

Legislative Report on Hybrid Electric Vehicles
Joint Fiscal Office
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I. Summary

- > The current patchwork of fragmented, uncoordinated federal and state incentives for alternative fuel vehicles has to date accomplished little in terms of promoting the public policy goals of increasing energy security and reducing motor vehicle emissions. Going forward, the evolution of hybrid electric vehicles offers the potential of achieving more significant results but the incentive benefit level required to jump start the mass market to the point where sales of clean fuel vehicles represent a significant portion of total vehicle sales is likely to be high on an individual vehicle basis. A coordinated, joint federal and multi-state effort to implement incentives simultaneously would greatly increase the odds of successfully jump starting the market to a self sustaining basis at least cost to the governments involved.

- > Presently, in Vermont at least, it is clear there is a certain level of demand for hybrid electrical vehicles that is not dependent upon the existence of a state incentive. Quantifying this level of base demand would be critical to assessing the potential cost effectiveness of an incentive program. Depending upon the size of this non-incentive dependent demand, even a modest incentive could end up being costly yet accomplish little in terms of stimulating additional sales.

- > An incentive program to encourage the sale of hybrid electric vehicles and other alternative fuel vehicles should be technology neutral.
- > The simplest, least expensive (in terms of administration) and most direct technology neutral incentive is a system which defines incentive eligibility in terms of the existing federal and California rating systems for fuel economy and tailpipe emissions.
- > The level of the net financial benefit should be set to cover some proportion of the incremental cost of the specialized clean fuel equipment of the vehicle as compared to conventional vehicles.
- > Such an incentive system is relatively simple to apply to new model vehicle sales but limiting the incentive to new model vehicles would exclude the secondary conversion market.
- > Incentives which are immediate and palpable such as point of sale rebates or purchase & use tax reductions are more attractive to consumers than income tax incentives and are not necessarily more costly.
- > Incentives for tax exempt entities such as towns and school districts can make a valuable contribution to the overall goal of increasing the sales momentum of clean fuel technology vehicles.

II. H. 772 Sec. 48

This report is pursuant to H.772, Sec. 48 (2003 Session) which provides as follows:

By January 15, 2005, the joint fiscal office shall report to the general assembly recommendations for potential financial, fee, and tax incentives that may be offered to purchasers of hybrid electric automobiles.

III. Background on hybrid electric vehicles

To understand a “hybrid electric vehicle” (HEV), one must first distinguish between the energy source of a motor vehicle and the propulsion system which drives the vehicle. In a conventional car, the energy source is gasoline and the propulsion system is an internal combustion engine which converts the chemical energy of gasoline into kinetic energy to power the drive train. Conventional cars powered by a gasoline engine are powerful, reliable and have a long driving range, but on the downside the technology is (1) very inefficient as the combustion process captures only 20-25% of the potential energy of the gasoline, wasting 75-80%, (2) increasingly dependent upon foreign sources of oil concentrated in politically unstable regions of the world and (3) generates as byproducts toxic emissions and greenhouse gases.

In an all electric vehicle (EV), the energy source is electricity which is either stored in a battery set or flywheel or generated by a fuel cell and the propulsion system is an electric motor which

converts the electrical energy into kinetic energy to power the drive train. On the road, EVs are a true ZEV (zero emission vehicle) and even when you account for how the ultimate electrical energy is generated in the complete fuel cycle (e.g. accounting for the emissions of a coal fired power plant that generates electricity to a recharging outlet), EVs are much cleaner than conventional gasoline or diesel powered vehicles. As to energy security, America's access to energy sources, electricity can be generated by a variety of hydrocarbon fuels including natural gas and coal as well as by renewable sources such as hydro, wind and solar power. On the down side, current technology EVs have two major disadvantages compared to conventional vehicles: (1) the driving range of EVs is limited (1/4 to 1/3rd that of conventional cars) and (2) refueling, i.e. recharging is time consuming and limited in availability.

In contrast to gasoline or diesel powered vehicles or EVs, HEVs have two distinct energy sources, an electrical source and a non-electrical source, the most common configuration being an electric battery set and a gasoline internal combustion engine. The propulsion system of an HEV is either (1) an electric motor (a "series" hybrid in which the internal combustion engine is connected via a generator to the electric motor which solely powers the drive train), or (2) a combination of an electric motor and a conventional drive train (a "parallel" hybrid in which the internal combustion engine is connected to both the electric motor and to the drive train which can be powered by either).

In a standard configuration HEV, one of the key functions of the internal combustion engine is to recharge the electric battery system. This overcomes both of the disadvantages of an EV. Recharging is simply a matter of refilling the tank and the driving range of an HEV is significantly greater than that of a conventional car and with much better fuel economy and fewer emissions. The improvement in fuel economy and emissions is made possible by the hybrid combination of energy sources. A conventional gasoline internal combustion engine is most inefficient and pollution intensive when idling, at slow speeds or stop and go traffic and is most energy efficient and less polluting at higher, sustained speeds. EVs, in contrast, are much more energy efficient at slow speeds and in stop and go traffic but are power intensive and energy draining at higher speeds (which limits the driving range between recharges).

In a HEV, the electric battery set powers the vehicle when idling, at slow speeds and in stop and go traffic and at higher, sustained speeds which drain the batteries, the internal combustion engine takes over (via a generator connected to the electric motor or directly in a parallel drive train). Moreover, because the drive train can always draw on the power generated by the electric batteries, the internal combustion engine can be (1) downsized, (2) run only when needed ("idle-off") and (3) when turned on, operated at a performance level which maximizes energy efficiency and minimizes tail pipe emissions.

The electric motor also allows HEVs to take advantage of "regenerative braking." When the brakes of an HEV are applied, the electric motor applies resistance to the drive train to slow the vehicle. Simultaneously the kinetic energy of the wheels is converted by a generator into electricity which is stored in the battery system, increasing the energy efficiency of the entire system. Conventional friction brakes are applied only in the last few feet to bring the vehicle to a complete stop.

The most dramatic advantage of HEVs is their fuel economy which obviously promotes the national policy of energy security. In the U.S. Department of Energy's "Model year 2005 Fuel Economy Guide," for example, the midsize Toyota Prius HEV (automatic) has a rated fuel economy of 61 mpg in city driving and 51 mpg in highway driving.¹ The next highest rated midsize car is the Hyundai Elantra (manual) with ratings of 27/34 mpg.

In terms of tailpipe emissions, HEVs are significantly cleaner than the average car. HEVs on the market satisfy the most stringent non-zero tailpipe emissions standards, the federal Tier 2 – Bin 2 and California's SULEV (super low emissions vehicles) standard.

Besides their excellent fuel economy and low emissions, a third oft-cited rationale for encouraging HEVs is that a growing market for HEVs will provide a technological and market supportive bridge to true zero emissions technology. Zero emissions vehicles such as hydrogen fuel cell EVs face three categories of obstacles: (1) technical problems, (2) component and systems costs and (3) consumer acceptance. HEVs incorporate many of the technologies of EVs. The broader the market penetration achieved by HEVs the greater the incentive to manufacturers to improve the common technologies shared by hybrids and EVs, component and system costs will be driven lower by economies of scale and consumers will become accustomed to a vehicle that is "just" a fuel cell away from a ZEV.

IV. Market obstacles to clean fuel technology

Hybrid technology poses the classic policy dilemma of a social good. On the benefit side of the equation, widespread use of HEVs in lieu of conventional vehicles would undeniably produce collective social benefits in terms of increased energy security and a cleaner environment. At the individual level, however, these benefits are too attenuated to drive consumer behavior. Meanwhile, on the cost side of the equation, as long as the market remains small, hybrids currently are, and are likely to remain, more costly than conventional vehicles of the same class.

Sales of hybrids have grown briskly since their introduction in model year 2000. Nationwide registrations of hybrids in 2003 were reported as growing by 26% to 43,435², and the sales growth has prompted manufacturers to introduce a number of new hybrid models. While this sales growth is impressive, in a nationwide market in which 14 to 16 million new cars and light trucks are sold each year, the sales volumes amounts to less than 1/3 of 1%.

Conceivably large production runs would generate economies of scale and drive down production costs which would allow a manufacturer to lower its price and attract more customers, but with a number of manufacturers all competing within a less than 1% slice of the market (itself divided into different model class sub-markets), sales would have to explode and the manufacturer would have to be confident of capturing nearly all off the growth in order to

¹ The 2002 model Toyota Prius had the following performance statistics in testing by DOE: Acceleration 0-50 mph – 10.4 seconds; maximum speed at 1/4 mile – 73.3 mph; fuel economy in model without accessories – 49.5 mpg with a driving range of 588 miles. <http://avt.inel.gov/pdf/hev/toyotaprius2002.pdf> accessed through <http://avt.inel.gov/hev.html>

² Polk Automotive Intelligence at http://www.polk.com/news/releases/2004_0422.asp

justify the financial risk. Hence smaller production runs and higher costs and higher sticker prices which discourage sales.

HEVs on the market typically cost between \$2,000 to \$6,000 more than a conventional car of the same class.³ The fuel economy advantage of an HEV translates into lower annual fuel costs which is obviously a tangible benefit to the owner, but at the current gap in up front costs it would take a number of years for a typical owner to break even.⁴ The size of the gap in up front costs (and the fact that the price differential is up front), the long drawn out gallon by gallon nature of the fuel economy cost benefits and uncertainty over reliability and maintenance costs until HEVs establish a track record all combine into a sizeable disincentive to sales.

In terms of the vehicle sales market, it is a chicken/egg problem. Lower prices will increase sales but higher sales are needed to reduce costs. Over time private market forces tend to solve these problems but in the meantime the collective social benefits in terms of energy security and a cleaner environment that would result from HEVs replacing conventional motor vehicles are put on hold and lost in the interim.

Government incentives to encourage the sales of HEVs can help solve this dilemma by stimulating the sales volume needed to encourage manufacturers to increase their production runs and sales efforts. Will government incentives generate public benefits which justify the cost of the incentives? More particularly, would incentives by the state of Vermont generate public benefits commensurate with their costs? The answer to that question is ultimately an exercise in political judgment since it involves difficult to measure and subjectively valued costs and benefits. Nor is the answer simply a matter of dollars and cents as it also involves core issues of social contract political ethics (particularly with respect to Vermont's role, e.g. recycling is successful in part because of mandates but is successful mainly because people recognize a social contract obligation to contribute to an effort which bears results only on a collective basis).

There are, however, certain technical issues that bear on the question which can be addressed, namely the range of different incentive options that are possible and their respective advantages and disadvantages. Laying out and analyzing these incentive options is the focus of this report.

V. Existing incentives in Vermont

Two government incentive programs relating to hybrids are currently available in Vermont. First, under federal law, HEVs qualify as a "clean fuel vehicle" and purchasers, whether for business or personal use, are eligible to take an income tax deduction for a portion of the incremental cost of the clean fuel equipment of an HEV. The incremental cost is certified by the manufacturer. The deduction was capped at a maximum of \$2,000 through tax year 2003 and

³ An internet search on Dec 31, 2004 showed the Toyota Prius at a list price of \$20,875 and the comparable mid-size Hyundai Elantra at \$14,849, a difference of \$6,386. The price differential on smaller models is considerably less.

⁴ According to the EPA's Model Year 2005 Fuel Economy Guide the Toyota Prius has annual fuel costs of \$491 versus \$899 for the next highest fuel economy rated mid-size model, the Hyundai Elantra (both assuming 15,000 miles per year at \$1.80 per gallon). At a price differential of \$6,000 and annual fuels savings of \$400, it would take an owner 15 years to break even.

under current law is being gradually phased out. The maximum deduction allowed for HEVs purchased in 2005 is \$1,000 with the cap scheduled to be reduced to \$500 in 2006. Higher deductions are available for clean fuel heavy trucks, vans and buses.⁵

It is important to note that the benefit of this federal income tax deduction is automatically passed through to Vermont taxpayers with respect to their state income tax liability. This is because state income tax liability is based on federal return income after deductions. Thus, while the state marginal rate is different than the federal marginal rate, for all intents and purposes, Vermont already has an income tax deduction incentive related to the incremental cost of clean fuel vehicles.

Second, under state law, businesses that are involved in the design, development and manufacture of electric vehicles, alternative fuel vehicles or hybrid electric vehicles are eligible for a variety of state income tax credits designed to encourage high-tech industries.⁶ Currently under Vermont law there are no incentives to purchasers of hybrids.

It is also important to note that the current demand for hybrids in Vermont exceeds the limited supply with dealers reporting order backlogs of up to 7 months.⁷ So presently, in Vermont at least, it is clear there is a certain level of demand for hybrids that is not dependent upon the existence of a state incentive. One might also reasonably speculate that the level of demand would be somewhat higher if there were no supply constraint.

Quantifying this level of non-incentive dependent demand would be critical to assessing the potential cost effectiveness of any incentive program because the incentive benefit, while it would be paid out to these buyers, is by definition not needed to stimulate these sales. The cost effectiveness of an incentive must be measured in terms of the incremental demand it generates above this market-as-is demand base and the incentive cost per sale must be measured by the ratio of the total costs of the incentive program divided by these incremental sales. Depending upon the size of this non-incentive dependent demand base, even a modest incentive could end up being costly yet accomplish little in terms of stimulating additional sales.

VI. Technology neutral government incentives

There are a number of state incentives that are technology specific where the particular technology has a strong economic connection to the state, e.g. ethanol fuel related incentives in Iowa, natural gas related incentives in Texas. States such as Iowa with its corn production and Texas with its natural gas industry have an obvious interest in promoting particular technologies that benefit the state economy. Absent an economic reason for preferring a particular technology, however, states for sound policy reasons have generally refrained from technology specific incentives.

⁵ The deduction is described in IRS publication 535. Go to www.irs.gov

⁶ See 32 V.S.A. §5930k

⁷ According to the Department of Motor Vehicles, 429 hybrid electric vehicles were registered in Vermont in 2004.

