EV Charging Equipment Location Prioritization Technical Report

CCRPC Electric Vehicle Planning Study – Phase II

June 2014

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Executive Summary

The Chittenden County Regional Planning Commission (CCRPC) is working to reduce greenhouse gas emissions from the transportation sector and increase the energy efficiency of Vermont’s motor vehicle fleet. This is an important factor in realizing energy efficiency improvements and greenhouse gas reductions detailed in the 2013 Chittenden County ECOS Plan and the Chittenden County Climate Action guide; as well as climate action plans across all levels of government. The Chittenden County Climate Action guide prioritizes the promotion of electric vehicle infrastructure for electric vehicle charging as a key action to meeting greenhouse gas reduction targets established by the State legislature. Electric Vehicle (EV) technology supports these goals by providing low carbon, highly efficient and cost effective transportation.

As of April 2014, there were 630 plug-in passenger cars in the state, a small but quickly growing fraction of the overall fleet. Approximately 1/3 of these vehicles were registered in Chittenden County. EV owners are generally expected to charge their vehicles at home overnight, but away-from-home charging will be needed to allow longer trips and increase the suitability of EVs for a variety of users. Availability of public charging affects consumer willingness to consider EV purchases, particularly in the case of all electric vehicles which do not use gasoline to extend range.

Priority locations for public EVCEs include areas with concentrations of retail, recreation, and public administration services. These destinations commonly have parking durations long enough to allow time for appreciable charging. This technical report examines a series of factors related to potential demand for public charging locations and provides a listing of suggested Chittenden County locations to further explore EV charging with property owners.

1 Site Selection Overview

The CCRPC Phase I report analysis concluded there was a need for 80 public EV charging locations across Chittenden County by 2023, with additional demand for workplace employee charging. Optimal siting of public Electric Vehicle Supply Equipment (EVSE, often referred to as charging stations) should account for projected demand at the location to maximize the return on investment. Charging locations should also be disbursed across Chittenden County and beyond to allow owners of all electric vehicles to make longer trips and feel confident they will not be stranded due to low batteries.

Ownership and management of public charging locations can operate under a variety of business models. In Vermont, many of the 22 existing public charging locations were installed or partially funded by electric power utilities. While these investments are continuing at a modest pace, they are unlikely to support a robust build-out of charging stations due to a lack of dedicated ratepayer funding for this work. Private landowners will need to see value in providing charging infrastructure to deem it worthy
of their attention and investment. Suggested value propositions for a number of different location types are identified in Table 1.1 below.

Table 1.1. Ownership Value Elements for Public EV Charging

<table>
<thead>
<tr>
<th>Location Type</th>
<th>Value Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Retail Stores</strong></td>
<td>• Attract new customers who own EVs</td>
</tr>
<tr>
<td></td>
<td>• Reward repeat customers, potentially through existing loyalty programs</td>
</tr>
<tr>
<td></td>
<td>• Increase duration of shopping</td>
</tr>
<tr>
<td></td>
<td>• Use charging equipment displays to promote products or services</td>
</tr>
<tr>
<td></td>
<td>• Potential for fee recovery to create revenue streams</td>
</tr>
<tr>
<td></td>
<td>• Demonstrate commitment to sustainable energy</td>
</tr>
<tr>
<td><strong>General Office / Commercial</strong></td>
<td>• Amenity for employees / tenants / guests</td>
</tr>
<tr>
<td></td>
<td>• Potential for fee recovery to create revenue streams</td>
</tr>
<tr>
<td></td>
<td>• Points for green building attributes (e.g. LEED)</td>
</tr>
<tr>
<td></td>
<td>• Demonstrate commitment to sustainable energy</td>
</tr>
<tr>
<td><strong>Mixed Use Commercial and Residential</strong></td>
<td>• Provide charging opportunities for residents and guests who may not have dedicated parking</td>
</tr>
<tr>
<td></td>
<td>• Attract new and repeat customers who own EVs</td>
</tr>
<tr>
<td></td>
<td>• Potential for fee recovery to create revenue streams</td>
</tr>
<tr>
<td></td>
<td>• Demonstrate commitment to sustainable energy</td>
</tr>
</tbody>
</table>

Outreach and education to potential charging station owners is critical to communicating the above values as well as the logistics and costs associated with charging station installations. CCRPC, Drive Electric Vermont, Vermont Clean Cities, electric utilities and many other partners are assisting with this work in the Chittenden County region. To support targeted property owner outreach, the following sections identify regions and specific property owners which are likely to see the highest demand for public EV charging stations.

