Electric Vehicle Readiness Study

Commonwealth Transportation Board Meeting

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Virginia Transportation Electric Vehicle Readiness Study

• Purpose: To evaluate and identify considerations Virginia could take to improve EV readiness from a transportation infrastructure perspective
  • Focus on infrastructure readiness
  • Builds on the work completed for the 2019 Transportation Funding Sustainability Study

• Leverage input from the Stakeholder Group

• Understand Virginia’s current level of EV readiness

• Identify best practices to improve readiness
  • Review of state practices
Plug Types

**Level 1 Charging**
- 120 Volts
- **+1 Days** to full charge

**Level 2 Charging**
- 240 Volts
- **Half Day** to full charge

**DC Fast Charging**
- 480 Volts
- **One Hour** to full charge

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**Level 2 Charging**
- Tesla Destination
- SAE J1772

**DC Fast Charging**
- SAE CCS
- CHAdeMO
- Tesla Supercharger
The State of Electric Vehicles in Virginia

- Virginia ranks 13th in the US for the total number of EV registrations

- Virginia ranks 11th in the US for number of EV Charging Stations, or Electric Vehicle Supply Equipment (EVSE)
DC Fast Charging Gap Analysis

Virginia CCS Charging Stations
Driving Distance Gap Analysis (Interstates)

- CCS Charging Stations
- > 25 Mi Drive Distance from CCS Station (Indicates >50 Mi Drive Distance Between Stations)
- Distance to & Location of closest out-of-state station

- Major Cities
- Interstates
- County Boundaries
DC Fast Charging Gap Analysis

Virginia CHAdeMO Charging Stations
Driving Distance Gap Analysis (Interstates)

- CHAdeMO Charging Stations
- > 25 Mi Drive Distance from CHAdeMO Station
  (Indicates >50 Mi Drive Distance Between Stations)
- Distance to & Location of closest out-of-state station

- Major Cities
- Interstates
- County Boundaries
Perceived Barriers vs. Infrastructure Deployment

2012 Federal Highway Administration Report

1. Upfront Vehicle Cost
2. Range Anxiety
3. Availability of Charging Infrastructure

2019 Autolist poll of US vehicle shoppers

1. Range Anxiety
2. Upfront Vehicle Cost
3. Availability of charging Infrastructure
4. Speed of Charging

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2. FHWA-HRT-13-001, 2012
4. EV Charging Infrastructure Trends, National Renewable Energy Lab, 2020
Opportunities for Improving Transportation EV Readiness
Coordinate with the Secretary of Natural Resources to Convene an Interagency Working Group

• Coordinate with the Secretary of Natural Resources to establish an EV interagency working group in collaboration with the Governor’s Conservation Cabinet
• Link various statewide efforts into a unified approach
• Leverage resources from multiple agencies
• Maximize the Commonwealth’s readiness
Support Low and Zero Emission Vehicle Regulations in Virginia – HB 1965

• HB 1965 State Air Pollution Control Board; low-emissions and zero-emissions vehicle program

• Under Section 177 of the US Clean Air Act, Virginia is poised to adopt California’s LEV and ZEV standards

• Continue Virginia’s Environmental and EV Initiatives

• Expand Virginia’s EV marketplace
  • OEMs prioritize EV deliveries to ZEV states
Expand the Existing Program of Alternative Fuels Corridors to Close Gaps in Virginia’s Charging Network

- Build on existing efforts in VA
- Prepare for upcoming requests for nominations
- Identify gaps and opportunities for installations to extend existing corridors
- Evaluate alternative methods and technology to designate corridors
Develop Partnerships to Enhance the Inventory of Existing Charging Locations

• Evaluate gaps in the state’s charging network
  • Leverage data capabilities of multiple agencies
• Recommend where charging should be provided
• Employ combination of public/private approaches
Explore a Pilot Program for Charging at Commonwealth Facilities

• Evaluate suitability of Commonwealth properties for charging installation

• Identify opportunities for private investment to fill network gaps

• Evaluate participation in grant programs for EVSE installation
Evaluate the Feasibility to Deploy Fleet EVs

• Coordinate with DGS and other state agencies to:
  • Identify appropriate uses for EVs within state fleets
  • Identify costs, charging, and grants to deploy
  • Provide central procurement that others can utilize to deploy fleet vehicles and/or charging
Create a Clearinghouse for Information and Education

• EV education can aid in removing perceived barriers

• Provide benefits and challenges of EVs

• Share data to create public awareness of registrations and charging station locations
  • Drive private investment in infrastructure
Evaluate the Ability to Provide Roadside Charging

- Currently no out-of-charge service provided similar to out-of-fuel for conventional vehicles
- Monitor EV out-of-charge incidents to determine roadside charging needs
- Determine challenges and opportunities considering operational environment and safety
- Consider a pilot to determine effectiveness and facilitation of quick clearance
- Provide overview of available options to use mobile charging
Encourage and Support EVs in Disadvantaged Communities

• Disadvantaged communities are disproportionately exposed to exhaust pollution

• Support EV bus deployments in transit-dependent neighborhoods

• Continue to assess EV school bus conversion or deployment

• Facilitate EV fleet usage in environmental justice communities

• Support placement of public chargers in disadvantaged communities
Expand Support for Bus Electrification

• In FY20, the first 17 electric buses were funded in three locations: Alexandria, Hampton Roads, and Blacksburg
• Continue to support EV transit investments
• Determine need for additional charging locations away from depot and evaluate grants to install
• Identification of routes well-suited for electric vehicle bus deployment
• Assure inclusivity of transit-dependent and rural communities
Opportunities for Improving Transportation EV Readiness

- Coordinate with the Secretary of Natural Resources to Convene an Interagency Working Group
- Support Low and Zero Emission Vehicle Regulations in Virginia
- Expand the Existing Program of Alternative Fuels Corridors to Close Gaps in Virginia’s Charging Network
- Develop Partnerships to Enhance the Inventory of Existing Charging Locations
- Develop a Pilot Program for Charging at Commonwealth Facilities
- Evaluate the Feasibility to Deploy EV Fleets
- Create Clearinghouse for Information and Education
- Evaluate Ability to Provide Roadside Charging
- Identify Opportunity for EVs in Disadvantaged Communities
- Expand Opportunities for Bus Electrification
Commonwealth of Virginia
Transportation Electric Vehicle Readiness Study

Questions?