



Electric Vehicle Infrastructure Location Tool and Visualization Map

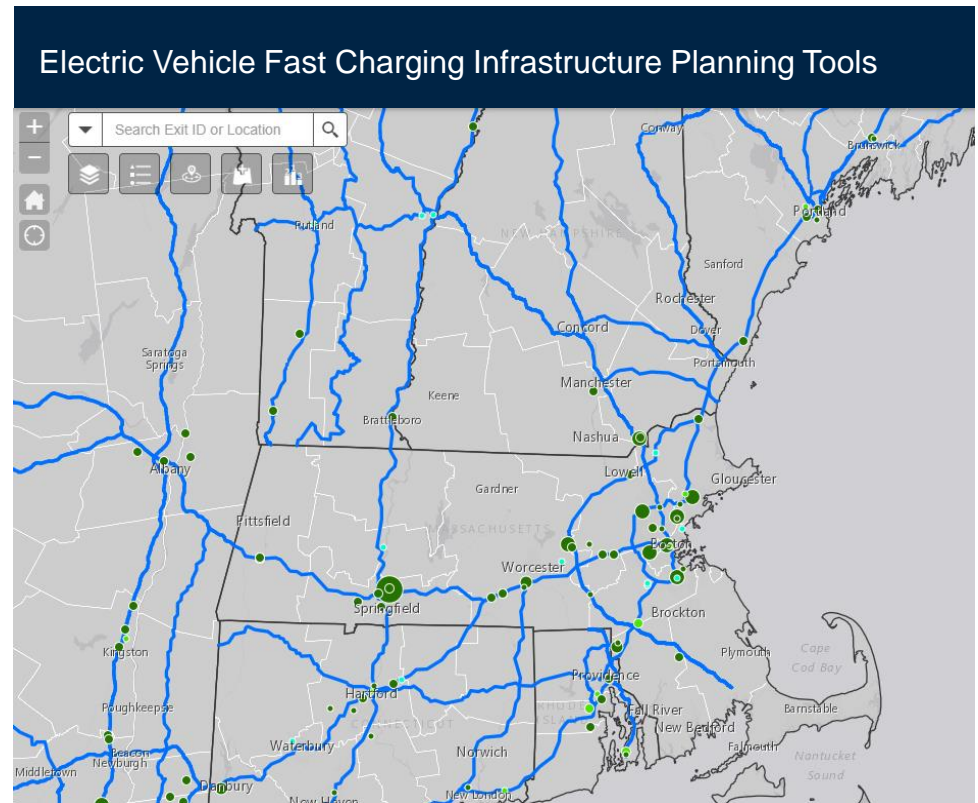
Version 2.0 Analysis Summary

July 17, 2018

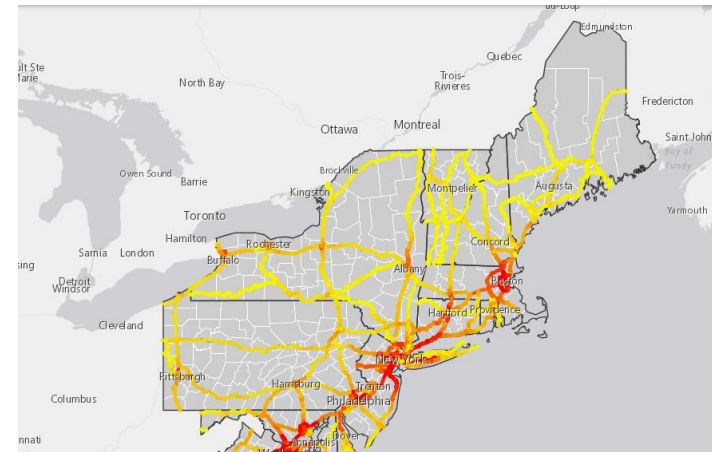
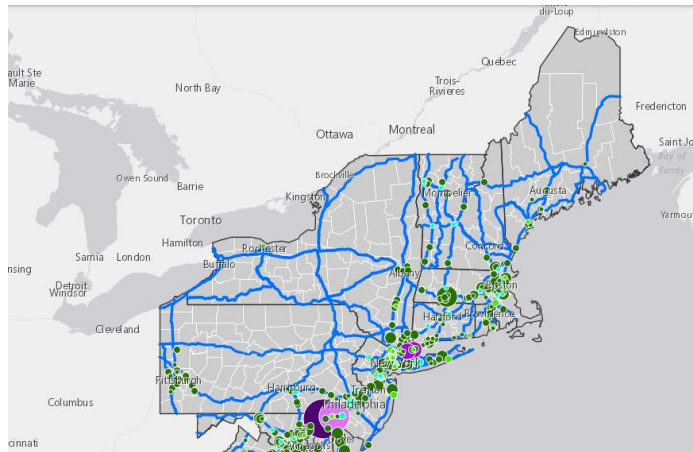
MJB & A

