

# Public Fleet Electrification Guide



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# Introduction



Are you ready to flip the switch and go electric?

- Maybe you've already begun a transition phase of moving to an electric fleet.
- Or perhaps you've completed the transition and are 100% charged.
- Maybe you've considered it but are not yet to the starting line.

Wherever you find yourself, know that all of the above are great! Having electric vehicles somewhere in your peripheral is a great place to start.

We realize that change can be difficult and could be one of your biggest obstacles to making the commitment to switching your fleet to electric. With insight from industry partners, Sourcewell has created this guide to help answer questions and bust many of the myths surrounding electric vehicles.

So, buckle up and join us on this journey as we navigate the future of fleets, electric vehicles, and YOU!

# Backing up



## A quick history of electric vehicles

Before we get on the road, we need to glance in the rearview mirror to see where the electric vehicle trend began and why.

In 2014, the mayors of Los Angeles, Houston, and Philadelphia founded the [Climate Mayors](#), a bipartisan, peer-to-peer network of 409 US Mayors representing 70 million Americans from 47 states committed to adopting, honoring, and upholding the goals of the Paris Climate Agreement.

Then, in 2018, 19 cities and two counties launched the Climate Mayors Electric Vehicle (EV) Purchasing Collaborative. The launch of [DriveEVfleets.org](#) established a turnkey, one-stop, online procurement portal providing municipalities across the country equal access to competitively bid electric vehicles and accompanying charging infrastructure. The platform was developed in partnership with the [Electrification Coalition](#), a nonprofit working to accelerate the mass adoption of EVs to reduce US oil dependence, and Sourcewell.

By transitioning city fleets to EVs, city leaders are setting an example: Helping to cut greenhouse gas emissions that are warming the planet, saving taxpayer money, improving public health, and reducing our nation's dependence on oil. The EV commitments also have the potential to:

- Cut gas use by more than 2 million gallons each year;
- Transition to 58 million electric miles driven each year; and
- Add more than \$158 million in purchasing power to the electric vehicle market.





# Putting it in drive



## A look at the current state of EVs

The United States has the third-largest electric vehicle market in the world, and more than \$125 billion in new EV investments in the US market were announced in 2020.

By 2025, automakers plan to release 200 new electric car models, many of which are in the popular sport utility vehicle market segment. The EV market in the United States is likely to reach 6.9 million units by 2025. As improvements in technical performance and pricing continue, consumers and public fleet leaders alike will have more decision-making power when purchasing EVs.

Charging infrastructure continues to expand with the demand for EVs. Its average compounded annual growth rate across 50 metropolitan areas is 30% and charging infrastructure deployment is now in line to meet the expected charging gap through 2025.

## EV Timeline

2014

Climate Mayors network founded by like-minded mayors.

2018

Climate Mayors Electric Vehicle Purchasing Collaborative formed to support transition of public fleets to EVs.

2020

**\$125 billion** in new investments in American EV market announced.

2025

Forecast of 200 new EVs, including SUV options; EV market in U.S. likely to reach **6.9 million units**.

# Owner's manual



## A basic guide to different types of vehicles

What is the difference between hybrid electric vehicles, plug-in hybrid vehicles, and all-electric vehicles?

### Hybrid electric vehicles (HEV)

- Powered by an internal combustion engine and an electric motor that stores energy in a battery.
- Run on gasoline and cannot be plugged in for charging.
- Use battery power while stopped and at low speeds.
- Provide extra power to the gasoline engine during high speeds.
- 30% to 50% more fuel efficient than comparable conventional vehicles; HEVs average 50 mpg.
- Examples: Toyota Prius, Ford Fusion Hybrid.

### Plug-in hybrid electric vehicles (PHEV)

- Use a battery to power an electric motor in addition to an internal combustion engine.
- Provide the distance security of a conventional vehicle while taking advantage of electricity's economic and emissions benefits.
- Can be plugged in to charge.
- All electric range is generally 20 to 40 miles without using the internal combustion engine.
- Examples: Toyota RAV4 Prime, Ford Escape PHEV, & Chrysler Pacifica.