For most states, hybrid electric vehicles are of public interest, not because of the particular technology they employ, but because of the outcomes they produce – substantially improved fuel economy which serves the public interest in energy security and significantly lower tailpipe emissions which serve the public interest in a cleaner environment. Any technology that produces comparable results would serve the public interest and there are a number of technologies competing in the marketplace to produce cleaner, more fuel efficient motor vehicles. By defining incentives in terms of the desired outcomes, states can promote the public interests involved while leaving to the private sector the task of devising the technical, material component and production process solutions that will most reliably and efficiently achieve the desired outcomes.

Administrative and compliance costs are another key issue in designing any government incentive, and in this particular area, using a technology neutral, outcome based approach is particularly appropriate because federal government programs already exist to measure and certify the two performance characteristics of new model vehicles that are of interest: fuel economy and tailpipe emissions.

All new vehicles offered for sale in the U.S. must have their tailpipe emissions rated and certified in accordance with either the federal or California standards. In addition, the EPA measures the fuel economy and greenhouse gas emissions of all new vehicle models offered for sale. These certifications provide a ready made basis for defining an incentive program, a particularly attractive advantage to a small state like Vermont.

VII. General principles regarding incentives

The National Conference of State Legislatures (NCLS) published in February 2001 a valuable report entitled “State Alternative Fuel Incentives – A Decade and More of Lessons Learned.”⁸ The report is interesting in several respects. First, the survey makes clear that a distinction must be drawn between the popularity of an incentive and the effectiveness of the incentive in achieving its ultimate public policy objective. The report describes a number of examples of state incentives which were popular with consumers and drained state revenues but which accomplished little in terms of replacing conventional cars with high fuel efficient, low emission vehicles. Incentives for bi-fuel vehicles, vehicles which can be run on gasoline or an alternative fuel, with no assurance that the vehicles would ever be run on alternative fuels, is one example.

Second, strictly in terms of consumer popularity, the report emphasizes 3 lessons. To be popular with consumers, an incentive must be (1) immediate, (2) simple and (3) certain.

- > **Immediacy** – The more immediate and tangible the benefit, the more popular it will likely be. Incentives which lower a vehicle’s cost at the point of sale are more attractive than benefits that must be applied for and processed.

- > **Simplicity** – The inverse law of government forms applies. The more forms that are required, and the more complicated the forms, the less credible is the incentive.

⁸ Web link is provided in the Report Sources.

- > Certainty – To control fiscal consequences, a number of state incentives place a cap on the annual cost of incentive programs. Uncertainty about the availability of a benefit, however, merely adds to the why-bother complexity of the undertaking.

Third, the survey shows that ten years of numerous state incentives for alternative fuel vehicles produced remarkably meager results in terms of actually increasing the proportion of alternative fuel vehicles on the road. There are sound reasons for speculating this outcome was largely the result of bad timing. After briefly surging following Iraq's invasion of Kuwait in 1990, oil prices dropped below \$20 a barrel and gasoline prices hit new inflation adjusted lows. Meanwhile the state of alternative fuel technologies was rather primitive – exciting to hard core enthusiasts but off the radar screen of the typical consumer.

In contrast, in 2004 sticker shock acquired a new venue at the gas pump while manufacturers are finally delivering to the show room the first real, user friendly, brand name backed, consumer market oriented alternative fuel technology option – the HEV. Conditions certainly seem to be different but the experiences of the 1990s highlight the risks involved.

The ideal government incentive for alternative fuel technologies would be just large enough to encourage just enough additional sales to induce manufacturers to make a large scale run at the market by ramping up production, thereby intensifying competition, driving down costs and prices and generating a self-sustaining sales momentum, at which point the incentive would no longer be needed. Stimulating sales to this key inflection point between a low-attention niche market and a must-compete mass market is the underlying, if unstated, rationale of every government incentive. Raising CAFE standards and/or tightening fleet emissions standards would lower this inflection point, but absent changes in the regulatory structure of the market, success in reaching this inflection point has all of the risks associated with establishing a new product market (further complicated by the fact that multiple actors, the federal government, state governments and the manufacturers are separately calculating risks and commitments).

The basic strategy has three notable risks. First, as frequently occurred in the 1990s, the government incentive may simply not be large enough to influence consumer behavior to the extent required. Some clean, fuel efficient cars are placed on the road but the overall market fails to grow. Some incremental gains are achieved, presumably at limited cost, but the cost to benefit ratio is high. The federal income tax deduction for clean fuel vehicles would appear to fall into this category. For several years an income tax deduction, initially up to \$2,000 (at a net cost to the federal government of \$400 in lost tax revenue for a 20% marginal rate tax payer), has been available for clean fuel vehicles including HEVs, but the market share of all clean fuel vehicles is still minuscule. Conceivably, the incentive has helped to build sales momentum, but the deduction is being phased out at the very time manufacturers are ratcheting up competition with new hybrid models (highlighting the problem when strategic decision-making is split).

Second, the consumer mass market inflection point may represent a significantly higher bar than anticipated. Government incentives may be generous but still not large enough to move the market. The result is similar, with incremental gains but at a significantly higher cost. Cost is just one factor in a purchase decision – ease of use, reliability, maintenance, warranties, resale

value, passenger room, power, styling, cachet, etc. are all factors in the mix.⁹ In this respect, the introduction of standard sized HEVs from trusted brands that actually look like a car is a major break through.

VIII. Multi-state issues

The third risk, one particularly relevant to Vermont, is that the incentive may be correctly sized and introduced in conducive market conditions but the impact of the incentive on total sales will be too small to move the market due to its limited geographic scope. If the conditions are right, creating a mass market for hybrids and other alternative fuel vehicles is, at root, a matter of bearing the temporary costs required to bridge the gap to a self-sustaining market. Vermont may bear its fair share of such costs but unless the federal government and other states cooperate in the effort, Vermont's impact on the market will be too small to make a difference.

Of course, leadership is an issue, a number of states already have incentives and other states and the federal government are considering incentives. The fragmentation of the efforts, however, is at direct odds with the collective nature of the task. One option to solve this problem is to pursue a multi-state effort analogous to the uniform commercial code project or the more recent efforts to implement a stream-lined state sales tax. Identical incentives would not be necessary. States could adopt an incentive program consistent with some agreed minimum level of effort with all of the incentives going into effect only when a certain number of states join the compact. Conceivably the combined impact on the market would provide the critical mass required to reach the mass market inflection point in the shortest time and at the least cost to all the governments involved.

IX. Incentive options

A. Vehicle cost versus fuel cost related incentives

The subject of this report is the range of possible options which can be used to encourage sales of HEVs. The main obstacle to increased sales of HEVs is the price differential between hybrids and conventional vehicles. If an incentive is to stimulate hybrid sales it must reduce that differential in vehicle cost. Fuel related incentives make little sense with respect to HEVs since most models use regular gasoline. In fact, fuel incentives, or rather, more narrowly, incentives which ultimately have the effect of lowering the cost of fuels which include gasoline or diesel, make little sense with respect to any technology which aims at, or has the effect of, reducing gasoline or diesel consumption. The principal obstacle confronted by such technologies is typically the higher equipment costs of the technology relative to conventional vehicles. If equipment costs were the same, presumably no incentive would be needed to the extent the technology was perceived to be reliable and user friendly and offered significant savings in all-in fuel costs.

⁹ For a sense of the obstacles facing the market, see Smartmoney.com's Nov, 2003 article "Are Hybrids Worth It?" at <http://aol.smartmoney.com/consumer/index.cfm?story=20031126> . For a more recent article with a more positive tone, perhaps reflecting a shift in sentiment, go to http://smartmoney.com/consumerreports/autos/index.cfm?story=upcominghybrid&nav=CR_hp

One notable exception is presented by blended fuel technologies such as “biodiesel” which involve moderate equipment costs but do involve, with current technology and at current scales of production, significantly higher costs for the non-gasoline, non-diesel component of the blended fuel; in biodiesel, the biomass portion of the blended fuel. Blended fuels are generally cleaner than gasoline or diesel and, in terms of energy security, can significantly increase the conventional oil derived fuel economy of a vehicle. To the extent that specialized equipment costs of new vehicles are a restraining factor, the technology neutral equipment cost incentives described here would apply. To the extent, however, that the bio-fuel or non-oil fuel side of the cost equation is the restraining factor, these equipment cost incentives will not help.

B. Incentive eligibility criteria

As described, the simplest and administratively least expensive method of ensuring that incentives in actual practice promote the public policy goals of enhancing energy security and reducing motor vehicle emissions is to define incentive eligibility directly in terms of the federal or California fuel economy and tailpipe emissions certifications. Two different schedules of incentives could be defined, one for fuel economy and one for tailpipe emissions with vehicles eligible for both. A hybrid SUV, for example, with a SULEV emissions rating but with moderate fuel economy would qualify for a higher emissions rating benefit but a lower fuel economy benefit while a hybrid with both a SULEV rating and enhanced fuel economy would qualify for a higher total package of benefits.

The fuel economy incentives could be defined in terms of the conventional oil derived fuel economy of the vehicle. For example, a vehicle rated at 30 mpg using a blend of 80% gasoline or diesel and 20% bio-fuel or ethanol or methanol could be credited with an oil derived fuel economy of $30 * 100/80 = 37.5$ mpg.

In most states incentive benefits are limited to, and cover only a portion of, the incremental costs of the vehicle’s clean fuel equipment. In theory, one could argue that the additional cost of specialized equipment is only a factor in the incentive benefit equation and that the incentive should be set at whatever level will accomplish the goal of jump-starting the market at least total cost. In the early stages of a technology when performance, reliability, durability, maintenance costs, resale value, etc. are major uncertainties, consumers may, in effect, demand a premium for assuming the risk of these uncertainties. As the technology improves and these uncertainties are resolved with the effect of focusing consumer attention on the advantages and benefits of the technology, the market jump-starting incentive level moves to an amount which is equal to or less than the incremental cost of the specialized equipment.

As a practical matter, however, identifying the incentive level which will jump-start the market at least cost is hardly a matter of plugging variables into an equation. A company launching a new product confronts the same problem when it attempts to price the product at a level which minimizes cumulative losses until sale volume gains generate a positive revenue stream. The issue is greatly complicated here by the fact that multiple actors, the manufacturers and the federal and state governments, are all making decisions which influence the final cost versus benefit price point at which the technology is marketed.

The most compelling practical constraint, however, is the fact that even if the appropriate incentive level could be divined, no individual state vehicle market is large enough by itself for an incentive to have the desired jump-start effect on the total market, highlighting again the fact that a coordinated, joint effort by the federal government and a critical mass of states would save money for all of the entities involved.

With respect to HEVs, the introduction of hybrid models with standard warranties by major manufacturers of trusted brands has undoubtedly gone a long way towards resolving the consumer uncertainties which have restrained sales. Some might cite the introduction of hybrid models by major manufacturers as a reason why incentives are not needed, but the differential cost of specialized equipment is still a major constraint, and one could argue that, in fact, now is the most opportune time for offering incentives since, for most consumers, incentive benefits will not be compensating for product uncertainties but will be compensating solely for the additional cost of the specialized equipment the public has an interest in encouraging.

C. Secondary – conversion market issue

In summary, distinct advantages are provided by an incentive program in which (1) benefit eligibility is defined on a technology neutral basis in terms of new model fuel economy and tailpipe emissions certifications and (2) the level of the incentive benefit is defined in terms of the incremental cost of specialized equipment. The downside of this approach is that it effectively limits incentive benefits to new model vehicle sales and excludes the conversion market in which conventional vehicles are converted to alternative fuel technologies.

The advantage of limiting the incentive to new model vehicles is that the federal government (and California) do all of the administrative work to certify the fuel economy and emissions ratings of the vehicles. An incentive program could be broadened to include conventional vehicle conversions, but any broadening of the incentive program beyond new vehicles would involve incremental administrative costs disproportionate to the likely size of the conversion market.

Bi-fuel vehicles, also called “flexible fuel vehicles” (FFV), present a special problem. These vehicles are designed to use either gasoline / diesel or, as a second fuel, a non-oil alternative fuel. Like HEVs, bi-fuel vehicles solve a very practical problem – the limited availability of alternative fuel re-fueling facilities. Unlike hybrids, however, with bi-fuel vehicles there is no assurance that the alternative fuel will actually be used.

This potential problem could be handled by assigning a fuel economy and emissions rating to bi-fuel vehicles assuming they are run on gasoline / diesel a certain proportion of the time. In a scaled system of benefits based on fuel economy and emissions, capped at allowing the full recovery of the incremental cost of specialized equipment only for the cleanest and most fuel efficient vehicles, bi-fuel vehicle benefit levels would end up in the middle to lower end of the scale. As long as purchasers end up in the net position of having to lay out some of their own cash to purchase a bi-fuel vehicle, there is some assurance the people who utilize the incentive will be committed to using the alternative fuel.

D. Incentive forms

There are two sub-markets of potential beneficiaries that an incentive program should consider: (1) individuals and businesses who pay taxes and (2) public entities other than the state such as towns and school districts that do not pay taxes. The obvious distinction here is that tax incentives are of no benefit to non-taxable entities. To reach non-taxpaying entities either the entire program must be based on non-tax incentives or a separate program must be created for these entities.

State by state incentive programs for alternative fuel and hybrid electric vehicles are described in the attachment to this report. Incentives can be delivered in five basic forms as described below.

The immediacy and ease of obtaining a benefit affects the attractiveness of the incentive, there are significant administrative cost issues and, with respect to income tax incentives, there are personal income equity issues, but otherwise, *from a strictly fiscal cash flow perspective*, there is little real difference between the incentive forms. A cash rebate program, in other words, does not necessarily cost more than a tax incentive. A cash rebate program must be explicitly funded each year, which means tax revenue must be collected and then redirected whereas with tax incentives, tax revenue collection is simply foregone. Either way the net cost to the state of the incentive program can be the same, i.e. whether the state collects \$1 in tax revenue and gives it to the purchaser of an HEV or the purchaser pays \$1 less in taxes, the cost to the state is \$1 (plus administrative costs).

