



TxDOT Goes Beyond Compliance by Purchasing 100% AFVs

State fleets that use alternative fuel vehicles (AFVs) and alternative fuels help reduce the country's dependence on imported oil and the release of criteria pollutants and greenhouse gases into the atmosphere.

The Texas Department of Transportation (TxDOT) operates one of the largest AFV fleets in the nation and uses alternative fuels the majority of the time. The TxDOT overcame barriers common to many states complying with the Energy Policy Act of 1992 (EPAct) and surpassed federal and state requirements.

Lessons Learned

- Methods to ensure alternative fuel availability statewide
- Incentive program for drivers to increase alternative fuel use
- OEM support for service infrastructure
- Training to increase driver familiarity with new technologies
- Participation in a national program to gain community involvement in AFV use

Background

EPAct requires state government fleets to acquire a percentage of new light-duty AFVs each year. For states, this percentage has risen from 10% in model year (MY) 1997 to 75% in MY 2001. EPAct requires state fleets to acquire AFVs that will run on alternative fuels available in their operating area. However, while the acquisition of AFVs is required for covered state fleets, alternative fuel use is not.

Ten years ago, the Texas legislature passed a law

that goes beyond these EPAct mandates, requiring state agencies to purchase AFVs only for their fleets. Moreover, the state law requires alternative fuel use in these vehicles (except in certain situations). TxDOT, however, has established a policy of "going beyond compliance" for both federal and Texas state mandates. For 10 years, all of TxDOT's acquisitions of light-duty vehicles have been AFVs, two-thirds of which are light-duty trucks. As a result, TxDOT currently boasts more than 7,000 credits, which were earned by exceeding EPAct requirements (a covered fleet can bank one EPAct credit for each vehicle it acquires beyond its annual requirements).

The fleet owns 9,000 on-road vehicles; 6,000 of them are AFVs. This level of achievement is a source of pride for the entire department.

TxDOT Fleet Profile*

Total On-Road Vehicles		
9,000		
On-Road Diesel # (% of total on-road vehicles)	On-Road Alternate Fuel # (% of total on-road vehicles)	
3,000** (33%)	6,000*** (67%)	
	Propane (LPG) # (% of total AFVs)	Compressed Natural Gas (CNG) # (% of total AFVs)
	5,100 (85%)	900 (15%)

*As of October 2001

**Light-duty, with a few medium-duty pickups ($\leq 3/4$ ton in GVWR)

***Two-thirds are light-duty trucks

The 6,000 AFVs use alternative fuels an average of 55% of the time statewide and up to 85% of the time in certain localities. This results in the annual consumption of about 5 million gallons of alternative fuels, principally natural gas and propane. Natural gas is available in Dallas and Houston, while propane

is found throughout the state in both urban and rural areas.

TxDOT's AFV fleet operates in all 254 Texas counties. However, it makes sense that most of TxDOT's 900 natural gas bi-fuel vehicles are clustered around Dallas and Houston where there is ample infrastructure. Both of these urban centers are defined as Metropolitan Statistical Areas (MSAs) that are subject to EPA's Act. Since TxDOT does not operate its own central refueling facilities for natural gas, these vehicles use commercial infrastructure to obtain compressed natural gas (CNG). The remaining 5,100 AFVs in TxDOT's fleet are propane bi-fuel vehicles and are scattered throughout the state. Some of the propane vehicles are refueled at commercial



A TxDOT employee fills his tank with CNG at a station in the Houston district.

stations, and the remainder at DOT-leased propane facilities. Propane is produced and exported by Texas, and is available in every Texas county. It

has always cost less than gasoline in Texas, even during spikes in fuel prices.

Overcoming Barriers

With its progressive programs, TxDOT has overcome barriers related to alternative fuel availability, alternative fuel use, servicing and maintaining vehicles, driver unfamiliarity with new technologies, and lack of community involvement. Lessons learned by the department can help other fleets increase their use of AFVs and alternative fuels.

