EnergyHub

Accelerating Electric Vehicle Management: 8 Key Strategies for a Successful EV Program

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Introduction

EV momentum is growing.
Load growth isn't far behind.

Electric vehicle (EV) sales are gaining momentum, granting utilities an opportunity to invest in grid improvements and ignite their electrification efforts, while improving load flexibility and deepening customer relationships.

The growth rate of new EV sales has already surpassed early predictions. By 2030, EVs are expected to constitute half of all new vehicle sales, according to Bloomberg NEF. Federal and state policies will further accelerate the shift to EV, including the Biden **administration**'s 2030 goal for new EV sales and a proposed revision of the **EPA** emissions standards.

The proliferation of EVs stands to improve grid resilience, customer satisfaction, and support decarbonization. However, if charging load is left unmanaged, it will exacerbate stress on an already taxed grid before utilities are able to take action.
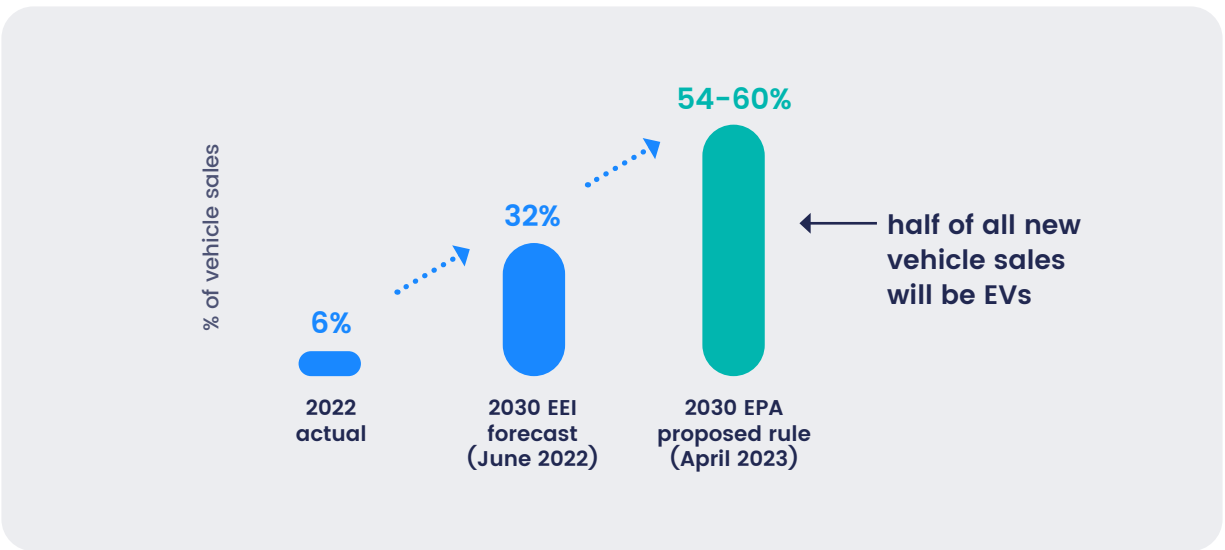
Figure 1: Percentage of vehicle sales rapidly shifting to EV through 2023+

As EV models become more affordable and North America experiences more frequent bouts of extreme weather, this scenario is already playing out in real-time. In late August the New York Times broke the news that California will ban the sale of new gasoline-powered cars by 2035. The following week, California requested that EV owners limit charging during a heat wave - and EV drivers answered the call, avoiding the need for power shut offs.

The call to action is clear. Collaboration between automotive and EVSE manufacturers and the electric power industry has never been more important. Utilities across the country are heeding the call, planning and piloting innovative EV management strategies. EnergyHub's work with many leading utilities forms the basis for this paper and subsequent recommendations for how to accelerate the movement.

EnergyHub is the leading provider of distributed energy resource management systems (DERMS) to utilities across the country, with proven expertise helping utilities build and manage multi-distributed energy resource (DER) virtual power plants (VPPS), including EVs and EVSEs, which must work in concert with other device classes to support grid needs. While point solutions were prominent a decade ago, a more sophisticated grid requires a more sophisticated approach to multi-DER program management.

Based on experience managing more than 60 utility VPP programs, and insights gleaned from actively managing more than 1 million DERs across North America, this white paper shares several key findings utilities can use to strengthen customer relationships, decarbonize the grid, and expand electrification now and in the coming years.

Our platform manages over **1m** DERs

90%+ charging shifted to off-peak window

Partner ecosystem of over **20+** EV brands

EnergyHub EV programs have a **68** net promotor score

Below are eight strategies that utilities can follow to **build a successful EV and EVSE program and manage load as more electric cars come online.**

8 key strategies for a successful EV program

1. Offer compelling incentives

While new EV drivers save substantially on fuel and maintenance costs, vehicle charging increases household electricity costs. Utilities can ensure customer satisfaction at the time of new technology adoption and pave the way for future load-shifting strategies by offering drivers an attractive incentive to purchase new EVSE hardware, reduce or shift their charging, and offset their increased electric bill.

