

# National Electric Vehicle Infrastructure (NEVI) Program Guidance and Alternative Fuel Corridors Designation

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PRESENTATION FOR SENATE TRANSPORTATION COMMITTEE, FEBRUARY 18, 2022

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# Timeline

May 13<sup>th</sup>: Nominations due for Alt. Fuel Corridors & guidance issued on minimum standards for EVSE

August 1<sup>st</sup> or before: States must submit EV Charging Plan to FHWA

September 30<sup>th</sup>: FHWA approval of plan

Additional guidance TBD

# NEVI Formula Program Guidance

- Priority given to EVSE along the interstates for corridor nominations, and investments to be made there first. (When fully “built out” as certified by FHWA, State may move onto other locations)
- New minimum requirements: 4 CCS ports of 150 kW each (600 kW total per site)
- 50 mile distance from the next charging location, but now only 1 mile from interstate exit or state highway intersection (prior radius was 5 miles)
- Submission of state plans by August 1st, with required plan elements

## No guidance yet on the following:

- Minimum standards for equipment
- Application of Buy America requirements
- 10% for Gap-filling grants
- Competitive grant programs for Corridor and Community Charging

# Charging Equipment

## Level 1 Charging

120V

5 miles range / hr



J1772



Tesla

## Level 2 Charging

240V

10-20 miles / hr



J1772



Tesla

## DC Fast Charging

480V

Up to 1,000 miles / hr



CCS



CHAdemo

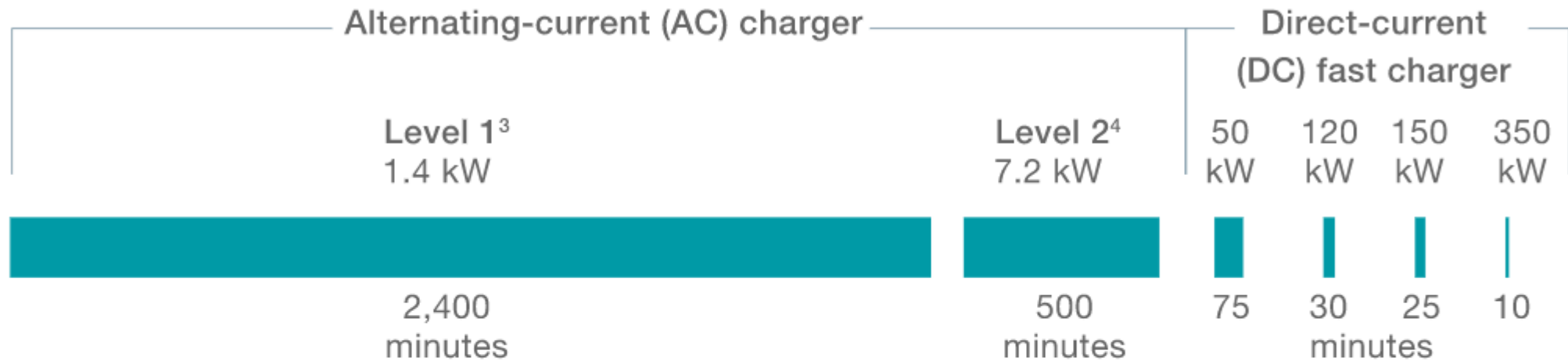


Tesla

Plug Types →

# Charging Equipment

Time to “fill up” a 60-kWh electric-vehicle (EV)<sup>1</sup> battery using different chargers<sup>2</sup>



<sup>1</sup>This assumes that the EV can charge at the higher kW direct-current fast-charging stations; most EVs today cannot charge faster than 100 kW.

<sup>2</sup>This assumes that the EV can charge at maximum speed during the entire charge. In reality, the charging speed varies.

<sup>3</sup>Level 1 equipment provides charging through a 120-volt AC plug; it generally refers to a household outlet.

<sup>4</sup>Level 2 equipment provides charging through a 240-volt AC plug and ranges from 16 to 40 amps. The most common is the 240-volt, 30-amp charger, which is 7.2 kW.