Fuel Infrastructure

TxDOT has some distinctive processes in place for overcoming barriers related to alternative fuel infrastructure that ensure the availability of refueling sites for its 6,000 AFVs.

A successful "Trading Land for Fuel" program has been established: A unique partnership between TxDOT and alternative fuel providers has been put in place in three locations in the Houston area to expand natural gas infrastructure. In a program called "Trading

Land for Fuel" TxDOT offers a prime section of its right-of-way land on an interstate highway to a natural gas company at no cost. The fuel provider pays to install a natural gas station at



Even in remote areas, TxDOT's propane bi-fuel vehicles have access to the alternative fuel.

that site, which must be open to government fleets and the public 24 hours a day. The owner pays TxDOT a small royalty (about 10¢/gallon) for any fuel that is sold to the general public. TxDOT Fleet Manager Don Lewis describes this payment as a form of "rent" on the land the department donated. This program has been highly successful in expanding the availability of natural gas fuel and the Department hopes to expand this scheme to more locations in Texas.

Texas takes full advantage of its local product, propane: Propane is available throughout the state. With a facility located in the center of each county, most TxDOT vehicles are within a reasonable driving distance of a propane refueling site. In some locations, propane AFVs are fueled with propane 85% of the time.

TxDOT writes the contract for infrastructure development: Fuel providers from all over the state have contracts with TxDOT that agree that each provider will have a propane storage tank and dispenser. This ensures the availability of the fuel to TxDOT fleets wherever they operate.

AFVs are purchased as bi-fuel vehicles: Drivers who find themselves unable to refuel with the alternative fuel have the option of switching to gasoline at any time in the driving cycle. This provides needed flexibility to drivers with natural gas vehicles since their refueling sites are confined to Houston and Dallas. The statistics on TxDOT show, however, that drivers routinely fuel with natural gas and typically only refuel with gasoline when natural gas is unavailable.

Alternative Fuel Use

Although Texas falls under both federal and state mandates for acquiring AFVs, some operators have tended to look for loopholes to using alternative fuel. TxDOT has developed a unique program to overcome this barrier to greater fuel use.

A merit incentive program is in place for TxDOT officials: TxDOT's incentive program has helped attract the attention of the top administrators in the department's 25 districts (every 10 counties equals a TxDOT district). All TxDOT employees who must drive to perform their jobs drive an AFV, therefore the percentage of alternative fuel use within a district



"Meeting state and federal mandates is challenging. Going 'beyond compliance' is even harder. It takes the dedicated efforts of all our employees and administration to achieve these goals," says Don Lewis, TxDOT Fleet Manager (above).

becomes part of the administrator's annual performance review. This is a strong incentive for the top official to influence individual AFV operators to use alternative fuel to the maximum extent. The success of this "top-down" merit program is reflected in the amount of alternative fuel used by the department. Each departmental vehicle displays a

bumper sticker showing that the vehicle uses a clean, domestically produced alternative fuel.

Service and Maintenance Infrastructure

TxDOT found it difficult to locate individuals who were trained to service the new alternative fuel technologies. The department believes the barrier existed because vehicle manufacturers (also called original equipment manufacturers or OEMs) don't always train AFV dealers to maintain the vehicles. Since so few AFVs are sold each year, it did not appear to be a priority for the OEMs or dealers to have trained mechanics available. It became a serious issue when TxDOT bought hundreds of a certain model of pick-up truck and couldn't find dealerships to repair them.

An official of TxDOT traveled to Detroit to meet with OEM officials to discuss a lack of warranty support at dealerships where the department's AFVs were assigned. Once they were fully aware of the situation, the OEM representatives presented the following plan to TxDOT to correct the problem:

- Provided TxDOT with a point-of-contact within the

fleet's service region to respond to all of its AFV issues.