### All-electric electric vehicles (EV)

- Powered solely by an electric motor using a battery.
- Must be plugged in to charge.
- Recharging ranges from 20 minutes to 20 hours (based on the speed of the charger and type of vehicle).
- Range is typically 150 to 250 miles on a full charge, a growing number of models can go more than 300 miles.
- Extremely efficient with no tailpipe emissions.
- Examples: Tesla Model S, Nissan LEAF & Chevrolet Bolt.

## Mini case study

# City of Des Moines impacts environment by reducing emissions and fuel consumption



City leaders in Des Moines, Iowa, have built a reputation for forward-thinking, regional planning focused on sustainability. This focus extends to the city's dedication to electric vehicle adoption within its municipal fleet.

With a metropolitan population of almost 700,000 residents, city fleet vehicles must provide reliable service across a 90-square-mile, census-designated area – occasionally in adverse weather conditions.

In 2009, the Des Moines City Council set a goal to reduce the city's environmental impacts – setting the stage for more ambitious action on climate and the environment. City staff were asked to reduce transportation emissions and fuel consumption. Soon after, the first hybrid vehicles joined the city's fleet.

In 2019, after analyzing several procurement options, the Des Moines City Council agreed to procure its first fully electric vehicles. Four Nissan LEAFs were acquired in a closed-end lease through the Climate Mayors Electric Vehicle Purchasing Collaborative and deployed in the fall of 2020.

A level of skepticism was anticipated since these were the city's first EVs. Some city employees expressed concerns about range and winter driving conditions. After driving the LEAFs for six months,

end-users were surveyed, and findings were encouraging. Initial concerns were put to rest by the vehicles' actual performance in daily service. The drivers gave the cars high ratings for acceleration, regenerative braking, and no vehicle downtime due to regular maintenance.

City leaders have since approved the procurement of 11 more Nissan LEAFs, which will be on a lease-to-own plan. This open-end lease structure will allow the city to access the federal tax credit to reduce overall vehicle cost, with ownership being transferred to the city after a period of 24 months.

The electrification of the fleet in Des Moines illustrates that an openness to new procurement and ownership models can save city leaders and public fleet professionals both money and time. This thoughtful approach has set Des Moines on the path to fully electrify its fleet before 2050.

2020 Nissan Leaf S	Per Unit	All Units
MSRP	\$31,599	\$126,396
Federal Tax Credit	\$7,500	\$30,000
Lease Savings	-\$201	-\$804
Des Moines Price	\$23,898	\$95,592
Total Savings	\$7,700	\$30,800

# Speedbumps



## Busting some of the myths surrounding EVs

Just switch your vehicle fleet to electric. Sounds easy, right? But fleet professionals know better. It takes the investment of time and money – what many individuals are already short of – and the buy-in of your internal and external public to make it happen. However, the pros do outweigh the cons when looking at the big picture. Here, we bust some of the myths synonymous with “going green.”

**MYTH:** There’s no way my city/county/community will buy-in to purchasing EVs.

**FACT:** Many fleets that have deployed EVs have used the transition as a positive marketing opportunity. With the many benefits that come from driving electric – from cost and fuel savings to environmental benefits – there are many positive messages a public agency can promote.

**FACT:** Some cities have wrapped their EVs to highlight these positive messages, and some have worked with their internal marketing teams to promote the vehicles in a positive light.

**FACT:** [View policy guidance information and additional resources.](#)







**MYTH:** EVs cost too much.

**FACT:** Consumers and fleets can save thousands of dollars over the life of an EV, but higher upfront costs can be a barrier. However, funding and financing for EVs and charging infrastructure can come from a variety of sources, including federal, state, and local government agencies; utilities; legal settlements; carbon market revenues; future operational savings; and monetization of vehicle-to-grid capabilities.

**FACT:** Many models of EVs and infrastructure have lower [total lifetime costs of ownership](#) than conventional options, with consumers typically saving \$6,000 to \$10,000 over the life of a vehicle.

**FACT:** With incentives and tax credit, the actual cost to purchase an EV can be less than a fossil fuel or hybrid run vehicle.

**FACT:** Leasing allows public entities to achieve savings from federal tax credits that they otherwise would not have the tax burden for.

