Revitalizing Solar Insights: A Dashboard for West Tennessee Solar Farm

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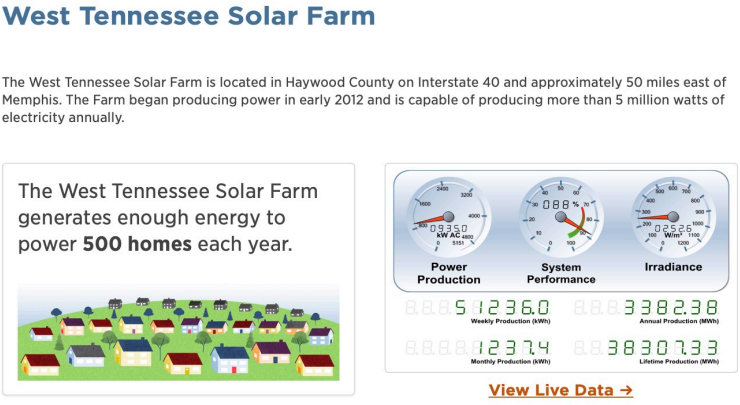

Motivation

Can we build an interactive dashboard to:

1. Improve research and education accessibility
2. Optimize power production
3. Advance sustainable energy practices

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     - Interactive Maps
     - Sensor Information Panel
     - Historical Data Analysis
     - Exporting Data

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   - User-Friendly Interface

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   Hosts a web server to allow users from all major operating systems to be able to access the dashboard.

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   Hosts a web server to allow users from all major operating systems to be able to access the dashboard.
5. **Google Cloud Console**
   Safeguards API information for enhanced data security.

Project Goals

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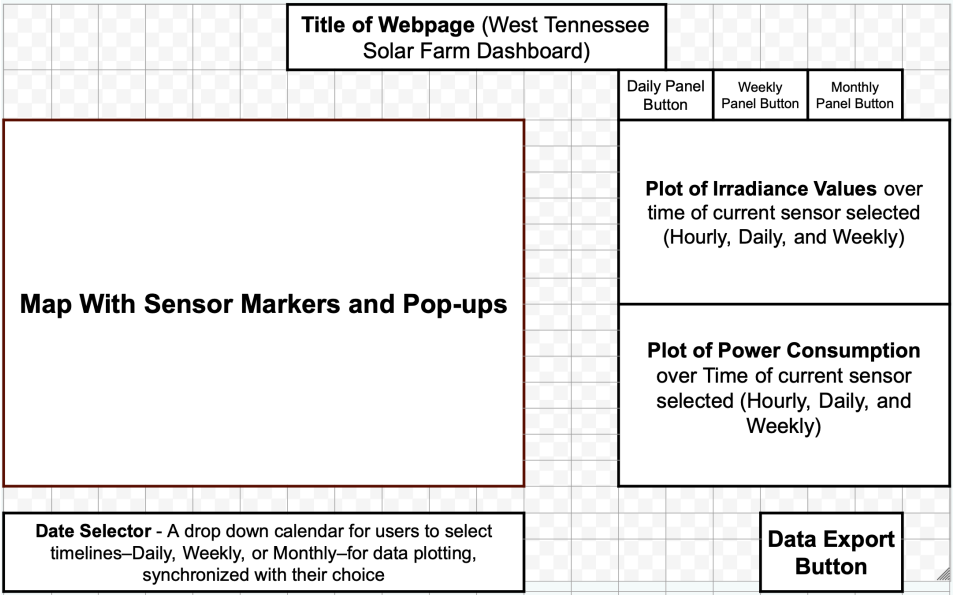
4. **Cross-Platform Accessibility**
   Ensure inclusivity by designing a webpage that accommodates diverse laptop operating systems, guaranteeing a seamless user experience.

Initial Mockup



Dashboard Demo

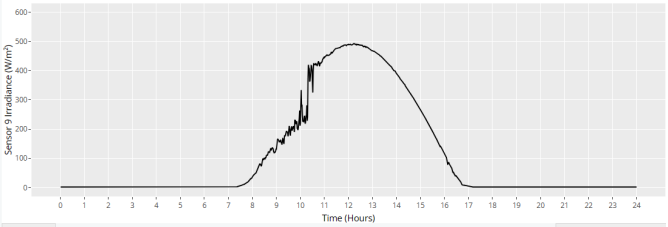
West Tennessee Solar Farm

Live Data | Daily Data

Start Date:

2023-09-08

Sensor 9 Irradiance 09-08-2023



Irradiance

Download Daily Data

Tomorrow's Forecast

Date	Metric	Value
2023-10-17	Predicted Average Cloud Cover (%)	12.96
2023-10-17	Predicted Average Temperature °F	55.02
2023-10-17	Weather Outlook	Overcast
2023-10-17	Predicted UV Radiation	17.38

Irradiance is a measure of how much energy from sunlight or other forms of light falls on a given area, typically expressed per square meter. It helps us understand how much light energy is reaching a specific spot, such as a solar panel.

The West Tennessee Solar Farm has powered 2595 houses or 6594 electric cars today. The West Tennessee Solar Farm has powered 11828 houses or 30046 electric cars in the past 7 days. The West Tennessee Solar Farm has powered 47313 houses or 120187 electric cars in the past 31 days.

Challenges

1. **Establishing a streamlined data flow**
   - mySQL $\Rightarrow$ Python $\Rightarrow$ Google Drive $\Rightarrow$ R-Shiny Dashboard

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2. **Error-Handling**
3. **Webpage Development**
   - Accessibility across a variety of major operating systems

Future Work

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3. **Video Tutorial**
   - Outline how to use the dashboards functionalities

Conclusion

The dashboard provides:

1. An educational resource for individuals interested in learning about the solar farm process.
2. A tool that offers researchers access to public data for their research.

Any Questions?

Comments?

More information about our Dashboard for West Tennessee Solar Farm:

https://github.com/andylum/495-senior-design.git

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