Guide

How to connect DERMS platforms to home batteries and capture the market

Dig in to learn more about:

- The growing home battery opportunity
- How to help customers get more value from their home batteries
- How connectivity impacts customer experience
- Best practice for better experiences

Enode

Introduction

As the world moves towards electrification, we're reducing our reliance on fossil fuels that create harmful carbon emissions. But the increased demand for electricity is putting strain on our grid systems.

It's also hard to meet the increasing demand with intermittent renewable energy sources. If the sun isn't shining, we can't simply generate more energy to meet spikes in demand. But we don't want to fall back on fossil fuel generation, either.

So what's the alternative?

To even out the growing imbalance between demand and supply, we urgently need **demand-side energy management solutions.** These solutions empower consumers to take control of their consumption, so they can work around the limitations of the energy system, and contribute positively to the energy transition.

It's a win-win. Demand-side solutions help bring the grid into balance, so we can continue to integrate renewable energy sources as we decarbonize major sectors of the economy.

They also help consumers cut their own carbon emissions, and keep control of their energy costs as more electricity-powered devices enter their homes.

The time is now for DERMS

Today, there's an enormous opportunity for distributed energy resource management systems (DERMS) that can aggregate residential energy devices, and manage their consumption in response to grid conditions.

But building a market-winning DERMS platform is challenging. The energy system is fragmented: there are thousands of energy devices, emerging technologies and competing standards to contend with. That makes it very difficult to develop solutions that work for everyone, which is critical.

Making solutions available to the widest possible market is not only a massive revenue opportunity, but also a chance to encourage consumer uptake, and drive positive change at scale.

> "Demand-side solutions help bring the grid into balance, and help consumers cut their carbon emissions and keep control of their energy costs."

Home batteries offer untapped potential

Home batteries are an important piece of the puzzle. As the grid becomes more volatile, demand for backup power and energy storage is growing fast. DERMS providers can get a foot in the door with a huge market by finding ways to make home batteries work better for consumers.

Those that win will be those that can create seamless user experiences, through which consumers can enroll their home batteries in demand response programs, and maximize the lifetime value of their device.

It starts with connectivity. In order to offer advanced functionality to the largest possible market, DERMS providers first need to be able to connect to all the different makes and models of home batteries.

Application Programming Interfaces (APIs) are the secret sauce that enable this connectivity. Whether building or buying, DERMS product managers should focus on three key criteria – API coverage, reliability and functionality – to uplift the customer experience and unlock scale.

Read on to learn why home battery optimization matters, what users really value, and how quality APIs can help.

