The future of fleets is mixed-energy — here's how to win the EV game





Smart businesses in the U.S. see EV adoption is no longer just a question of sustainability. The adoption of EVs is a strategic business decision, especially when carried out in a thoughtful way. The factors that illustrate an evolving EV story are twofold:

- Battery technology is improving, so vehicles can travel farther on a single charge
- EV manufacturing is becoming cheaper, so the total cost of ownership (TCO) has fallen and will continue to decline

"The future of EVs is that they will increasingly become the smarter business decision. Batteries are getting more powerful and cheaper. When 30–40% of the cost of an EV is the battery, we envision a future where EVs will become less expensive than ICE vehicles, making them the most economical and the wisest business choice." As WEX's Sarah Booth, Senior Director of Connected Fleet, put it above, the cost trajectory for EVs is clear.

What does this mean for you? It's time to partner with an EV advisor, use data and science, and start building your mixed-energy fleet today to prepare for the mixed-energy reality of the future.

Factors to consider before adoption

The three most important things to get right when weighing your options for a mixed-energy fleet:

- Determining the right use case/duty cycle to convert — What is the vehicle used for?
- Determining the right vehicle for that use case — Picking the right vehicle for the job
- Determining the right charging strategy for that vehicle — Building your infrastructure intelligently

This report will help you craft a mixed-energy adoption strategy, reducing your fleet TCO, and setting you ahead of the competition.

Real-world example: "The Acme Company"

Sawatch Labs, a WEX company, is a fleet electrification analytics software firm. They use predictive analytics to help organizations determine how to transition their fleets to electric vehicles. Sawatch considers the suitability of specific vehicles combined with a company's infrastructure needs when assisting in a company's fleet transition.

Sawatch has been working with "The Acme Company," ("ACME") a fleet with 6,000 vehicles, for many years. From the outset, Acme was ahead of the pack on electrification.

Pulling the EV adoption trigger too quickly can be costly

Acme originally hired Sawatch to conduct targeted analytical studies of portions of its fleet. For the first three years of Sawatch's contract with Acme, Sawatch analyzed 100 Acme vehicles per year that Acme fleet managers had slated for replacement.

While Sawatch was conducting studies on small subsets of the organization's large fleet, the leadership team at Acme was pressuring fleet management to quickly electrify. It was at this point that Acme conducted some of their own electric vehicle suitability assessment (EVSA) and charging infrastructure analysis using Telematics data (GPS) and mapping analysis on a spreadsheet. While this method of electrification planning is better than just putting EVs into random use cases and installing a charger for every vehicle you purchase, it does have its limitations. For example, a spreadsheet-based approach often uses monthly or annual vehicle utilization averages and doesn't factor in other energy-impactful data points such as changes in altitude and temperature. To truly model a vehicle's specific energy needs one needs to understand the distance, speed, terrain, and ambient temperature for all driving. For a fleet operating across a large geographic area, a spreadsheet-based approach also often ignores the variable utility time-of-use (TOU) rates and demand charges, meaning the fleet could still face high electricity bills if "active" vehicles are charging simultaneously during peak hours.



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Because Acme had ambitious conversion goals, they began electrifying vehicles that Sawatch hadn't studied. Some decisions were based on which departments raised their hands and asked to electrify, while others were based on manual analysis by the organization. Placing EVs in ICE applications without proper analysis can result in underutilization of the vehicle and therefore an inability to meet the projected TCO savings.



