



GOING GREEN, SAVING GREEN:

A FLEET MANAGER'S GUIDE TO ALTERNATIVE FUELS BEST PRACTICES

Finding the right balance...

The media often positions alternative fuel types as a consumer movement, but the truth is, commercial and government fleets are actually much better poised to use alternative fuels.¹ This is the case for one main reason: Unlike most individual consumers, a fleet's fueling choices are premeditated. Vehicles must typically refuel at specific depots or at known stations along well-defined routes. There's less process uncertainty, making it easier for them to integrate alternative fuels across their fleets in a consistent, systematic way.

But while the case for alternative fuels is compelling, knowing how to implement them in your fleet isn't always obvious. How do you roll out green initiatives without raising operating costs and exposing your fleet to market fads?

In this paper, we provide fleets with best practices for the cost-effective implementation of alternative fuels in a commercial or government fleet. The following critical topics will help with decision making and planning:

- Know the station coverage in your area
- Compare historical fuel costs
- Calculate the total cost of vehicle ownership
- Identify and use tax credits
- Approach fuel conservation comprehensively

¹For simplicity's sake, we will include next-gen vehicle technologies, such as otherwise standard engines converted to run propane autogas or electric-powered vehicles under the umbrella of "alternative fuels"—even though hybrid EVs also use gasoline for engine propulsion.

TIP #1: KNOW THE STATION COVERAGE IN YOUR AREA.

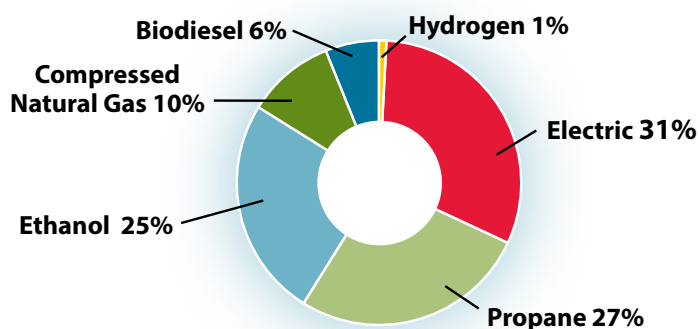
Most fleet managers worry that if they switch to alternative fuels, they won't be able to easily find fueling stations—and as a result, they'll be forced to constrain operations to a smaller area.

It's an understandable worry, one that, as recently as ten years ago, was entirely justified. Since 2009, however, U.S. government agencies have made significant investments in infrastructure expansions to accommodate an increasing number of government "green" vehicles. As of May 2013, the alternative fuel and charging station network had grown to nearly 11,800 stations, including almost 6,000 electric vehicle (EV) charging set-ups.² The government doesn't hold a monopoly on the network; commercial fleets of all sizes can leverage this infrastructure as well. 82% of alternative fueling sites are accessible to the public.

What are the top types of alternative fuels?

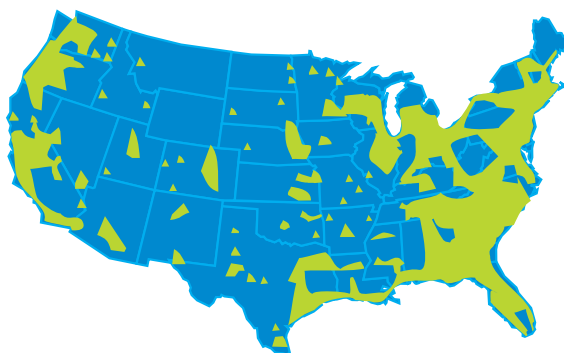
Alternative fuels are numerous, but there are six types that currently account for a majority of the market. Alternative fuel share can be identified in many ways, but site location is one way for fleets to isolate those with better coverage.