- Made another individual available to pursue more dealerships that would provide AFV warranty support. This OEM representative visited dealers where TxDOT had AFVs to persuade them to sign up as "gaseous fuel dealers" (initially this took a lot of persuasion).
- Trained dealers about what tools to order for their shops and about the diagnosis and repair of AFVs.
- Improved the hot line available to technicians for receiving direct technical support from the OEM.
- Established "regionalized parts distribution" of AFV components so all parts wouldn't have to be shipped from out of state.
- Established training centers for new AFV technicians. There are repair experts for AFVs in the majority of the 254 counties in Texas. Additionally, each of the 25 TxDOT districts has trained mechanics either associated with the department or commercial facilities.

TxDOT feels that its initial interaction with the OEM in Detroit was instrumental in changing the repair/maintenance infrastructure for its fleets.

Training for AFV Drivers

When Texas decided state agencies would purchase only AFVs, it knew all employees who used a vehicle on the job would end up driving an AFV. To overcome an initial reluctance to accept this situation, TxDOT initially trained its 15,000 employees to fuel and operate their vehicles. This included:

- Developing a course to train its operators on the basics of the AFV system: how to use, fuel, and perform general service on the vehicles.
- Arranging for one trained person to visit each of the 25 TxDOT districts and "train-a-trainer" in the district.
- Providing each district trainer with the necessary materials to conduct "in-house" training for each AFV driver in that district.
- Taking advantage of some of the training the OEM provided to its dealership technicians, as well as training provided by the Texas Railroad Commission's Alternative Fuels Research and Education Division (AFRED), which is a recognized national leader in promoting the use of liquid propane gas.

The initial training ended after each of the depart-

ment's 15,000 employees received their instruction, but training has become an ongoing activity at TxDOT.

Community Involvement

TxDOT's activities in acquiring and using AFVs and alternative fuels and providing refueling and maintenance facilities for AFVs contribute significantly to the momentum of the U.S. Department of Energy's National Clean Cities Program, which supports public/private partnerships that deploy AFVs and alternative fuel infrastructure. TxDOT participates in the Clean Cities stakeholder meetings in the region, which are well attended and provide an opportunity for TxDOT to interact with local government officials and other local stakeholders. Representatives of OEMs are generally also present.

As a prominent stakeholder in Texas Clean Cities coalitions, TxDOT reaches out to the community to encourage and support the acquisition of AFVs and alternative fuel infrastructure. There are currently six Texas communities that belong to the Clean Cities Program: Austin, Houston/Galveston, South Texas, Alamo Area, Dallas/Ft. Worth, and Paso del Norte. A number of representatives from TxDOT interact with the Clean Cities programs close to their home base.

Long-Term Plans

The 2001 Texas legislature passed Texas Senate Bill 5, the Texas Emission Reduction Plan (TERP), which is designed to stimulate the use of AFVs and alternative fuel in Texas. TERP will offer grants and other financial incentives for improving the state's air quality. The purchase of clean, light-duty vehicles that reduce emissions more than EPA's Tier II emission standards falls under the provisions of this plan. The program will begin September 1, 2002, for model year 2003 vehicles.

Under this program, the TxDOT will move toward purchasing dedicated rather than bi-fuel AFVs as they become available from the auto manufacturers. The potentially large market in Texas is an incentive for OEMs to build more dedicated models. If it becomes available, the department will consider replacing its diesel-powered equipment with off-road equipment that is designed or modified to operate on CNG and propane. Future plans also include increasing the total number of AFVs in the fleet so it can increase its number of EPAct credits.

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What is EPAct?

The Energy Policy Act of 1992, or EPAct, was passed by Congress to reduce the nation's dependence on imported petroleum. Provisions of EPAct require certain fleets to purchase alternative fuel vehicles. DOE administers the regulations through its State & Fuel Provider Program, Federal Fleet Program, Private & Local Government Program, and Fuel Petition Program. EPAct also includes voluntary programs, such as Clean Cities, which help accelerate the use of alternative fuels in transportation.

For more information, visit <http://www.ott.doe.gov/epact>, or call the Regulatory Information Line at (202) 586-9171.

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