McKinsey&Company

[Mckinsey.com](https://www.mckinsey.com)

# Alternative Fuel Corridors

## FHWA Designation

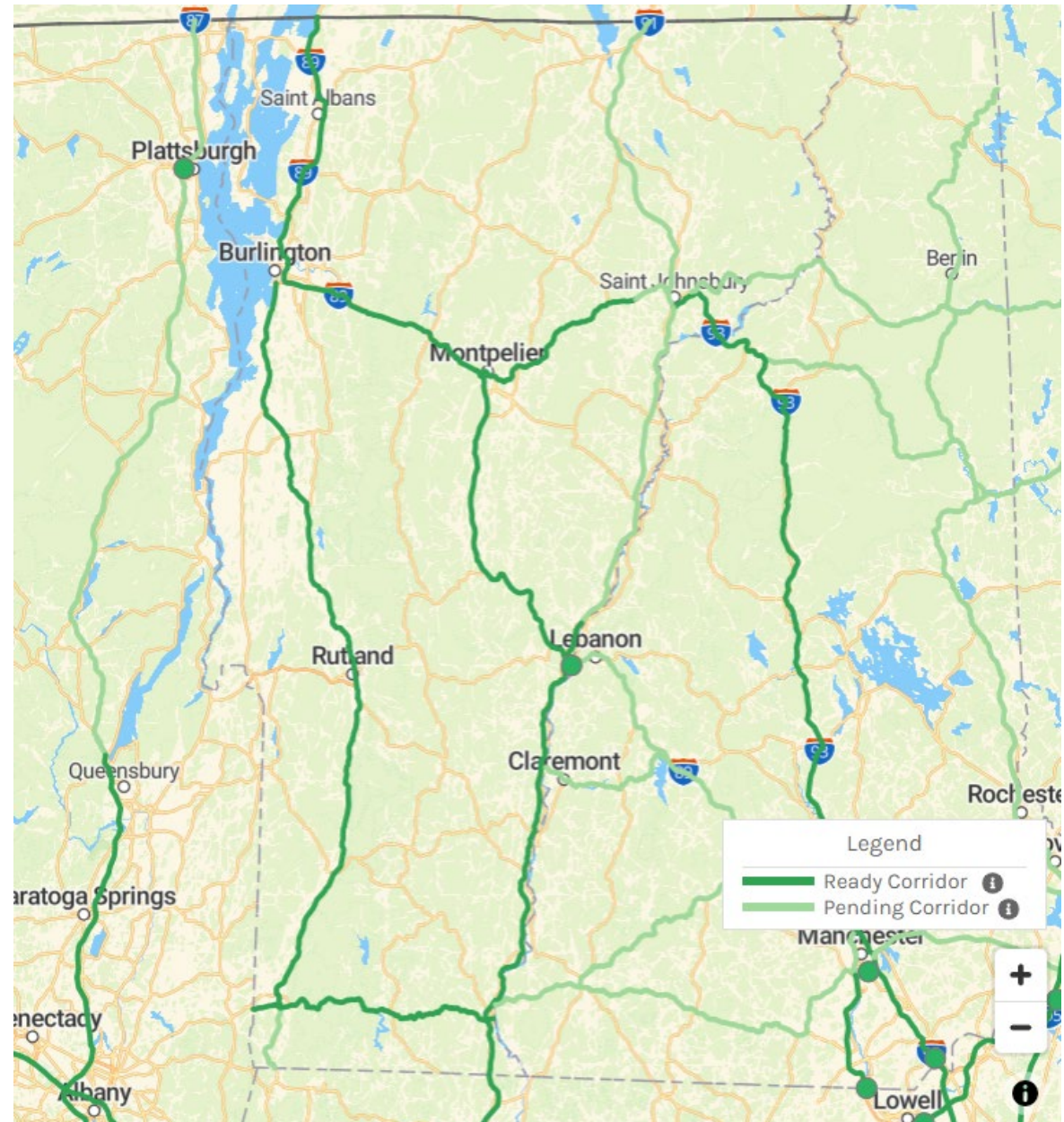
- Stations within 50 miles of the next on the highway system and within 1 mile of an exit, with few exceptions
- Site power capability should be no less than 600 kW (supporting at least 150 kW per port simultaneously across 4 ports).

