Northeast Regional Electric Vehicle Corridor Planning

New Hampshire EV Charging Stations Infrastructure Commission

October 2018

Matthew Goetz
Electric Vehicle Program Manager
Georgetown Climate Center

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Presentation Agenda

- Introduction to Georgetown Climate Center and the Transportation & Climate Initiative
- Challenges and importance of EV fast charging
- Electric Vehicle corridor analysis and regional planning
- Questions and discussion

Georgetown Climate Center:

A Resource for State and Federal Climate Policy

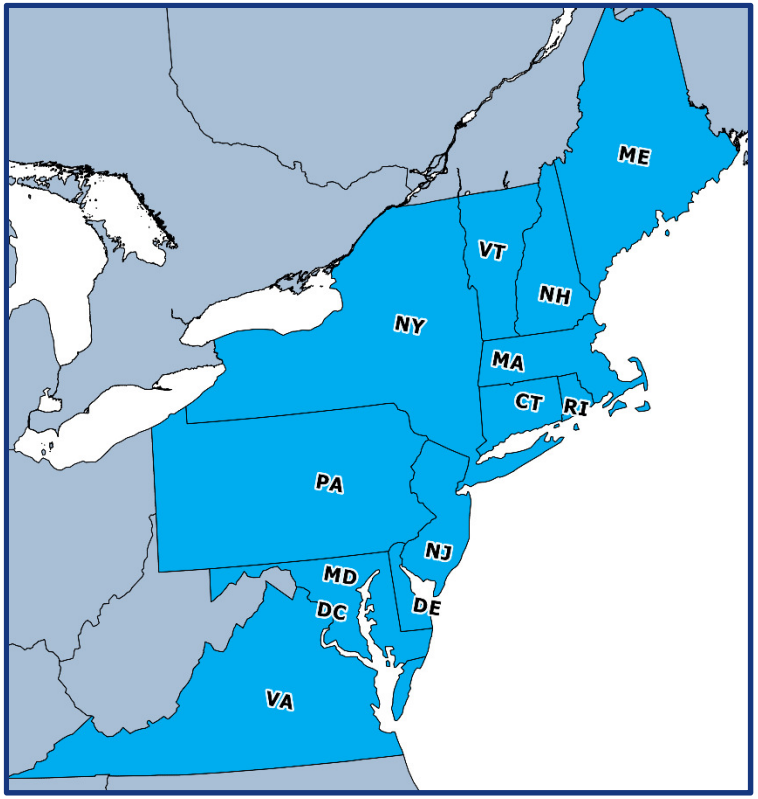
- Launched in 2009 as a resource to states
- Works at the nexus of federal-state policies
- Supports states and other stakeholders through research, facilitation and convening

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

TRANSPORTATION & CLIMATE INITIATIVE

Of the Northeast and Mid-Atlantic States

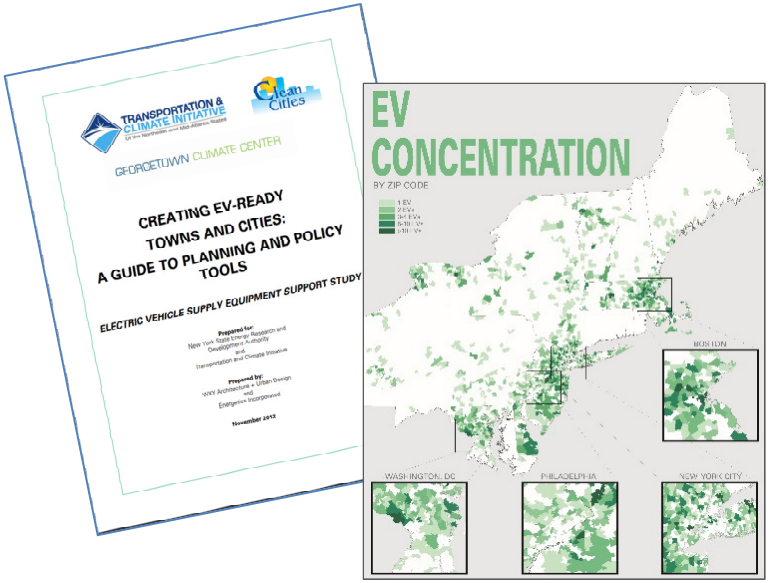
- 12 Northeast and mid-Atlantic states and D.C.
- State energy, environment, and transportation agencies
- Clean vehicles & fuels, regional emissions transportation policies, sustainable communities, freight, and resilience

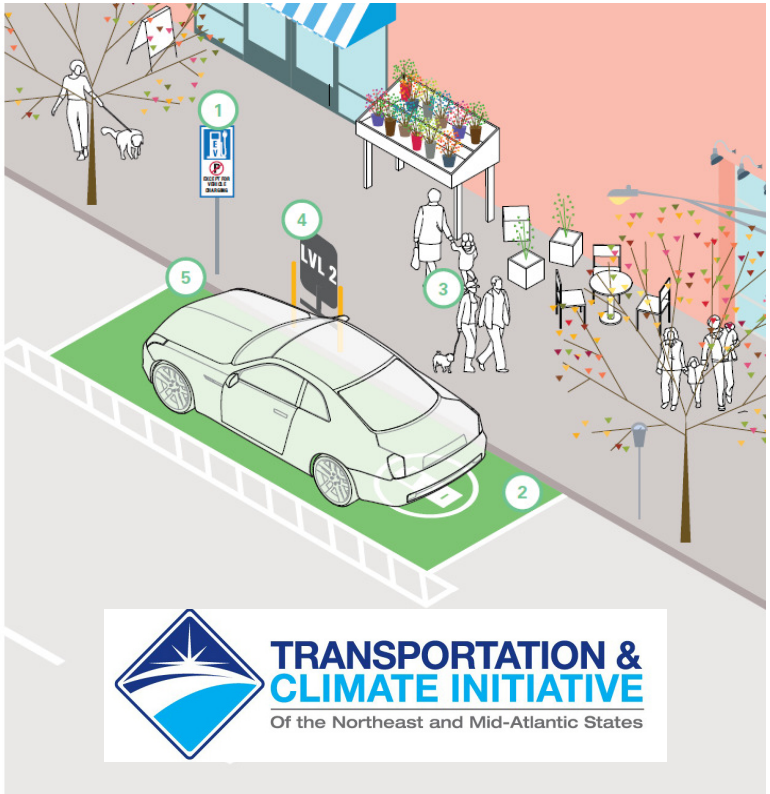


GEORGETOWN CLIMATE CENTER

A Leading Resource for State and Federal Policy

Regional Coordination on Electric Vehicle Charging Infrastructure





NORTHEAST ELECTRIC VEHICLE NETWORK

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Opportunity for EV Corridors to Accelerate Widespread Deployment

- Inflection point for vehicles and charging technology
- Improve EV driver convenience and public awareness
- Opportunity to promote tourism and economic growth
- Access to charging for those without home parking

New Vehicles & EV Fast Charging Technology

- Long-range electric vehicles becoming more affordable
- Fast charging technology makes long-distance travel more convenient

Image credit (Chevy Bolt): Dave Pinter, CC BY-NC-ND 2.0
Image credit (Tesla Model 3): Steve Jurvetson, CC BY 2.0
Image credit (charger): eVgo

EV Corridors Enable Tourism and Economic Development

- Canadian Provinces and Northeast States have set bold EV adoption goals
  - Quebec – 100,000 EVs by 2020 1,000,000 by 2030
  - Massachusetts – 300,000 EVs by 2025

- More drivers on the roads will look for fast charging availability
- Corridors enable vacation travelers along with local residents

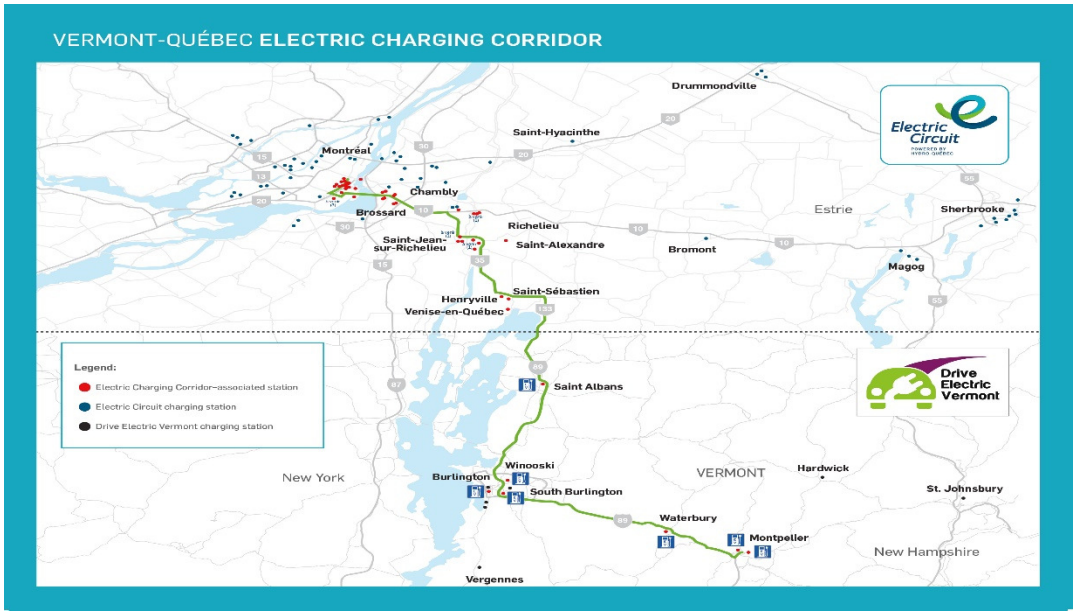
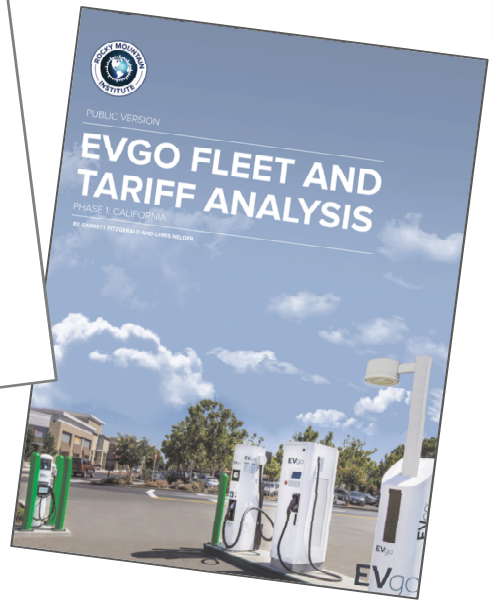


