THE DRIVE TO EFFICIENT TRANSPORTATION

STATE POLICIES TO ENCOURAGE THE PURCHASE AND USE OF LIGHT—DUTY ADVANCED TECHNOLOGY VEHICLES AND ALTERNATIVE FUELS



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CONTENTS

Acknowledgements		iii
Figures and Tables		iv
Acronyms		v
Executive Summary		1
Introduction		2
The Energy and Envi and the Promise of A	ironmental Impacts of Motor Vehicles dvanced Technology Vehicles	3
State Policies that En Advanced Technolog	courage the Purchase and Use of y Vehicles and Alternative Fuels	8
Incentives		9
Purchase Ince	entives Repates and Tax Credits	11
#1 #2	Reduced Tax Rates	
#2	Low-Interest Loans	
#4	Grants	
#5	Private Fleets	
#6	Insurance Premiums	
#7	State Policies	
#8	State Bonds	
#9	Vehicle Registration Surcharge	
Operational 1	Incentives	21
#10	Vehicle Use Exemptions	
#11	Reduce or Eliminate Tolls	
#12	Leveraging Federal Highway Transportation Funding	
#13	Voluntary Vehicle Retirement	
Manufacturin	g Incentives	26
#14	Economic Development	
#15	Renewable Investment Funds	
Benefits and Challen	ges of Advanced Technology Vehicles	29
◆ Hybrid Electric V	Tehicles	
♦ Advanced Diesel		
◆ Fuel Cell Electric	Vehicles	
• Hydrogen Interna	l Combustion Engine Vehicles	
Alternative Fuels		35
♦ Electricity		
♦ Compressed Nature	ral Gas & Liquefied Natural Gas	
Pronane		
 ♦ Ethanol 		

- Biodiesel
- HydrogenMethanol

La	ws and Regulations: Working to Improve the Efficiency of the Transportation Sector	43
٠	U.S. Federal Laws and Regulations	
	 Corporate Average Fuel Economy Standards 	
	 Clean Air Act & Clean Air Act Amendments of 1990 	
	 Reduced Sulfur Content in Gasoline 	
	 New Standards for Diesel Fuel 	
	 Congestion Mitigation and Air Quality (CMAQ) Improvement Program 	
	8-Hour National Ozone Standard	
	OPProposed EPA Standard for Fine Particulate Matter	
	♦ Energy Policy Act of 1992	
٠	State Laws and Regulations	
	◊ California Standards: LEV and LEV II	
	 CARB Regulations Limiting Greenhouse Gas Emissions from Cars and Trucks 	
	♦ Adoption of LEV II by States	
Re	esources	50
•	U.S. Federal Agencies	
•	Associations	
٠	Environmental Groups	
٠	State-Related Organizations	
٠	Clean Cities Program	
Bi	bliography	53
DI		
Ph	toto Credits	54
M Av	odel Year 2005 Chart: Alternative Fuel Vehicles and Advanced Technology Vehicles vailable or Nearing Completion (January 2005), U.S. Department of Energy	Purple Tab
Са	omprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative F	Suels

comprehensive mainta of meentives for maraneea reenhology renetes and meentiure racis			
•	Organized by Provision (includes federal incentives)	Peach Tab	
•	Organized by State	Ivory Tab	

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ABOUT THE ALLIANCE TO SAVE ENERGY

The Alliance to Save Energy is a coalition of prominent business, government, environmental, and consumer leaders who promote the efficient and clean use of energy worldwide to benefit consumers, the environment, the economy, and national security. For more information about the Alliance and its activities, please visit: <u>www.ase.org</u>.

ABOUT FORD MOTOR COMPANY

Ford Motor Company, a global automotive industry leader based in Dearborn, Michigan, manufactures and distributes automobiles in 200 markets across six continents. With more than 325,000 employees and 110 plants worldwide, the company's core and affiliated automotive brands include Aston Martin, Ford, Jaguar, Land Rover, Lincoln, Mazda, Mercury, and Volvo. Its automotive-related services include Ford Motor Credit Company and Hertz. For more information regarding Ford's products, please visit www.fordvehicles.com.



Creating an Energy-Efficient World

ALLIANCE TO SAVE ENERGY Ford

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FIGURES AND TABLES

Figures 1

1.	U.S. Consumption of Total Energy by End-Use Sector, 2002	3
2.	Combined Fuel Economies of Advanced Technology Vehicles compared to	
	Conventional ICEs (%)	4
1.	The Evolution of Hydrocarbon Tailpipe Emission Standards	5
2.	Projected U.S. Carbon Dioxide Emissions by Sector and Fuel, 1990-2025 (million metric tons)	7
Tal	bles	

1. Hybrid Checklist: Is This Vehicle A Hybrid?

ACRONYMS

AFV	Alternative Fuel Vehicle
AT-PZEV	Advanced Technology Partial Zero Emission Vehicle
BEV	Battery Electric Vehicle
BTU	British Thermal Unit
CAA	Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CAFE	Corporate Average Fuel Economy
CaFCP	California Fuel Cell Partnership
CARB	California Air Resources Board
CMAO	Congestion Mitigation and Air Quality Improvement Program
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CO^2	Carbon Dioxide
DOF	U.S. Department of Energy
DOT	U.S. Department of Transportation
FIA	Energy Information Administration
EDA	US Environmental Protection Agency
EI A EDA et	Energy Policy Act of 1002
EFACI	Electric Vehicle
EV	Evel Cell Electric Vehicle
	Fuel Cell Electric Vellicle
	Cross Vahiala Waisht
	Cross Vehicle Weight
GVWK	Gross venicle weight Rating
HC	Hydrocarbon Urshuid Electuic Vakiele
HEV	Hydrid Electric venicle
HUV	High Occupancy venicle
ICE	Internal Combustion Engine
ILEV	Inherently Low Emission Venicle
LEV	Low Emission Vehicle
LNG	Liquified Natural Gas
LSV	Low Speed Vehicle
MPD	Miles Per Day
MPG	Miles Per Gallon
MPO	Metropolitan Planning Organization
MTBE	Methyl Tertiary-Butyl Ether
NEV	Neighborhood Electric Vehicle
NGV	Natural Gas Vehicle
NHTSA	National Highway Traffic Safety Administration
NOx	Nitrogen Oxides
OPEC	Organization of Petroleum Exporting Countries
PBF	Public Benefit Fund
PM	Particulate Matter
PPM	Parts Per Million
PVEA	Petroleum Violation Escrow Accounts
PZEV	Partial Zero Emission Vehicle
SBC	Systems Benefits Charge
SULEV	Super Ultra Low Emission Vehicle
VOC	Volatile Organic Compound
TLEV	Transitional Low Emission Vehicle
ULEV	Ultra Low Emission Vehicle
ZEV	Zero Emission Vehicle

EXECUTIVE SUMMARY

States can play an important role in helping to reduce the amount of petroleum used in the transportation sector and in the light-duty vehicle segment in particular. By introducing, and having passed into law, a variety of financial and non-financial incentives designed to encourage consumers to purchase and use advanced technology vehicles and alternative fuels, states can help lessen the nation's dependence on imported oil, reduce greenhouse gas emissions, and improve the air quality in cities and towns.

This handbook provides state legislators with a sampling of 15 incentives including:

- Nine types of purchase incentives (e.g., tax credits, grants and rebates);
- Four types of operational incentives (e.g., exempting hybrid electric vehicles from high occupancy vehicle lane restrictions or parking fees); and
- Two types of manufacturing incentives to promote economic development and job creation.

The policies detailed in this handbook are but a subset of the many and varied policy tools that have been enacted and/or are under consideration by states. This handbook does not discuss, for example, gas taxes or road tolls, rideshare programs or transit usage, vehicle miles traveled-based (VMT) fees or improvements to bike and pedestrian infrastructure.

Each of the 15 incentives described in this handbook is currently being implemented in at least one state. A total of 46 states have enacted one or more of these laws to encourage the development, purchase, and use of advanced technology vehicles and alternative fuels. This document is intended to serve as a resource to legislators interested in learning about incentive-based policies to encourage use of efficient light-duty advanced technology vehicles and alternative fuels, as well as to provide general information about hybrid electric, advanced diesel, hydrogen internal combustion engine, fuel cell electric vehicles, and alternative fuels. And, because the effects of the nation's petroleum consumption have long been of national concern, information is provided on the transportation sector's impact on U.S. energy use and the environment. Key federal laws and regulations that encourage the development and use of cleaner and more efficient transportation technologies also are described, and information is provided on a variety of additional resources.