For example, a Maryland utility's EV program rollout with EnergyHub deployed an incentive structure that led to the successful enrollment of 25% of eligible drivers in the utility's service territory.
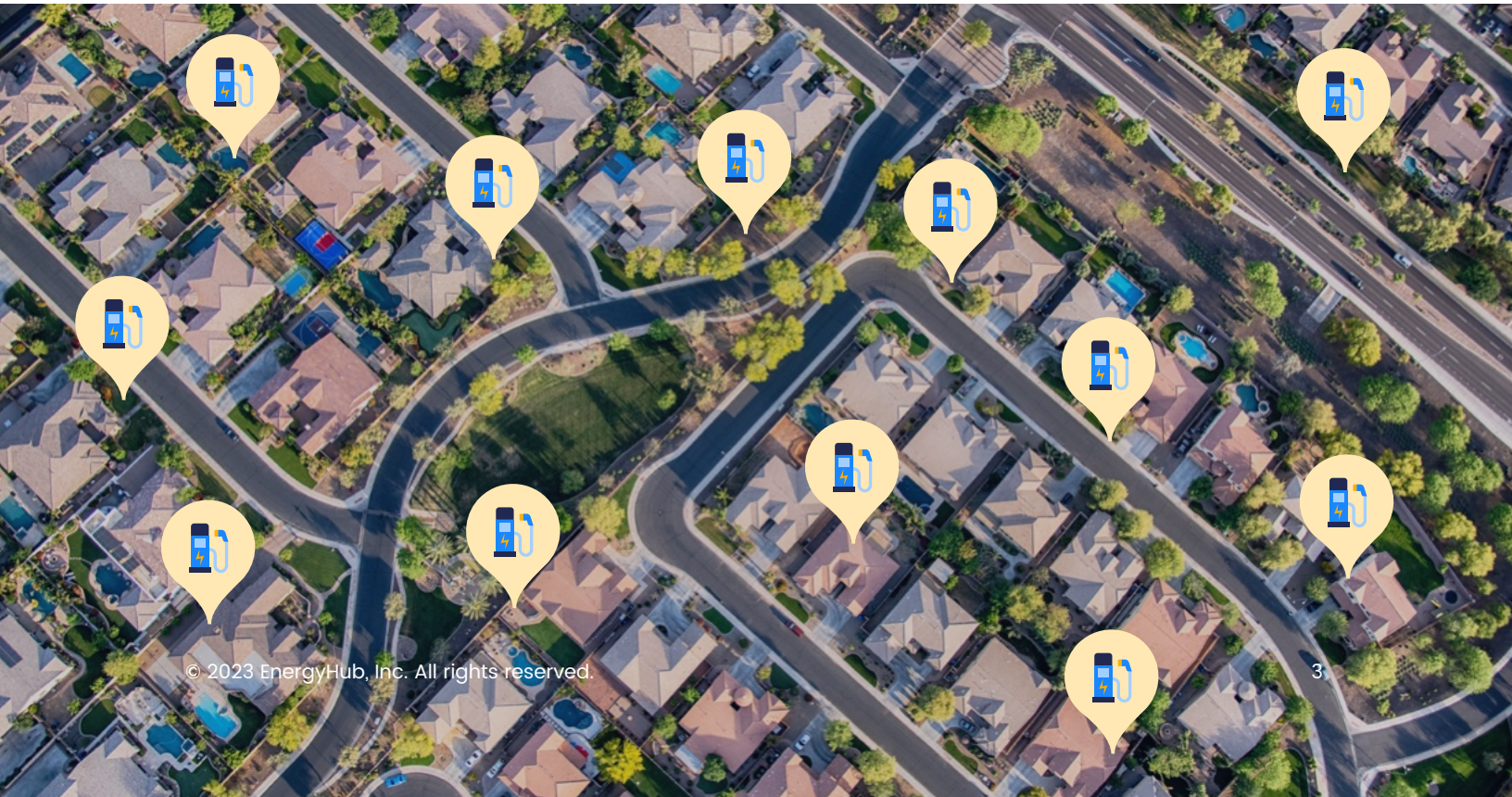
EnergyHub EV programs fall into three categories: managed charging, behavioral charging, and analytics programs. EnergyHub recommends customer incentives based on which program best meets utility goals and parameters, to encourage enrollment and solve unique challenges.

Managed charging

Managed charging programs actively control a vehicle's charging load via EV telematics or EVSE integration. Typically these programs provide customers with a monthly incentive for participation. Generous enrollment incentives help ensure swift uptake of the offer, and drive retention of enrolled customers. Programs range from simple load shifting and peak reduction to innovative vehicle-to-grid (V2G) programs.