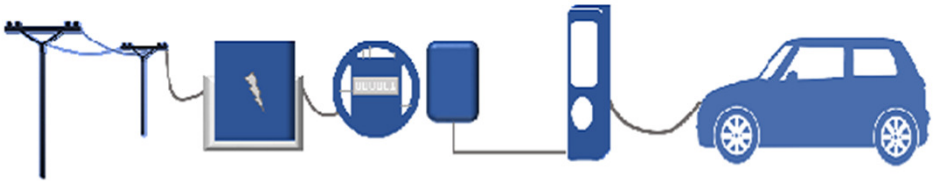
Image credit (Circuit Electrique): Hydro Quebec

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Challenges of EV Corridor Development

- Significant additional fast charging infrastructure investment is needed
- Poor business case for private investment in DC Fast Charging
- Utility/grid infrastructure and rate design challenges





GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Investments in EV Corridor Charging by Utilities, Automakers, and States

Image credit (Circuit Electrique): Hydro Quebec
Image credit (Tesla Superchargers): Tesla
Image credit: Oregon Dept of Transportation, CC BY 2.0

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Volkswagen Settlement
Electrify America Corridor Investment

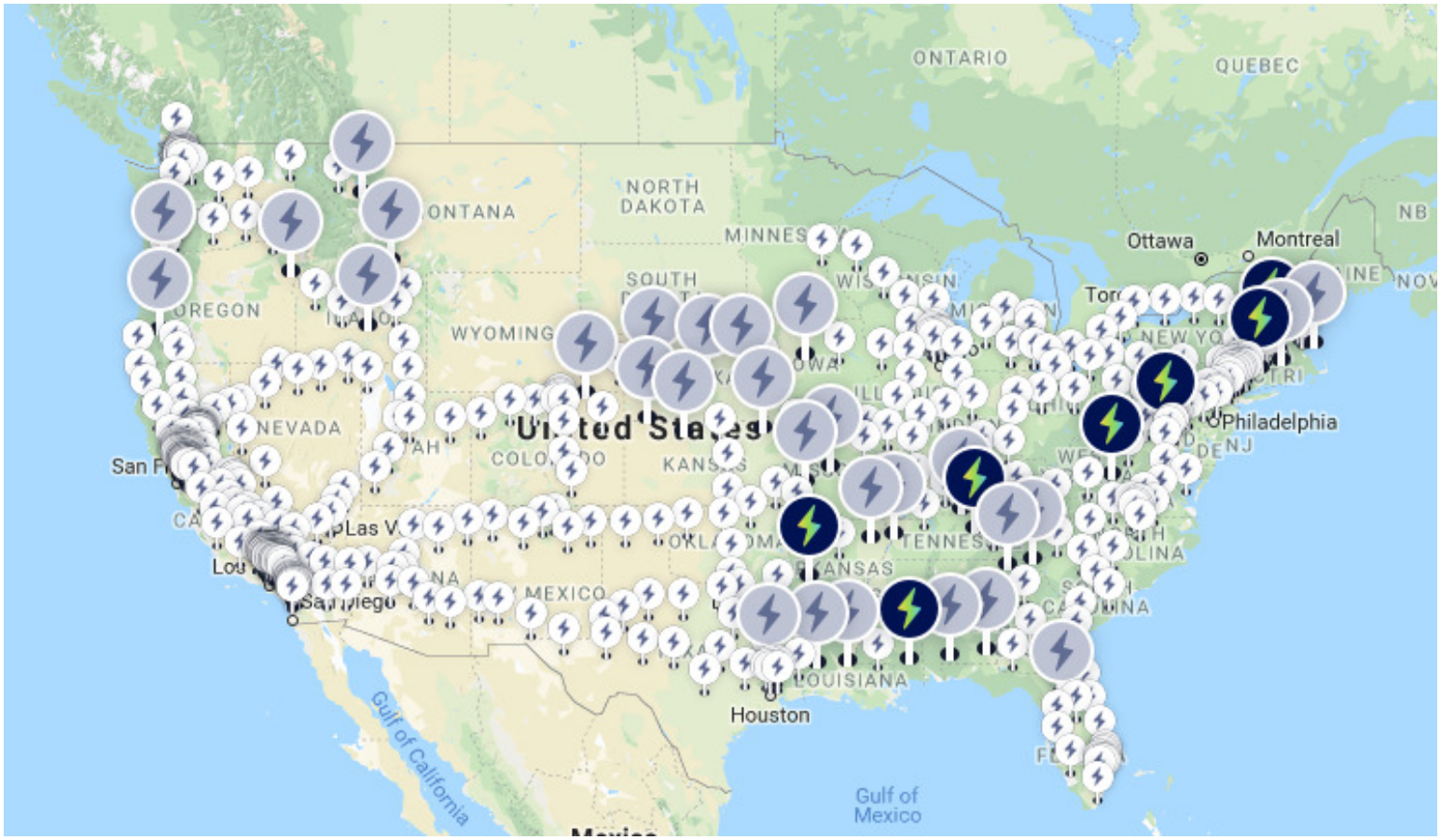


Image credit: Electrify America, reproduced with permission

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Utility Investment in EV Charging Infrastructure

EVERSOURCE

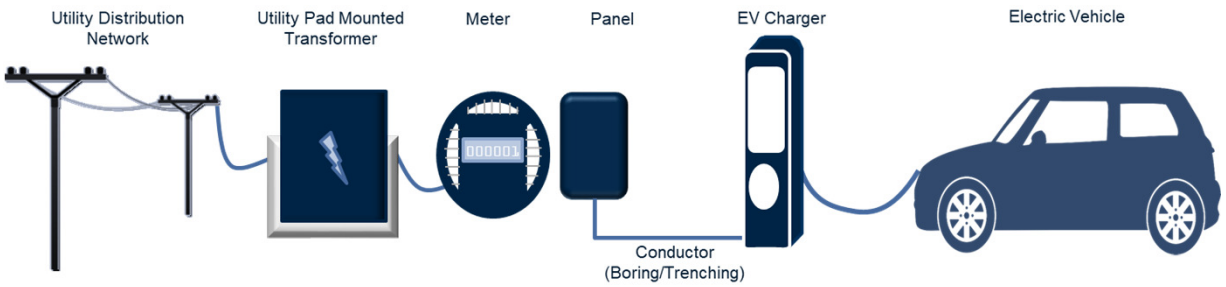
BGE

pepco
An Exelon Company

nationalgrid

PSEG

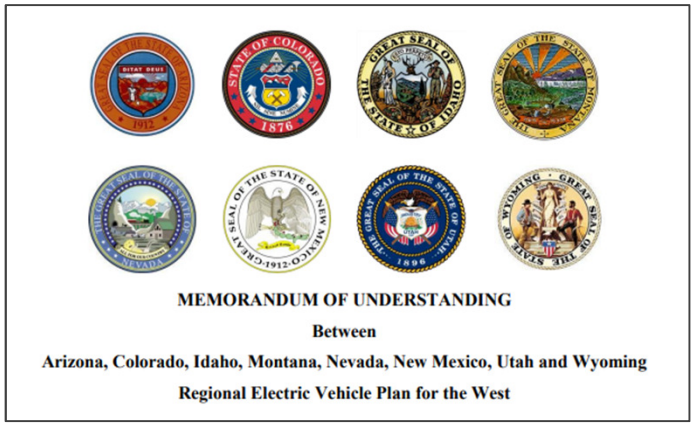
NY Power Authority



GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Multi-state Collaboration on Regional EV Corridor Planning