- In a lease, since the private leasing entity retains ownership of the vehicle for the length of the lease term (generally 24-36 months), agencies are eligible to apply for the federal electric vehicle tax credit.
- The leasing entity then passes on a majority of those savings through in the lease term. Certain leasing structures allow for vehicles to be purchased and owned by the fleet at the end of the lease term.
- The [leasing companies on Sourcewell contract](#) evaluate the incentive opportunities on a state-by-state basis. [View a leasing case study of city fleets.](#)

**FACT:** The [Dashboard for Rapid Vehicle Electrification \(DRVE Tool\)](#) was developed by the Electrification Coalition and can evaluate a variety of procurement ownership structures, vehicle types, electric vehicle charging configurations, and more. [Contact](#) the Electrification Coalition for help using the DRVE Tool.

# Speedbumps

**MYTH:** Charging a vehicle is going to be time prohibitive and expensive.

**FACT:** Vehicles can “refuel” overnight when no one is using them. Plug them in at the end of the day and voilà – you’re ready to roll the next morning.

**FACT:** Vehicles can be charged with minimal infrastructure change. There are three types of charging options, including Level 1 (120 volts), Level 2 (240 volts), and Level 3 also known as DC Fast Charging (480 volts).

**FACT:** Charging time depends on the size of the vehicle’s battery and the level of charging. With DC Fast Charging, an EV will get 60 to 80 miles of range in only 20 minutes of charging.

**FACT:** You don’t need a charging station for every vehicle. In fact, a one-to-one ratio for vehicle-to-charging is not necessarily recommended, as all vehicles will not need to charge at the same time.

**FACT:** Solar charging stations can be installed away from the main fleet garage to create cost-savings and easy access.

**FACT:** Even with the addition of charging infrastructure installation costs, many light-duty EVs still have a lower total cost of ownership over their lifetime compared to ICE vehicles. Check out the US Department of Energy [vehicle cost calculator](#) to see the potential savings.

**MYTH:** Our maintenance teams will have to learn all new skills.

**FACT:** The learning curve may not be as steep as you’d expect. Much of the maintenance on an EV is what your fleet staff already does, including tire rotations, wiper replacement, changing out air filters, etc.

**FACT:** Gone are the days of oil changes. With EVs, you’ll actually save money down the road by having fewer moving parts susceptible to breaking down, meaning less out-of-service time. And standard battery warranties on an EV are eight to 10 years – often times longer than many public fleets own vehicles.

**FACT:** Staff should be trained on the range of EVs, faster acceleration, regenerative braking, and charging. Training on maintaining EVs is often available through vehicle manufacturers (OEM) and can be arranged locally through dealership networks.

**MYTH:** Our maintenance teams will have to learn all new skills.

**FACT:** Much of the maintenance on an EV is what your fleet staff already does.

# Time to hit the road

Going electric isn't as exhausting as you may have originally thought.

In addition to long-term savings, electric mobility is the best alternative for reducing U.S. oil dependence. The electric power sector is a scalable source of energy with an existing infrastructure.

EVs are cheaper, cleaner, and more efficient than vehicles with internal combustion engines. They are also quieter and have instant torque, so they accelerate more quickly. EVs offer the opportunity to synergize transportation with the electric power sector. These vehicles will act as distributed storage devices for electricity, enabling consumers to get more out of renewable energy sources, and providing a buffer against fluctuating electricity demand and production.

With 95% of the 10 million public and private fleet vehicles currently on the road in the United States using petroleum-based fuels, fleet leaders have a real opportunity to reduce petroleum consumption, have a positive impact on the environment, and save money.



# Additional ‘fuel’ for thought

## Resources

- [Climate Mayors](#)
- [Drive EV Fleets](#)
- [Electrification Coalition](#)
- [Fleets for the Future](#)
- [Sourcewell](#)
- [Dashboard for Rapid Vehicle Electrification](#)
- [EV City Policy Toolkit](#)
- [Guidebook for Funding and Financing Electrification](#)



## Calculators

- [californiahvip.org/tco](http://californiahvip.org/tco)
- [afdc.energy.gov/calc](http://afdc.energy.gov/calc)
- [apps.dana.com/commercial-vehicles/tco](http://apps.dana.com/commercial-vehicles/tco)

## Help when you need it.

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877-585-9706

[service@sourcewell-mn.gov](mailto:service@sourcewell-mn.gov)



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Thank you to our partners at the Electrification Coalition for contributing content and resources for this guide.