Behavioral charging

Behavioral charging programs shift EV charging load by incentivizing customers to charge at a time of day when demand for energy and/or electricity prices are lower. Customers in these programs typically receive an upfront enrollment incentive and voluntarily shift their charging behavior in exchange for an ongoing incentive as a reward for charging during off-peak times. Additionally, some utility programs may actually charge participants a reduced rate based on when the customer charges. Utilities set an EV-specific Time-of-Use (TOU) rate or an off-peak charging rate to incentivize customers to charge at off-peak times, and EnergyHub calculates customer charging time and shares that data with the utility.
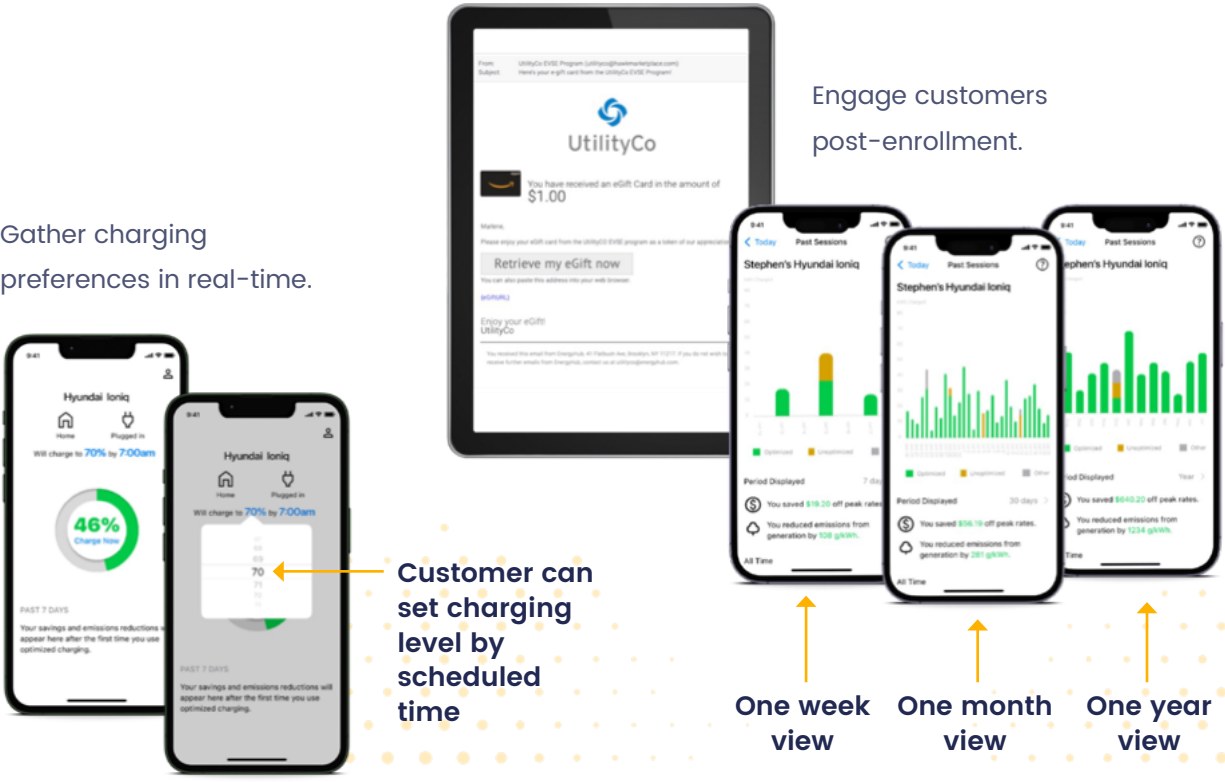
Charging analytics

Charging analytics programs enable utilities to learn more about EV charging behavior and impacts. Customers receive a one-time or ongoing incentive for sharing their data with their utility which allows for strategic planning and analysis, ensuring readiness for EV adoption in a utility's service territory.

2. Deliver a driver-first experience

Deploying EVs as successful grid resources requires recognizing that vehicles are, first and foremost, a means of transportation. The key to program success is to prioritize drivers' transportation needs. Otherwise, utilities risk eroding customer trust.

EnergyHub's ChargingRewards brand and customer app provides the foundation for a driver-first experience with scheduled charging, incentive notifications, impact reports, and in-app messaging. Gathering customer preferences in real-time to deliver an intuitive experience across UX ecosystems is an important component of future managed charging programs; our app lets customers set their charging preferences at the time of enrollment, override event participation if charging is needed immediately, and provides utilities with charging behavior data. **Driver feedback is essential at this phase of program delivery to pave the way for exponential participation in the coming years.**

Engage customers post-enrollment.

Gather charging preferences in real-time.