The main variable determining the effectiveness of an incentive is, of course, the size of the incentive benefit; and the key issue in that respect is to determine how much of the additional cost of specialized equipment should be subsidized by the state. That issue, in turn, depends upon the objective of the program. A modest incentive benefit could be viewed, and solely justified as, a partial cost reimbursement reward for good citizenship. Individuals and businesses that purchase alternative fuel vehicles would be recognized for their efforts in contributing to a cleaner, more energy secure environment, but the program would have no pretense of transforming the market. Such programs can over time help nudge the market towards the inflection point where sales volumes are achieved on a self-sustaining basis, but the driving force of the change will not be the incentive.

On the other hand, to the extent the objective of the incentive program is to transform the market, a significantly higher level of subsidy benefit will be required. Such is the conclusion drawn by NCSL in its study. One must note, however, that during the period of the NCSL study there were no alternative fuel vehicles available in the market comparable to the hybrid models being introduced today. Considering the financial risks involved, the determination of the subsidy level to be offered should be based upon professional market studies.

1. Income tax incentives

A number of state incentive programs are in the form of income tax deductions or credits. The key advantage of income tax incentives (which is significant) is administrative cost and

simplicity. On the down side, income tax incentives are rather remote in time and uncertain in value. More significantly, income tax incentives raise problematic income equity issues.

To take advantage of an income tax incentive, a taxpayer must have, before the incentive, a not insignificant net income tax liability to the state. The higher one's income, the more likely the taxpayer will be able to fully utilize the benefit of the cost subsidy. The lower one's income, the less likely the tax benefit will be of any value (or rather the more likely the tax benefit will be of much smaller value). This result not only impacts on the effectiveness of the incentive to stimulate sales but also creates an inequity between higher and lower income taxpayers. A higher income taxpayer who can fully utilize the income tax benefit ends up with a higher cost subsidy benefit than a lower income taxpayer who pays the same higher cost for an HEV but does not have the income to fully realize the tax benefit. This is particularly true for income tax incentives in the form of a deduction. Tax credits are more equitable but even with a tax credit a taxpayer must have several hundred dollars of state income tax liability to realize a benefit.

Tax credits are generally more costly to the state than tax deductions but that is simply a matter of how the credit or deduction is defined. Once a subsidy level is determined, as a matter of equity, the incentive should be designed to provide that subsidy benefit to every qualifying purchaser regardless of their income. In that respect, a tax credit is definitely more equitable and if total fiscal costs are a concern, the tax credit can be scaled down (although with obvious diluting effects on the benefit as a sales incentive).

2. Purchase and use tax incentives

A number of states offer an incentive in the form of an exemption from, or a reduction in, the motor vehicle sales tax applicable to the purchase of alternative fuel vehicles. The key, once again, is to determine how much of the incremental cost of specialized equipment should be subsidized and tie the sales tax incentive to that target subsidy level. In terms of stimulating sales, one distinct advantage of sales tax incentives is that the benefit is apparent and realized at the point of sale.

3. Cash rebates

Several states employ cash rebate programs. Such programs have three advantages. First, the amount of the benefit can be directly tied to the incremental cost of specialized equipment without having to be filtered through marginal income tax or sales tax rates. Second, the total annual cost of the program can be more easily and effectively controlled. One disadvantage of income tax or sales tax incentives is that the total cost of the incentives cannot be tracked until returns are processed. Since most income tax returns are filed in a concentrated period of time, it would be impossible to place a total cost cap on income tax incentives. Motor vehicle sales are more spread out over the year but there are still periods when sales are more concentrated. Sales tax returns could be monitored and a total cost cap triggered but there will always be sales returns in process and the triggering of a cap will invariably be unfair to some purchasers. In contrast, a cash rebate program with a total annual cost cap could be administered on-line. A dealer could log onto a website and lock in a guaranteed rebate by registering a sale which automatically draws down the pool of available funds. When the pool is exhausted, the purchaser will know before the sale is completed.

Third, cash rebates would obviously be attractive to tax-exempt entities. Even if a rebate program is not applied generally, a separate rebate program for tax exempt entities should be considered.

As with sales tax incentives, cash rebate programs have the marketing advantage of being apparent and tangible at the point of sale. In several states, manufacturers and dealers handle the rebates, deducting the rebate directly from the price of the vehicle so the purchaser sees and realizes the benefit immediately with the dealer submitting the paperwork to the state for reimbursement. As noted a cash rebate program must be funded up front each year but a rebate being a rebate does not necessarily mean the incentive will be more costly to the state.

4. Loan programs

A loan program for the incremental cost of the specialized equipment of alternative fuel vehicles can be a particularly cost effective means of stimulating sales to fleet owners, both public and private. By varying either the interest rates or the size of the loan amount available, different incentives can be offered depending upon the combination of fuel economy and tailpipe emissions of the vehicles being purchased. Because fleets, if efficiently managed, are mileage intensive, the absence of an outright net financial benefit is offset by the cash savings afforded by the enhanced fuel economy of alternative fuel vehicles. The fuel economy of hybrids should be particularly attractive to fleets operating in urban stop and go traffic.

A loan program will have administrative costs but on the upside the program funds can be repeatedly recycled as loans are repaid and, depending upon defaults, interest revenue would allow the program to grow over time.

5. Registration fees

Vehicle registration fees, due to their relatively small size, would not be an effective incentive to sales. A system, however, in which registration fees were scaled in terms of a vehicle's rated fuel economy and tailpipe emissions could provide an effective funding source for other incentive programs. With over 500,000 vehicles registered in Vermont, even a modest increase in registration fees would generate a significant stream of revenue to offset the cost of other incentive programs.

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Sources

The U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy (“EERE”) has a wealth of material on alternative fuel technologies. The main web site is at <http://www.eere.energy.gov/> . See in particular the “FreedomCAR & Vehicle Technologies Program” at <http://www.eere.energy.gov/vehiclesandfuels/> .

The FreedomCar’s “Just the Basics” site has primers on a number of different alternative fuel technologies as well as particulate matter and emissions. Go to http://www.eere.energy.gov/vehiclesandfuels/technologies/fcvt_basics.shtml .

DOE performance statistics on a number of HEV models is at: <http://avt.inel.gov/hev.html>

The EERE “Alternatives Fuels Data Center” has materials on alternative fuels, alternative fuel vehicles and federal and state incentives. Go to: <http://www.eere.energy.gov/afdc/index.html> .

Also see the EERE Clean Cities Program web set at: <http://www.eere.energy.gov/cleancities/>

Information on currently available alternative fuel vehicle incentives (reproduced in the attachment) is provided at the EERE “Vehicle Buyer’s Guide” site at: <http://www.eere.energy.gov/cleancities/vbg/>

The U.S. Department of Energy and the Environmental Protection Agency jointly sponsor the “fueleconomy.gov” web site with information on fuel economy ratings, including the annual “Fuel Economy Guide”. Go to: <http://www.fueleconomy.gov/> . Side by side comparisons of hybrids, for example, are at http://www.fueleconomy.gov/feg/hybrid_sbs.shtml

The U.S. Environmental Protection Agency has information on motor vehicle emissions at its “Transportation and Air Quality” web site. Go to: <http://www.epa.gov/otaq/>

The California Energy Commission (“CEC”) has background information and data on a number of relevant topics. The main web site is at: <http://www.energy.ca.gov/> . The CEC site on “Alternative Fuel Vehicles (AFVs) and High-Efficiency Vehicles” is at <http://www.energy.ca.gov/afvs/index.html> . Accessible through this site is the CEC’s useful background primer “ABCs of AFVs – A Guide to Alternative Fuel Vehicles” at <http://www.energy.ca.gov/afvs/reports/ABCsintro.html>

“State Alternative Fuel Vehicle Incentives – A Decade and More of Lessons Learned,” National Conference of State Legislatures, Feb 2001. Go to <http://www.ncsl.org/legis/ESNR/incentivesaltfuel.htm>

A pro-HEV perspective is provided at the Union of Concerned Scientists website at http://www.ucsusa.org/clean_vehicles/advanced_vehicles/page.cfm?pageID=204. Accessible through this site is the Union's report: "A New Road – the Technology and Potential of Hybrid Vehicles."

Another pro-HEV perspective is provided at Hybridcars.com. Go to <http://www.hybridcars.com/index.html>

For information on biodiesel, see <http://www.biodiesel.org/>

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State by State alternative fuel and HEV incentives

The information below is drawn from the U.S. Department of Energy's Clean Cities Program web site. See:

Home page <http://www.eere.energy.gov/cleancities/vbg/fleets/index.html>
Alternative fuels http://www.eere.energy.gov/cleancities/vbg/fleets/state_incentive.htm
HEVs
http://www.eere.energy.gov/cleancities/vbg/fleets/state_hybrid_incentive.html

Note: The DOE Clean Cities website has one site which describes state by state alternative fuel vehicle incentives and a second site which describes state by state hybrid electric vehicle incentives. A number of states which have alternative fuel incentives are described in the second site as having no HEV incentives. In at least one case, a comparison of the two entries revealed a clear discrepancy. As a general rule, HEVs utilizing a gasoline internal combustion engine are not treated as an "alternative fuel vehicle" or "clean fuel" vehicle but as HEV's have grown in popularity there is a trend towards redefining these incentive categories to include HEVs.

Alaska

Alternative fuel vehicle incentives - There are currently no known state incentives for alternative fuels or alternative fuel vehicles (AFVs) in Alaska.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Alaska.

Alabama

Alternative fuel vehicle incentives - There are currently no known state incentives for alternative fuels or alternative fuel vehicles (AFVs) in Alabama.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Alabama.

Arkansas

Alternative fuel vehicle incentives - The Arkansas Department of Economic Development established a rebate fund for the cost of converting vehicles to operate on alternative fuels. The fund provides a 50% rebate of up to \$2,000 for each vehicle converted to operate on CNG, LNG, and electricity, and up to \$1,000 for each vehicle converted to operate on LPG, methanol, and ethanol. The 50% rebate is also available for the incremental cost of

purchasing an OEM AFV, with a maximum of \$2,000 per rebate. Local governments and private individuals are eligible for these rebates; however, fuel suppliers and state governments are not.

An income tax credit is available to biodiesel suppliers for up to 5% of the costs of the facilities and equipment used in the wholesale or retail distribution of biodiesel fuels. Additionally, the Alternative Fuels Commission may provide grants for the production of biodiesel of up to \$0.10 per gallon, up to 5 million gallons per producer per year, for a period not to exceed five years. (Reference [Arkansas Code](#) §15-4-2803 and §15-4-2804)

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Arkansas.

Arizona

Alternative fuel vehicle incentives - A Diesel Incentive Program for diesel vehicles to operate on an alternative fuel is being developed by the Arizona Department of Environmental Quality (ADEQ)

A tax credit up to \$75 is available to individuals for the installation of electric vehicle (EV) recharging outlets in a house constructed by the taxpayer. (Reference ARS 43-1090 and 43-1176).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Arizona.

California

Alternative fuel vehicle incentives – The Carl Moyer Memorial Air Quality Standards Attainment Program provides funds on an incentive-basis for the incremental cost of cleaner than required engines and equipment. Eligible projects include cleaner on-road, off-road, marine, locomotive and stationary agricultural pump engines, as well as forklifts, airport ground support equipment, and auxiliary power units. The Carl Moyer Program provides funds for significant near-term reductions in emissions of oxides of nitrogen (NOx) and also for reductions of particulate matter (PM) emissions. The Moyer Program also includes the Advanced Technology Development Program and the Fuel Infrastructure Demonstration Program, which are administered by the California Energy Commission (CEC); however, these latter two programs do not currently have any allocated funding. Additionally, the Carl Moyer program has been expanded to include heavy-duty fleet modernization projects that reduce emissions of NOx or particulate matter, projects for cars and light-duty trucks, and projects that reduce hydrocarbon particulate matter pollution. Carl Moyer Program grants are issued locally by air pollution control districts and air quality management districts in California. For more information, visit the Web site at www.arb.ca.gov/msprog/moyer/moyer.htm. (Reference [California Health and Safety Code](#) Section 44280, Proposition 40, 2002, [Assembly Bill](#) (AB) 1394, 2004).

The Lower-Emission School Bus Program provides grants to school districts to replace older, high-emitting pre-1987 model year school buses with lower-emitting models that meet the latest federal motor vehicle safety standards. Program funds can be used to purchase new buses operating either on ultra low-sulfur diesel fuel or on an alternative fuel; funds may also be used for alternative fuel infrastructure, based on demonstrated need. For more information, visit the Web site at arb.ca.gov/msprog/schoolbus/schoolbus.htm.

The South Coast AQMD (SCAQMD) administers the Air Quality Investment Program, which funds projects that improve air quality through emissions reductions, including AFV projects on an on-going basis, with priority given to on-road vehicles. For more information, visit the Web site at www.aqmd.gov/trans/aqip.html.

The Bay Area AQMD (BAAQMD) offers several programs to provide incentives for clean-fuel vehicles, with an emphasis on public agency fleets. The Vehicle Incentive Program (VIP) offers incentives to public agencies that purchase AFVs with a Gross Vehicle Weight Rating (GVWR) of 10,000 pounds (lbs.) or less. Qualifying vehicles must be certified as super ultra low emission (SULEV), partial zero emission (PZEV) or zero emission vehicles (ZEV). Incentives range from \$1,000 to \$5,000 per vehicle. For more information, visit the Web site at www.baaqmd.gov.

Through the Transportation Fund for Clean Air (TFCA) program, the BAAQMD offers incentives to cover the incremental cost of the purchase or lease of alternative fuel buses and the purchase of medium- and heavy-duty AFVs with a GVWR of 10,000 lbs. or greater. Any public agency within the BAAQMD's jurisdiction can apply for TFCA funds. For more information, visit the Web site at www.baaqmd.gov.

