

Fleet Forward: Future-Proofing Airport Operations Vehicles

EV Integration Strategies

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YOW's Background

- Medium Size Airport (5M Pax, 3 main ground handling companies, 6 Airlines, 62 Heavy Fleet vehicles, 30 Light Fleet vehicles, 12EV light duty)
- *Net Zero Challenge Participant since 2022*
- *Big Promises, Medium Budgets... Requires innovative strategies!*



YOW's emissions reduction – Fleet

- *Type 1 emissions (produced directly by YOW operation)*

- *Electrification of light duty fleet*

- *4X F150 Lightning*

- *1X Ford transit van*

- *2X Jeep PHEV*

- *2X Chevy Equinox*

- *1X eCobus*

- *2X forklifts*



- *Type 3 (Produced by others on campus)*

- *eGSE electrification*

Challenges – Power availability

How do we power this new increased demand?

- YOW's campus is fed by a 20MW Electrical service loop
- YOW's PTB Backup Generation is approx. 1.5MW and currently nearing capacity
- Power is shared between Tenants, Airlines, GHSProviders and OIAA's growing power needs
 - Electrification of heating systems
 - Electrification of Fleets
 - Terminal Expansion
 - Campus development



Challenges – Fleet Charging

OIAA's Light Duty Fleet requires specific charging access

- Airside and Groundside
- Emergency power
- FAST

Multiple Ground Service Handlers Fleet electrification plans

- Different pace of fleet electrification
- Different equipment/charging protocols
- Emergency power
- FAST



**** Understanding use cases for certain vehicles is key.***

Solutions – Where/When power is available

*Large Capital programs take time to implement.
What can we do NOW?*



Legend

- Public Level 1
- Public Level 2
- Public Level 3
- Fleet Level 1
- Fleet Level 2
- Fleet Level 2+
- Fleet Level 3
- eGSE Level 2-3

Solutions – Implementations

OIAA Fleet

- Gate 19 – Level 3 Fleet Charger – Ground loading gate, bridge power feed available - \$175K
- Parkade Lot O3 – 20 Level 2 chargers – Using the last power capacity in the Parkade – \$300K
- Cell Lot – 3 Level 3 chargers – Using power made available by decommissioned buildings services - \$700k
- Alert Hangars – Level 3 Fleet Charger – Using power made available by decommissioned building services - \$175K



Solutions – Implementations

eGSE

Gate 21 – Posicharge MVS 400 - Ground loading gate, bridge power feed available - \$125K



Solutions – Solving the power availability shortage NOW

OIAA Fleet (Short Term – NOW)