## VT Corridor-Ready:

- Interstates 89, 91; State Routes 9, 2, 7

## VT Corridor-Pending:

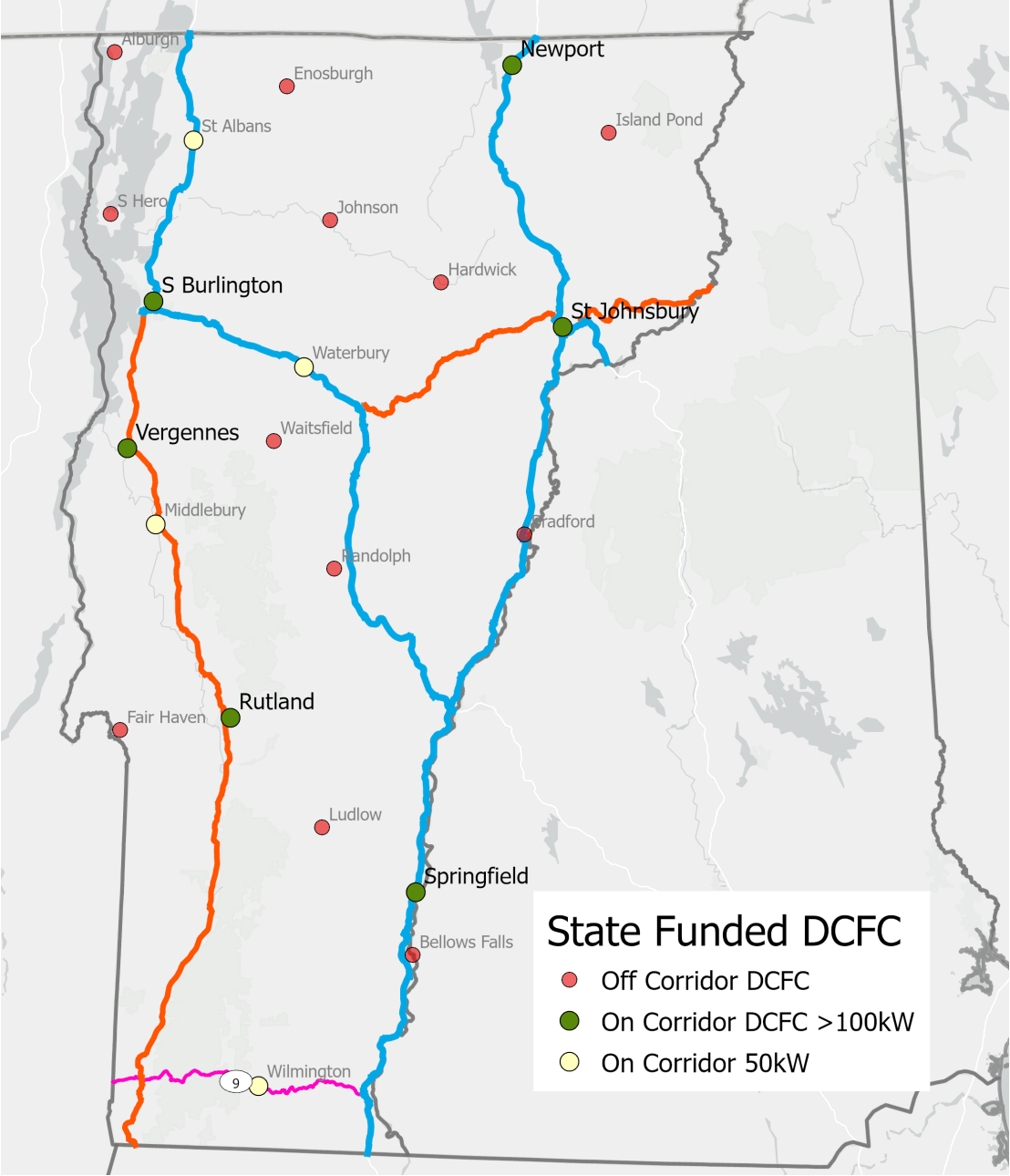
- US-2: Between Danville and VT/NH border
- US-7: Between Bennington and VT/MA border



