

New Hampshire EV Opportunities

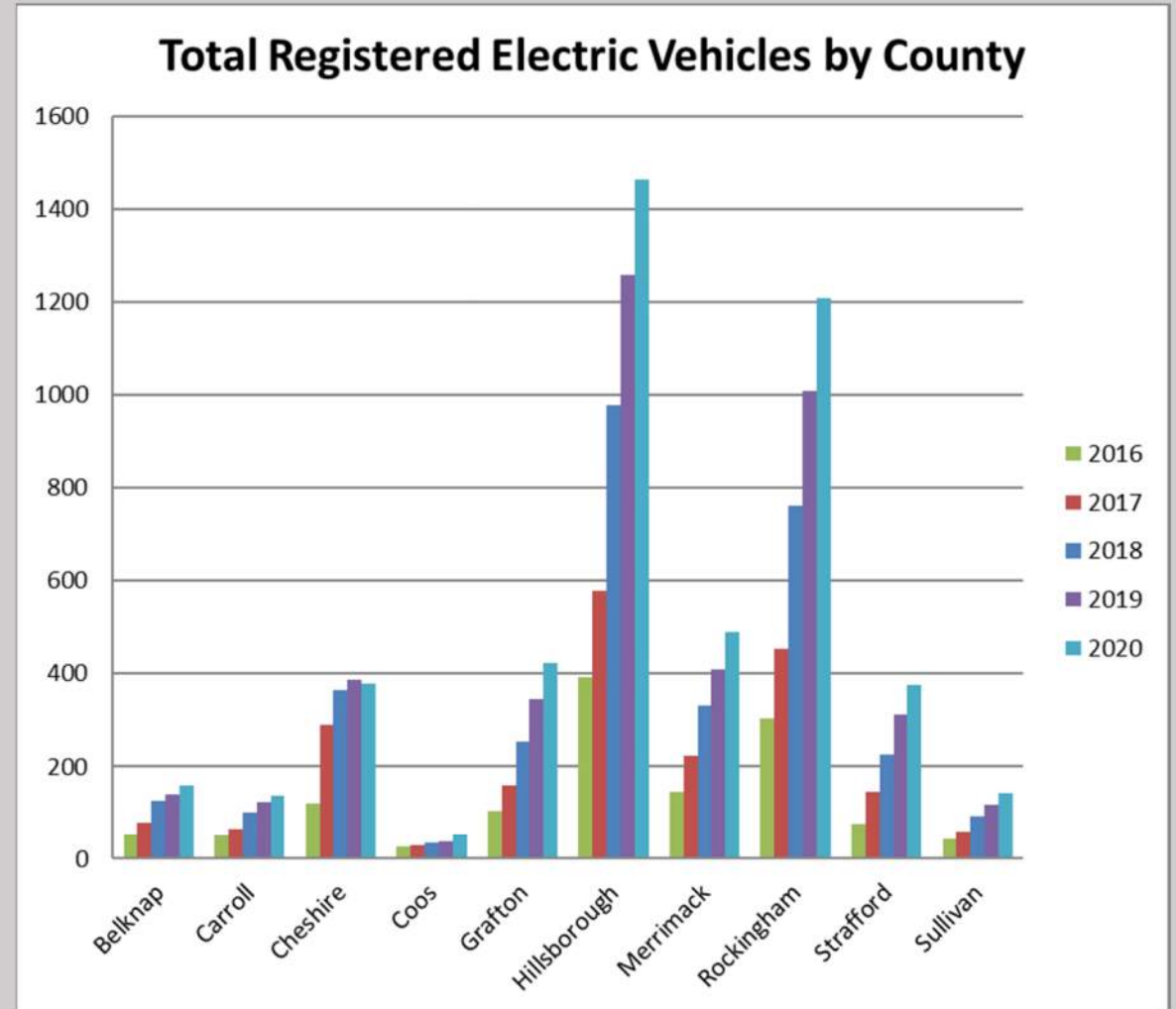
Transportation
Council Meeting
April 22, 2022



NH Electric Vehicle (EV) Statistics

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

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/?>



Automaker Plans for Electrification

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

Automaker Plans for Electrification (Cont.)

