### Title
Spatial planning of electric vehicle infrastructure for Belo Horizonte, Brazil

### Author(s)
Costa, Evaldo; Paiva, Arthur; Seixas, Julia; Costa, Gustavo; Baptista, Patricia; Ó Gallachóir, Brian

### Publication date
2018-12-19

### Original citation

### Type of publication
Article (peer-reviewed)

### Link to publisher's version
https://www.hindawi.com/journals/jat/2018/8923245/
http://dx.doi.org/https://doi.org/10.1155/2018/8923245
Access to the full text of the published version may require a subscription.

### Rights
© 2018 Evaldo Costa et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. https://creativecommons.org/licenses/by/4.0/

### Item downloaded from
http://hdl.handle.net/10468/7962

Downloaded on 2019-08-03T10:34:42Z
Supplementary Materials

Table A1: Explanation of Attributes

<table>
<thead>
<tr>
<th>Attr</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inc</td>
<td>Total of permanent households with monthly nominal income per capita equal or higher than US$ 2,200 per month</td>
</tr>
<tr>
<td>Dens</td>
<td>Population density older than or equal to 18 years</td>
</tr>
<tr>
<td>PTra</td>
<td>Public transportation with 50 or more parking spaces</td>
</tr>
<tr>
<td>PShop</td>
<td>Shopping centers with parking lot for at least 50 vehicles</td>
</tr>
<tr>
<td>Dcia</td>
<td>Workplace: areas with at least 50 organizations</td>
</tr>
<tr>
<td>PPP</td>
<td>Roads, corridors and avenues connecting with inter-municipal, interstate highways and two or more neighborhoods</td>
</tr>
<tr>
<td>PGeo</td>
<td>Geohazard: restricted areas for construction</td>
</tr>
<tr>
<td>PWat</td>
<td>Flooding: areas subjected to risk of flooding</td>
</tr>
<tr>
<td>Slop</td>
<td>Slope greater than 25 degrees</td>
</tr>
<tr>
<td>Rest</td>
<td>Green areas: In land use planning, urban open space is open space areas for &quot;parks&quot;, &quot;green spaces&quot;, and other</td>
</tr>
<tr>
<td>Rest</td>
<td>Water bodies: is any significant accumulation of water on a planet's surface</td>
</tr>
<tr>
<td>Rest</td>
<td>Subnormal agglomerates: Cluttered and dense poor settlements, most lacking basic urban utilities and essential services</td>
</tr>
</tbody>
</table>

Table A2: Technical specifications of the charging equipment levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Typical Use</th>
<th>Energy interface</th>
<th>Power Level</th>
<th>Charge Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVCS_L1 AC</td>
<td>Home or Office</td>
<td>Convenience outlet</td>
<td>Up to 2 kW</td>
<td>12 to 18 hours</td>
</tr>
<tr>
<td>120 V</td>
<td></td>
<td></td>
<td>≤ 20kW</td>
<td></td>
</tr>
<tr>
<td>EVCS 1 DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 - 450 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVCS_L2 AC</td>
<td>Dedicated Outlets</td>
<td>Dedicated outlet</td>
<td>≤ 20 kW</td>
<td>3 to 8 hours</td>
</tr>
<tr>
<td>240 V</td>
<td></td>
<td></td>
<td>≤ 80kW</td>
<td>From 20 min to 7 hours</td>
</tr>
<tr>
<td>EVCS 2 DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 V - 450 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVCS_L3 AC</td>
<td>Commercial Station</td>
<td>Dedicated EVSE</td>
<td>50 – 100 kW</td>
<td>Less than 30 minutes</td>
</tr>
<tr>
<td>Undefined</td>
<td></td>
<td></td>
<td>~120 Kw</td>
<td></td>
</tr>
<tr>
<td>EVCS 3 DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 V – 450 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: (EPA 2017)