At the Alliance to Save Energy, we are striving to promote energy efficiency worldwide to achieve a healthier economy, a cleaner environment, and greater energy security. We encourage you to join us in this endeavor by seeking to have enacted into law policies and programs that spur the transition to clean, efficient, advanced modes of transportation. The incentives described in this handbook represent such policies. There are, however, many other approaches that are being employed or under consideration that are effective and valuable. The Alliance, while recognizing the value of the incentives detailed herein, supports a broad array of local, state, and national energy efficiency policies. With your help, we can improve the efficiency of the transportation sector while also gaining important energy security and environmental benefits.

INTRODUCTION

Today, the transportation sector is responsible for over 66 percent of the oil consumed in the United States. Improvements in the efficiency of today's cars, trucks, and buses can result in substantial savings in gasoline and diesel fuel, which can have a positive impact on energy independence. greenhouse gas emissions, and air pollution. What does it mean to improve the efficiency of the transportation sector? Does it mean continuing research on how to travel farther on a gallon of gasoline? Does it mean fueling our vehicles with alternatives to gasoline and diesel fuel? Does it mean moving away from the internal combustion engine to a vehicle technology that produces energy from a chemical, as opposed to a mechanical, reaction?

At the Alliance to Save Energy, we believe efficient transportation incorporates all of these options. It means improving the efficiency of internal combustion engines through hybridization and advanced diesel technologies; encouraging advances in fuel cell vehicles and hydrogen production, since these technologies have the potential for breakthrough fuel efficiency along with zero vehicle tailpipe emissions; and using an alternative fuel, like compressed natural gas, ethanol, or biodiesel, as a way to reduce dependence on foreign oil supplies.

These advanced technology vehicles and alternative fuels, along with their potential to improve fuel economy and emit less pollution, come with a price premium. For example, today's hybrid electric vehicle offerings cost approximately \$2,500-\$6,000 more than their internal combustion engine counterparts. To entice consumers to purchase these more expensive vehicles and fuels, state governments could offer consumers incentives, such as a tax credit to cover the incremental costs and/or exempt them from emissions inspections or registration fees.

A total of 15 incentives, financial and nonfinancial, are provided in this handbook for state policymakers to consider to help jumpstart the market for advanced technology vehicles and alternative fuels so they can reach the economies of scale required to ensure a viable and sustainable market. But without the active support of state policy makers, we are unlikely to see substantial increases in these transportation options in the near term.

This may be the first in a series of publications that the Alliance develops to focus on improving efficiency in the transportation sector. While this first installment focuses specifically on ways to improve the efficiency of today's light-duty vehicles, additional publications could address issues such as reducing vehicle miles traveled, encouraging public transit, and promoting idle reduction technologies at ports, airports, and truck stops.

Since the use of light-duty vehicles has an impact on overall energy consumption and the environment, we encourage you to turn the page and learn more about actions you can undertake to encourage the purchase and use of transportation technologies that can spur the transition to efficient, affordable, and clean advanced modes of transportation.

THE ENERGY AND ENVIRONMENTAL IMPACTS OF MOTOR VEHICLES AND THE PROMISE OF ADVANCED TECHNOLOGY VEHICLES

The effects on our energy security and environment of the nation's enormous and growing petroleum consumption have long been of national concern. Advanced technology vehicles can play a positive role in addressing the transportation sector's impact on energy use, greenhouse gas emissions, and urban air pollution.

ENERGY SECURITY

The transportation sector currently accounts for about 66 percent of all petroleum used in the United States and approximately 25 percent of total energy consumption. Each day, vehicles in the United States consume about 10 million barrels of petroleum, primarily in the form of gasoline and diesel fuels. The U.S. Department of Energy's Energy Information Administration (EIA) projects that this figure will rise to about 15 million barrels by 2010, and that much of this consumption will be met by importing oil. While U.S. petroleum consumption has increased, domestic production of petroleum continues to decrease. According to the EIA, net United States importation (imports minus exports) of petroleum was 54 percent of total consumption (19.7 million barrels per day) during 2002, of which approximately 40 percent came from the Organization of Petroleum Exporting Countries (OPEC).

Figure 1.



Reasons for the continued increase in vehicle petroleum consumption:

- An increase in the number of vehicles on the roads;
- An increase in the number of vehicle miles traveled;
- An increase in sales of light trucks;
- An increase in vehicle horsepower and weight.

Given the advances in fuel efficiency over the past few decades, why will vehicle petroleum consumption continue to increase? First, Americans are driving more. According to the Transportation Energy Data Book, 56 percent of American households owned one vehicle in 1960. In 2000, the majority of households owned two vehicles.

Second, between 1969 and 2001, the average annual miles traveled per driver in the United States increased from 8,685 to 14,542—an increase of 67 percent.

Third, light truck sales have increased more than sales in any other vehicle class due to their increased use as personal passenger vehicles. Light trucks include pick-ups, minivans, sport utility vehicles, and vans. The Alliance of Automobile Manufacturers estimates that between 1980 and 2003, the light truck market share increased from 22 percent to 56 percent of total vehicle sales.

Finally, vehicles are becoming more powerful and heavier. Increases in fuel efficiency have not corresponded to increases in fuel economy. Instead, gains in fuel efficiency often have been used to increase vehicle horsepower and size (weight). The average new light vehicle fuel economy is about the same today as it was 20 years ago. Average vehicle horsepower, on the other hand, has jumped by 45 percent since 1990. So as the number of vehicles owned per household has increased, along with the increased number of light trucks purchased and vehicle miles driven, Americans have essentially canceled out any gains in fuel savings over the past 30 years.

The Promise of Advanced Technology Vehicles for Energy Security

Advanced technology vehicles have the potential to lessen the amount of petroleum fuel used in the transportation sector. Hybrid electric vehicles have the potential for fuel economy improvements ranging from 5-50 percent; advanced diesel can improve fuel economy from 20-40 percent; hydrogen internal combustion engines (ICEs) can achieve fuel economy improvements of 20-25 percent, and fuel cell vehicles can be two to three times more fuelefficient than their gasoline powered counterparts.

Furthermore, alternative fuels such as natural gas, electricity, ethanol, and other biofuels can be derived from domestic sources, thereby lessening our dependence on foreign sources of oil.

Figure 2.



ENVIRONMENT

Air Pollution

Transportation (motor vehicles, planes, ships, and pipelines) accounts for 50 percent of United States urban air pollution. Today, most of the power to move an automobile results from burning gasoline in an engine. The by-product of this combustion process includes hydrocarbons, nitrogen oxide, carbon monoxide, and carbon dioxide. In addition, a considerable amount of hydrocarbon emissions occurs when gasoline leaks or spills or gets hot and evaporates from the fuel tank or engine. Mobile sources (cars, trucks, and buses) also are the largest contributor to air toxics—pollutants known or suspected to cause cancer or other serious environmental effects.

Starting in the mid-1970s, the Environmental Protection Agency established progressively more stringent emission standards for carbon monoxide, hydrocarbons, nitrogen oxides, and particulate matter for on-road vehicles. Automobile manufacturers responded to tighter emission standards by improving engine and vehicle technology. Advancements included:

- Designing combustion systems to minimize exhaust pollution;
- Introducing vapor-recovery systems to capture evaporating gasoline;
- Using computer technologies to monitor and control engine performance;
- Developing "after treatment" technologies (e.g. catalytic converters, particulate filters) that remove pollutants from the exhaust stream before they can escape into the atmosphere; and
- High-efficiency vehicle systems (e.g. lightweight materials, tires, aerodynamics, etc.).

As further detailed in the federal laws/programs section of this handbook (pp. 43–47), phase-in of current federal emission standards (Tier 2) for passenger cars and light-duty trucks began in 2004 and will be fully implemented by 2007. Under Tier 2, the same emission standards apply to all vehicle weight categories. Therefore, cars, minivans, light-duty trucks, and SUVs, fueled by **Figure 3**. The Evolution of Hydrocarbon Tailpipe Emission Standards



Source: Ford Motor Company

gasoline, diesel, or alternative fuels, will have to meet the same emissions standards.

