

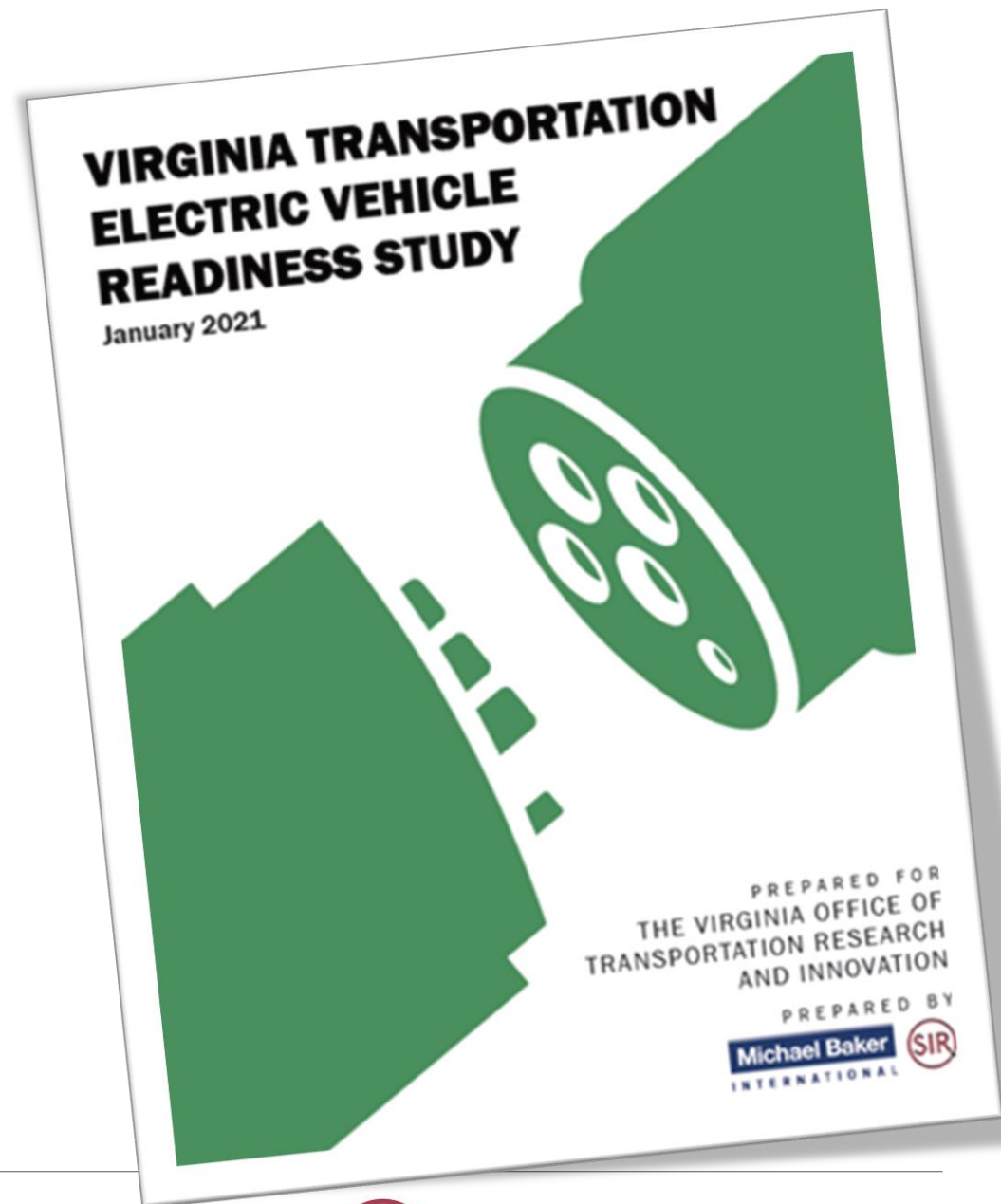
# Electric Vehicle Readiness Study

Commonwealth Transportation  
Board Meeting

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# Virginia Transportation Electric Vehicle Readiness Study

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- 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