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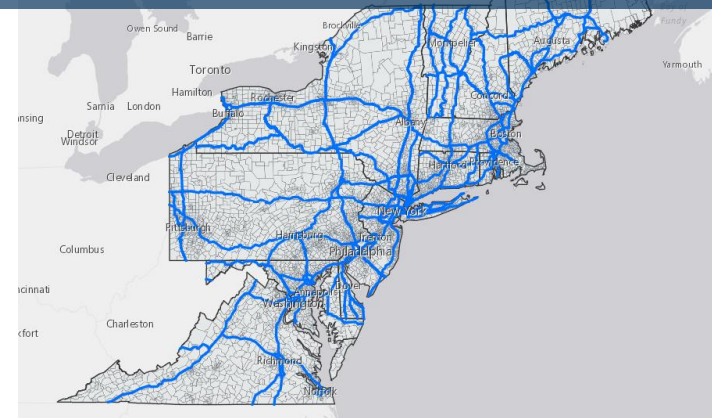
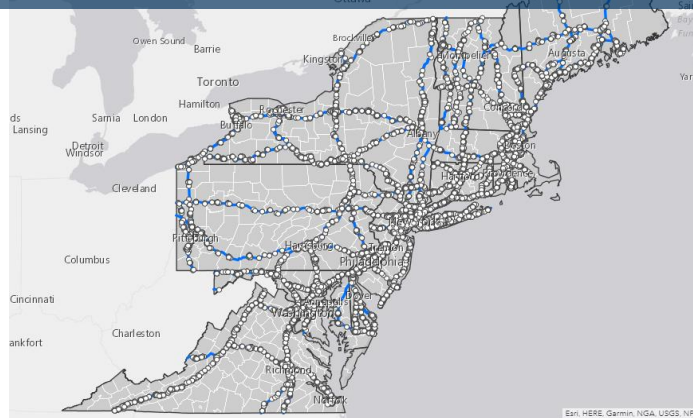
- Overview & Analysis Goals
- Methodology
- Possible Uses
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Analysis Objective



Support states and other stakeholders in assessing fast charging along transportation corridors and priority locations for charging stations



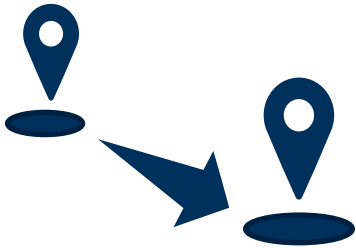
Key Analysis Parameters

MJB&A utilized a GIS platform to collect and organize data on over 9,000 miles of key PEV corridors in 12 states: the 11-state Transportation & Climate Initiative region (including D.C.) and Virginia

- Assessed DC Fast Charging (DCFC) opportunities along all the designated federal corridors plus additional state priority corridors
- For the existing network, included public, non-proprietary DCFC infrastructure within 5 miles of freeway corridors, extending into neighboring regions
- Focused on interstate exits and other key intersections as sites for corridor fast charging
- Worked with analysis region state participants to refine dataset, parameters, and metrics