Alternative Fuel Site Coverage By Percent Share



It's important to realize, however, that this network is highly region-dependent. For example, the bulk of EV charging stations are located in major metropolitan areas and along the highly-travelled Eastern seaboard and West Coast. Significant east-west coverage gaps exist, though, especially across the Midwest and Rocky Mountains:

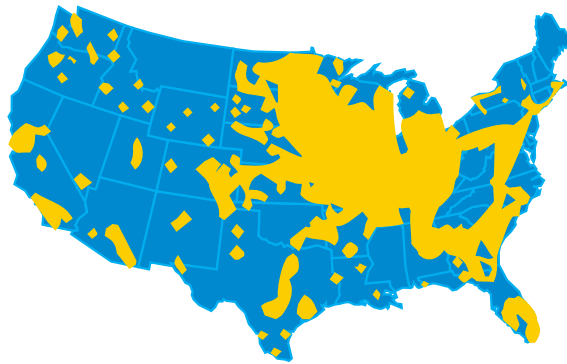
Approximate Regional Distribution of Electric Vehicle (EV) Charging Stations



²Source: US DOE statistics, accessed through <http://www.afdc.energy.gov/locator/stations/>. Current as of May 18, 2013

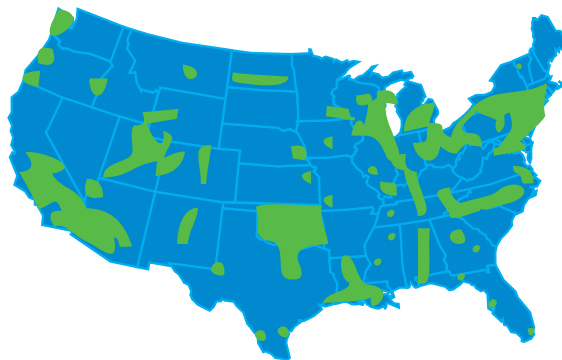
Compare this to the nationwide network of ethanol (E85) stations. These stations cluster primarily in the Midwest, where subsidies to corn producers make ethanol cheaper to produce and sell. Station density is significantly lower on the West Coast:

**Approximate Regional
Distribution of Ethanol
(E85) Stations**



In addition, some alternative fuel types have a higher number of stations across more locations than others. For example, there are only 586 compressed natural gas (CNG) stations nationwide, compared to thousands for propane autogas, ethanol or EV. CNG stations also tend to cluster around areas with significant petroleum storage capacity, such as Oklahoma and Southern California:

**Approximate Regional
Distribution of
Compressed Natural
Gas (CNG) Stations**



Lower availability inherently impacts cost — you won't save money if your drivers have to go out of their way to fuel their vehicles.

So when considering alternative fuels, your first step should be to do your homework on the station coverage in your operational area. Does your fleet stick to major cities, or travel interstate? How often do your vehicles return to a central location? Understanding where, how, and with which options your fleet could fuel will help narrow your purchasing decisions considerably.