Tesla Destination



SAE J1772

Level 2 Charging

DC Fast Charging



SAE CCS

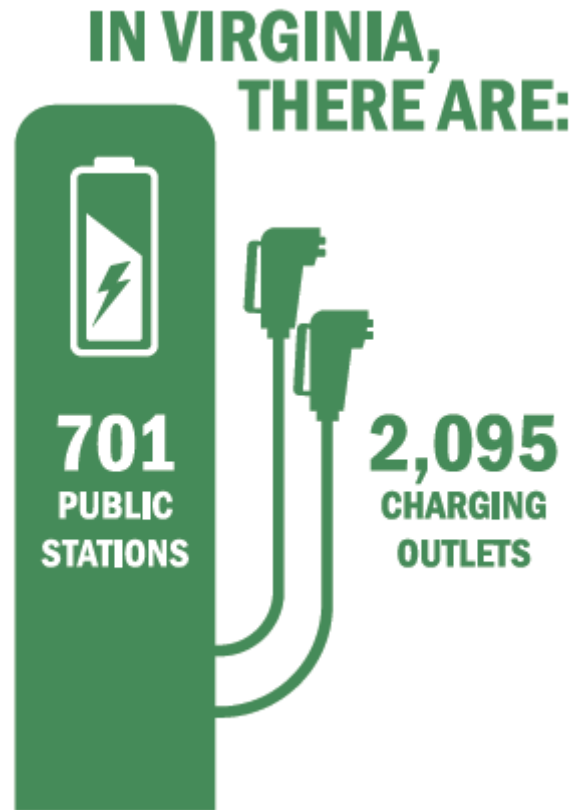


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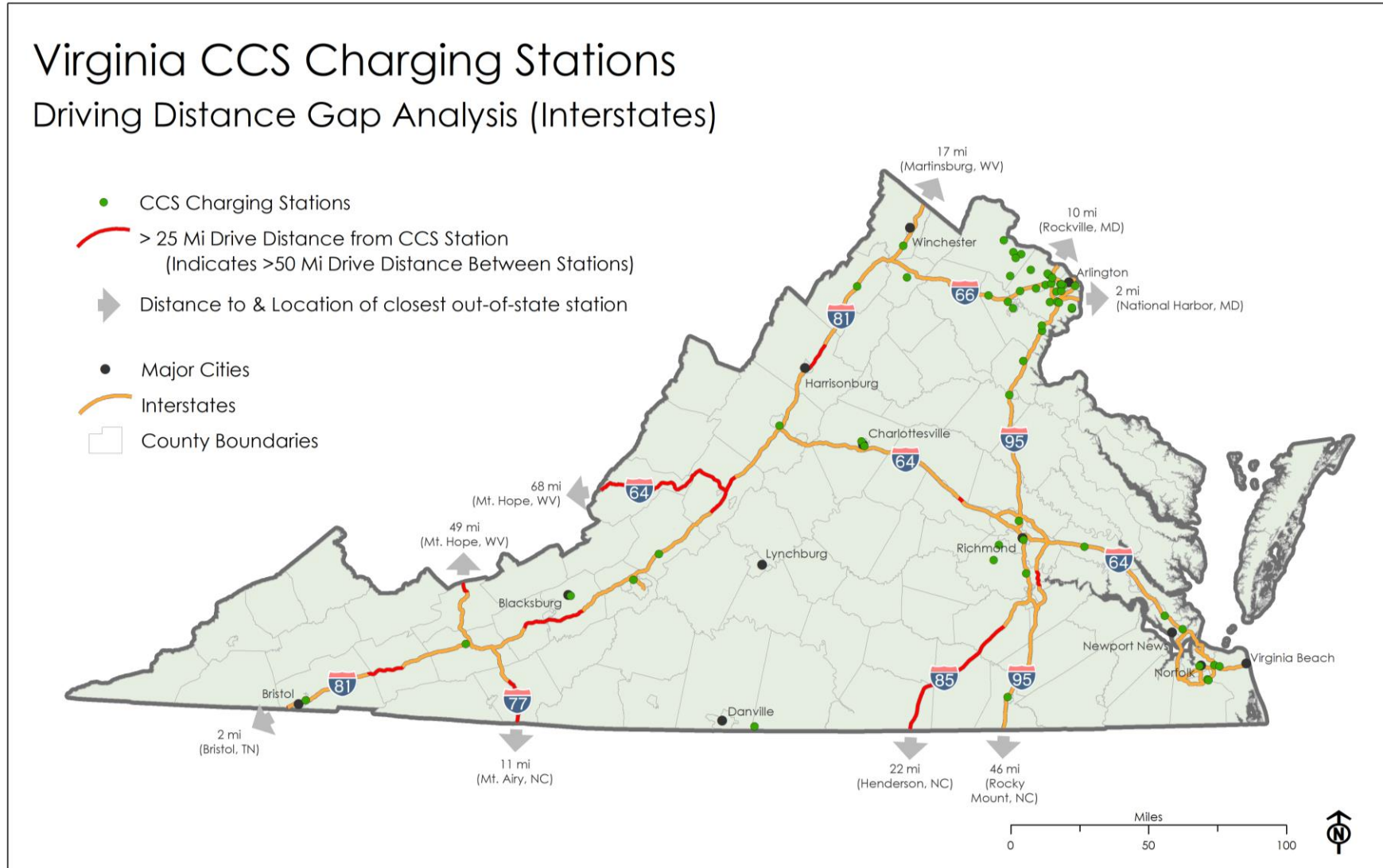
Tesla Supercharger

