

# SolarSize: Optimal Solar Installation Sizing

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## Introduction

- Installing solar panel solutions may raise many uncertainties

### Objectives

- Help user understand the financial benefit of solar power installations
- Help user determine the optimal size for their solar power installation
- Help user visualize the energy production capabilities of solar panels in comparison to their current energy consumption

## Methods

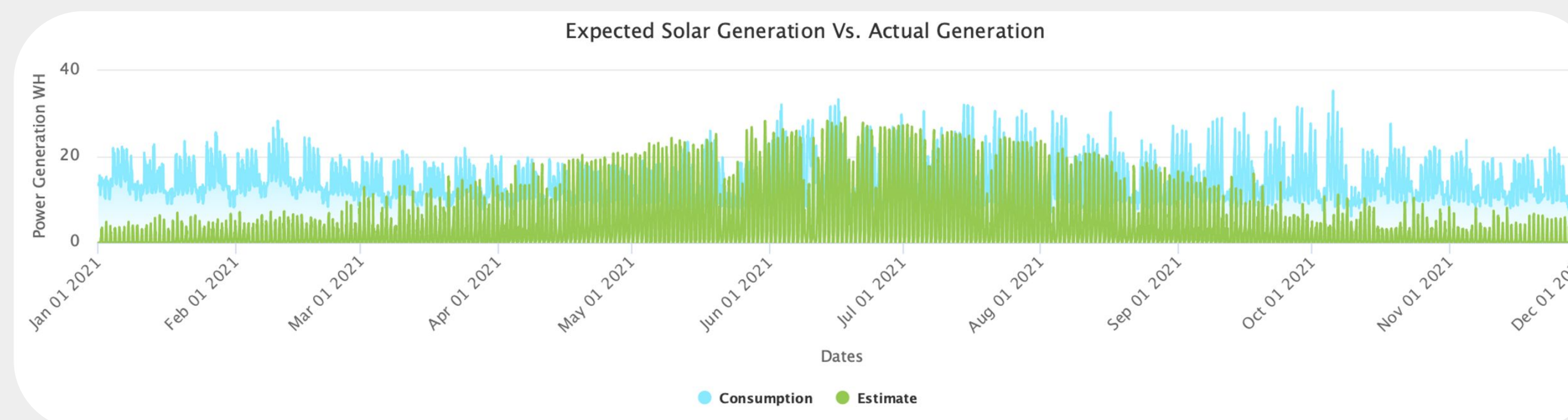
- Solar data is collected from NASA POWER API using a Python solar model
- Laravel backend acts as a bridge between the Python solar model and the frontend
- Application interface and results are displayed to user using Vue.js and Highcharts



## Results

### Energy Overlay Graph

- Accepts .csv file detailing user energy consumption
- Retrieves hourly estimated solar energy levels
- Formats data into graphable x and y values
- Creates line graphs for user energy consumption and estimated solar energy levels
- Overlays the graphs to provide a visual comparison between the energy consumption and estimated solar power generation

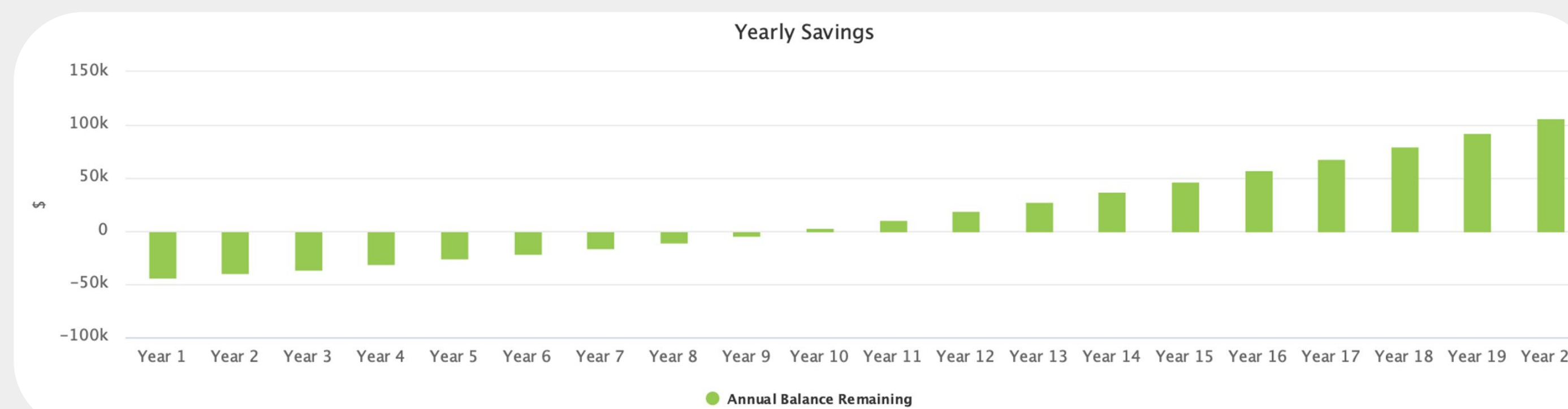


### Optimal Solar Power Installation

- Compares multiple types of solar panels
- Evaluates the energy and savings produced by different numbers of solar panels
- Suggests the panel type and number of panels that will produce the most savings

### Return on Investment Analysis

- Calculates the cost of installing the panels and the savings the panels generate
- Breaks down yearly savings, interest costs, maintenance costs, and remaining balance



## Conclusion

- Encourages users to install solar power solutions
- Provides annual cash flow breakdown and return on investment analysis
- Suggests optimal solar power installation
- Graphs user energy consumption and estimated solar energy production

## Acknowledgments

Dr. Timothy Maciag & Dr. Kin-Choong Yow



## Further Information

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## Literature Cited

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