New Hampshire EV Opportunities

Transportation Council Meeting
April 22, 2022
### NH Electric Vehicle (EV) Statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>BEV</th>
<th>PHEV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>316</td>
<td>269</td>
<td>585</td>
</tr>
<tr>
<td>2016</td>
<td>366</td>
<td>310</td>
<td>676</td>
</tr>
<tr>
<td>2017</td>
<td>489</td>
<td>320</td>
<td>809</td>
</tr>
<tr>
<td>2018</td>
<td>766</td>
<td>1,331</td>
<td>2,097</td>
</tr>
<tr>
<td>2019</td>
<td>1,296</td>
<td>2,016</td>
<td>3,312</td>
</tr>
<tr>
<td>2020</td>
<td>1,904</td>
<td>2,327</td>
<td>4,231</td>
</tr>
<tr>
<td>2021</td>
<td>???</td>
<td>???</td>
<td>???</td>
</tr>
</tbody>
</table>

BEV = Battery-Electric Vehicles  
PHEV – Plug-in Hybrid Vehicles
Mainstream Automakers are investing in electrification

Today, there are over 40 different models of EVs available in the Northeast alone!

[https://driveelectricus.com/explore-electric-cars/?](https://driveelectricus.com/explore-electric-cars/?)
# Automaker Plans for Electrification

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Date for PHEVs-BEVs</th>
<th>Date for Carbon Neutrality</th>
<th>Planned spending on EVs</th>
<th>Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentley</td>
<td>By 2026</td>
<td>By 2030</td>
<td>N/A</td>
<td>First battery EV in 2025</td>
</tr>
<tr>
<td>BMW</td>
<td>N/A</td>
<td>100% renewable energy by 2050</td>
<td>$6.5 billion (2019 figure)</td>
<td>2 million fully electric vehicles by the end of 2025</td>
</tr>
<tr>
<td>Ford</td>
<td>N/A</td>
<td>By 2050</td>
<td>$22 billion through 2025</td>
<td>76% carbon emissions reduction by 2035</td>
</tr>
<tr>
<td>Cadillac</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>No new models with gas engines now</td>
</tr>
<tr>
<td>General Motors</td>
<td>N/A</td>
<td>By 2040</td>
<td>$35 billion through 2025</td>
<td>Electric Hummers and Silverado coming</td>
</tr>
<tr>
<td>Honda</td>
<td>2022 (Europe), 2040 (North America)</td>
<td>By 2050</td>
<td>N/A</td>
<td>2 new EVs in 2024 to be built by GM</td>
</tr>
<tr>
<td>Hyundai-Kia</td>
<td>N/A</td>
<td>Undated pledge</td>
<td>$7.4 billion in the U.S. by 2025</td>
<td>23 types of EVs and hydrogen cars by 2025</td>
</tr>
<tr>
<td>Jaguar Land Rover</td>
<td>100% with some electrification by 2030</td>
<td>By 2039</td>
<td>$3.5 billion annually</td>
<td>6 electric Land Rovers over the next 5 years</td>
</tr>
<tr>
<td>Mazda</td>
<td>N/A</td>
<td>By 2050</td>
<td>N/A</td>
<td>First battery EV is the MX-30 in the fall</td>
</tr>
<tr>
<td>Mercedes-Benz</td>
<td>All new platforms EV-only in 2025</td>
<td>By 2039</td>
<td>$47 billion between 2022 and 2030</td>
<td>EQS luxury sedan on sale this fall</td>
</tr>
</tbody>
</table>
## Automaker Plans for Electrification (Cont.)