# EVSE Network Coverage

## FHWA Designation

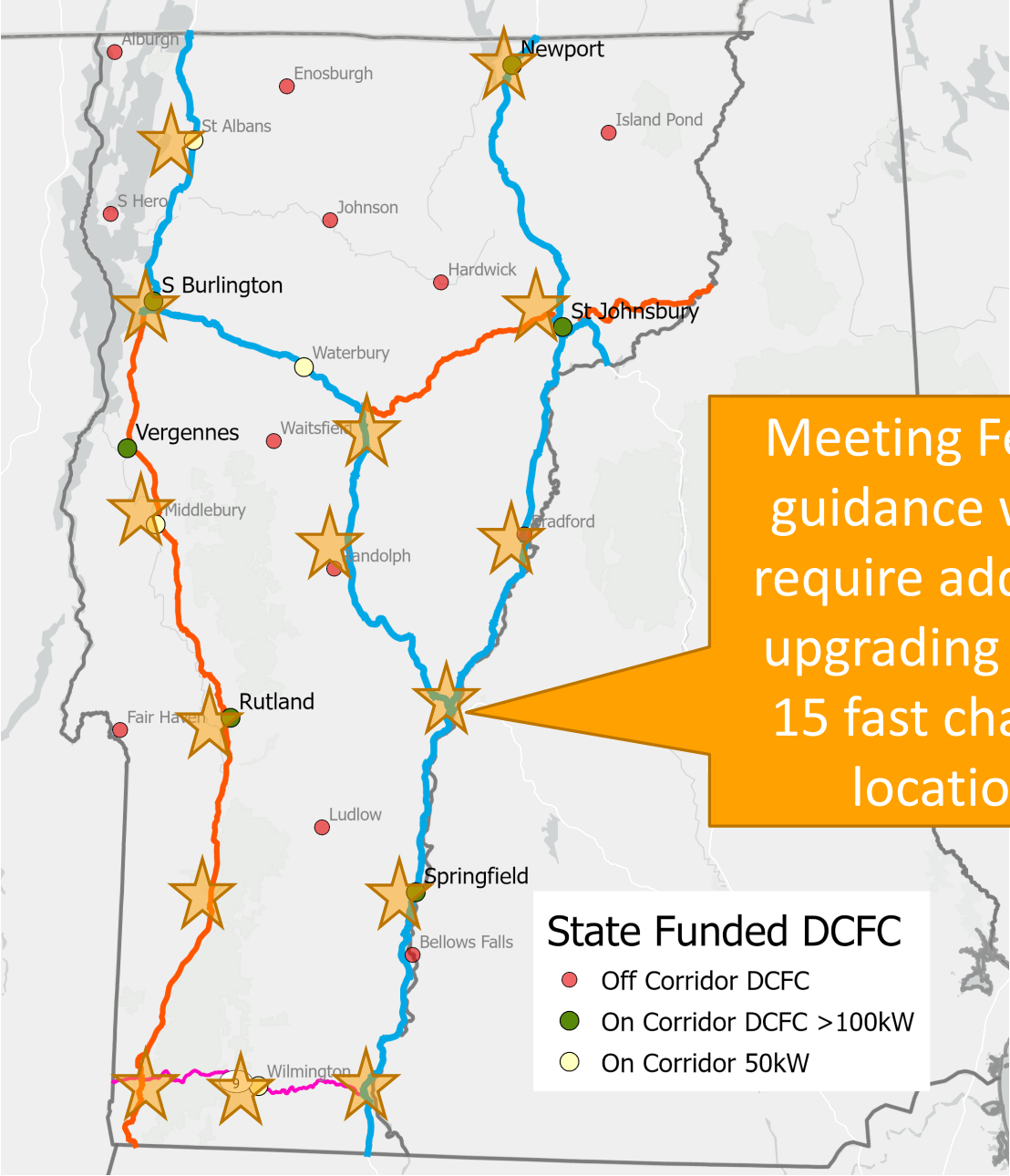
- No corridor segments appear ready to convert given current guidance
- Most, if not all, existing locations would be required to upgrade the number of ports and/or the capacity of the chargers
- Move from 5 to 1 mile distance from exits/intersections may result in multiple requests for exceptions, for lack of electrical service or local businesses



# EVSE Network Coverage

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# National Electric Vehicle Infrastructure Funding (IIJA)

## Apportionment for VT

Federal FY2022: **\$3,140,247**

Years 2-5: ~\$4.5 million

Total: \$21+ million

10% of annual funding to be set aside for “gap-filling” grants to rural areas

<b>Cost per Location for four 150kW DC Fast Chargers</b>	
Equipment	\$300,000
Labor	\$47,040
Materials	\$65,520
Other	\$688
<b>Total per location</b>	<b>\$413,248</b>

Total for 15 corridor locations is about **\$6.2 million**



# NEVI Eligible Project Costs

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- EVSE installation costs to include renewable energy and battery storage solutions, and allows for existing facilities to be upgraded
- Operating assistance for 5 years only when needed to expand to rural, underserved areas with low demand
- Development phase activities—planning, forecasting, permitting and design work, community outreach and participation, mapping activities—forecasting EV ownership, future public transit needs, etc
- Data sharing

# Projected Charging Needs for 2025

To support 6,585 PEVs in VT:

- 330 Workplace Level 2 Plugs
- 262 Public Level 2 Plugs
- 69 Public DC Fast Charging Plugs

Vermont currently has:

- 714 Public Level 2 Plugs
- 76 Public DC Fast Charging Plugs, with more in progress