2 EV Charging Location Criteria Factors

The CCRPC Phase 1 report contained general recommendations for locating EV charging equipment. This technical report provides a detailed geographic analysis based on factors related to EV charging demand. Several other regional entities have performed similar analyses to help guide charging infrastructure investments. In general, these analyses develop prioritization systems based serving drivers at their normal destinations or along existing travel routes to make EV charging more convenient for routine travel patterns.
Several criteria factors are presented below which are designed to assemble travel destinations, multi-modal connections and regional planning goals into a framework to prioritize specific locations for EV charging installations. Geographic Information Systems (GIS) analysis tools were used to quantify these factors for individual properties and assemble them into a unified framework. Several elements used raster spatial analysis tools based on a 25 hectare (approximately 60 acre) cell area. These cells are 500 meters (0.3 miles) on each side which represents a reasonably walkable distance for EV owners who can access multiple destinations and attractions at a potential charging location.

The prioritization criteria are separated according economic, transportation and land use considerations. The map sheets contained at the end of this report illustrate the individual and overall prioritization factors at a larger scale for the urban municipalities of Burlington, Winooski, South Burlington, Essex Junction and portions of Colchester, Essex, Williston, Shelburne. The communities are included in smaller scale county-wide maps.

2.1 Economic Criteria

2.1.1 EV Priority Employer Employment Density (Map 1)
The CCRPC Phase I report identified employer types which were more likely to demand public EV charging facilities based on destination trip patterns. NAICS\(^1\) classifications of employers were used to identify the following retail and service employer types:

<table>
<thead>
<tr>
<th>NAICS Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>44-45</td>
<td>Retail Trade</td>
</tr>
<tr>
<td>71</td>
<td>Arts, Entertainment and Recreation – includes performing arts, sports, museums</td>
</tr>
<tr>
<td>72</td>
<td>Accommodation and Food Services – hotels and restaurants</td>
</tr>
<tr>
<td>812</td>
<td>Personal Services – hair salons, laundromats, etc.</td>
</tr>
<tr>
<td>92</td>
<td>Public Administration – municipal offices, courts, etc.</td>
</tr>
</tbody>
</table>

These locations have significant parking turnover of customers and/or visitors over the course of the day. These travel patterns are more likely to generate demand for public EV charging. The employer data used in this analysis is a commercial data product from Dun & Bradstreet\(^2\) which collects highly accurate data on establishment types, employees and contact information.

2.1.2 Total Employment Density (Map 2)
While certain business types identified in 2.1.1 above are likely to generate greater demand for EV charging, all types of employment represent destinations for workers and associated business activity. Including total employment in the prioritization also helps identify areas with potential for combined public and workplace charging for employees.

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2.1.3 Corporate support for EV charging installation

A number of companies with operations in Chittenden County have cultivated EV charging programs at their establishments in other regions, particularly in California where there are more plug-in vehicles available and on the roads. Most of these companies have received grants or tax credits to assist in covering installation costs in other regions, which is one reason why they are not yet providing this infrastructure in Vermont.

Chittenden County companies with charging station programs include:
- Best Buy
- Kohls
- Macy’s
- McDonalds
- Panera
- Price Chopper
- Walgreens
- Walmart
- Trader Joes

These locations were not mapped in GIS due to the relatively small number, but should be considered for potential outreach on future installations.

2.2 Transportation Criteria

2.2.1 Proximity to High Traffic Routes

Proximity distances were measured along the highway network to better represent on-the-ground conditions rather than using geographic “as the crow flies” measurements.

2.2.1.1 Highways with Over 10,000 Vehicles per Day (Map 3a)

Travel routes with over 10,000 vehicles per day average annual daily traffic (AADT) represent the primary travel corridors in Chittenden County. Proximity to these roads represents access along routes used by the majority of vehicles. The primary travel corridors in Chittenden County include Interstate 89, VT 289 in Essex, US 7 south of Burlington, VT 116 through Hinesburg, VT 15 through Essex and Jericho, VT 2A from Williston to Colchester, US 2 heading toward the Champlain Islands, and VT 127 from Burlington to Colchester.

2.2.1.2 Interstate Highway Exits (Map 3b)

Interstate highways experience the highest traffic volumes in Chittenden County. Easy access to EV charging from these facilities will serve normal travel patterns of County residents, workers and customers as well as provide more convenient service for long distance travel by EV on the “Green Corridor” running between Montreal, Quebec and Montpelier, Vermont.