Vehicle	Date for PHEVs-BEVs Date for BEVs	Date for Carbon Neutrality	Planned spending on EVs	Milestones
Mitsubishi	N/A	25% carbon reduction by 2030	N/A	A plug-in hybrid focus. The Airtrek EV shown for the Chinese market.
	N/A			
Nissan	N/A	By 2050	\$1.3 billion on EV hub in England	8 EVs on the road by the end of 2023
	N/A			
Rolls-Royce	EVs will be available in 90% of segments	By 2030	N/A	Silent Shadow is in development, using BMW technology
	N/A			
Stellantis	70% of European sales, 40% of North American sales electrified in 4 years	N/A	\$35.5 billion in EV spending through 2025	55 electrified cars and trucks for sale in the U.S. and Europe by 2025
	N/A			
Toyota	8 million electrified vehicles by 2030	By 2050	N/A	70 electrified models by 2025, 15 of them battery EVs
	N/A			
Volkswagen Group	50% fully electric sales in U.S. by 2030	By 2050	\$86 billion through 2025	The VW Group has 70 new electrified models in the pipeline
	Last new combustion platform in 2026			
Volvo	By 2025, half of global sales fully electric	By 2040	\$1 billion annually on electrification and autonomy	All fully electric models will be available online only
	By 2030			

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?

Electric Vehicle Supply Equipment (EVSE)

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

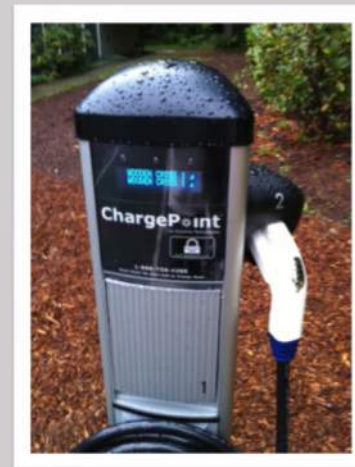


Level 2 (J1772)

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.

Learn more  USDOE Resource EV Charger Selection Guide:
https://afdc.energy.gov/files/u/publication/EV_Charger_Selection_Guide_2018-01-112.pdf

***Note:** Most existing DCFC stations are 50kW, however, new 350kW DCFC can deliver 200 miles of range in 10 minutes.



DCFC Infrastructure in NH

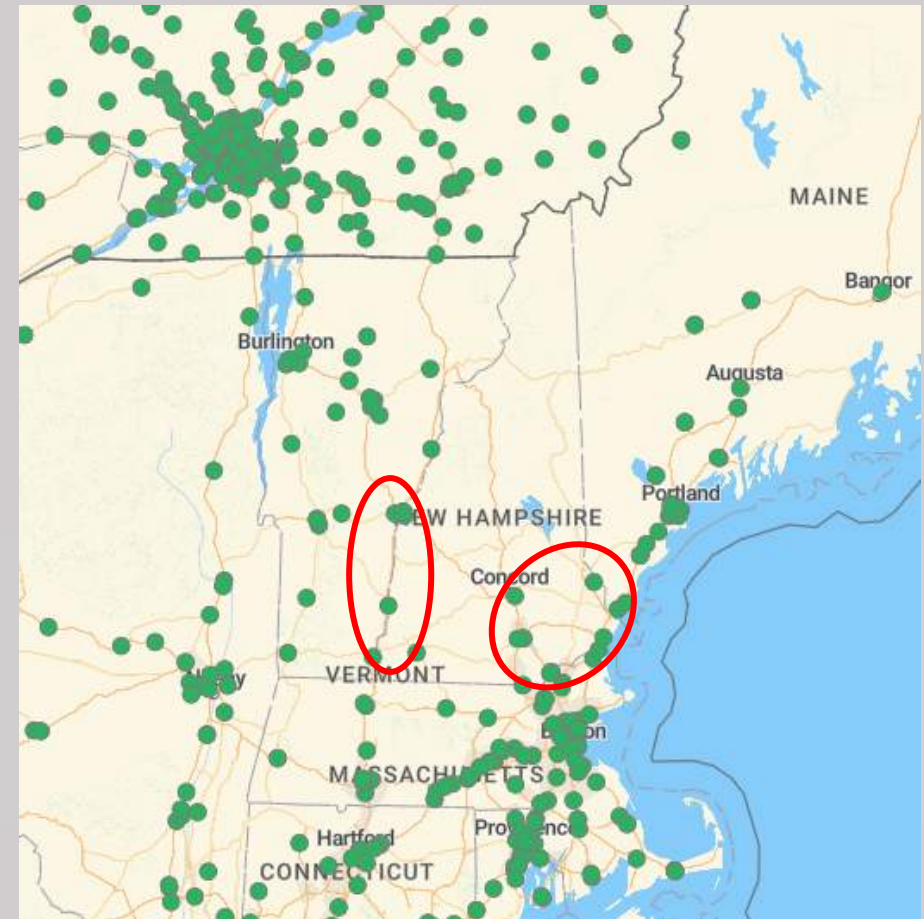
DCFCs delivers the fastest charge for EV drivers, which:

