



Predictive Optimization for Load Displacement

Problem

Capture maximum value from **Solar & Batteries**
in a **Load Displacement** scenario.

Solution



Hybrid PV Optimization

Smart Storage & Load Shifting

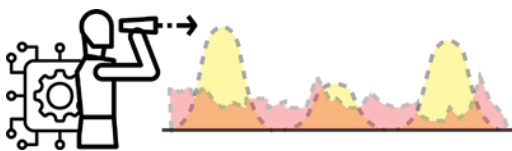
Balance **Curtailment Reduction** and **Rate Arbitrage** \$

with **Outage Protection** 

to reduce grid expenditure by up to 40% and safeguard your energy

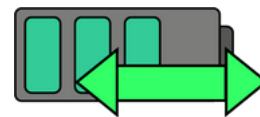
How it Works:

Forecast



Sponge EMC generates production & usage forecasts and monitors energy rates...

Control



to charge/discharge batteries & shift loads when it is most cost effective.

Protect



If Sponge detects at
Outage Risk...



it makes sure your
battery is fully charged...



so your business is
protected.

On this page we are going to prove that Your Hybrid PV System is Inefficient.

Once we identify inefficiencies, we can optimize against them

Inefficiency #1

Batteries have 2 use cases that are **not complimentary**.



Use #1: **Power Outage Protection**

To provide outage protection, **a battery should be near full charge**.



Use #2: **Harness Cheap Energy**

To harness cheap energy, **a battery should periodically be near empty**.

Inefficiency #2

The cost of battery power depends on **how it was charged**:



Solar Charging = Free (but *not always available*)



Grid Charging = Expensive (*Day = More Expensive, Night = Less Expensive*)

To **save money**, a battery should discharge when energy is most expensive.

A battery is only **efficient** if it **harnesses the cheapest energy available** in the time period before each discharge.



Optimization Challenge

Ensure batteries are charged before a power outage.

Utilize batteries (and shiftable loads) to ensure that system is always harnessing the cheapest energy available in a given time period.

solved by:

Hybrid PV Optimization
Smart Storage & Load Shifting

Understand Sponge Optimizations

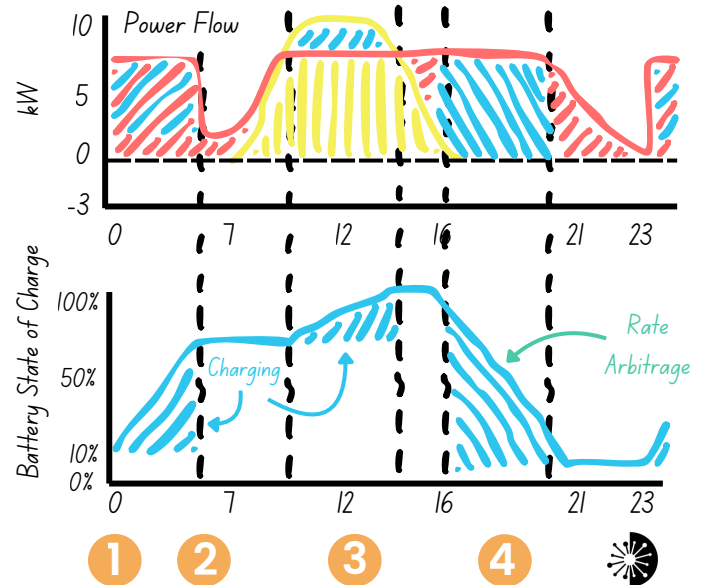
=If [

Forecast = **Cloudy**, Battery Charges on low-cost overnight rate,
Forecast = **Sunny**, Battery kept low to capture tomorrow's solar,
Forecast = **Outage Risk Detected**, Battery Charges to 100%]