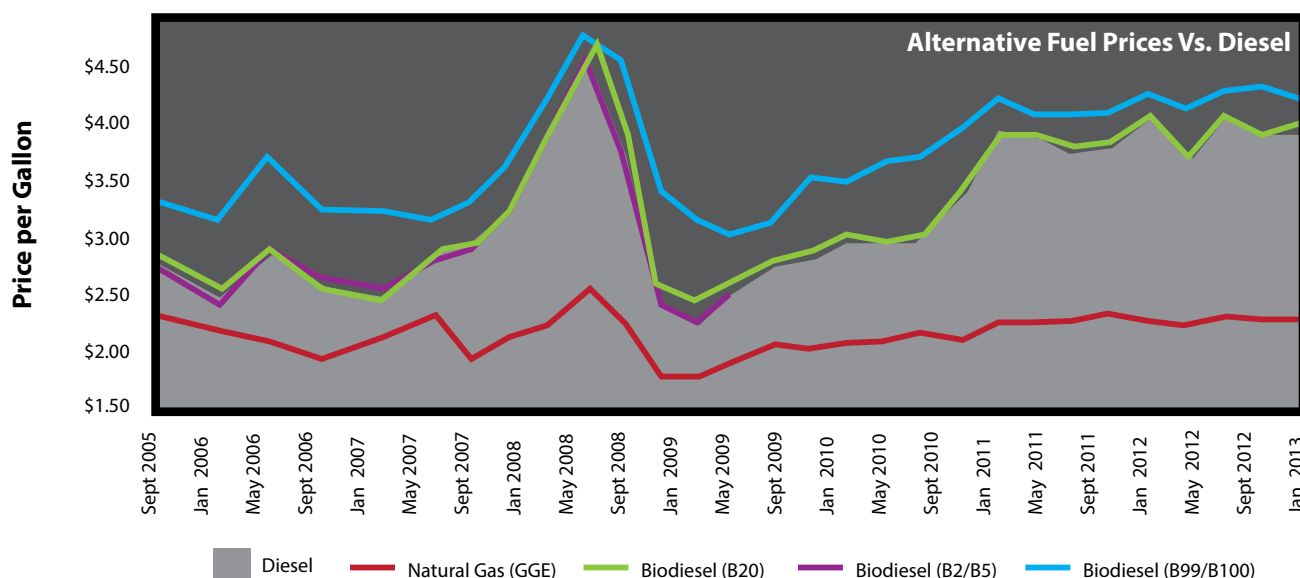
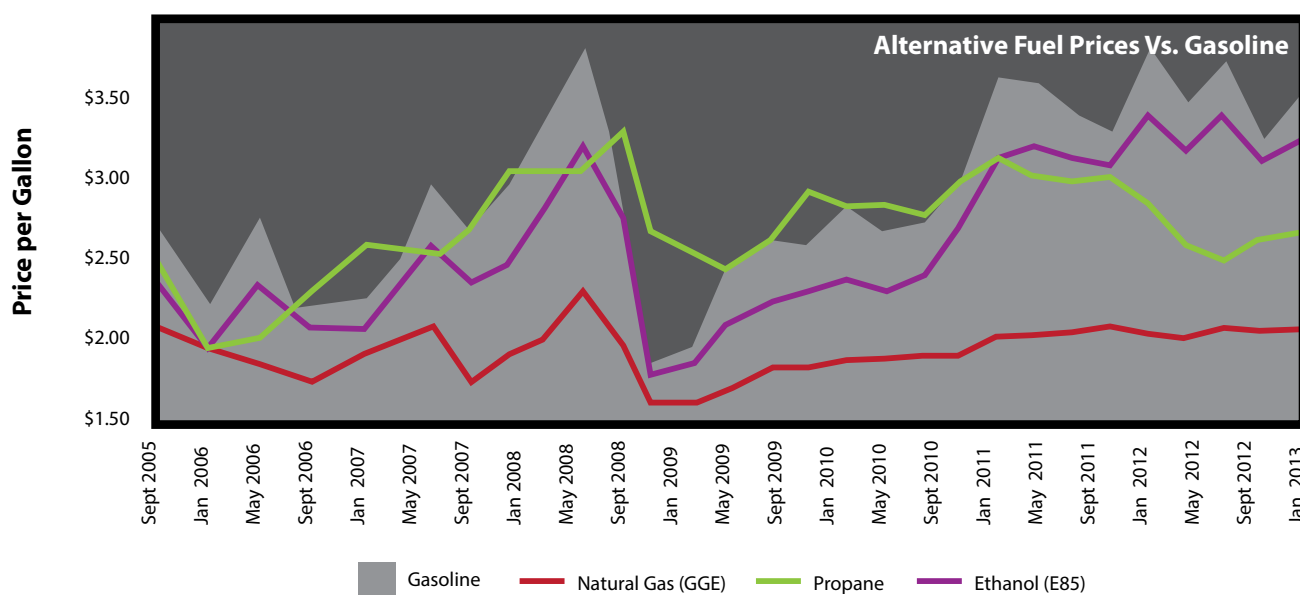
In addition, factor in how your choices will be accommodated by your existing fleet card program. Some fleet cards can already process transactions at green fuel stations; the **WEX Fleet Card**, for example, is accepted at over **4,500 alternative fuel and charging stations** nationwide. WEX has an online alternative fuel site directory that is built into its WEXOnline® reporting system. It's free and includes thousands of alternative fuel sites in the U.S.

TIP #2: COMPARE HISTORICAL FUEL COSTS.

According to a recent survey of more than 300 fleet managers,³ over 60% planned to purchase more fuel-efficient or alternatively-fueled vehicles in 2013 to cope with rising gasoline costs.

It's a smart plan, considering pump prices for several types of alternative fuels historically have been lower and more stable than gas prices, or even diesel prices.