Customer can set charging level by scheduled time

One week view   One month view   One year view

3. Maximize customer choice with both EV and EVSE brands

80 percent of EV drivers **prefer to charge at home**. That means utilities need to integrate with as many EV partners as possible, and build a robust network of EVSE providers as well. EnergyHub has leveraged telematics integrations to enable EV programs since 2020, providing access to five leading vehicle original equipment manufacturers (OEMs), with plans to integrate an additional three OEMs by the summer of 2024. For example, a large IOU utility on the east coast unlocked a path to 9,000 enrollments by 2025 by adding Tesla electric cars to its roster of eligible vehicle models. There are currently dozens of different EVSE brands and EV OEMs for customers to choose from — and the market is growing rapidly.
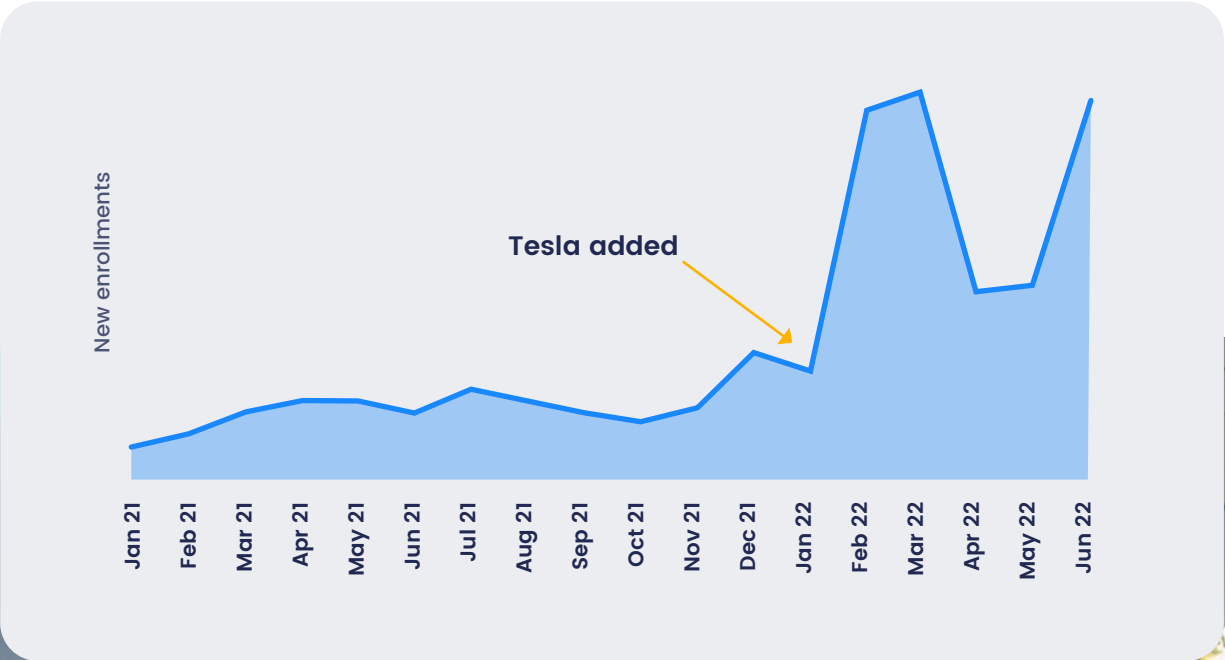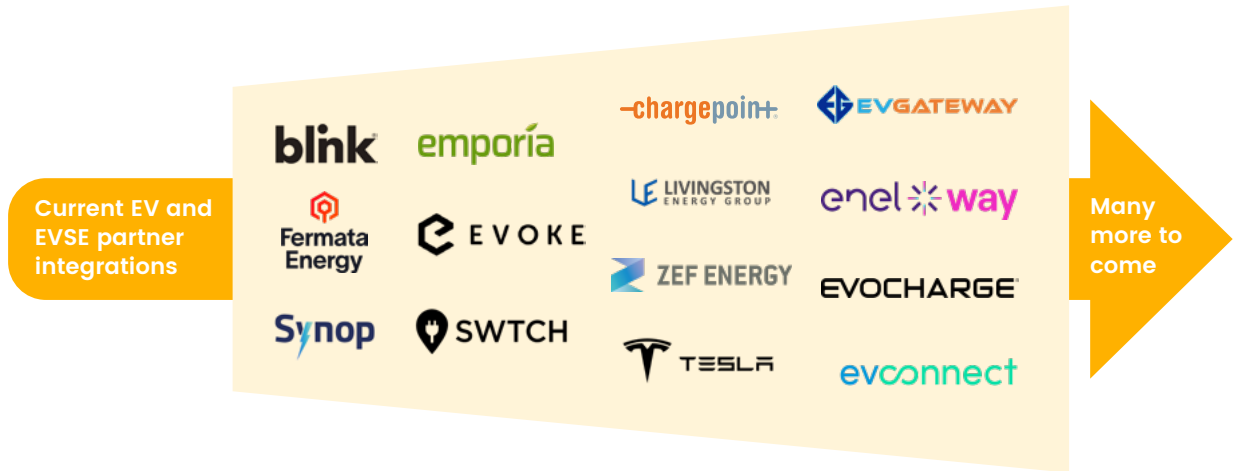

Figure 2: Adding Tesla unlocks one path to 9k enrollments by 2025

6

Utilities can encourage deeper participation and get better analytics by incorporating a wide range of EV and EVSE brands in programs.

