# Leveraging analytics for energy community planning, sizing and operation

Using data-intensive analytics to optimize integration of renewable distributed generation and storage

**algoWatt** achieved this using
• SAS® Viya® in Microsoft Azure • Machine learning

**SAS Hackathon 2023** • Technology Winner for Forecasting • Energy Track

## Challenge

The expansion of renewable energy use has created problems for energy companies in balancing incentives with costs.

- The system of incentives is important, but has built up piecemeal over time.
- It is not clear what composition of 'energy communities' (collectives of producers) will be most profitable.
- The break-even point is hard to predict.

## Innovation

This solution uses data from photovoltaic sites to forecast the optimum configuration for energy communities.

**algoWatt:**

- Used data taken every 15 minutes from substations and photovoltaic sites over a period of 4 to 11 months.
- Analyzed the patterns of energy generation and use over time.
- Created models to forecast optimal configuration of energy communities.

## Impact

The aim was to maximize the profits of energy generators.

- It was possible to forecast the optimum generation capacity and size of community.
- It was also possible to identify the smallest investment that would have a positive return.
- This solution could be widely used by energy companies to improve their return on investment in renewable sources.

> "This will enable companies to make informed and profitable decisions for the community."
>
> Aishwarya Sangal • Student • Oakland University