vehicles into cost parity

Vehicle Group	Class 8 Trucks					
Electric Vehicle	BYD 8TT	Freightliner eCascadia	Tesla Semi	XOS HDXT	Nikola TRE BEV	Volvo VNR Electric
Availability	Now	Now	Coming Soon	Now	Now	Now
Class/Size	Class 8	Class 8	Class 8	Class 8	Class 8	Class 8
Range	200 miles	230 miles	500 miles	230 miles	350 miles	275 miles
Payload	78,765 lbs.	60,000 lbs.	44,000 lbs.	56,000 lbs.	40,000 lbs.	66,000 lbs.
Energy Capacity	422 kWh	438 kWh	1000 kWh	N/A	753 kWh	565 kWh
Level 3 Charging Time (350 kW power)	1.5 hours	1.5 hours	1 hour (Using Tesla Semi Charger)	N/A	2.5 hours	2 hours
Website	8TT	eCascadia	Semi	HDXT	TRE BEV	VNR Electric
Vehicle Photo						





Questions

massfleetadvisor@calstart.org

Jennifer Kritzler, CALSTART,
jkritzler@calstart.org

Thank you for your time.

Massfleetadvisor.org


BACKUP

How Do I Sign Up?

Sign up at **massfleetadvisor.org** or by emailing **massfleetadvisor@calstart.org**

Total time needed from fleet is 3 to 5 hours

1. Pre-participation Virtual Call: *15 to 30 minutes*

2. Sign Participation Agreement

3. Receive and complete Fleet Intake Form

- Vehicle make/model, operational schedule, average annual mileage for your existing fleet

4. Every fleet now receives a free site assessment for charging equipment exploration

5. Additional options for deeper analysis:

- Install dataloggers for 2-4 weeks or share existing GPS data
- Solar Analysis

Personalized Report: Example Table of Contents

Contents

Participating Fleet Experiences: Site Assessments

Site Assessment Results

Location 1

- Three dual-port level 2 charging stations for 6 vehicles.
- New electrical panel needed to support breakers

Location 2

- One dual-port level 2 charger for 3 vehicles.
- New electrical panel needed

Location 3

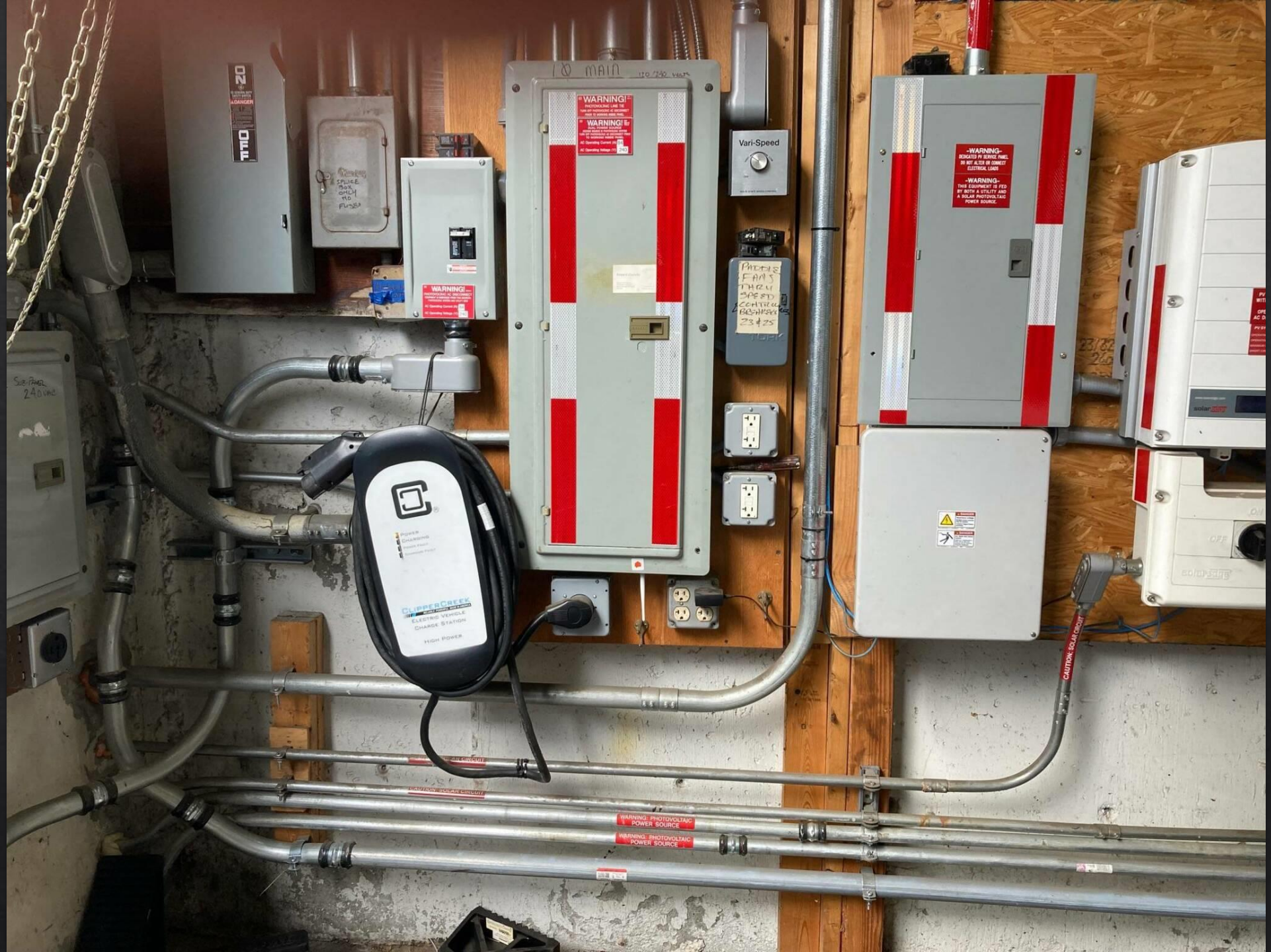
- One dual-port level 2 charger for 3 vehicles.
- New electrical panel needed