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Date for PHEVs-BEVs</th>
<th>Date for BEVs</th>
<th>Date for Carbon Neutrality</th>
<th>Planned spending on EVs</th>
<th>Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitsubishi</td>
<td>N/A</td>
<td>N/A</td>
<td>25% carbon reduction by 2030</td>
<td>N/A</td>
<td>A plug-in hybrid focus. The Airtrek EV shown for the Chinese market.</td>
</tr>
<tr>
<td>Nissan</td>
<td>N/A</td>
<td>N/A</td>
<td>By 2050</td>
<td>$1.3 billion on EV hub in England</td>
<td>8 EVs on the road by the end of 2023</td>
</tr>
<tr>
<td>Rolls-Royce</td>
<td>EVs will be available in 90% of segments</td>
<td>By 2050</td>
<td>N/A</td>
<td>N/A</td>
<td>Silent Shadow is in development, using BMW technology</td>
</tr>
<tr>
<td>Stellantis</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>$35.5 billion in EV spending through 2025</td>
<td>55 electrified cars and trucks for sale in the U.S. and Europe by 2025</td>
</tr>
<tr>
<td>Toyota</td>
<td>8 million electrified vehicles by 2030</td>
<td>By 2050</td>
<td>By 2030</td>
<td>N/A</td>
<td>70 electrified models by 2025, 15 of them battery EVs</td>
</tr>
<tr>
<td>Volkswagen Group</td>
<td>50% fully electric sales in U.S. by 2030</td>
<td>By 2050</td>
<td>$86 billion through 2025</td>
<td>N/A</td>
<td>The VW Group has 70 new electrified models in the pipeline</td>
</tr>
<tr>
<td>Volvo</td>
<td>By 2025, half of global sales fully electric</td>
<td>By 2050</td>
<td>$1 billion annually on electrification and autonomy</td>
<td>N/A</td>
<td>All fully electric models will be available online only</td>
</tr>
</tbody>
</table>

Table shows dates automakers say their lineups will comprise only plug-in hybrid electric vehicles (PHEVs) and battery-electric vehicles (BEVs), then only BEVs. Automakers have answered these questions in different ways, such as describing when the last gas or diesel (combustion) platform comes to market instead of when the maker will be 100% BEV. Hybrids do not count as electrified vehicles here. Source: Automakers and Forbes WHEELS
The Market Continues to Grow
Where are we now?
Level 1
2 to 5 miles of range per hour of charging (full charge in 11-20 hrs)
Standard 120v AC Wall Outlet
1.4 kW – 2.4 kW

Level 2 (J1772)
10 to 25 miles of range per hour of charging (full charge in 8 hrs)
Requires 240v outlet and dedicated 40 amp circuit – the same kind used by a clothes drier or stove
3 kW to 19 kW (Avg 9.6 kW)

DCFC
60 to 80 miles of range per 20 minutes of charging*
Generally, Requires three-phase 480v AC electric circuit
Needs to be mounted on an equipment pad
50 kW – 150 kW – 350 kW
DC Fast Chargers (DCFC)

DCFCs range from 50 to 350 kilowatts.

Three different plug types that are used by different vehicle manufacturers:

- SAE Combined Charging System (e.g., BMW, GM, VW)
- CHAdeMO (e.g., Nissan, Mitsubishi)
- Tesla (used exclusively by Tesla)

Most new non-Tesla chargers come equipped with both SAE CCS and CHAdeMO plugs.


*Note: Most existing DCFC stations are 50kW, however, new 350kW DCFC can deliver 200 miles of range in 10 minutes.*
DCFCs delivers the fastest charge for EV drivers, which:

- facilitates long distance travel,
- provides an alternative to home charging, and
- allows drivers to “top off”

There are currently **15 universal public DCFC locations** (25 including Tesla) in New Hampshire, and over 6,000 universal DCFC locations in the US.

For reference, DCFC infrastructure in neighboring states:
- Vermont – 32 locations
- Maine – 33 locations
- Massachusetts – 92 locations

Source: [https://afdc.energy.gov/stations/#/find/nearest](https://afdc.energy.gov/stations/#/find/nearest)
There are currently **134 Level 2 public charging locations** (159 including TESLA) in NH.

For reference, charging infrastructure in neighboring states:
- Vermont – 263 locations
- Maine – 237 locations
- Massachusetts – 1,998 locations

Current data as of 04/13/2022

Source: [https://afdc.energy.gov/stations/#/find/nearest](https://afdc.energy.gov/stations/#/find/nearest)
VW Trust Funds: NH Mitigation Plan

- NHDES is Lead Agency
- Approximately $31 million – 15% dedicated to EVSE
- EVSE Funding Opportunity:
  - September 2021– DCFC Request for Proposals (RFP) for ~$3 million – Closed 02/25/22
  - Contracting for installation plus operation and maintenance for five years
  - Up to 80% of eligible costs, or up to 100% of eligible costs for EVSE located on state or local government-owned property.
- For Reference: NHDES Volkswagen Mitigation Trust Webpage:
VW Trust Funds: DCFC RFP

• Publicly Accessible Sites:
  • ≥ 2 DCFC + L2 – networked!
  • ≥ 50 kW DCFC
  • Connectors: CCS & CHAdeMO

