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## Energizing Education in Minnesota: Proximity of Conventional and Renewable Facilities to Universities

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## Energizing Education in Minnesota:

### Proximity of Conventional and Renewable Facilities to Universities

#### Summary

With climate change becoming more evident across the world and identifying that the energy sector is one of the largest contributors to global warming, it is paramount to have extensive examination of energy sources within the global system, especially within higher education institutions. In relation to this, I was curious about Minnesota's energy and environmental commitments especially seen within its high education institutions and I decided to examine the relationship between energy and education within the state. Therefore, the question being posed is, "could there be a relationship between the proximity of renewable and non-renewable sources to major Minnesota higher education institutions and their relative energy/ environmental education and awareness within their communities?" The goal of this project was to find a potential relationship between distance and awareness of energy and environmental issues amongst higher education institutions.

#### Data

To answer my question, I needed to pinpoint the major colleges as well as renewable and non-renewable facilities around Minnesota. I collected data about energy facilities locations, quantities, and energy output from the U.S. Energy Information Administration (EIA) for all the renewable and nonrenewable data used within my analysis from a 2016 report. Furthermore, I found the locations and type of institutions from the Minnesota Office of Higher Education; from this, I decided to identify major higher education universities therefore, I included all colleges with four-year degrees. In addition to the two variables, energy types, and university/college locations, included Minnesota counties and major highways as relative features in the state when observing the plotted points. After having the base points, I isolated the nonrenewable/fossil fuel sources as well as the renewable sources to be able to join both sources to the same college points. After joining each energy type group to major Minnesota universities/colleges, I identified the proximity of each college to its nearest source from the distance table and compared the closest and further institutions from their nearest fossil fuel/nonrenewable source and renewable source. In addition to researching distance, I researched each university's environmental/energy education initiatives; to do this, I made a table with 7 points to analyze their environmental/energy awareness. The 7 criteria are listed as follows:

- Environmental/Energy Major/minor
- Sustainability/Environmental Education Center(s)
- Community Events and Outreach
- Direct Action
- Research
- Climate Agreements
- Campus Commitments

#### Conclusion

I thoroughly examined each campus' websites for at least one representation of each of the listed criteria to determine their involvement and focus on environmental and energy education. I discovered that over 89% of all major Minnesota universities and colleges are within 10 miles or less of a renewable source, while 80% of within 10 miles of a nonrenewable/fossil fuel plant. Therefore, for the education

score portion of my research, I identified the average education score of campuses that are under and over 10 miles of their nearest renewable energy source. I discovered that colleges closer to these renewable sources overall had higher education score than those over 10 miles potentially identifying a correlation between energy source distance and environmental awareness within Minnesota universities. This importance of this study depicts that observing the proximity of higher education institutions to the closest power sources does much more than predicting what types of energy campuses consume; this research also provides in-depth examination of campus' responsibility of environmental concerns, energy education and awareness, as well as their success amongst various Minnesota universities.

### **Recommendations**

If I were to redo this project, there would be some goals, data, and analysis that I would change. For instance, I would research more criteria points to more thoroughly assess campus' obligations to environmental awareness and energy usage. Furthermore, I would use only 4-year public and private universities consisting of a myriad of studies rather than including specialty schools such as the Minneapolis College of Art and Design. While these campuses are still significant educational institutions in Minnesota, they focus on one area of study limiting their involvement in environmental and energy education. Lastly, I would analyze the institutions' distances from their sources based on roads ways to and from the institutions rather than simply by distance away. This would create a more realistic and accurate analysis of distance between schools and energy sources.