The Promise of Advanced Technology Vehicles for Air Pollution

The United States has seen increases in the number of vehicles owned per household, vehicle miles traveled, percentage market share (more than 50 percent) of light trucks, and vehicle weight and available horsepower. These realities have offset some of the important gains realized in mobile source emissions over the last 30 years.

Advanced technology vehicles, especially hybrid electric vehicles (HEVs) (aka "hybrids") and fuel cell electric vehicles (aka "fuel cells"), have the potential to significantly reduce mobile source emissions. An HEV can control the engine's optimal operating point, making the vehicle more efficient and less polluting. The engine also can be downsized, because the motor/battery can help power the vehicle, and the engine can be turned off during idling times, such as at stops or during coasting. In addition, the engine can have a smoother operation, minimizing power spikes that can cause the engine to use more fuel and produce more pollution.

Hybrids also use regenerative braking to recapture braking energy. For example, a hybrid

electric motor can provide some braking power and act as a generator, producing electricity that can be stored in batteries or ultra-capacitors. This power can be used to power the wheels and displace engine operation, to lower fuel use and emissions. In addition, hybrids have the potential to operate in the "electric only" mode and produce zero emissions, which is optimal in congested areas.

Fuel cell electric vehicles have the potential for zero tailpipe pollution during vehicle operation, and near-zero "well-to-wheels" emissions. In fact, when hydrogen is used to power a fuel cell, the only byproducts are water and heat. And, since fuel cell technology is more efficient than combustion-based technologies, less energy is needed to provide the same amount of power. Hydrogen can be produced from a wide range of potential feedstocks (e.g. coal, natural gas, nuclear power, and renewables). Today, most hydrogen is produced by steam reforming natural gas. Fuel cell vehicles fueled by hydrogen produced from renewable sources such as wind, solar, and hydro may result in truly pollution-free transportation technology.



Greenhouse Gas Emissions

The transportation sector (motor vehicles, planes, ships, and pipelines) produces approximately one-third of U.S. greenhouse gas emissions (e.g. carbon dioxide). Motor vehicles alone account for approximately 25 percent of total U.S. carbon dioxide emissions. While not regulated as an emission, carbon dioxide is the transportation sector's primary contribution to climate change. Carbon dioxide emissions are directly proportional to fuel economy—each 1 percent decrease (increase) in fuel consumption results in a corresponding 1 percent decrease (increase) in carbon dioxide emissions.

The Impact of Advanced Technology Vehicles on Greenhouse Gas Emissions

Today more than 30 different vehicle models have fuel economy of 30 mpg or greater, although they represent less than 10 percent of total vehicle sales. One way to make breakthroughs in vehicle fuel economy, while maintaining the safety and comfort customers have grown accustomed to, is to move to advanced technology vehicles. The more efficient our transportation technologies, the less fuel consumed and carbon dioxide emitted. For example, although ICEs and ICE hybrids may never be "zero emission" vehicles, their potential

Figure 4.





Source: US Department of Energy, Energy Information Administration, Energy Annual Outlook 2005.

for CO₂ reduction per mile driven is substantial, especially if based on a future, downsized clean gasoline- or diesel-powered ICE. Combined with advanced aerodynamics, light-weighting, the reduction of rolling resistance (including low rolling resistance tires) and high efficiency engines such as lean burning engines and high expansion cycle engines, these vehicles may eventually produce even better vehicle efficiency and therefore, increase fuel economy and reduce carbon dioxide emissions. Furthermore, if ICE hybrids used biofuels, such as ethanol, they could, under certain circumstances, qualify as "carbon neutral" transport systems.

STATE POLICIES THAT ENCOURAGE THE PURCHASE AND USE OF ADVANCED TECHNOLOGY VEHICLES AND ALTERNATIVE FUELS

State policy makers from across the country have enacted into law a wide variety of incentives that encourage both the purchase and use of advanced technology vehicles and alternative fuels. Only through a multi-pronged approach are economies of scale likely to be reached to ensure a viable, sustainable market for clean, efficient transportation technologies.

The following pages provide one-page descriptions of 15 specific examples of incentives that could help spur development and use of advanced technology vehicles and alternative fuels if enacted into law. In fact, some of the policies highlighted already have been enacted into law and/or introduced in a particular state. Each of the following descriptions identifies the incentive type, intended goal, states that enacted the incentive into law, an example of a specific state policy, and the unique benefits and challenges associated with its implementation. Also included in this handbook is a comprehensive matrix of existing federal and state incentives for advanced technology vehicles and alternative fuels, organized in two ways: by provision and by state. Knowing existing incentives and actions other states have taken to address the nation's growing reliance on petroleum in the transportation sector may help legislators facilitate decisions on where to focus state efforts.

Also provided in the handbook is a variety of contact information, such as relevant federal agencies, as well as information about associations and environmental groups working to increase the use of advanced technology vehicles in the United States. We encourage readers to contact these individuals directly for additional information and, where applicable, strategies for enacting specific policies.

As noted on the following pages, the Alliance to Save Energy is providing a menu of options for determining the financial and/or non-financial incentive that best suit a particular state. It may, for instance, prove most beneficial for a state to implement direct cash incentives to make advanced technology vehicles more affordable. These could be in the form of consumer-based grants, loans, rebates, and buy-downs; income tax credits and deductions, and/or sales-tax and property-tax exemptions. The goal of such incentives is to help expand the market for advanced technology vehicles and, thereby, lower their costs. The incentives could be gradually phased out over time, helping to create a smooth transition to a sustainable market that would not need additional financial support.

Financial Incentives	Non-Financial Incentives
• Grants, loans, and tax credits/rebates.	• Exemptions from emission inspections, highway/bridge toll fees, and HOV lane restrictions.

Alternatively, states can choose to support government-subsidized loans to encourage technology adoption by helping customers overcome initial financial barriers. Interested but cash-challenged entities that could not otherwise afford to install a hydrogen refueling station, for example, could do so with such a loan. Nonfinancial incentives, such as exemptions from high occupancy vehicle (HOV) lane requirements, vehicle emissions inspections, or registration fees, also could be used to encourage the purchase and use of advanced technology vehicles.

The Alliance recognizes that states are taking many and diverse actions to promote advanced technology vehicles and alternative fuels. The selection of 15 incentives in this handbook in no way speaks to the Alliance's position on other state-level policy tools. The incentives selected, however, are supported by the Alliance as meaningful, practical tools for making advanced technology vehicles and alternative fuels more desirable and affordable to consumers.

INCENTIVES

Government often uses incentive-based policies and programs to encourage citizens to behave in a certain way. Incentives featured in this handbook are designed to encourage the purchase and use of advanced technology vehicles and/or alternative fuels. Without financial incentives, the higher incremental costs often associated with new technologies or alternative fuels that are not necessarily offset by fuel savings would prove to be market-entry barriers. Government incentives can positively impact purchasing decisions by either eliminating the cost difference between the conventional technology and the new technology (i.e. incremental cost) or, in some cases, providing a more favorable price to encourage purchase and use.

Incentives, however, have both benefits and challenges, and policy makers must take this into consideration when devising sound public policy. For purposes of this handbook, we have separated incentives into three categories: purchase incentives, operational incentives, and manufacturing incentives.

Each of the 15 incentives described in the following pages identifies: the incentive type; its intended goal; states that have enacted the provision into law; examples of specific state policies; and the unique benefits and challenges to the incentive.

COMMON BENEFITS AND CHALLENGES SHARED BY MANUFACTURING, PURCHASING, AND OPERATONAL INCENTIVE CATEGORIES

BENEFITS

- Reduced fuel usage;
- Accelerated market transformation;
- Reduced dependence on foreign fuel;
- Education of new technology and fuels;
- Improved air quality;
- Diversity of fuel portfolio;
- Government leading by example;
- Lower greenhouse gas emissions.



CHALLENGES

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- Potential reduction in state/local revenue;
- Temporary increase in state/local expenditures;
- Difficulty with enforcement;
 - Competition for limited funding;
 - Siting and construction of supporting infrastructure;
- Education and awareness.

