



Technology and Marketing

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National and state regulatory activities set the stage

Why Alternate Fuels May Become a Viable Alternative

Expert opinions vary widely when it comes to predicting if and when alternative fuels will significantly impact the transportation industry. The most general range of opinions appears to be somewhere between "not in my lifetime" and "not in my grandchildren's lifetime."

Considering three of today's main forces in the market—a technology explosion, rising energy demands and global ecology concerns—it is not surprising alternative fuels technology is making inroads on the petroleum equipment industry.

Indeed, domestically, the above mentioned market forces are amplified by legislation. In addition, the Clinton Administration's recently released document, *Comprehensive National Energy Strategy*, clarifies the U.S. position on national and global energy issues.

A national energy strategy

Released in April of this year, the energy document lists five goals and a number of objectives for each:

Goal 1: Improve the efficiency of energy systems—making more productive use of energy resources to enhance the overall economic performance while protecting the environment and advancing national security.

Goal 2: Ensure against energy disruptions—protecting the economy from external threat of interrupted supplies or infrastructure failure.

Goal 3: Promote energy production and use in ways that reflect human health and environmental values.

Goal 4: Expand future energy choices—pursuing continued progress in science and technology to provide future generations with a robust portfolio of clean and reasonably priced energy sources.

Goal 5: Cooperate internationally on global issues—developing the means to address global economic, security and environmental concerns.

While all of the specific objectives within the strategy address pertinent issues, I am highlighting those with a specific impact on our industry:

Goal 1, Objective 2: Significantly increase energy efficiency in the trans-

portation, industrial and building sector by 2010.

Goal 2, Objective 1: Reduce vulnerability of the U.S. economy to disruptions in oil supply by developing technology options by 2010 to help reduce expected oil consumption by one million barrels per day.

Goal 3, Objective 2: Accelerate the development and market adoption of environmentally friendly technologies.

The various government agencies must include these goals as priorities in their planning. The Department of Energy expects to promote its plan through public/private partnerships.

Federal legislation

Federal legislation is driven by two national goals: clean air and reduced reliance on imported fuel.

The Clean Air Act Amendments (CAAA) of 1990 allow other states to adopt California Emissions Standards. CAAA established an Ozone Transport Commission that coordinates ozone control strategies in the Northeast and mid-Atlantic states. It also decreased allowable emissions for vehicles, created a Clean Fuel Vehicle Fleet Program and imposed new requirements for gasoline and diesel fuel specifications.

The "Tier 1" emissions standard reduces allowable HC and NO_x emissions by 39 and 60 percent compared to existing standards, and requires a warranty extension on vehicle emissions systems from 50,000 to 100,000 miles. The amendments also require EPA to adopt more stringent "Tier 2" standards beginning in 2004.

Under the Clean Fuel Vehicle Fleet Program, covered fleets in 22 ozone non-attainment areas must begin phasing in vehicles that can meet California's Low Emission Vehicle (LEV) standard in 1998. Covered fleets are those of more than 10 vehicles that are centrally fueled and owned by a single person or business.

While the 1990 CAAA requirements don't directly impact alternative fuel vehicle sales, these requirements do encourage their use indirectly. This is

because new emission standards are attainable and automotive emission control systems are more readily maintained through the use of alternative fuels.

In addition, Corporate Average Fleet Efficiency (CAFE) standards are easier to attain with alternative fuels. For example, each equivalent gallon of natural gas is assumed to contain 15 percent gasoline in CAFE calculations, or almost seven times its actual gasoline-equivalent fuel economy.

The Energy Policy Act of 1992 is the only national legislation that mandates alternative fuel vehicles. It applies to light-duty vehicle fleets of at least 20 vehicles that are centrally fueled or 50 vehicles, regardless of fueling. The legislation allows for a slow implementation of alternative fuel vehicles starting with Federal fleets in 1996.

The overall goal is to replace 10 percent of petroleum fuel by the year 2000, rising to 30 percent by 2010. At least 50 percent of the replaced fuel must come from domestic sources. Under the Energy Policy Act, the alternative fuel vehicle fleet could reach three million by 2009.

California legislation

Legislation passed in California can be adopted by other states. In 1990 CARB adopted the Low Emission Vehicle Program, setting standards for four emission levels:

- ▶ Transitional low emission vehicle (TLEV)
- ▶ Low emission vehicle (LEV)
- ▶ Ultra-low emission vehicle (ULEV)
- ▶ Zero-emission vehicle (ZEV)

By 2003, 10 percent of California vehicle sales must be ZEV, a standard that can only be met with electric or fuel cell vehicles.

For the petroleum equipment industry, a large effort should soon be devoted to strategic planning, identifying potential winners and developing products and infrastructures for the new fuels.

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