EnergyHub's expansive partner network lets utilities access the majority of EVSE and EV OEM platforms to **reach more customers with less effort**.


Current EV and EVSE partner integrations

blink emporia chargepoint EVGATEWAY

Fermata Energy EVOKE LIVINGSTON ENERGY GROUP enel way

ZEF ENERGY EVOCHARGE

Synop SWTCH TESLA evconnect

Many more to come

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chargepoint

"As a leading provider of utility programs in the DER space, EnergyHub is a natural partner for ChargePoint. EnergyHub brings a lengthy list of utility program opportunities for the ChargePoint customer base to participate in. Simply put, this provides more access for ChargePoint customers to earn rewards and benefit the grid.

Providing the opportunity for ChargePoint customers to participate in programs is an important piece of the transition to electrified transportation. ChargePoint customers can not only earn financial incentives for participation, but their contribution to mitigating grid impacts (such as blackouts, or costly infrastructure upgrades) are arguably far more valuable."

4. Engage across channels

Effective marketing is critical to building and scaling an effective EV program. Consider that more than two-thirds of all devices enrolled in EnergyHub EV programs are new devices enrolled at the time of purchase. Meet your customers where they are; raise awareness about EV programs and promote enrollment with multi-channel marketing campaigns that leverage enrollment opportunities at hardware point-of-sale, digital advertising opportunities, utility emails, partner emails, postcards, utility microsites, public charging displays, and more, to capture customer attention.
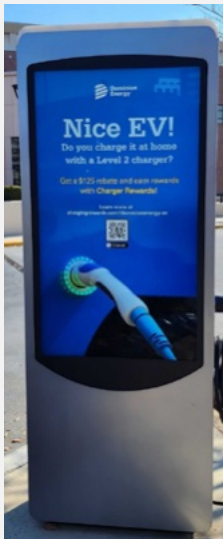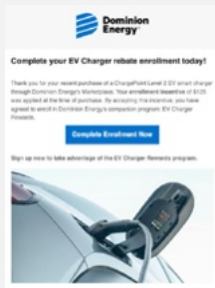

Digital ad

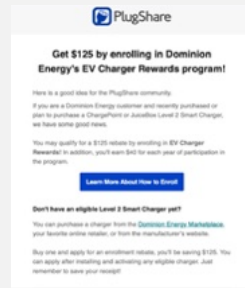Postcard

Public charger
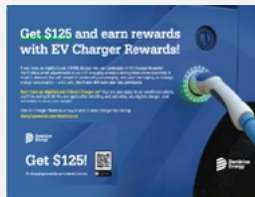
Utility email

Partner email

Utility microsite

For instance, EnergyHub mapped the days when enrollment was highest for one utility's EV program. From email drips to partner promotion, every high enrollment day was associated with a specific marketing event developed as part of a comprehensive multi-channel campaign.
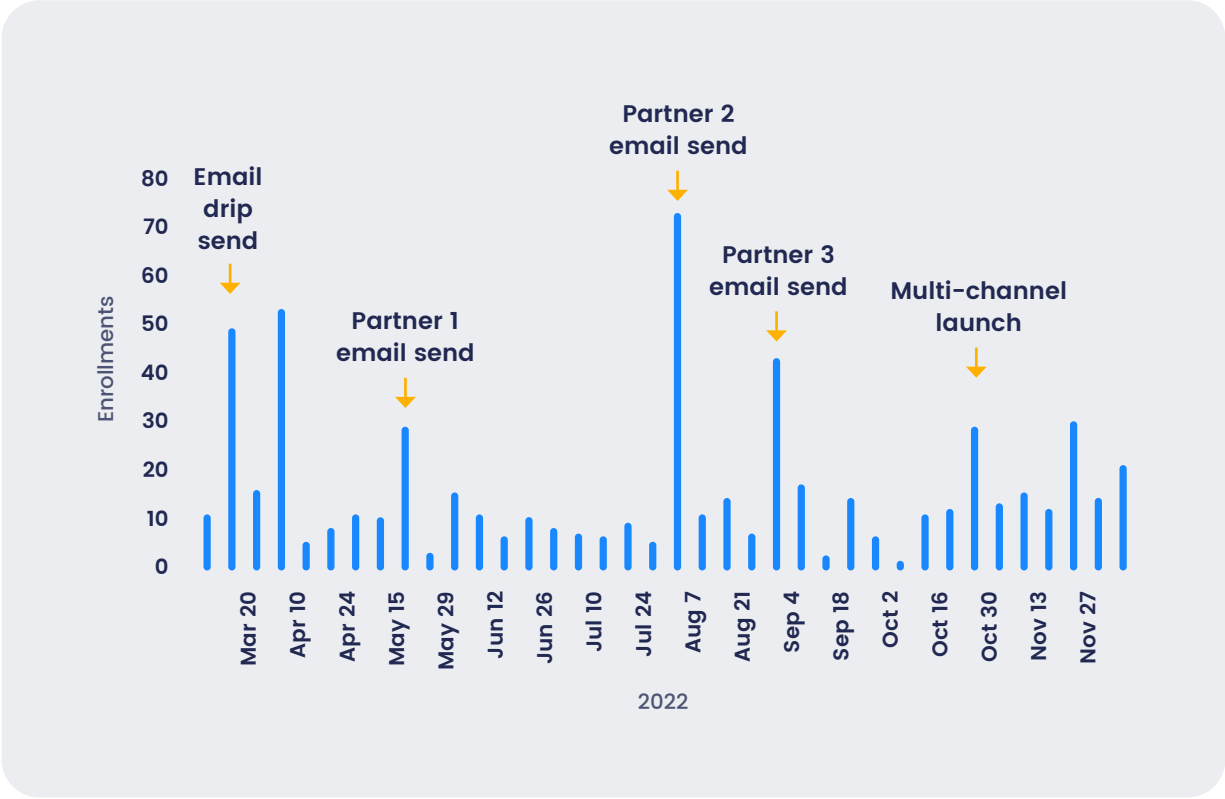

