

APPLICATION NOTE

Sigen AI mode preferences & Dynamic Tariff Configuration Guide

REVISION HISTORY

Date	Version	Note
2026/7/16	1.0	Initial Release

PRODUCT / SOLUTION

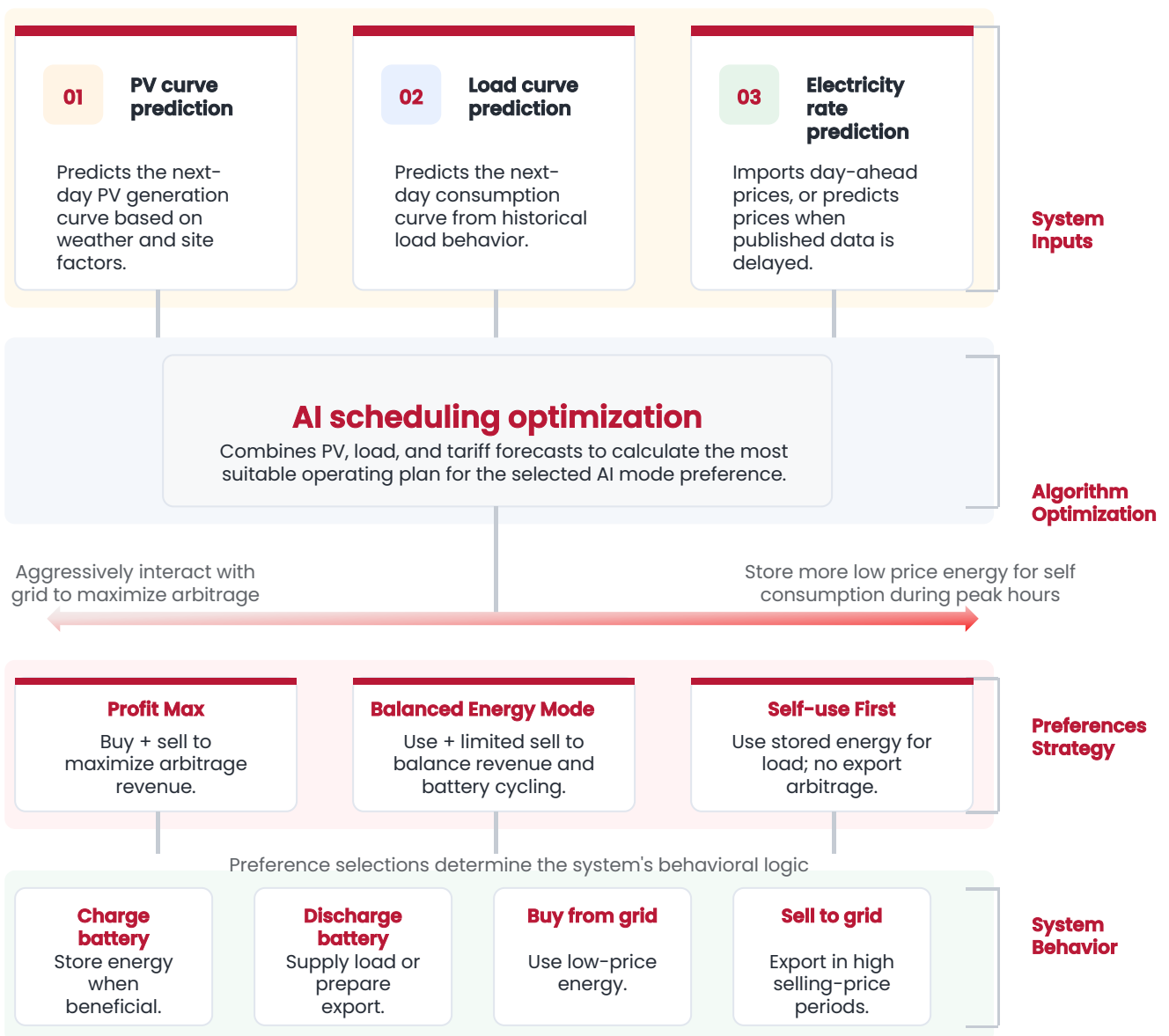
mySigen APP

TARGET AUDIENCE

Final user
Installer
Distributor

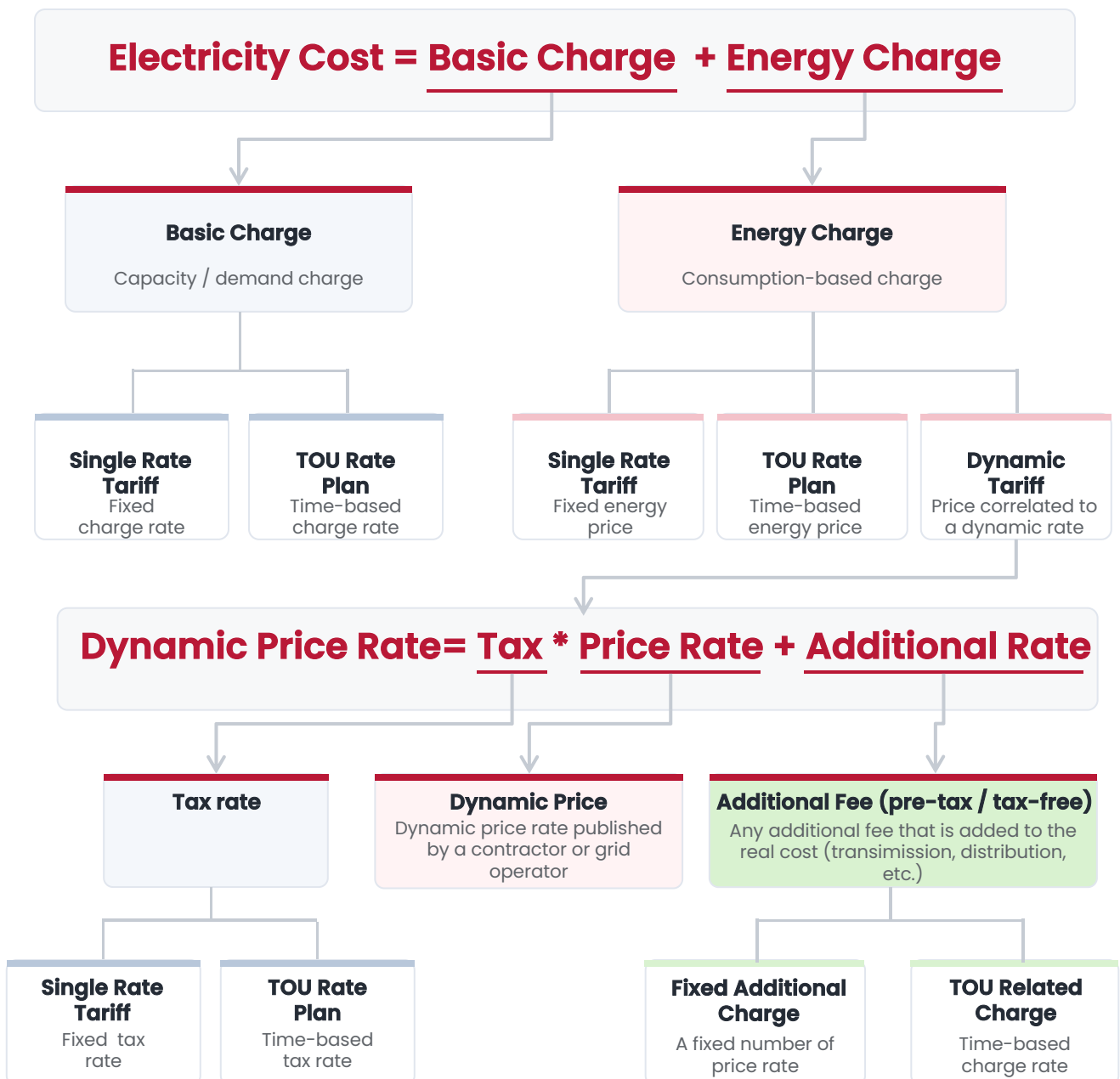
How will sigen AI mode optimise your system operation logic

AI mode uses forecast data to decide when the system should buy electricity, charge the battery, discharge for load, or sell electricity to the grid. By processing PV generation prediction, load curve prediction, electricity price rate prediction, AI algorithm automatically adjust the system EMS behavior according to the preference defined by the client.