Historical national average prices for alternative fuels relative to gasoline and diesel



Based on the Department of Energy, "Clean Cities Alternative Fuel Price Report, April 2013"

³Source: <http://greenroad.com/press-releases/fleet-leaders-cautiously-optimistic-about-year-ahead-expect-modest-fuel-price-increases/>

As of April 2013, ethanol, propane autogas and CNG⁴ sold nationwide at a discount to gasoline of 29, 86 and 149 CPG, respectively. The discount to diesel was even higher (69, 126, and 189 CPG, respectively).

What's more, although the average gas price rose 30 cents between January and April, ethanol and propane autogas prices rose only 13 and 5 cents, respectively. Meanwhile, CNG prices stayed the same:

Comparison of nationwide average prices by fuel type and station type, April 2013

	Nationwide Average Price for Fuel This Report	Nationwide Average Price for Fuel Last Report	Change in Price This Report vs. Last Report	Units of Measurement
Gasoline (Regular)	\$3.59	\$3.29	\$0.30	per gallon
Diesel	\$3.99	\$3.96	\$0.03	per gallon
CNG	\$2.10	\$2.10	\$0	per GGE
Ethanol (E85)	\$3.30	\$3.17	\$0.13	per gallon
Propane	\$2.73	\$2.68	\$0.05	per gallon
Biodiesel (B20)	\$4.11	\$4.05	\$0.06	per gallon
Biodiesel (B99-B100)	\$4.29	\$4.44	(\$0.15)	per gallon

Source: Department of Energy, "Clean Cities Alternative Fuel Price Report, April 2013"

Of course, not all alternative fuel prices are cheaper than gasoline. Biodiesels, for example, tend to sell at a 10-40 CPG premium to regular diesel, and as much as 70 cents above gasoline.

Prices are also influenced by station type. Private, fleet-only fueling stations can often negotiate lower prices than public retail stations, because they can commit to long-term contracts for bulk fuel purchases. This isn't always the case, however, especially for stations in remote areas or which require smaller quantities of fuel.

Comparison of nationwide average prices by fuel type and station type, April 2013

Type of Fuel	Private Refueling Station	Public Refueling Station
Gasoline	\$3.61	\$3.59
Diesel	\$3.94	\$3.99
Compressed Natural Gas (CNG)	\$1.80	\$2.22
Ethanol (E85)	\$3.30	\$3.30
Propane	\$1.85	\$2.85
Biodiesel (B20)	\$4.24	\$4.07
Biodiesel (B99-B100)	\$4.49	\$4.27

Source: Department of Energy, "Clean Cities Alternative Fuel Price Report, April 2013"

⁴Based on pump prices, not energy-equivalent basis.

TIP #3: THINK IN TERMS OF TOTAL OWNERSHIP COST.

The costs of greening a fleet go beyond just at-the-pump fuel prices, however. Fleet managers should consider the total cost of owning and operating alternatively-fueled vehicles, including:

- Capital costs
- Maintenance cost
- End of life recycling and replacement costs
- Indirect costs

While it's true that alternative fuel vehicles and EV sell at a premium to standard gas-powered ones, the total cost of ownership over the vehicle's lifetime can be much lower—especially for high-traffic fleets.

For example, a recent study by Pike Research⁵ found that for fleets whose vehicles have lifespans of 120,000 miles or more, mid-sized hybrids and EVs were much cheaper to own than their gas-powered counterparts. In particular, comparing cost-per-mile, battery-powered EVs were as much as two-thirds cheaper to own over their entire lifespan as similarly-sized diesel trucks.

This is due in part to lower routine repair and maintenance costs, since hybrid and all-electric vehicles have fewer moving parts to maintain. An electric-powered car requires no engine tune-ups or oil changes, and its brakes last twice as long, due to lower-friction regenerative braking. (Though when repairs do occur, they can be expensive.

EVs aren't the only vehicles with lower maintenance costs, however. Propane autogas vehicles have lower average maintenance costs than gas-powered equivalents, particularly for heavy-duty vehicles, like buses. Their engines can last twice as long as standard ones.

In addition to lower repair expenses, alternatively-fueled vehicles can offer a range of lower "soft" costs, including:

- Reduced worker downtime (due to less time off for repairs)
- Safety improvements, such as noise reduction
- Greater overall fleet efficiency

Finally, remember that no fleet vehicle can last forever, so when purchasing vehicles, one must consider its full life cycle. Given industry and legislative trends, it's possible that gas-powered cars will continue to rise in price, while costs for alternatively-fueled vehicles will continue to fall.