TRANSPORTATION & CLIMATE INITIATIVE
Of the Northeast and Mid-Atlantic States



MEMORANDUM OF UNDERSTANDING

Between

Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming

Regional Electric Vehicle Plan for the West

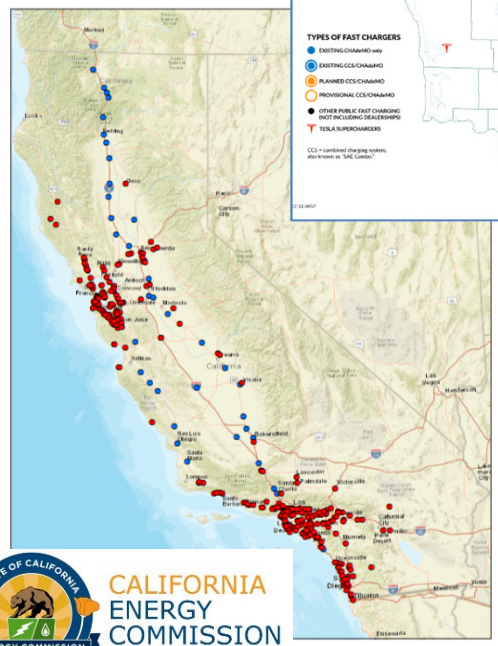
WEST COAST ELECTRIC HIGHWAY

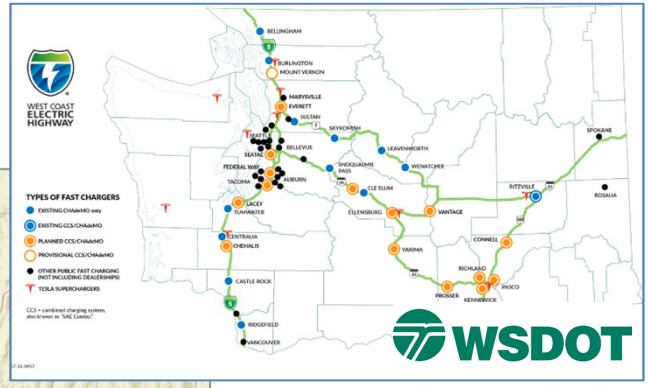
GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Image credit (EV charger plugs): Kecko - CC BY 2.0

Regional Corridor Planning: West Coast Electric Highway

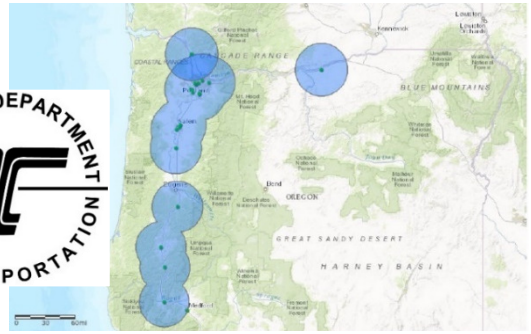
WEST COAST ELECTRIC HIGHWAY





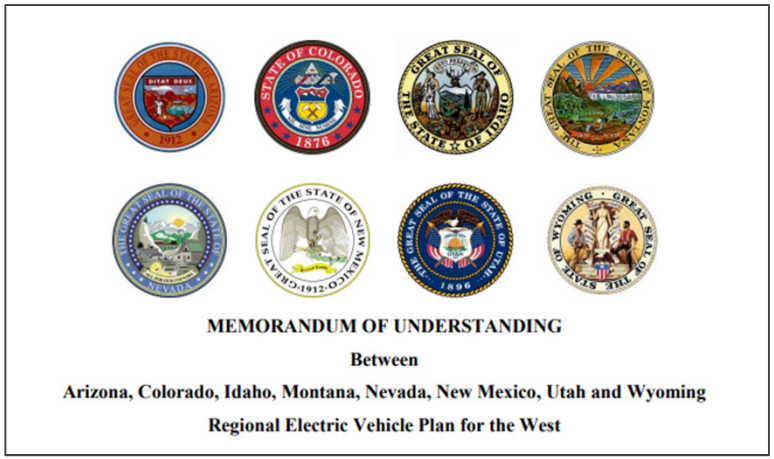
CALIFORNIA ENERGY COMMISSION

OREGON DEPARTMENT OF TRANSPORTATION



GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Regional Electric Vehicle Plan for the West

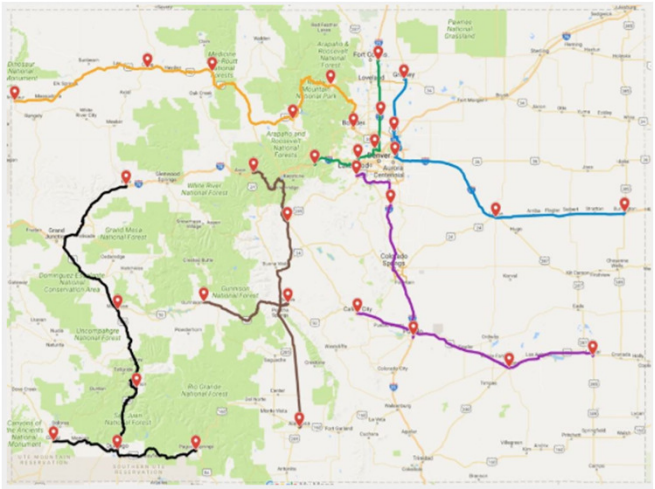


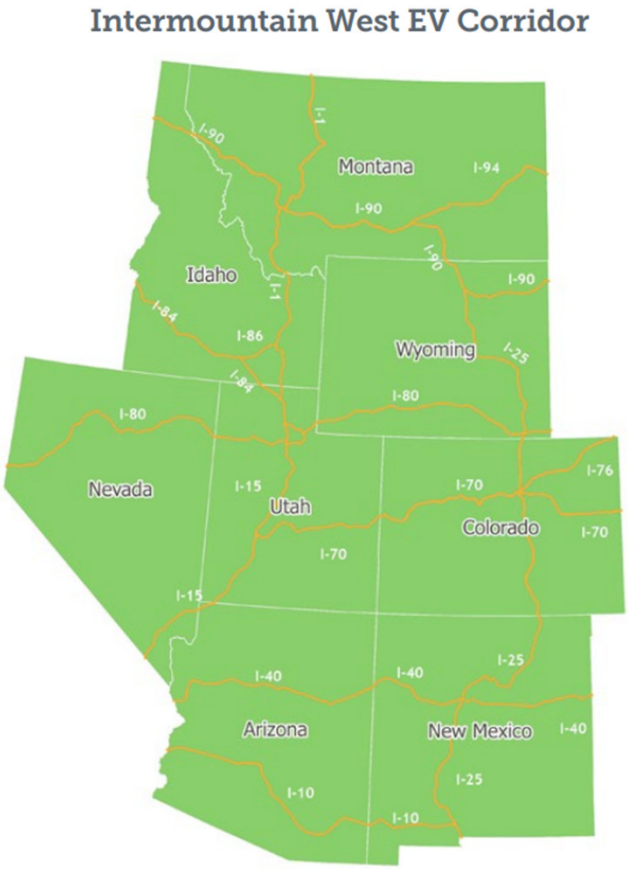
MEMORANDUM OF UNDERSTANDING

Between

Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming

Regional Electric Vehicle Plan for the West

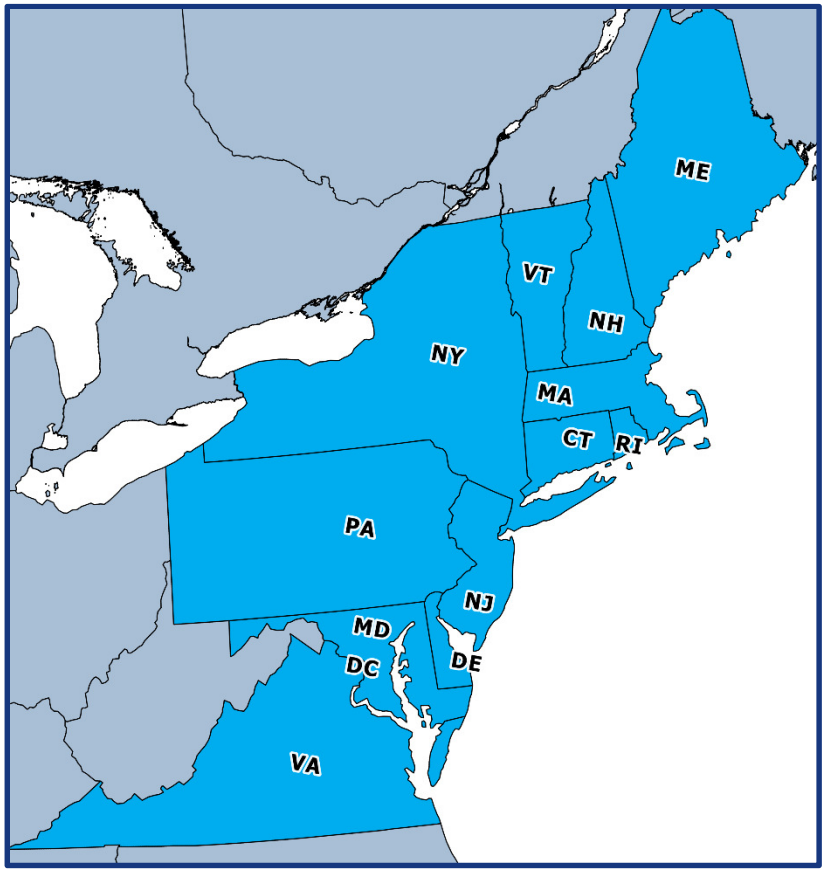




GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Northeast Regional Coordination on Electric Vehicle Corridors