# The State of Electric Vehicles in Virginia

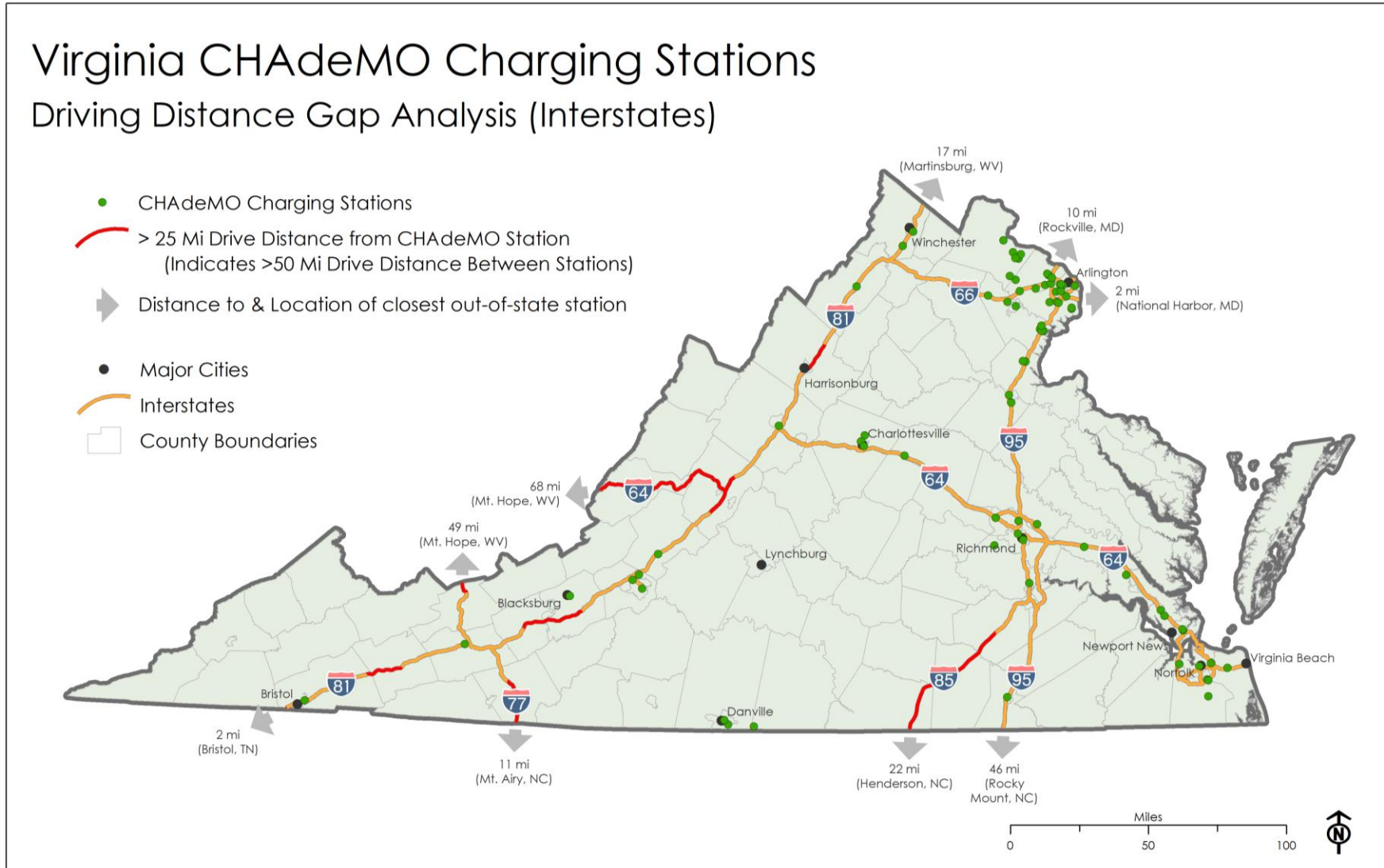


- Virginia ranks 13<sup>th</sup> in the US for the total number of EV registrations
- Virginia ranks 11<sup>th</sup> in the US for number of EV Charging Stations, or Electric Vehicle Supply Equipment (EVSE)