Figure 3: Marketing drives enrollments

EnergyHub's utility clients benefit from our industry-leading partnership network, including relationships with EVSE providers and OEMs, to promote programs through their channels and mobile apps. These partners have high brand recognition, are trusted by consumers, and have access to customer information; further, they provide a direct channel to promote program participation through their native apps. Leveraging these and other partner channels accelerates program growth by accessing existing customer relationships, and raising awareness among a broader audience of potential program participants.

5. Set the stage for seamless enrollment

A seamless enrollment process ensures higher customer acquisition rates and improves program satisfaction. As the driver of more than one-million successful DER enrollments, EnergyHub has gained a keen understanding of best practices, while taking into account differences across programs, regions, and utilities. Customers need an enrollment process with as little friction as possible to increase completion rate and reduce the number of applications with input errors.

All EnergyHub EV program types use partner in-app enrollment, enrollment websites, and microsites to sign up participants. Managed charging programs also benefit from the EnergyHub ChargingRewards app, which helps to capture charging preferences at the time of enrollment. Eventually, most enrollment will take place via native mobile apps (either automotive OEM or EV charging OEM), which is a best practice in DER programs. The EnergyHub ChargingRewards app reduces customer enrollment friction today - as we wait for each EV and EVSE brand to create their own customer app experience.

Customers purchase vehicles and EVSE at one of several points of sale, including utility marketplaces, online retailers, and dealerships. EnergyHub partners with OEMs and marketplace providers to create multi-channel marketing campaigns that lead to web-based and in-app enrollment flows. This creates multiple enrollment entry points that lead to successful adoption.

> "ChargePoint can help drive program enrollment scale through two major factors. First, CP Home Flex is a widely used product, meaning utilities are sure to have an ample base of chargers to enroll in a program. Second, ChargePoint actively markets programs directly to customers. Through this direct marketing, ChargePoint is able to obtain a high level of enrollment and participation in programs."

—chargepoint
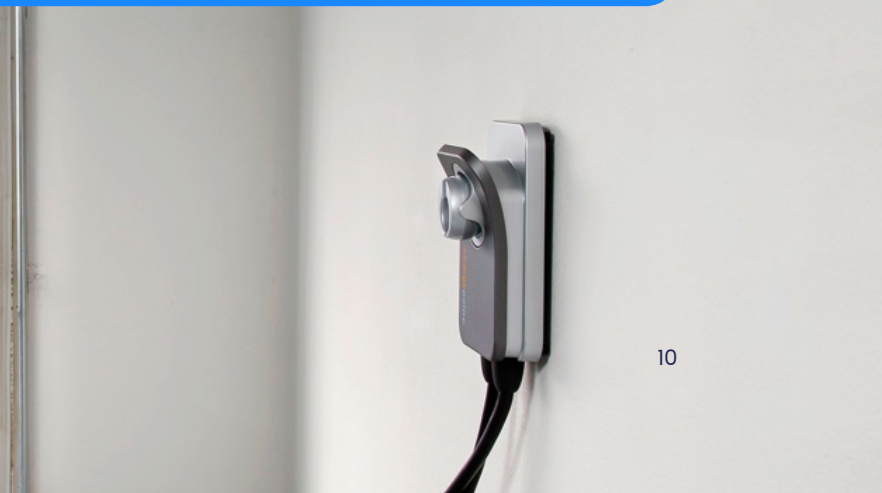
ChargePoint enrollment flow

1) Microsite enrollment page
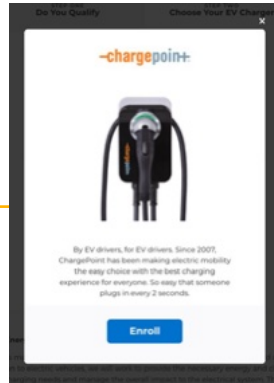
Regardless of enrollment path, the goal should be to have an enrollment process that requires as little customer-side effort as possible.

