

AGTA Position Paper - 7/2014

Alternative Fuels for the Provision of Airport Ground Transportation

Airports today face considerable pressures and challenges in reducing their carbon footprint at the curb. Probably nowhere else is there such a concentration of gasoline powered vehicles all stopping and idling as passengers get on or off. Airports across North America are seeking ways to require alternative fuels by commercial operators as one element in their program for a cleaner airport environment.

AGTA's [position](#) on alternative fuel is to be "fuel neutral". It is a business decision that should be based on the market and the application. Although it is desirable that airports mandate the use of alternative fuels, we do not believe specific fuel type mandates are in the best interest of the operator, the airport, or the traveling public. The energy environment is changing rapidly and operators must have the ability to be flexible and change with it. By having alternatives, competition forces fuel, vehicle, and conversion companies to compete and build the best, safest, and most economical options for the industry.

Although all forms of multiple passenger vehicles are inherently green, the question of which fuel to use is debated by operators and airports alike. There are several types of alternative fuels, and each type has both pros and cons. As an example, some can be used in high mileage airport transportation, and some cannot. The objective of alternative fuels for airports and operators is to improve air quality, reduce dependency on foreign oil, and promote environmentally friendly industries.

There are three main types of alternative fuels used in shared ride transportation today that airport officials should consider acceptable. These are CNG, Propane, and Bio Diesel.

CNG

Compressed natural gas is a domestic product, and fueling infrastructure varies based upon geographic location. Vehicle conversions are now readily available, and the technology has been thoroughly tested. There is some additional maintenance required, such as cleaning of fuel filters every 4000 miles and having tank inspections performed every 36,000 miles. Both of these requirements cost a few hundred dollars, but it is often the down time of a vehicle that causes issues for operators.

When discharged into the environment, CNG is a greenhouse gas, but it reduces harmful emissions by 30 to 40 percent, as compared to gasoline. CNG vehicles have limited range due to smaller fuel tank capacities. CNG is also a highly pressurized fuel, and fueling infrastructure is generally too expensive for operators to establish themselves. Therefore, outside funding and facilities are necessary for successful operation. The price per gallon is usually substantially less than gasoline, but marginally more than propane. Compressed natural gas is generally considered to be one of the cleanest burning alternative fuels.

Propane

Propane (or liquefied petroleum gas) is also a domestic product, but not toxic or damaging. It will not harm the environment if it is released into the atmosphere, which is why it is not labeled as a greenhouse gas. Propane vehicle conversions are readily available, but fueling infrastructure can be inadequate in some locations. Unlike for CNG, operators are able to justify investing in fueling stations at their own facilities, because the construction cost is typically below \$100K. Regardless, additional fueling facilities are generally needed, depending upon the size of service area. Range is better than with CNG, and the cost per gallon is typically somewhat lower.

The emissions comparison of propane vs. natural gas is fairly insignificant, due to the cleanliness of each fuel. Propane and natural gas are both classified as clean alternative fuels for vehicles and both exemplify clean burning characteristics, with harmful emissions and toxins at minimal levels. Propane vs. natural gas should be a topic of little discussion where environmental impact is concerned, as they are both environmentally friendly fuels.

Biodiesel

Biodiesel will release a smaller number of pollutants (carbon monoxide particulates and hydrocarbons) than conventional diesel, because biodiesel burns both cleanly and more efficiently. Even with regular diesel's reduced quantity of sulfur from the ULSD (ultra-low sulfur diesel) designation, biodiesel outperforms those levels because it is sulfur-free. The main benefit of Diesel combustion engines is that they have 44% fuel burn efficiency, compared with just 25-30% in the best gasoline engines.

Other possibilities

E 85

This alternative fuel is a blend of 85 percent ethanol **and** 15 percent gasoline. The main advantage of this fuel type is that no vehicle conversion is typically necessary, thereby saving the operator between \$5000 and \$10,000 per vehicle. Many flex-fuel vehicles are offered directly from US manufacturers, which are capable of utilizing E85.

However, E85 has two serious disadvantages. While it typically costs about 10 percent less than gasoline, the fuel economy is generally 30 percent lower than for gasoline, because alcohol has lower energy density. As a result, utilization of this fuel type results in an approximate 20 percent increase in fuel costs over the life of a vehicle, which greatly offsets the original savings on the conversion cost.

The other significant disadvantage of E85 is that it doesn't provide any environmental benefit. In fact, most studies indicate that when the greenhouse gas emissions from the production of ethanol are considered, E85 is actually worse for the environment than standard gasoline. For this reason, AGTA does not recommend E85 as an alternative fuel option.

Hybrid Vehicles

A hybrid vehicle typically achieves greater fuel economy and thereby lowers emissions by reducing gasoline consumption for the same number of miles driven. While hybrid vehicles do not utilize alternative gas or liquid fuels, they do assist in achieving some of the main objectives of alternative fuel usage.

Plug-in electric vehicles typically have very limited range and would not fit the application for most commercial uses. With that said, technology does evolve rapidly. Back in the year 2000, the above alternative fuels were not used. In the future, there may be improved electric options and new fuel sources that would fit airport transportation uses.