• 9 Travel Corridors
  • US 3
  • US 2
  • Route 16
  • US 302
  • I-93
  • I-89
  • Route 11 / 103
  • Route 9 / 202
  • Route 101
NH’s FHWA Designated EV Corridors

- I-89
- I-93
- I-95
- F.E. Everett Turnpike
- Spaulding Turnpike/NH SR-16
- US-302
- US-2
- US-4
- NH SR-9
- NH SR-11
- NH SR-12
- NH SR-101

GSCCC Newsletter Article for more details:
Bipartisan Infrastructure Law (BIL)
Formerly IIJA
BIL Investment: EV Infrastructure Plan


- **Target** = By 2030, US EV sales represent 50% of new cars sold

- National EV charging network – Guidance & Standards, Corridors & “CARE”

- Joint Office: federal DOT & DOE - [https://driveelectric.gov/](https://driveelectric.gov/)

- **EV Batteries:**
  - Increase domestic manufacturing and environmentally responsible sourcing
  - Advance re-use and recycling applications
  - Deploy energy storage (grid-connected battery storage) projects at federal sites
National Electric Vehicle Infrastructure (NEVI)
A program funded by the BIL
NEVI: Program guidance


• BIL establishes a Joint office of Transportation and Energy

• Guidance includes details on:
  • State Plans
  • Project Eligibility
  • Program Administration
  • Technical Assistance

• State EV Infrastructure Deployment Plans due to Joint Office by August 1, 2022

• FHWA approval Plans by September 30, 2022
NEVI Timeline

- Bipartisan Infrastructure Law
  - Signed into law on November 15, 2021. The National Electric Vehicle Infrastructure (NEVI) Formula Program is established.

- 90 Day Guidance
  - February 10, 2022
  - FHWA releases guidance for the NEVI Formula Program within 90 days of enactment of the BIL.

- States Coordinate with Joint Office of Energy and Transportation

- FHWA Approves State Plans
  - September 30, 2022
  - FHWA approves Plans or notifies State DOTs if changes are needed not later than September 30, 2022.

- Alternative Fuel Corridor (AFC)
  - Nominations
    - February 10, 2022
    - FHWA publishes the Request for Nominations for the 5th round of AFC designations. State DOTs review existing AFCs and nominate additional routes, prioritizing the Interstate Highway System, to support a national EV charging network by May 13, 2022.

- 180 Day Minimum Standards and Requirements
  - May 13, 2022
  - FHWA publishes proposed regulations for minimum standards and requirements for the NEVI Formula Program by May 13, 2022.

- State Plans Due
  - August 1, 2022
  - State DOTs submit their EV Infrastructure Deployment Plans to the new Joint Office of Energy and Transportation not later than August 1, 2022.

- Funds Available for Investment
  - If approved, State DOTs deploy EV charging infrastructure through the use of NEVI Formula Program funds.
BIL: EV Infrastructure Programs

- National Goal: 500,000 EV chargers by 2030 (currently 100,000+)

- BIL invests a total of $7.5 billion
  - $5 billion NEVI formula funding ($1B per year over five years)
    - NH 5-year formula funding = $17,271,581
      - NH Year 1 formula funding = $2,556,450 (available after Plan approval)
      - NH Year 2-5 formula funding = $3,454,316 (anticipated)
    - Cost-share: 80% federal – 20% state or private funds
  - $2.5 billion discretionary grant funding divided between corridor & community charging
    - Focus on rural charging, and access in underserved/overburdened/disadvantaged communities
BIL: Discretionary Grant Program

• $2.5 billion discretionary grant funding divided between corridor & community charging - competitive program
  • $1.25 billion – Corridor Charging Grant Program
    • Publicly accessible EVSE, H2, LPG & NG fueling infrastructure along designated AFC
  • $1.25 billion – Community Charging Grant Program
    • Publicly accessible EVSE, H2, LPG & NG fueling infrastructure in communities
• Additional guidance anticipated later this year (likely by November 15, 2022)
BIL: National Electric Vehicle Infrastructure Formula Program (NEVI)

- NHDOT led EV Infrastructure Deployment Plan
  - Working with other State Agencies
  - Build upon work completed by NHDES with the VW Trust Funds
  - Required to be updated yearly, i.e. a “Living Plan”

- Funding priorities for installation, operation, and maintenance of EV charging infrastructure:
  - Prioritize investments along the Interstate Highway System
  - FHWA designated alternative fuel corridors
  - Publicly accessible – rural and disadvantaged communities
  - DCFC every 50 miles and within 1 travel mile from the highway
    - ≥ four 150 kW DC output fast chargers with CCS ports capable of simultaneously charging four EVs

