October 1 2025

Solar Energy Potential Analysis

1M1B Green Internship

The Importance of Solar Energy for the Future

Understanding how solar energy contributes to sustainable development and community resilience

Project Objectives: Mapping Solar Potential and Predicting Energy Output

Key objectives focus on developing a comprehensive tool for assessing solar viability and sustainability.

- Develop a data-driven tool for accurate solar potential mapping.
- Predict energy output based on local irradiance and climate factors.
- Support sustainable development initiatives through informed decision-making.

Data Collection and Analytical Tools

Geospatial Analysis: Importing Layers in QGIS

In this phase of the project, we focused on importing and processing multiple geospatial layers within QGIS. This included analyzing land use, rooftop suitability, and solar irradiation data. By integrating these layers, we were able to identify high-potential solar zones crucial for optimizing solar energy deployment in the community.
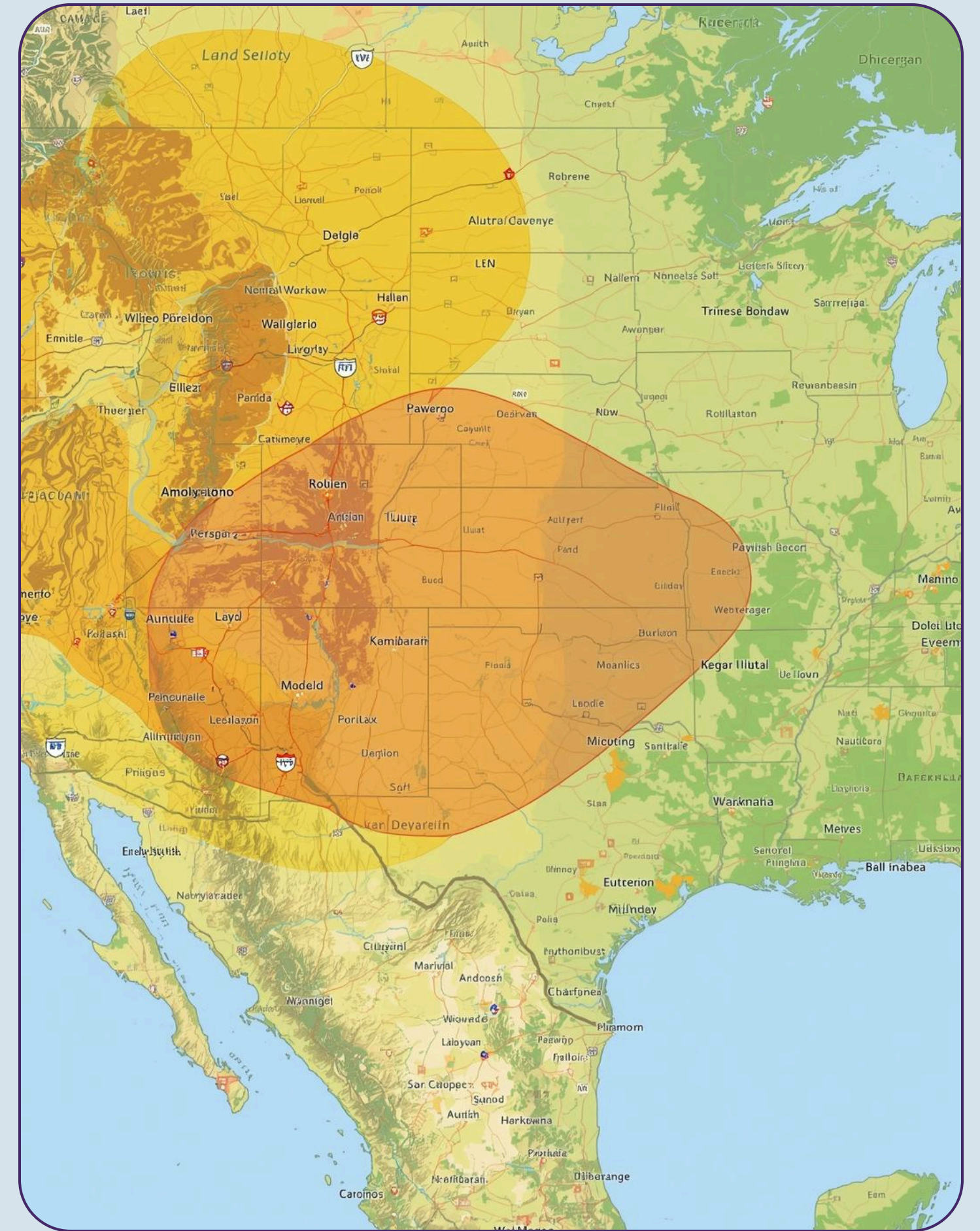
AI Regression Model: Analyzing Solar Energy Potential

