Trends & Predictions in Fleet Electrification

With predictions that global electric vehicle (EV) use will climb to 13 million by 2020 and more than 125 million by 2030, it is probably safe to assume that electrification is here to stay.

These predictions aren’t coming out of thin air. Government entities are continuing to support electrification initiatives by expanding their own fleets, rolling out public EV charging infrastructure, and setting environmental policies favoring EV adoption. These moves are coming alongside growing public and corporate commitment to EVs.

But perhaps the best indicator of electrification’s future is the product offerings of the major vehicle original equipment manufacturers (OEMs). Most of these big automakers are making significant commitments to grow their EV lineups at every level, from light-duty sedans and SUVs to medium-and heavy-duty trucks. Today there are already dozens of EV models available, and the amount of choice will only continue to grow. OEMs wouldn’t be making this commitment if there weren’t a sustainable market for these products.

Commercial fleets are also going “all-in” with electrification. Coalitions such as EV100 are encouraging commercial fleets and lessors to commit to transitioning their fleets to 100% electric by 2030.2 These electrification commitments let commercial (and government) fleets continue being both sustainable and cost effective for their organizations.

1. Growing Adoption: Reasons to Transition to EVs

Sustainability Commitments

With about 50% of all vehicles belonging to fleets (either through ownership or leasing), significant and growing commitments to integrating EVs into fleet operations will continue to drive the transition to EVs. Because of growing commitments to sustainability, it’s likely that EVs will become necessary to all types of businesses in every part of the world. As with any major shift in technology, the key to EV adoption is that it has to make business and operational sense in addition to having an impact on sustainability.

Lower Costs

Significantly, the ongoing fall in battery costs will lower EV purchase prices and make the economic justification for EVs easier for fleet personnel and their stakeholders. Improvements in EV technology mean that geographical differences such as weather and topography are no longer impediments to EV adoption and operation. However, what could complicate adoption in some geographical areas is the lack of sufficient EV charging infrastructure to meet the growing energy demands of fleets as they scale up their electrification efforts.
As outlined above, a crucial factor fueling the widespread adoption of EVs by fleets is the number and types of vehicles that have become available in the past few years. Particularly in the light-duty and bus segments, there are many models and options available for fleets.

Government and transit operations are particular growth areas primarily because of sustainability commitments and anticipated economic benefits. Many transit operations in major cities are committing to shifting to 100% EV adoption within the next 20 years.

The adoption of light-duty EVs both by governments and consumers has shown that EVs are viable and operationally sustainable alternatives to traditionally fueled vehicles. With the price of batteries falling and a better understanding of EV total cost of ownership (TCO) emerging, the lower costs of running EVs are now penciling out with hard data.

More Choice in Vehicles

Another factor that is helping fleets make a bigger EV commitment is the growing number of vehicle types available. EV transit buses demonstrated that large, heavy vehicles can be effectively electrified—serving as a proof of concept to government and commercial fleets that electrification didn’t have to be confined to light-duty vehicles only.

In fact, there are a growing number of medium- and heavy-duty EVs from major OEMs, already on the market or coming soon, that are able to fulfill most fleet operational needs. This wide array of products for every need allows fleets and their stakeholders to envision electrification as a viable future reality.

2. Growth Factors Examined

While the capability and product are available, EV adoption isn’t simply a matter of adding a budget line. Fleets need to develop strategies that address EVs and their infrastructure as an integrated ecosystem.

Long-Term Planning

These strategies have to be developed for the long term—at least 3-5 years out for sedan and work truck fleets and as long as 12 years for transit operations due to the latter’s longer vehicle lifecycles—to successfully implement a fleet electrification plan. Thinking long-term will help future-proof the fleet’s investment, avoiding the need to repeatedly perform initial construction or “rip and replace” EV charging solutions that were not optimized from the start. Smart planning will maximize the initial investment in EVs and make future expansion relatively seamless, both in terms of adding vehicles and handling increasing demand for power.

Increased demand for power makes planning a crucial part of the process. How much power is needed and how it will be managed must be determined with the aid of both internal and external stakeholders, including facilities, the fleet’s EV charging provider, and the local utility.

While implementing and integrating hardware will be major parts of the electrification process for fleets, software integration will likely be even more crucial for the fleet to effectively manage the EV ecosystem. This integration includes embedded software on portable and desktop devices and vehicles as well as systems for traffic management, fleet management and logistics operations.
One of the significant benefits of EVs is that they are more connected than their traditionally fueled cousins—in fact, the entire EV infrastructure is, by necessity, a uniquely 21st-century digital solution.

Vehicles will become hubs of data that will allow fleet personnel and fleet management systems to correlate weather, traffic patterns, routing and other variables to accurately measure energy use.

This increased level of integration across the entire fleet and beyond will provide more operational data for a clearer day-to-day picture of the fleet’s charging needs, leading to a better path to optimized, intelligent charging strategies that will keep the fleet up and running at peak efficiency. Ultimately, integrated software is a required component of the larger charging ecosystem.