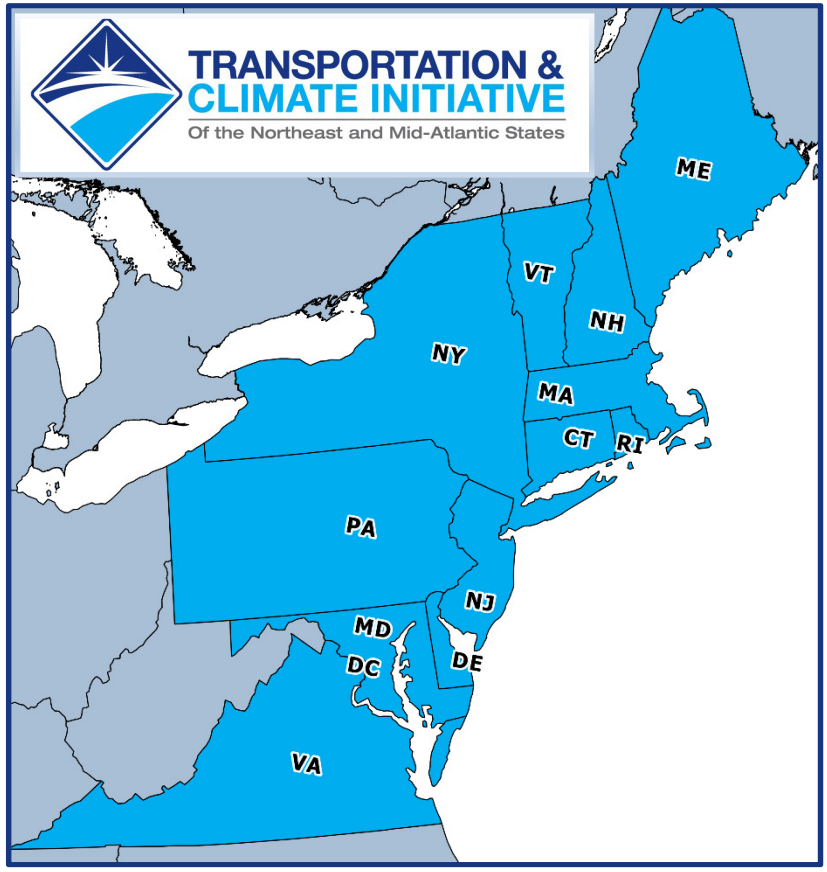
- Close geographic and economic connections
- Create a consistent and reliable experience for drivers
- Opportunity to collaboration to promote efficient build-out of EV charging network



GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Transportation and Climate Initiative
Regional EV Corridor Planning & Analysis

- Analysis to inform EV Fast Charging infrastructure planning along corridors
- Share best practices and technical expertise
- Engage with other jurisdictions and key stakeholders
- Identify opportunities for regional planning and coordination



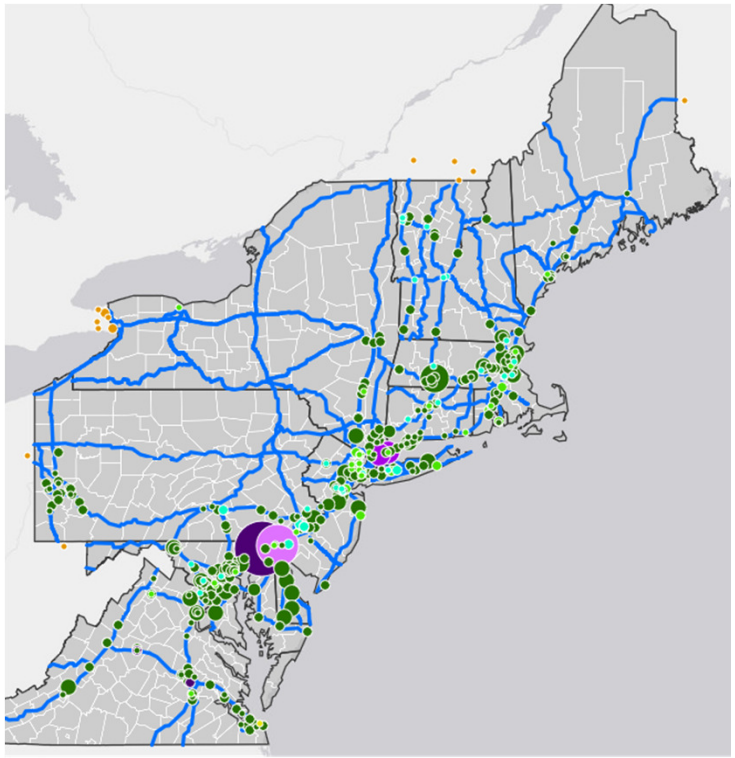
GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

TCI Regional EV Corridor Analysis

- **Scope of analysis**:
  DC Fast Charging (DCFC) along designated federal corridors plus additional state priority corridors

- **Charging Stations:**
  Public, non-proprietary fast chargers within 5 miles of freeway corridors

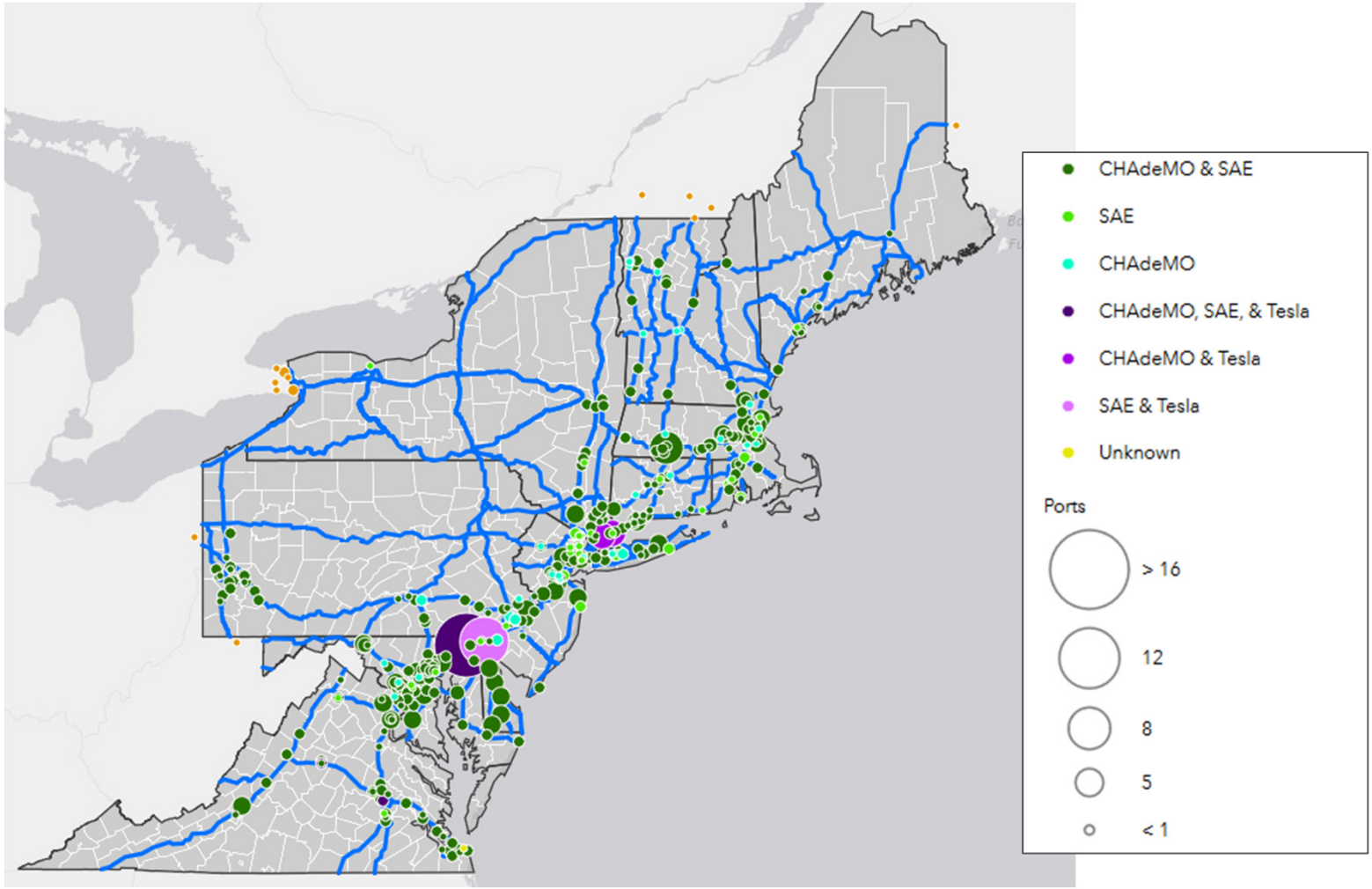
- **Interstate Exits:**
  Focused on interstate exits and other key intersections as potential sites for corridor fast charging