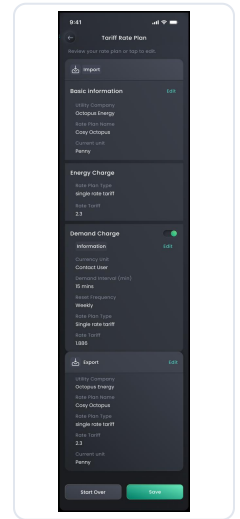
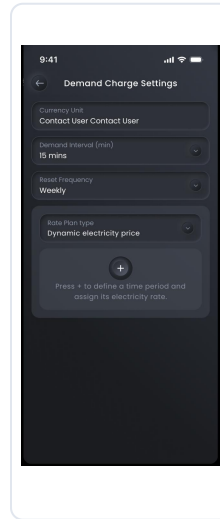
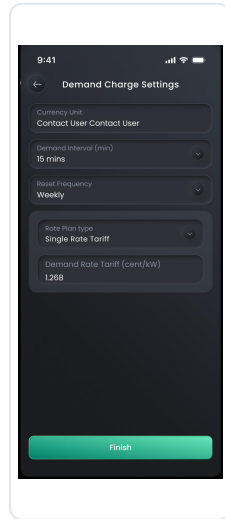
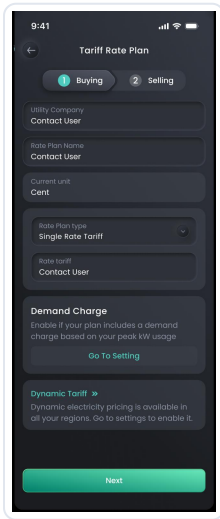
Tariff settings define how the system calculates electricity cost

AI mode uses forecast data to decide when the system should buy electricity, charge the battery, discharge for load, or sell electricity to the grid.



Configure demand charge (Optional)

Demand charge configuration is not applicable in some regions, please refer to the actual display in mySigen APP.



1 Set Demand Charge

System Setting -
Energy Management
Setting - Tariff Plan -
Demand Charge

2 Enter billing parameters

Select currency,
demand interval, reset
frequency. And tariff

3 Choose rate structure

Use Single Rate Tariff
for one fixed kW price,
or TOU Rate Plan when
the kW price changes
by period.

4 Review and save

Check the demand
charge summary
together with the
energy charge
settings, then save the
rate plan.

How to select the demand charge rate plan

Single Rate Tariff

Use one demand rate for the whole reset period. The system calculates the demand cost from the measured peak demand and this fixed kW price.

TOU Rate Plan

Use time-based demand rates when the utility applies different kW prices by season, weekday or time window.

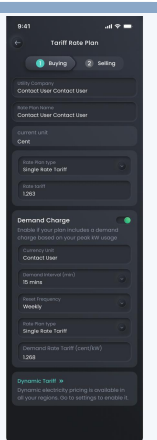
- Demand interval defines how peak kW is measured; reset frequency defines when the peak demand record is cleared for the next billing cycle.

Configure energy charge by tariff type

Energy Charge is the consumption-based part of the tariff calculation. Select the rate type that matches the utility plan.

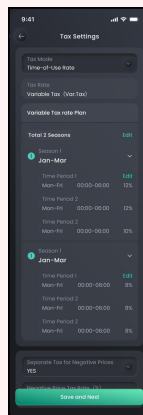
Fixed rate

A fixed tariff per kWh



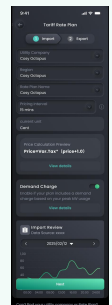
TOU rate plan

Use time-of-use periods when the import price changes by season, weekday or time window.



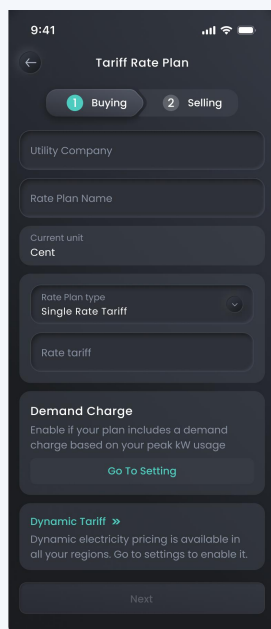
Dynamic tariff

Use dynamic tariff when the system imports dynamic market prices



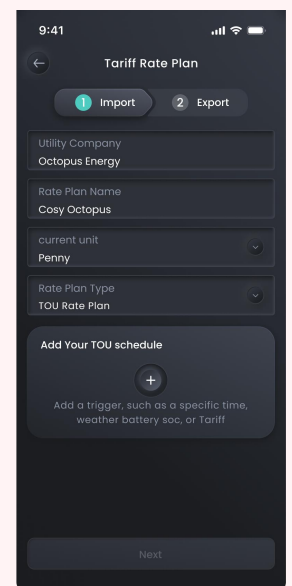
Fixed rate

- Select 'Single Rate Plan'
- Enter utility company name, rate plan name, and rate plan (price/kWh)
- Configure buying rate plan and selling plan respectively with similar process



