

# Electric Vehicles: The Future Is Now

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Electric cars may embody our modern, green mindset, but they are, in fact, an old idea. A century ago, more automobiles in the U.S. were powered by electricity than by the internal combustion engine. Urban dwellers, who didn't need to travel far or fast, didn't mind their limited range and top speed of about 20 miles per hour. Even better, they liked the cars because they weren't noisy and smelly like the ones that used gasoline.

Then came better roads spanning greater distances, affordable gasoline and Henry Ford's assembly line that lowered the cost of gas-powered cars, which quickly eclipsed electric vehicles (EVs) and relegated them to curiosities.

For much of the next 100 years, EVs remained on the margins of the automotive industry. But that has changed dramatically over the past couple of years. For economic, technological and environmental reasons, there is now a very compelling case that EVs are on the verge of wide adoption. A few major companies including AT&T, Florida Power & Light (FPL), Duke Energy and GE have committed to purchasing tens of thousands of EVs for their fleets, and many other blue chip companies are launching pilot programs. Hertz is introducing some EVs into its rental fleet, while Coca-Cola, Google, Pacific Gas & Electric, Pepsico Frito-Lay, and UPS are all purchasing some vehicles and experimenting with new ways of doing business.

## Three top reasons to try EVs

There are three fundamental reasons why EVs are here to stay, and why we expect many corporate fleets will soon have a mix of traditional, alternative fuel and electric vehicles. First is a need for economic stability. When the price of something as vital to daily operations as fuel is routinely whipsawed by international events, it's difficult to control and manage costs. Hedging can help to smooth costs in the short term, but the long-term costs will continue to vary wildly.

A second reason is a desire to reduce greenhouse gas (GHG) emissions—which is becoming a requirement for doing business in some jurisdictions—and is supported by federal and state tax incentives. It has been estimated that plug-in hybrid electric vehicles, which use an electric motor with a gasoline engine as backup when the battery is depleted, can reduce GHG emissions by as much as 30% compared to a traditional vehicle over its lifetime (even when the emissions associated with power generation are taken into consideration).

Lastly, EVs' cutting edge designs and technologies create a competitive edge and open up new business opportunities for companies operating in a tough global marketplace.

Widespread EV adoption isn't far away. The EV ecosystem is growing in the U.S. Today's energy grid can power EVs via at-home and commercial charging stations, which are cropping up around the country. There are almost 500 in California alone, and that figure is growing quickly. Moreover, the lightweight materials used in automotive designs have made EVs more powerful and efficient, and better batteries allow for longer ranges and decreased charging times, typically four to eight hours. Now is the time for business leaders and fleet managers to learn about these vehicles, determine how they fit into the fleet, develop a plan to scale adoption and, in short, build the business case.

## The total cost of ownership

Part of building the business case will be determining total cost of ownership (TCO). This is an admittedly difficult calculation and one unique to each company depending on factors such as who will drive the EVs, for what purposes, over what distances and in what geographies since gas prices and government incentives vary by state. Today's EV purchase price



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is higher than comparable vehicles with internal combustion engines but, over the life of the vehicle, fuel and maintenance savings, along with tax credits, help compensate for those costs. TCO also needs to factor in less certain numbers, such as residual value and the potential for improved productivity.

These calculations won't be easy. But managers must begin by clearly defining their goals and objectives. They must ask themselves, "What am I really trying to accomplish with an EV pilot?" To cut emissions by 50% in three years? To drive operational savings? To improve the company's image? To simply reduce the cost of fleet management? By tackling these questions head on, managers can construct a business plan based on the factors that are most important to their organizations, and then calculate their own TCO that takes into account hard costs such as fuel and maintenance as well as other factors.

For instance, a GE client based on the West Coast calculates that EVs may spur significant productivity gains. By switching to EVs, the company could gain access to high-speed lanes reserved for environmentally friendly vehicles, thereby lowering travel times and increasing productivity, ultimately leading to improved financial performance. Meanwhile, other GE clients are considering EVs in order to reduce noise pollution and thereby extend their working hours for service and deliveries in residential neighborhoods—in the evenings, for instance, when louder conventional vehicles are barred from operating.

## Key factors to consider

Whatever the EV pilot's objective, once articulated, executives can begin the strategic planning and goal setting process. Four key considerations are as follows:

- *Who* will be driving the EVs?
- *What* type of EVs will they be driving?
- *Where* in the country will they be driving? and
- *When* should the company integrate EVs into the fleet?

The first step is to understand who will drive the EVs. What are their routing patterns and business requirements? The more a company knows about its drivers' habits, the more effective the planning. Manager surveys, driver surveys and telematics all help paint this picture. For instance, do the drivers operate in urban or rural areas, what is the total mileage, what is the average mileage between stops? Is the driver a sales person with a briefcase and laptop, a service technician with a trunk

filled with heavy tools or a delivery person who needs cargo space?

Once a company understands who will be driving, it can choose the right EV. The options are still relatively limited within the compact, small car and light truck categories, but many more options are expected in the next few years. And those new models won't just come from well-known auto makers. Some niche OEMs are emerging, particularly in the light truck category. Companies should build relations with these niche OEMs to make sure they have a full range of options.

A related question is what type of charging infrastructure to use. Drivers can plug their EVs into a standard outlet at home, or companies can install home-charging stations for faster charges. But what about employees who live in apartment buildings? If that's a common situation among drivers, maybe it's best to build a central depot of charging stations at the office. Alternatively, the company might contract with a third-party owner/operator of charging stations, or perhaps subscribe to a public network. All these options have pros and cons based on the drivers' needs and usage patterns.

An important part of strategic planning is considering where in the country an EV fleet will be operating. This is critical to calculating the TCO since state-by-state fuel prices and tax incentives vary significantly. In the summer of 2011, for instance, one gallon of gas in California cost 10% more than the national average. There is also a variety of local incentives to consider. In California, for instance, there's an EV rebate of \$3,000 to \$5,000. Illinois offers a tax credit up to \$4,000, and New York awards a 50% rebate on infrastructure costs. What's more, not all manufacturers sell and service EVs in all states.

Companies also need to consider the timing of an EV deployment—the "when." Although some notable companies have announced large fleet purchases, much corporate EV activity today involves pilot programs, in part due to constrained production capacity. Xcel Energy, for instance, recently purchased 13 Ford Transit Connect Electric vans; Johnson Controls ordered 20 of them. These companies are learning about the operational process and benefits today while the supply and vehicle value chains are maturing.

With every passing year, manufacturers expand product lines, in-house training and maintenance expertise. Fueling locations continue to proliferate, making long trips more feasible. And data collection improves so onboard features can handle more tasks, such as assessing maintenance needs and locating charging stations en route.

What's old is new again. This well-known adage applies perfectly to EVs. Make no mistake, EVs are here to stay for



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powerful reasons related to environmental sustainability and business opportunities. Indeed, new technologies and government policies are converging to make this a great time for many companies to be early adopters of EVs. Today, \$1 billion leaves the U.S. every day to pay for fuel. What might happen if a small percentage of that enormous sum could stay onshore and be reinvested to grow businesses and create jobs?

