

Fleet Electrification Checklist for Fleet Managers



According to the U.S. EPA, the transportation sector accounts for the largest portion of total U.S. greenhouse gas emissions (28%), and the medium-and-heavy-duty truck sector accounts for 23% of those emissions. Commercial, private, and public fleets are making the transition to a clean energy future and electrification is one of the ways fleet managers can improve and “green” their fleet. This shift is driven by various factors such as the emergence of new technologies and improved total cost of ownership. Overall, electric vehicles can lower fleet operating and maintenance costs, help comply with government policies, and demonstrate commitment to environmental protection and energy security. If you are a fleet manager looking to electrify your fleet, here are some things you should consider.

Factors to Consider when Purchasing EVs for your Fleet

1. Vehicle Selection & Replacement

- State of Current Vehicles – Determine which vehicles in your fleet you plan to replace based on factors like vehicle job type, life cycle, fuel use, and efficiency.
- Range Capability – Assessing range capability before purchase leads to confidence that the vehicle will be fully capable of completing the needed duty cycle each day.
- Charge Capability – Ensuring charge capability means the fleet can be assured that there is enough time available between the last trip of one day and the first trip of the next for the vehicle to recharge.

2. Total Cost of Ownership

- Purchasing EVs and Incentives – In 2018, there were 59 light-duty and 54 medium/heavy-duty PHEV and BEV models available from major auto manufacturers. Plug-in hybrid EVs and battery-electric vehicles qualify for a \$2,500 to \$7,500 federal tax credit.
- Fuel Prices & Electricity Rates – EVs can dramatically reduce your fleet’s fuel costs because of the low cost of electricity versus conventional gasoline. Fuel cost savings depend on electricity and gasoline prices as well as vehicle type and driving patterns.
- ROI & Vehicle Service Life – Adoption of EVs into a fleet should only occur if a financial case can be made for it. Calculating fleet performance metrics such as total fleet reduction of greenhouse gases, fuel use comparison, fuel cost savings, and operations maintenance costs prior to EV deployment provides feasibility.

3. Fleet Charging

- Charging Level – Fleet charging will typically be a mix of Level 1 and Level 2 units and may include the use of multiple port units. The amount of time needed to charge all the fleet vehicles will be an important consideration when selecting the charging level.
- Demand Charges – A fleet that is installing many EVSE units and operating them all at the same time may face demand charges. Overnight charging of fleets may avoid peak demand issues and some fleets may be able to utilize a fixed schedule for charging EVs.
- EVSE Features – The fleet manager will need to work with an EVSE manufacturer, electrician, and utility to determine the lowest cost solution to meet the fleet’s needs.



Primary Motivators for Electrifying Fleets

- ✓ Achieving sustainability goals
- ✓ Lowering total cost of ownership
- ✓ Financial incentives
- ✓ Policy changes

Top Barriers for Electrifying Fleets

- Limited Product Availability
- High Purchase Price
- Inadequate Facility Charging



Prices and Incentives

Fleets can reduce the cost of owning EVs through a federal tax credit of up to \$7,500 and incentives from their state, city, or utility.

To find relative incentives, search the Alternative Fuels Data Center Federal and State Incentives and Laws database at www.afdc.energy.gov/afdclaws.

Example Light-Duty EV Models

- 2019 Chevy Bolt (BEV)
- 2019 Nissan Leaf (BEV)
- 2018 Toyota Prius Prime (PHEV)

Example Medium-Duty and Heavy-Duty EV Models

- Ford/Lightning Systems Transit 350HD Cargo Van (BEV)
- BYD Class 6 Step Van (BEV)
- Zenith Electric Chassis Cab (BEV)



Fleets That Have Used EV's Effectively

- ✓ City Sanitation Departments
- ✓ Utility Fleets
- ✓ Police Departments
- ✓ Delivery Trucks
- ✓ Ridesharing Services



Benefits of Electrifying Your Fleet

Compliance with Fleet Requirements: The Energy Policy Act of 1992 and subsequent federal regulatory activities require certain fleets owned or operated by federal and state agencies or alternative fuel providers to acquire alternative fuel vehicles or reduce petroleum consumption in other ways. Because electricity is defined as an alternative fuel, EVs help covered fleets meet the requirement.

High Performance: EVs are considered state-of-the-art highway vehicles ready to match or surpass the performance of conventional gasoline and diesel vehicles. While some medium and heavy-duty vehicles have limitations, EVs are quieter, produce maximum torque, and provide smooth acceleration from a full-stop.

Flexible Fueling: Depending on how your fleet operates, you may fuel vehicles at fleet facilities, public charging stations, or both. Like conventional vehicles, EVs are well suited to any of these fueling options. Charging stations are being installed at fleet facilities which enable EVs to be recharged overnight and during idle times.

Low Emissions: EVs can have significant emissions benefits over conventional vehicles. Vehicle emissions can be divided into two general categories: air pollutants and greenhouse gas emissions. EVs produce zero direct emissions while PHEVs produce zero tailpipe emissions when in all-electric mode and typically lower direct emissions when using the ICE.

Community Leadership: While some fleets are required to minimize their petroleum use or emissions, others do so voluntarily to meet sustainability goals, demonstrate leadership, or differentiate themselves from competitors. Fleets that are highly visible, such as transit and school buses, law-enforcement vehicles, and taxis, are particularly well-suited to project a positive image by using EVs.

Energy Security: The U.S. transportation sector accounts for two-thirds of our petroleum consumption and most vehicles depend almost entirely on petroleum. EVs can help make the U.S. more energy independent by relying on domestic energy sources and reduce the impacts of gasoline and diesel price volatility on fleets.

Source: U.S. Dept. of Energy

Driving and Maintenance

Vehicle Maintenance

PHEVs have internal combustion engines and so maintenance requirements are like those in conventional vehicles. EVs have an electrical system that will likely require minimal scheduled maintenance and in general less maintenance than conventional vehicles do because there are fewer fluids to change and less moving parts.

Battery Life

The advanced batteries in EVs are designed for extended life but will eventually wear out. EV dealerships will have specific information about battery life and warranties but are expected to be a significant expense.

Safety

EVs must undergo the same rigorous safety testing and meet the same safety standards required for conventional vehicles sold in the U.S. Standards specifically requires EVs to limit chemical spillage and prevent shock. EV manufacturers have designed their vehicles with safety features that deactivate the high-voltage electric system in the event of a collision.



Checklist for Fleet Electrification

<input type="checkbox"/>	Vehicle Replacement, Cost of Ownership, and Fleet Charging
<input type="checkbox"/>	Prices, incentives, and Vehicle Availability
<input type="checkbox"/>	Benefits of Fleet Electrification
<input type="checkbox"/>	EV Fleet Driving and Maintenance
<input type="checkbox"/>	EV Fleet Management

Fleet Management for Cities

1. Ensuring safe and reliable transportation
2. Requires seamless integration with existing operational needs such that the city's mission to provide services to its residents is not compromised
3. Recognition that adding EVs to the fleet will also require some evolution in existing management practices

Source: Climate Mayors Electric Vehicle Purchasing Collaborative