Wildly simplified
Sponge algorithm

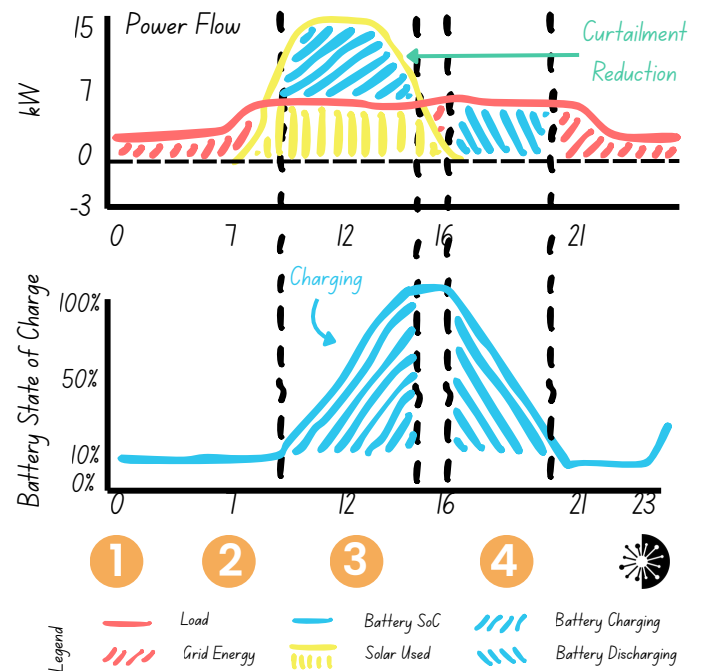
Cloudy Forecast

- 1 Sponge forecasts a cloudy day
- 2 **Battery is partially charged on low-cost nighttime energy**
- 3 Room is left to capture small amount of excess solar
- 4 **Low-cost grid energy and solar stored in battery** used for **rate arbitrage**



Sunny Forecast

- 1 Sponge forecasts a sunny day
- 2 **Battery is kept at a minimum state of charge overnight**
- 3 More **excess solar is captured** and stored - **reducing curtailment**
- 4 Low-cost, solar-charged battery energy is used for rate arbitrage



Sponge leverages usage and production forecasts to ensure that your system is always using the lowest cost form of energy. **We regularly reduce energy bills by an additional 40%.**

Sponge can also manage loads like EV (Fleets) and Water Heaters (Chillers) to ensure that they consume the cheapest forms of energy available.

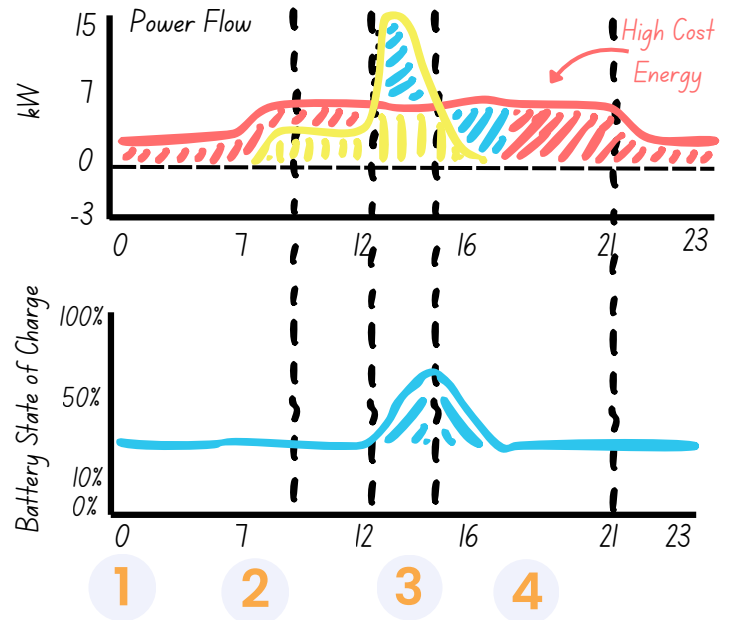
Let's compare how **SPONGE** reduces your grid costs.

Observe how Sponge optimizes a partially-sunny day compared to a regular battery

Regular Battery

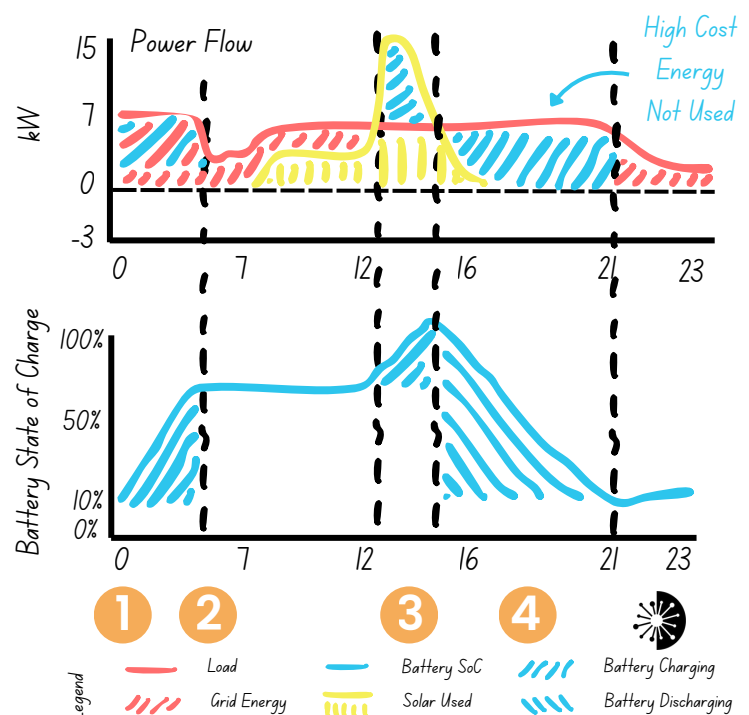
Partial-Sun Forecast

- 1 Battery Min-State-of-Charge may be higher for outage protection
- 2 Battery does not capture low-cost night time energy
- 3 Battery receives minimal charge from excess solar in afternoon
- 4 Battery energy runs out before evening demand spike, expensive grid energy is used instead.



