Electric Vehicles and Alternative Fuels Corridors in Wisconsin

Brad Sippel, AICP
Urban and Regional Planner

Bi-State MPO/RPC Conference/Workshop
Virtual

September 23, 2021
Electric Vehicle Basics

Vehicle Options

- **HEVs** use both gasoline and electricity recharged by the engine for improved efficiency.
- **PHEVs** use both gasoline and electricity from the engine and from the electricity grid.
- **EVs** only use battery power by connecting to the electricity grid.

Fossil Fuel Dependent | Electricity Dependent
Electric Vehicle Basics

Charging Infrastructure

- **Level 1**
  - 120V AC
  - 2-5 miles of range per hour of charging

- **Level 2**
  - 240V AC
  - 10-20 miles of range per hour of charging

- **DCFC**
  - 208/480V 3-phase AC
  - 60-80 miles per 20 minutes of charging

Legend:
- Less Power
- More Power
Transportation Electrification

• The transportation sector is the 2nd largest greenhouse gas emitter in Wisconsin
• Particulate matter and NOx have negative health impacts particularly for low income and minority populations
• Operating costs of EVs are typically lower than ICE vehicles over the vehicle lifetime
EV Trends and Developments

- Rapid growth in previous decade
- Increases in model offerings
- More range, faster charging
- Battery costs
- Possible increases in federal funding support for charging infrastructure

Source: Ford Motor Company
Electric Vehicle Growth

PEV Sales

U.S. Plug-in Electric Vehicle Sales by Model

Source: Alternative Fuels Data Center
EVs in the U.S.
2018 Market Share

- CA: 7.84%
- WA: 4.28%
- MN: 1.14%
- WI: 1.20%
- IL: 0.79%
EVs in Wisconsin

Proportion of EVs by County, 2020

Number of electric vehicles registered in Wisconsin by year

- 2018: 2942
- 2019: 4468
- 2020: 6171
- 2021: 7521
EV Charging Stations

**Level 2**
326 station locations (60 Tesla)
650 EVSE ports (131 Tesla)

**DC Fast**
48 station locations
140 EVSE ports

**Tesla Supercharger**
12 station locations
83 EVSE ports
State Efforts

Wisconsin

• Grants & Funding for EVCS
  ▪ VW Mitigation Program – DOA
  ▪ Energy Innovation Grants – OEI
  ▪ Congestion Mitigation and Air Quality (CMAQ)
  ▪ Other Federal formula/competitive programs

• Utility Incentives and Time of Use Rates
  ▪ Utilities including MG&E, WPS, Xcel, We Energies

• Corridor Planning
  ▪ FHWA Alternative Fuels Corridors
  ▪ Multi-state corridor planning coordination
  ▪ Michigan to Montana (M2M) Alternative Fuels Corridor (I-94)
Alternative Fuels Corridors
Electric Vehicle
Challenges to EV Adoption and Alternative Fuel Corridors

- **Infrastructure**
  - Costs (DC Fast Charging)
  - Responsibility
  - Regulatory barriers for infrastructure
  - Rapidly changing technology
  - Charging options and equity

- **Vehicles**
  - Model availability
  - Upfront costs compared to ICE vehicles
  - “Range anxiety”
Going Forward

WisDOT Role

- Corridor Planning
  - Continuing to evaluate and possibly propose new corridors for AFC – EV designation
  - Exploring options for EVCS placement along corridors
- Signage
  - AFC signs on newly completed EV ready segments of the I-94 corridor (and other corridors)
- Funding
  - Obligation of Federal funding programs
Going Forward

WisDOT Role

- Participation & Collaboration
  - Interagency Collaboration, including the PSC, DOA, and WEDC
  - Regional Electric Vehicle (REV) Midwest
  - Central Region Corridor Collaboration
  - Coordination with Wisconsin Clean Cities Coalition
  - Mid America Freight Coalition and the WisDOT Freight Advisory Committee
  - Mid-America Association of State Transportation Officials (MAASTO)
EV and EVCS Planning Resources

- **Department of Energy - Alternative Fuels Data Center**
  - EVI-Pro Lite estimate tool - [https://afdc.energy.gov/evi-pro-lite](https://afdc.energy.gov/evi-pro-lite)
  - EV station locator - [https://afdc.energy.gov/stations/#/find/nearest](https://afdc.energy.gov/stations/#/find/nearest)
  - PEV readiness planning - [https://afdc.energy.gov/pev-readiness.html](https://afdc.energy.gov/pev-readiness.html)

- **Registration data**
  - Wisconsin DMV vehicle registration data - [https://wisconsindot.gov/Pages/about-wisdot/newsroom/statistics/veh-info.aspx](https://wisconsindot.gov/Pages/about-wisdot/newsroom/statistics/veh-info.aspx)

- **Federal Highway Administration**

- **Organizational Resources**
  - Wisconsin Clean Cities Coalition
  - Electrification Coalition
  - RENEW Wisconsin
Thank you

Questions

Brad Sippel
Bradley.sippel@dot.wi.gov