PURCHASE INCENTIVES

Purchase incentives that seek to influence consumers' buying decisions include grants, tax credits and/or rebates, financing, and reduced tax rates. Such incentives reduce or eliminate the incremental costs associated with advanced technology vehicles and alternative fuels, ultimately resulting in increased purchase and use.

Provisions identified in this section include:

- Rebates and tax credits;
- Reduced tax rates;
- Low-interest loans;
- Grants;
- Private fleets;
- Insurance premiums;
- State policies;
- State bonds;
- Vehicle registration surcharge.

Challenges associated with these provisions include, but are not limited to, requiring legislative approval for surcharges on vehicle registrations and for tax credits/rebates; requiring voter approval for bond initiatives; and needing to educate private fleet owners/operators about the benefits of advanced technology vehicles and alternative fuels. The potential benefits of these provisions to businesses and consumers include increased public visibility of advanced technology vehicles, reduced taxes and fees, and expanded vehicle choices.

REBATES AND TAX CREDITS

Provide rebates or tax credits to businesses and/or individuals for purchase of advanced technology vehicles and/or supporting infrastructure.

- **Goal:** To increase the number of advanced technology vehicles, including alternative fuels and supporting infrastructure, by providing tax incentives to both businesses and consumers to encourage the purchase of advanced technology vehicles, alternative fuels, and supporting infrastructure.
- States: Arizona, Arkansas, California, Colorado, Connecticut, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Minnesota, Mississippi, Missouri, Montana, New York, North Carolina, North Dakota, Oklahoma, Oregon, Rhode Island, South Dakota, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.
- **Examples:** *Colorado*: Income tax credit ranging from \$2,430 to \$4,310 for businesses and consumers who purchase a qualifying HEV.

Mississippi: Makes direct payments to new ethanol producers of \$0.20 per gallon, up to 30 million gallons per year per producer, for a 10-year period.

Unique Benefit: Lowers vehicle and fuel costs.

Unique Challenge: Difficult to gain approval of tax credits during periods of state budget shortfalls/ fiscal constraints.

Rebate vs. Tax Credit vs. Tax Deduction

What is a tax rebate?

A rebate is a direct payment issued to a purchaser after the initial payment has been made.

What is the difference between a tax credit and a tax deduction?

A tax credit is a direct reduction in tax liability, independent of tax bracket. For example, a \$1,500 tax credit lowers an individual's tax liability by \$1,500. A tax deduction is an adjustment to income for purposes of calculating tax liability. For example, a \$1,500 federal tax deduction for a person in the top (33 percent) tax bracket results in a \$500 reduction in tax liability.

REDUCED TAX RATES

Reduced sales or excise tax rates for advanced technology vehicles and alternative fuels (and/or payment of an annual tax in lieu of a fuel tax).

- **Goal:** To encourage the sale and use of advanced technology vehicles and alternative fuels by setting a tax lower than the tax applied to conventional vehicles and fuels.
- States: Alabama, Arkansas, California, Colorado, Connecticut, District of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Maine, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, Oklahoma, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Washington, and Wisconsin.
- **Examples:** *New York*: For qualified hybrid electric vehicles, the sales tax exemption is \$3,000, unless the manufacturer certifies a higher incremental cost for the vehicle. Expired December 31, 2004.

New Mexico: Owners of AFVs with a gross vehicle weight not exceeding 54,000 lbs. may pay an annual tax in lieu of the per gallon tax, ranging from \$60 to \$1,100.

Maine: The state highway tax for each special fuel used in transportation is based on each fuel's energy content relative to gasoline. Ethanol (E85) and propane (LPG) are taxed at a rate of \$0.16 per gallon, and compressed natural gas (CNG) at \$0.19 per 100 standard cubic feet. Gasoline is taxed at a rate of \$0.22 per gallon.

Unique Benefit: Pay less in taxes/fees and help defray incremental costs associated with advanced technology vehicles and alternative fuels.



LOW-INTEREST LOANS

Authorize the state to create loan guarantee programs to help public and private fleet operators acquire advanced technology vehicles and/or build supporting infrastructure.

- **Goal:** To increase the number of advanced technology vehicles in private and public fleets by making loan programs available to help fleet operators acquire AFVs/HEVs and/or businesses construct supporting infrastructure.
- States: Connecticut, Iowa, Kansas, Maine, Missouri, Nebraska, New Mexico, Oklahoma, Rhode Island, and Utah.
- Example: Nebraska: Makes low-cost loans available for a variety of alternative fuel projects, including replacement of conventional vehicles with AFVs; purchase of new AFVs; conversion of conventional vehicles to operate on alternative fuels; and construction or purchase of a refueling station or equipment. Dedicated AFVs are eligible, and loans may help pay for dual-fuel vehicles. The maximum loan amount is \$150,000 per borrower. The interest rate is 5 percent or less and may be adjusted semi-annually. This program is funded by Petroleum Violation Escrow Accounts (PVEA).

Unique Benefit: Revolving loans provide continuous source of program funding.

Unique Challenge: Managing loans.

What are Petroleum Violation Escrow Accounts?

In the 1970s, the Organization of Petroleum Exporting Countries (OPEC) embargoed crude oil exports to the U.S. In response to this restriction in oil supply, the federal government regulated oil prices from 1973-1981 to prevent price gouging by domestic crude oil producers and to ensure fair allocation of oil resources. The U.S. Department of Energy was responsible for identifying violations, recovering overcharges, and obtaining restitution from wronged parties. Through the 1980s, several overcharge cases against domestic oil producers were settled or decided in court, resulting in financial penalties against oil producers. These penalties were intended to provide restitution to victims of the oil overcharges, and the funds were to be spent to benefit energy consumers. States have used the oil overcharge funds for a number of programs, including such transportation-related efforts as public transportation, ridesharing, and highway, bridge, and airport maintenance. Although there hasn't been a new settlement in years, some states are still funding programs from the interest collected from the settlement funds, including an interest installment expected to be released in fall 2005.

GRANTS

Grants for the purchase of advanced technology vehicles, production of alternative fuels, and/or construction of supporting infrastructure.

- **Goal:** To provide grants to individuals, businesses, and government entities to encourage the purchase of advanced technology vehicles, production of alternative fuels, and the construction of supporting infrastructure.
- States: Arkansas, California, Iowa, Kansas, Kentucky, Maine, New Jersey, New Mexico, North Carolina, Pennsylvania, Texas, Utah, Washington, and West Virginia.
- **Example:** *Pennsylvania*: Alternative Fuels Incentive Grant (AFIG) Program. Qualified projects (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) receive funding for 20 percent of eligible costs. No more than 10 percent of the funds may go to any one applicant each funding cycle, and no more than 15 percent may go to any one county.

Florida - Tries to Make Inroads with Hydrogen Energy Technologies

Florida Gov. Bush proposed a \$61.6 billion budget proposal for Fiscal Year 2005-06 which included an aggressive \$15 million initiative to make the state of Florida a leader in hydrogen energy technology. By offering a combination of grants and tax incentives, the governor hoped to attract corporate investment, create high-tech jobs, and demonstrate "next generation" technologies. Gov. Bush proposed \$12.9 million for targeted grants to accelerate private-sector capital investment in hydrogen technology and job creation. The funds were to be used for select, high-value demonstration projects with a minimum 100 percent match by project partners. In addition, \$2.1 million in salesrelated tax exemptions and corporate tax credits would have supported the manufacture and use of hydrogen technologies to stimulate capital investment, grow new businesses, and create iobs.

The hydrogen proposals died in committee, but demonstrated a method by which state government can attempt to incentivize the creation and demonstration of advanced technology vehicles and supporting infrastructure.



One of the Florida hydrogen vehicle demonstration models: the Ford E450 shuttle hydrogen internal combustion engine.

PRIVATE FLEETS

Programs that aim to increase the number of advanced technology vehicles in taxicab and for-hire fleets.

- **Goal:** To provide high-mileage vehicle fleets (e.g. taxicabs and for-hire fleets) with program incentives to encourage the fleet owners/operators to purchase advanced technology vehicles.
- States: New York (City of New York) and Maryland.
- **Examples:** *New York*: The New York City Clean Fuel Taxi Program provides up to \$8,000 per vehicle towards the purchase of new CNG taxi cabs or the conversion of gasoline cabs to operate on CNG. (Program has been on hold but is expected to be renewed in spring 2005).