On point electrification: sophisticated tools to significantly cut costs

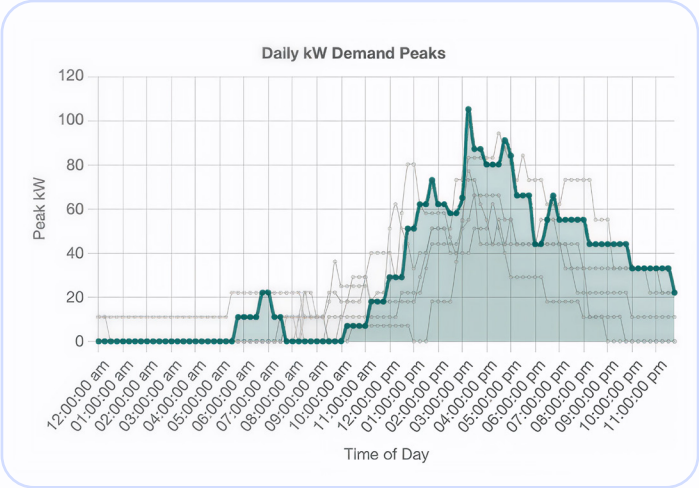
Acme reengaged with Sawatch in 2024 as it looked to move to the next tranche of electrification. Acme had learned from their experience adopting EVs ad hoc over the past few years. They saw that they needed to better understand not just which vehicles to replace, but how they were going to install charging infrastructure in a strategic way. They had a keen focus on infrastructure planning in a data-driven way to reduce overspending/over build-out of EVSE. At the same time the EV market had grown, and Sawatch's capabilities had expanded. For this more recent Acme project, Sawatch became front and center in Acme's strategy. Sawatch was employed to analyze a year's worth of data and analyze Acme's fleet in its entirety. Acme wanted to use the sophisticated tools and support that Sawatch offered.

Sawatch Labs' ezEV and ezIO (EV Charging Infrastructure Optimizer) tools offered Acme an efficient solution that went beyond charger-to-vehicle ratios and energy estimates. Sawatch gave Acme an optimized Electric Vehicle Supply Equipment (EVSE) count that minimized what Acme would pay for charging infrastructure.

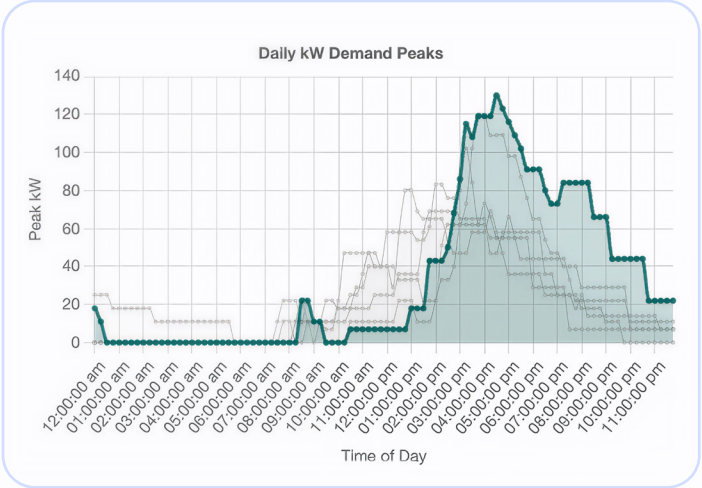
ezIO factors in vehicle-specific usable battery capacities and the actual energy each vehicle uses each day to project when, where, and how long each vehicle will need to charge. It also models the 15-minute demand curve at each projected charging site, aggregating the projected charging for each individual vehicle, and integrating specific utility rate structures, such as time-of-use (TOU) rates.

Using sophisticated energy modeling, vehicle usage, dwell patterns, and projected charging demand for Acme, Sawatch's ezIO identified the optimal number of chargers required to meet all the fleet's charging needs while simultaneously minimizing overall electricity costs. They did this by identifying exactly how many chargers Acme would need at every single fleet parking location. Additionally, ezIO demonstrated how many chargers Acme would need at increasing levels of fleet electrification (from 5% to 100%). This helped Acme plan EV purchasing for future years while simultaneously planning their build-out to meet future demand.





Projected 15-minute demand for charging at Site A at **25% Fleet electrification** (Acme)



Projected 15-minute demand for charging at Site A at **50% Fleet electrification** (Acme)

Electrifying vehicles without Sawatch's data analysis tools cost company millions of dollars

Sawatch analyzed the entire fleet of vehicles with proprietary software built for EV analysis and determined that about 680 vehicles were a good fit for an EV. Impressively, Acme converted just over 680 vehicles to electric during this time. But Sawatch found that many of the vehicles Acme replaced were not the best candidates for EVs. Because Acme converted suboptimal vehicles, the company forfeited millions of potential total cost of ownership (TCO) lifetime savings.

