

# County of San Bernardino – Fleet Management

## Alternative Fuels Insights, Issues and Long-Term Planning



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July 24, 2007

(Revised December 14, 2009)

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# Executive Summary

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**Current Sensitivity** The public/political climate is increasingly sensitive to “global warming” issues and how organizations are preparing/responding. This document is intended to proactively prepare and reach consensus for such inquiries relative to Fleet Management’s Motor Pool operations.

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**Fleets** San Bernardino County owns/operations about 5,000 vehicles/pieces of equipment that consume fuel. Total annual miles is estimated approximately 50 million miles (total collective data for all vehicles is not available). Of this, the Motor Pool accounts for approximately 1,200 vehicles accumulating about 17MM miles annually. The remaining vehicles/equipment are “owned” by Sheriff, Fire, Special Districts and Transportation.

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**Carbon Footprint** To use the contemporary terminology, the total carbon footprint of the Motor Pool fleet is calculated at 5,500 tons (using EPA’s calculator and MP’s data).

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**Alternative Fuel Challenges**

1. County geographic size.
2. Remoteness of much of the county with limited/no alt fuel infrastructure or significant quantities of vehicles in those areas.
3. Emergency response/support mandate to a wide-spread sustained catastrophe.
4. Lack of (OEM) alt fuel vehicle availability.
5. Reduced fuel capacity (trip range) in most alt fuel vehicles.
6. Uncertainty of alt fuels of the future.

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**Energy Conservation Strategy**

1. Monitor alt fuel developments for strategic change opportunity.
2. Purchase “best in class” MPG models that use traditional fuels.
3. Increased use of hybrid vehicles.

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**Alternative Fuels Limitations, Risks and Concerns** Each of the currently available alt fuels has drawbacks for use in the county. A discussion on these limitations, by fuel type, is included. The risks and concerns of adopting any of these alt fuels today is that the chosen fuel may not be one that endures and the results could be a lack of vehicles, parts and fuel. The vehicles and infrastructure investments could (probably will) become prematurely obsolete.

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At this time there is no clear “alternative fuel of choice” for the future. Each has risks of increased operating costs, infrastructure development costs, limited vehicle operating range and/or supply/infrastructure short-comings. Any/all of these limitations could severely impact emergency response to a County-wide sustained demand for emergency response.

**Electric vehicles** are limited to recharge on the commercial electric grid that may not be available during a wide-spread emergency. Electric vehicles also have limited range operating time that would significantly reduce the ability of County departments to operate around-the-clock in emergencies. At this stage in their development, electric powered vehicles are also exceedingly expensive when compared to traditional fuel powered vehicles.

**Hybrid vehicles** (gasoline/diesel assisted by electric motors and batteries) have the greatest potential to reduce fuel demand short-term, but hybrids are NOT alternative fuel. Hybrids are the application of technology to improve fuel economy without risk of loss of operating capability.

**CNG/LNG** are clean burning fuels which have very positive impacts on vehicle pollution. The drawbacks are limited vehicle range, on-board fuel tanks are relatively large and typically take up much of the cargo space and the fuel need to be compressed (600 to 1,600 PSI).

This fuel, due to the storage pressures and the properties of the fuel, will “bleed off” over time if not constantly recharged – constant expense and in an emergency without sufficient electrical power, there would be no fuel supply. Even with electrical power, in a severe sustained emergency, supply could be a major issue.

**Dual fuel** vehicles that automatically switch between CNG/LNG and gasoline or diesel are available. These vehicles are very expensive to purchase, delivery is typically delayed about three/six months for conversion and they are a challenge to maintain/repair.

Garage facilities must be upgraded to evacuate the CNG/LNG fuel vapors and possible fuel leaks (fire codes). A recent tour of Burbank’s garages, which have been upgraded to allow CNG/LNG maintenance/repair reveals costs in excess of \$1.5MM. During the tour, discussions indicated other upgrades to the facility were required that were NOT included in the \$1.5MM. Inquiries of other “converted” garages indicate similar expenses/restrictions.

**Propane (LPG)** This fuel doesn’t burn as clean as LNG/CNG, but it is cleaner than gasoline or diesel.

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The drawbacks to LPG fueled vehicles are similar to CNG/LNG with a few exceptions. LPG is compressed to a lower PSI, 300#s and the bleed-off isn't nearly as often or as dramatic. LPG vapors fall (CNG/LNG vapors rise). Once again, the tanks are large and displace storage areas.

LPG is more readily available than CNG/LNG due to the widespread use in RVs, remote areas as heating fuel and of course the backyard barbeque.

LPG has fewer BTUs per gallon equivalent than gas or diesel, therefore there must be a lower price to make it financially attractive.

**Ethanol** – There are many proponents to this fuel. However, the greatest drawback is the lack of availability and cost. The basic arguments in favor are that bio-based fuels increase fuel supply (and the GNP) and lower dependence on foreign suppliers. And while this is true, Ethanol is not a silver bullet for all fuel problems, and was never intended to be. There are minor advantages to Ethanol versus other alt fuels, such as, initial vehicle costs are closer to traditional than other alt fuel vehicles. And, the investment in equipment and infrastructure is relatively small. Recently, however, there have been many bankruptcies and industry consolidations due to high cost of production, delivery costs added to the basic fuel cost (making it non-competitive vs gasoline) and a general lack of infrastructure. The Federal Government currently subsidizes the industry to produce the fuel (\$1/gallon). Combining all of these factors indicates a maturing and somewhat unstable Ethanol market which, for now, the county should limit their exposure.

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