Maryland: Offers flexible incentives to private companies and local governments to cover the incremental cost of dedicated CNG and clean-fuel vehicles that reduce emissions of nitrogen oxides (NOx). In order to qualify for these incentives, which are funded by CMAQ monies, 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 its 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 either the Washington, D.C., 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.

Unique Benefits: Increased public visibility of advanced technology vehicles; reduced fuel use and vehicle emissions.

Unique Challenges: Educate fleet owners/operators about the benefits of advanced technology vehicles and financing incremental costs.



INSURANCE PREMIUMS

Establish regulations that require insurance premiums for advanced technology vehicle policyholders to be at a comparable or reduced rate to those of gasoline/diesel vehicle policyholders.

- **Goal:** To ensure that advanced technology vehicle insurance policyholders are charged comparable or reduced insurance premium rates comparable to gasoline/diesel vehicle policyholders and to encourage the purchase of advanced technology vehicles.
- **States:** Maine and Florida.
- **Examples:** *Maine*: An insurer may credit or refund any portion of the premium charges for a clean-fuel vehicle insurance policy to encourage its policyholders to use them, as long as insurance premiums on other vehicles are not increased to fund these credits or refunds.

Florida: EVs are protected from insurance surcharges based on factors such as new technology, passenger payload, weight-to-horsepower ratio, and the types of material used to manufacture the vehicle, unless the Department of Insurance determines from actuarial data that the surcharge is justified.

Unique Benefit: Equitable or lower insurance costs for advanced technology vehicle owners.

Unique Challenges: Convincing insurance companies that advanced technology vehicles are comparable to conventional vehicles; educating public about insurance premium benefits of advanced technology vehicle ownership.



STATE POLICIES

Policies to encourage increased state purchase/use of advanced technology vehicles, alternative fuels, and supporting infrastructure.

- **Goal:** To increase the public purchase of advanced technology vehicles and/or construction of supporting refueling infrastructure by promoting or developing programs that would help public agencies acquire advanced technology vehicles.
- States: Arizona, California, Colorado, Connecticut, District of Colombia, Illinois, Indiana, Kansas, Maine, Maryland, Missouri, Montana, New Mexico, New York, Nevada, North Carolina, Oregon, Washington, and West Virginia.
- **Examples:** *New York:* State agencies and other affected entities must procure increasing percentages of AFVs as part of their annual vehicle acquisition plans; HEVs qualify under these requirements. By 2005, at least 50 percent of new light-duty vehicles acquired by each agency and affected entity must be AFVs, and by 2010, 100 percent of all new light-duty vehicles must be AFVs, with the exception of designated specialty, police, or emergency vehicles. (Reference Executive Order No. 111)

Washington: At least 30 percent of all new vehicles purchased through a state contract must be clean-fuel vehicles; this percentage shall increase at a rate of 5 percent each year.

Unfunded Mandates

The Energy Policy Act of 1992 (EPAct) requires federal, state, and alternative fuel provider fleets to purchase AFVs. In fact, this year, 75 percent of new federal and state light-duty vehicle acquisitions are to be AFVs; for alternative fuel providers (e.g, the electric and natural gas industries), 90 percent of lightduty vehicle acquisitions are to be AFVs.

The intent of EPAct was for these often centrallyfueled fleets to act as guaranteed markets for AFVs, helping create a market for vehicle manufacturers to produce the vehicles and fuel providers to install ethanol, compressed natural gas, and electric refueling and recharging infrastructure. The program was intended to solve the classic "chicken and egg" dilemma: the vehicle will be manufactured if and when the alternative fuels are available, and vice-versa.

The EPAct AFV mandate, however, did not provide states with sufficient funds to make the transition to AFVs. For example, funding was not always provided to help states purchase the AFVs, which all carry a price premium. While consumer-based tax incentives for AFVs were made available as part of EPAct, these incentives were not available to the states.

If mandates are to be used to change behavior, providing funding to ensure programmatic success may also be necessary.

STATE BONDS

Authorize issuance of state bonds to finance energy-efficient advanced technology vehicles, alternative fuel, and supporting infrastructure projects.

- **Goal:** To authorize funds for state bonds so the state can help foster the purchase and use of advanced technology vehicles and alternative fuels.
- State: New York.
- **Example:** Through New York's Clean Water/Clean Bond Act (Chapter 413), funds are available for state assistance payments to municipalities, state agencies and departments, and state public authorities that acquire alternatively-fueled buses and supporting infrastructure, including electric and hybrid electric buses.

Unique Challenges: Receiving voter approval for bond initiatives; educating the public on the benefits of specific bond initiatives.

What Are Bonds, and What Are They Used For?

Bonds issued by states and municipalities (often called municipal bonds) are generally used by states to finance capital outlay projects or acquire land. They are usually long-term expenditures and enable states to acquire assets or develop building programs that they could not afford on a "pay as you go" basis. For example, when people purchase a home, they usually don't have all the money needed to finance the acquisition, so they take out a mortgage loan. The understanding is that the loan will be repaid over the years, with interest. With state bonds, the state is doing the same thing, but on a larger scale – it is taking out a loan through the sale of bonds to finance a project or series of projects. States often use bonds to finance education, corrections, veterans' facilities, housing, transportation, state and local parks, and natural resources. Revenue bonds tend to fund specific programs or projects that will eventually bring in revenue – such as the building of toll roads, water and sewage facilities, airports, etc. The idea is that the money provided to these

programs will eventually be repaid through fees and charges to the facility users. General obligation bonds are backed by the issuer's taxing authority, not by a revenue stream created by the project being financed.

Michigan \$2 Million Bond Initiative

In February 2005, Michigan Gov. Granholm introduced her "21st Century Job Initiative," which aims to create 72,000 high-wage jobs by investing \$2 billion in bond monies to establish Michigan as a global center of research in new technology and emerging industries such as fuel cells, biodiesel technology, alternative energy, and clean technology. The bond initiative needs to be approved by the Michigan legislature before it can be placed on the state ballot for consideration by registered Michigan voters.

VEHICLE REGISTRATION SURCHARGE

Place a surcharge on vehicle registration fees to finance the purchase and use of advanced technology vehicles, supporting infrastructure, and alternative fuels.

- **Goal:** To develop a revenue stream to fund advanced technology vehicles and alternative fuels through a surcharge on vehicle registrations.
- State: California.
- **Example:** AB 2766, which became law in California in 1990, gives State Air Quality Management Districts (AQMDs) authority to issue a surcharge on vehicle registration fees to be used specifically to reduce air pollution from motor vehicles. Surcharges range from \$1 (South Coast AQMD) to \$6 (Sacramento AQMD). The Bay Area Air Quality Management District (Bay Area AQMD) includes the following programs that are funded by its \$4 vehicle registration surcharge:
 - ⇒ *Vehicle Incentive Program* Enables public agencies to acquire low emission, light-duty alternative fuel vehicles.
 - ⇒ Vehicle Buy Back Program - A voluntary program that pays owners up to \$650 to retire eligible older, operating, and registered vehicles. The vehicles have to be MY 1985 or older in order to be eligible for the program.

Unique Challenge: Receiving legislative approval to place a surcharge on registration fees.



OPERATIONAL INCENTIVES

The next set of incentives are "operational incentives." Through reduced tolls, parking exemptions, and vehicle scrappage programs, consumers are being encouraged to "make the right choice" and consider energy efficiency in their automobile purchasing decisions.

Provisions identified in the section include:

- Vehicle use exemptions;
- Reduced or eliminated tolls;
- Leveraged federal highway transportation funding; and
- Voluntary vehicle retirement (scrappage).

Consumer benefits include reducing toll fees, idling time, toll booth congestion, and commuting time; preferential parking; and accelerated turnover of the vehicle fleet to newer, more fuel-efficient, and cleaner vehicles. Loss of highway funds, potential increases in HOV lane congestion, and social equity issues are some of the challenges associated with these incentives.

VEHICLE USE EXEMPTIONS

Advanced technology vehicle exemptions: emissions inspections, license plate and/or parking fees, and high-occupancy vehicle (HOV) lane access restrictions.