TIP #4: FIND AND USE TAX CREDITS WHEREVER YOU CAN.

Tax credits and other incentives can help lower the cost of purchasing and owning alternatively fueled vehicles. Dozens of credits, rebates and grants exist, available from both federal and state agencies. The Department of Energy keeps an up-to-date list in its Alternative Fuels Data Center, available at <http://www.afdc.energy.gov/laws/>.

To claim these tax credits, however, you need to have good fleet reporting mechanisms in place – particularly a fleet card that captures the **Level III data** needed to easily demonstrate program compliance and other criteria.

Can your fuel card handle alternative fuels?

As part of the decision to utilize alternative fuels, fleet managers need to ensure their fuel card can handle alternative fuel transactions. **The WEX Fleet Card** can process transactions for many different fuels besides conventional gasoline, including **CNG, LNG, LPG/LP/Propane, Electric, Methanol, E85, and Biodiesel**. WEX is also actively working to ensure product coding is in place for new fuel types as they become available.

The WEX Fleet Card is unsurpassed in convenience — it is currently accepted at over 4,500 alternative fuel stations, and the **WEXOnline** fleet portal makes line-item reporting and billing for alternative fuels quick and easy.

⁵Source: Pike Research <http://www.navigantresearch.com/research/total-cost-of-ownership-of-alternative-fuel-vehicles-for-fleet-operators>

WEX has worked with the North American Industry Classification System to standardize product codes for fuels such as ethanol, CNG, LNG, biodiesel and methanol, as well as charging rates for electric vehicles. With the WEX Fleet Card, you can capture and isolate Level III data on these fuel purchases as easily as you could for gasoline or diesel.

TIP #5: THINK HOLISTICALLY ABOUT FLEET FUEL COSTS.

Today's alternative fuel market is a lot like the explosion of home computers in the 1980s or cell phones in the 1990s — lots of types are available, but no clear market winner has yet emerged. It's likely to stay that way for some time — perhaps indefinitely. As we've seen, alternative fuels are a highly decentralized and individualized market. There's no one-size-fits-all solution.

Therefore, thinking about alternative fuels as a speculative bet on which option will become "the new gasoline" is an approach that could cost your fleet dearly. Instead, it's more productive to think about which option best suits your fleet's operational needs and risk profile.

Keep in mind that this isn't an all-or-nothing proposition. You don't have to convert all your vehicles in order to see cost benefits; you can still green your fleet by degrees.

For example, one cost-saving measure is to convert the engines of some existing vehicles to use flex fuels, propane or biodiesel — an option that can be several thousand dollars less expensive than buying a whole new vehicle. Another option can be to implement hybrid vehicles, which still take gasoline, but also use electric batteries to better regulate and economize fuel usage.

These options prevent you from having to outlay thousands of dollars for a technology that may go obsolete in a few years.

In addition, if your goal is to reduce fuel consumption fleet-wide, then your efforts shouldn't end with just implementing alternative fuels. Other strategies can help as well, including:

- Eliminating or transferring low usage vehicles
- Swapping gas guzzling vehicles for more fuel-efficient models

- Ensuring fuels can be purchased with existing fuel cards, and purchases can be integrated into fleet reporting
- Rigorously sticking to maintenance schedules
- Training drivers on fuel-efficient driving practices
- Implementing maximum driving speeds
- Reducing vehicle idle time
- Optimizing routes to reduce miles driven, or time spent in traffic, at signals, etc.
- Efficient use of air conditioning

A holistic approach to fuel conservation will net more substantial cost savings than just swapping out fuel types piecemeal.

SUMMARY

Alternative fuels don't make sense for every fleet or every situation. But when they do, a "green" fleet can be a substantial cost-saver. Making that happen, however, requires some research on your part:

- Know the station coverage in your area
- Compare historical fuel costs
- Calculate the total cost of vehicle ownership
- Identify and use tax credits

Think holistically about fleet fuel costs. A one-size-fits-all approach often isn't possible. Fleet managers often have many considerations when making investments in new technologies. Cost, compatibility with existing infrastructure, and resource allocation are just a few. With a little research, you'll have all the tools and information you need to make the best decision for your fleet.

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