

Transforming the way  
you power your world.

FLUENCE

A Siemens and AES Company

Introducing Fluence, the global leader in energy storage.



10+ Years



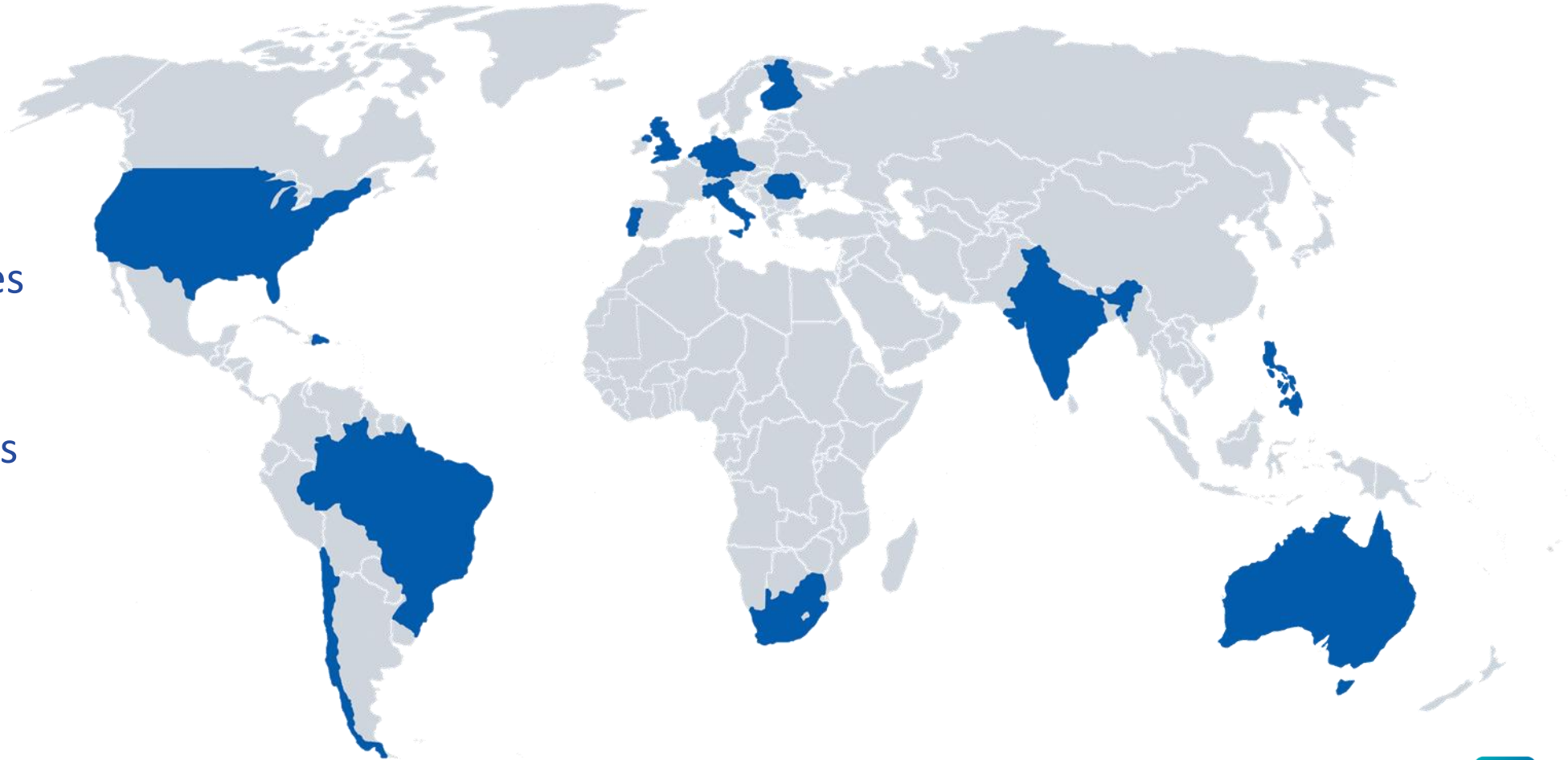
16 Countries



60+ Projects



500+ MW



# Fluence brings unmatched experience at scale from the partner you can trust.

## EXPERIENCE

10+ years of experience in energy storage from two proven industry pioneers

## SCALE

Complete technology and service offerings delivered worldwide

## THE RIGHT PARTNER

Deep understanding of modern power markets, customer needs, and local market challenges