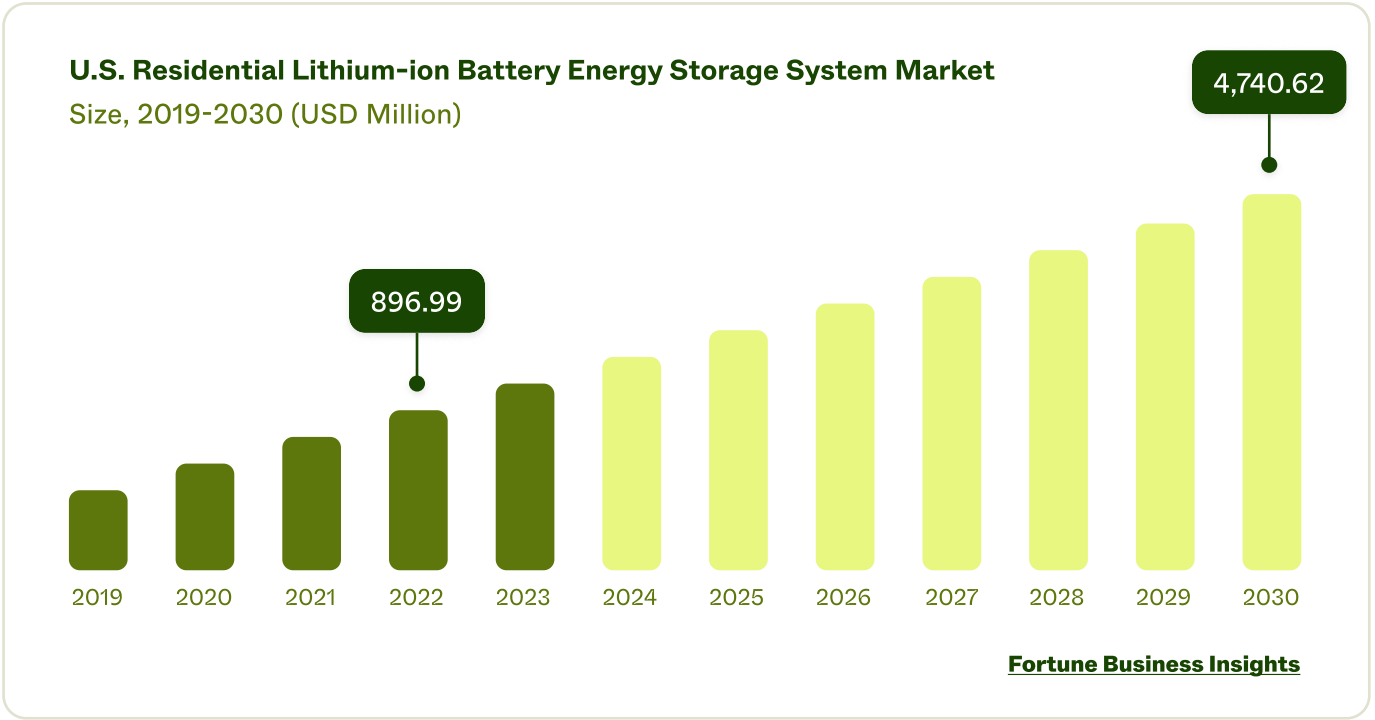
The growing home battery opportunity

The American grid system is becoming more volatile and less reliable.

- Most parts of the United States face blackout risks over the next 10 years.
- 41% of US consumers are more concerned with power outages than they were 10 years ago.
- Electricity customers experienced power outages for an average of 7 hours and 20 minutes in 2021.

As a result, demand for backup power and energy storage is growing. According to the Solar Energy Industries Association (SEIA) “America’s ability to lead the global clean energy transition and boost grid reliability depends on how quickly we scale domestic production and deploy battery storage technology.” The market is projected to expand rapidly in response to this challenge: US demand for battery energy storage systems (BESS) is expected to increase over six-fold by 2030, from 18 GWh to 119 GWh.

With fuel-powered alternatives being expensive to run, consumers are increasingly turning to home batteries. They not only help keep energy costs under control, but are also more environmentally friendly. In fact, the residential sector in the US is booming – and outpacing the commercial and utility battery storage systems market in terms of growth. In 2023, Market leader Tesla reached a milestone 500,000 global deployments of the Powerwall.



Consumers are also attracted by the breadth of functionality that home batteries provide, compared with fuel-powered alternatives. Not only can they keep homes up and running during outages, they can also store excess solar energy . to power homes at night, and be optimized to save money day to day.

As batteries become more advanced, they're able to support a variety of cost- and carbon-saving use cases. Consumers are taking notice, and looking for ways to maximize the value of their assets by integrating them with others:

- In 2023 13% of residential solar systems across the US were sold with batteries attached.
- Solar plus storage systems could shave over $1000 per year off consumer energy bills.

The large and growing addressable market means there is a huge opportunity for DERMS solutions that can manage home batteries more efficiently, and help consumers get more value from them.

119 GWh

estimated US demand for battery energy storage systems by 2030

$4.74 billion

estimated size of the US residential lithium-ion battery energy storage system market by 2030

500,000

deployments of the Tesla powerwall

7h20m

average time of electricity power outages experienced by US consumers in 2021

How to help customers get more value from their home batteries

So, how can DERMS providers work with home batteries to make them less taxing on the grid, and more valuable to consumers?

Relieving pressure on the grid means enrolling as many devices as possible into demand-side energy management solutions. The more devices and the greater energy load we can optimize, the less the strain on the grid.

Enrolling as many devices as possible depends upon delivering the best user experience. Delivering the maximum functionality and value, and in the most seamless way, will encourage more users to sign up – and stay engaged.