2) Enrollment on desktop or mobile via the ChargePoint app

On desktop, driver logs in with ChargePoint account username and password. Connection form appears as a pop-up window.

On mobile, if driver has the ChargePoint app and is already logged in, link directly opens program Connection form in ChargePoint app. If driver does not have the ChargePoint app, enrollment link opens iOS/Android app store to download. Connection form opens automatically.

3) Acceptance email sent and customer enrolled in utility program

6. Put customer satisfaction at the center of program design

While utility EV programs are still relatively new, customers are interested in taking part - if they are engaged with relevant messaging, compelling incentives, and easy control overrides, and utilities incorporate customer feedback in program design on an ongoing basis.

EnergyHub EV program enrollments grew **200 percent from 2022-2023** thanks to unwavering focus on customer needs and preferences. Successful programs:

Recognize that EVs are first and foremost a means of transportation.

Vehicles must be charged when drivers need them, which means EV programs must allow customers to opt out of events and incorporate customers charging schedules.

Deliver compelling incentives.

Program participation incentives should be generous, paid in a timely manner, and communicated in a way that makes it clear to utility customers that they are being compensated for being part of the program.
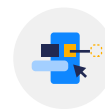
Celebrate driver participation.

Program participants want to know how and when they are "doing the right thing" for the climate and for the grid. Successful programs make the impact of participation clear to utility customers.

EnergyHub EV programs received an **average net promoter score (NPS) score of 68** in 2022.

7. Look beyond peak load

EV demand response programs look similar to the thermostat and battery flexibility programs of the last decade: customers enroll their vehicle or EVSE, receive an incentive, and are asked to have their charging stopped or curtailed during summer (and sometimes winter) peaks. But peak load reduction values for EVs are modest, making it difficult to build a program around peak load reduction alone.

EnergyHub research has shown an average load shed of 0.4 kW/targeted EV or EVSE against a maximum average potential of 7.8 kW. The vast difference between potential and actual load shed is due to the mobile nature of EVs. At any given time, only a certain percentage of vehicles are online and linked to the system. Of those, only a subset of EVs will be plugged in, and some vehicles that are plugged in may already be fully charged. Finally, not every vehicle will participate or respond accurately to event parameters like charge rate.
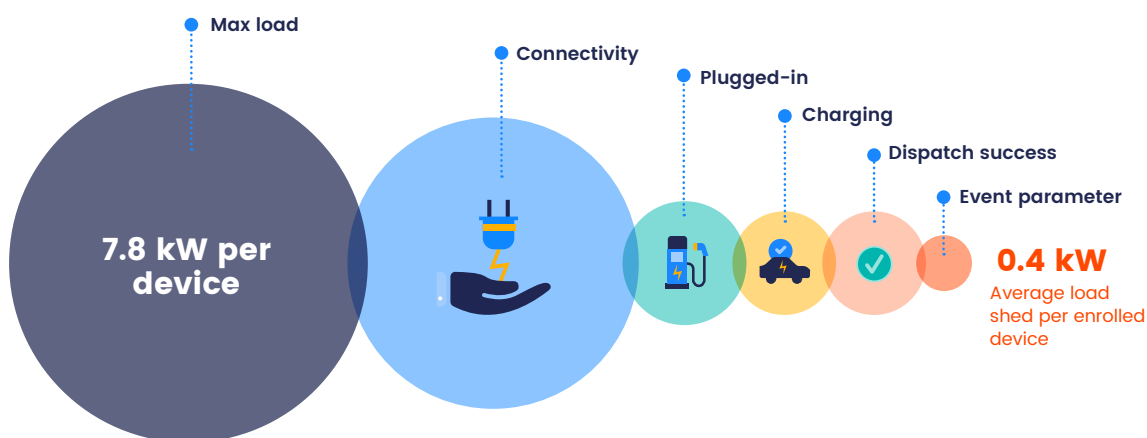

Figure 4: Peak load reduction is modest

Instead of focusing solely on peak reduction, utilities should explore value-stacking opportunities for managed charging programs that add load shifting and distribution capacity benefits to peak load reduction values. Managed charging can reduce energy procurement costs via load shifting and help utilities defer or avoid grid upgrades, which recent studies suggest could be worth several thousand dollars per EV compared to an unmanaged scenario. This approach provides more holistic accounting of the value EV-based VPPs can deliver.

Using a single DERMS to orchestrate EV programs in concert with other device classes unlocks the full potential of DER-based VPPs. By integrating EVs in a multi-DER DERMS, utilities can solve for near-term distribution grid constraints and allow EVs to work in tandem with other DERS to solve problems on both the distribution network and bulk grid.