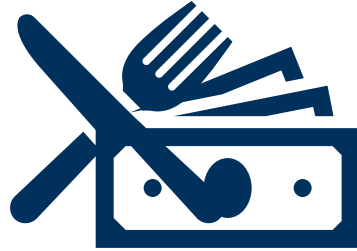


Inputs: Key Metrics



Proximity to Existing Charging

Distance to nearest DCFC station and density of existing stations



Commercial Activity

Number of restaurants, bars, and gas stations within 1 mile of each exit



Population

Population density of surrounding census tract

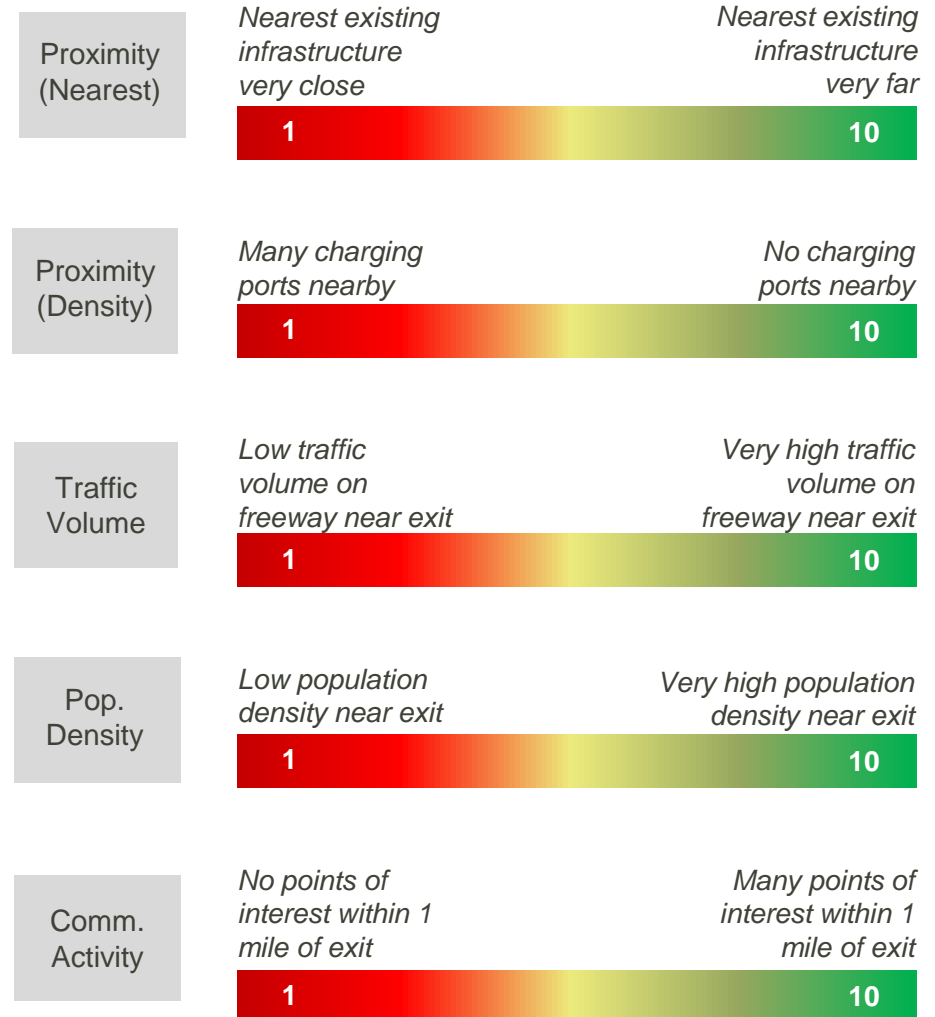


Traffic Density

Average annual traffic volume of freeway segment

Methodology: Overview

- 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



Resource: Infrastructure Location Identification Tool

Identification Tool Options

- **Region:** Full analysis region, state, or county
- **Exit Group:** Ability to filter to include/exclude service plazas and/or limit analysis to specific corridor
- **Weighting method:** one of six preloaded 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)

