

# Understanding battery optimisation

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# How optimisation works

Our optimisation works by looking at information like how much energy you use and generate, the weather forecast, and when electricity is cheaper. Based on this information, it decides the best times to charge and use your battery to save you money on your electricity bills.

Our optimisation will keep adjusting your battery mode every 5 minutes to make you the most savings on your electricity bill. It should do all the things you require. for example, charging overnight in the cheap period and leaving enough space to accept solar charge in the day and selling excess energy.

However, it will be adaptive to your specific circumstances and tariff. Some examples include:

- Charging up less overnight if it forecasts a sunny day with lots of available PV
- Charge to full overnight if your tariff is comparatively really cheap then
- It can forecast you as likely to use a lot of energy in the morning before the sun comes up.

If you change tariff, the optimisation will adjust to this, and will change what it does accordingly. Given this, we don't do things like set up a daily schedule for an overnight charge between two fixed times. Instead, we wait until the overnight period comes, and then our algorithm calculates how much it thinks your battery should charge by, and charges accordingly. We'll show you in the app exactly what we've done, and hopefully it should be clear how the actions that the optimisation took benefited you.

If you'd like some more help, please email us at [hello@smug.energy](mailto:hello@smug.energy)

# Battery modes

We will set your battery into one of the following states:

- Charge (from grid and/or solar) - This charges your battery at full speed. Unless there's lots of solar generation, this will import from the grid.
- Discharge (to grid and/or home) - This discharges your battery at full speed. Unless the home is using a lot of energy, this will export to the grid.
- Store solar or cover usage - The battery charges if there's excess solar, or discharges if there's excess usage.
- Charge from solar - If there is more solar generation than home usage, the excess goes to the battery.
- Cover usage - If there is more home usage than solar generation, the battery discharges to cover it.
- Do nothing - The battery doesn't charge or discharge.

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# My optimisation control is disabled - help

For optimisation to be turned on, there have to be a few things in place:

## Import or export tariff is not linked

- For optimisation to function, we need your tariff details to ensure the correct financial decisions are made.
- To fix this, go to '**Account**' > **Tariff details**. If either of your tariffs aren't linked, you'll see an option to connect them

## Your battery is offline

- This means that we cannot communicate with your battery. This could be due to your local network, or there may be an issue with the manufacturer's connection.
- To fix this, check that your battery is properly connected to the internet and try again

## The battery is unable to be controlled

- This can happen due to restrictions set by the manufacturer, or because the battery model is not supported.
- Unfortunately, there is nothing you can do here.

## We are currently unable to retrieve the latest status for your battery

- This is usually a temporary issue and may resolve itself shortly

If the issue persists after trying the troubleshooting steps, or need more information, please email us at [hello@smug.energy](mailto:hello@smug.energy)

# Can I take part in GivEnergy's GivBack events?

Yes, it is possible to participate in GivEnergy's GivBack events, though doing so whilst optimisation is on is not recommended.

This is because both systems attempt to control your battery, and running them at the same time could lead to conflicting commands and suboptimal financial outcomes.

## Can I do both at the same time?

It is possible if you turn off optimisation at the right time on the day of a GivBack event, and then turn it back on once its over. However, doing this has risks:

- Disrupts the optimisation strategy - the optimisation engine expect to control the battery throughout the day.
- Disabling it could interrupt its planned charging and discharging cycles.
- Potential financial losses - since optimisation is designed to maximise savings across the whole day, disabling it for a GivBack event could result in higher overall costs.
- Manual intervention required - one of the reasons to why Smug is so easy, is due to no manual intervention required. However, to participate in GivBack events, you would have to carefully time when to disable and re-enable optimisation, adding complexity, and increasing the risk of missing optimal charging periods.

# Can I take advantage of Octopus Power-Ups events?

The answer is yes, and no.

## Power-Ups require your input to opt-in

Optimisation doesn't automatically take into account Power-Ups. You need to manually opt in each time a Power-Up is available. As this is your action, our optimisation engine cannot detect whether you have opted in or not.

