Creating an Electric Vehicle Ecosystem: Recommendations for New Charging Stations in Greenville

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Project Summary and Goals
The purpose of this project was to identify locations at which the City of Greenville should construct additional electric vehicle charging stations. The addition of new electric vehicle charging stations was identified as a priority of the City in order to promote environmentally friendly forms of transportation, improve air quality and health, facilitate efficient transportation along I-85 between Charlotte and Atlanta, and improve ease of transportation by electric vehicle within Greenville, and encourage increased economic activity in commercial zones. To determine where additional charging stations in Greenville should be located, I created maps showing existing and requested electric vehicle charging station locations. I then created maps showing factors such as income, population, commercial zones, and proximity of requested charging stations to existing charging stations and I-85. Analysis to determine the location of future electric vehicle charging stations was conducted by assigning point values to requested charging stations based off of the above criteria. Requested charging stations with the highest points were recommended as the location for future electric vehicle charging stations. It was found that the corridor along I-85 in the western most corner of Greenville is the most desirable location for additional electric vehicle charging stations.

Methods
The maps to the left and below show the distribution of existing, owner and nonowner requested, and analysis recommended additional electric vehicle charging stations in Greenville. In order to determine the location of recommended additional charging stations, criteria including median income, population density, distance from existing charging stations, distance to I-85, zone type, and whether an electric vehicle owner or nonowner requested the location were considered, as represented in Figures 1–7. One point was given for every charging station within a high income grouping zone, high population density zone, commercial zone, within 0.1 miles of I-85, not within 0.5 miles of an existing charging station, and requested by a nonowner. Two points were given for every charging station requested by an owner. The results of these criteria, the owner/nonowner requested charging stations with the highest point values, is shown in Figure B. below.

Results and Discussion

Conclusion
Based off of the criteria and point values assigned to determine the location of additional electric vehicle charging stations, new stations should be located along I-85. This is largely due to the desire for charging stations for commuters who use this highway to get from Charlotte to Atlanta, as well as the presence of high income zones, high population density zones, and commercial zones in this area.

References and Data Sources


Recommended Further Research
In this analysis, the best new locations for electric vehicle charging stations were determined. However, further research could explore what type of electric vehicle charging stations should be used. In addition, a similar method could be followed in order to determine where additional privately owned electric vehicle charging stations should be constructed.

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