There are three things home batteries users really care about:

1. Cutting energy costs
2. Reducing carbon emissions
3. Easy-to-use features and functions

There are lots of flexibility use cases that can be built on top of HVACs to deliver this value to consumers, ranging from the simple . to the more sophisticated:

Read

Access real-time data from home batteries to surface insights about state of charge, performance and more.

Control

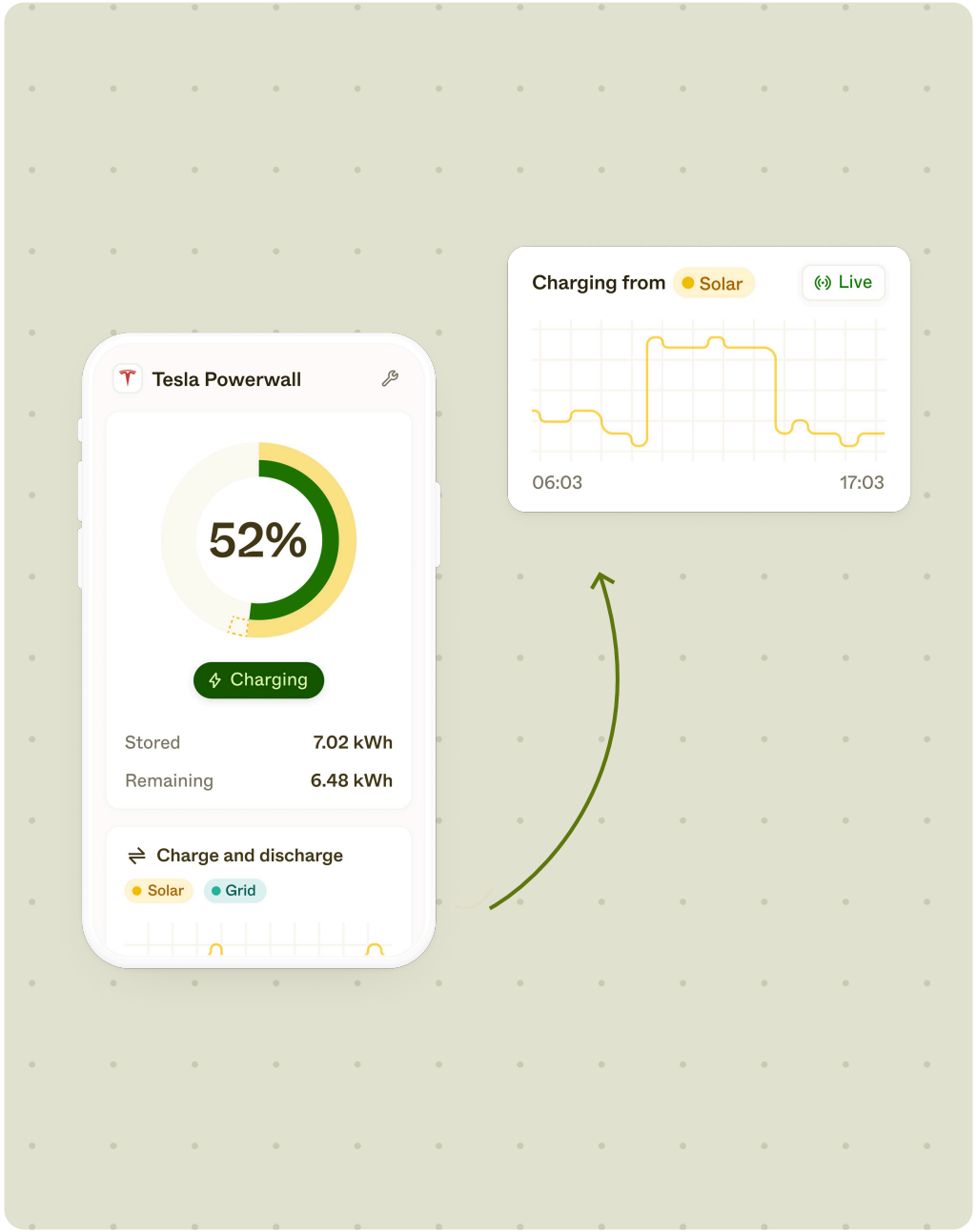
Send commands to make home batteries charge or discharge remotely.