8. Rethink measurement

Driving and charging behavior is much more variable than, say, home air conditioning behavior. Drivers can travel and charge at all times of the day. As a result, the traditional baseline methods needed to measure grid impacts must evolve to reflect EV energy consumption and EV driver behavior. As it stands, existing baselines don't accurately estimate the energy used by EVs. A recent EnergyHub-authored white paper demonstrated that existing baselines are flawed, with even slight inaccuracies creating major impacts on measurement and verification results.[1]

EnergyHub is developing new methodologies for measuring the grid impacts of EV programs to ensure the full value and unique characteristics of EVs and EV charging are captured. We use an "engineered baseline" for each vehicle, which represents what would have occurred during the event without control or program influence, based on the charging behavior directly preceding, during, and following the event. We expect our methodologies to evolve significantly in the coming years as we gather more data about driver and charging behavior and as programs scale.
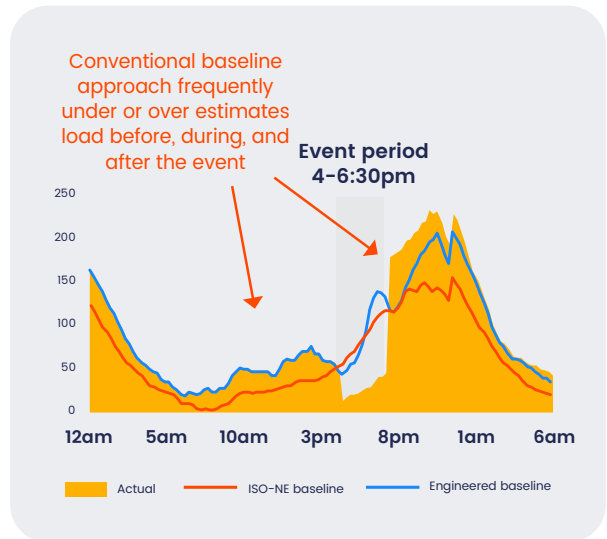

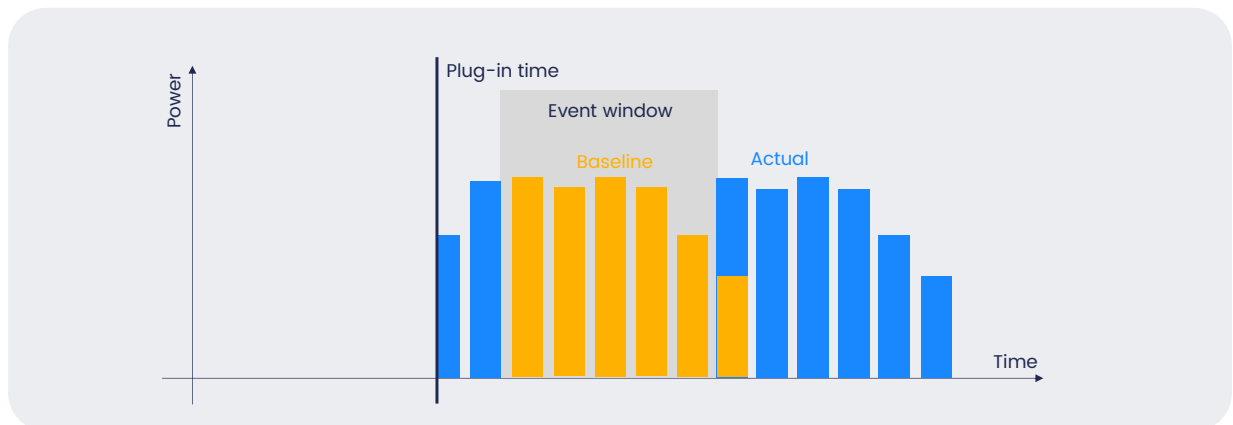**Figure 5:** New baseline methodology addresses unique EV load attributes

Figure 6: Plug-in data is used to construct a logic counter-factual for each device individually.

[1] EnergyHub. (2023). The Impact of EV Charging on Distribution Network Infrastructure [White paper]

Get in the driver's seat

Utilities play a critical role in accelerating transportation electrification while maintaining clean, reliable power. By delivering a seamless, compelling customer experience across channels and brands, they set the stage for success. From awareness to conversion to retention, utilities must keep the focus on delivering value to their customers.

EnergyHub EV provides utilities with the expertise and support needed to ensure that managed charging, behavioral charging, and charging analytics programs are reliably delivered. By providing near real-time EV insights and control, EnergyHub EV allows utilities to unlock grid value from EVs and optimize program performance, all while delighting customers.

To learn more about starting or accelerating an EV program at your utility, visit EnergyHub's electric vehicle charging solutions page.

[Learn more](#)

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Or learn more at energyhub.com

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EnergyHub

Helping over 60 utilities unlock value from DERs at the grid edge.