TOU rate

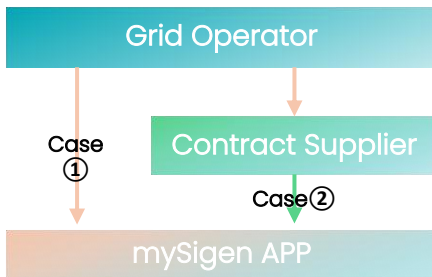
- Select 'Single Rate Plan'
- Enter utility company name, rate plan name, and rate plan (price/kWh)
- Configure buying rate plan and selling plan respectively with similar process



Configure Dynamic Tariff

In regions that a grid operator or aggregator provides dynamic tariff to the clients. Clients may configure the dynamic tariff plan via mySigen APP - 'system setting' - 'EMS setting' - 'tariff plan'. In cases that sigenergy obtains a wholesale price from a grid operator, it is necessary for the client to manually adjust tax and other adjustment to the price formula to match the real cost and revenue.

In cases that sigenergy obtains a contract price that the contract suppliers provide to the clients, there is no need to adjust the price formula as the price published by the contract suppliers directly reflects the real cost the revenue for the clients.



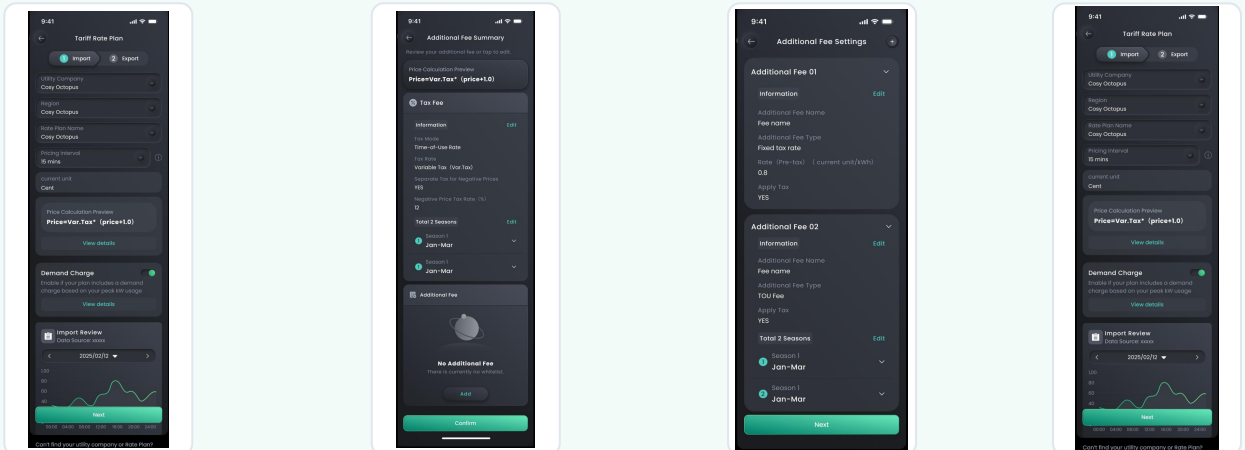
Case① - Obtain wholesale prices from grid operator

In this case, rate curve in mySigen app doesn't match the actual bill. **Rate plan needs to be adjusted manually.**

Case② - Obtain ultimate prices from contract supplier

In this case, rate curve in mySigen app matches the actual electricity bill. **No need to modify rate.**

Dynamic tariff rate



- 1 Select Dynamic Tariff**
 - Choose the dynamic rate plan provider.
 - For grid operators that publish wholesale price, press 'View Detail' to configure tax and additional fee
- 2 Configure Tax Rate**
 - Select fixed tax rate or TOU tax rate.
 - Support enabling separate tax for negative prices
 - For tax adjustment, please configure positive value for buying and negative value for selling to reflect adjustment for cost and revenue
- 3 Configure Additional Fee**
 - Configure Additional Fee by fixed rate or TOU rate.
 - Support configure multiple additional fee
 - Support applying tax for additional fee
 - For additional fee adjustment, please configure positive value for buying and negative value for selling to reflect adjustment for cost and revenue
- 4 Review and Save Plan**
 - Review dynamic tariff provider, Price adjustment and demand charge

Key questions before enabling AI Mode

AI Mode can be used with different tariff structures. Accurate tariff settings and the selected preference determine how the system schedules battery and grid interaction.