Managing Power

Software integration will also play an important role in overall power management, managing the vehicle energy load and allowing the fleet to take advantage of periods of non-peak power demands. Further, with the increasing advancements in vehicle-to-grid technology, power management will become even more sophisticated and efficient with the ability to push power back into the grid, flattening the demand curves and storing energy for excess capacity.

With the increasing availability of EV products and the falling costs of batteries, fleets will be better able to develop comprehensive acquisition and vehicle cycling plans to fully transition to EVs. One of the significant benefits of EVs is that they are more connected than their traditionally fueled cousins. In fact, the entire EV charging infrastructure is, by necessity, a uniquely 21st-century digital solution.

Because of this, collecting data on vehicles will become much easier, improving fleet efficiency and lowering vehicle TCO. Vehicles will become hubs of data that will allow fleet personnel and fleet management systems to correlate weather, traffic patterns, routing and other variables to accurately measure energy use. In practice, this will help with budgeting and proving the efficiency of the vehicles long-term, including accurate measurements of TCO factors such as cost per mile. The large amount and accuracy of the data available will allow fleets to better manage their charging infrastructures and plan for growth based on real-world operational needs. Data takes the guesswork out of fleet operations.

The biggest factor for managing EV growth is to think about the process not just as a transition to EVs, but to electrification as a whole, including all the accompanying information and possibilities for optimization.
3. Forecasting Change

No matter how long it takes for fleet electrification to become ubiquitous, there are few if any who argue it won’t happen. Along with electrification will come significant changes in how fleets operate and even how they will address mobility issues.

Adapting the Overall Approach

Electrification will change fleet operations, with charging and power demands being integrated into operational considerations. This may result in a fundamental reshaping of how fleets provide their services. For example, the transit fleet as we know it today may cease to exist, replaced by new, more efficient mobility options.

Instead of keeping large buses working around the clock, transit fleets may shift off-peak service hours to small, autonomous, electric vehicles or an on-demand ride-sharing solution. Electrification will give businesses more flexibility in exploring and adopting mobility solutions specific to the needs of their customers and overall operational efficiency.

Managing Demand for Power

There will be specific challenges and opportunities related to power management, security, and the transition from a petroleum to an electrified model.

Power management will require an array of tactics to manage power demand, including scheduling, storage, and power purchase agreements (PPAs). This could be particularly complex for fleets with national footprints that will need to navigate numerous infrastructure challenges in different parts of the country.

Energy availability and vehicle uptime will be crucial aspects of a successful electrification strategy, and may require the use of distributed energy resources (DER). These will involve the fleet installing its own micro-grid—typically a wind or solar generating station—to help manage localized demand from the main power grid, particularly during times of peak energy use or a scheduled or unscheduled power disruption.

While software integration will be crucial for fleets to manage their power needs, security will become an important issue for fleets to address as they implement their electrification strategies. At every point where systems connect, there is the potential for a vulnerability to a security breach that could shut down the fleet’s grid access or affect charging optimization. Security will need to be a part of planning with the fleet or organization’s IT team a part of the ongoing integration process.

Again, making the transition to electrification from petroleum-based fuels is complex and may include changing the way the fleet manages depot parking, which may be a reflection of charging management, and integration with existing fleet management systems, which, in addition to the security issues discussed above, will...
likely require changing the way the fleet is using these systems to manage charging, measure efficiency, and analyze TCO.

While every vertical and every geographical location will be impacted by the shift to electrification, two verticals that will likely see the quickest adoption are airports and sea ports. These two verticals are ideal for current electric buses, vans, forklifts, and other service vehicles, because they can deliver the power that’s needed to move people and things over short distances.

4. The Bold Predictions

As the early adopters have demonstrated, fleets and electrification are ideally suited to one another, and it’s likely that fleet electrification will pick up speed and outpace consumer adoption of EVs for a number of reasons, including:

+ There’s less reliance on individual taste and preference
+ There’s more focus on functionality and reliability than creature comforts
+ There’s more predictable usage and clear functional requirements
+ Higher usage makes operational savings more substantial

Electric Fleets Will Advance Smart Cities

Electrification will have far-ranging importance for the broader infrastructure, being critical for the implementation of smart city initiatives. Because it is fundamentally a digital solution, electrification offers the ability to integrate electrified fleet management and monitoring solutions with smart city systems, such as traffic management, smart grid, and data management to dynamically update fleet activities.

Electrified fleets not only will be able to reach greenhouse gas (GHG) emission reduction targets set by federal and local governments, but will be critical parts of a larger, integrated power management approach.

While it will be a few years before any of these predictions will be proven true, the ongoing electrification of fleet operations is already showing private companies and public agencies the benefit of reduced carbon footprints, more efficiency and lower operating costs and total cost of ownership.

5. About ChargePoint

ChargePoint has been committed to making it easy for businesses and drivers to go electric since 2007, with the largest EV charging network and most complete set of charging solutions available today. From workplaces to fleet, residential to retail, ChargePoint is creating the new fueling network to move all people and goods on electricity. To date, ChargePoint’s network has grown to more than 110,000 places to charge with drivers plugging in approximately every two seconds. Thousands of businesses and organizations and hundreds of thousands of drivers and around the world count on ChargePoint. For more information, visit www.chargepoint.com.
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