- 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



Current data as of 02/25/2022

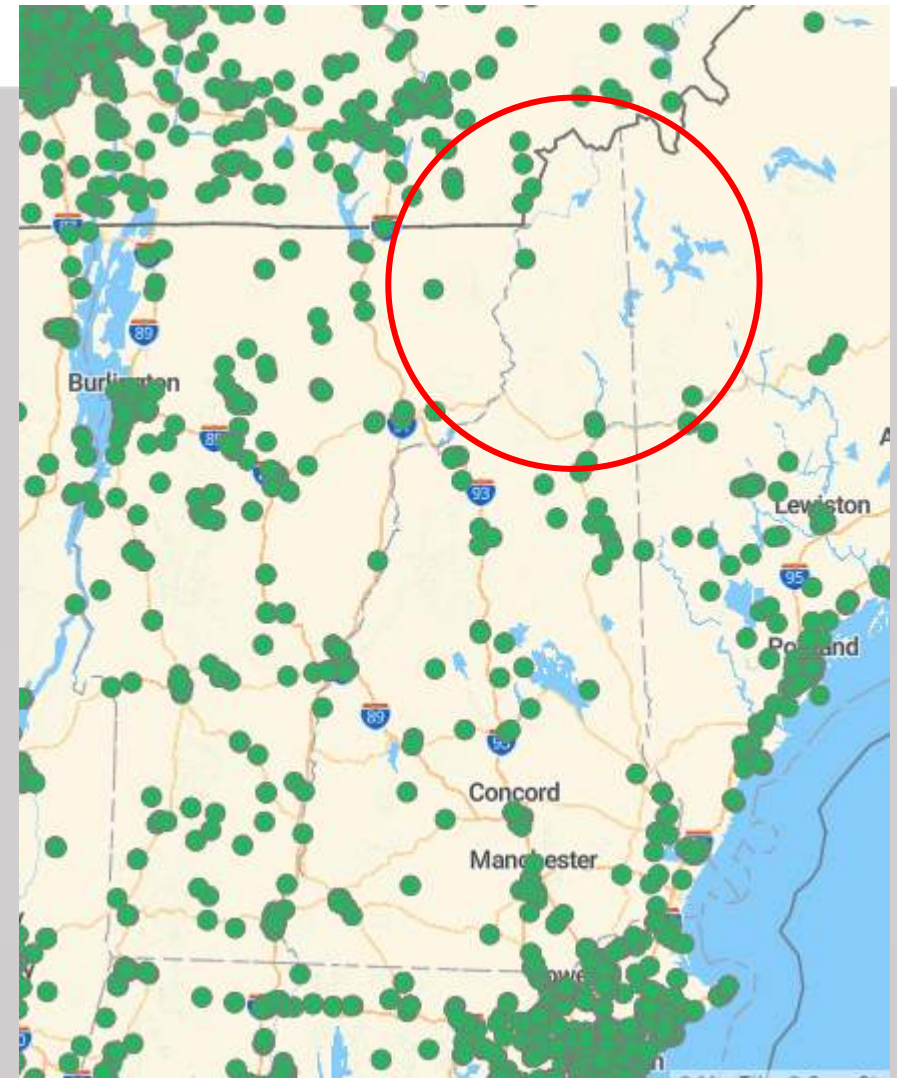
Source: <https://afdc.energy.gov/stations/#/find/nearest>