2.2.2 Proximity to Public Transportation (Map 4)

The CCRPC ECOS plan calls for a multimodal transportation system. Locating EV charging facilities near public transportation provides owners with additional travel options while their vehicles are charging. Data on CCTA transit stop locations was supplied by CCTA’s Google Transit Feed Specification (GTFS) file.
2.2.3 **Proximity to Sidewalks or Multi-Use Paths (Map 5)**
Current data on public charging facilities shows charging durations will usually run between 1 and 4 hours. Locating charging in areas with adequate pedestrian facilities will allow owners to walk to stores and offices to allow them to complete other activities while charging.

2.2.4 **Proximity to Existing EV Charging (Map 6)**
With limited resources to support EV charging, geographic dispersion of charging stations to provide a safety net of chargers every 25 miles will increase the range confidence of EV owners. The distance from a property to existing charging locations is used as a negative contribution to the overall prioritization.

2.3 **Land Use Criteria**

2.3.1 **CCRPC ECOS Land Use Classification (Map 7)**
The CCRPC ECOS plan includes future land use recommendations which focus growth in Center, Enterprise, Metro and Village Planning Areas\(^3\). Properties located in these areas were flagged as having a higher priority for infrastructure investments.

2.3.2 **Property Zoned for Commercial Use (Map 8)**
Public EV charging locations are most frequently sited on properties zoned for commercial use.

2.3.3 **Concentrations of Multi-Family Housing (Map 9)**
Residents of multi-family housing developments may not have access to dedicated parking for personal charging use. Widespread availability of public charging in areas with high concentrations of multi-family housing will help support these residents and their visitors and guests in using electric vehicles.

3 **Final Prioritization**
The individual criteria listed in section 2 above were assembled into an overall prioritization score to determine high priority locations for EV charging outreach. Each of the mapped factors were initially considered in equal measure. Continuous variables were transformed using the square root of the variable to stabilize the wide variance of values and then normalized to allow for values to be added or subtracted from the rankings using a common value system.

After the first iteration of rankings was completed, a number of weighting adjustments were made to the prioritization formula to better reflect the importance of the criteria in creating a balanced regional prioritization. The following weighting factors were applied:

- **a.** EV Priority employee density was weighted with a factor of 2, or doubled in importance relative to unweighted criteria.
- **b.** Distance to existing EV charging equipment was weighted with a factor of 4 to better prioritize charging installations on properties located at significant distances from current locations.
- **c.** Properties in the direct vicinity of Church St in downtown Burlington were flagged and their overall scores reduced by a factor of 7 to reflect the lack of suitable EV charging opportunities at

\(^3\) CCRPC ECOS Future Land Use in chapter 4 of the adopted ECOS plan [http://ecosproject.com/](http://ecosproject.com/)
most of these properties. The City of Burlington has one existing one existing level 2 charging station at Church & Main with additional Level 2 planned for the Lakeview parking garage and DC Fast Charging in the marketplace garage.

The formula box below contains the Python script used to calculate the overall priority score for each parcel. These values are illustrated in Map 10 below.

**ArcGIS Python Script Calculating Overall Prioritization Scores**

```python
def Priority(evemployment, totalemployment, aadtdist, interchangedist, publictransdist, sidewalkdist, evcedist, planningarea, commzon, mfhousingd, churchst):
    if (evemployment > 0):
        ranking = 2 * (math.sqrt(evemployment) / math.sqrt (581))
    elif (evemployment <= 0):
        ranking = 0
    if (totalemployment > 0):
        ranking = ranking + (math.sqrt(totalemployment) / math.sqrt (3285))
    if (aadtdist >= 0):
        ranking = ranking + (1- (math.sqrt(aadtdist) / math.sqrt (20165)))
    if (interchangedist >= 0):
        ranking = ranking + (1- (math.sqrt(interchangedist) / math.sqrt (14.9)))
    if (publictransdist >= 0):
        ranking = ranking + (1- (math.sqrt(publictransdist) / math.sqrt (12662)))
    if (sidewalkdist >= 0):
        ranking = ranking + (1- (math.sqrt(sidewalkdist) / math.sqrt (19810)))
    if (evcedist >= 0):
        ranking = ranking - (4*(1-(math.sqrt(evcedist) / math.sqrt (20.4))))
    if (planningarea == "EV Priority"):
        ranking = ranking + 1
    if (commzon == 1):
        ranking = ranking + 1
    if (mfhousingd > 0):
        ranking = ranking + ((math.sqrt(mfhousingd) / math.sqrt (1929)))
    if (churchst == 1):
        ranking = ranking - 7
    ranking = ranking * 100
    return ranking
```

### 3.1 Top Priority Properties

Following the prioritization an interactive process was used to identify the highest priority properties and distinguish locations. For example, the University of Vermont’s land holdings span many parcels in Burlington, but for the purpose of this exercise are treated as on location.