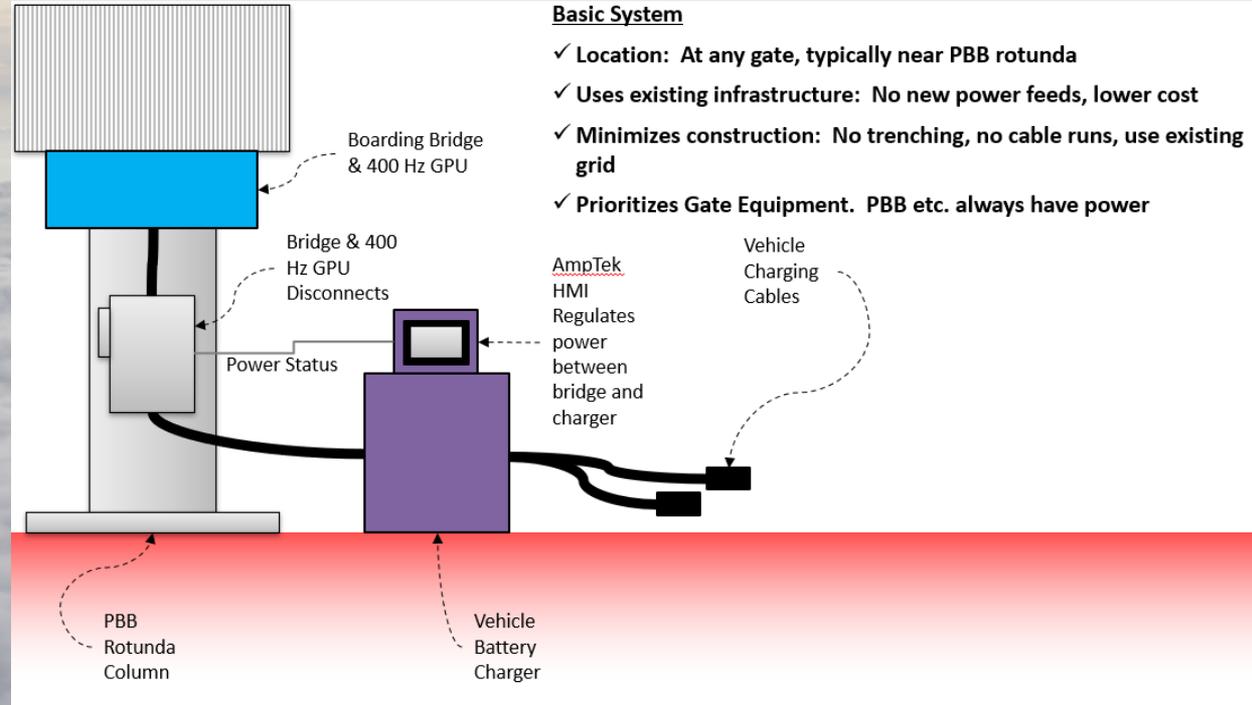
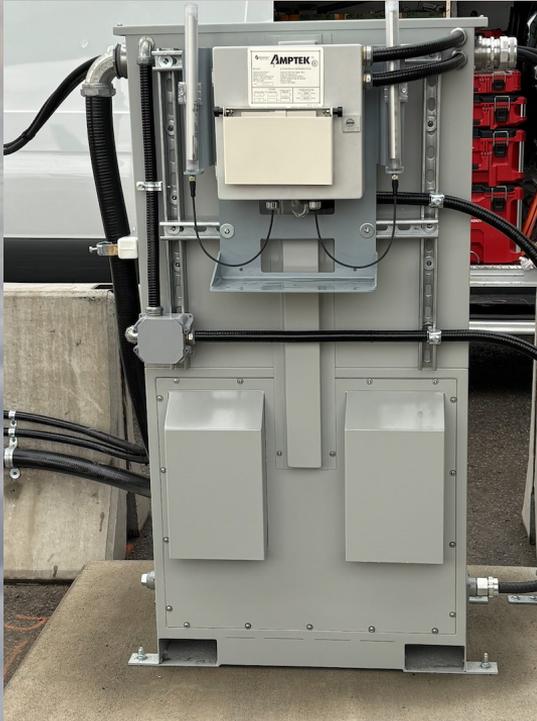
- Use available power in strategic locations with a mix of L1 to L3 chargers.
 - CSB 4X L1 employee parking - \$50K
 - CSB 3X L2 Airside - \$75K
 - CSB 3X L2 DC (19 kwh charging) Airside - \$100K



Solutions – Solving the power availability shortage NOW

eGSE (Short Term and Long Term)

- Use where possible, power sharing solutions.



Basic System

- ✓ Location: At any gate, typically near PBB rotunda
- ✓ Uses existing infrastructure: No new power feeds, lower cost
- ✓ Minimizes construction: No trenching, no cable runs, use existing grid
- ✓ Prioritizes Gate Equipment. PBB etc. always have power

AmpTek
HMI
Regulates
power
between
bridge and
charger

Vehicle
Charging
Cables

PBB
Rotunda
Column

Vehicle
Battery
Charger

Solutions – Power sharing devices for eGSE charging

- Allows an existing electrical feed to be utilized for dual purposes. (bridge/PCA/GPU AND charging)
- Unit throttles charging down to allow source load to operate. Without tripping the main source feed.
- Choice of what to share depends on type of power (emergency vs Normal) and usage profile of source.
 - Ex. Bridge is on emergency power, used 5 mins/turn vs PCA on Normal power used 30mins/turn.
- Costs approx. \$15-20k for unit and install vs running costly new electrical infrastructure.

Solutions – Solving the power availability shortage NOW

eGSE

Gate 15 and 20 – Posicharge MVS 400 with Amptek device - \$300k ea



Steps forward and future considerations

- Solutions exist today that can bridge a gap between major infrastructure upgrades and what power is currently available.
- Load sharing devices enable 'off-limits' infrastructure to be considered as viable options
- Understanding the usage profile of Fleet Vehicles and current electrical infrastructure capacity can lead to cost effective charging solutions.
- As electrical charging technology evolves, more effective and efficient solutions arise. These increased options when planning future infrastructure projects.
 - PosiCharge L1 prototype trial: uses traditional bloc heater outlets to charge eGSE