MJB & A

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

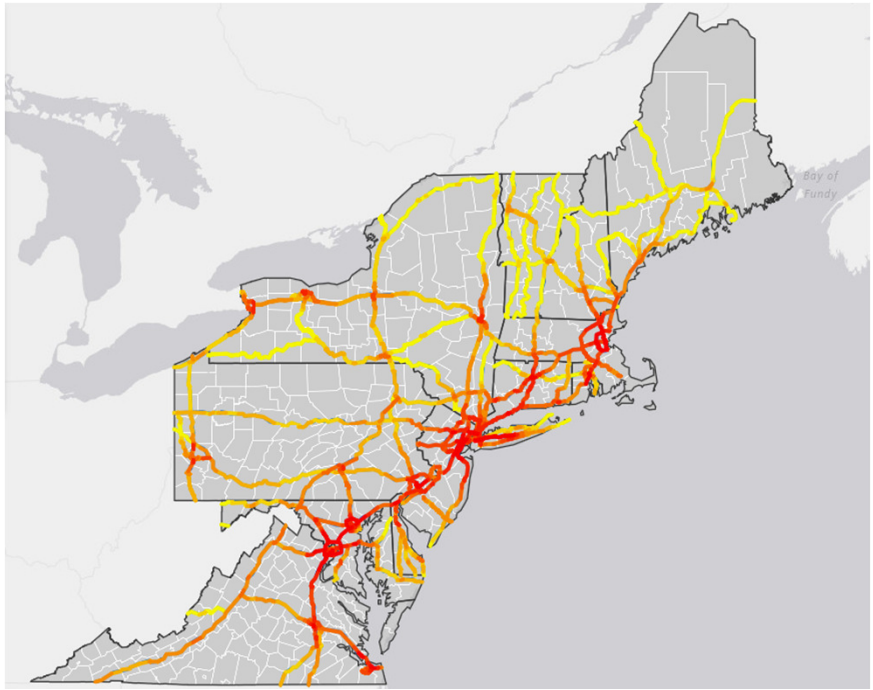
Existing Public Fast Charging Along Corridors



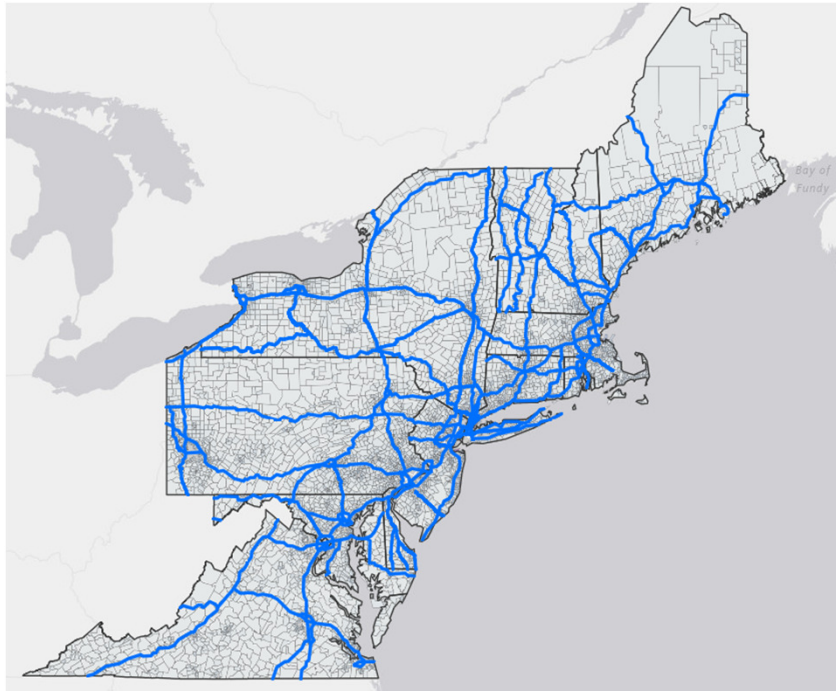
MJB & A

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

TCI Regional EV Corridor Analysis Metrics



Traffic Volume (AADT)

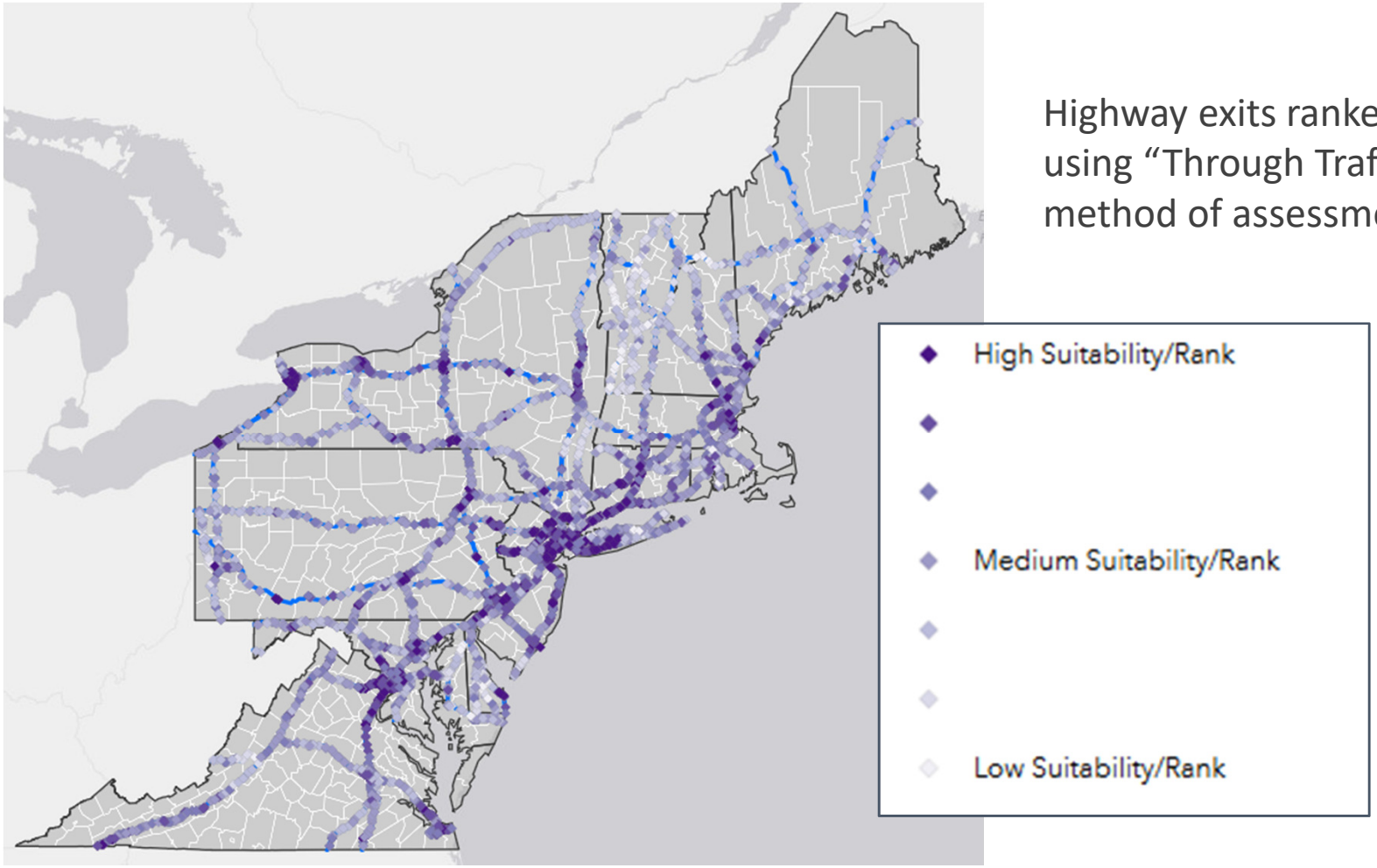


Population Density (census tract)

