



Electric Vehicle Infrastructure Location Identification Tools

A planning framework for states, local governments, utilities, developers...

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Analytical Resources



Electric Vehicle Tools

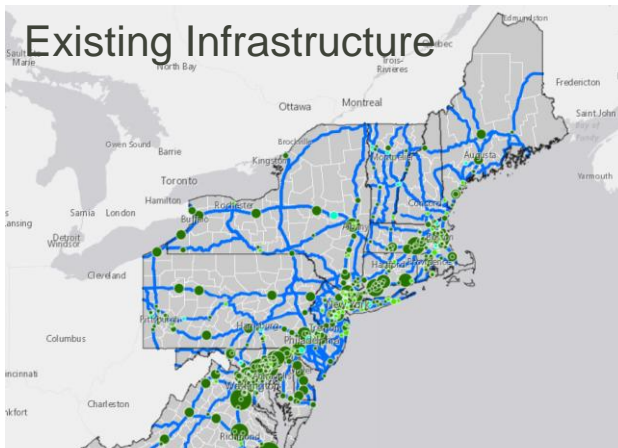
Electric Vehicles

Electric Vehicle Infrastructure Planning Tools

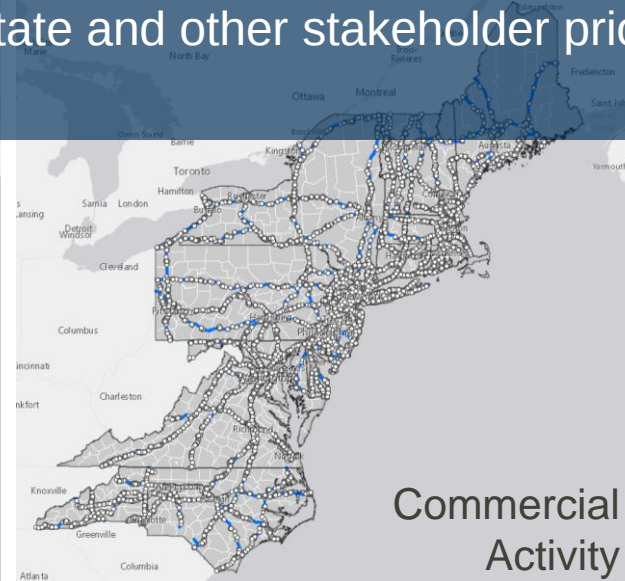
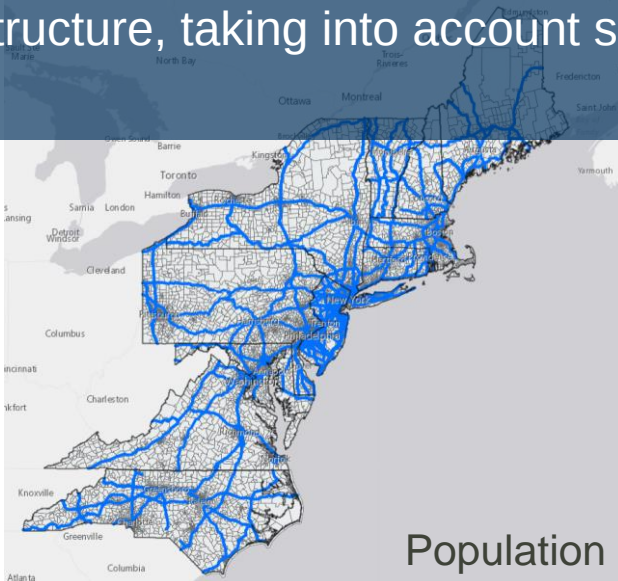
These GIS-based tools can be used to visualize and evaluate existing and planned public direct current fast charging (DCFC) infrastructure along key electric vehicle corridors across the 12-state Transportation Climate Initiative region (Virginia to Maine, including D.C.). The tools allow the user to weight input metrics based on regional- or state-level priorities and generate rankings of key locations that reflect the relative suitability of each location for DCFC infrastructure development.



What question are we answering?



What locations may be suited for electric vehicle fast charging infrastructure, taking into account state and other stakeholder priorities?



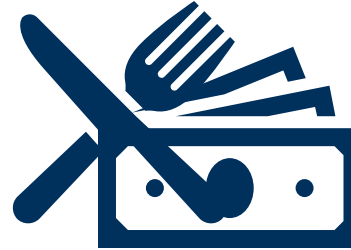
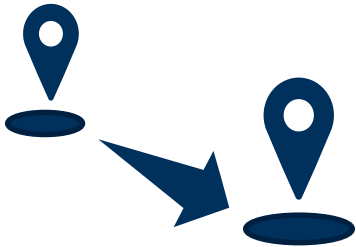
How did we answer this question?