- **Goal:** To increase the purchase and use of advanced technology vehicles by providing exemptions from various laws and regulations.
- States: Arizona, California, Colorado, District of Columbia, Florida, Georgia, Hawaii, Maryland, Michigan, Missouri, Ohio, Oregon, Nevada, Pennsylvania, Utah, Virginia, and Washington.

Examples: District of Columbia: Reduced registration fees by 50 percent for HEV owners.

California: HEVs exempt from biennial and change-of-ownership Smog Check inspections until January 1, 2010.

Unique Benefits: Convenience and reduced costs.

Unique Challenges: Potential overcrowding of HOV lanes and/or parking spaces; equitability among vehicle manufacturers.

HOV Lane Access for Hybrids—Federal Law and Implications for States

As of this writing, governors from six states— Arizona, California, Colorado, Florida, Georgia, and Virginia—have signed bills into law allowing single-occupant drivers of hybrids to use HOV lanes in these states. These laws are not identical:

- California requires that the hybrid achieve a fuel economy rating of 45 mpg or better;
- Colorado and Florida allow all hybrids;
- Georgia requires the vehicles to meet federal emission standards (Tier 2, Bin 5); and
- Virginia allows vehicles bearing "cleanfuel vehicle" license plates (which include hybrids) to travel in the HOV lanes.

Today, the only hybrid drivers who are legally able to travel in the HOV lanes as single

occupants are those traveling the highways of Virginia. The Federal Highway Administration has determined that Virginia can serve as the pilot test case for the country on this issue. Hybrid drivers in all of the other states will have to wait to take advantage of these state laws until the federal law is changed. Currently, waiver conditions are only granted to single-occupant drivers of compressed natural gas and electric vehicles.

The 109th Congress is attempting to address this issue as it considers legislation to reauthorize the federal highway, public transportation, highway safety, and motor carrier safety programs.

REDUCE OR ELIMINATE TOLLS

Reduce or eliminate tolls for advanced technology vehicles.

- **Goal:** To increase the desirability of advanced technology vehicles by reducing or eliminating road toll fees.
- State: California.

Example: Battery electric, compressed natural gas, and hydrogen-fueled vehicles are permitted to use the high occupancy vehicle (HOV) lanes toll-free/reduced-rate passage privilege on specified bridges if the owner of the vehicle has obtained an automatic vehicle identification account and is registered to an address in the nine-county San Francisco Bay region. Eligible vehicles do not include hybrid electric vehicles currently offered for sale in California.

Unique Benefits: Reduction in the number of cars idling and in toll booth congestion; reduction or elimination of toll fees, resulting in saved time and quicker commutes.

Unique Challenges: Loss of highway funds and enforcement.



LEVERAGING FEDERAL HIGHWAY TRANSPORATION FUNDING

Require metropolitan planning organizations (MPOs) to include acquisition of qualifying clean-fuel vehicles and advanced technology vehicles in priority projects to receive Congestion Mitigation and Air Quality (CMAQ) Improvement Program funding.

Goal: To prioritize clean fuel and energy-efficient vehicle acquisition projects in non-attainment areas that receive CMAQ funding to increase the number of advanced technology vehicles on the roadways and ultimately, reduce vehicle emissions and improve air quality.

States: Georgia, Maryland, New York, and Texas.

Example: New York City Private Fleet Alternative Fuel/Electric Vehicle Program, administered by NYSERDA in cooperation with New York City Clean Cities and funded through CMAQ, helps private companies operating vehicles in New York City acquire AFVs. Funds are awarded on a competitive basis for up to 50 percent of the incremental cost of purchasing new light-duty NGVs or EVs. 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.

Unique Challenges: Convincing MPOs that advanced technology vehicle acquisition is a funding priority.

Congestion Mitigation and Air Quality (CMAQ) Improvement Program

The Congestion Mitigation and Air Quality (CMAQ) Improvement Program funds projects and programs in air quality nonattainment and maintenance areas for ozone, carbon monoxide, and small particulate matter that reduce transportation-related emissions. CMAQ funds are distributed to state DOTs, metropolitan planning organizations (MPOs), and transit agencies according to a formula based on population and severity of pollution. A total of \$8.1 billion was authorized for CMAQ during 1998-2003. It is anticipated that the program will receive \$9-\$10 billion during the next reauthorization cycle. (As of this writing, Congress has not finalized action on the highway reauthorization bill.) As currently structured, CMAQ funds can be used to purchase a variety of alternative fuels and alternative fuel vehicles. CMAQ funding also can be used for experimental pilot projects which can be reasonably classified as transportation projects, will reduce emissions, and are not in violation of any legal restrictions. The CMAQ program provides an important mechanism for encouraging pollution reductions in the transportation sector.

VOLUNTARY VEHICLE RETIREMENT

Fund a voluntary vehicle retirement (scrappage) program in which individuals/businesses receive \$X for each vehicle retired.

- **Goal:** To remove older, less efficient, and higher-emitting vehicles from the roads by offering a monetary incentive to owners who voluntarily retire an eligible vehicle.
- State: California.
- **Example:** California has instituted a voluntary vehicle retirement program to meet emissions-reduction goals. Participants sell eligible vehicles to an approved enterprise so that the entire vehicle can be destroyed in order to generate mobile source emission reduction credits. Each retired vehicle is subject to a series of emissions tests to calculate the emissions benefits it achieved by removing it from the road. The value of the retired vehicle depends on the value of emission reduction credits in the air district where the vehicle is registered. Typically, this translates into \$400-\$700 per vehicle.

Unique Benefit: Accelerates fleet turnover to put newer, more fuel-efficient, and cleaner vehicles on the road sooner than would otherwise occur.

Unique Challenges: Uncertainty whether replacement vehicle is cleaner than traded vehicle; social equity issues; calculating emission and fuel-savings benefits of retired vehicles; establishing funding source.

Just Scrap It!

MANUFACTURING INCENTIVES

The backbone of manufacturing incentives is economic development: grow a state and/or local economy by encouraging businesses to relocate or expand to create new job opportunities and brand-new startups.

Provisions identified in this section include:

- Tax credits/rebates for new and/or expanding business;
- Renewable investment funds.

The following pages discuss states that have enacted manufacturing incentives as a way to encourage the production of alternative fuels and create new jobs and advanced technologies.

ECONOMIC DEVELOPMENT

Provide tax credit for construction of a facility that manufactures advanced technology vehicles or produces alternative fuels.

- **Goal:** Encourage advanced technology vehicle-related businesses in the state by providing a tax incentive to businesses that construct manufacturing facilities for advanced technology vehicles and/or production facilities for alternative fuels.
- States: Arkansas, Hawaii, Michigan, Vermont, Virginia, and Washington.

Examples: *Michigan*: 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 technology vehicles such as electric vehicles, hybrid vehicles, or alternative fuel vehicles and their components.

Vermont: Businesses that are involved exclusively in design, development, and manufacture of electric vehicles, alternative fuel vehicles, or hybrid vehicles are eligible for up to three of the following seven income tax credits:

- A percentage of increased payroll costs;
- 10 percent of qualified research and development expenditures;
- 5-10 percent of total investments in facilities and equipment;
- Up to 6 percent of investments in machinery and equipment;
- Up to 6 percent of investments for renovation of existing facilities to provide cable, fiber, or telecommunications access; and
- 20 percent of qualified training, education, and workforce development expenditures; sales and use tax exemption for approved personal computers and software.

Virginia: A job-creation tax credit worth \$700/per full-time employee is provided 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.

RENEWABLE INVESTMENT FUNDS

Develop a renewable investment fund and make technologies that produce hydrogen from renewables and/or efficiently convert hydrogen to electricity eligible for funding.

- **Goal:** Increase the production of hydrogen from renewable energy resources for refueling fuel cell electric vehicles and/or hydrogen internal combustion engine vehicles.
- State: Connecticut.
- **Example:** Technology that produces hydrogen or efficiently converts hydrogen to electricity is eligible for funding under Connecticut's Renewable Energy Investment Fund (Fund). The Fund collected approximately \$20 million from system benefit charges in 2004 and is expected to collect approximately \$28 million per year beginning in 2005. The state approved the expenditure of funds for the development of technologies that produce hydrogen.

Unique Benefit: Producing clean-burning fuel from non-polluting renewable energy resources.

Unique Challenges: Initial low demand for end-product; overcoming perceptions about hydrogen as an alternative fuel.