MJB & A

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

TCI Corridor Analysis Results – Demand

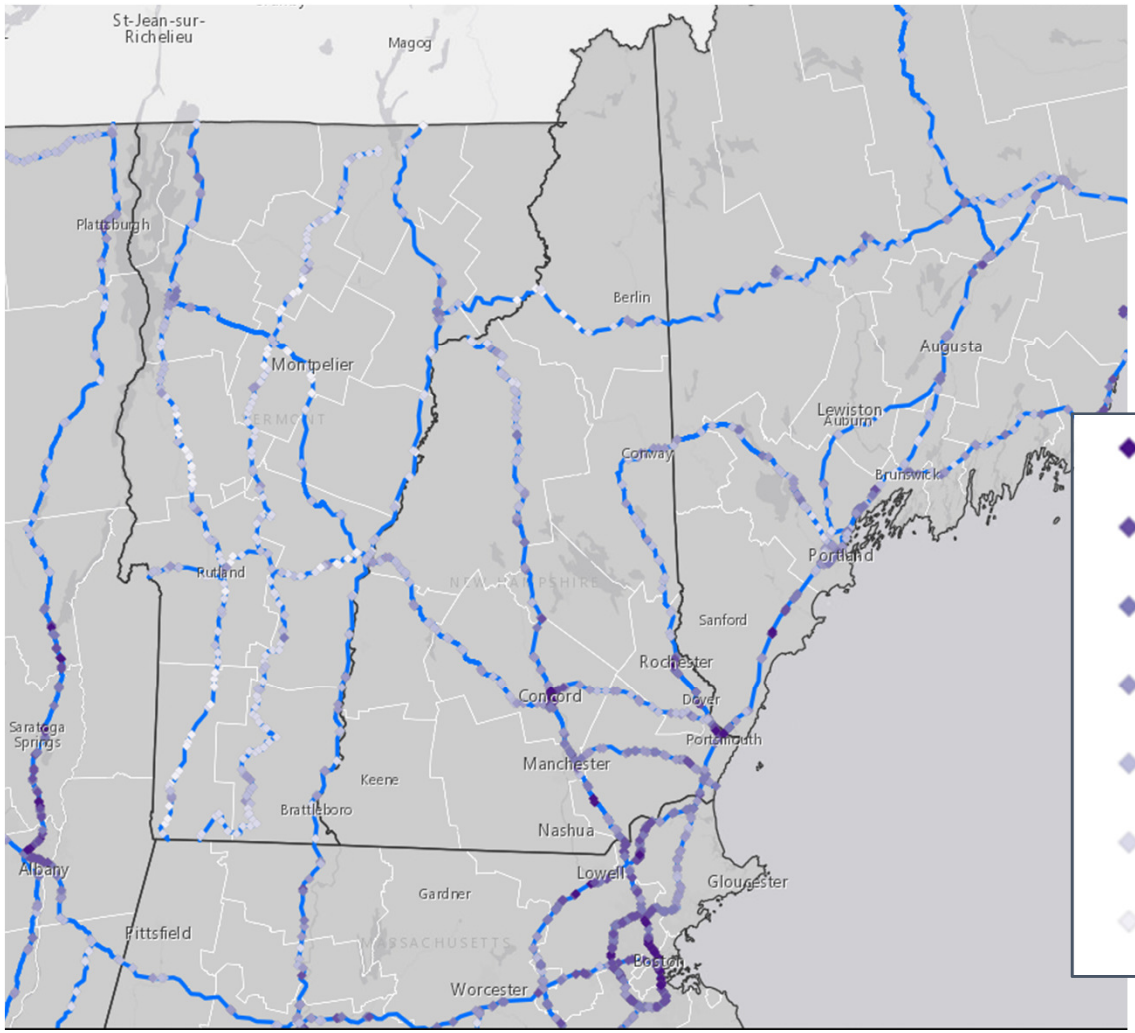


Highway exits ranked using "Through Traffic" method of assessment

MJB & A

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

TCI Corridor Analysis Results – Demand



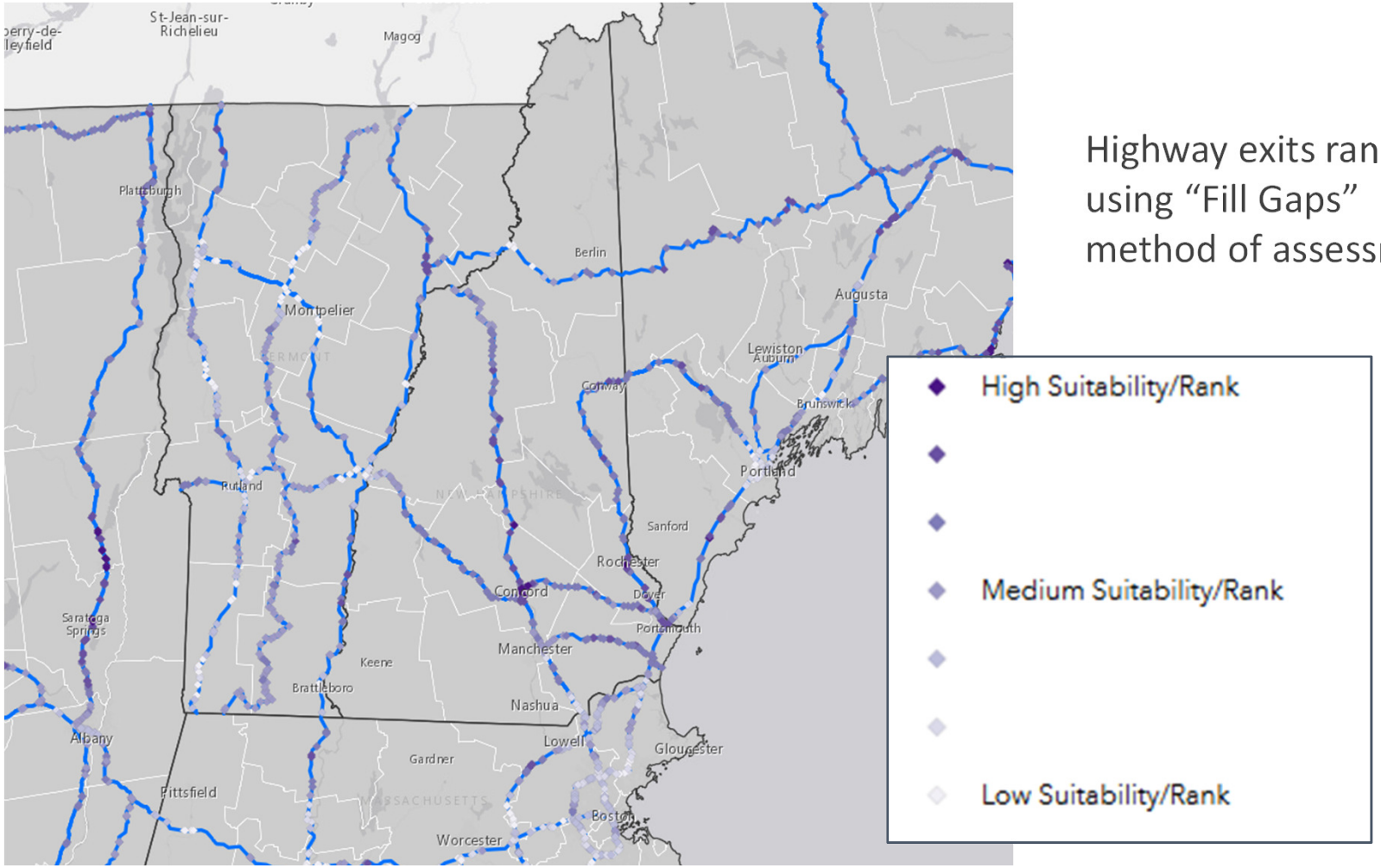
Highway exits ranked using "Through Traffic" method of assessment

- High Suitability/Rank
- Medium Suitability/Rank
- Low Suitability/Rank

MJB & A

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

TCI Corridor Analysis Results – 'Gaps'



Highway exits ranked using "Fill Gaps" method of assessment

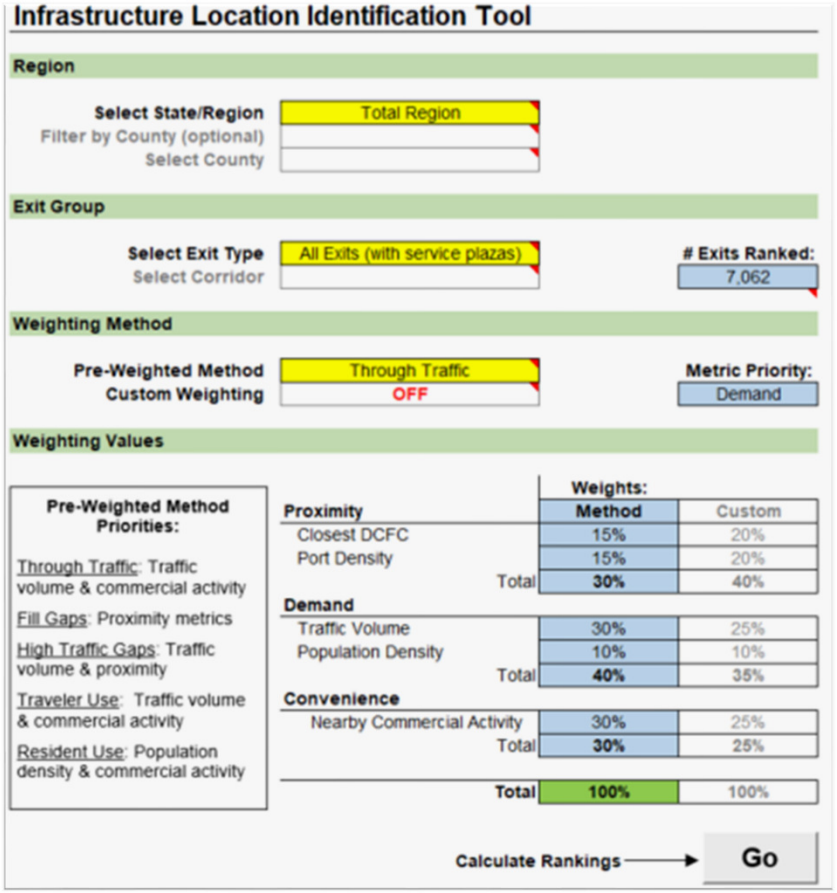
MJB & A

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Infrastructure Location Identification Tool