Understanding the features utilized and the choice of model for accurate energy output predictions

Visualizing Solar Potential Zones and Outputs

The results of our analysis revealed critical solar potential zones across the community. **Detailed maps** highlight areas with optimum irradiation and suitable rooftops for solar installations. These visualizations serve as essential tools for stakeholders to make informed decisions about solar energy deployment and sustainability initiatives.
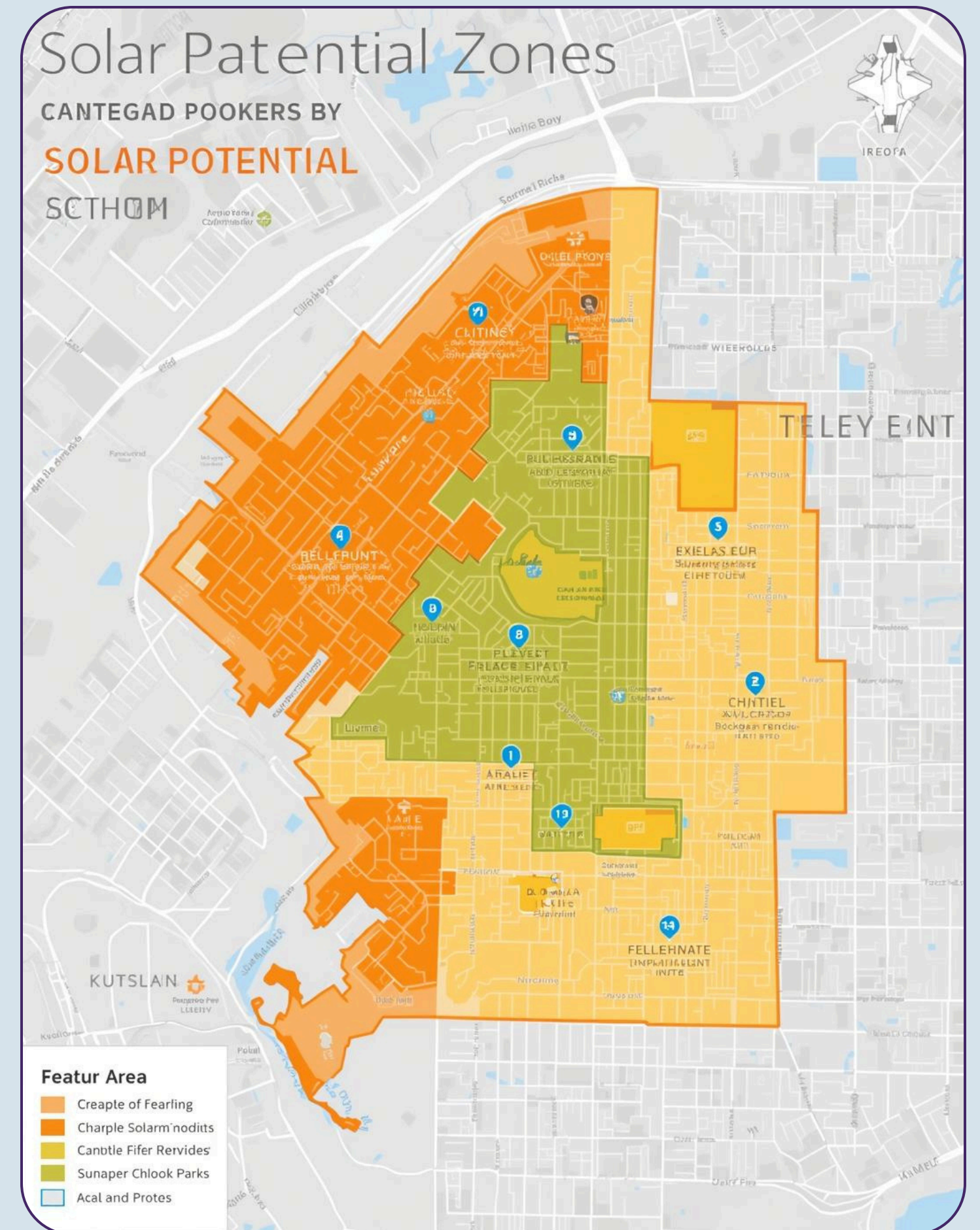
Engaging Local Communities and Policymakers for Solar Advocacy

Fostering collaboration through workshops and site-specific reports to enhance community involvement in solar energy initiatives.

Challenges in Solar Energy Analysis

Key hurdles faced during data processing and model development

- Handling fragmented and multi-source geospatial data proved complex for accurate analysis.
- Ensuring model accuracy while maintaining interpretability was a critical balancing act.
- Enhancing visualizations to cater to non-technical audiences required innovative approaches.

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