Table 3.1 below includes a summary of the top 60 property locations identified through the GIS analysis. The following section provides additional priority locations identified in the top decile of prioritization scores and through discussions with CCRPC staff and other stakeholders on highly desirable locations for EV charging.
Table 3.1. Priority Ranking of Properties

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main St Landing</td>
</tr>
<tr>
<td>2</td>
<td>Sheraton Hotel</td>
</tr>
<tr>
<td>3</td>
<td>University of Vermont</td>
</tr>
<tr>
<td>4</td>
<td>Holiday Inn</td>
</tr>
<tr>
<td>5</td>
<td>Maplefields Exit 14</td>
</tr>
<tr>
<td>6</td>
<td>Champlain College</td>
</tr>
<tr>
<td>7</td>
<td>Mobil Exit 14</td>
</tr>
<tr>
<td>8</td>
<td>Vermont Tap House</td>
</tr>
<tr>
<td>9</td>
<td>Hannaford Williston</td>
</tr>
<tr>
<td>10</td>
<td>Toys R Us Williston</td>
</tr>
<tr>
<td>11</td>
<td>Bed Bath and Beyond</td>
</tr>
<tr>
<td>12</td>
<td>Petsmart Williston</td>
</tr>
<tr>
<td>13</td>
<td>Northfield Savings Bank - Williston 2A</td>
</tr>
<tr>
<td>14</td>
<td>Maple Tree Place</td>
</tr>
<tr>
<td>15</td>
<td>Tafts Corners Associates Land</td>
</tr>
<tr>
<td>16</td>
<td>Staples Plaza</td>
</tr>
<tr>
<td>17</td>
<td>City Market</td>
</tr>
<tr>
<td>18</td>
<td>Interstate Corp Center Williston</td>
</tr>
<tr>
<td>19</td>
<td>Gardners Supply Williston</td>
</tr>
<tr>
<td>20</td>
<td>Imported Car Center</td>
</tr>
<tr>
<td>21</td>
<td>Tafts Corners Associates Land</td>
</tr>
<tr>
<td>22</td>
<td>AC Moore - Williston</td>
</tr>
<tr>
<td>23</td>
<td>Walmart</td>
</tr>
<tr>
<td>24</td>
<td>TD Bank</td>
</tr>
<tr>
<td>25</td>
<td>Panera Bread Williston</td>
</tr>
<tr>
<td>26</td>
<td>Fletcher Allen</td>
</tr>
<tr>
<td>27</td>
<td>Tafts Corner Associates Land</td>
</tr>
<tr>
<td>28</td>
<td>Clay Point Associates - Williston</td>
</tr>
<tr>
<td>29</td>
<td>New England Federal Credit Union - Williston</td>
</tr>
<tr>
<td>30</td>
<td>Tafts Corner Shopping Center</td>
</tr>
<tr>
<td>31</td>
<td>Vermont Tech - Williston</td>
</tr>
<tr>
<td>32</td>
<td>Texas Roadhouse</td>
</tr>
<tr>
<td>33</td>
<td>UPS Williston</td>
</tr>
<tr>
<td>34</td>
<td>Friendlys Williston</td>
</tr>
<tr>
<td>35</td>
<td>Mobil Williston</td>
</tr>
<tr>
<td>36</td>
<td>YMCA Burlington</td>
</tr>
<tr>
<td>37</td>
<td>Powderhorn</td>
</tr>
<tr>
<td>38</td>
<td>Lines for the Body</td>
</tr>
<tr>
<td>39</td>
<td>Vermont State Police - Williston</td>
</tr>
<tr>
<td>40</td>
<td>Tafts Corners Associates Land</td>
</tr>
<tr>
<td>41</td>
<td>Tafts Corners Associates Land</td>
</tr>
<tr>
<td>42</td>
<td>Tafts Corners Associates Land</td>
</tr>
<tr>
<td>43</td>
<td>33 Blair Park</td>
</tr>
<tr>
<td>44</td>
<td>Buttered Noodles</td>
</tr>
<tr>
<td>45</td>
<td>Tafts Corners Associates Land</td>
</tr>
<tr>
<td>46</td>
<td>Tafts Corners Associates Land</td>
</tr>
<tr>
<td>47</td>
<td>Vermont Sandwich Company</td>
</tr>
<tr>
<td>48</td>
<td>Harvest Ln Bldg</td>
</tr>
<tr>
<td>49</td>
<td>Tafts Corners Associates Land</td>
</tr>
<tr>
<td>50</td>
<td>Tafts Corners Associates Land</td>
</tr>
<tr>
<td>51</td>
<td>Quarry Hill Housing</td>
</tr>
<tr>
<td>52</td>
<td>Lennys - Chefs Corner</td>
</tr>
<tr>
<td>53</td>
<td>Peoples United Bank - Williston</td>
</tr>
<tr>
<td>54</td>
<td>US Post Office - Williston</td>
</tr>
<tr>
<td>55</td>
<td>Fairfield Inn Williston</td>
</tr>
<tr>
<td>56</td>
<td>Tafts Corners Associates Land</td>
</tr>
<tr>
<td>57</td>
<td>Berlin City Kia</td>
</tr>
<tr>
<td>58</td>
<td>Burlington Cohousing</td>
</tr>
<tr>
<td>59</td>
<td>Edmunds School</td>
</tr>
<tr>
<td>60</td>
<td>Tafts Corners Associates Land</td>
</tr>
</tbody>
</table>
3.2 Additional Locations