Enrich

Use data and controls to build custom schedules for commands.

Optimize

Execute on smart schedules in response to signals from the grid.



How connectivity impacts customer experience

The first step in building any of these use cases is connecting to home batteries. Without broad connectivity, DERMS providers won't be able to reach or retain users as the market becomes increasingly competitlve. But this can be a lot more complex than it might seem.

Connectivity is delivered by APIs (application programming interfaces), which allow the exchange of data between users' home batteries and energy management software, without the need for additional hardware. But there are hundreds of different home battery manufacturers and models. Each of these is controlled by different platforms, with different APIs.

Each API has different capabilities, different data standards, and different methods for communicating with the device.

That makes integrating with each of these individually a complex and resource-intensive task. Not only does it require a lot of effort on the part of engineering teams, it can have a negative knock-on effect on the user experience, too.

When integrating with home battery APIS, there are three common challenges that hinder the customer experience, and limit the scalability of DERMS platforms:

1. Coverage
2. Functionality
3. Reliability

1. Coverage

In order to address the whole market, separate integrations need to be built for each model of home battery. Those integrations require constant, ongoing maintenance to keep on top of new releases and updates.

This can prove a major blocker to scalability. Each new integration adds engineering time and costs. As overheads start to spiral, many DERMS platforms find themselves forced to limit the number of assets with which they integrate. That means a lot of home battery owners get left out, limiting uptake and impact.

2. Functionality

The more energy devices enter consumers' homes, the greater the opportunity for innovative DERMS platforms to add value. Leveraging those assets to create a wide range of use cases that deliver cost savings, emissions reductions and holistic home energy management will put them ahead of competitors.

Not all home battery APIs offer a full range of functionality and control. But use cases like smart heating and cooling are becoming table stakes. DERMS platforms that can't deliver them risk missing opportunities to win the market.

3. Reliability

Above all, the user experience needs to be consistent and seamless – across every asset and every use case, every time. The success rate of DERMS solutions (how often they successfully execute programs) is pivotal, especially in a competitive market. They can't afford to fail.

The stakes are especially high when it comes to home batteries. Home batteries provide guaranteed capacity if the grid fails, keeping users comfortable even in the middle of blackouts. Success rate is entirely dependent upon the quality of APIs – meaning APIs could make all the difference between users sitting in a dark, cold house and a bright, warm one.

Best practice for better experiences

Clearly, connectivity is critical to winning the lion's share of the market, delivering a premium experience and getting the maximum value from home batteries.

So, how can DERMS providers overcome connectivity challenges and give their platform the best chance of success?

API quality should be the first priority, with coverage, functionality and reliability the key assessment criteria.