The cost savings from converting to EVs varies depending on how a vehicle is used, the cost per kWh to charge, and how many daily miles it drives. A comprehensive analysis guides you to which vehicles are the best to electrify.

Careful what assumptions you make about your drivers and what infrastructure you need

It's easy to make assumptions as a fleet manager and skip important steps in the electrification process. However, every step must be attended to with care, to avoid long-term costs. Determining the "right" amount of EVSE for a fleet, and avoiding over- or under-building your fleet charging infrastructure is a tricky exercise. This is where bringing in an expert with the best tools for building a mixed-energy fleet will help you make sure you're not missing anything.

For example, you might imagine where your drivers park their vehicles at night is only their concern and not necessarily of much importance. In fact, parking location affects costs over time.

A second case study: Pay attention to where people park

Sawatch was hired by a consultant to analyze the fleet for one of their customers. The customer had a little more than 100 vehicles across seven states, and was interested in converting their fleet to EVs. The consultant asked the fleet manager directly where their fleet of vehicles parked. The fleet manager's response was that each of their vehicles parked at one



of four different offices. The consultant made a plan to install charging stations at all four offices but first asked Sawatch to analyze the operational data.

Sawatch then conducted a data analysis, using telematics to determine location, and determined that 97% of the drivers in this fleet parked their vehicles at home at the end of the workday. Had the company gone forward with a plan based on an assumption of where the vehicles parked, they would have installed thousands of dollars worth of charging stations to service 3% of the company's fleet. Using Sawatch Labs' EV infrastructure optimizer tool (ezIO) provided them with a precise, cost-effective solution and Sawatch's analysis saved the business from a costly mistake investing in stranded assets. The salient point Sawatch makes here with its customers is that even if vehicles may be assigned on paper to a specific location, fleet managers want to be certain that they know where the vehicle actually dwells overnight because that's where charging will happen.

How to intelligently plan your charging infrastructure and why it matters

Another Sawatch customer, "Widget Manufacturing," ("Widget") has been working with Sawatch since 2021, and uses Sawatch's tools in a variety of ways. They're a customer who is active in the Sawatch dashboard and is regularly pulling down information to incorporate into their broader planning. Widget's data is updated daily in the Sawatch dashboard and reflects their vehicles' evolving operations. Widget makes infrastructure and EV purchase decisions strategically based on the analysis Sawatch's tools provide.

Widget moves vehicles around quite a bit due to a flow of constantly changing operations on its expansive site. They are steadily increasing their charging infrastructure in line with increasing the EVs in their fleet. They identified which locations they wanted to prioritize based on best vehicle fit and areas that were suited to newly built infrastructure. Best vehicle fit means which vehicles had an EV that met their daily operational needs and would result in a reduced TCO

compared to an ICE option. They then aligned their vehicle procurement with those data sets. So, as an example, Widget was able to determine that there was one location with a number of vehicles that were well-suited to convert to EVs. They determined this by using their Sawatch dashboard, and set their plans in motion.

Widget needed to hire a contractor to install chargers and put out a request for proposal (RFP) so contractors could bid for the project. By using Sawatch's analysis and charging recommendations they were able to properly structure the RFP needs and not overly spend for chargers they might not need. This level of detail allowed vendors applying to the RFP to determine what kinds of utility upgrades would be required at the site and hone in on an accurate budget. Having the detailed analysis in advance helped Widget hire a vendor, optimize their EVSE, and align their vehicle procurement.

Widget recently began the same level of detail for a new RFP for the next infrastructure location, investing money in new infrastructure with confidence, because they know the information Sawatch provides them is accurate and actionable. As Sarah Booth from Sawatch noted, "Widget is electrifying strategically, meeting their sustainability targets, and making sure they're getting infrastructure at the right place and vehicles at the right time to all line up."

Widget exceeded 15% fleet electrification and is on target to meet their long-term fleet sustainability goals.