Level 2 Infrastructure In NH

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>

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:
<https://www.des.nh.gov/business-and-community/loans-and-grants/volkswagen-mitigation-trust>

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:

<https://www.granitestatecleancities.nh.gov/happening/documents/news-20200910.pdf>



Bipartisan Infrastructure Law (BIL) Formerly IIJA

BIL Investment: EV Infrastructure Plan

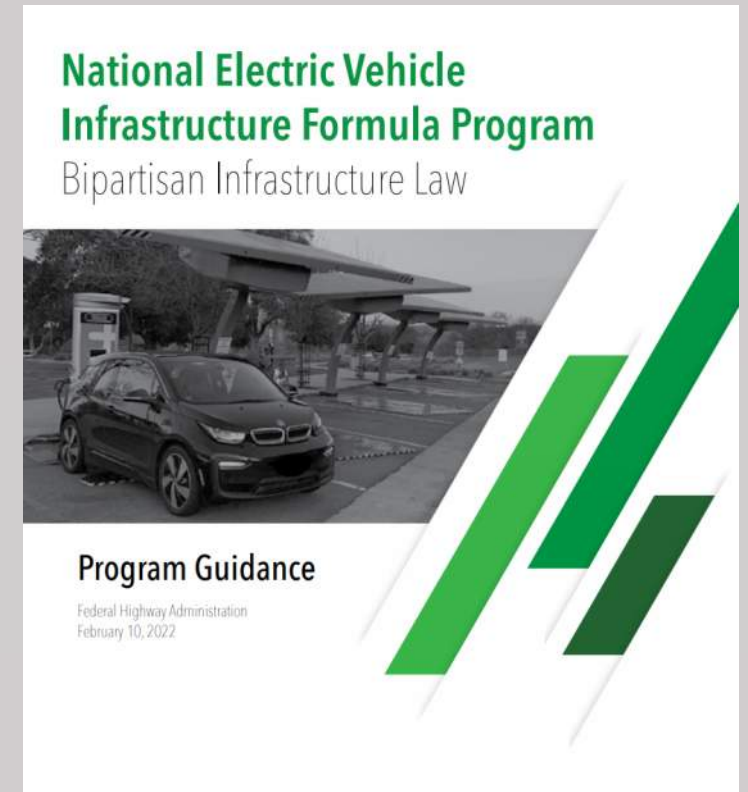
- EV Charging Action Plan – Fact Sheet: <https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/13/fact-sheet-the-biden-harris-electric-vehicle-charging-action-plan/>
- **Target = By 2030, US EV sales represent 50% of new cars sold**
- National EV charging network – Guidance & Standards, Corridors & “CARE”
- Joint Office: federal DOT & DOE - <https://driveelectric.gov/>
- 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)