The Sacramento AQMD's Heavy-Duty Low-Emission Vehicle Incentive Program offers a variety of financial incentives to entities that lower NOx emissions from heavy-duty vehicles (both on and off-road) with a GVWR over 14,000 lbs. This includes purchasing new AFVs as well as retrofitting older diesel vehicles to ensure lower emissions. Private businesses and public agencies in the six-county Sacramento federal ozone non-attainment area are eligible to apply for this program. For more information on the Sacramento AQMD's Heavy Duty Vehicle Incentive Program, visit the Web site at www.airquality.org. The City of Sacramento offers free parking to individuals that own or lease electric vehicles (EVs) with an EV parking pass in downtown parking lots.

The Ventura County APCD offers the Clean Air Fund, which is seeking proposals for projects to reduce smog in the county, including alternative fuel vehicle related projects. Smog-reducing activities already mandated by existing local, state, or federal requirements are not eligible for funding. Proposals are accepted on an ongoing basis.

The San Joaquin Valley Unified Air Pollution Control District (SJVAPCD) Heavy-Duty Engine Incentive Program provides incentive funds for the incremental cost associated with reduced emission technology for heavy-duty vehicles. Eligible funding categories include heavy-duty on-road vehicles with a GVWR over 14,000 lbs., off-road self-propelled vehicles, locomotives, marine vessels, electric forklifts, electric airport ground support equipment and

stationary agricultural irrigation pump engines. Eligible fuel types include compressed natural gas (CNG), liquefied petroleum gas (LPG), and electricity.

The Heavy-Duty Engine Program also has an Alternative Fuel Infrastructure component that provides grants for the development of infrastructure to dispense alternative fuel for heavy-duty vehicles.

Additionally, the Heavy-Duty Engine Idle Reduction Incentive Program provides incentive funds for technologies that result in a significant reduction of on- and off-road heavy-duty vehicle idling in the San Joaquin Valley.

The Los Angeles Airport (LAX) offers free parking and recharging for EVs in certain parking lots.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in California.

Colorado

Alternative fuel vehicle incentives – Prior to July 1, 2011, an income tax credit is available from the Colorado Department of Revenue for the incremental cost of purchasing an AFV or for the conversion of a vehicle to operate using an alternative fuel. HEVs also qualify for this incentive. This credit is only available in the year during which the vehicle was purchased or converted, and a vehicle can qualify for this credit only one time. For an AFV purchase or conversion that permanently replaces a motor vehicle or power source that is ten or more years old (such that the old vehicle or power source will no longer be operated on state highways), the percentage specified in the table below is doubled, up to a maximum of 100% of the incremental or conversion cost. To the extent the allowable credit exceeds the person's tax liability for that year, the excess may be carried forward for up to five years. The value of the credit is based on the EPA emissions classification of the vehicle as follows:

Type of Vehicle	Tax Year Beginning Prior to 2006	July 1, 2006- July 1, 2009	July 1, 2009- July 1, 2011
Low Emission Vehicle (LEV)	50%	25%	0%
Ultra Low or Inherently Low Emission Vehicle (ULEV or ILEV)	75%	50%	25%
Super Ultra Low or Zero Emission Vehicle (SULEV or ZEV)	85%	75%	50%

Tax credits for Model Year 2004 HEVs are as follows:

HEV Model	Tax Credit
2004 Toyota Prius	\$2,678

2004 Honda Insight (automatic)	\$4,310
2004 Honda Insight (manual)	\$3,803
2004 Honda Civic Hybrid (automatic)	\$2,580
2004 Honda Civic Hybrid (manual)	\$2,430

If the motor vehicle that qualifies for the AFV credit is owned by the state, a political subdivision of the state, or a tax-exempt organization, and is used in connection with the official activities of the entity, the entity will be eligible for a rebate in the same amount as specified above. For more information, including tax credit amounts for Model Year 2002 and 2003 HEVs, please visit www.revenue.state.co.us/fyi/html/income09.html. (Reference [Colorado Revised Statutes](#) (CRS) §39-22-516 and §39-33-102).

For tax years beginning on or after January 1, 1998 and prior to July 1, 2011, the Colorado Department of Revenue offers an income tax credit for the actual cost of construction, reconstruction or acquisition of an alternative fuel refueling facility that is directly attributable to the storage, compression, charging or dispensing of alternative fuels to motor vehicles. The credit has a value of:

Tax Year	Tax Credit
1998-2006	50%
2006-2009	35%
2009-2011	20%

For an alternative fuel refueling facility that will be generally accessible for use by persons in addition to the person claiming the credit, the percentages specified above shall be multiplied by 1.25. For an alternative fuel refueling facility that dispenses an alternative fuel derived from a renewable energy source, the credit percentages specified above shall be multiplied by 1.25 with certification that at least 70 percent of the alternative fuel dispensed annually is derived from a renewable energy source for a period of ten years. The credit has a maximum value of \$400,000 in any consecutive five-year period for each refueling facility. For more information about these incentives, visit the Web site at www.revenue.state.co.us. (Reference [CRS](#) §39-22-516)

For tax years beginning on or after July 1, 1998 but prior to July 1, 2011, a rebate is available from the Colorado Department of Revenue for the purchase of an AFV or for the conversion of a vehicle to operate using an alternative fuel. Vehicles must be owned by the State of Colorado, a political subdivision of the state, or a tax-exempt organization, and be used in connection with the official activities of the entity. HEVs also qualify for this incentive. The rebate is a percentage of the incremental cost if used toward purchasing a new AFV, or is a percentage of the conversion cost if used towards the cost of converting a vehicle to operate using an alternative fuel. For an AFV purchase or conversion that permanently replaces a motor vehicle or power source that is ten or more years old, the percentage specified in the

table below is doubled, up to a maximum of 100% of the incremental or conversion cost. Each qualified entity is limited to \$350,000 per state fiscal year in total rebates paid.

Type of Vehicle	1998-2006	2006-2009	2009-2011
LEV	50%	25%	0%
ULEV or ILEV	75%	50%	25%
SULEV or ZEV	85%	75%	50%

(Reference [CRS](#) §39-33-101 through §39-33-106)

Hybrid electric vehicle incentives – See above.

Connecticut

Alternative fuel vehicle incentives - Between January 1, 1994 and January 1, 2008, a Corporation Business Tax credit is available for 50% of the following expenditures: the construction of, improvements to, or equipment for any CNG, LNG, or LPG refueling station or an electric vehicle recharging station; and the purchase and installation of equipment used in dedicated or dual fuel CNG, LNG, LPG, or electric vehicle conversions. (Reference [Connecticut General Statutes](#) (C.G.S.) 12-217i and Senate Bill 218 (Public Act 04-231), 2004)

Prior to January 1, 2008, a Corporation Business Tax credit is available for 10% of the incremental cost of a new dedicated CNG, LNG, LPG, or electric vehicle. This credit may be carried forward for up to three years. For more information, please contact the Connecticut Department of Revenue Taxpayer Services Division at (860) 297-5962. (Reference [C.G.S.](#) 12-217i and Senate Bill 218 (Public Act 04-231), 2004)

Prior to July 1, 2008, the following purchases are exempt from sales tax: new HEVs with a U.S. Environmental Protection Agency fuel economy rating of at least 40 mpg; new dedicated natural gas, LPG, hydrogen, or electric vehicles; equipment used in dedicated or dual fuel CNG, LNG, LPG, or electric vehicle conversions; and equipment associated with a CNG or hydrogen filling or electric recharging station. (Reference [C.G.S.](#) 12-412-67, 68, 69, and 115, and Senate Bill 218 (Public Act 04-231), 2004).

Natural gas or propane sold as a motor fuel by a public utility company prior to July 1, 2008 is exempt from the gross earnings tax on the sale of petroleum products. (Reference [C.G.S.](#) 12-264(a) and Senate Bill 218 (Public Act 04-231), 2004).

Between July 1, 1994, and July 1, 2008, CNG, LPG, and LNG are not subject to the motor fuels tax. (Reference [C.G.S.](#) 12-458f and Senate Bill 218 (Public Act 04-231), 2004).

Hybrid electric vehicle incentives – See above.

Delaware

Alternative fuel vehicle incentives - The Delaware Soybean Board offers rebates and marketing, promotion and education assistance for biodiesel use on a case-by-case basis.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Delaware.

Florida

Alternative fuel vehicle incentives - ILEVs and HEVs that are certified and labeled in accordance with federal regulations may be driven in HOV lanes at any time, regardless of the number of passengers in the vehicle. The vehicle must have a decal issued by the Florida Division of Motor Vehicles, obtained for a \$5 fee, which must be renewed annually. (Reference [Florida Statutes](#) 316.0741).

Hybrid electric vehicle incentives – See above.

Georgia

Alternative fuel vehicle incentives – Funded through Congestion Mitigation and Air Quality (CMAQ) funds, the Alternative Fuel Vehicle Incremental Cost Incentive Program is available to local businesses, governments, and authorities throughout the 13-county Metropolitan Atlanta area. The program provides an incentive for fleets to purchase alternative fuel vehicles (AFVs) by offering funding to offset the incremental cost difference of AFVs from comparable gasoline- or diesel-powered vehicles. Applicants must have a demonstrated commitment to use alternative fuels and all vehicles must operate full-time on the alternative fuel. There is a 20% matched dollar requirement for each project.

Georgia offers an income tax credit of 20% of the cost to purchase or lease a ZEV, or \$5,000, whichever is less. ZEVs include, but are not limited to, battery-only electric vehicles (EVs) and hydrogen fuel cell vehicles.

Georgia offers a tax credit towards the purchase, lease, or conversion of a vehicle that operates solely on an alternative fuel and is LEV certified (or better) by EPA. The owners of vehicles that have their vehicles converted to operate on an Energy Policy Act (EPAct) defined alternative fuel and can meet the EPA certification of LEV or better may also receive the credit. The credit is worth 10% of the cost of a new AFV or 10% of the cost of conversion, or \$2,500, whichever is less. The credit cannot exceed the taxpayer's income tax liability, but any portion of the credit not used in the year the AFV is purchased or converted can be carried over for up to five additional years.

There is a tax credit to any business enterprise for the purchase or lease of each electric charger that is located in Georgia. The amount of the credit is 10% of the cost of the charger or \$2,500, whichever is less.

Hybrid electric vehicle incentives – Hybrid electric vehicles (HEVs) shall be authorized to use high occupancy vehicle lanes, regardless of the number of passengers if the U.S. Congress or U.S. Department of Transportation approve such authorization through legislative or regulatory action. (Reference Georgia Code Section 32-9-4).

The term 'alternative fuel vehicle' is expanded to include HEVs. A HEV is defined as a motor vehicle, which draws propulsion energy from onboard sources of stored energy, which include an internal combustion or heat engine using combustible fuel and a rechargeable energy storage system. HEVs must also meet federal Clean Air Act and California emissions standards and must have a fuel economy that is 1.5 times the Model Year 2002 EPA composite class average for the same vehicle class. (Reference Georgia Code Section 40-2-76).

Hawaii

Alternative fuel vehicle incentives - Through December 31, 2005, taxpayers making a high technology business investment are eligible for a tax credit the year the investment is made and for the following four years. A 'qualified high technology business' is one in which more than 50% of the activities are qualified research (75% if which is conducted in Hawaii) and in which more than 75% of the income (i.e. income from products sold from, manufactured or produced in Hawaii or from services performed in Hawaii) is derived from qualified research. 'Qualified research' includes research that is related to non-fossil fuel energy-related technology. The tax credit is equal to a percentage of the investment made, up to the following maximums:

Year	Tax Credit (percent of investment made)	Maximum Value of Credit
Year of Investment	35%	\$700,000
1st Year Following Investment	25%	\$500,000
2nd Year Following Investment	20%	\$400,000
3rd Year Following Investment	10%	\$200,000
4th Year Following Investment	10%	\$200,000

If the tax credit exceeds the taxpayer's income tax liability for any of the five years that the credit is taken, the excess of the tax credit may be used as a credit in subsequent years until exhausted. A taxpayer may continue to claim the credits if the five-year period to claim the credits commences in taxable years beginning before January 1, 2006. (Reference [Hawaii Revised Statutes](#) (HRS) §235-7.3 and §235-110.9).

The state provides income tax deductions of \$2,000 to \$50,000, identical to the federal income tax deductions, for the installation of clean-fuel refueling property provided in the Energy Policy Act of 1992.

Alcohol fuels are exempt from the 4% state excise tax on retail sales. (Reference [HRS](#) §237-27.1)

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Hawaii.

Iowa

Alternative fuel vehicle incentives – The Department of Natural Resources (DNR) conducts marketing and education outreach to encourage the use of alternative fuels and, contingent upon funding availability, also awards demonstration grants to persons who purchase vehicles that operate on alternative fuels, including but not limited to, high blend ethanol, compressed natural gas, electricity, solar energy, or hydrogen. Grants are awarded for research connected with the fuel or the vehicle, and not for the purchase of the vehicle itself. A vehicle may be purchased with these funds only if the department retains the title to the vehicle and if the vehicle is used for continuing research. If the vehicle is sold, the proceeds of the sale of the vehicle will be used for additional research.

A tax credit is available to retail service stations at which more than 60% of the total gallons of gasoline sold through metered pumps are ethanol-blended. Once station owners surpass the 60 percent threshold, they are eligible for a tax credit of \$0.025 for every additional gallon of ethanol-blended gasoline sold during the tax year, from 2002 through 2007. (Reference [Iowa Code](#) 422.33).

Ethanol-blended gasoline is taxed at \$0.19 per gallon, while non-ethanol blended gasoline is taxed at \$0.203 per gallon. Natural gas is taxed at \$0.16 per gasoline gallon equivalent. Those who blend conventional motor fuel with ethanol may file for a refund for the difference between sales taxes paid on the motor fuel purchased to produce ethanol-blended gasoline and the tax due on the ethanol-blended gasoline. This tax incentive expires June 30, 2007. (Reference [Iowa Code](#) 452A.21).

Iowa's Alternate Energy Revolving Loan Program for alternative energy projects is administered by the Iowa Energy Center and funded by the state's investor-owned utilities. The program offers zero-percent interest loans for up to half the cost of biomass or alternative fuels related fuel production projects, up to a maximum of \$250,000 per facility. Fuel production facilities must be located in Iowa. (Reference [Iowa Code](#) 476.46).