MJB&A utilized a GIS platform to collect and organize data on over 13,500 miles of key corridors in 13 states—the Transportation & Climate Initiative region (including D.C.) and North Carolina

- Assessed DC fast charging opportunities along all designated federal corridors plus additional state priority corridors
- Focused on interstate exits and other key intersections
- Worked with state participants to refine dataset, parameters, and metrics
- Developed metrics for each possible location that can be weighted and combined into one final score
- Produced an Excel model and two online Visualization Maps for stakeholders to run scenarios and compare results



What factors did we consider?



| Proximity to Existing Charging | Traffic Volume | Commercial Activity | Population Density |
|---|---|---|---|
| <p>Including all or a subset based on plug type:</p> <ul style="list-style-type: none">Distance to nearest DCFC stationDensity of existing stations | <p>Roadway segment:</p> <ul style="list-style-type: none">Average annual daily traffic (AADT)Peak traffic factor (k-factor)Peak traffic volume (AADT*k-factor) | <p>Number of stores, restaurants, gas stations, etc. within 1 mile of each exit</p> | <p>Population density of surrounding census tract</p> |

How did we source the data?

Primary Considerations

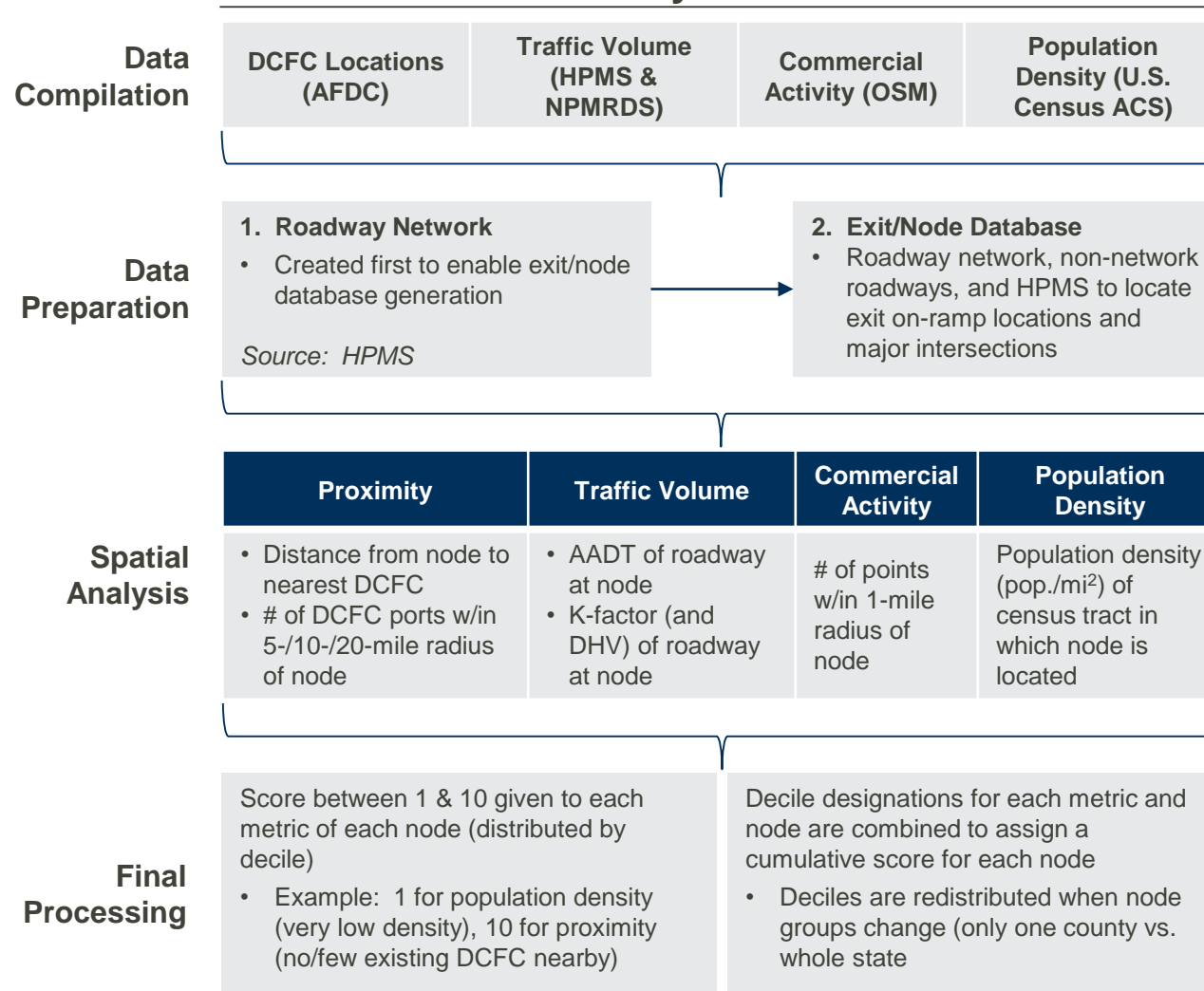
- **Scalability & Consistency** → National or regional datasets
- **Cost** → Free or public datasets
- **Quality** → Reputable sources
- **Relevance** → Recent and regularly updated datasets
- **Ease of Use** → Commonly used and understood metrics and data sources