What is a System Benefits Charge (SBC)?

Connecticut's Renewable Energy Investment Fund (aka Connecticut Clean Energy Fund) derives its revenue from system benefits charges (SBCs) (i.e. public benefit funds or PBFs). Such funds are commonly supported through a surcharge on all customers' electricity consumption (e.g., 0.2 cents/ kWh). Uses of these funds include: rebates to entice customers to purchase renewable energy systems, funding for renewable energy R&D, and development of renewable energy education programs. As of this writing, 25 states plus the District of Columbia have public benefits programs, but only Connecticut uses its fund to support hydrogen efforts.

BENEFITS AND CHALLENGES OF ADVANCED TECHNOLOGY VEHICLES

Every advanced technology vehicle, whether it be clean diesel, alternatively fueled, or hybridized, has specific advantages and disadvantages, but each has the potential of reducing the amount of petroleum and/or diesel fuel used in the transportation sector. This section provides a brief overview of the transportation technologies and fuels that could be encouraged through advantageous state policies and the challenges to their widespread adoption in the marketplace.

HYBRID ELECTRIC VEHICLES

Hybrid electric vehicles (HEVs or "hybrids") combine an internal combustion engine with an electric motor and battery. The two technologies can be combined to reduce fuel consumption and tailpipe emissions. Hybrids capture energy lost during braking and return it to the battery, in a process called "regenerative braking." While hybrids can be fueled by ethanol, compressed natural gas, hydrogen, or other alternative fuels, the hybrid electric vehicles that have been introduced in the United States' market to date are fueled by gasoline.

HEVs can have a parallel design, a series design, or a combination of the two. In a parallel design, the energy conversion unit and electric propulsion system are connected directly to the vehicle's wheels. The primary engine is used for highway driving; the electric motor provides added power during hill climbs, acceleration, and other periods of high demand. In a series design, the primary engine is connected to a generator that produces electricity. The electric motor that powers the which drive an electric motor that powers the wheels. HEVs can also be built to use the series configuration at low speeds and the parallel configuration for highway driving and acceleration.

ADVANTAGES OF HYBRID ELECTRIC VEHICLES

- An improvement (5 to 50 percent) in fuel economy and performance over conventional ICE vehicles;
- No compromise for infrastructure or range;
- Potential for reduced tailpipe emissions;
- Plug-in capability.

The hybrid batteries in today's HEVs are not plugged in to recharge. Instead, they are recharged using regenerative braking or by using an on-board generator. The electric utility industry, regulators, the environmental community, and the automotive industry are pursuing grid-connected hybrid technologies as a way to further improve the environmental performance and fuel savings of hybrids. DaimlerChrysler's Sprinter Group and EPRI have formed an alliance to build and test five plug-in hybrid Sprinter vans with a 20 to 30 mile allelectric range.

CHALLENGES OF HYBRID ELECTRIC VEHICLES

- Cost and complexity of two powertrains;
- Customer expectation/knowledge;
- Component availability.

As of April 2005, six HEV models are available to consumers for purchase. These include the Honda Insight, the Honda Civic Hybrid, the Honda Accord Hybrid, the Toyota Prius and Lexus RX400h, and the Ford Escape Hybrid. Toyota has announced the planned introduction of the Toyota Highlander in June 2005. (Please see the DOE advanced technology vehicles chart located in the back of this handbook). General Motors has hybridized two light-duty pick-ups-the Chevrolet Silverado and the GMC Sierra-for fleet use only. Demand for hybrid vehicles has been strong and sales grew by 81 percent in 2004 to just over 83,000 hybrid vehicles sold. The automotive industry also has plans to introduce additional hybrid vehicles into the marketplace in the 2006-2008 timeframe, albeit in small numbers. While the number of hybrids are growing, there are 17 million lightduty vehicles sold annually in the United States; hybrids account for less than 1 percent of overall vehicle sales.

In recognition of the varying energy-efficiency characteristics of hybrid electric vehicles, some legislators have been considering consumer tax incentives that would be based on factors such as the fuel economy of the vehicle, its emissions characteristics, and the amount of driving power supplied by the electrical system. For example, comprehensive energy legislation considered during the 108th Congress (HR6) would have provided a tax credit of \$400 to \$2,400 for hybrid passenger automobiles and light trucks that achieved specific mileage performance criteria (125-250 percent increase over MY 2002 city fuel economy) through 2008 and an additional credit (\$250-\$1,000) based on the amount of fuel saved over the life of the vehicle. The vehicles also would have had to meet both California's LEV standard and Federal Tier II, Bin 5 emission standards and have a maximum available power of at least 4 percent. State policy makers may want to consider these factors when considering consumer incentives for hybrid electric vehicles.

Table 1. Hybrid Checklist: Is This Vehicle a Hybrid?

Does this vehicle	Conventional Vehicle	Muscle Hybrid	Mild Hybrid	Full Hybrid	Plug-In Hybrid
Shut off the engine at stop lights and in stop-and-go traffic?	✓	×	✓	×	✓
Use regenerative braking and operate above 60 volts?		×	×	✓	✓
Use a smaller engine than a conventional version with the same performance?			~	*	1
Drive using only electric power?				✓	✓
Recharge batteries from the wall plug and have a range of at least 20 miles on electricity only?					1

Source: Union of Concerned Scientists, January 2003
ADVANCED DIESEL

In 2002, less than one-half of one percent of cars sold in the United States were diesel vehicles, and no light-duty trucks were produced. This is in large part a legacy of the 1970s and 1980s, when light-duty diesels appeared in larger numbers but were plagued by poor performance, unreliability, visible exhaust, and high noise levels. Over the years, manufacturers have been addressing these shortcomings, and in Europe, clean diesel powers 40 percent of new, light-duty motor vehicles.

Clean diesel vehicles are more fuel-efficient than gasoline-powered vehicles. On average, clean diesel vehicles achieve 20-40 percent better fuel economy than their gasolinepowered counterparts. Today's diesel vehicles run more cleanly as a result of new fuel injection, combustion, and exhaust aftertreatment technologies. Diesel engines, however, are more expensive than gasoline engines. Because they operate at higher compression ratios, diesel engines are built more robustly, which elevates their costs. Furthermore, as new features such as highpressure common rail fuel injection and variable geometry turbochargers are implemented to control emissions and elevate performance, their price will likely continue to be higher than other internal combustion engine vehicles. Tomorrow's diesel vehicles also will require advanced after-treatment systems, adding cost, at least in the near term.

BENEFITS AND CHALLENGES OF ADVANCED DIESEL

Benefits

- More fuel efficient than ICE counterpart;
- Higher performance.

Challenges

- More expensive than gasoline engines;
- Reducing NOx tailpipe emissions to meet U.S. Tier 2 emissions standards;
- Overcoming negative consumer perceptions.

On average, clean diesel vehicles achieve 20-40 percent better fuel economy than their gasolinepowered counterparts.

In the past, the disadvantages of diesel vehicles have constituted major obstacles to increased use in the United States. For example, their emission of certain pollutants was much higher than those of gasoline vehicles. In order to address this concern for light-duty vehicles, EPA now has much more stringent federal regulatory requirements for diesel vehicles, requiring they meet the same standards as gasoline vehicles for NOx and particulate matter (PM). These two pollutants have potential direct and indirect public health impacts. NOx is an important precursor to smog formation in the United States. PM, especially the very fine particles that are found in diesel exhaust and other combustion sources, has been associated in epidemiology studies with respiratory illness. California has designated diesel PM as a toxic air contaminant. Strict emission requirements are in place at the federal level and in California to address these potential health concerns on all newly produced diesel vehicles.

While four car models are the extent of light-duty diesel offerings in the United States today, domestic automobile manufacturers plan to enter the light-duty diesel market within the next several years. The majority of diesel vehicles available at present are medium-duty vehicles (aka "Class 2b" trucks) that weigh between 8,500 and 10,000 lbs. gross vehicle weight.