The Iowa Renewable Fuel Fund's Value-Added Agricultural Products and Processes Financial Assistance Program offers a combination of forgivable and traditional low-interest loans for projects involving biomass and alternative fuel technologies. Research and development projects are not eligible for this program.

The Iowa Energy Center is established at Iowa State University of Science and Technology. The Center aims to increase energy efficiency in all areas of Iowa energy use and to decrease reliance on energy production from nonrenewable, resource-depleting fuels. The Center

conducts research on energy efficiency and conservation programs and supports special programs that encourage implementation of energy efficiency and alternative energy production systems. Projects are selected and awarded funding on a competitive basis. Iowa colleges, universities, private nonprofit agencies and foundations are eligible to receive funding. The Center may also solicit additional grants and funding from public and private nonprofit agencies and foundations.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Iowa.

Idaho

Alternative fuel vehicle incentives - Idaho offers a tax deduction for the use of biodiesel and ethanol. Gasoline and diesel blends containing either fuel are eligible.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Idaho.

Illinois

Alternative fuel vehicle incentives - Governor Rod Blagojevich and the Illinois Environmental Protection Agency (EPA) established the Illinois Clean School Bus Program in November 2003 to provide a healthier environment for Illinois school children. The Illinois Clean School Bus Program provides funding to assist schools/school districts to reduce emissions from diesel-powered school buses through emission control retrofits and implementation of cleaner fuels, including biodiesel, propane and natural gas. Funding is initially restricted to 24 counties, and further funding is being secured through federal grants and other resources to implement the program on a statewide basis.

Sales and use taxes do not apply to ethanol-blended fuels (containing between 70% and 90% ethanol) sold between July 1, 2003 and December 31, 2013. These taxes apply to 100% of the proceeds from sales made thereafter. (Reference [Illinois Compiled Statutes](#) (ILCS) Chapter 35 120/2-10).

Sales and use taxes apply to 80% of the proceeds from the sale of biodiesel-blended fuels (containing between 1% and 10% biodiesel) made between July 1, 2003 and December 31, 2013. However, if these taxes are ever imposed at a rate of 1.25%, then the tax on these biodiesel blends will apply to 100% of the proceeds of sales. These taxes do not apply to the proceeds from the sale of biodiesel blends containing more than 10% biodiesel made. The taxes apply to 100% of the proceeds from sales made thereafter. (Reference 35 [ILCS](#) 120/2-10).

The Illinois Alternate Fuels Rebate Program (Rebate Program) provides rebates for 80% of the incremental cost of purchasing an AFV or converting a vehicle to operate on an alternative fuel. The maximum amount of each rebate is \$4,000. Eligible vehicles include natural gas, propane, and electric. Gasoline-electric hybrid vehicles are not eligible. In

addition, the Rebate Program includes E85 and biodiesel fuel rebates. For E85, the rebate is up to \$450 per year for three years for each flexible fuel vehicle that uses E85 at least half the time. For biodiesel, the fuel must contain at least 80% biomass content to be eligible. The Rebate Program was extended indefinitely in June 2003 and is currently funded. Eligibility is open to all Illinois residents, businesses, government units (except federal government) and organizations that are located in Illinois and who purchase or convert their vehicles to operate on an alternative fuel or who purchase E85 or a minimum of 80% biodiesel fuel in Illinois. (Reference 415 [ILCS 120/30](#)).

The Illinois Green Fleets Program recognizes and provides additional marketing opportunities for progressive fleets in Illinois that have a significant number of AFVs and use clean, "American" fuels. The Illinois Environmental Protection Agency (EPA), in cooperation with Chicago Area Clean Cities, is also launching the Illinois Green Fuels and Illinois Green Dealers programs. The Illinois Green Fuels Program recognizes and highlights retail or commercial fuel stations that implement E85, natural gas, propane, or other clean fuels for sale to the public or to surrounding fleets. The Illinois Green Dealers Program recognizes Illinois car dealerships that promote the sale of AFVs and educate their customers on the benefits of AFVs, including which vehicle models can use E85 and where the nearest E85 stations are located. Information on all of these programs can be found at www.illinoisgreenfleets.org.

The Alternative Energy Research, Development, and Demonstration Program is administered by the Illinois Department of Commerce and Economic Opportunity (DCEO). The goal of this program is to promote and expand the use of ethanol as a clean, renewable transportation fuel. DCEO manages ethanol test and demonstration projects designed to encourage economic growth in both industrial manufacturing and rural communities. DCEO also sponsors the research and development of new and innovative technologies to help reduce ethanol production costs, and to develop new value-added products.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Illinois.

Indiana

Alternative fuel vehicle incentives – The Indiana Department of Commerce administers the Alternative Fuel Transportation Grant Program for projects that involve the purchase of alternative fuel vehicles, conversion of conventionally fueled vehicles to operate on alternative fuels, installation of alternative fuel vehicle refueling facilities, purchase and use of renewable transportation fuels, or combinations of these purposes. Alternative fuel vehicles include vehicles capable of operating on electricity, ethanol, propane, hydrogen and natural gas. They do not include hybrid electric vehicles. Grant amounts range from \$2,000 to \$30,000 and are determined according to the following formulas:

1. For the purchase of OEM AFVs for which the manufacturer produces a conventionally fueled equivalent, 80% of the incremental cost is eligible for funding.

2. For the purchase of OEM AFVs for which the manufacturer does not produce a conventionally fueled equivalent, 30% of the overall cost of the vehicle is eligible for funding.
3. For the conversion of vehicles to run on an alternative fuel, 80% of the cost of conversion is eligible for funding.
4. For the purchase and installation of refueling facilities for an alternative fuel to be used in vehicles, 50% of the facility cost is eligible for funding.
5. For the purchase and use of E85 or biodiesel in blends of 20% or higher, 50% of the incremental cost is eligible for funding.

Combinations of acquisitions in the above categories (e.g., refueling infrastructure with vehicle conversions) may be bundled into a single grant. Businesses, non-profit institutions and units of local government (including public school systems) are eligible to apply. Entities that are required to purchase alternative fuel vehicles under the Energy Policy Act of 1992 are not eligible for grants under this program. For more information, see the Alternative Fuel Transportation Grant Program Web site (www.in.gov/doc/businesses/AFTGPguidelines.html).

A taxpayer that produces biodiesel at a facility located in Indiana is entitled to a credit of \$1 per gallon of biodiesel that is used to produce blended biodiesel (diesel/biodiesel blends of at least 2% biodiesel). (Reference [Indiana Code](#) 6-3.1-27).

A taxpayer that produces blended biodiesel at a facility located in Indiana is entitled to a credit of \$0.02 per gallon of blended biodiesel. Both the biodiesel blend and the biodiesel used in the blend must be produced at a facility located in Indiana. (Reference [Indiana Code](#) 6-3.1-27).

A taxpayer that is a fuel retailer and operates a service station in Indiana at which blended biodiesel is sold and dispensed through a metered pump in a taxable year is entitled to a credit of \$0.01 per gallon of blended biodiesel sold and dispensed through all the metered pumps located at a service station. (Reference [Indiana Code](#) 6-3.1-27).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Indiana.

Kansas

Alternative fuel vehicle incentives – The state offers an income tax credit equal to 50% of the incremental or conversion cost of qualified AFVs placed in service on or after January 1, 1996 and before January 1, 2005:

Vehicle GVW (lbs)	Credit
Less than 10,000	Up to \$3,000
10,000 to 26,000	Up to \$5,000

Over 26,000 Up to \$50,000

For AFVs placed in service after January 1, 2005:

Vehicle GVW (lbs)	Credit
Less than 10,000	Up to \$2,400
10,000 to 26,000	Up to \$4,000
Over 26,000	Up to \$40,000

Alternatively, a tax credit in an amount not to exceed the lesser of \$750 or 5% of the cost of an AFV shall be allowed to a taxpayer who purchases an original equipment manufacturer (OEM) AFV. This credit shall be allowed only to the first individual to take title of the vehicle. For motor vehicles capable of operating on a blend of 85% ethanol and 15% gasoline (E85), this credit is allowed for taxable years after December 31, 1999. The individual claiming the credit must provide evidence of purchasing at least 500 gallons of E85 between the time the vehicle was purchased and December 31 of the next calendar year.

The state offers an income tax credit equal to 50% of the cost of constructing or setting up a qualified alternative fuel refueling station (up to \$200,000) placed in service on or after January 1, 1996 and before January 1, 2005. For refueling stations placed in service after January 1, 2005 the tax credit may not exceed \$160,000.

These tax credits should be deducted from the taxpayer's income tax liability for the taxable year in which the expenditures are made. In the event the credit is more than the taxpayer's tax liability for that year, the remaining credit may be carried over for up to three years after the year in which the expenditures were made. For more information, visit the Kansas Corporation Commission's Web site at www.kcc.state.ks.us/energy/alt_fuels.htm. (Reference [Kansas Statutes](#) 79-32,201)

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Kansas.

Kentucky

Alternative fuel vehicle incentives - Organizations or individuals located in non-attainment areas are eligible for Congestion Mitigation and Air Quality Improvement Program vehicle rebates for dedicated Original Equipment Manufactured (OEM) alternative fuel vehicles (AFVs): \$2,000 per dedicated light or medium-duty AFV and \$4,000 per dedicated heavy-duty AFV. There is a limit of five vehicles per fleet per calendar year, and mandated fleets are not eligible. Each participant must pay a minimum of 20% of the incremental cost. Rebates are also available for hybrid electric vehicles and low speed vehicles operating within a fleet. This rebate program expires June 30, 2004.

The Kentucky Division of Energy provides information on a range of alternative fuels, publicizes demonstration projects, and promotes networks of people working with alternative fuels. It has implemented a number of projects to support AFVs and establish an alternative fuel infrastructure.

Hybrid electric vehicle incentives – See above.

Louisiana

Alternative fuel vehicle incentives - The state offers an income tax credit worth 20% of the cost of converting a vehicle to operate on an alternative fuel, 20% of the incremental cost of purchasing an OEM AFV, and 20% of the cost of constructing an alternative fuel refueling station. For the purchase of an OEM AFV, the tax credit cannot exceed the lesser of 2% of the total cost of the vehicle or \$1,500. Only those vehicles registered in Louisiana can receive the tax credit. (Reference [Revised Statutes](#) (RS) §47:38 and §47:287.757).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Louisiana.

Massachusetts

Alternative fuel vehicle incentives - There are currently no known state incentives for alternative fuels or alternative fuel vehicles (AFVs) in Massachusetts.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Massachusetts.

Maryland

Alternative fuel vehicle incentives - The Maryland Energy Administration (MEA) has a limited amount of money to help offset the purchase of alternative fuel shuttle and school buses. The rebate will pay up to \$10,000 of the incremental cost of purchasing an alternative fuel shuttle bus. This rebate does not apply to vehicle fleets mandated to comply with the Energy Policy Act of 1992 (EPAAct).

The Metropolitan Washington Council of Governments (MWCOC) administers the Advanced Technology Vehicle Program - The Clean Alternative, which is funded by the MDOT and offers flexible incentives to private companies and local governments to cover the incremental cost of dedicated CNG and other clean-fuel vehicles that reduce emissions of nitrogen oxides (NOx). In order to qualify for these incentives, interested businesses/organizations must meet certain criteria: the business/organization must have been in operation at least five years and have more than 10 vehicles in their fleet (exceptions may be made); fuel use must be greater than 3,000 gallons, or more than 45,000 miles traveled per year/per vehicle; and the vehicles must be registered in Maryland and operate in the Washington, DC metropolitan area or the Baltimore metropolitan area. The exact amount of financial support is determined on a case-by-case basis, taking expected emissions benefits

and other criteria into consideration. For more information, visit the Web site at www.mwcog.org/transportation/activities/clean.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Maryland.

Maine

Alternative fuel vehicle incentives – There is a state income tax credit of \$0.05 per gallon for the production of biofuels for use in motor vehicles or otherwise substitute for liquid fuels. A taxpayer claiming this credit must provide information to the Commissioner of Environmental Protection regarding the biofuel being produced, including the type of forest or agricultural product being utilized, the nature and composition of the biofuel being produced, the proportion and composition of any nonbiofuel with which the biofuel is blended and the type of application for which it is intended to be used. Upon review of the information, the commissioner will provide the taxpayer with a letter of certification that the biofuel produced during the taxable year is eligible for this tax credit. For blends of biofuels with petroleum or other nonbiofuels the credit is allowed only on the portion of that blend that the biofuel constitutes. Any portion of unused credits may be carried over for the succeeding five taxable years. (Reference [Legislative Document \(LD\)](#) 1492, 2004 and [Maine Revised Statutes](#) (MRSA) Title 36 §5219-W)

Maine provides a partial tax exemption for the purchase of clean-fuel vehicles. For original equipment manufacturer (OEM) vehicles, the incremental cost of the sale or lease of a clean-fuel vehicle for which there is an identical gasoline-powered vehicle is tax-exempt. If there is no identical vehicle powered by gasoline, 30% of the sale or lease price of an internal combustion engine clean-fuel vehicle, and 50% of the sale or lease price of a clean-fuel vehicle either fully or partly powered by electricity stored in batteries, generated by a dynamic flywheel or generated by a fuel cell on board the vehicle, is tax-exempt. The tax exemption expires January 1, 2006. Clean-fuels include, but are not limited to, compressed natural gas (CNG); liquefied natural gas; liquefied petroleum gas (LPG); hydrogen; hythane; dynamic flywheels; solar energy; alcohol fuels containing not less than 85% alcohol by volume; and electricity. For more information, please visit www.maineenvironment.org/energy/TaxCredit.htm. (Reference [MRSA](#) Title 36 §1752 and §1760-79)

A tax credit is available for the construction or installation of, or improvements to, any refueling or charging station for the purposes of providing clean fuels to the general public for use in motor vehicles. The qualifying percentage is 25% for expenditures made from January 1, 2002 to December 31, 2005. (Reference [MRSA](#) Title 36 § 5219-P).

