State of New Jersey
Alternative Fuel Program

September 23, 2000 to December 31, 2002

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State Auditor
Enclosed is our report on the audit of the State of New Jersey Alternative Fuel Program for the period September 23, 2000 to December 31, 2002. If you would like a personal briefing, please call me at (609) 292-3700.
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State of New Jersey
Alternative Fuel Program

Scope

We have completed an audit of the State of New Jersey Alternative Fuel Program for the period September 23, 2000 to December 31, 2002.

The Energy Policy Act of 1992 (EPACT) mandated all 50 states purchase alternative fuel vehicles (AFVs) to reduce the nation’s use of petroleum fuels in the transportation sector and to improve air quality throughout the country. EPACT required that a certain percentage of the vehicles acquired each year by fleet operators be AFVs. For state fleets, the requirement increased from 10 percent in model year 1997 to 75 percent in model year 2001 and beyond. Additionally, the Governor’s Executive Order #94 increased the purchase requirements for New Jersey’s fleet by an additional 5 percent in model year 1999 and beyond and allows for the purchase of advanced technology vehicles (ATVs).

The State of New Jersey selected compressed natural gas (CNG) as its alternative fuel. Almost all of the AFVs acquired were CNG vehicles. As of November 2002, there were 1,850 AFVs in the fleet: 1,700 dual-fuel vehicles which operate on regular unleaded gasoline or CNG, 100 dedicated CNG law enforcement vehicles, and 50 vehicles which operate on other alternative fuels. Each of the 1,800 AFVs with CNG costs an average of $5,000 more than conventional gasoline vehicles. The incremental expense to date is $9 million.

Objectives

The objectives of our audit were to determine whether the state has complied with significant laws and regulations applicable to the program and whether financial transactions were reasonable. We
also tested for resolution of the significant conditions noted in our prior report dated October 23, 2000.

This audit was conducted pursuant to the State Auditor's responsibilities as set forth in Article VII, Section 1, Paragraph 6 of the State Constitution and Title 52 of the New Jersey Statutes.

**Methodology**

Our audit was conducted in accordance with *Government Auditing Standards*, issued by the Comptroller General of the United States.

The information available from the Department of the Treasury, Central Motor Pool was used to compile, evaluate and draw our conclusions. In preparation for our testing, we studied legislation, federal regulations, and policies of the agency. Provisions that we considered significant were documented and compliance with those requirements was verified by interview, observation, and through our analysis. We also read the budget message, and interviewed agency, federal, and various states’ personnel to obtain an understanding of the programs and the internal controls.

To ascertain the status of findings included in our prior report, we identified corrective action, if any, taken by the agency and walked through the system to determine if the corrective action was effective.

**Conclusions**

We found that the state has complied with the Alternative Fuel Program regulations, and the financial transactions included in our testing were reasonable. We also found that the state has not resolved the significant conditions noted in our prior report dealing with the limited use of CNG in dual-fuel vehicles and limited utilization of cost saving alternatives. As a result, the state has incurred
significant incremental costs without receiving a corresponding environmental benefit.

New Jersey exceeded the federal and state purchasing mandate percentages for model years 1997, 1998, 1999, 2000, and 2002. During model year 2001, the state availed itself of options available under EPACT and the Governor’s Executive Order by applying prior banked credits, using biodiesel fuel, and purchasing ATVs. For model year 2002, the state discontinued its vehicle life cycle replacement efforts due to budgetary constraints. The vehicle acquisition freeze is expected to continue for model year 2003. (see following chart)
As noted in our prior report, issued October 2000, we continue to find limited use of CNG in the dual-fuel vehicles. In many cases, the cars have never been filled with the alternative fuel and continue to operate exclusively on unleaded gasoline. It should be noted that EPACT and the Governor’s Executive Order stipulate the purchase of AFVs but do not establish usage requirements for the alternative fuel. Furthermore, New Jersey continues to rely on purchasing AFVs even though other options are available in order to comply with the mandate as noted in our last report.

Fuel Use of CNG Vehicles

Goals of the program were to reduce petroleum usage and thereby improve the air quality. We found that the state is not accomplishing this objective because AFVs are only using CNG four percent of the time over the vehicle’s lifetime.

As of November 2002, 56 percent of the state’s dual-fuel cars had never been filled with CNG and operate exclusively on unleaded gasoline. This represents a small improvement from July 2000 when it was 73 percent. However, 250 vehicles (15 percent) used less than 10 gallons of CNG throughout their lifetimes. As a result, the state incurred $6 million in incremental costs for vehicles being operated on gasoline from which it received no environmental benefit. When New Jersey resumes the vehicle life cycle replacement program and purchases 700 AFVs
annually, the projected non-beneficial incremental costs for those vehicles would be $2.5 million yearly based on current usage rates.