How data helps off-cycle procurement as well

Companies that work with Sawatch rarely replace all their vehicles at once. Every year, as part of their annual procurement process, vehicle replacement is a line item. Customers are using Sawatch's analysis during the procurement planning process to determine if they can replace any of their vehicles with EVs.

Sawatch also assists in off-cycle procurement. For example, Sawatch helped Widget with their annual procurement process and also assisted in some off-cycle procurement.

In 2023, Widget turned to Sawatch for assistance in an off-cycle procurement. A vehicle unexpectedly needed replacement, and Widget's sustainability team thought an EV replacement might make sense. When Widget's sustainability team approached their fleet manager, he let them know he felt an EV would not work as a replacement and he was under a time crunch to get the vehicle replaced. The sustainability team offered to look at the numbers together. The fleet manager was convinced that an ICE vehicle was the only option. He gave them one week to convince him otherwise. As it turns out, an EV really was the right fit for that vehicle's replacement. Sawatch's senior business development specialist, Mary Till, told the story: "The sustainability team showed the fleet manager the analysis from their Sawatch dashboard and showed him why an EV worked. They bought an EV in that application as a result of those discussions. Had they put an ICE in that application, they would have chosen the more expensive vehicle because the total cost of ownership for that ICE vehicle was higher than the total cost of ownership for an EV."

With available data at their fingertips, not only does Widget meet their sustainability goals, but they are actually selecting the option that is lower cost over the lifetime of that vehicle. Sometimes doing it how you've always done it means you miss out on opportunities to save money. In this instance, Sawatch predicted Widget would have a 10% lower TCO if they replaced this vehicle with an EV over an ICE vehicle.

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How do diminished government EV resources impact mixed-energy fleet construction

With federal resources dwindling, organizations are being asked to electrify with little to no additional funding. Fleets have their own standard vehicle replacement budget — it's the federal incentives that are no longer available. Because these resources are constrained, companies need to be even smarter now about how they're replacing ICE vehicles with EVs. They also need to pay more heed to infrastructure placement. Strategic addition of EVs where charging already exists and careful consideration of where to build out new charging infrastructure — this is where real money can be saved.

Satisfying a diversity of fleet needs across divisions within one company

From an infrastructure standpoint, one of the challenges Sawatch encountered with Acme, and with other companies they've worked with, stemmed from a diversity of fleet customers within one company, and managing the needs and various ways of working across those disparate departments.

Acme was a complex case in part because there were company locations where facilities were shared between multiple departments. Things quickly get complicated when a variety of drivers from different departments share a single EV charging infrastructure location. Invoices get sent to the wrong department (EV charging getting lumped into facilities invoices for instance), tensions build around charging efficiency and timing, and suddenly you're faced with potential conflict. You're better off planning ahead.

Sawatch stepped in by providing broad data analysis to Acme, across departments that managed their vehicles differently. Even though every vehicle ultimately rolled up to one executive fleet manager, there was a big discrepancy between departments operationally. Trying to coordinate all of those different ways of managing a fleet increased the complexity of the project.

What does EV infrastructure planning look like with leased facilities?

Another complexity for Acme's project, which Sawatch has experienced with other customers as well, was that some of their facilities were leased rather than owned. Does it make sound business sense to invest in installing charging infrastructure at a property you don't own? Yet another variable companies like Acme need to consider when building up their EV fleets.



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How can EV adoption be optimized?

One thing is absolutely clear: you're going to get maximum savings out of your electric vehicles if you optimize their use. When you look at your fleet fuel budget, the cost to drive a mile on electricity usually costs less than a mile driven in an ICE vehicle. There are factors that impact that cost comparison such as whether or not you're using public charging, and what your utility rates are, but in general, maximizing your electric miles will help you achieve the best savings for your fleet.

Mary Till from Sawatch says, "If you're putting EVs in applications where employees are driving only a few thousand miles a year, you're not getting the optimum amount of savings. If you're conservative in how you use your EVs and put them in safe applications, you might end up paying more than if you had an ICE in the same application." It may seem counterintuitive, but the best way to use EVs is to use them to their maximum capacity, and as a fleet manager this will be a place where you can realize a lot of savings.