The prioritization exercise and results documented above capture many of the most critical factors associated with potential demand for EV charging. Following from the analysis we have reviewed additional locations within the top decile of prioritization scores in consideration of increased geographic dispersal, additional workplace charging opportunities at major employment centers, local knowledge of travel patterns and potential ease of construction.

3.2.1 Public Locations

Colchester
- I-89 Exit 16 Area – Costco, Shaws
- Severance Corners

Essex
- Essex Outlet Center

Essex Junction
- Train Station Multi Modal Center

Hinesburg
- Municipal Park and Ride
- Kinney Drug
- Shopping Center (Aubuchons)

Milton
- Pomerleau Shopping Center (McDonalds, Hannaford)

South Burlington
- City Center area
- Technology Park

3.2.2 Workplace

Colchester
- Exit 16 Area – Watertower Hill

Essex Junction
- IBM / Champlain Valley Technology and Innovation Park

Williston
- State of Vermont Agency of Human Services offices and other local businesses on Hurricane Lane
4 Conclusion

This prioritization of properties for public and workplace EV charging will be used to direct outreach and education efforts to property owners and tenants. The EV Charging Installation Guidebook developed for CCRPC provides property owners with resources to take the next steps in offering customers and employees with electric vehicle charging opportunities.

Several properties were identified as priorities during the development of this prioritization and served as early opportunities to evaluate strategies to work with businesses on installing EV charging locations. Property owners and tenants included Champlain College, Trader Joes (White & Burke Real Estate Advisors), Maple Tree Place, Taft Corners Associates, the University of Vermont, Fletcher Allen Healthcare, the City of Burlington and others.

While many of these locations were interested in providing EV charging, several key issues were identified:

- Workplace charging for employees is motivated by employee/customer demand. With the relatively low penetration of electric vehicles in the region as of spring 2014, this will take time to develop.
- The costs of installing EV charging are significant. The installation guide includes design and siting recommendations to reduce costs. Prices are expected to continue moderately declining over the next several years as equipment production volume increases and contractors gain experience.
- Parking capacity concerns are a major issue for many businesses, both in terms of the number of spaces required under local development regulations as well as expectations of employees, tenants and customers to have parking available.
- Including EV charging installations as part of planned construction projects is often the most cost effective approach, but this requires significant foresight to plan as it can be much more difficult to include once plans are complete and the project moves into construction. Potential building code requirements for EV charging would help facilitate this approach.
- Uncertainty over operating costs for EV charging services was a concern, including utility costs, EVSE networking expenses and other fees associated with payment processing.

The majority of property owners were interested in developing EV charging facilities through future development / maintenance work, but were generally reluctant to invest significant effort at this point due to perceived lack of demand. The exception to this were locations with employees requesting access to EV charging and those which were eligible for grant funding through the State of Vermont’s Designated Downtown program.