Hybrid electric vehicle incentives – See above.

Michigan

Alternative fuel vehicle incentives – Certain property tax exemptions apply to industrial property which is used for, among other purposes, high-technology activities or the creation or synthesis of biodiesel fuel. High-technology activities include those related to advanced vehicle technologies such as electric vehicles, hybrid vehicles, or alternative fuel vehicles and their components. In order to qualify for the tax exemptions, an industrial facilities exemption certificate for the property must be obtained from the State Tax Commission. (Reference [Michigan Compiled Laws](#) (MCL) 207.552 and 207.803, House Bill 4010, 2004, and Senate Bill 824, 2004)

A voluntary statewide emissions trading program allows AFV credits to be traded or retained for future use based on an emission reductions basis, not on a per vehicle basis.

NextEnergy is a comprehensive set of actions and incentives designed to position Michigan as the world's leading center for alternative energy technology, research and development, education, and manufacturing. The program supports technologies for both mobile and stationary applications using renewable and distributed energy solutions. NextEnergy offers several incentives for companies that develop or utilize alternative energy applications. For more information, visit the Web site at www.nextenergy.org.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Michigan.

Minnesota

Alternative fuel vehicle incentives – There is an ethanol production incentive of \$0.20 per gallon of ethanol produced. This incentive only applies to qualified ethanol production facilities that began production on or before June 30, 2000. Annual payments are limited to \$3.0 million to any one producer. For fiscal years 2004 through 2007, this incentive is \$0.13 per gallon of ethanol, up to \$1.95 million annually to any one producer. This incentive may return to \$0.20 after 2007 and expires June 30, 2010.

The Twin Cities area is a national pilot market for large-scale promotion of using blends of 85% ethanol and 15% gasoline (E85) and flexible fuel vehicles (FFVs). This demonstration is a cooperative, public-private effort of the Minnesota E85 Team. Members include Ford Motor Company, fuel retailers, Minnesota Corn Growers, Minnesota ethanol producers, the Minnesota Department of Commerce, the Minnesota Department of Agriculture, the Minnesota Office of Environmental Assistance, the U.S. Department of Energy (DOE) Clean Cities Program, the National Ethanol Vehicle Coalition and the American Lung Association of Minnesota (ALAMN).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Minnesota.

Missouri

Alternative fuel vehicle incentives – The Missouri Ethanol Producer Incentive Fund provides a financial incentive to a qualified Missouri ethanol fuel producer of \$0.20 per gallon for the first 12.5 million gallons and \$0.05 for the second 12.5 million gallons produced. This fund is administered by the Department of Agriculture and expires on December 31, 2007. (Reference [Missouri Revised Statutes](#) (RSMo) 142.028 and 142.029).

The Missouri Qualified Biodiesel Producer Incentive Fund provides a financial incentive to a qualified Missouri biodiesel producer of \$0.30 per gallon for the first 15 million gallons produced. This fund is administered by the Department of Agriculture. There is currently no funding available for this incentive. For more information, please contact Robin Perso of the Department of Agriculture at (573) 526-4892, or via email at robin.perso@mda.mo.gov. (Reference [RSMo](#) 142.031)

School districts are allowed to establish contracts with nonprofit, farmer-owned new generation cooperatives to purchase biodiesel blends of 20% biodiesel (B20) or higher for use as bus fuel. Each district can receive additional state school aid to help offset the incremental cost of purchasing the biodiesel. This incentive expires after the 2005-06 school year. (Reference [RSMo](#) 414.433)

The Biodiesel Fuel Revolving Fund uses the money generated by the sale of EPA Act credits to cover the incremental cost of purchasing fuel containing B20 or higher biodiesel blends for use by state fleet vehicles. (Reference [RSMo](#) 414.407).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Missouri.

Mississippi

Alternative fuel vehicle incentives – Mississippi does not currently offer any incentives for alternative fuel vehicles (AFVs), although policy language is included in the state energy plan.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Mississippi.

Montana

Alternative fuel vehicle incentives – An income tax credit is available to businesses or individuals for up to 50% of the equipment and labor costs for converting vehicles to operate on alternative fuels. The maximum amount of the credit is \$500 for the conversion of vehicles of 10,000 pounds (lbs.) or less Gross Vehicle Weight Rating (GVWR) and up to \$1,000 for vehicles over 10,000 lbs. GVWR. The credit must be applied in the year the conversion is made, and the seller of an alternative fuel may not receive a credit for converting their own

vehicles to operate on the alternative fuel that they sell. (Reference [Montana Code Annotated \(MCA\)](#) 15-30-164 and 15-31-137).

A consumer incentive for ethanol and biodiesel blends will be available for four years after an ethanol plant is constructed and begins operating in Montana. The incentive reduces the state road tax to the consumer by 15% as compared to the tax on gasoline. (Reference [MCA](#) 15-70-204 and 15-70-321).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Montana.

Nebraska

Alternative fuel vehicle incentives – The Nebraska Energy Office administers the Dollar and Energy Saving Loans Program. The Program makes low-cost loans available for a variety of alternative fuel projects, with the Nebraska Energy Office's participation. Those projects include the replacement of conventional vehicles with AFVs; the purchase of new AFVs; the conversion of conventional vehicles to operate on alternative fuels; and the construction or purchase of a refueling station or equipment. Dedicated AFVs are eligible, and loans may go towards part of the cost of dual-fuel vehicles. The maximum loan amount is \$150,000 per borrower. The interest rate is 5% or less and may be adjusted semi-annually. For more information, visit the Web site at www.nol.org/home/NEO.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Nebraska.

Nevada

Alternative fuel vehicle incentives – Nevada does not currently offer any incentives for alternative fuel vehicles (AFVs).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Nevada.

New Hampshire

Alternative fuel vehicle incentives – There are currently no known state incentives for alternative fuels or alternative fuel vehicles (AFVs) in New Hampshire.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in New Hampshire.

New Jersey

Alternative fuel vehicle incentives – New Jersey's AFV Rebate Program offers rebates to local government entities that convert vehicles to operate on alternative fuels or purchase original

equipment manufacturer (OEM) AFVs. The rebate amounts, shown in the table below, can be used to cover vehicle conversion or the incremental cost of the OEM AFV, and vary according to the vehicle weight class and whether the vehicle is dedicated or bi-fuel. Hybrid electric vehicles (HEVs) also qualify for the rebates. Eligible entities include local governments, state colleges and universities, school districts, and governmental authorities. A \$500,000 federal Congestion Mitigation and Air Quality Improvement grant funds this program; approximately \$200,000 in funding remains available.

Vehicle Weight	Rebate Amount (dedicated or hybrid)	Rebate Amount (bi-fuel)
Light-duty (<8,500 pounds (lbs.))	Up to \$4,000	Up to \$2,000
Medium-duty (8,500-14,000 lbs.)	Up to \$7,000	Up to \$4,000
Heavy-duty (>14,000 lbs.)	Up to \$12,000	Up to \$6,000

The Local Government Biodiesel Rebate Program currently has funding available to reimburse eligible local governments, state colleges and universities, school districts, and governmental authorities for the incremental costs of using biodiesel fuel in lieu of petroleum diesel.

The Local Government Alternative Fuel Infrastructure Program currently has funding available to reimburse eligible local governments, state colleges and universities, school districts, and governmental authorities for 50% of the cost of purchasing and installing refueling infrastructure for alternative fuels, up to \$50,000 per applicant. Eligible fuels include natural gas, propane, electricity, ethanol (E85) and hydrogen.

Hybrid electric vehicle incentives – See above.

New Mexico

Alternative fuel vehicle incentives – The Advanced Energy Technologies Economic Development Act has been established to provide funding to stimulate the market for, and promote the statewide utilization of, advanced energy technologies; it also provides for a targeted program that advances the creation of a hydrogen and fuel cell industry cluster. The Clean Energy Grants Program provides grants for projects utilizing clean energy technologies and providing clean energy education, technical assistance, and training programs. Qualifying entities are municipalities and county governments, state agencies, state universities, public schools, post-secondary educational institutions, and Indian nations, tribes and pueblos. No single entity shall receive greater than \$100,000. The EMNRD will establish the application procedure and required qualifications of projects.

The Hydrogen and Fuel Cell Tech Technologies Development Program has been established to foster the development of hydrogen and fuel cell-related commercialization and economic development in the state. The program shall include the following activities:

- (1) Establishing a public-private partnership between the state, national laboratories, nonprofit organizations and the hydrogen and fuel cell technologies industry sector to provide guidance and support for hydrogen and fuel cell initiatives;
- (2) Supporting activities to adopt uniform hydrogen safety codes and standards and provide education and training to communicate these codes and standards to the appropriate fire and regulatory entities;
- (3) Developing demonstration projects by pursuing federal funds and other available funds to augment state resources, advancing public education about hydrogen and fuel cell technology and building the necessary infrastructure to support commercial use and adoption of hydrogen and fuel cell technologies; and
- (4) Coordinating and supporting research and education activities in hydrogen and fuel cells between state universities and federally funded research and development organizations in the state to promote closer cooperation and advance the state's overall capabilities and programs in hydrogen and fuel cell technologies.
(Reference House Bill 251, 2004)

From July 1, 2004 through June 30, 2009, HEVs with an EPA fuel economy rating of at least 27.5 miles per gallon are eligible for a one-time exemption from the motor vehicle excise tax at the time of the issuance of the original certificate of title for the vehicle. (Reference Senate Bill (SB) 86, 2004 and New Mexico Statutes (NMSA) 1978 7-14-6)

The Energy Conservation and Management Division of EMNRD provides funding on a competitive basis to eligible applicants that wish to purchase AFVs or conduct training or related activities in New Mexico. Eligible applicants must submit proposals within specified dates as determined by EMNRD. If a proposal is selected for funding, the applicant will be required to enter into a professional-service agreement or governmental-service agreement with EMNRD. Funds are available on an annual basis.

Hybrid electric vehicle incentives – From July 1, 2004 through June 30, 2009, HEVs with an EPA fuel economy rating of at least 27.5 miles per gallon are eligible for a one-time exemption from the motor vehicle excise tax at the time of the issuance of the original certificate of title for the vehicle. (Reference Senate Bill (SB) 86, 2004 and New Mexico Statutes (NMSA) 1978 7-14-6)

New York

Alternative fuel vehicle incentives – New York's Alternative Fuel (Clean Fuel) Vehicle Tax Incentive Program offers tax credits for the purchase of new HEVs, EVs, AFVs, and the installation of clean fuel vehicle refueling property. Purchasers of qualified HEVs are eligible for a tax credit of \$2,000. To qualify, a vehicle must draw propulsion energy from both an internal combustion engine (or heat engine that uses combustible fuel) and an energy storage device; and must employ a regenerative braking system that recovers waste energy to charge that device, and, for model year 2004 and later, must meet or exceed the California LEV II emission standard. Purchasers of EVs are eligible for a tax credit of 50% of the incremental

cost, up to \$5,000 per vehicle. Purchasers of AFVs are eligible for a tax credit worth 60% of the incremental cost of the vehicle. The maximum value of the incentive is \$5,000 for vehicles with less than 14,000 pounds (lbs.) gross vehicle weight rating (GVWR), and up to \$10,000 for vehicles over 14,000 lbs. GVWR. The tax credit for clean-fuel vehicle refueling property is equal to 50% of the cost of the property. This includes property for storing or dispensing a clean-burning fuel into the fuel tank of a motor vehicle propelled by that fuel, as well as property used for recharging electric vehicles.

A sales tax exemption is also available for the incremental cost of alternative fuel vehicles and the cost of clean-fuel refueling property. For qualified hybrid electric vehicles, the sales tax exemption is equal to \$3,000 unless the vehicle manufacturer certifies a higher incremental cost. These incentives apply to vehicles and fueling property placed in service by December 31, 2004.

The New York State Clean Cities Challenge, administered by NYSERDA, awards funds to members of New York's Clean Cities Coalitions that acquire AFVs and/or refueling infrastructure. Funds are awarded on a competitive basis, and can be used to cost-share up to 75% of the proposed project, including the incremental cost of purchasing AFVs, the cost of installing refueling and recharging equipment and the incremental costs associated with bulk alternative fuel purchases.

The New York State Clean Cities Sharing Network, which provides technical, policy, and program information on AFVs, is managed by NYSERDA. Membership is open to all organizations, businesses and individuals interested in AFVs. Members are notified about upcoming funding opportunities and events. The Network publishes information on tax incentives, refueling stations, case studies, and contact information for the Clean Cities program and other industry leaders. The Network also organizes and sponsors technical workshops.

The New York City Clean Fuel Taxi Program provides up to \$6,000 towards the purchase of new CNG taxis cabs or the conversion of gasoline cabs to operate on CNG.

The New York City Private Fleet Alternative Fuel/Electric Vehicle Program, administered by NYSERDA in cooperation with New York City Clean Cities, helps private companies operating vehicles in New York City to acquire AFVs. Funds are awarded on a competitive basis for up to 40% of the incremental cost of purchasing new light-duty natural gas vehicles (NGVs) or EVs, and up to 70% of the incremental cost for purchasing new or converting medium and heavy-duty CNG, electric, or hybrid electric vehicles. Eligible projects may also include fueling or recharging station equipment and installation directly related to an AFV and/or EV project for which funding is awarded.

NYSERDA's Transportation Research Program sponsors a wide variety of product development efforts aimed at improving efficiency and increasing the use of alternative fuels. Program Opportunity Notices are issued periodically to solicit proposals for cost-share development efforts leading to the manufacture and sale of innovative products that provide

energy, environmental and economic development benefits. For more information, please visit the Web site at www.nyserda.org.

Hybrid electric vehicle incentives – See above.

North Carolina

Alternative fuel vehicle incentives – Grants from the Department of Environment and Natural Resources Division of Air Quality are available for the incremental cost of purchasing Original Equipment Manufacturer alternative fuel vehicles, vehicle conversions, and constructing or implementing alternative fuel public refueling facilities. More than \$500,000 in funding is available. For more information, visit the Web site at daq.state.nc.us/motor/ms_grants.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in North Carolina.