As ever, data analysis is key. Using data to identify where an EV meets your daily operational needs and is also going to drive a lot of miles, will equal the most savings. Acme's 680 misplaced EVs illustrate the point perfectly.

The quandary of adopting hybrids over EVs

Sometimes companies purchase plug-in hybrid electric vehicles (PHEV) in a desire to be more sustainable, and this often proves to be a tactical error. There are some known disadvantages fleets experience with PHEVs. To put it plainly, if you buy a plug-in hybrid electric vehicle, you're buying a battery and an internal combustion engine, and any potential savings depends on if you drive most miles fueled by electric or not.

Oftentimes PHEVs are purchased without charging infrastructure in place or planned driver training. This leads drivers to fall back on what they know and use the fuel-powered engine in their PHEV as opposed to charging the battery. And if you're not using the battery, then you've just spent more money for what is essentially a slightly more efficient ICE vehicle.

As Booth explains, "Flex fuel vehicles have existed for decades. For as long as there have been flex fuel



vehicles, fleet drivers have a tendency to default to using the standard fuel that they're used to rather than the alternative fuel option. We see the same thing with PHEVs."

Sawatch helps a company identify when the PHEV is not being charged enough, or performing well enough, and when a full battery electric, or ICE vehicle is the better replacement. Taking the time to analyze a fleet before converting allows you to confidently place full battery electric vehicles in your fleet and avoid purchasing a plug-in hybrid electric that gets used as if it were an ICE vehicle.

Why ongoing services can be more impactful for EV adoption

Another factor in the EV conversion discussion is how to engage with an electrification partner. Fleets have the option to choose software as a service (SaaS) or to approach each conversion as an individual project with their electrification partner. Acme has been proactively electrifying its fleet since 2017. Their approach has been to electrify via the project model. Sometimes there are operational reasons for going that route tied to budget and procurement standards, but it's good to note the value of software as a service over a project-based approach.

With SaaS you can monitor the use of your EVs after they're implemented, you can ensure they're being optimized, ensure they're in the right application, or move them to applications where they're going to afford more savings. "We prefer ongoing engagement with our fleet customers because electrification is a journey, not just a one-time analysis. Factors are ever-changing. Vehicle availability changes, vehicle pricing changes, incentives change, fleets move vehicles from application to application, new staff need to be trained. With all of this uncertainty, you need a partner providing you fleet data on an ongoing basis to allow for planning, and for optimizing decisions-making on both the vehicle and the EVSE side," says Booth.

When the customer chooses software as a service, their Sawatch dashboard is updated daily reflecting actual operations. Customers have consistent access to a subject matter expert, and Sawatch engages with all the company's stakeholders throughout the year to continue a company's electrification growth. This can involve identifying vehicles that need replacement, infrastructure that needs to be built out, and revising the various inputs in real time based on market changes.

Partner with an expert in electrification analysis

Partnering with an EV expert like Sawatch will help you build your mixed-energy fleet into the most cost-effective powerhouse in the market. Sawatch Labs specializes in leveraging real-world fleet operational data, be it telematics or fuel transaction data, and energy optimization expertise. The company focuses on **using EV analytics to provide actionable insights** into EV suitability assessments, EV infrastructure planning, EV management, and fleet emissions tracking and reporting. Sawatch is a strategic partner dedicated to creating successful and cost-effective fleet electrification journeys for its customers. **Contact Sawatch Labs** today for a demo of products, including the EVSE optimizer tool.

About WEX

WEX is a global commerce platform that simplifies the business of running a business. WEX has created a powerful ecosystem that offers seamlessly embedded, personalized solutions for its customers around the world. Through its rich data and specialized expertise in simplifying benefits, reimagining mobility, and paying and getting paid, WEX aims to make it easy for companies to overcome complexity and reach their full potential. To learn more, please **visit the company's About WEX page**.

*Acme is the pseudonym for a real Sawatch customer.
†Widget is the pseudonym for a real Sawatch customer.

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