Created and backed by two industry powerhouses

**SIEMENS**  
*Ingenuity for life*

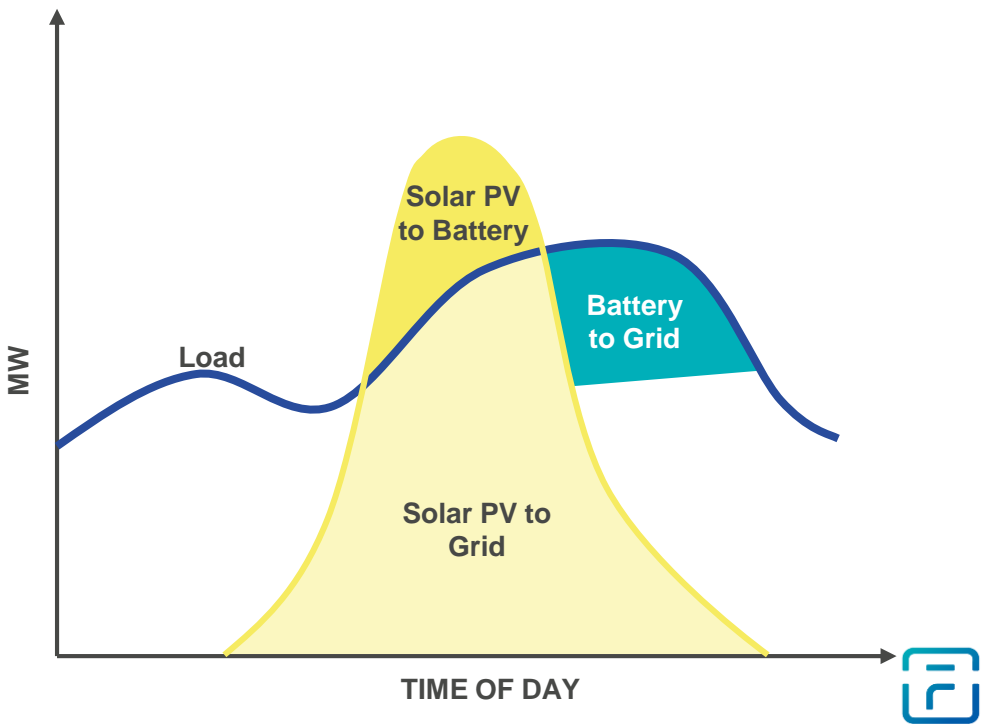
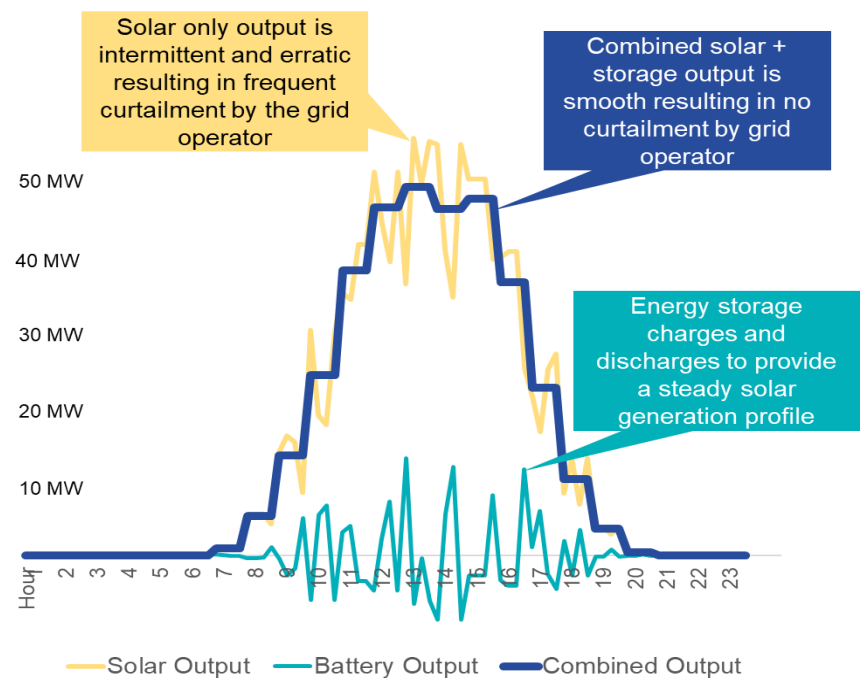
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 **AES**  
*we are the energy*

