

Fleet Sustainability

How Fleets Can Help Jumpstart EV Adoption

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Today's fleet operators are faced with the ever increasing challenge of reducing operating costs while meeting new corporate and government sustainability goals. Meanwhile, growing global demand and geopolitical conflicts are driving large fluctuations in gasoline prices, which exacerbate the challenges of managing fuel costs, the largest component of ongoing fleet operating costs. It is expected that these factors would drive a large shift in fleet purchases to alternative technologies, which can reduce fuel consumption and hedge against large price fluctuations. Leading companies with large fleets have indeed anticipated these changes and have begun to incorporate advanced technologies and alternative fuels into their fleets with resulting large savings. Similarly, some taxi operators have shifted a portion of their fleets to Hybrid Electric Vehicles (HEVs) since ten-plus-years of in market operation have proven these vehicles to be robust and economical.¹ Despite these actions, the level of broader fleet adoption remains relatively low, limited in many cases by fleet vehicle supply and options. Outside of HEVs, many of the major original equipment manufacturers (OEMs) have focused more advanced technology development on consumer vehicles such as the Nissan Leaf and Chevrolet Volt – the first two modern plug-in electric consumer vehicles to market – while initial commercial electric vehicle development has been primarily carried out by niche players and aftermarket upfitters.

Despite relatively high gasoline prices (as of July 2, 2012, the nationwide average for regular unleaded was \$3.36 / gal and the price in California was \$3.77 / gal²), plug-in electric vehicles and other alternative fuel vehicles are still struggling to attract customers in large numbers (with the one exception of the Prius HEV). General Motors recently halted production of the Volt for five weeks due to soft demand.³ Consumers' concerns with range and initial acquisition costs make electric vehicles – even extended range electric vehicles like the Volt – too uncertain a proposition to drive significant market demand.

On the other hand, fleet customers represent a significant opportunity to grow the electric vehicle (EV) and other alternative fuel vehicle market. With more than 16.3 million vehicles in operation, they likely possess enough capacity to drive initial ramp-up scale in the battery industry and OEM supply chains to make electric vehicles more cost efficient for general consumers.

¹ U.S. Department of Energy, Energy Efficiency and Renewable Energy, Alternative Fuels and Advanced Vehicles Data Center, HEV Sales by Model 1999-2011

² U.S. Energy Information Administration. "Gasoline and Diesel Fuel Update", <http://www.eia.gov/petroleum/gasdiesel/>, viewed as of July 3, 2012.

³ "Electric Cars Face Issues in US," Voice of America Press Releases and Documents, 9 March 2012, 2012 Federal Information & News Dispatch, Inc.

Eight key parameters make fleets an attractive market for electric vehicles:⁴

- **Total Cost of Ownership Approach:** fleet operators consider the total lifecycle cost of a vehicle versus only its initial acquisition cost when making purchase decisions
- **Route Predictability:** route dedicated EV infrastructure as well as EV battery size can be optimized for fleet applications, helping to minimize costs
- **High Utilization Rates:** high annual mileage helps to accelerate the payback period
- **Centralized Parking Facilities:** central depots help to reduce the reliance on public charging infrastructure and provide for economies of scale for installing multiple chargers
- **Maintenance Costs:** high mileage electric drive vehicles tend to have lower maintenance costs
- **Lower Electricity Rates:** fleet operators can benefit from commercial electricity rates, especially when employing dedicated charging facilities
- **Alternative Business Models:** due to larger purchasing power and access to capital, fleet operators can benefit from leasing strategies and other business models that make EVs more attractive
- **Corporate Sustainability:** EVs can help commercial and government enterprises meet reduced emission and fuel consumption targets

The growth in commercial and fleet electric vehicles not only can provide the scale economies to make EVs more cost effective for retail consumers, but they can also influence the growth of a public charging infrastructure, thereby delivering the positive externalities and network effects to alleviate potential EV customers' range anxiety. From a commercial development and public policy perspective, fleets represent an attractive means of increasing EV adoption and reducing dependence on petroleum for transportation.

Fleet Sustainability Levers:

- *Right Sizing*
- *Advanced Technology Vehicles*
- *Operating Efficiencies*

That being said, from a fleet operator's perspective, EVs and other alternative fuel vehicles represent only a partial solution. These technologies should be employed as part of a broader fleet sustainability strategy that incorporates other sustainability levers, such as right sizing and operating efficiencies.

⁴ "Fleet Electrification Roadmap, Revolutionizing Transportation and Achieving Energy Security," Electrification Coalition, November 2010

Comprehensive strategies can deliver total lifecycle cost savings of over 10% with simultaneous emissions reductions greater than 20%. The overall lifetime savings are primarily a result of annual fuel cost reductions of up to 40%, which significantly improve annual fleet operating expenses. Right sizing of vehicles and fleets can account for 50% of the lifetime savings. Advanced technologies and operating efficiencies each account for about 25%. Operating efficiencies include vehicle load reduction, other vehicle design elements, driver engagement programs, and telematics and other routing technology. The leading fleet operators are employing all of these strategies. Other large fleet operators, including utilities companies and telecom providers, are also starting to explore these practices due to the significant operational savings. In general, utilizing all three levers provides a robust solution that can deliver sustainable results, increase environmental as well as financial savings, and help fleet operators meet operational targets.

Levers	Right Sizing	Advanced Technology / Alternative Fuel Vehicles	Operating Efficiencies
Definition / Examples	<p>Vehicle right sizing: the practice of using vehicles appropriately configured for most missions versus vehicles configured for the occasional use</p> <p>Fleet right sizing: eliminating underutilized vehicles</p>	<p>Electric propulsion technologies (e.g., HEV, PHEV, EV)</p> <p>Alternative fuels (e.g., CNG, LNG, Biodiesel)</p> <p>Electric power takeoffs (EPTO) to electrify the worksite</p>	<p>Vehicle load reduction: use of light weight materials and appropriate tool/equipment load out)</p> <p>Other vehicle design elements: aerodynamic shields, low rolling resistant tires</p> <p>Driver engagement programs: training and incentives to encourage more fuel efficient vehicle usage</p> <p>Telematics and other routing technology</p>
Benefits	<p>Provide 50% of lifetime savings</p> <ul style="list-style-type: none"> • Reduced upfront acquisition cost • Reduced operating costs through fuel reductions • Reduced emissions levels 	<p>Provide 25% of lifetime savings</p> <ul style="list-style-type: none"> • Reduced vehicle lifecycle cost • Reduced emissions level • Reduced exposure to volatile fuel markets • Reduced employee exposure to noise and particulate matter • Greener public perception 	<p>Provide 25% of lifetime savings</p> <ul style="list-style-type: none"> • Improved fuel efficiency • Improved safety levels • Reduction in vehicle clutter • Reduced vehicle wear • Reduced emission levels

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