To support 27,000 PEVs in VT by 2025:

- At least another 100 Level 2 plugs
- At least another 125 DCFC plugs in ~32 locations

## Your Results

In Vermont, to support 27,000 plug-in electric vehicles you would need:

**1,173** Workplace Level 2 Charging Plugs

**880** Public Level 2 Charging Plugs

*There are currently 714 plugs with an average of 2.5 plugs per charging station per the Department of Energy's [Alternative Fuels Data Center Station Locator](#).*

**220** Public DC Fast Charging Plugs

*There are currently 76 plugs with an average of 2.3 plugs per charging station per the Department of Energy's [Alternative Fuels Data Center Station Locator](#).*

## Where Do I Start?

Planners may want to prioritize installation of fast charging infrastructure above Level 2 charging.

**Build DC Fast First:** Establishing fast charging networks that enable long-distance travel, serve as charging safety nets, and provide charging for drivers without home charging is critical to support all-electric vehicles that have no other alternative for quickly extending their driving range.

**Build Level 2 Second:** EVI-Pro typically simulates the majority of Level 2 charging demand coming from plug-in hybrid electric vehicles, which have the ability to use gasoline as necessary for quickly extending driving range.

Credit: Alternative Fuels Data Center, [EVI Pro-lite](#)

## Change Assumptions

Plug-in Electric Vehicles (as of 2016): 1,400

Light Duty Vehicles (as of 2016): 551,900

Number of vehicles to support

Vehicle Mix		
Plug-in Hybrids 20-mile electric range	<input type="text" value="15"/>	%
Plug-in Hybrids 50-mile electric range	<input type="text" value="35"/>	%
All-Electric Vehicles 100-mile electric range	<input type="text" value="15"/>	%
All-Electric Vehicles 250-mile electric range	<input type="text" value="35"/>	%
<b>Total</b>	<b>100%</b>	

How much support do you want to provide for plug-in hybrid electric vehicles (PHEVs)?

- Full Support**  
*Most PHEV drivers wouldn't need to use gasoline on a typical day.*
- Partial Support**  
*Calculate using half of full support assumption.*
- Do not count PHEVs in charging demand estimates.**

Percent of drivers with access to home charging  %

**Recalculate**

# NEVI Project Considerations

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- Goal of projects to be completed no later than 6 months from procurement
- Reliability of greater than 97% at station level, mitigate adverse impacts to the grid, maintain reasonable cost of charging, minimize demand charges
- Design should consider accessibility, fire protection/traffic safety, distributed energy resources, future-proofing
- States to work to streamline permitting
- States to work with utilities, PSD and PUC to streamline planning and approval of grid connections for EV charging projects
- States to consider locations with accessible restrooms, lighting, travel centers, food, convenience stores, small businesses, ADA
- Identify gaps—rural, underserved, disadvantaged communities, tribal areas for Justice 40

# Statewide EV Charging Plan

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- Different use cases and interconnections: residential, workplace, highways
- Trends, projections, goals for EV adoption in Vermont, current and future requirements
- Funding sources and EVSE policy—federal, state, local, utility
- Strategies from other states and places to increase charging availability
- Financial modeling for EV charging deployment—how many, over what time period, for what cost? How can public investments encourage private investment in EVSE network, and by when?
- Fleet (including medium and heavy-duty) considerations
- Infrastructure Resiliency and Emergency Response
- EVSE siting prioritization and mapping analyses of gaps/need for redundancy



# Public Engagement

States should consult with entities including:

Metropolitan Planning Organizations and Regional Transportation Planning Organizations; Counties and cities, including coordination with existing EV charging programs; State departments of energy, including Clean Cities Coalitions; State environmental protection agencies; State economic development agencies; State public utility commissions; State weights and measurement agencies; State and Federal land management agencies; State manufacturing extension partnerships; State department of motor vehicles; State department of commercial motor vehicles; Responsible emergency/disaster preparedness functions in the State; Tribal governments; Electric utilities and transmission and distribution owners and regulators; Electric vehicle service providers; Public transportation agencies; Port and freight authorities; Community-based organizations, environmental justice and environmental protection organizations, small business associations, Chambers of Commerce; labor organizations, and private entities; and Other appropriate parties...And Private sector EV charging infrastructure owners and network operators; Vehicle manufacturers; Unions and other labor organizations; Real estate industry groups; Minority- and women-based organizations; Freight industry groups; EV industry organizations and EV advocacy groups, as applicable; Gas station owners and operators; Taxicab commissions and ridesharing companies; Emergency management and public safety agencies; and Other appropriate parties