Case Study: Medium-Duty Commercial Fleet Electrification

Ezekiel Wheeler - Intelligent Labor & Moving


Intelligent Labor
Moving and Storage
Charged in Arlington, MA
617 864 0620
DOT #2065664
help@IntelligentLabor.com
Intelligent Labor
MORGAN
HINO
W47·953


PUT THE CHARGE PLUG BACK UP HERE IN THIS HOLDER
Little Giant Ladder Systems
ALTA-ONE
POWER
CHARGING
ELECTRIC VEHICLE
CHARGE STATION
HIGH POWER


ON
OFF
DANGER
WARNING!
Vari-Speed
-WARNING-
DO NOT ALTER OR CONNECT ELECTRICAL LOADS
-WARNING-
THIS EQUIPMENT IS FED BY BOTH A UTILITY AND A SOLAR PHOTOVOLTAIC POWER SOURCE.
CLIPPER CREEK
ELECTRIC VEHICLE
CHARGE STATION
HIGH POWER
CAUTION: SOLAR CIRCUIT
WARNING: PHOTOVOLTAIC POWER SOURCE
WARNING: PHOTOVOLTAIC POWER SOURCE


PARKING
ONLY
VIOLATORS ARE
SUBJECT TO
TOWING AT
OWNER'S EXPENSE
WARNING
ON
OFF
WARNING: PHOTOVOLTAIC
POWER SOURCE
WARNING: PHOTOVOLTAIC
POWER SOURCE
JAYS
TOUTHAKER
CREW
HINO
HINO 195
U.S. MAIL
CLIPPERCREEK
HIGH POWER

SEA Electric Model		Comparison Model
Vehicle Model		**Vehicle Fuel**
Hino M5		Diesel
Sales Price		
$135,000		
Voucher Value		
$45,000		
Purchase price		**Price:ISUZU NRR**
$90,000		$55,000
Charger and install Cost		**Lifetime of Vehicle**
$2,000		10 Years

General

Number of vehicles		**State**
1		Massachusetts
Utility kWh rate		**Price per gallon/kWh/GGE**
$0.13		$4.98
Est. miles/kWh		**fficiency per gallon/kWh/GG**
1.0 miles		10.0 miles
Elec Mainteinance per Mi		**Mainteinance per Mile**
$0.09		$0.35