1 Can AI Mode be enabled only for sites with dynamic tariff?

No. AI Mode is available for residential and C&I sites regardless of tariff type.

2 How does AI mode characterize system losses and SOH degradation during arbitrage?

AI algorithm automatically reserves a minimal arbitrage margin gap to ensure the arbitrage gap can cover system losses. For SOH degradation, under the most aggressive preference of 'profit max', system will try to limit the system cycle number to no higher than two cycles per day.

3 How will AI mode affects battery degradation? How to characterize the effect of degradation of battery system in economic model

Sigen AI mode has already implemented internal benchmark to characterize the effect of degradation during cycles. System will only run cycles when arbitrage gap is enough to cover the loss of SOH, unless programmed for 'profit-max' preference.

4 How do preferences affect system behavior?

The three AI Mode preferences define how actively EMS uses the battery and inverter to interact with the grid. More aggressive preferences may increase arbitrage revenue, but can accelerate battery SOH degradation.

5 How to characterise additional adjustment to dynamic tariff plan?

Dynamic tariff published by the grid operator or energy market normally reflects the base price. For buying electricity, taxes and network-related fees increase the customer's actual cost, so they should be added to the buying price as positive values. For selling electricity, these items reduce the actual export revenue, so they should be deducted from the selling price as negative values. This helps AI Mode optimize charging and discharging based on the real settlement price.

Disclaimer

Before using AI Mode or configuring dynamic tariff, keep the mySigen App and device firmware updated to the latest available version. Screenshots in this document are for demonstration only. Actual dynamic tariff availability varies by country or region. Sigenenergy will continue to provide updated AI energy solutions for global customers. Please refer to the mySigen App for actual availability and launch schedule.

AI preferences create different responses to the same dynamic tariff in one typical day

The case uses the same PV, load and tariff profile. The only change is the selected AI Mode preference, which changes how EMS uses the battery and grid interaction capability.

Preference	Grid buy	Grid sell	Battery throughput	Strategy signal
Profit Max	8.80 kWh	5.45 kWh	9.43 kWh	Aggressive arbitrage
Balanced Energy Mode	6.61 kWh	2.91 kWh	5.03 kWh	Moderated arbitrage
Self-use First	6.57 kWh	0.42 kWh	2.66 kWh	Self-consumption first

How to read the following charts

1. Power response chart: PV and load are shown as positive power. Grid buying is positive; grid selling is plotted below zero to show export direction.
2. Tariff and SOC chart: buy/sell prices are shown against the battery SOC trajectory to explain when EMS charges, discharges or preserves energy.
3. Dynamic tariff rate plan and PV generation is based on a real application case, different EMS logic and operation results are simulated to demonstrate a clear comparison help understand the effect of preferences.

Profit Max: dynamic tariff response

The most aggressive preference. EMS increases charge and discharge actions when the price spread creates arbitrage opportunities.