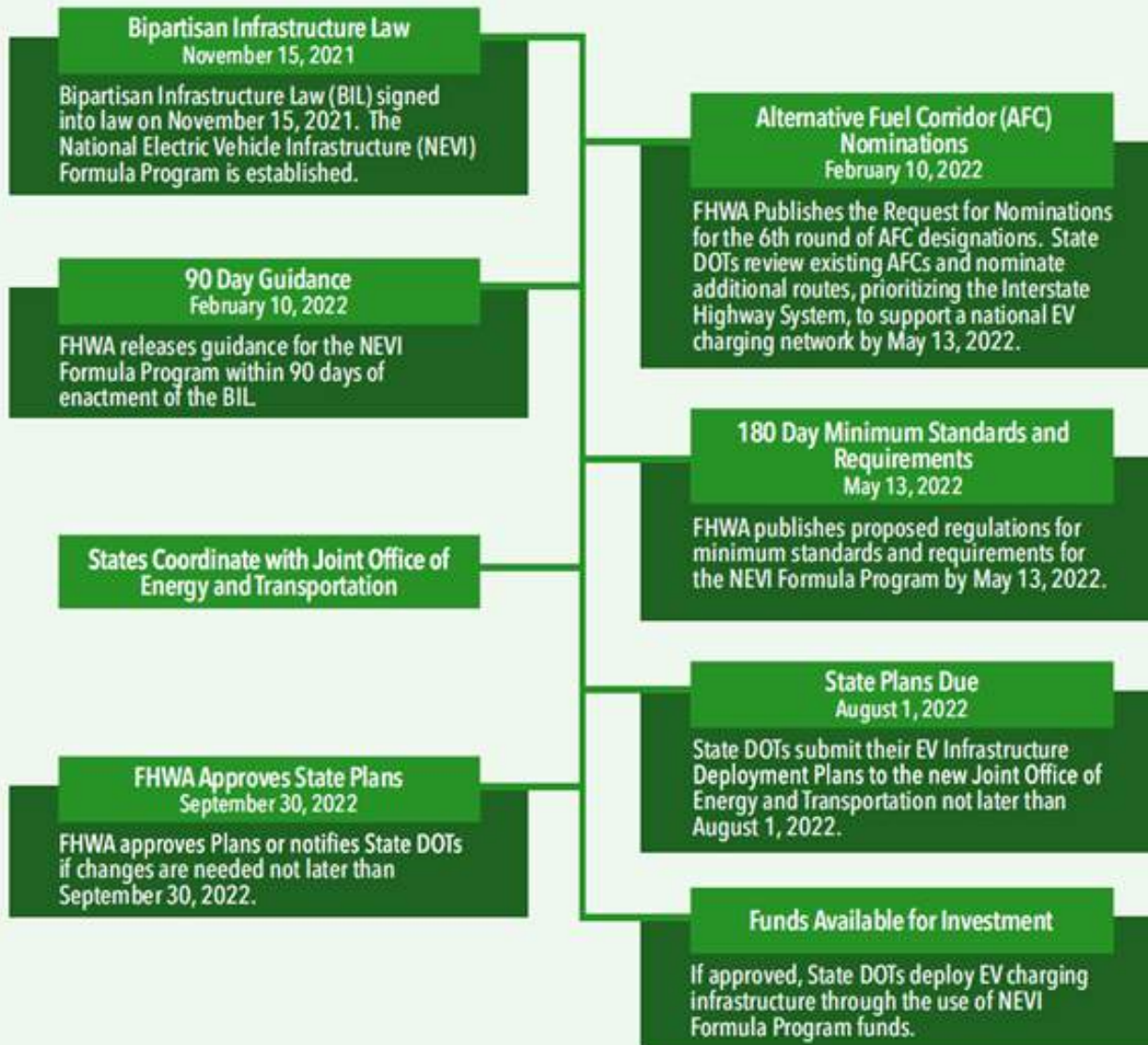
A program funded by the BIL

NEVI: Program guidance

- https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/nominations/90d_nevi_formula_program_guidance.pdf
- 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



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
 - \geq 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>
- Be updated annually

State EV Infrastructure Outline

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 Data 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?

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Resources

- NH BIL Fact Sheet: [https://www.transportation.gov/sites/dot.gov/files/2022-01/BIL New Hampshire.pdf](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