**Project Title:** EV Charging Station Planning at University of Iowa

**Project Description:** Determine the best locations for electric vehicle charging stations on the University of Iowa campus, the types of charging stations available, cost estimates, and project what type of growth the network will need to see over time.

**Background:** The electric vehicle market is expected to have strong continued growth. In order to support the growth, an increasing network of electric charging stations will need to be developed. On campus, the University of Iowa has established solar-powered charging spaces for EVs at the Sustainable Energy Discovery District (SEDD), powering ~20 EVs. At this point, these spaces are reserved only for University personnel. As EVs become more common on campus, expansion of the charging station network will be an important consideration.

Questions to analyze include: Which parking lots do not have any charging stations? Will the charging stations include solar panels, like the station at SEDD? Are there some parking lots or surfaces that are better for installation? What factors can influence costs? How much would the installation of charging stations cost the University? Who offers the service, or what kind of brands of charging station would serve University needs the best? What kind of charging station will you use? What quantity did you decide on? How did growth projections factor into your decision-making? What approach did you choose for determining where to place them on campus? What data do you think you would need to answer these questions? Your approach to the strategy and these questions may depend on whether you’re planning for the next round of installations, or 5-10-25-50 years down the road.

Depending on your background, one aspect of this project may be more “central” than the others. For example, GIS students may be concerned with the actual spatial location and suitability of the stations. Engineering students may be concerned with the system processes, selection, construction, and performance of the stations themselves. Environmental engineering, planning, or sustainability students may be more concerned with a combination of forecasting growth and planning. Finance, economics, or business students may be most concerned with the cost analysis of the stations and installation, cost-to-use price setting, and pay-off time or benefit quantification of deploying this system.

**Helpful Materials:** “Sustainable Energy Discovery District,” Facilities Management. <https://www.facilities.uiowa.edu/sustainable-energy-discovery-district>

“Costs Associated with Non-Residential Electric Vehicle Supply Equipment: Factors to consider in the implementation of EV charging stations,” U.S. Department of Energy. <https://afdc.energy.gov/files/u/publication/evse_cost_report_2015.pdf>

**Desired Outcomes:**

* The final output will vary based upon the class/background of the student. A written report, perhaps supplemented by a visual presentation, of the EV plan which answers the questions above, considers practical limitations to their approach, and exercises some creativity is the end goal across topics. GIS project approaches may emphasize the mapped locations more. Finance, accounting, economics, or business students may be asked to generate complex spreadsheets, charts, and models. Engineering students may be concerned with evaluating different designs and models.

**Potential Collaborators/Stakeholders:**

* **Office of Sustainability and the Environment** (can guide project focus and help acquire data students determine to be important)
* **Facilities/Energy Management**

**Evaluation:** Based upon successful consideration of the questions above and varies based upon the specialization/focus of the project. A thorough attempt at answering most or all the questions in the background to maximize the usefulness of the report to a University official/manager is expected.

**Course Relevance:** GIS, Finance/Business/Economics, Sustainability, and Engineering related courses.