Identification Tool Options

- **Region:** compare exits for northeast region, state, or county
- **Exit Group:** Ability to filter to include/exclude service plazas and to specific corridor
- **Weighting method:** one of six preloaded methods or custom



Infrastructure Location Identification Tool

Region

Select State/Region	Total Region
Filter by County (optional)	
Select County	

Exit Group

Select Exit Type	All Exits (with service plazas)	# Exits Ranked:	7,062
Select Corridor			

Weighting Method

Pre-Weighted Method	Through Traffic	Metric Priority:	Demand
Custom Weighting	OFF		

Weighting Values

Pre-Weighted Method Priorities:

Through Traffic: Traffic volume & commercial activity

Fill Gaps: Proximity metrics

High Traffic Gaps: Traffic volume & proximity

Traveler Use: Traffic volume & commercial activity

Resident Use: Population density & commercial activity

	Weights: Method	Custom
Proximity		
Closest DCFC	15%	20%
Port Density	15%	20%
Total	30%	40%
Demand		
Traffic Volume	30%	25%
Population Density	10%	10%
Total	40%	35%
Convenience		
Nearby Commercial Activity	30%	25%
Total	30%	25%
Total	100%	100%

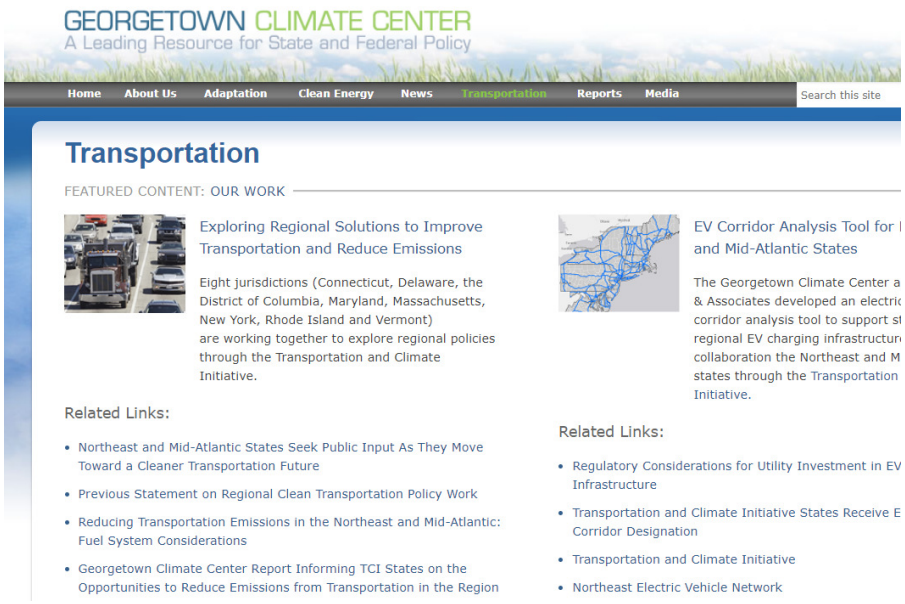
Calculate Rankings → Go

MJB & A

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

TCI EV Corridor Analysis Availability

Tools are available for free from M.J. Bradley & Associates
and Georgetown Climate Center websites



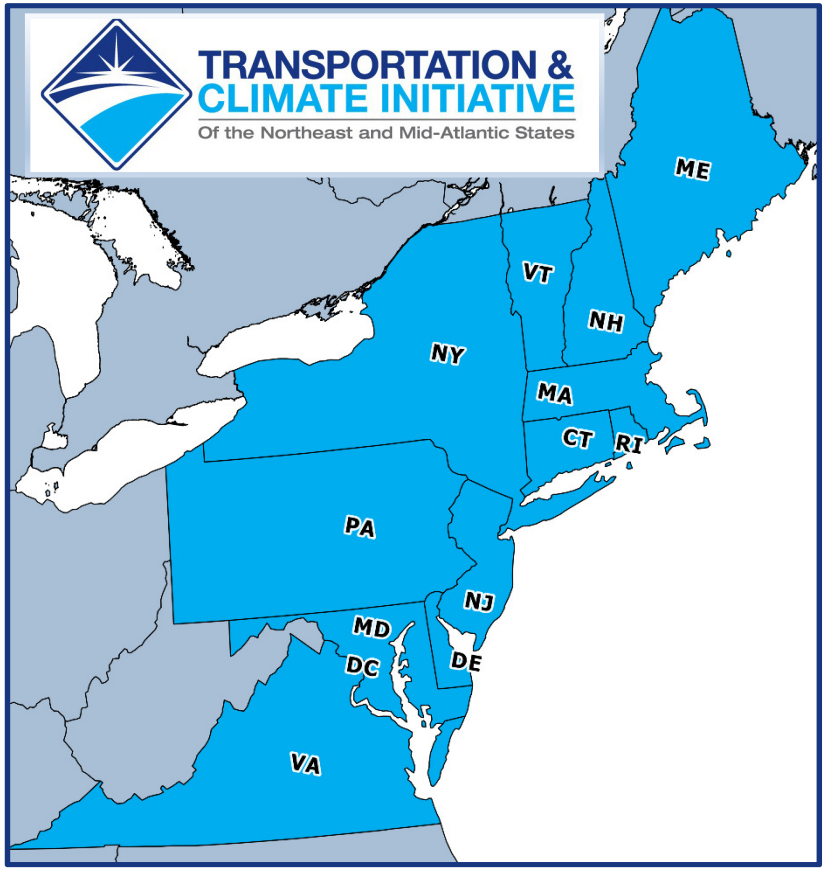
www.mjbradley.com

www.georgetownclimate.org

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Next Steps for Regional EV Corridor Planning

- Engagement with EV charging providers, electric utilities, state and local agencies
- Additional analysis and coordination to inform infrastructure planning
- Coordination on corridor signing



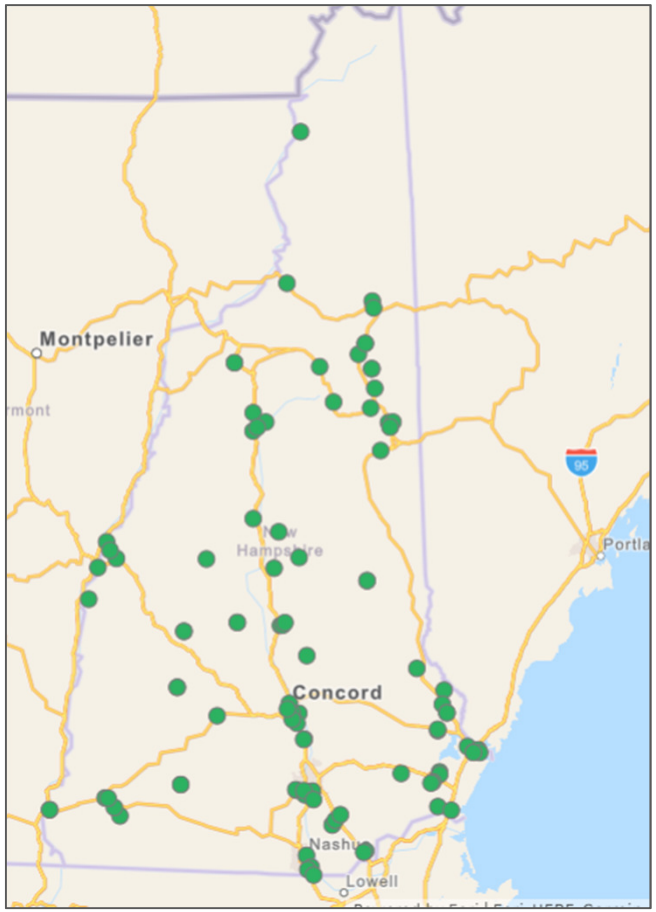
GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Questions and Discussion

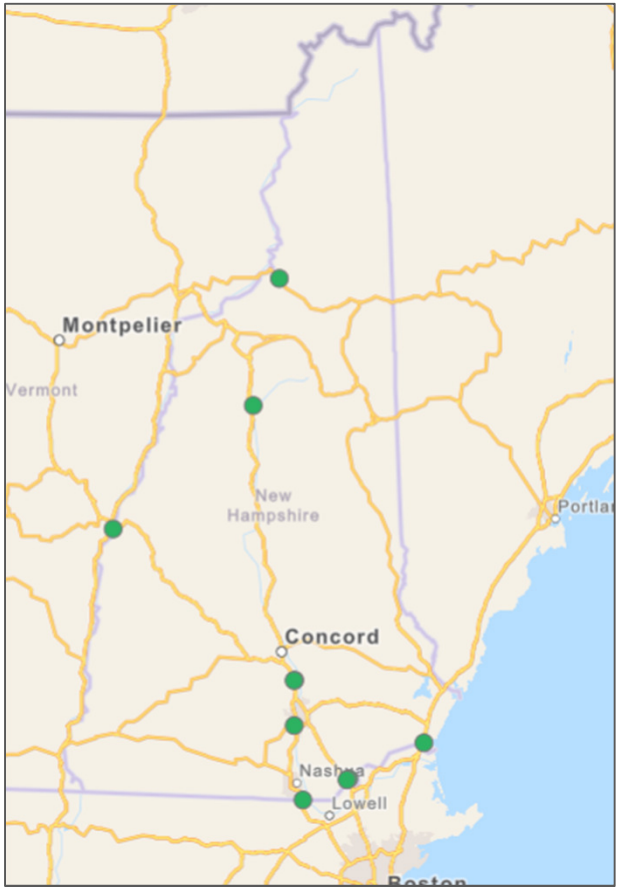
Matthew Goetz
Electric Vehicle Program Manager
Georgetown Climate Center
goetz@georgetown.edu