5 Maps
Map 2: Total Employee Density

Legend

Total Employee Density
(Decile Units = Employees / sq km in 1.5 km radius)

- 0.0 - 4.9
- 5.0 - 10.6
- 10.7 - 28.6
- 28.7 - 54.9
- 55.0 - 107.1
- 107.2 - 186.8
- 186.9 - 319.3
- 319.4 - 646.8
- 646.9 - 1,168.5
- 1,168.6 - 3,284.4

DECILE

EV Charging Location Prioritization
Map 3a: Proximity to Highways with > 10,000 AADT

Legend

Proximity to Highly Traveled Routes
Distance to 10,000 AADT Routes (meters)

0.0 - 78.3
78.4 - 200.6
200.7 - 344.6
344.7 - 510.0
510.1 - 780.1
780.2 - 1,227.0
1,227.1 - 1,919.6
1,919.7 - 3,215.2
3,215.3 - 6,121.8
6,121.9 - 20,164.8

Miles

DECILE

1 2 3 4 5 6 7 8 9 10
Map 3b: Proximity to Interstate Highway Access

Legend
Proximity to Interstate Highway
Distance to Interchange (miles)

- 0.1 - 1.3
- 1.4 - 1.9
- 2.0 - 2.7
- 2.8 - 3.8
- 3.9 - 4.7
- 4.8 - 5.6
- 5.7 - 6.8
- 6.9 - 8.2
- 8.3 - 14.8
- 14.9+

DECILE

1 2 3 4 5 6 7 8 9 10

Miles

Legend
Proximity to Interstate Highway
Distance to Interchange (miles)

- 0.1 - 1.3
- 1.4 - 1.9
- 2.0 - 2.7
- 2.8 - 3.8
- 3.9 - 4.7
- 4.8 - 5.6
- 5.7 - 6.8
- 6.9 - 8.2
- 8.3 - 14.8
- 14.9+

DECILE

1 2 3 4 5 6 7 8 9 10

Miles
Map 4: Proximity to Public Transportation

Legend

Proximity to Public Transportation Routes
Distance to Public Transportation Stop (meters)

0.0 - 66.3
66.4 - 147.4
147.5 - 278.0
278.1 - 503.2
503.3 - 823.7
823.8 - 1,413.1
1,413.2 - 2,350.1
2,350.2 - 3,591.9
3,592.0 - 5,137.0
5,137.1 - 12,661.5

EV Charging Location Prioritization
Map 5: Proximity to Sidewalk or Path

Legend
Proximity to Sidewalk or Path
Distance (meters)

- 0.0 - 0.4
- 0.5 - 1.5
- 1.6 - 7.6
- 7.7 - 19.3
- 19.4 - 86.3
- 86.4 - 232.1
- 232.2 - 708.6
- 708.7 - 1,939.3
- 1,939.4 - 4,271.9
- 4,272.0 - 19,809.2

Decile
1 2 3 4 5 6 7 8 9 10

EV Charging Location Prioritization
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Map 6: Proximity to Existing EV Charging

Legend

Proximity to Existing EV Charging

Distance to EVCE (miles)

0.0 - 1.1
1.2 - 1.8
1.9 - 3.1
3.2 - 3.8
3.9 - 4.9
5.0 - 6.3
6.4 - 7.7
7.8 - 10.8
10.9 - 12.7
12.8 - 20.4

DECILE

1 2 3 4 5 6 7 8 9 10

Miles

1.5

DECILE
Map 8: Areas Zoned for Commercial Use

Legend

Commercial Zoning

- Commercial Zoning Classification
Map 9: Multi Family Housing Density

Legend
Multi Family Housing Density
(Decile Units = MF units / sq km in 1.5 km radius)

0.0 - 0.4
0.5 - 1.3
1.4 - 5.9
6.0 - 19.4
19.5 - 36.2
36.3 - 64.1
64.2 - 118.2
118.3 - 184.8
184.9 - 656.9
657.0 - 1,928.8

Legend
EV Charging Location Prioritization

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Map 10: Composite Priority Ranking

Legend

Prioritization Score
See calculation methodology for details

Map showing prioritization scores for EV charging locations with a color gradient indicating different score ranges.
Map 11: Top Ranked Locations

Legend

Priority Location

Prioritization Score

See calculation methodology for details

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-182 - 101
102 - 132
133 - 159
160 - 194
195 - 237
238 - 280
281 - 354
355 - 397
398 - 452
453 - 797

Miles


6 References