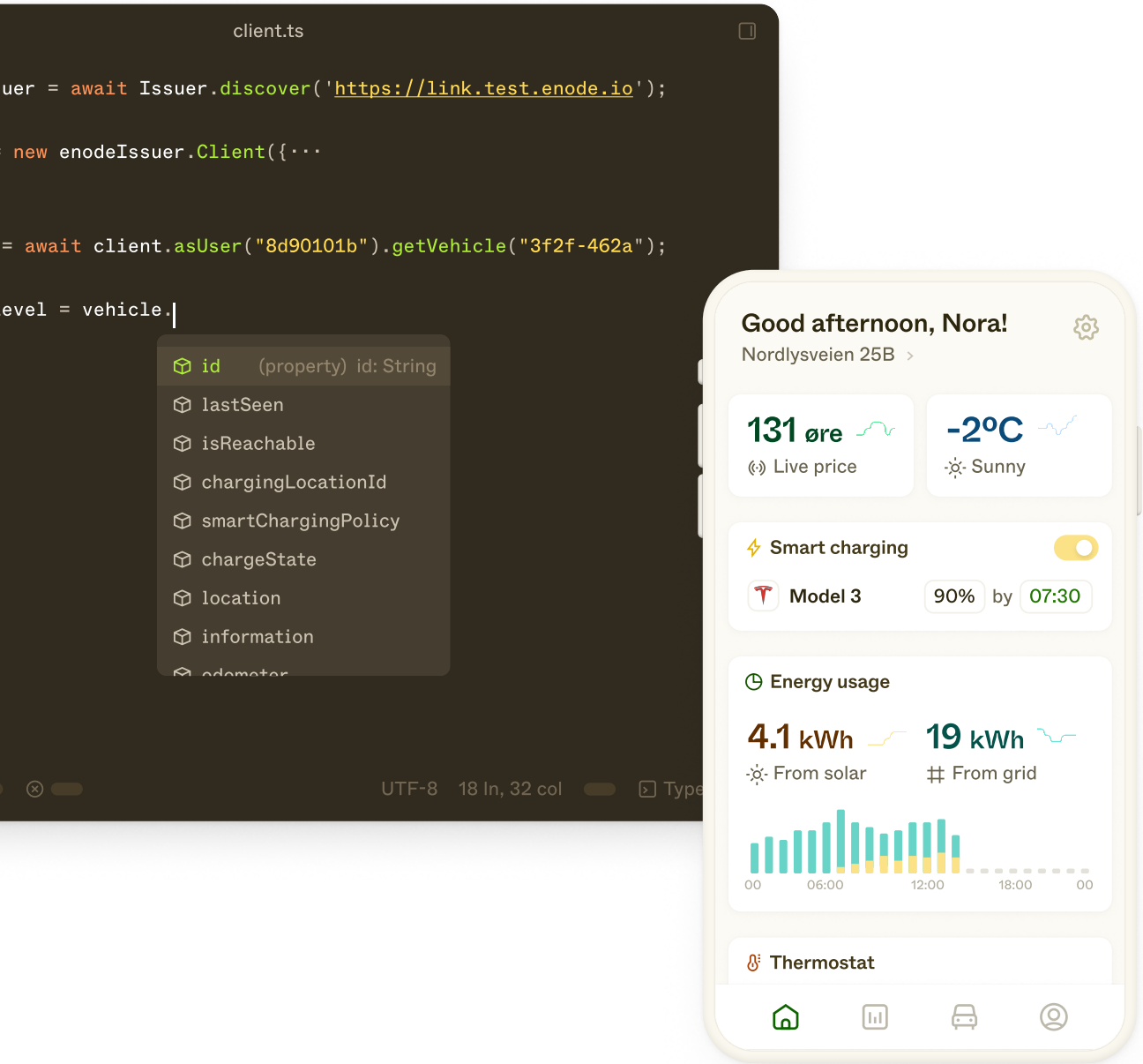
Build or buy?

Building direct integrations that meet all three criteria isn't realistic for every DERMS provider.

As we've mentioned, creating and maintaining integrations with every brand of home battery is difficult work. On top of that, there's the challenge of standardizing the data returned and building bespoke capabilities to ensure that the user experience is the same across all devices. This can cause development costs to mushroom, and push out time to market.

Besides cost and time considerations, there's also the question of expertise. Not every team is equipped to manage the technical aspects of connecting to home batteries. It requires specialist knowledge, and can add complexity to system architecture and database organization. Expecting non-expert engineers to take on the work pulls their focus from the core task of designing a best-in-class app and once again, puts the customer experience at risk.

Specialist, third-party APIs can help. They unify a wide range of integrations into a single API. This helps reduce cost, risk, and time to market, while protecting the user experience.



About Enode Connect

Enode is the leading API for energy devices including home batteries, HVACs, EVs and more.

Our Connect API is purpose-built for energy management use cases, offering expanded coverage across 1000+ energy devices.

Connect to a single API

Get up and running with our Connect API in minutes, and get access to hundreds of home batteries and other energy devices in one place.

Integrate your customers' hardware

Guide customers through hardware connection with our Connect UI flows for web and mobile, making integrations a breeze.

Build powerful features

Access and control your customers' hardware through carefully unified endpoints to build your own custom functionality.

ENODE API

One integration, 1000+ energy devices

Interested in learning more about Enode or getting access to our API? Tell us how we can help and we'll reach out to you shortly.

Contact sales