www.georgetownclimate.org

Appendix: New Hampshire EV Charging



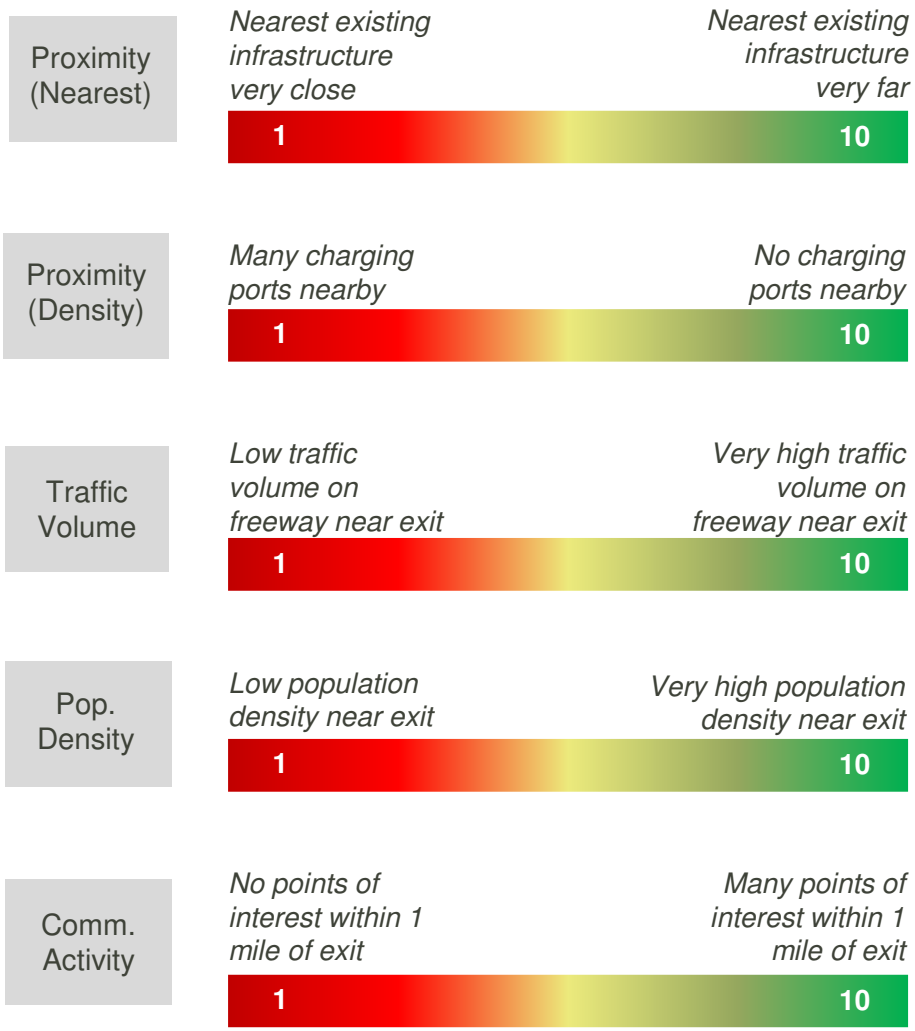
All charging stations (NH)



DC fast charging stations (NH)

Appendix: Regional Corridor Analysis Methodology

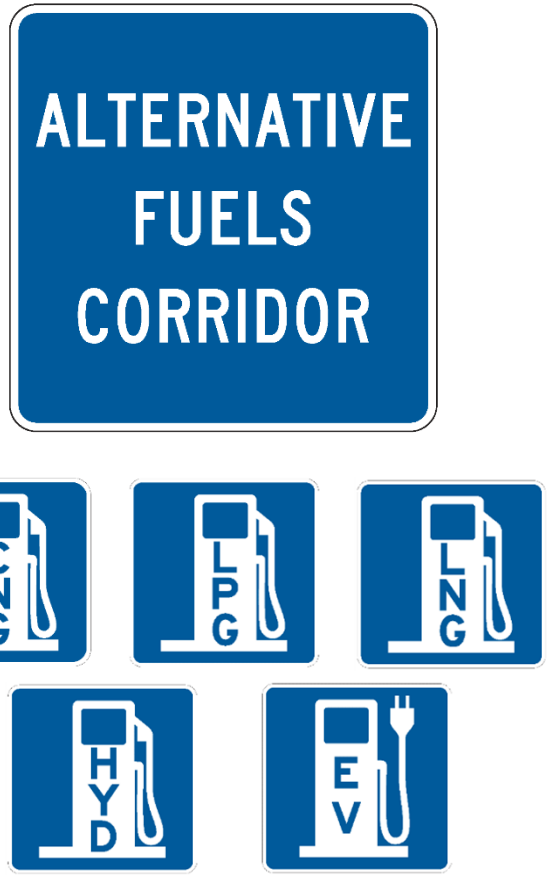
- Each exit is compared to all other selected exits within each metric
- Each exit is scored between 1 and 10 for each metric: an exit could be a 1 for population density (i.e., very low population) but a 10 for proximity (i.e., there are no existing DCFC nearby)
- Metrics are then combined through a range of ranking methods to assign each exit one cumulative score; all scores are then ranked
- Tools allow a user to adjust the weighting of metrics and design a ranking method that reflects personalized priorities



MJB & A

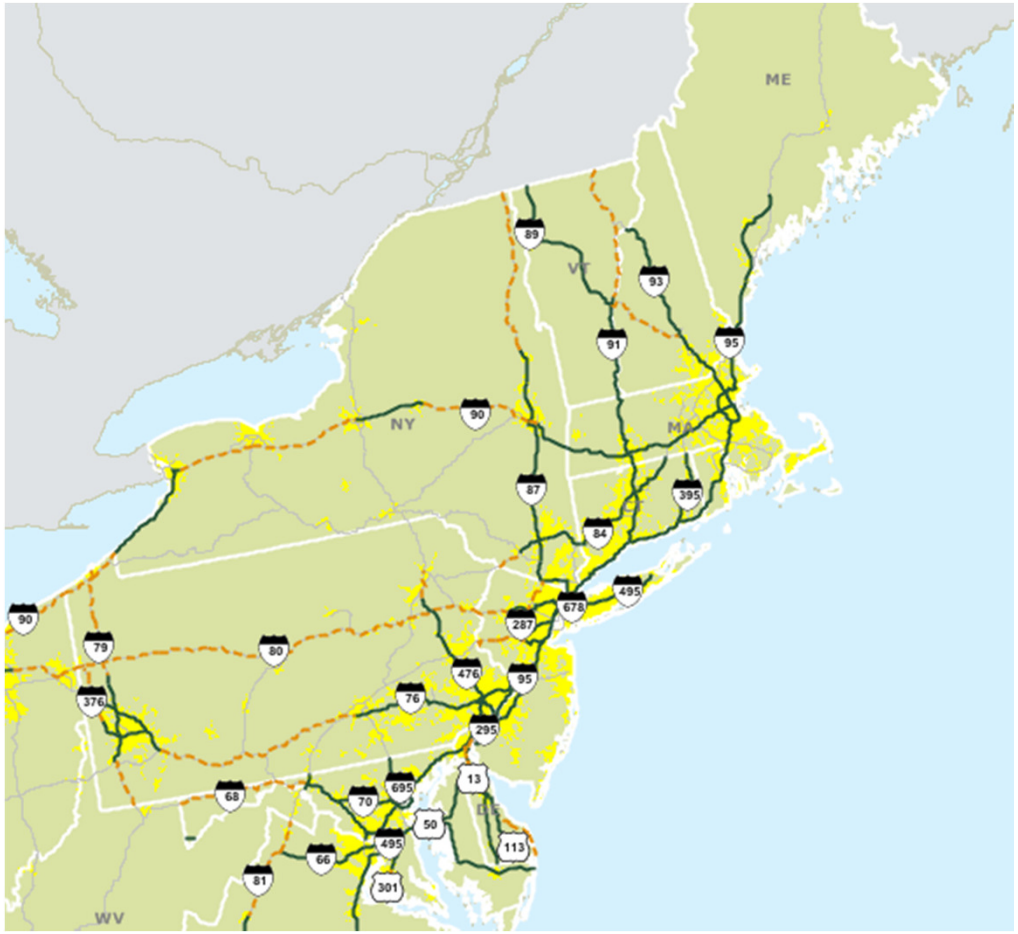
FAST Act Alternative Fuel Corridors Program

U.S. Department of Transportation
Federal Highway Administration



GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

Appendix: Federal EV Corridor Designations



Electric Vehicle Corridors

Signage-Ready

- Fast Charging Stations
- At least every 50 mi.
- <5 miles from highway
- Public stations

Signage-Pending

- Additional infrastructure needed to meet criteria