| Metric | Data | Data Vintage | Source |
|--------------------------------|---|--|--|
| Proximity to Existing Charging | Public, non-Tesla DCFC stations within 5-mile radius of node (roadway exit or intersection) | December 2019 (will be updated in next refresh) | Department of Energy (DOE) Alternative Fuels Data Center (AFDC) |
| Traffic Volume | Average Annual Daily Traffic (AADT) | 2016 (will be updated when NPMRDS is updated) | Federal Highway Administration (FHWA) Highway Performance Monitoring System (HPMS, by state); User Guide |
| | Peak traffic factor (k-factor) | 2017 (unknown update frequency) | FHWA National Performance Management Research Dataset (NPMRDS, by state); data merge using 2016 HPMS and 2017 Transportation Management Center |
| Commercial Activity | Restaurants, shops/stores, gas stations, other points of interest | June 2019 | Proprietary (root data source is OpenStreet Map [OSM]); supplemented with additional OSM queries * |
| Population Density | Census tract population density | 2017 (will be updated with 2018 in next refresh) | U.S. Census Bureau 2017 American Community Survey (5-year estimates) |

*Example of OSM query system; other resources can be used to query OSM

What were the key steps of the analysis?

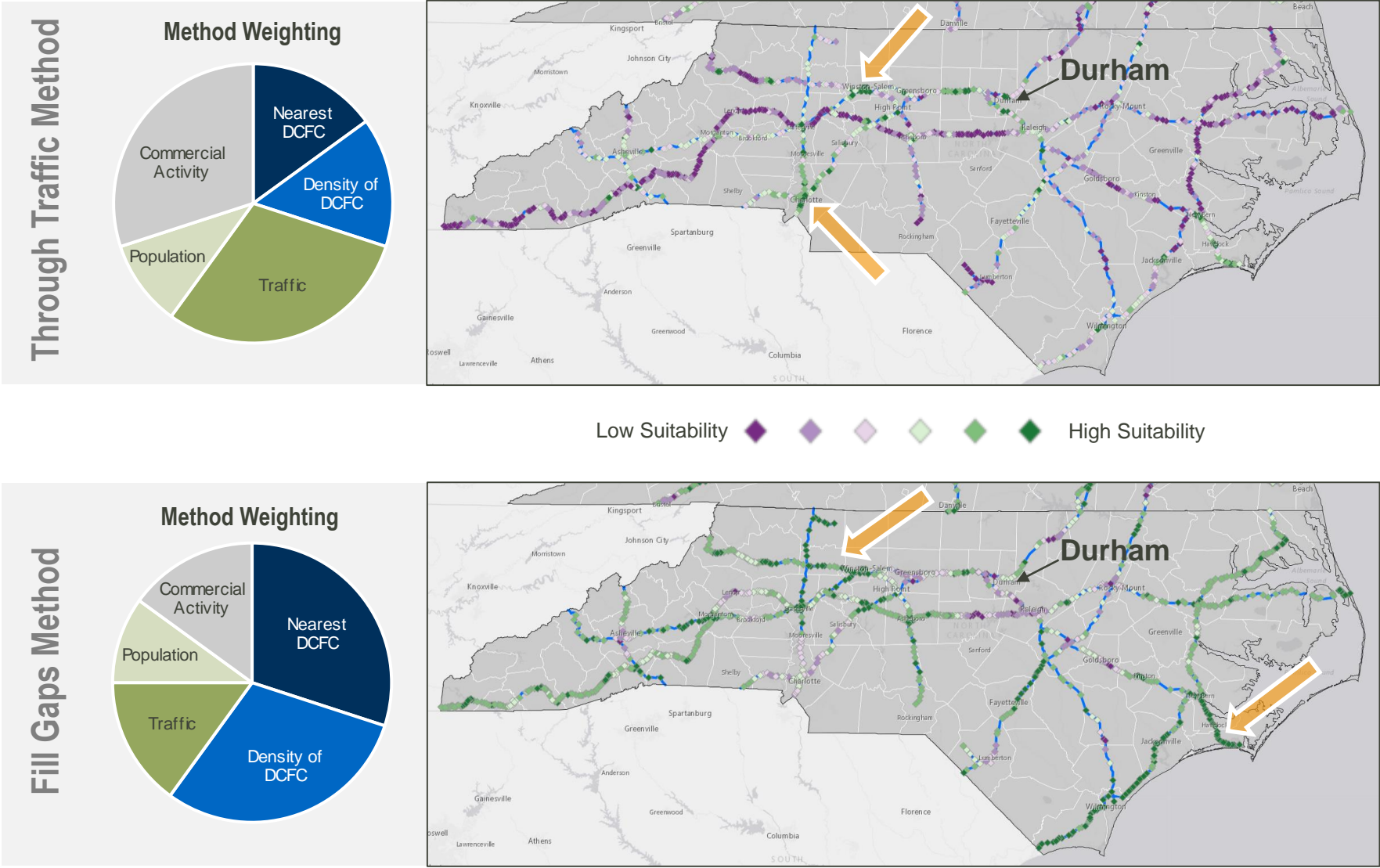
Analysis Flow



Analyses Not Undertaken

- Network Analyst / road-based distance measurements (*analysis and budget constraints; usability*)
- Trip-based traffic flows (*data cost and modeling constraints*)
- Utility electric system data (*lack of data and privacy concerns*)
- Level 2 or local siting analysis (*state interest and planning needs*)

What do the results show?

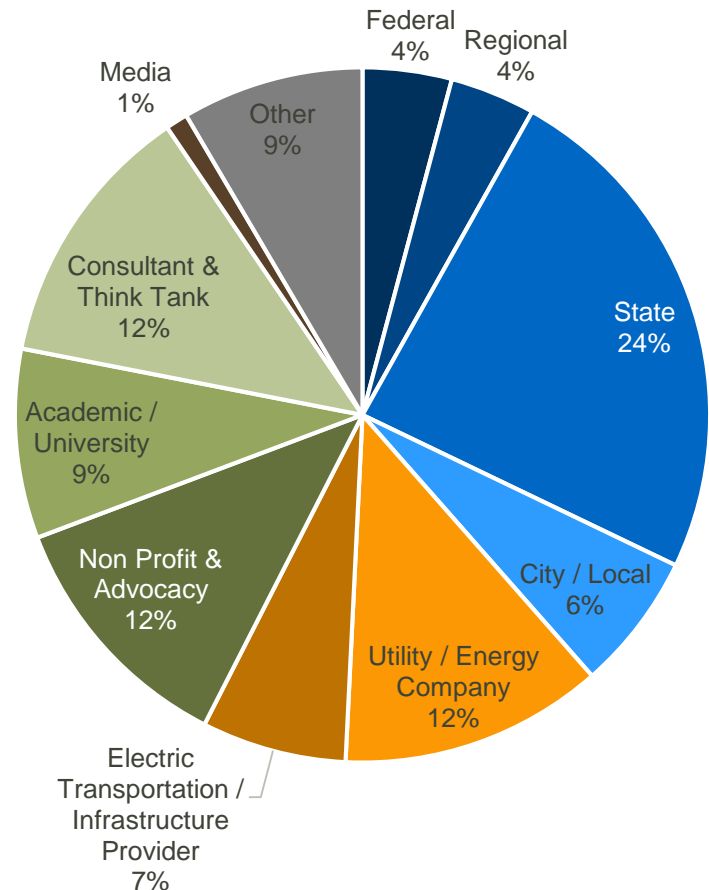


How can the tools be used, and who uses them?

Uses

- Scenario and planning analysis based on customized priorities
- 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

Users





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