



R&D – ELECTRIC VEHICLE FLEET CHARGING THINK-TANK RESULTS

1122, 1140, & 1141

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EV FLEET CHARGING STRATEGIES - EQUIPMENT

- Established relationships with 9 equipment manufactures and their sales reps.

General Chargers:

- ABB E-Mobility – Leading manufacturer of Level 3 chargers.
- ATOM Power – Intelligent controlled breakers.
- Phoenix Contact – Charger components
- Siemens – Range of charger options.
- Eaton – Supporting electrical distribution
- Leviton – Smaller chargers

Fleet Chargers:

- Minit Charger
- Posicharge
- Lightning eMotors

Other Chargers:

- Chargepoint
- ClipperCreek
- EVgo



EV FLEET CHARGING STRATEGIES

Charging Strategies

- Bulk charging: Throw enough chargers at it with loads of power and no problem.
- All the fast chargers: Spend all your budget on DCFC at ~\$35k each. Fast charge everything all the time.
- Ideal: Primarily Level 2 Chargers and a limited number of DCFC to supplement unplanned/atypical needs.



EV FLEET CHARGING STRATEGIES



Charging Strategies

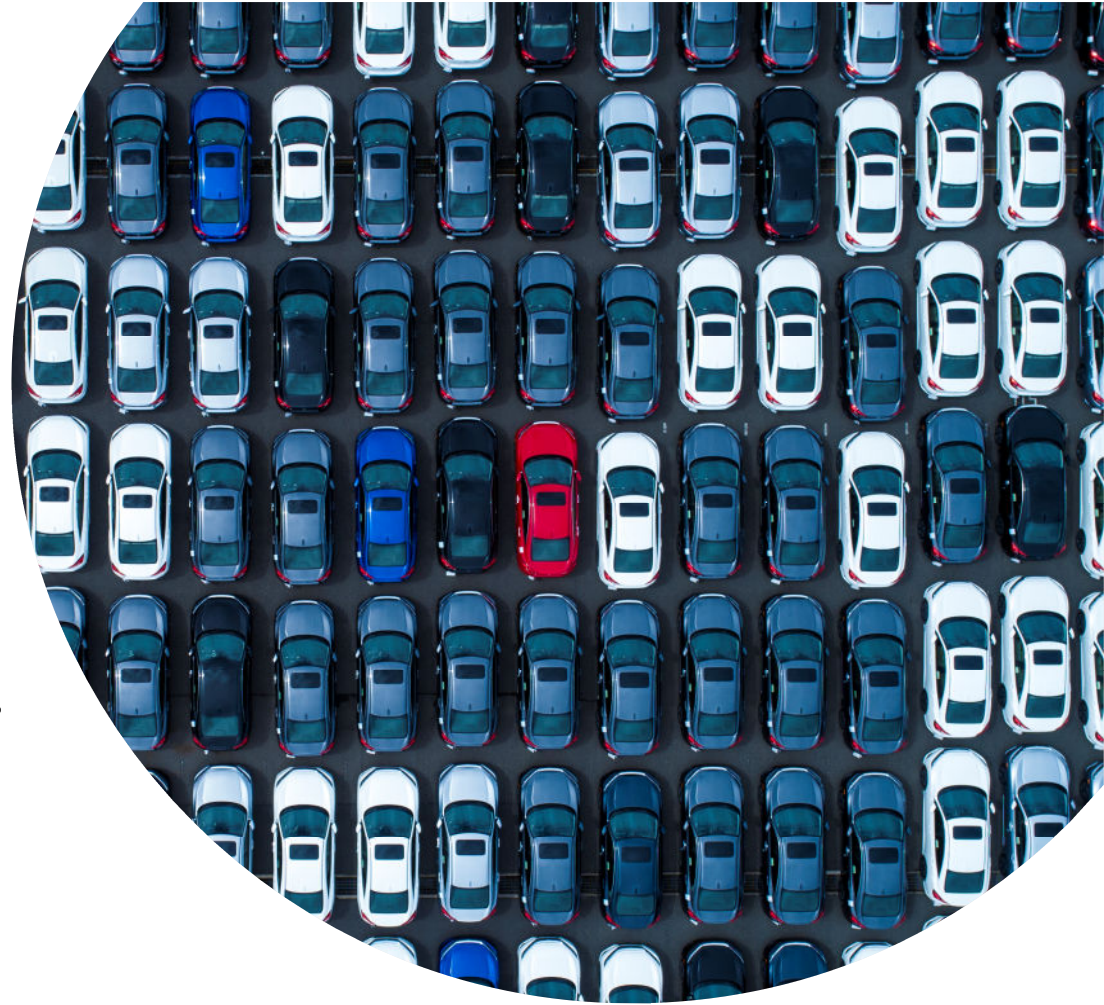
Infrastructure Tools:

- Get the person(s) responsible for vehicle maintenance in the discussion ASAP
- Managed charging to maximize electrical capacity. (Intelligent charging controller to prioritize vehicles)
- Discuss public facing fees. If revenue generating, consider partnering with EVgo or Chargepoint. (Partner with established fee-based providers)

EV FLEET CHARGING STRATEGIES

Other Observations:

- For shuttles/busses try to locate chargers mid-vehicle. Saves guessing which end the charge port is at.
- Bollards, bollards, bollards.
- Phoenix Contact for cable replacements.
- Utilize self-retracting cable reels.
Consider mounting overhead if indoors.
- Bidirectional charging doesn't exist yet.
(don't listen to car manufacturers)



FNI'S PLACE IN EV CHARGING

- Federal Transportation Funding
 - Part through DOT. Strong opportunity for FNI.
- Energy Code Compliance requirements
- Large Clients with fleets of vehicles
 - Short run vehicles and public transport are market ready for conversion now
 - Long haul vehicles are still bleeding edge technology but could stabilize quickly. (1-5 years)



USEFUL RESULTS ALREADY

Campus Fleet Electrification Feasibility Proposal for TWU:

- TWU leadership wants a report on feasibility of reallocating below grade fuel tank replacement budget to Electrification
- Facilities Maintenance, ATVs, Police Department Vehicles, Administrative Vehicles, lawn equipment.
- Level 2 for fleet, some DCFC, consider wireless for PD...