Grid buy
8.80

 kWh
/day

Grid sell
5.45

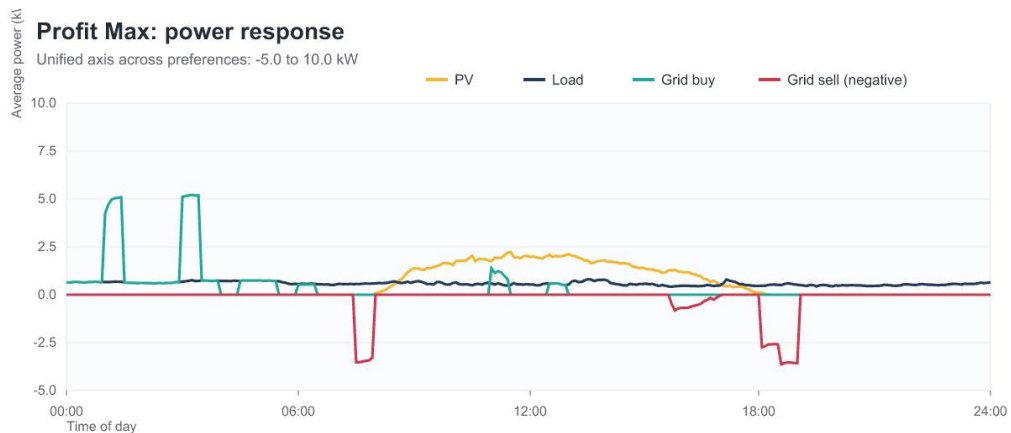
 kWh
/day

Battery throughput
9.43

 kWh
/day

SOC range
0-100

%

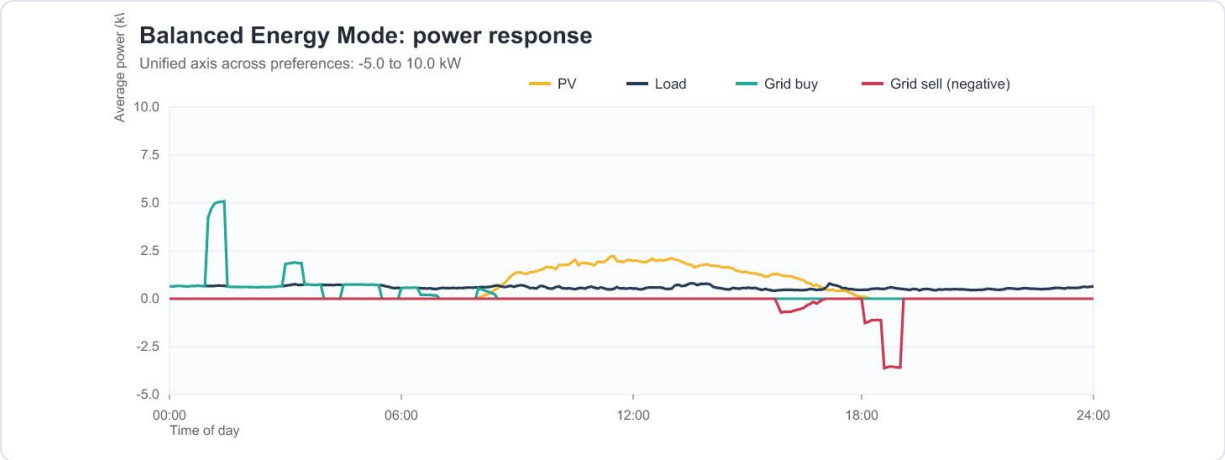


- This mode shows the strongest arbitrage behavior: battery throughput is the highest in the sample and grid export is the highest. EMS is willing to use more battery cycles when price spread creates value.

Balanced Energy Mode: dynamic tariff response

A moderated preference. EMS still responds to price windows, but with lower grid exchange and battery throughput than Profit Max.

Grid buy 6.61 kWh /day	Grid sell 2.91 kWh /day	Battery throughput 5.03 kWh /day	SOC range 0-100 %
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- This mode keeps a middle ground: it still follows low-price charging and high-price discharge opportunities, but the total throughput and export volume remain below Profit Max.

Self-use First: dynamic tariff response

The most conservative preference. EMS avoids aggressive arbitrage and prioritizes using PV and battery energy to serve load.

Grid buy
6.57

 kWh
/day

Grid sell
0.42

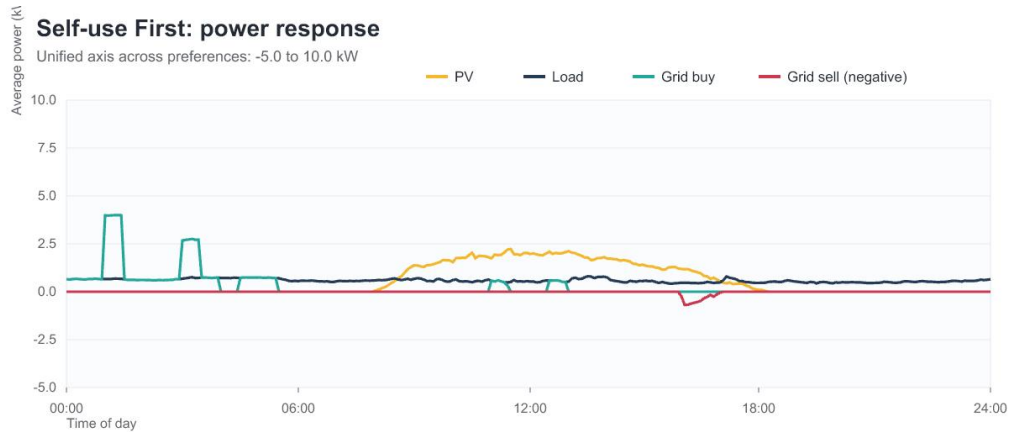
 kWh
/day

Battery throughput
2.66

 kWh
/day

SOC range
0-100

%



- This mode prioritizes load coverage and self-consumption. Grid export is limited, and EMS avoids aggressive battery discharge for external arbitrage.