# The Opportunity: Renewables + Storage

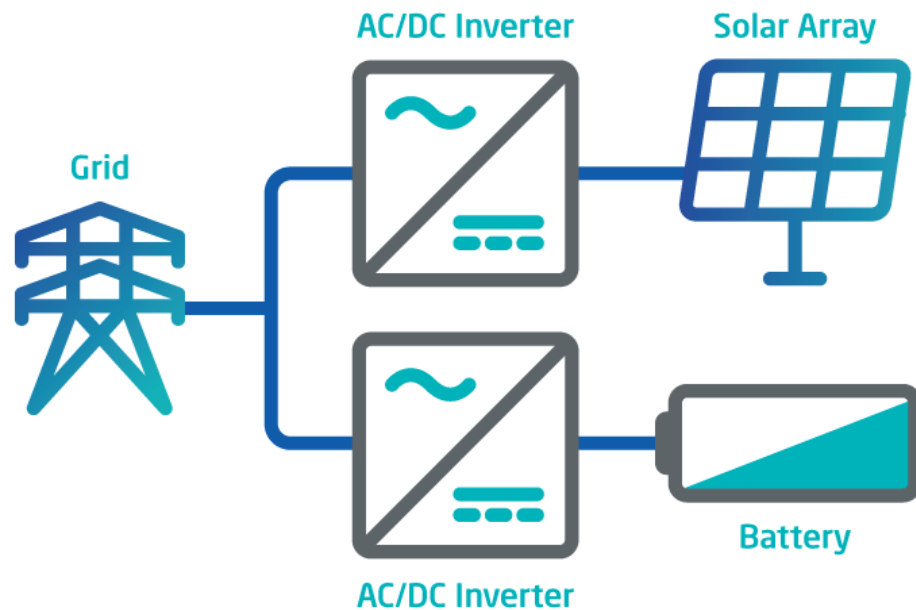
The RE+ES value proposition **depends highly** on the use case.

	Grid services	Renewable plant stability	Renewable firm energy
Value proposition	Reliably integrate increased renewable energy penetration into the grid	<ul style="list-style-type: none"><li>• Reduce voltage stability issues</li><li>• Reduce renewable energy curtailment</li></ul>	Replace the most expensive generators that cover peak demand with semi-dispatchable wind or solar
Typical ES Duration	30 minutes to 1 hour	30 minutes to 2 hours	1 hour to 8 hours