North Dakota

Alternative fuel vehicle incentives – The state of North Dakota offers a five-year corporate income tax credit for biodiesel production equipment costs. The tax credit is worth up to 10% per year for up to five years, but may not exceed \$250,000. The tax credit is available to purchase equipment used to retrofit an existing facility or adapt a new facility for the purpose of producing or blending diesel fuel containing at least 2% biodiesel fuel by volume. (Reference [North Dakota Century Code](#) 57-38-30.6).

The ethanol production incentive program provides funds for an incentive of \$0.40 per gallon for agriculturally derived fuel produced and sold in North Dakota. An ethanol plant with a production capacity of less than 15 million gallons is eligible for up to \$600,000 in production incentives per year and an ethanol plant with a production capacity of more than 15 million gallons may receive up to \$300,000 in production incentives per year. The total amount for any ethanol plant may not exceed \$10,000,000. (Reference [North Dakota Century Code](#) 4-14.1-07, 4-14.1-08 and 4-14.1-09).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in North Dakota.

Ohio

Alternative fuel vehicle incentives – Alternative fuel vehicles (AFVs) are exempt from certain motor vehicle inspection and maintenance programs. (Reference [Ohio Revised Code](#) §3704.14)

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Ohio.

Oklahoma

Alternative fuel vehicle incentives – Prior to January 1, 2009, Oklahoma provides a one-time income tax credit for 50% of the cost of converting a vehicle to operate on an alternative fuel, or for 50% of the incremental cost of a new OEM AFV up to \$2,000. The state also provides a tax credit for 10% of the total vehicle cost, up to \$1,500, when an AFV is resold, as long as a tax credit has not been previously taken on the vehicle. Additionally, the state provides a tax credit for up to 50% of the cost of installing refueling infrastructure for AFVs. These tax credits may be carried forward for up to three-years. The alternative fuels eligible for the credit include compressed natural gas (CNG), liquefied natural gas (LNG), liquefied petroleum gas (LPG), ethanol, methanol, and electricity. This tax credit extends to low-speed electric vehicles as defined by NHTSA in 49 C.F.R. 571.500 and to forklifts and other similar self-propelled vehicles. (Reference [Oklahoma Statutes](#) §68-2357.22)

Oklahoma has an Alternative Fuels Loan program to help convert public fleets to operate on alternative fuels. This program provides 0% interest loans for converting vehicles to operate on an alternative fuel, for the construction of refueling infrastructure, and for the incremental cost associated with the purchase of an OEM AFV. The program provides up to \$5,000 per converted or new vehicle and up to \$100,000 for refueling infrastructure. Repayment is made from fuel savings during a maximum seven-year period. If the alternative fuels price does not remain below the price of the conventional fuel that was replaced, repayment is suspended. Eligible applicants include state and county agencies and divisions, municipalities, school districts, mass transit authorities, and public trust authorities.

Oklahoma also has a private loan program with a 3% interest rate for the cost of converting private fleets to operate on alternative fuels and for the incremental cost of purchasing an OEM AFV. The repayment of the loan is made from fuel savings during a maximum three-year period.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Oklahoma.

Oregon

Alternative fuel vehicle incentives – A Business Energy Tax Credit (BETC) is available for the incremental cost of purchasing hybrid electric vehicles (HEVs) and bi-fuel vehicles, the cost of converting vehicles to operate on an alternative fuel, and the cost of constructing alternative fuel refueling stations. The tax credit is 35% of the incremental cost of the system or equipment and is taken over five years. For more information, visit the Web site at www.energy.state.or.us

A Residential Tax Credit (RETC) of up to \$1,500 is available for the incremental cost of a HEV or bi-fuel vehicle. A credit is also available for the purchase of an OEM alternative fuel vehicle, and the cost of converting vehicles to operate on an alternative fuel. For more information, visit the Web site at www.energy.state.or.us.

A small-scale loan program for conservation and renewable resource-related projects is available from the Oregon Department of Energy. For more information, please contact Dave Stevens of the Oregon Department of Energy at (503) 378-3493, via email at david.p.stevens@state.or.us, or visit the Web site at www.energy.state.or.us

Hybrid electric vehicle incentives – See above.

Pennsylvania

Alternative fuel vehicle incentives – The AFIG Program was established in 1992 to reduce Pennsylvania's dependence on imported oil and improve air quality through the use of alternative fuels. Eligible applicants are essentially any entity incorporated or registered in Pennsylvania, and Pennsylvania residents. Eligible alternative motor fuels and fuel systems are compressed natural gas (CNG), liquefied natural gas (LNG), liquid propane gas (LPG), ethanol (E85), methanol (M85), hydrogen, hythane, electricity, coal-derived liquid fuels, fuels derived from biological materials, and fuels determined by the Secretary of the U.S. Department of Energy as meeting the requirements of Section 301 of the Energy Policy Act of 1992. Qualified projects will receive funding for 20% of eligible project costs. The following projects are eligible for funding: purchasing AFVs, including hybrid electric vehicles; converting or re-powering existing vehicles to operate on an alternative fuel; purchasing and installing alternative fuel refueling or recharging facilities; and developing and evaluating innovative AFVs and refueling or recharging facilities. No more than 10% of the funds may go to any one applicant each funding cycle, and no more than 15% may go to any one county. Applications must be submitted during an open opportunity AND prior to incurring any costs. For more information, visit the Web site at www.dep.state.pa.us/dep/deputate/pollprev/AFIG/afvafig1.htm. (Reference [Pennsylvania Code](#) Chapter 311)

The Greater Philadelphia Clean Cities Program (GPCCP) has Congestion Mitigation Air Quality (CMAQ) funding available for AFV rebates. The Clean Fueled Fleets Grant is designed to offer up to 72% of the incremental cost of purchasing AFVs. Up to \$4,000 is available for light duty AFVs, up to \$7,000 is available for medium duty AFVs, and up to \$10,000 is available for heavy duty AFVs. Additionally, some of GPCCP's rebates also cover the costs of installing and purchasing AFV refueling stations. To qualify for these rebates, applicants must become members of the GPCCP and complete and sign an application, agreeing to certain terms and conditions, such as monitoring fuel use. For more information, visit the Web site at www.phillycleancities.org/rebates.htm.

Hybrid electric vehicle incentives – See above.

Rhode Island

Alternative fuel vehicle incentives – The Rhode Island State Energy Office offers loans of up to five years, with minimal administrative fees, to state agencies and municipal governments to cover the incremental cost of purchasing original equipment manufactured (OEM) alternative fuel vehicles (AFVs).

For tax years beginning on or after January 1, 2001, a taxpayer entitled to the federal qualified electric vehicle (EV) tax credit shall be entitled to a tax credit equal to 25.5% of the federal qualified EV tax credit for tax year 2001 and 25% of the federal qualified EV tax credit for tax year 2002 and thereafter. (Reference [Rhode Island Code](#) (R.I.C.) §44-30-2.6)

The Alternative Fueled Vehicle and Filling Station Tax Credit entitles taxpayers to a tax credit equal to 50% of the capital, labor, and equipment costs incurred for the construction of, or improvement to, any alternative fuel refueling or recharging station providing domestically produced alternative fuel. Taxpayers are also entitled to a tax credit equal to 50% of the incremental cost incurred for the purchase of an AFV or the capital, labor, and equipment cost of converting a motor vehicle to run on an alternative fuel. Taxpayers may carry forward any unused credits or any unused portion of the credit for up to five years. This incentive is valid for income years commencing on or after January 1, 1998, and prior to January 1, 2008. (Reference [R.I.C.](#) §44-39.2-2)

Corporations that sell alternative fuels are allowed a deduction from the gross earnings from sales reported in the corporations' tax returns. The deduction shall be the total of gross earnings from the sale of alternative fuels when used as separately metered motor fuels that powers motor vehicles. This incentive is valid from January 1, 1998, to December 31, 2007. (Reference [R.I.C.](#) §44-13-5)

Organically produced biodiesel fuels are exempt from motor fuel tax (Reference [House Bill](#) 8085, 2004).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Rhode Island.

South Carolina

Alternative fuel vehicle incentives – There are currently no known state incentives for alternative fuels or alternative fuel vehicles (AFVs) in South Carolina.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in South Carolina.

South Dakota

Alternative fuel vehicle incentives – Biodiesel and biodiesel blends are defined as 'special fuels' and are taxed at the special fuel excise tax rate of \$0.22, which is equivalent to the regular motor fuel excise tax rate. (Reference South Dakota Statutes §10-47B-3 through §10-47B-10 and Senate Bill 31, 2004)

Compressed natural gas (CNG) shall be converted to gasoline gallon equivalents (GGE) at the rate of 120 cubic feet of natural gas per one gasoline gallon equivalent. CNG is taxed at a rate of \$0.10 per GGE. (Reference South Dakota Statutes §10-47B-3 and §10-47B-4)

Liquid petroleum gas (LPG), when used as a motor vehicle fuel, shall be converted for purposes of taxation to equivalent liquid gross gallons using the conversion factor of 4.24 pounds per gallon of liquid at sixty degrees Fahrenheit. LPG is taxed at a rate of \$0.20 per GGE. (Reference South Dakota Statutes §10-47B-3 and §10-47B-4)

E85 and M85 are taxed at a rate of \$0.10 per gallon. A tax report credit for gasoline blended with ethyl or methyl alcohol to create E85 or M85 is available to licensed blenders. The tax report credit is granted on a per gallon basis, in the amount that the rate for motor fuel exceeds the rate for E85 or M85. The credit shall be used to offset any tax liability resulting from the blending of previously untaxed ethyl or methyl alcohol. (Reference South Dakota Statutes §10-47B-4 and §10-47B-136)

A production incentive payment of \$0.20 per gallon is available to ethanol producers for ethyl alcohol that is fully distilled and produced in South Dakota. To be eligible for this payment, the ethyl alcohol shall be denatured and subsequently blended with gasoline to create an ethanol blend. The cumulative annual production incentive payments made may not exceed \$4 million for fiscal year 2003, \$5 million for fiscal year 2004, \$6 million for fiscal year 2005, and \$7 million thereafter. (Reference South Dakota Statutes §10-47B-162).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in South Dakota.

Tennessee

Alternative fuel vehicle incentives – There are currently no known state incentives for alternative fuels or alternative fuel vehicles (AFVs) in Tennessee.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Tennessee.

Texas

Alternative fuel vehicle incentives – The Adopt-A-School Bus Program, a cooperative partnership between the U.S. Environmental Protection Agency (EPA), state agencies, local elected officials, and corporate sponsors, was established as a nonprofit grant program to aid local school districts replacing their aging, diesel school bus fleets with new clean fuel buses. In an effort to ensure the longevity of the new buses, a portion of all grant money awarded is earmarked for fleet infrastructure and maintenance. There are currently Adopt-A-School Bus Programs operating in four cities. For more information, please visit the Web sites for Dallas-Fort Worth (www.adopt-a-schoolbus.org), Austin/Central Texas (www.cleanairforce.org), Houston (www.educationfoundation.info/adopt.htm), and San Antonio/Alamo Area (www.aacog.dst.tx.us/schoolbus).

TERP (the Texas Emissions Reduction Plan) provides grants for various types of clean air projects in 41 counties to improve air quality in the state's non-attainment areas. Grants are

available for new or converted on-road and off-road AFVs and engines. For more information, visit the Web site at www.terpgrants.org.

TERP also provides grants for alternative fuel and advanced technology demonstration and infrastructure projects under the New Technology Research and Development (NTRD) Program. For more information, visit the Web site at www.terpgrants.org. (Reference [Texas Statutes](#), Health & Safety Code, Chapter 386)

The Texas Economic Development and Tourism Office administers a grant program for ethanol and biodiesel fuel producers. In order to be eligible for a grant, ethanol and biodiesel fuel producers are required to register with the state and contribute \$0.032 per gallon, up to 18 million gallons per producer, to a fund. Additionally, the state contributes \$0.168 per gallon produced to the fund. A producer is then entitled to receive a grant of \$0.20 per gallon from the fund, up until the 10th anniversary of the date production from the plant began. For each fiscal year a fuel producer may not receive a grant for more than 18 million gallons of fuel ethanol or biodiesel produced at any one registered plant, regardless of total gallons produced. This incentive expires August 31, 2005. (Reference [Texas Statutes](#), Agriculture Code, Chapter 16)

The Texas General Land Office (GLO) makes low-cost natural gas available to school districts for use in AFVs. The GLO has also established an alternative fuels program to aggressively promote the use of alternative energy sources, especially for those fuels abundant in Texas. The GLO alternative fuels program serves as a liaison between government and industry, and has been instrumental in the conversion of public and private fleets to operate on alternative fuels, as well as in the opening refueling stations across the state.

The Texas State Energy Conservation Office (SECO) researches and assists public and private entities in securing grants to encourage the use of alternative fuels, including conversion of state and local government fleets to compressed natural gas (CNG) and liquefied petroleum gas (LPG). SECO also currently administers existing projects for the Texas Alternative Fuels Council. For more information, visit the Web site at www.seco.cpa.state.tx.us.

The Railroad Commission of Texas (RRC) has the authority to regulate the safety of the liquefied natural gas (LNG), CNG, and LPG industries. The RRC, through its Alternative Fuels Research and Education Division (AFRED), funds LPG research projects on a case-by-case basis. For more information, visit the Web site at www.propane.tx.gov.

AFRED's School Bus Rebate Program applies to school buses (Model Year 2004 or newer) that incorporate an OEM low emission vehicle (LEV) certified LPG system. The rebate is worth 80% of the incremental cost of the LPG system, less any other grant funds used to pay for the incremental cost of the LPG system. Used OEM vehicles and LPG fuel system components are not eligible. AFRED also offers incentives to buyers of propane forklifts that meet 2004 EPA emission standards. For more information, visit the Web site at www.propane.tx.gov/rebate_program.