# DC Fast Charging Gap Analysis



# DC Fast Charging Gap Analysis



# Perceived Barriers vs. Infrastructure Deployment

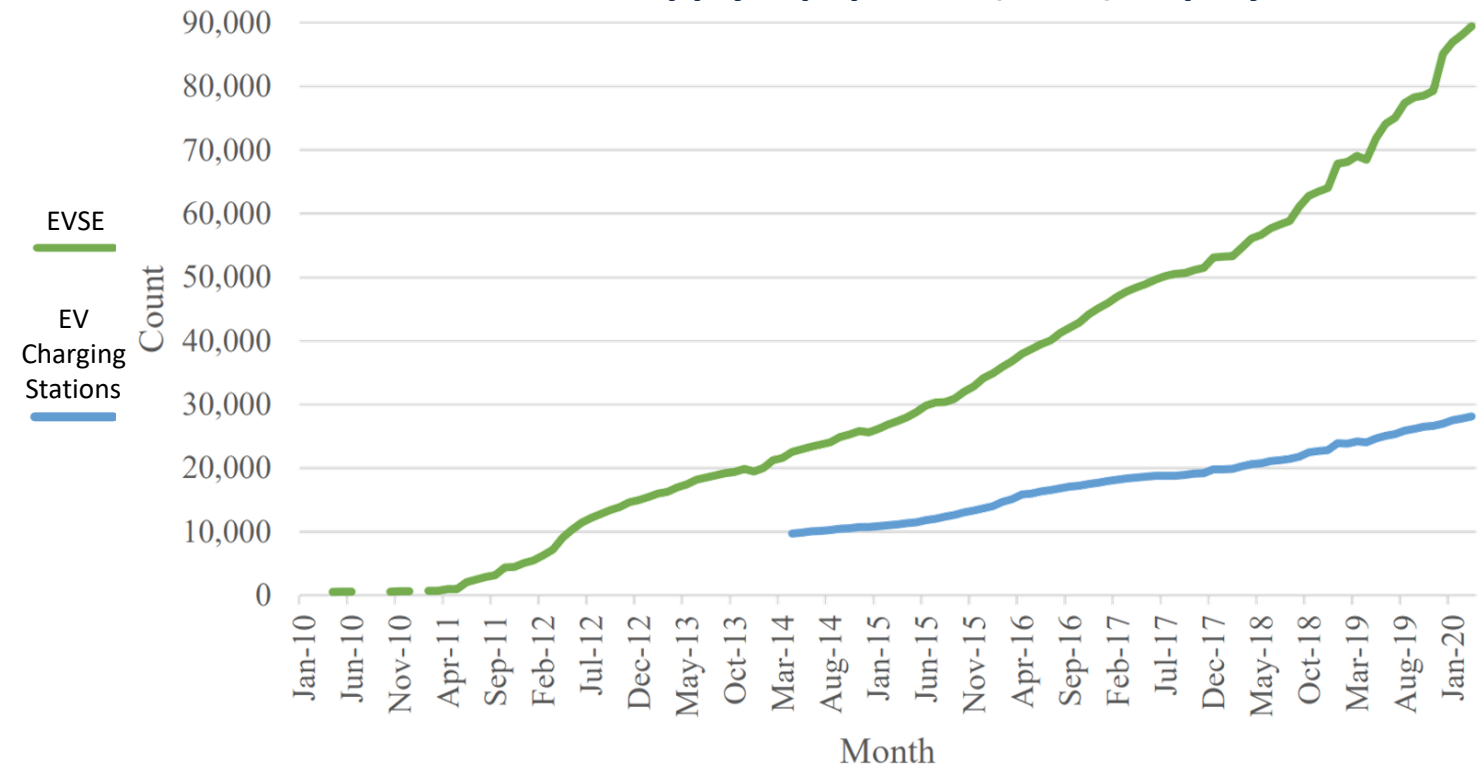
## 2012 Federal Highway Administration Report<sup>2</sup>

