Accelerating Equitable Electrification in Portland and South Portland, ME

MIT Policy Hackathon, Fall 2021

Team DATAS

- Increase equity in public transit access by implementing **electric on-demand microtransit**
- Construct **multipurpose fast charging hubs** with backup shelter and battery power for outages/climate disasters and EV charging stations for residential areas
- Improve **access to EV charging infrastructure** in commercial and residential areas (single-family, multi-family residences, and curbside)
- Effectively incentivize and finance **public & private conversions to EVs**

Electric on-demand microtransit

- Provide on-demand services at a low cost
- Serve riders within a zone or to a nearby transit station
- Target neighborhoods with low transit accessibility and high service needs
- The City could either adopt an own-and operate model or partner with a microtransit provider (Jersey City partnership with Via)
- Modeled on Metro Micro in LA and VIA Link in San Antonio

Key Stakeholders

- Transit Agencies
- Existing paratransit provide
- Future microtransit providers
- Charging service providers
- Department of Transportation
- Utility companies

Micro Metro map in Los Angeles, California

Source: https://micro.metro.net/

Multipurpose fast charging hubs

- Combine several functions:
  - EV charging ports, including for the micro-transit fleet and nearby residents
  - Vehicle-to-grid partnerships to leverage large bus battery capacity to convert transit centers to emergency shelters during climate disasters
- Co-locating functions is more efficient

Key Stakeholders

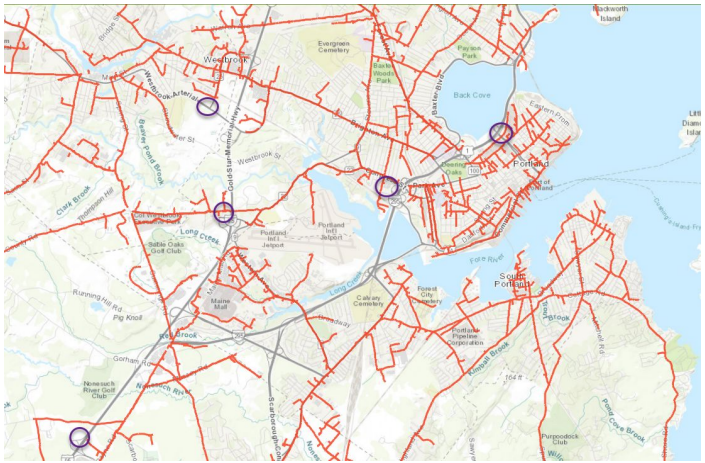
- Transit Agencies
- Charging service providers
- Utility companies
- Department of City Planning

Montgomery County, MA - Brookville bus charging hub that integrates solar photovoltaic canopies, onsite generation, battery energy storage, microgrid controls, and electric bus chargers to ensure the fleet's continuous operation regardless of utility outages

Source: AlphaStruxure

EV charging infrastructure access

- Overnight parking in Portland and South Portland is dominated by curbside and private driveways & garages
  - Charging stations attached to streetlights and utility poles
  - Smart chargers incentive by utility companies
- Retrofitting existing lots instead of building new lots
- Access to multi-family homes
  - Charging ports
  - Car-shares
- Fast charging hubs for transit and ride-sharing fleets



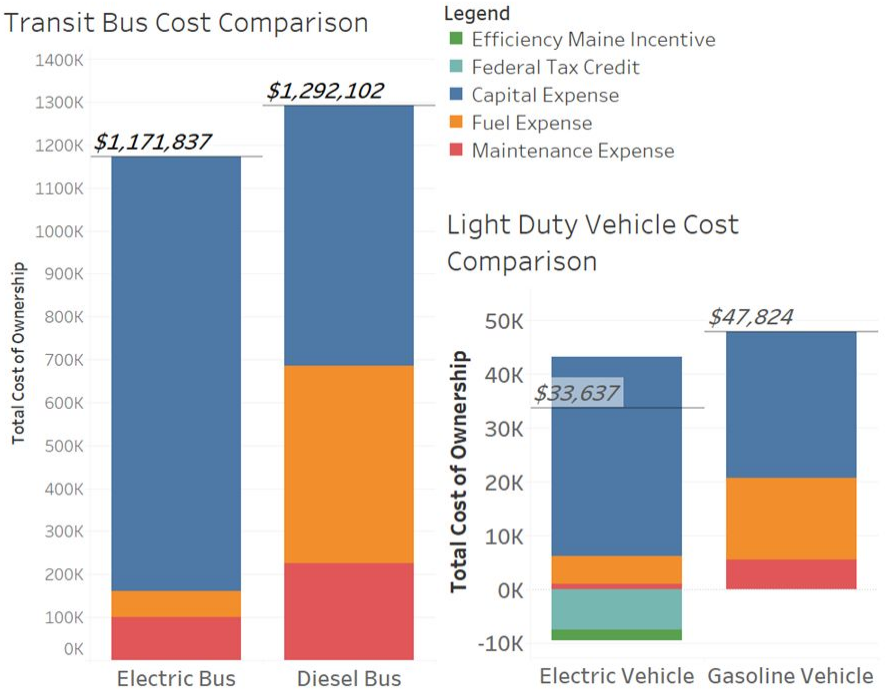
Three-phase circuit map marked w/ overlapping park-and-ride locations

Key Stakeholders

- Department of City Planning
- Department of Transportation
- Shared fleet service providers
- Housing Authority
- Charging service providers
- Utility Companies

Incentivize and finance public & private conversions to EVs

- Turnkey fleet providers
  - Innovative pricing
  - Vehicle-to-grid components
- Commit to purchase only light-duty EVs by 2025



Total cost of ownership comparisons based on data from Drive Electric Vermont

Key Stakeholders

- Portland Office of Budget and Management
- Department of Finance
- State of Maine
- Utility Companies

Source: https://www.driveelectricvt.com/