Once national network is fully built out, funds can be used on any public road or other publicly accessible location – flexibility to determine type and location
Existing AFC Corridors

- Stations within 1 mile of the exit, 4 CCS ports:
  - Walmart – West Lebanon
  - Simon Mall of NH – Manchester
  - Simon Pheasant Lane Mall – Nashua
  - Simon Mall at Rockingham Park – Salem
  - Walmart – Seabrook

Source:
https://afdc.energy.gov/stations/#/corridors
State EV Infrastructure Deployment Plan

State Plan Template Released 03/02/22

• Describe state agency coordination in development of plan
• Discuss how the public was engaged in plan development
• Articulate the plan’s vision and goals on a 5-year horizon
• Analyze existing and future risks/challenges to deployment
• Present a deployment strategy for installations on designated corridors (prioritizing Interstate Highway System)
• Identify non-federal funding source
• Consider sociodemographic, geographic, and economic equity (in deployment and workforce) – e.g., Justice 40 - EPA mapping tool: [https://www.epa.gov/ejscreen](https://www.epa.gov/ejscreen)
• Be updated annually
State Plan Outline

- Introduction
- State Agency Coordination
- Public Engagement
  - Stakeholders involved in Plan Development
  - Public Outreach
- Plan Vision and Goals
- Contracting
- Existing and Future Conditions Analysis
  - State Geography, Terrain, Climate, and Land Use Patterns
  - State Travel Patterns, Public Transportation Needs, Freight and other Supply Chain Needs
  - AFC Corridor Networks
  - Existing Locations of Charging Infrastructure Along AFCs
  - Known Risks and Challengers
- EV Charging Infrastructure Deployment
  - Funding Sources
  - 2022 Infrastructure Deployments/Upgrades
State EV Infrastructure Outline (Cont’d)

State Plan Outline (Cont’d)
- EV Charging Infrastructure Deployment
  - Funding Sources
  - 2022 Infrastructure Deployments/Upgrades
  - FY 23-26 Infrastructure Deployments
  - State, Regional, and Local Policy
- Implementation
  - Strategies for EVSE Operation & Maintenance
  - Strategies for Identifying Elective Vehicle Charger Service Providers and Station Owners
  - Strategies for EVSE Date Collection & Sharing
  - Strategies to Address Resilience, Emergency Evacuation, Snow Removal/Seasonal Needs
  - Strategies to Promote Strong Labor, Safety, Training, and Installation Standards
- Civil Rights
- Equity Considerations
- Labor and Workforce Consideration
- Cybersecurity
- Program Evaluation
- Discretionary Exceptions (If Any)
What We Don’t Know (Yet)

• Minimum standards and requirements for EV charging projects, maintenance and data collection
  • (DOT to publish May 13)
• Future NOFO: Competitive Charging and Fueling Infrastructure Program
  • ($1.25BB community and $1.25BB corridor charging grant programs)
• Details of 10% set-aside for network gap-filling grants
• Buy America requirements
  • Waivers may be allowed
  • Select vendors may be able to meet these requirements
• Details of utility upgrades that can be included in NEVI Program
• Full criteria for designation of ‘fully built out’ corridors
• Medium/Heavy Duty vehicles and shared mobility
Moving Forward

• Engaged the services of AECOM to assist with Plan development
• Develop Plan Vision, Goals, Objectives, and Priorities
• Develop Stakeholder and Public Surveys
• Create a Program Webpage to inform stakeholders and host NEVI Plan when approved
• Host Public Hearing (Hybrid Meeting)
• Confirm power requirements with utilities
• Draft Plan by mid-June
• Submit Final Plan by August 1st
• Review and update Plan yearly
Questions?
Michael Mozer, P.E.
NHDOT NEVI Program Lead

Michael.J.Mozer@dot.nh.gov
Resources

• NH BIL Fact Sheet: https://www.transportation.gov/sites/dot.gov/files/2022-01/BIL_New_Hampshire.pdf

• EV Charging Action Plan Fact Sheet: https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/13/fact-sheet-the-biden-harris-electric-vehicle-charging-action-plan/

• USDOT NEVI Guidance with State FY22 funding: https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/13/fact-sheet-the-biden-harris-electric-vehicle-charging-action-plan/

• Joint Office – federal DOT & DOE