Partial-Sun Forecast

- 1 Sponge deems outage risk low, allows for more discharge previous day
- 2 Battery is charged with low-cost night time energy
- 3 Space is left in the battery to capture the small amount of excess solar
- 4 Battery runs through evening demand spike, saving money



Sponge's intelligent forecasting ensures you extract the **most value** from your system under every weather condition.

Up to

40%

Reduction in
Energy Bills



Up to

4 Yr

Reduction in
Payback Period

Sponge Optimization Pricing Formula:

Sponge EMC

+

Commissioning Fee

+

Subscription



Pro or
Pro+

Based on Project
Size (kW AC)

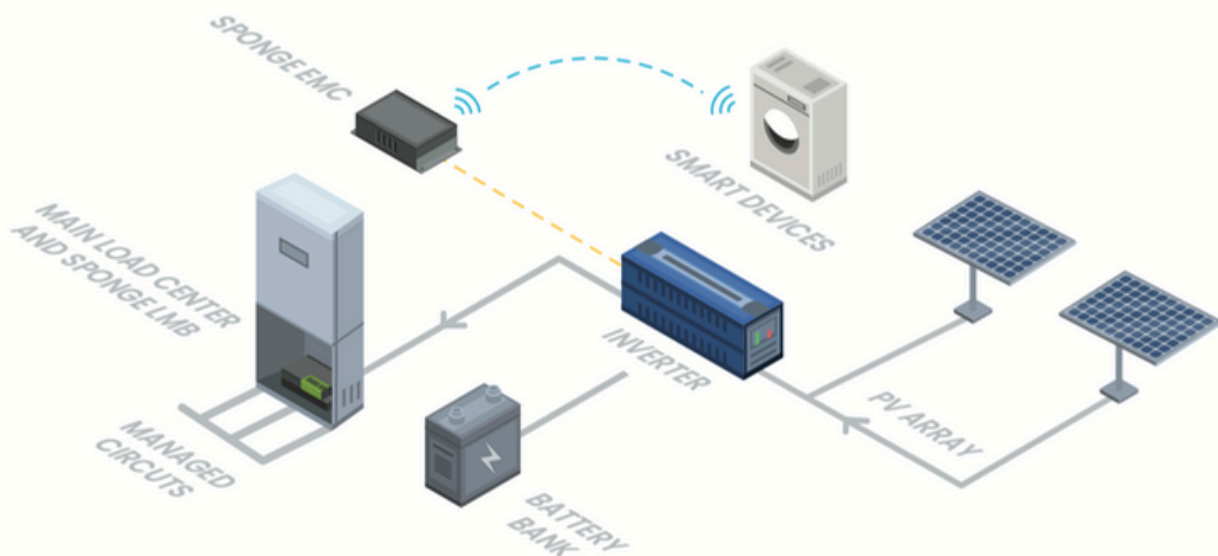
For Projects
>80kWh

PRICING

Hardware	Project Size (AC)	<30kW	>30kW	
	Class	EMC Base	EMC Pro	EMC Pro +
	Price	\$1,275	\$1,775	\$3,800
Optimization	Battery Size (kWh)	<80kWh	80kWh - 500 kWh	500 kWh+
	Commissioning	Free	\$3,125	\$6,250
	Subscription	Free	Lifetime Subscription: \$25/kWh - (20% ITC) = \$20/kWh	
			OR	
			1 Year Free Trial, then either:	Annual Billing: \$3/kWh Lifetime Billing: \$25/kWh

Sponge Offering

The Sponge solution includes the delivery and commissioning of our Energy Management Controller, which operates our proprietary control algorithms. But it doesn't stop there. Our team has full remote access to every system we deploy, enabling over-the-air updates, remote monitoring, system maintenance and most importantly, quality assurance.



Control Philosophy

At Sponge, we respect that system reliability is paramount. That's why our control approach is simple and nonintrusive. Our controls operate completely outside the loop of mission critical system operations and simply make adjustments to targeted set points as required in order to instigate the performance we want to see. After the control action, default settings are restored. This means that there is no incremental complexity or reliability risk introduced, just added value and improved performance.

Order Information

01. Reach out to your installer to confirm your decision to procure the Sponge Optimization Package.
02. The Sponge Optimization Package will be added to your existing payment schema.
03. The Sponge EMC will be installed by your solar installer with commissioning support from Sponge Microgrids.



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Monitor | Control | Optimize