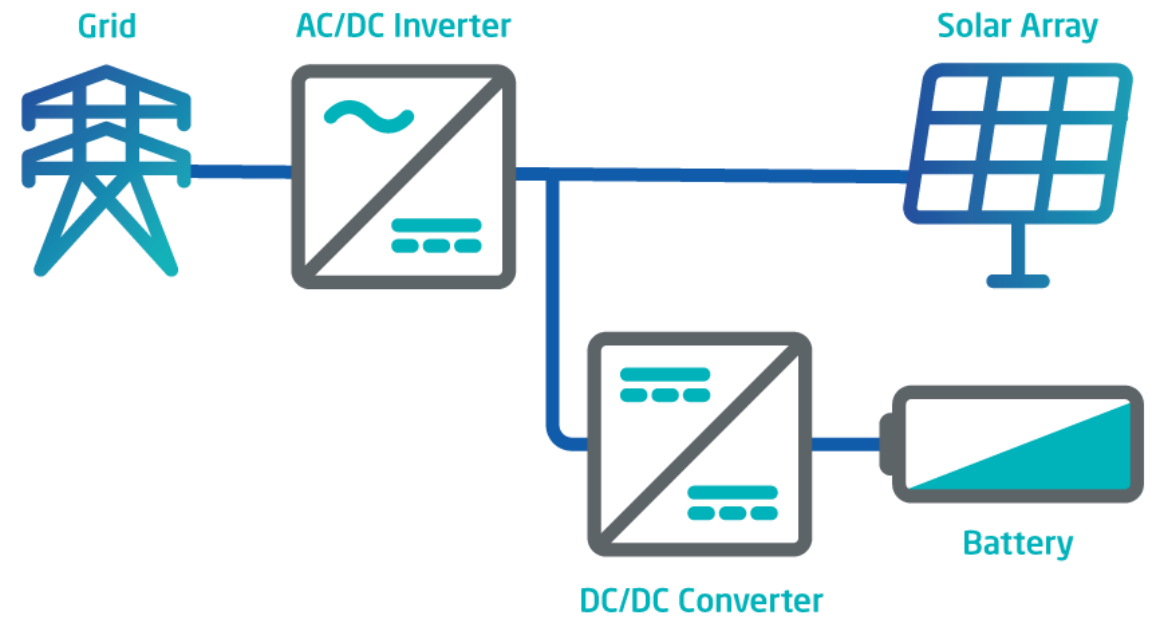


# Storage can be either AC- or DC-coupled with solar.

## AC Coupled



## DC Coupled



# How do you decide if DC coupling is the right choice?

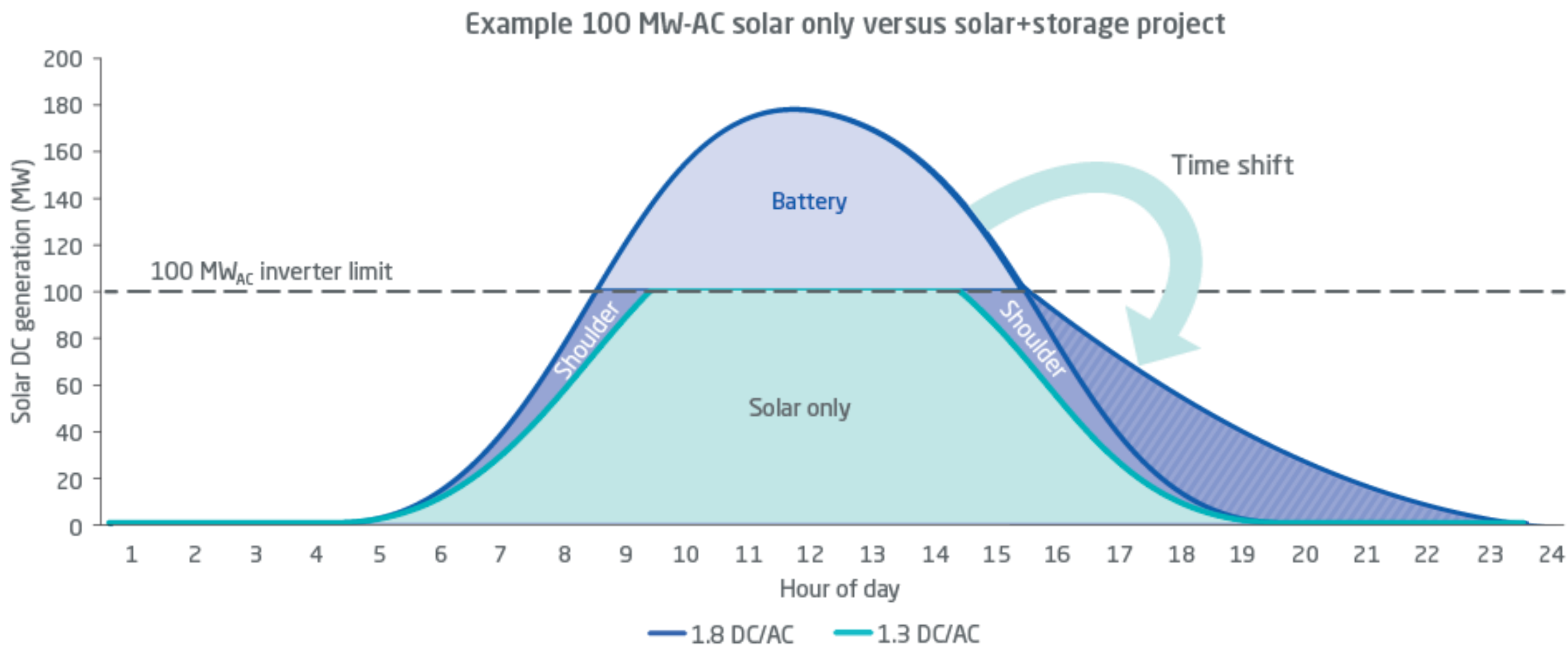
DC coupled has several advantages though may place restrictions on commercial capabilities.

	AC	DC
Can store energy generated by the solar project or from the grid	X	X
Eligible for ITC, but must demonstrate that 75% of battery charging is from PV	X	X
Separate dedicated inverters & transformers for solar elements and energy storage elements of the project	X	
Increased amount of PV energy that can be delivered through same interconnection		X
Simplified interconnection process due to single inverter		X
Takes advantage of solar project DC / AC ratio oversize to charge storage system		X
Use cases <ul style="list-style-type: none"><li>1. Grid Stability</li><li>2. T&amp;D deferral</li><li>3. Renewable Plant Stability</li><li>4. Renewable Firm Energy</li><li>5. Ancillary Services</li></ul>	All	All, with limits





