Electric bus charging infrastructure – lessons learned

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Photo credit: TriMet
The project

- 26-mile loop served by five all-electric buses.
- Buses recharge at Sunset Transit Center during driver’s break.
- Depot chargers only needed on the coldest days of the year.
- PGE / TriMet pilot project with PGE owning and operating charging infrastructure.

Image credit: TriMet
The bus

New Flyer Excelsior 40-foot all-electric bus equipped with 200 kWh lithium-ion battery as well as overhead and depot charging capabilities. Photo credit: TriMet
The infrastructure

New Flyer Excelsior 40-foot all-electric bus underneath 450 kW ABB overhead fast charger at Sunset Transit Center.
What we’ve learned

This is new! Be prepared to educate your stakeholders.

• Internal resources like drivers, maintenance staff, legal counsel, contracting and procurement staff, etc.

• External resources like your local utility, electrical and construction contractors, and city / county inspectors.
What we’ve learned

Invest more today for big savings in the future.

- Upsize transformer pad, conduit and switchgear.
- Include primary-side vaults in designs for future capacity.
- Make space available for future expansion.

Contractors installing 1,600 A switchgear at Sunset Transit Center, sized for serving up to two 450 kW fast chargers.
What we’ve learned

The best charging strategies will depend on battery costs, infrastructure costs, and transit system schedule and layout.

- Depot charging w/ larger batteries – higher bus costs but lower infrastructure costs.
- On-route charging w/ smaller batteries – lower bus costs but on-route charging can be expensive.

Transformer, switchgear and power conversion equipment serving the 450 kW ABB overhead fast charger at Sunset Transit Center.
What we’ve learned

Stand-up operations and maintenance programs early.

• Start discussing O&M strategies with bus and charging infrastructure manufacturers during procurement.

• New products present new risks and may benefit from extended warranties.

450 kW ABB overhead fast charger at Sunset Transit Center.
Questions?