## Tariff rate remains unchanged

During a Power-Up event, your tariff remains the same, and is charged as normal and then credited back by Octopus Energy. Since our optimisation engine uses real-time tariff pricing, it cannot see that energy during the Power-Up period is effectively free.

## No API or Data Feed for Power-Ups

Currently, the API Octopus Energy feed us does not contain any Power-Up data. This means our optimisation engine cannot see when it is happening, or if you have opted in.

## Can I still make the most of a power up?

There is no disadvantage to opting into a Power-Up, but optimisation won't necessarily maximise the value of the free hour of energy you'd receive.

Furthermore, your usage data will also be incorrect for the Power-Up hour, as it'll show a cost for the energy, rather than it being free.

# Optimisation vs Manual schedules

If you have already been setting manual schedules for your battery, you may be wondering: Why switch to optimisation? While schedules follow fixed rules, optimisation is dynamic, smart, and adapts in real time to maximise your savings and efficiency.

## Smarter charging based on your home usage

Manual scheduling may mean that your battery is charged when it's not actually needed. Optimisation takes into account your home's energy usage. It won't charge your battery fully if it doesn't need to, helping you save money and avoid unnecessary cycles.

## Adapts to weather forecasts

Optimisation automatically considers upcoming weather conditions. If a sunny day is expected, it'll leave space in your battery to charge from solar energy instead of overcharging the night before.

## Maximises savings through smart exporting

At the end of the day, the excess charge in your battery will vary. Optimisation ensures that any extra energy is discharged back into the grid when it earns you the most money (tariff dependant), whereas manual schedules don't adapt to the varying percentage charge left each day.

## Optimisation unlocks the power of arbitrage

Depending on your tariff combination, optimisation can charge your battery when electricity is cheap and discharge when it's expensive - effectively turning your battery into an energy-saving powerhouse overnight.

## Automatic adjustments for changing tariffs

If your tariff rate changes, optimisation adjusts automatically. No need to keep updating your schedules, just set it and forget it. Your battery will always charge at the lowest rates and discharge when it's most cost-effective.

# Smug compared to Octopus Intelligent Flux

You may have come across Octopus Intelligent Flux, and wondered how it compared to our optimisation. Both aim to help you save money, but they work in very different ways, and serve different goals.

## Control

With optimisation, the Smug is working for you. It's designed to make decisions that maximise your specific tariff, solar forecast, and usage patterns to get the best possible outcome for your setup.

In contrast, Intelligent Flux is controlled by Octopus Energy. Their goal is to use your battery to help balance the grid and reduce their own wholesale energy costs. You still benefit, but ultimately, their system is optimising for Octopus, not for you.

## Tariffs and how you save

Optimisation works with whatever tariff you're already on, fixed or dynamic. It constantly monitors energy prices and system behaviour to charge when it's cheapest and discharge when it's most valuable. The aim is to always maximise your return, whether through savings or smart exports. Certain tariffs, such as Octopus Agile, can offer a better import and export rate at certain times of the day, which optimisation makes use of.

With Intelligent Flux, you're offered a subsidised tariff - but in exchange, you had over full control of your battery. Octopus decides when and how to use your battery to suit their needs, and while the rates are designed to benefit you too, the system is ultimately working to support their grid strategy and profit model, not your individual energy profile.



# Why doesn't my battery fully charge?

Optimisation is designed to save you money and maximise efficiency, so if your battery didn't fully charge, it was likely the best financial decision based on tariffs, solar forecasts, and energy usage.

## Expected home usage

Optimisation analyses your typical energy consumption and optimises battery charging accordingly. If it predicts that you won't need a full battery to cover your usage, it won't charge to 100% (or the set limit) unnecessarily. This helps prevent wasted energy cycles and reduces costs.

## Preparing for solar generation

If a high amount of solar is expected the next day, the system may leave space in the battery to store that free solar energy instead of filling it up with grid electricity. This ensures that you make the most of the self-generated power rather than the grid imports.

## Avoiding unnecessary charging costs

Charging to 100% (or the set maximum charge limit) when it's not needed can sometimes increase costs or lead to unnecessary cycling.