Select Corridor

Exits Ranked:

7,062

Weighting Method

Pre-Weighted Method

Through Traffic

Custom Weighting

OFF

Metric Priority:

Demand

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%
	Port Density	20%
	Total	30%
Demand	Traffic Volume	30%
	Population Density	10%
	Total	40%
Convenience	Nearby Commercial Activity	30%
	Total	30%
	Total	100%

Calculate Rankings → **Go**

Infrastructure Location Identification Tool: Ranking Methods

Proximity Metrics

- Nearest DCFC
- Density of DCFC

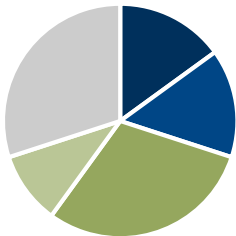
Demand Metrics

- Traffic Density
- Population Density

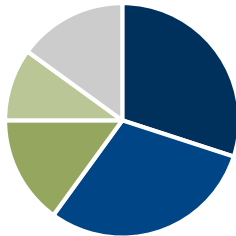
Convenience Metrics

- Commercial Activity

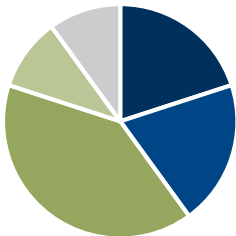
1. Through Traffic



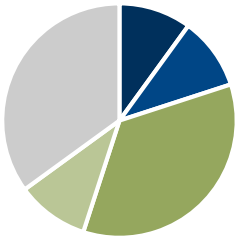
2. Gap



3. High Traffic Gap



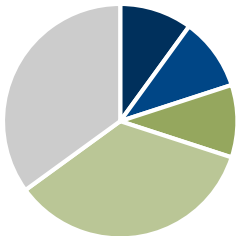
4. Traveler Use



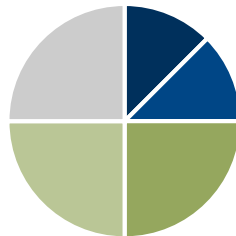
+ User Defined



5. Resident Use

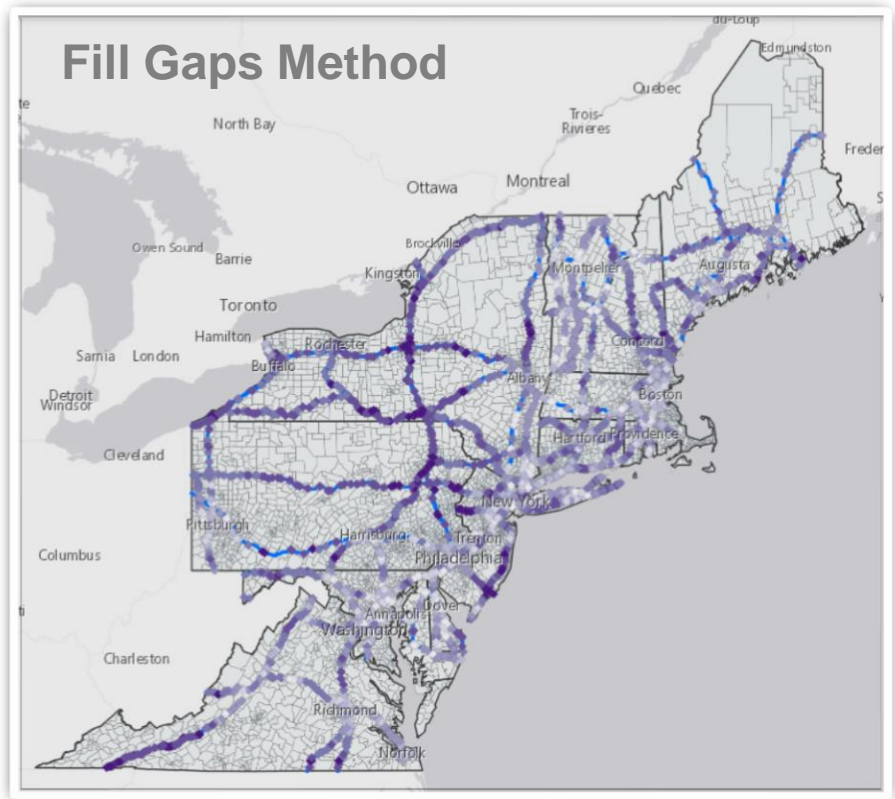
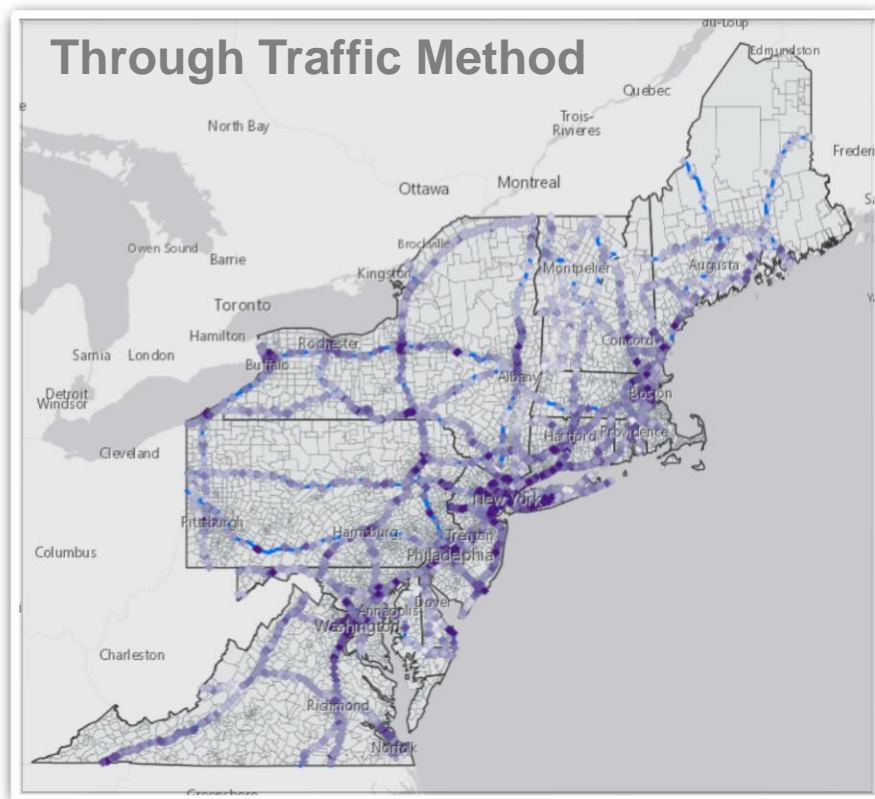


6. Even



Resource: Visualization Map

The Visualization Map allows the user to see all metric data (e.g., population density and traffic volume) as well as the outputs from the Identification Tool in order to compare possible locations for DCFC infrastructure deployment