CO2 Emission	SEA Electric	Diesel
Per gallon/kwh in lbs.	0.92	20.6

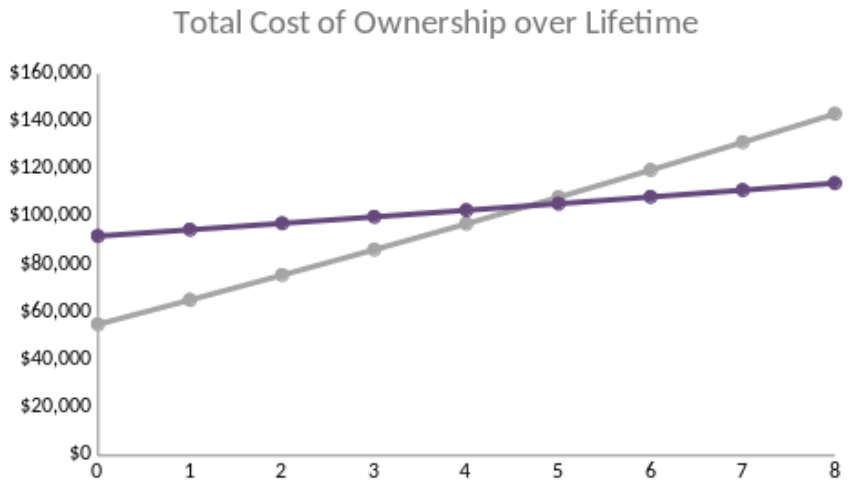
Route Info

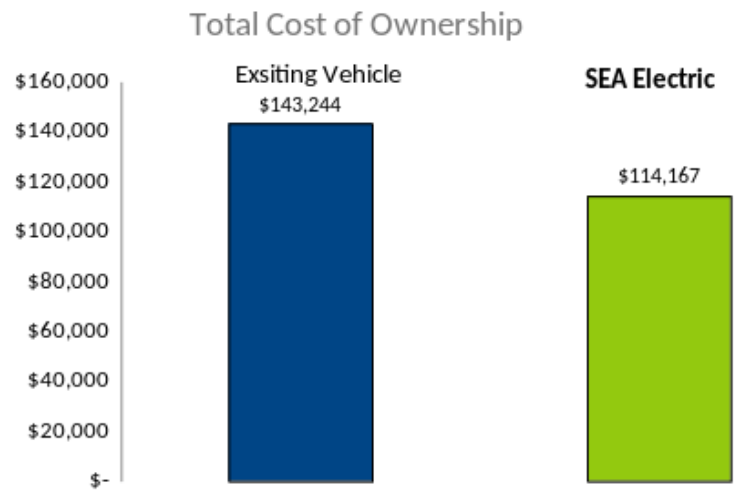
Daily Milage per vehicle	Days in operation	Annual Milage
33 miles	365 Days	12045 miles

Summary

Annual Saving	in $ per vehic	in $ entire flee	in %
Fuel & Maintena	$ 7,139	$ 8,260	75%
Emissions Saved	13,731 lbs.	13,731 lbs.	55%

Project Breakeven Point: 4.68 Years



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EVgo
FAST CHARGING
EVgo
FAST CHARGING
US DOT 2065664


MENU
NAVI
FAV
PWR / VOL
SEA
CHASSIS
--- A--
4:04 PM
IDLE
F
E
CHARGING REMAINING
1.8 hrs
Power
42 kW
12%
0
1
2
3
4
A/C

Thank You!

Contact

Ezekiel Wheeler

Intelligent Labor and Moving

zk@intelligentlabor.com

Discussion

- What are the most effective tools and venues for engaging MHD fleet owners? How can / should the state leverage these approaches to facilitate fleet electrification?
- How can EVICC and the state effectively incorporate the unique charging infrastructure needs of MHD fleets? Are there regulatory, logistical, or financial barriers the state can help mitigate?
- What types of information or data are critical for MHD fleet electrification planning? How can EVICC and the state help ensure data accessibility and accuracy?
- How can/should EVICC and the state help support grid infrastructure upgrades to accommodate MHD fleet electrification? How can the new process, required by Section 103 of the 2024 Climate Bill, identify charging hubs and grid upgrades?
- What workforce development and training programs are needed to support the transition?

Public Comment