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

## 2019 Autolist poll of US vehicle shoppers<sup>3</sup>

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

## Electric Vehicle Supply Equipment (EVSE) Deployment<sup>4</sup>



2. FHWA-HRT-13-001, 2012

3. <https://www.autolist.com/news-and-analysis/survey-electric-vehicles>

4. EV Charging Infrastructure Trends, National Renewable Energy Lab, 2020



# **Opportunities for Improving Transportation EV Readiness**



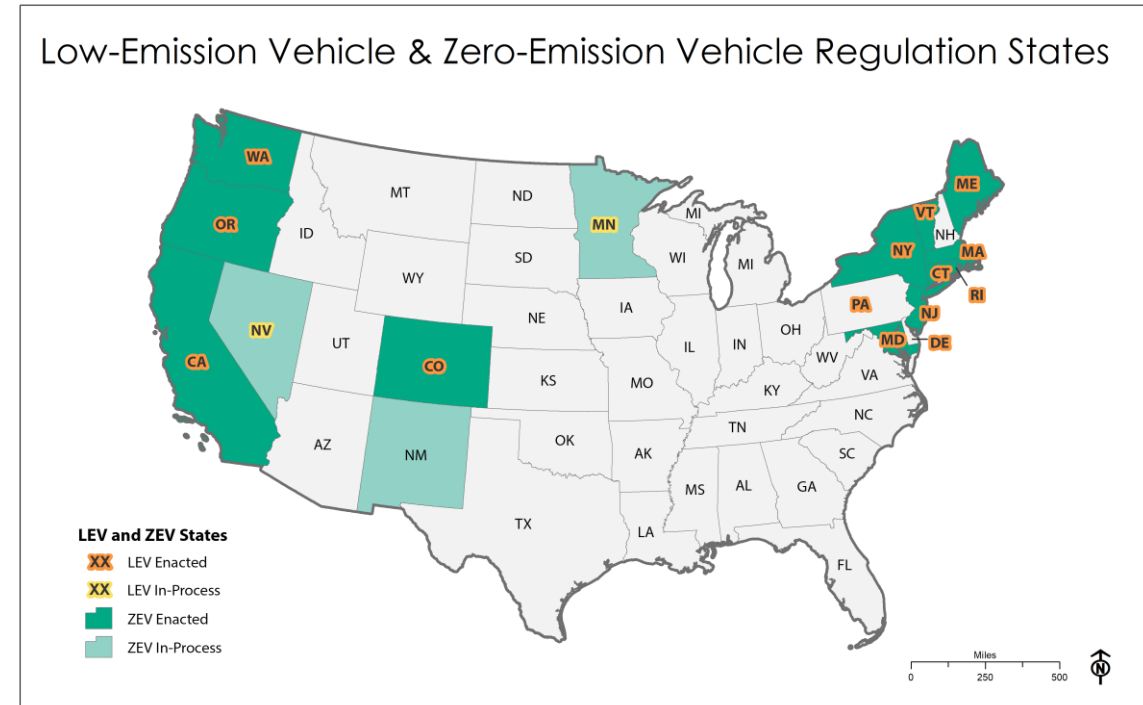
# Coordinate with the Secretary of Natural Resources to Convene an Interagency Working Group

