







FLEET APPLICATION OF ELECTRIC VEHICLES

BENEFITS OF ELECTRIFYING YOUR FLEET

-  Clean emissions
-  Low expensive for fuel and maintenance
-  Vehicle purchase incentives
-  Wide variety of vehicle options

3 TYPES OF ELECTRIC VEHICLES (EVs):

The Alternative Fuel Data Center's definitions for the three types of electric vehicles are as follow:

- Hybrid Electric (HEV):** HEVs are primarily powered by an internal combustion engine and an electric motor that uses energy stored in a battery. The battery is charged through regenerative braking and by the internal combustion engine and is not plugged in to charge.
- Plug-In Hybrid Electric (PHEV):** PHEVs are powered by an internal combustion engine and an electric motor that uses energy stored in a battery. The vehicle can be plugged into an electric power source to charge the battery as well. When not plugged in these vehicles operate like a tradition hybrid vehicles.
- All-Electric (EV):** EVs use a battery to store the electric energy that powers the motor. EV batteries are charged by plugging the vehicle into an electric power source. All electric vehicles offer driving ranges from 80-250 miles per charge.



ASSOCIATED COSTS:

Maintenance: All-electric vehicles have much fewer moving parts than gasoline vehicles do, and therefore require much less maintenance, such as oil changes. Because of this, EVs only need to be serviced once or twice a year for a simple checkup and to rotate the tires.

Fuel: Electricity to power a vehicle costs around \$1 per gallon equivalent of gasoline. This number fluctuates much less than that of gasoline prices as electric rates are much less volatile than those of gasoline. The Alternative Fuels Data Center (AFDC) has a vehicle cost calculator to estimate the total cost of ownership of an EV when compared with vehicles that use other fuels: www.afdc.energy.gov/calc.

Vehicle Purchase: It is widely believed that EVs are are considerably more expensive than petroleum-fueled vehicles. However, the retail prices of EVs range from \$20,000 to \$85,000, with the majority of models falling on the lower end. Even Tesla offers an EV for \$35,000. Additionally, a federal tax credit of \$2,500-\$7,500 is available for the purchase of electric vehicles. This paired with the lower cost of ownership (fuel and maintenance) make these vehicles an economical choice for your fleet. You can view the current incentives available on the AFDC website: www.afdc.energy.gov/fuels/laws/ELEC.

CHARGING YOUR EVs:

Charging infrastructure for EVs is continuously becoming more available, increasing the convenience of and incentive for owning an EV. There are three types of EV charging stations (EVSE):

- **Level 1:** Level 1 charging is essentially a trickle charge through a 120-volt plug, which gives an EV two to five miles of range per hour of charging. This can simply be a common three-prong household plug, and most EVs come with a Level 1 cordset. Level 1 charging is typically used for residential applications.
- **Level 2:** Level 2 charging offers charging through a 208- or 240-volt plug and gives an EV 10 to 20 miles of range per hour of charging. Some extra equipment is necessary for this type of station. Level 2 charging is typically used for residential or commercial applications.
- **DC Fast Charging:** DC fast charging offers charging through a 208- to 480-volt plug and gives 50 to 70 miles of range per 20 minutes of charging. DC fast charging requires extra equipment and is typically used for public charging applications.

If you are thinking of purchasing EVs for your fleet, it is important to identify places these vehicles can be parked in order to have access to one of these types of charging stations, whether it simply be an outdoor plug or Level 2 or DC fast charging infrastructure at your company's location.

RIGHTSIZING YOUR FLEET:

An important part of fleet rightsizing is the use of alternative fuel vehicles, including EVs. This helps improve the fleet's efficiency and saves money that would otherwise be spent on fuel and maintenance in less-efficient fleets. Evaluate your fleet in terms of vehicle use in order to choose the appropriate vehicle size and function and decide whether or not there is the option for an EV to meet these needs. A wide variety of EVs exists, including vans, buses, and lawn mowers. Don't give up an opportunity for vehicle replacement before you've done your research! You can search for a specific vehicle type and fuel on the AFDC website: www.afdc.energy.gov/vehicles/search.

RESOURCES:

A ton of awesome resources exist to help you electrify your fleet by comparing fuel and vehicle prices, learning about incentives to purchase an EV, searching for a specific vehicle or dealership, and reading case studies on similar projects.

National

- Alternative Fuels Data Center
www.afdc.energy.gov
- FuelEconomy.gov
www.fueleconomy.gov

Vermont

- Drive Electric Vermont
www.driveelectricvt.com/
- Vermont Clean Cities Coalition
www.uvm.edu/vtccc

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