Mass Fleet Advisor

Facility Upgrade Challenges

Rhys Webb, Jennifer Kritzler, Heather Takle

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Mass Fleet Advisor

PROGRAM BACKGROUND

- Mass Fleet Advisor provides free technical assistance to private medium- and heavy-duty fleets interested in electrification
- Intended to prepare fleets to take advantage of MOR-EV Trucks funding
- Eligibility requirements:
  - Have 3 or more fleet vehicles
    - One of which must be MHD
  - Vehicles registered and depot in MA
    - Goal of >50% participating fleets depot in Environmental Justice Communities
  - Private (non-government) fleets

Phase 1: Fleet Report

Virtual Site Assessment

VIRTUAL SITE ASSESSMENT OFFERINGS

- Phase 1 Site Assessments
  - Assessments completed by project team using Electrical subcontractor review of "virtual site walk"
  - Intended to be high level recommendations tailored to fleet size and duty cycle
  - Data supplied by individual fleets (photos of electric panels/transformers, parking spots, facility capacity information)
- Outputs of Phase 1 Assessments
  - Recommendation of the number of chargers needed for full fleet electrification
  - High level assessment of existing electrical infrastructure and capacity upgrades needed to support full fleet electrification
  - Cost analysis not provided to fleet in Phase 1
    - The project team is tracking cost estimates and will feed into Phase 2
- Phase 2 Site Assessments – beginning July 2023
  - Detailed on-site and route data-driven assessment
  - Managed charging analysis based on fleet owner electric rate and demand charges
    - TCO in Phase 1 included flat electric cost assumption
  - Utility-side infrastructure cost evaluation by utility (low, medium, high cost screening)

Virtual Site Assessment

EVSE INSTALLATION COST

Fleet Type	Fleet Size	Recommended # of Level 2 Chargers	Recommended # of Level 3 Chargers	Capacity (kW) Needed	Estimated Total Installation Cost	Estimated Installation Cost per Vehicle
Lumber Company	10	4	1	142	$ 114,650.00	$ 11,465.00
Heating and Cooling Company	6	1	1	73	$ 49,450.00	$ 8,241.67
Boarding School	7	4	0	46	$ 47,500.00	$ 6,785.71
Insulation Contractor	9	5	0	115	$ 59,750.00	$ 6,638.89
School	8	3	0	69	$ 38,050.00	$ 4,756.25
Compost Pickup Company	23	7	1	211	$ 80,800.00	$ 3,513.04
Nutrition Service	16	6	0	138	$ 67,850.00	$ 4,240.63
Research Organization	44	4	0	326	$ 170,350.00	$ 3,871.59
Dry Cleaning Company	21	3	0	115	$ 47,500.00	$ 2,261.90
University	92	3	0	521	$ 242,800.00	$ 2,639.13

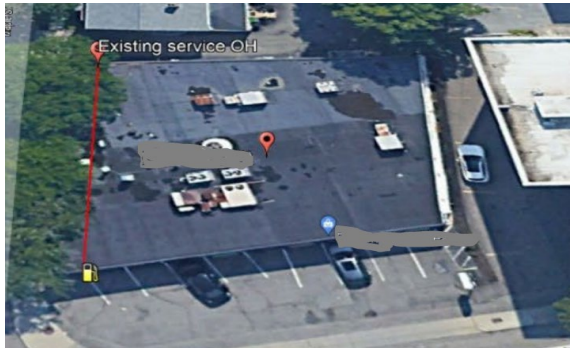
Virtual Site Assessment

CASE STUDY 1 – DRY CLEANING COMPANY (SITE 1)

- **Vehicles**: 21
- **Capacity needed**: 115 kW
- **Recommended EVSE**: 6 dual port level 2
- **Upgrades needed**: enough existing electrical capacity but needs to install second electrical panel at each site
- **Estimated total cost of EVSE installation and equipment**: $89,764
- **Estimated cost per vehicle (installation and equipment)**: $4,274
- **Timing impact**: minimal delays, company electrician could complete upgrades

Site 1

Site 3



Site 2

Virtual Site Assessment

CASE STUDY 2 – LUMBER COMPANY

- **Vehicles**: 10
- **Capacity needed**: 115 kW
- **Recommended EVSE**: 4 dual port level 2 and 1 dual port level 3/DCFC
- **Upgrades needed**: 225-amp, 480-volt service with a transformer
- **Estimated total cost of EVSE installation and equipment**: $173,056
- **Estimated cost per vehicle (installation and equipment)**: $17,305
- **Timing impact**: significant delays, need utility's help to complete upgrades

Charging Equipment Installation Location

Challenges

KEY OBSTACLES

- Significant load requirements for full fleet electrification EVSE
  - Most fleet EVSE require new electrical panels
  - Many fleet EVSE require new utility service line
  - Nearly all DCFC for MDHD fleet EVSE require utility upgrades
- Unclear path to utility side information and analysis
- Some fleets are operating out of older or leased facilities
- High costs of utility and site electrical upgrades
  - Can often come as a surprise to fleets

RISKS OF INACTION

- Significant fleet electrification delays
  - Due to high cost and long EVSE planning and construction timeline
  - Delays can impact business needs
    - Fleets can't afford to have a vehicle out of service while waiting for EVSE installation
  - May deter fleets from pursuing electrification
    - Could cause mistrust of electrification within the commercial market
- MDHV electrification delays result in lower emissions reductions
- Delays in meeting state's clean transportation goals

Recommendations and Next Steps

- Phase 2 analyses will provide more accurate cost estimates and upgrades needed
  - Feedback from fleets will help understand impacts of costs and timing delays
  - Managed charging can defray costs
  - Utility analysis on utility side infrastructure feasibility will be critical input

- Support through the chicken and egg problem -> Create a process with Utilities to help fleets understand their NET costs for EVSE infrastructure

- Full fleet electrification planning to inform fleets about early upgrades that will be needed in the future (i.e. installing extra conduit)

- Integrate important cost savings from managed charging in Muni aggregations, MLPs and demand management programs (wholesale and retail)

Thank you

Rhys Webb – rwebb@masscec.com

Jennifer Kritzler – jkritzler@calstart.org

Heather Takle – htakle@poweroptions.org