- 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



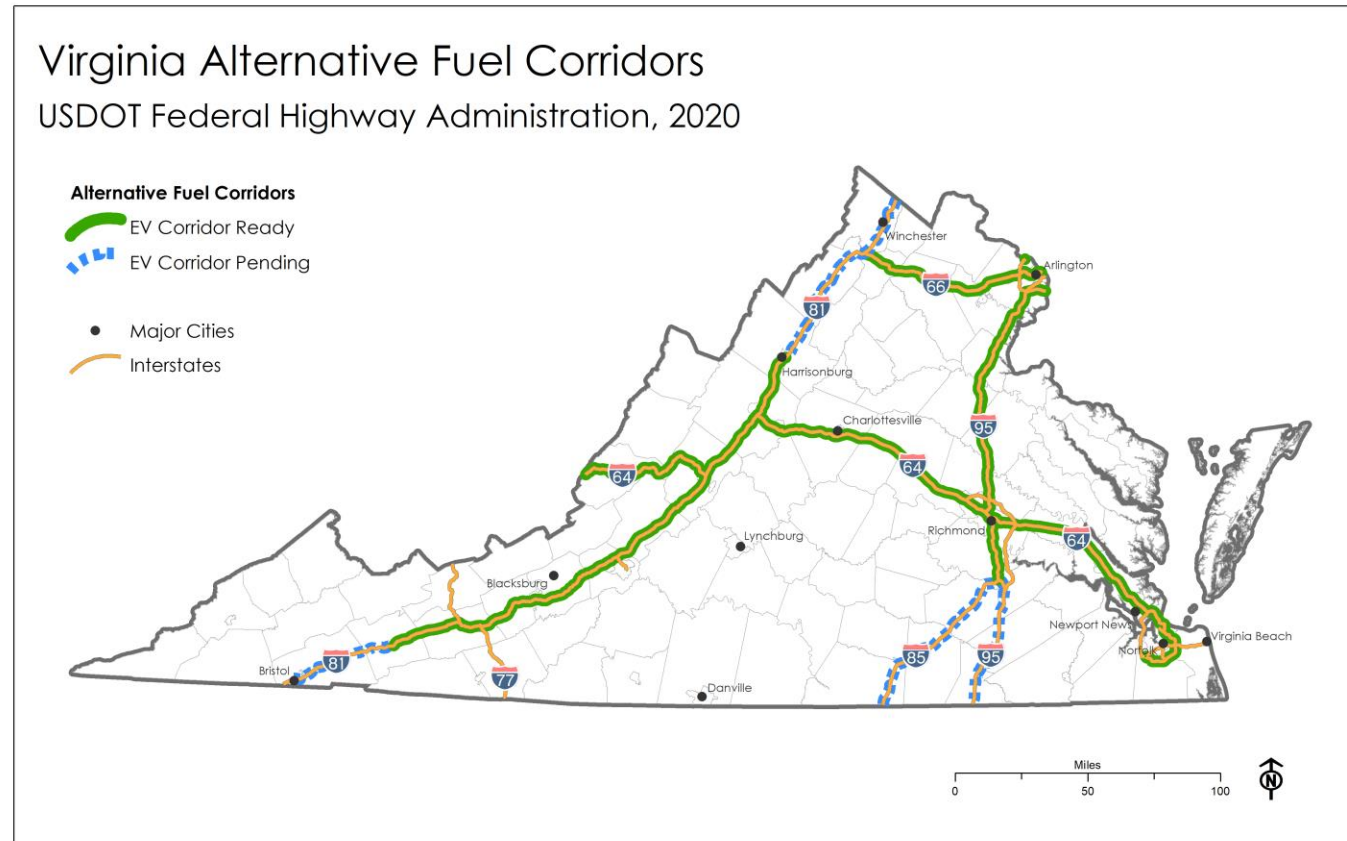
# Support Low and Zero Emission Vehicle Regulations in Virginia – HB 1965

