City of Alexandria Electric Vehicle Charging Infrastructure Scoring Map

The City of Alexandria is interested in supporting public access to electric vehicle (EV) charging for residents who cannot currently charge at home in a garage or driveway. To identify where publicly-accessible charging infrastructure may be most necessary, a multi-indicator scoring system was developed (Figure 1). This heat map combines many factors into a single score. The Scoring Map of the city in Figure 1 shows areas identified as higher priority (darker shades) and lower priority (lighter shades) for new public EV charging stations. The Scoring Map was developed through weighting process analysis of existing population data and the US Department of Energy's Alternative Fuel Data Center described below.[1,2]

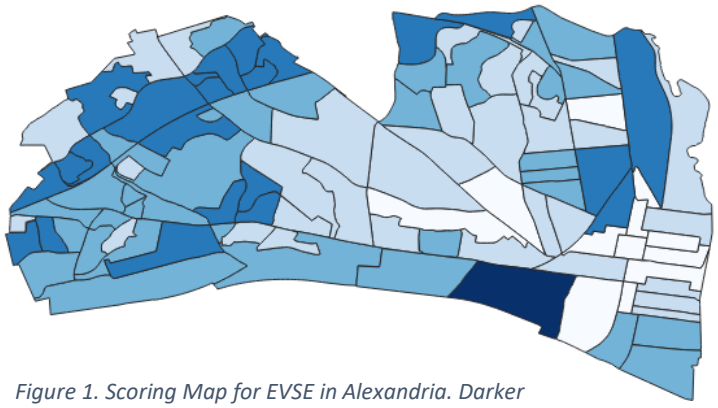

Figure 1. Scoring Map for EVSE in Alexandria. Darker shaded block groups indicate higher need for public EV charging

Score Weighting Process

The city was spatially analyzed at the US Census block group unit. Using experience from other jurisdictions (see box to right), discussions with subject-matter experts, and relevant research, the City in partnership with Cadmus identified five factors that drive the need for public EV charging: (1) density of apartments and condominiums; (2) density of renters; (3) density of car commuters; (4) density of early adopters; and (5) density of existing EV charger access. Table 1 provides rationale for including each indicator. All indicators were normalized between 0 and 1 and multiplied by the weights in Table 1. Finally, the weighted scores were summed together for a composite score of 0 to 1 for each block group. Figure 1 shows these weighted scores.

A similar EV Scoring Process and Map was used by:

- *San Antonio, TX*
- *Contra Costa County, CA*
- *Somerville, MA*
- *Berkeley, CA*

Table 1. Weights and Rationales to Develop Map

Indicator	Weight	Rationale for Indicator
Density of Apartments and Condominiums[1]	50%	Residents living in multifamily buildings have less access to at-home charging. These "garage orphans" are a relatively large segment of potential electric vehicle adopters who are locked out of the market.
Density of Renters[1]	5%	As with garage orphans, renters have a lower likelihood to have access to at-home charging than owners. This means they need public charging solutions.
Density of Car Commuters[1]	5%	Areas with higher numbers of car commuters means have higher need for charging than areas with lower density of car commuters.
Density of Early Adopters[1]	20%	Electric vehicle chargers should be located in areas with more electric vehicles to help ensure utilization of the chargers.
Density of Existing EV Charger Access[2]	20%	Areas with low public charging access should be higher scoring than areas with high publicly-accessible charging.

[1] US Census (2020) Explore Census Data. https://data.census.gov/cedsci/
[2] US Department of Energy (2020) Alternative Fuel Data Center: Station Locator.

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