

**Docket 08-ALT-1**  
**Investment Plan Strategies for Alternative Fuels**  
**Propane and CNG Purchase Incentives vs. R&D Funding**

**Benefits of OEM Level Engine Fuel Systems vs. Aftermarket Engine Fuel Systems:**

There is a lot of confusion over the LPG and CNG engine fuel systems and vehicles available today. Over the past five years, the combination of EPA and CARB regulations, along with a more sophisticated and demanding customer base has transformed the industry. Manufacturers can no longer claim an exemption of emissions testing and certification based on an “assumed or reasonable basis” for believing the original emissions and reliability of an engine are un-affected. Likewise, the consumer will no longer accept a casual guarantee from a small regional up-fitter or “Mom & Pop Shop” operation, no matter how good their product claims to be. Today, both fleet customers and the regulatory environment demand absolute reliability, durability of performance, a rock solid guarantee and reliable technical support from engine fuel systems.

While there may still exist a place in the market for small volume manufacturers of third party, aftermarket “conversion kits”, the growing demand of consumers, fleets and State and federal regulators, is for alternative fuel solutions that mirror the performance and reliability of original equipment vehicles. Consider the following:

1. There are no longer separate “49-state” and “California” certifications. There are now “California” States and “EPA” States. More than eleven states have adopted California ARB emissions, durability and warranty standards. There are only a few (1 - 2) alternative fuel systems certified for legal installation in all fifty states.
2. There is no longer a single requirement for California or EPA tailpipe emissions testing and certification. To be compliant, *all* alternative fuel systems must now be certified or have a validated and documented exemption from tailpipe emissions and the following certifications:
  - a. FTP tailpipe emissions (California or EPA standards as applicable)
  - b. EVAP / SHED (California or EPA standards as applicable)
  - c. OBD-II Compliance (50 State)
  - d. Refueling Evaporative emissions.
3. OBD compliance is virtually impossible without some level of OEM cooperation and/or access to PCM code and SAE standard ALDL communications. This alone has virtually stopped all California certifications. All but a few suppliers have stopped trying to certify for California states. However, some continue to “blindly” sell their products in a 49-state vacuum.
4. Current evaporative emissions standards are practically unattainable for suppliers using older technologies. Only the most current equipment is capable of meeting these stringent guidelines. To date, only two companies have certified OEM-level systems.

5. Most fleet customers, especially high-liability, passenger-carrying fleets such as shuttles, airport park & ride, school buses and city transportation vehicles, all require DOT and FMVSS compliance equal to original conventional vehicles. This requires very detailed and costly FMEA (Failure Mode Effect Analysis), FEA (Finite Element Analysis) and/or live crash testing. Only one system supplier has crash tested complete alt fuel vehicles. Only two suppliers have performed thorough FMEA, FEA, DVPR, etc. Both suppliers are OEM-level system providers.

6. Emissions standards now require full compliance for the useful vehicle life (up to 120,000 miles depending on the application). This requires very thorough OEM-level engineering, substantial mileage accumulation and in-use emissions testing before a vehicle/system can be sold. There are currently only 2-3 suppliers who have matched what is required by all OEM-level suppliers.

7. The market now demands that service be equal to and, in many cases, *better than* the level provided by conventional OEM vehicles. Just two AFV suppliers currently sell their systems directly through OEM approved relationships with OEM dealership support. Only CleanFUEL USA and Roush have the ability to provide OEM-level warranties and service. Over the past eighteen months, these suppliers have outsold all “aftermarket” suppliers by more than a 10:1 ratio, thus validating the demand and expectations of the customers for OEM-level up-fits.

The following points easily validate the necessity for OEM-level AFV systems. On the surface, what may seem like an expensive, time consuming process (product concept, design, development, validation, testing, certification, compliance and servicing) is, in fact a streamlined approach to providing AFV systems.

When comparing an AFV, OEM-level systems to traditional aftermarket conversions it is important to consider the cost and timing of each approach:

<b>Aftermarket:</b>	Estimated cost per engine family (EPA tailpipe certified only) < \$150,000 and 6 months.
<b>OEM Level:</b>	Documented cost per engine family (50 State, fully certified & FMVSS compliant) > \$2,250,000 and 18 months.

The current obstacle to certify and market Propane AFV systems is *not* the sticker price or consumer demand. Previous success has proven that OEM-level systems at a higher price are acceptable and remain in high demand. All three recently launched OEM-level systems for propane have sold very well and continue to out-pace all aftermarket solutions combined. The true market obstacle is the tremendous costs associated with small, capable and innovative companies to allocate an adequate level of resources to produce OEM-level AVF offerings. Even companies that have enough capital and staff find the burden of \$2.2M per engine family and eighteen months of engineering, calibration and development time too much to bear. Within the current environment, no one should expect prices to decrease or the number of viable AFV offerings to increase enough to satisfy current market demands.

Therefore, investment in R&D and demonstration strategies to substantially increase the number of AFV offerings is far more important and cost effective than AFV incentives to purchase a limited number of AFVs. AFV purchase incentives should be part of the overall Investment Plan. However, it is widely believed that a far greater level of funding allocations in the first three years of the program should be allocated for AFV research and development and demonstration projects to accelerate the commercialization of a greater number of AFV offerings. Consumer demand for AFVs is very strong for light- and medium-duty trucks, vans and industrial engines, as well as heavy-duty engines for both on-road and off -road applications. It is time that these markets are offered more than one or two legitimate products.

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