Siting Charging Infrastructure: Tools and Considerations

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

Electric Vehicle Grid Integration: Interactive Virtual Summit
September 17, 2020

Grace Van Horn
Siting Charging Infrastructure – A Balancing Act

- Limited Funding
- Aggressive Policy Targets
- Developing Market
- Urgent Need
- Immediate Utilization
- Equitable Expansion
- Long Distance Travel
- Local Utilization
Balancing These Factors: Local Priorities

What locations may be suited for electric vehicle fast charging infrastructure, taking into account state and other stakeholder priorities?
MJB&A EV Infrastructure Location Identification Tools: Customizable Priorities

- 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

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
## Siting Priorities Considered

<table>
<thead>
<tr>
<th>Proximity to Existing Charging</th>
<th>Traffic Volume</th>
<th>Commercial Activity</th>
<th>Population Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Including all or a subset based on plug type:</td>
<td>Roadway segment:</td>
<td>Number of stores, restaurants, gas stations, etc. within 1 mile of each exit</td>
<td>Population density of surrounding census tract</td>
</tr>
<tr>
<td>• Distance to nearest DCFC station</td>
<td>• Average annual daily traffic (AADT)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Density of existing stations</td>
<td>• Peak traffic factor (k-factor)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Peak traffic volume (AADT*k-factor)</td>
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</table>
Visualizing and Comparing Results: Scenario Analysis

1. **Ranking Tool**
   - Sample rankings of North Carolina ranked nodes, using the Through Traffic ranking methodology

2. **Data Viewer**
   - Existing DCFC Infrastructure, by type

3. **Results Viewer**
   - Sample rankings of selected ranked nodes using the Results Viewer, emphasizing “gaps” in the existing network

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**Rankings:** All Exits (with service plazas) in North Carolina: "Through Traffic" Weighting Method

<table>
<thead>
<tr>
<th>Final Rank</th>
<th>Exit ID</th>
<th>Proximity</th>
<th>Demand</th>
<th>Port Density</th>
<th>Population</th>
<th>Convenience</th>
<th>Nearby Activity</th>
<th>Final Score</th>
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Balance of Priorities Drives Outcomes

Through Traffic Method

Fill Gaps Method

Method Weighting

Nearest DCFC
Density of DCFC
Population
Traffic

Method Weighting

Commercial Activity
Nearest DCFC
Density of DCFC
Population
Traffic

Low Suitability
High Suitability

Fill Gaps Method

MJB & A
Additional Siting Considerations

- Network Interoperability
- Electric System Capability
- Funding Sources and Partnerships
- Regional Coordination

MJB & A
Questions?

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www.mjbradley.com/analytical-resources
<table>
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<tr>
<th>Concord, MA</th>
<th>Washington, DC</th>
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<td>Concord, MA 02145</td>
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