- 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



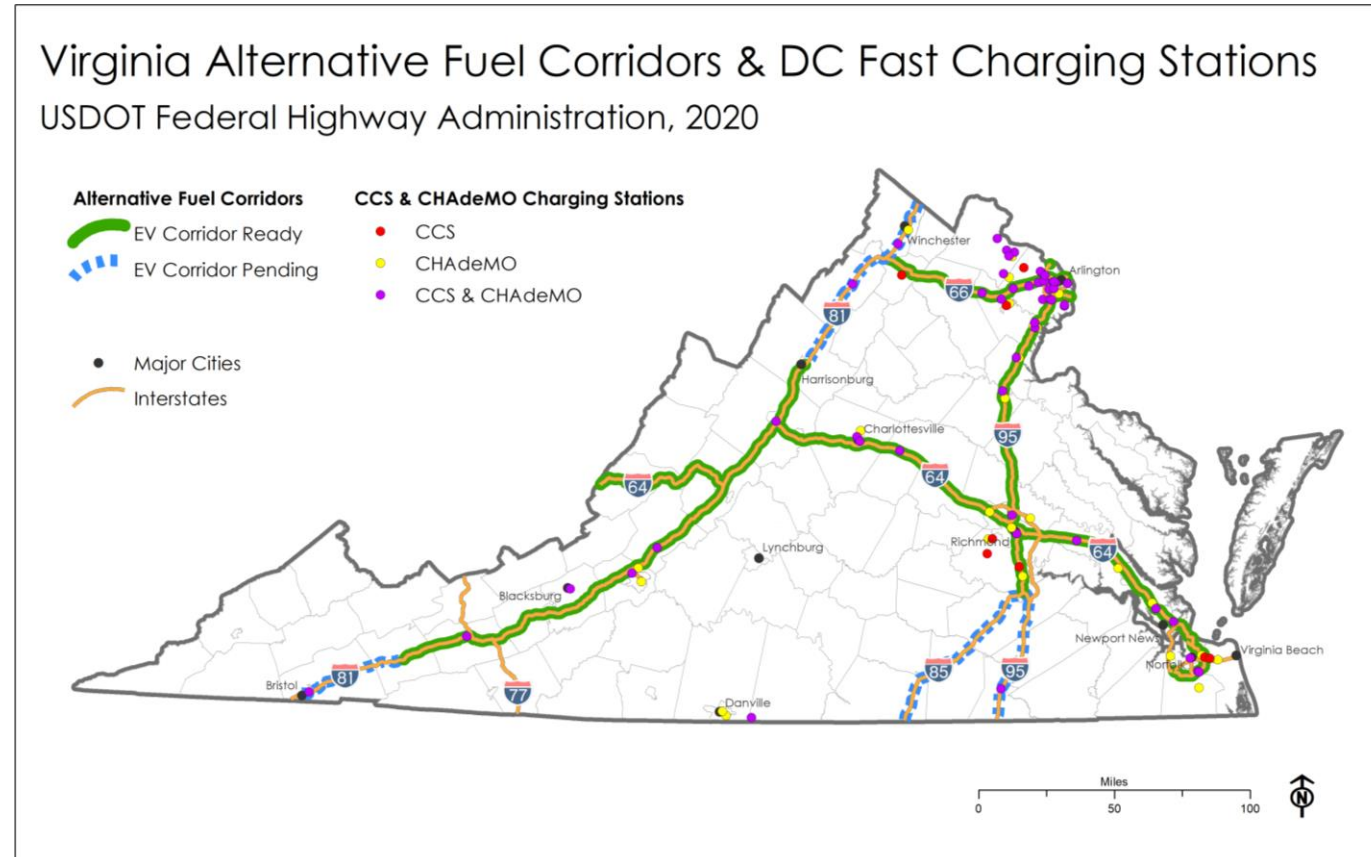
# Expand the Existing Program of Alternative Fuels Corridors to Close Gaps in Virginia's Charging Network