The RRC offers free safety and maintenance training on propane vehicles, buses and forklifts. For more information, visit the Web site at www.propane.tx.gov/training.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Texas.

Utah

Alternative fuel vehicle incentives – Vehicles with clean fuel group license plates are authorized to travel in HOV lanes regardless of the number of occupants. The clean fuel plate may be purchased for \$10 from any Motor Vehicle Division office by presenting a clean special fuel certificate. This incentive expires December 31, 2005. For more information, please contact the Utah State Tax Commission's Motor Vehicle Division at (800) DMV-UTAH or (801) 297-7780, or visit the Web site at dmv.utah.gov/licensespecialplates.html. (Reference Utah Code 41-1a-1211, 41-6-53.5, and 63-55-241)

The Utah Clean Fuels Grant and Loan Program provides grants worth up to 50% of the cost of converting a vehicle to run on a clean fuel (\$2,500 maximum) and/or up to 50% of the incremental cost of purchasing an OEM vehicle (\$3,000 maximum) minus the amount of any tax credit claimed under Utah Code 59-7-605 or 59-10-127. Through the Clean Fuels Grant and Loan Program, the Utah Energy Office is also authorized to provide loans for the cost of converting a vehicle to operate on a clean fuel, for the purchase of OEM vehicles, and for the purchase of refueling equipment for public/private sector business and government vehicles. However, the Loan program has been put on hold. Bi-fuel vehicles must operate on the clean fuel at least 70% of vehicle miles traveled beginning at the time of conversion or purchase of the vehicle. For more information, please contact Bernell Loveridge of the Utah Energy Office at (801) 538-5413 or (800) 662-3633 (within the state), via email at bernellloveridge@utah.gov, or visit the Web site at www.energy.utah.gov/altfuels/home.htm. (Reference Utah Code 63-34-202 to 63-34-204)

The state provides an income tax credit for 50% of the incremental cost (\$3,000 maximum) of a clean-fuel vehicle built by an OEM and/or an income tax credit for 50% of the cost (\$2,500 maximum) of the after-market conversion of vehicles purchased after January 1, 2001 and registered in Utah. If not previously used, the tax credit on used vehicles may be claimed. Tax credits are available for businesses and individuals and may be carried forward up to five years. Tax credits are not available for electric hybrids, except the Honda Civic hybrid. Documentation must be provided as described in the Utah state tax form TC-40V. (Reference Utah Code 59-7-605 and 59-10-127).

Hybrid electric vehicle incentives – The tax credit for clean fuel vehicles described above applies to HEVs.

Virginia

Alternative fuel vehicle incentives – The Commonwealth of Virginia provides individuals, private entities, and corporations a state tax credit in an amount equal to 10% of the amount allowed as a federal tax deduction for clean-fuel vehicles and related refueling property (under Section 179A of the Internal Revenue Code). The tax credit was amended in 1994 to specify that it is for the purchase of clean-fuel vehicles that are principally garaged in Virginia and for certain refueling property placed in service in Virginia. (Reference Virginia Code Sec. 58.1-438.1).

AFVs displaying the Virginia 'Clean Special Fuels' license plate can use the Virginia HOV lanes, regardless of the number of occupants, until July 1, 2006. Dedicated AFVs and the Toyota Prius, and Honda Insight and Civic hybrid electric vehicles qualify. For more information, please visit the Virginia Department of Motor Vehicles Web site at www.dmv.state.va.us/webdoc/citizen/vehicles/cleanspecialfuel.asp www.dmv.state.va.us/webdoc/citizen/vehicles/cleanspecialfuel.asp. (Reference Virginia Code §33.1-46.2 and §46.2-749.3).

The Virginia Board of Education may use funds from the state Literary Fund to grant loans to school boards that convert school buses to operate on alternative fuels or construct alternative fuel refueling stations. (Reference Virginia Code §22.1-146).

There is a job-creation tax credit worth \$700 per full-time employee for businesses involved with alternative fuels. The credit is allowed in the taxable year in which the job is created and in each of the two succeeding years in which the job is continued. Qualifying businesses include AFV component manufacturers and vehicle conversion companies. This credit is effective for taxable years beginning on or after January 1, 1996, through December 31, 2006. (Reference Virginia Code §58.1-439.1).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Virginia.

Vermont

Alternative fuel vehicle incentives – Businesses in Vermont that are involved exclusively in design, development, and manufacture of electric vehicles (EVs), alternative fuel vehicles (AFVs), or hybrid vehicles (HEVs) are eligible for up to three of the following income tax credits:

- A percentage of increased payroll costs;
- 10% of qualified research and development expenditures;
- A credit against export taxes;
- 5% to 10% of total investments in plants or facilities and machinery and equipment (small business investment tax credit);
- Up to 6% of investments in machinery and equipment (\$100,000 per year maximum);
- Up to 6% of investments for renovation of existing facilities to provide cable, fiber or telecommunications access;

- 20% of qualified training, education and workforce development expenditures; sales and use tax exemption for approved personal computers and software.

Certain limits and restrictions apply. (Reference [Vermont Statutes](#) Title 32, Chapter 151 §5930k)

Vermont Points of Contact:

NAME	AGENCY	TITLE	PHONE	FAX	EMAIL
Harold Garabedian	Vermont Clean Cities Coalition	Clean Cities Coordinator	(802) 241-3849	(802) 241-2590	harold.garabedian@anr.state.vt.us
Mike Scarpino	U.S. Department of Energy, Northeast Regional Office	Clean Cities Regional Project Manager	(617) 565-9716	(617) 565-9723	michael.scarpino@ee.doe.gov
Kelly Launder	Vermont Department of Public Service	Energy Efficiency Specialist, Energy Efficiency Division	(802) 828-4039	(802) 828-2342	kelly.launder@state.vt.us
James (J.J.) Mullaney	Vermont Gas Systems	Manager, Technical Services	(802) 863-4511 ext. 339	(802) 658-3926	jmullaney@vermontgas.com
Gina Campoli	Vermont Agency of Transportation	Policy and Planning Division	(802) 828-5756	(802) 828-3983	gina.campoli@state.vt.us
Brian Smith	U.S. General Services Administration	Fleet Manager, Region 2	(212) 264-3930	(212) 264-5771	brian.smith@gsa.gov
Robert Judge	U.S. Environmental Protection Agency	Environmental Engineer, Region 1	(617) 918-1045	(617) 918-0045	judge.robert@epa.gov
Andrew E. Motter	U.S. Department of	Community Planner	(617) 494-	(617) 494-	andy.motter@fta.dot.gov

	Transportation, Federal Transit Administration, Region 1		3560	2865	

Hybrid electric vehicle incentives – See above.

Washington

Alternative fuel vehicle incentives – Until July 1, 2009, investments in buildings, equipment and labor for the purpose of manufacturing biodiesel, biodiesel feedstock or alcohol fuel are eligible for the deferral of state and local sales and use taxes. To be eligible, projects must be located in a designated community empowerment zone, a county containing a community empowerment zone (and must meet employment requirements), a county with fewer than 100 persons per square mile, or a county that has a population of less than 225,000 and has an area greater than 225 square miles. Qualifying buildings, equipment and land used in the manufacturing of alcohol fuel, biodiesel, or biodiesel feedstocks are also exempt from state and local property and leasehold taxes for a period of 6 years. Additionally, a reduced Business & Occupation tax rate of .138% applies to persons engaged in manufacturing of alcohol fuel, biodiesel fuel, or biodiesel feedstock. The typical rate for manufacturing businesses is .484%. (Reference Revised Code of Washington (RCW) 82.04.260, 82.08, 82.12, 82.14, 82.29A.135, 82.32, and 84.36)

Beginning July 1, 2003, a tax deduction is available for the sale or distribution of biodiesel or alcohol fuel (comprised of at least 85% alcohol fuel by volume). Additionally, fuel delivery vehicles and machinery, equipment, and related services that are used for the retail sale of a biodiesel or alcohol fuel are exempt from state retail fuel sales and use taxes. (Reference RCW 82.04, 82.08 and 82.12)

Two school districts are to be selected to participate in a pilot project on the use of biodiesel with ultra low sulfur diesel in school buses. The pilot project will begin in September of 2003. During the 2003 school year, at least one of the participating school districts will fuel at least 10 buses or 25% of its school bus fleet with ultra low sulfur diesel. During the 2004 school year, at least seven or 70% of those buses will be fueled with a blend of 80% ultra low sulfur diesel and 20% biodiesel (B20). One of the participating school districts may use B20 throughout the project. Emissions testing will take place at specified intervals throughout the project. The Superintendent of Public Instruction shall submit a report of findings, including issues related to the maintenance of the vehicles, to the legislature by September 1, 2005. (Reference RCW 28A.160.804)

In order to encourage the use of nonpolluting fuels, owners of CNG and LPG powered vehicles are required to pay an annual fee, based on GVWR, instead of motor fuel excise taxes. The fee is calculated as follows:

GVW	Fee
Less than 10,000 pounds (lbs.)	\$45
10,001 - 18,000 lbs.	\$80
18,001 - 28,000 lbs.	\$110
28,001 - 36,000 lbs.	\$150
More than 36,000 lbs.	\$250

To determine the actual annual license fee imposed by this section for a registration year, the appropriate dollar amount set out in the above schedule shall be multiplied by the motor vehicle fuel tax rate in cents per gallon (as established by RCW 82.36.025), effective on July 1, of the preceding calendar year, and the product thereof shall be divided by \$0.12. In addition, there is a \$5 handling fee in order to receive a compressed natural gas (CNG) or liquefied petroleum gas (LPG) permit. (Reference RCW 82.38.075)

Matching grant allowances were established under the Washington Clean Air Act of 1991 to assist in the purchase and operation of clean fuel public transit vehicles, to establish programs at vocational-technical institutes to certify clean-fuel vehicle mechanics, and to further the establishment of clean fuel refueling infrastructure. However, no funds have been appropriated for these programs. (Reference RCW 70.94.960)

Hybrid electric vehicle incentives – Electric, CNG, and LPG vehicles are exempt from emission control inspections. Effective June 13, 2002, hybrid motor vehicles that obtain a rating by the U.S. Environmental Protection Agency of at least 50 miles per gallon of gas during city driving are also exempt from these inspections. (Reference RCW 46.16.015)

Wisconsin

Alternative fuel vehicle incentives – The Wisconsin Department of Revenue offers a state alternative fuel vehicle (AFV) tax deduction identical to the federal AFV tax deduction. Taxpayers who placed AFVs into service in 2002 and 2003 are entitled to the full deduction. The deduction is reduced by 25% for vehicles placed in service in 2004, by 50% for vehicles in 2005 and by 75% for vehicles in 2006. No deduction is available for clean fuel vehicles placed in service in 2007. The full deduction is \$50,000 for any truck or van with a gross vehicle weight rating (GVWR) of at least 26,000 pounds (lbs.) or a bus with seating capacity of at least 20 adults. The deduction is \$5,000 for a truck or van with a GVWR greater than 10,000 lbs. and \$2,000 for vehicles under 10,000 lbs.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Wisconsin.

West Virginia

Alternative fuel vehicle incentives - The state of West Virginia offers a tax credit for the incremental cost of purchasing an OEM AFV, or for the cost of converting a vehicle to operate on an alternative fuel. The tax credit became effective on July 1, 1997, for either personal or corporate income tax. The maximum credit depends on the vehicle type and Gross Vehicle Weight Rating (GVWR), as shown below, and cannot exceed the incremental or conversion cost. Eligible alternative fuels include CNG, liquefied natural gas, liquefied petroleum gas, blends of 85% or more of methanol and ethanol, other alcohols, alcohol-derived liquids, and electricity. The credit is taken in three equal increments over three years and expires June 30, 2006. (Reference [West Virginia Code](#) §11-6D)

GVWR/Vehicle Type	Non-Electric Vehicle Tax Credit	Electric Vehicle Tax Credit
10,000 pounds (lbs.) or less	\$3,750	\$4,125
10,000 to 26,000 lbs.	\$9,250	\$10,175
Trucks or vans over 26,000 lbs.	\$50,000	\$55,000
Buses seating over 20 adults	\$50,000	\$55,000

The West Virginia Clean State Program is a grant program that assists local governments in converting and purchasing AFVs. Each governmental entity may receive up to \$20,000 to convert fleet vehicles or to pay for the incremental cost associated with the purchase of an AFV. For the purpose of this grant program, AFVs are defined as dual-fuel or dedicated CNG or OEM electric vehicles. For the purpose of acquiring special OEM electric vehicles, such as neighborhood electric vehicles, the grantee can request up to 50% of the purchase price not to exceed \$20,000 per governmental entity. Grants must be matched by the local government by at least 50% in the form of cash. Grant monies are provided for approved projects on a reimbursement basis only. Eligible applicants are limited to county governments, incorporated municipalities, transit authorities, and school boards. For more information, see the Program Web site at www.wvdo.org/community/cleanstate.html.

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in West Virginia.

Wyoming

Alternative fuel vehicle incentives - Effective July 1, 2003, any person who has a tax liability for the sale of ethanol-based motor fuel, or gasoline sold for the purpose of blending into an ethanol-based motor fuel, may redeem a credit of \$0.40 per gallon, valid with the Wyoming Department of Transportation. To be eligible to receive this credit, 25% of an ethanol producer's distillation purchases shall be products that originate in Wyoming, excluding water, during the year the tax credits were earned. The total credits redeemed by all ethanol producers shall not exceed \$4,000,000 per year, and the total credits redeemed by any individual ethanol producer shall not exceed \$2,000,000 per year. An ethanol producer constructing a new ethanol plant after July 1, 2003 may receive tax credits for a period not to exceed 15 years after the date the construction of the new plant is complete. Any ethanol

producer that expands its production after July 1, 2003 by at least 25% is eligible for tax credits with an increased maximum. Ethanol producers qualifying for the tax credit on or before July 1, 2003 may only receive a tax credit until June 30, 2009. (Reference Wyoming Statutes 39-17-109).

Hybrid electric vehicle incentives – Currently, there are no Hybrid Electric Vehicle Incentives available in Wyoming.