Low Suitability



High Suitability

Ongoing & Potential Tool Uses



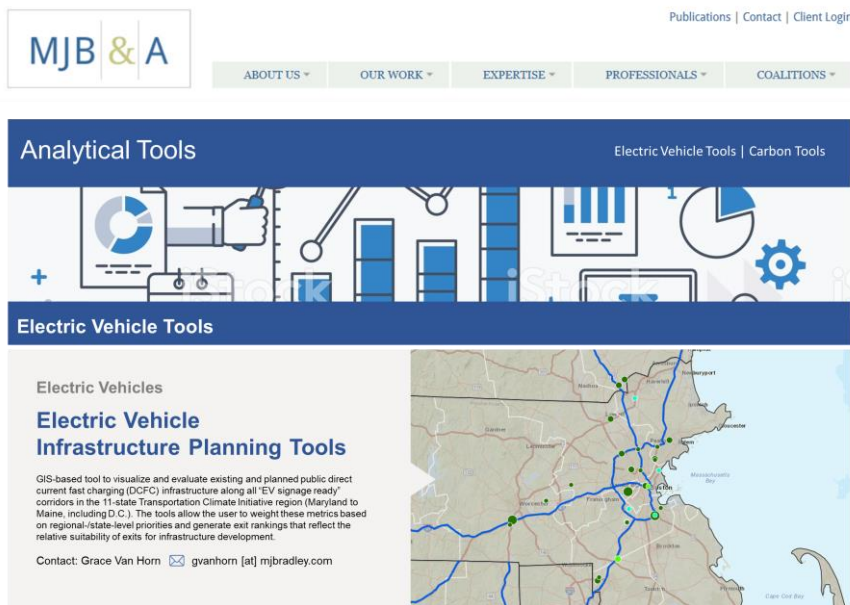
- Scoping analysis for state infrastructure development initiatives
- Support for Public Utilities Commission electric vehicle proceedings
- Utility or private developer review / comparison of potential development locations

Version 2.0: Key Updates

- **Geographic Expansion:** tool now assesses over 9,000 miles of key transportation corridors (interstates, highways, and other key thoroughfares) across the Transportation & Climate Initiative region and (*new*) Virginia
- **Charging Network:** existing charging network is updated as of June 12, 2018. It also now includes “border” existing charging stations that may be important for gap analysis but are outside the analysis region (e.g., in neighboring states and Canada)
- **Exit Data:** more accurate assessment of exit and other node locations; exclusion of all rest stop locations that bar commercial development
- **Tool Functionality:** replaced “gap exits” assessment group with ability to filter by exit type (including, excluding, or exclusively service plazas) and additional ability to conduct assessment within geographic subgroups (county- and/or corridor-level groupings)
- **Map Functionality:** addition of “filter exits” functionality that allows a user to display only those exits that meet certain analysis criteria (e.g., are located in high traffic areas or further than 10 miles from existing infrastructure)
- **Additional Data Improvements:** latest (2015) traffic data, improved display of population density (now displays by census tract, matching analytical framework)

Tool Availability

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



The screenshot shows the MJB & A website. The header includes the logo and navigation links: ABOUT US, OUR WORK, EXPERTISE, PROFESSIONALS, and COALITIONS. The main content area is titled "Analytical Tools" and features a sub-header "Electric Vehicle Tools | Carbon Tools". Below this, there is a section for "Electric Vehicle Tools" with a sub-header "Electric Vehicles" and "Electric Vehicle Infrastructure Planning Tools". The text describes a GIS-based tool for visualizing and evaluating existing and planned public direct current fast charging (DCFC) infrastructure along all "EV signage ready" corridors in the 11-state Transportation Climate Initiative region (Maryland to Maine, including D.C.). It mentions that the tools allow users to weight these metrics based on regional/state-level priorities and generate exit rankings that reflect the relative suitability of exits for infrastructure development. Contact information for Grace Van Horn is provided: gvanhorn [at] mjbradley.com. A map of the Northeastern United States is shown on the right side of the section.

www.mjbradley.com



The screenshot shows the Georgetown Climate Center website. The header includes the logo and tagline "A Leading Resource for State and Federal Policy". The navigation bar includes links: Home, About Us, Clean Energy, Adaptation, Transportation, and News. The main content area is titled "Transportation" and features a sub-header "FEATURED CONTENT: OUR WORK". Below this, there is a section titled "Exploring Regional Solutions to Improve Transportation and Reduce Emissions". The text describes a project where eight jurisdictions (Connecticut, Delaware, the District of Columbia, Maryland, Massachusetts, New York, Rhode Island, and Vermont) are working together to explore regional policies through the Transportation and Climate Initiative. An image of a traffic jam is shown on the left side of the section.

www.georgetownclimate.org

Questions?



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