**Dual Fuel Vehicles**

*Lifetime Usage through November 2002*

![Bar Chart: Dual Fuel Vehicles Usage](chart.png)

The major contributing factor to the under-utilization of CNG continues to be the lack of fueling stations. As of the end of our field work, there were only three refueling stations for New Jersey’s fleet of AFVs; one located at the Department of Transportation in the Trenton area, one in Wall Township, and the other in Hackensack. The Wall Township and Hackensack facilities have limited access and, combined, provided fuel for only 25 vehicles. In addition, the Trenton station can not meet current demand. According to the Advanced Technology Vehicle Task Force, which was created by the Governor’s executive order, the estimated cost to upgrade the Trenton facility to a larger capacity will range from $600,000 to $850,000.
Due to the cost, efforts were made by state officials to utilize existing federal, local, and private facilities. However, minimal success occurred as a result of those efforts. Since our last report, the state received $1.1 million through federal sources to build fueling stations. The task force in August 2000 developed a priority list of refueling locations required to meet the state’s immediate needs. The top three locations were Hamilton, Cherry Hill and an upgrade of the Trenton station. The station located in Hamilton is near completion with a cost in excess of $600,000. The facility at Cherry Hill, which has cost the state in excess of $300,000 to date, is currently in the construction bidding phase. There remains insufficient funding to upgrade the Trenton station.

**Auditee’s Response**

We concur that there is still limited use of compressed natural gas (CNG) in the state’s AFV fleet and we are working to remedy this issue. As stated in the report, a new CNG fueling station is near completion in Hamilton and a facility in Cherry Hill is in the construction-bidding phase. Additionally, an agreement with New Jersey Natural Gas is currently in the works to use its Lakewood facility as an additional CNG fueling station.

**Cost Savings Alternative**

Federal regulations provide for temporary relief from the purchase of AFVs while continuing to meet its mandate. Relief is granted on a per year basis and takes the form of either exemptions or credits. New Jersey has taken minimal action to relieve the burden of purchasing vehicles while continuing to comply with the mandate since our last report. By increasing efforts to utilize credits and implementing additional alternatives, such as purchasing ethanol fueled vehicles, cost savings to the state could be realized and still comply with the program regulations. The following options were available to New Jersey.
Exemptions can be granted in areas where the alternative fuel is not available to the fleet as a result of one or more of the following reasons: 1) distance from the vehicle location, 2) lack of station accessibility, and 3) unreasonable amounts of time necessary to travel in order to refuel. In addition, exemptions can be granted in cases where the make and model of the vehicle has no similar AFV manufactured. New Jersey has not availed itself of this option.

AFV credits are accumulated when the minimum federal purchase requirements have been exceeded for any given model year. New Jersey has amassed these credits due to their commitment to exceed the minimum. Since our last report, the state applied 160 credits during their model year 2001 acquisitions. However, they continue to have a balance of 80 banked credits that can still be utilized.

EPACT allows for the buying and selling of AFV credits between qualifying fleets. Those credits can be used to offset future year purchase requirements. Our research indicates that the market price to purchase credits from others is significantly less than the incremental cost required to purchase an AFV. New Jersey has not availed itself of the option to purchase credits from others.

EPACT allows states to earn AFV credits for using biodiesel fuel (fuels derived from biological materials mixture) in medium and heavy duty vehicles. Those credits can then be used to offset current year purchase requirements up to 50 percent of the total. Consideration should be given to increasing biodiesel usage when New Jersey resumes the life cycle vehicle replacement program.
Based upon the estimated usage of 1.3 million gallons of diesel fuel annually, New Jersey could be eligible for over 575 AFV credits each model year by converting from diesel to biodiesel with a potential cost avoidance of $2.1 million. Effective model year 2001, New Jersey began applying credits earned against AFV purchase requirements based upon biodiesel usage. However, the credits earned were minimal.

New Jersey selected CNG as its alternative fuel even though other types of AFVs are available, such as those that operate on ethanol. Vehicles which operate on ethanol have no incremental purchasing cost. Currently there are no ethanol fueling stations in New Jersey. Our research indicates that the cost to build such a facility ranges from $40,000 to $150,000, which is significantly less than a CNG refueling station.

**Recommendation**

We recommend that the state should pursue the above alternatives until an adequate infrastructure is developed for the AFV fleet. Consideration should be given to purchasing AFVs which operate on ethanol and increasing the usage of biodiesel fuel. This would permit the state to save millions of dollars and derive the environmental benefit intended by the program.

**Auditee’s Response**

We also concur that the State should pursue other alternatives for complying with the Energy Policy Act of 1992 (EPACT) until an adequate infrastructure is developed for the AFV fleet. We will seek temporary relief from purchasing AFVs by applying for the exemptions that are allowed under the federal regulations. Due to the limited number of fueling stations in the state, New Jersey may be granted the exemptions.
With regard to utilizing the accumulated AFV credits, the state used 160 credits last model year and 52 this model year. There is currently a balance of only 49, which are available for use next year. We will also investigate the possibility of purchasing additional AFV credits to help offset future year purchase requirements.

As stated in the report, the state is already acquiring credits for using bio-diesel fuel in the medium and heavy-duty vehicles. However, the credits have been minimal because there is currently only one tank that contains bio-diesel fuel. The bio-diesel fuel that is used in this tank, which is located at the Department of Transportation’s (DOT) Fernwood location, is partially funded by the Board of Public Utilities, Office of Clean Energy. DOT has the majority of the diesel tanks in the State and they may require a funding source to offset the cost of using the more expensive bio-diesel fuel in their other diesel tanks.

With regard to giving consideration to purchasing AFVs, which operate on ethanol, the state is already doing this. Of the 154 AFVs purchased this model year, 115 are Flexible Fuel Vehicles (FFV). The FFVs operate on ethanol and there is no incremental purchasing cost.