# Maximizing Solar with DC-Coupled Energy Storage



# Case Study: Renewable Firm Energy

## Solar + storage on Kauai, Hawaii

### Background:

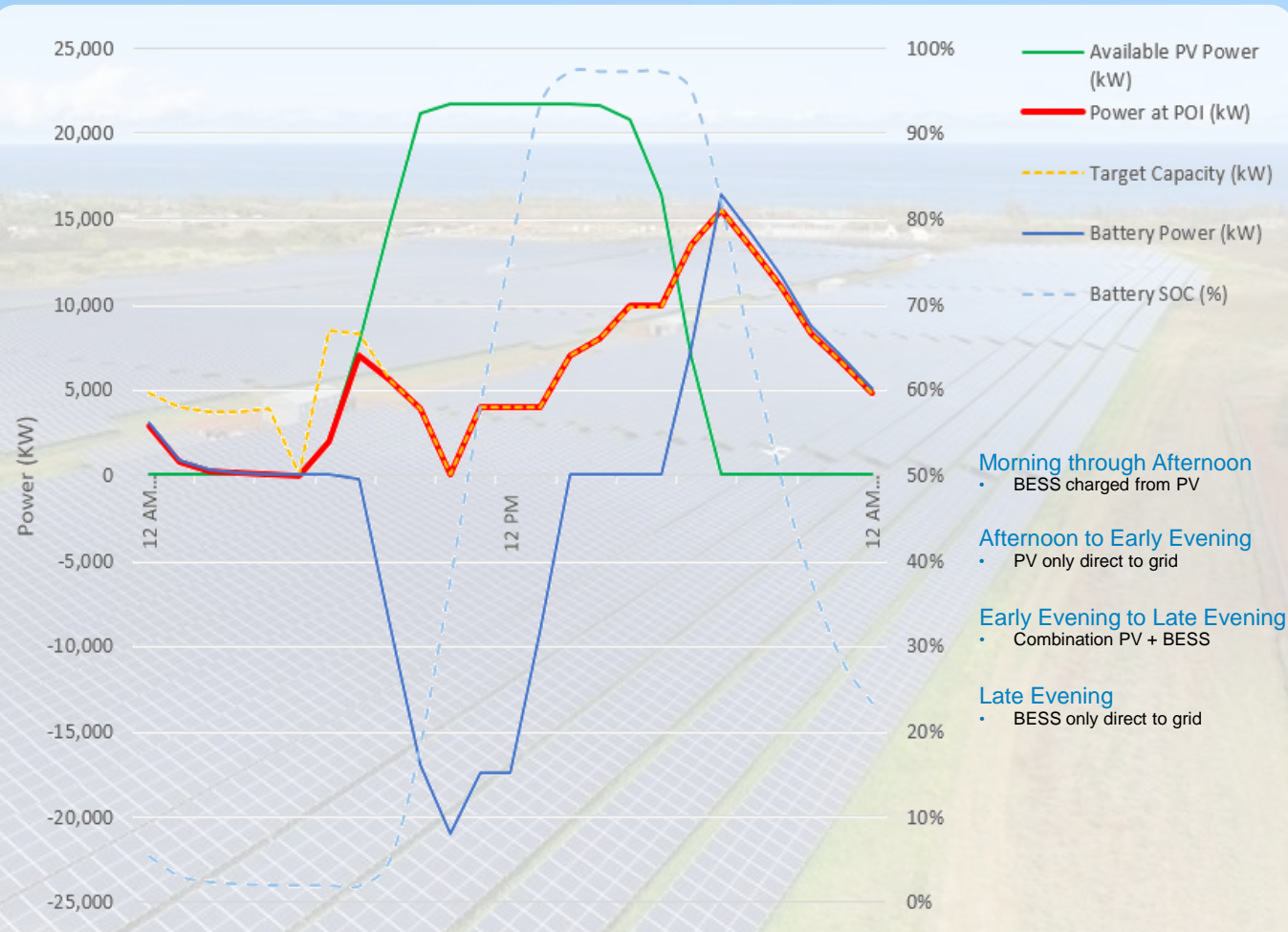
- Population of 66,000
- 125 MW of generation capacity

### Problem:

- Electricity is expensive, ~ 33 cents/kWh
- Utility reliant on expensive fossil fuel generators to cover peak load.

### Solution:

- 28 MW solar + 20 MW, 5 hour (100 MWh) energy storage solution
- “Renewable peaker” offers flexible but firm capacity to meet demand
- PPA is \$110/MWh, ~11 cents/kWh





# Contact Information

- Thomas (TJ) Winter
- [tj.winter@fluenceenergy.com](mailto:tj.winter@fluenceenergy.com)



Thank You