- 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



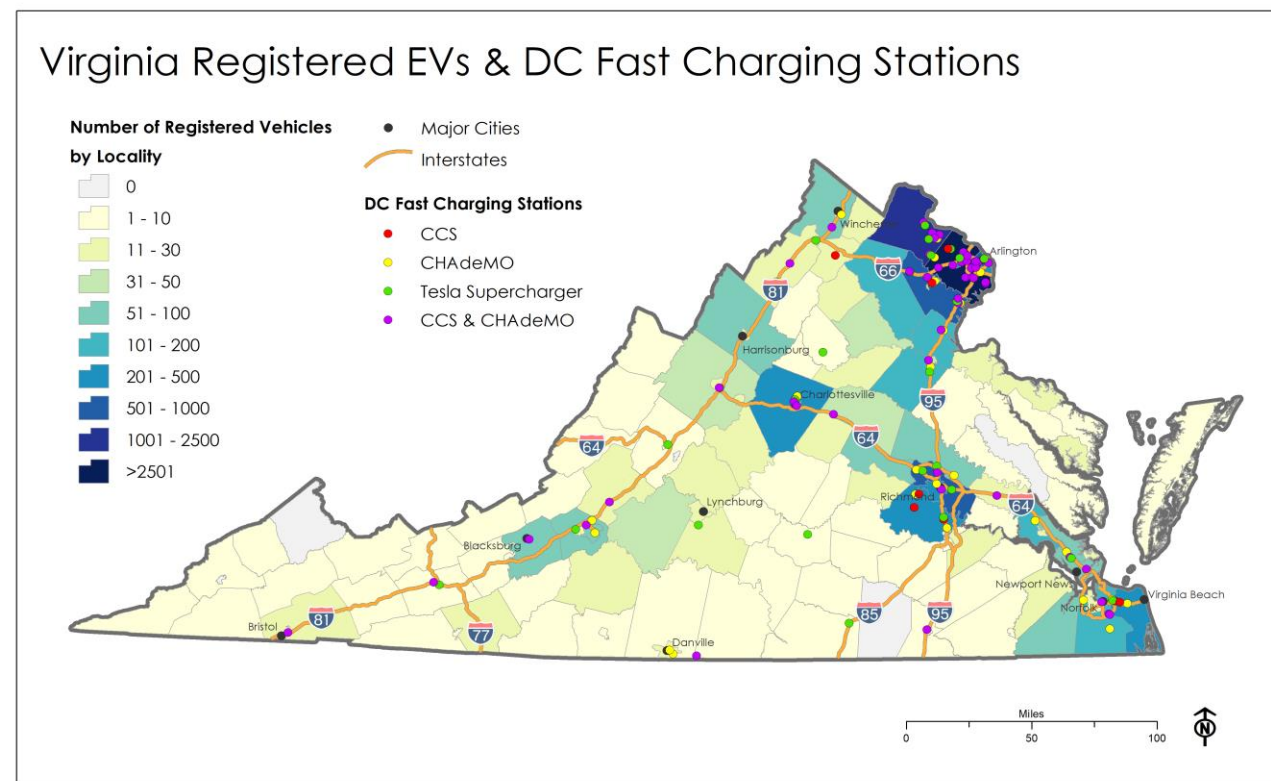
# Evaluate the Feasibility to Deploy Fleet EVs

- 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

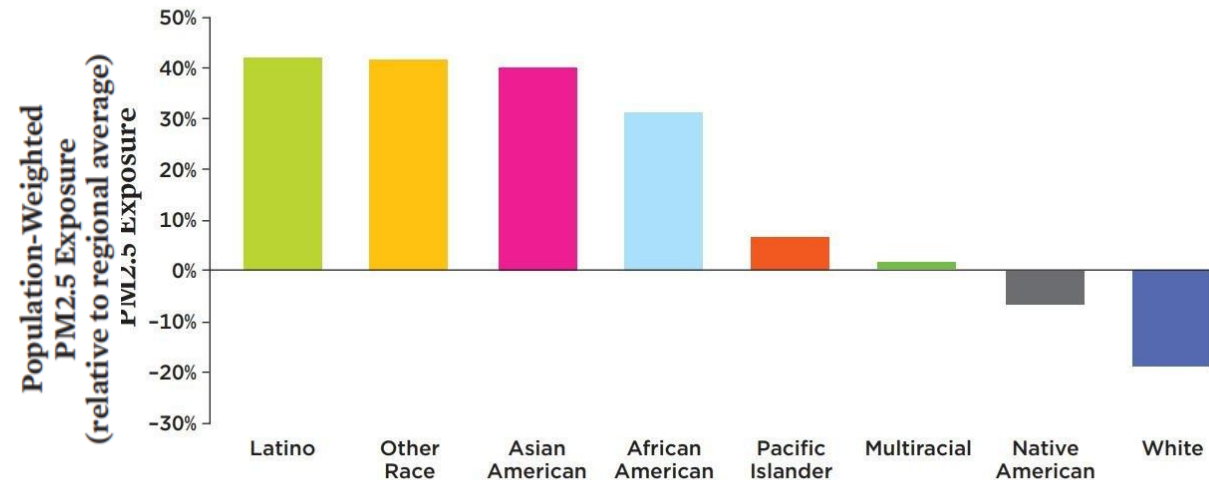




# Encourage and Support EVs in Disadvantaged Communities

- 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

Disproportionately High Exposure for People of Color in the Northeast and Mid-Atlantic



# 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

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- ⚡ 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?