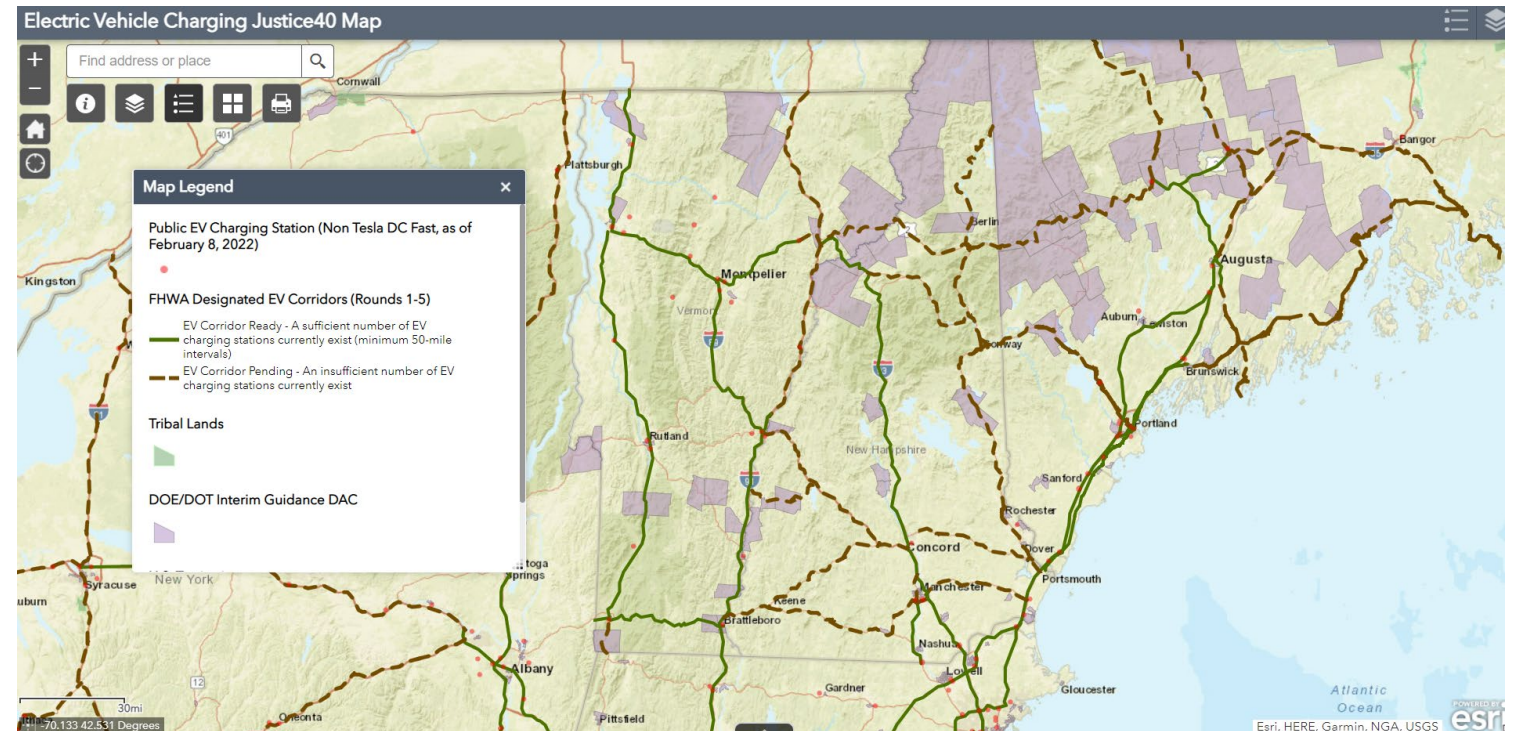
# FHWA Required State Plan Elements

- State Agency coordination
- Public engagement
- Plan vision and goals
- Contracting
- Existing and future conditions
- Implementation
- Civil Rights
- Equity Considerations
- Labor and workforce considerations
- Cybersecurity
- Program Evaluation

# EVSE Network Coverage

- How can competing aims—building fast charging network along designated interstate corridors and prioritizing Justice40 areas (rural, underserved, disadvantaged areas) be reconciled?
- How can fast charging facilities actually benefit the communities in which they are located?
- How are public investments planned to complement rather than compete with existing infrastructure?

# Justice40 Mapping



# Contacts

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