FUEL CELL ELECTRIC VEHICLES

All of the world's major automobile manufacturers are demonstrating fuel cell electric vehicles (FCEVs) in small numbers. The benefits of FCEVs include the potential for zero or nearzero emissions, a higher efficiency than internal combustion engine vehicles, and lower maintenance costs. In fact, an FCEV, powered by an electric motor, promises the air quality benefits of a battery-powered electric vehicle. FCEVs can be fueled with pure hydrogen gas, stored onboard in high-pressure tanks. They also can be fueled with hydrogen-rich fuels (e.g., methanol, natural gas, gasoline, etc.), but these fuels must first be converted into hydrogen by an on board reformer. FCEVs are not expected to reach the mass market for a least 10-15 years. Challenges to their development and commercialization include the cost of fuel cells, the range of the vehicles, storage of the fuel, the development of the required infrastructure (e.g. siting of hydrogen refueling facilities, training, adoption of appropriate codes and standards, education and outreach) and the availability of hydrogen. (See the section on hydrogen as an alternative fuel for additional details).

Because FCEVs and supporting infrastructure are still in their infancy, they require continued support at the federal, state, and local levels to ensure their success in the marketplace. In 2003, President Bush announced a \$1.2 billion hydrogen fuel cell initiative whose goal is that industry will decide whether or not to commercialize fuel cell electric vehicles by 2015.

ADVANTAGES OF FUEL CELL ELECTRIC VEHICLES

- Potential for zero tailpipe emissions;
- The "well-to-wheel" CO₂ emissions can be near zero by using renewable fuels to produce hydrogen.
- Potential enhanced energy security through use of non-petroleum-based transportation fuels.

In addition, a handful of fuel-cell-based passenger cars have been leased to government and universities, but they are not yet available for sale to the public. As of March 2004, the California Fuel Cell Partnership (Partnership) has demonstrated 55 fuel cell vehicles. The six-yearold Partnership also expects to facilitate members' placement of up to 300 fuel cell cars and buses by the end of 2007. In addition to the vehicles, the Partnership is testing fuel alternatives, identifying fuel infrastructure issues, conducting joint studies, and preparing the California market for this new technology.

In April 2004, California Gov. Schwarzenneger signed Executive Order S-7-04, which created a public/private partnership to build a "hydrogen highway" in California by 2010. The goal of the "California Hydrogen Highways Network" is to plan and build a network of 150-200 hydrogen fueling stations along California roadways, and in the urban centers that they connect, to allow Californians access to hydrogen fuel.

CHALLENGES OF FUEL CELL ELECTRIC VEHICLES

- Fuel cell stack and system cost must be significantly reduced and reliability increased;
- Hydrogen supply challenges (i.e. generation/ storage/availability);
- Codes and standards and customer acceptance;
- Vehicle range.



Source: California Fuel Cell Partnership

HOW A FUEL CELL WORKS

A fuel cell is an electrochemical energy conversion device that is two to three times more efficient than an internal combustion engine in converting fuel to power.

A fuel cell produces electricity, water, and heat using fuel and oxygen in the air. When hydrogen is the fuel, water is the only vehicle emission.

As hydrogen flows into the fuel cells on the anode side, a platinum catalyst facilitates the separation of the hydrogen gas into electrons and protons (hydrogen ions). The hydrogen ions pass through the membrane (the center of the fuel cell) and, with the help of a platinum catalyst, combine with oxygen and electrons on the cathode side, producing water. The electrons, which cannot pass through the membrane, flow from the anode to the cathode through an external circuit containing a motor or other electric load, which consumes the power generated by the cell.

The voltage from one single cell is very small, so it takes a lot of cells (stacked) to increase the operating voltage.

HYDROGEN INTERNAL COMBUSTION ENGINE VEHICLES

Until fuel cells become readily available, vehicle manufacturers are exploring the development of hydrogen-powered ICEs as a means of advancing the use of hydrogen and hydrogen-blend fuels. One of the benefits of hydrogen-powered ICEs is that they can run on pure hydrogen or a blend of hydrogen and compressed natural gas (CNG). Fuel flexibility is very attractive as a means of addressing the widespread lack of hydrogen fueling infrastructure in the near term. Hydrogenpowered ICEs also have many operating advantages. They perform well under all weather conditions, require no warm-up, have no cold-start issues (even at subzero temperatures), and are highly fuel-efficientup to 25 percent better than conventional spark ignition engines. The concept of using hydrogen in internal combustion engines offers several advantages: producing near-zero net emissions, maintaining the utility and flexibility of today's automobiles, and helping to promote a hydrogen fueling infrastructure. Hydrogen ICEs also could serve as a bridge technology to fuel cell vehicles.

The challenges to hydrogen ICEs include the need to create a fueling infrastructure, provide hydrogen in large quantities, develop appropriate codes and standards for hydrogen manufacturing, distribution and storage, and develop sufficient onboard fuel storage.

Hydrogen ICEs are highly fuel efficient up to 25 percent better than conventional gasoline spark ignition engines—and could serve as a bridge technology to fuel cell vehicles.



Cooling hydrogen to -423°F on BMW's 750hL shrinks hydrogen to a small fraction of its uncompressed volume. The hydrogen remains at this temperature, thanks to hightech insulation in the fuel tank.

BENEFITS OF HYDROGEN ICE VEHICLES

- Run on pure hydrogen;
- More fuel efficient than conventional ICEs;
- No cold-start issues;
- Near-zero net emissions.

CHALLENGES OF HYDROGEN ICE VEHICLES

- Creating fueling infrastructure;
- Developing sufficient on-board fuel storage;
- Providing hydrogen fuel in large quantities;
- Developing codes and standards for hydrogen manufacturing/distribution/storage;
- Overcoming perceptions of hydrogen.

ALTERNATIVE FUELS

Alternative fuels are defined as:

- Electricity;
- Natural gas (Compressed and Liquefied);
 Propane (Liquefied Petroleum Gas);
- Ethanol;
- Biodiesel;
- Hydrogen;
- Methanol.

What follows is general information about all of these.





ELECTRICITY

Electricity can be used as a transportation fuel to power battery electric and plug-in hybrid vehicles. Electricity is unique among the alternative fuels, in that mechanical power is derived directly from it, whereas the other alternative fuels release stored chemical energy through combustion to provide power. When used to power electric vehicles (EVs), electricity is stored in an energy storage device such as a battery. EV batteries have limited storage capacity and must be replenished by plugging the vehicle into a recharging unit. The electricity for recharging the batteries can come from the existing power grid (fueled by coal and/or natural gas) or from distributed renewable energy sources such as solar or wind.

The principal benefit of using EVs is that there are no vehicle tailpipe emissions, although the source of the electricity can affect its overall environmental impact. The economic advantage of using EVs, once the relatively high initial capital cost is covered, comes through lower "fuel" and maintenance costs. The cost of an equivalent amount of fuel for an EV is less than the price of gasoline. Additionally, maintenance is less, because EVs have fewer moving parts to service and replace.

The automotive industry is no longer producing full function battery electric vehicles. Low-speed electric vehicles (LSVs) are available from manufacturers such as Global Electric Motorcars, a subsidiary of DaimlerChrysler. LSVs are fourwheeled motor vehicles whose top speed is between 20 and 25 miles per hour. They comply with Federal Motor Vehicle Safety Standards applicable to low-speed vehicles. LSVs are designed to be used in residential areas, planned communities, industrial sites, and other areas with low density traffic, and low-speed zones.



Approximately 45,656 electric vehicles (including LSVs) and 574 public and private recharging sites were in use in 2003. The majority of these chargers (468) are located in California.

COMPRESSED NATURAL GAS AND LIQUIFIED NATURAL GAS

Natural gas is a mixture of hydrocarbons, mainly methane, and is extracted either from gas wells or in conjunction with crude oil production. Natural gas can be used as a transportation fuel in either a gaseous form (compressed natural gas or CNG) or as a liquid (liquid natural gas or LNG). CNG is dispensed into vehicles at 3,600 psi, and LNG is dispensed as super-cooled liquid at -260°F. In order to achieve travel distances comparable to those of gasoline or diesel vehicles, CNG is stored onboard as a gas in high-pressure cylinders, and LNG is stored as a liquid in super-insulated tanks. Because natural gas is clean-burning and not made from petroleum, as are gasoline and diesel, many automakers around the world have developed vehicles to run on natural gas.

CNG currently is available at approximately 800 refueling stations in 43 states. There were 132,988 CNG vehicles in use in 2003.

Source: U.S. DOE

Natural gas is odorless, non-toxic and noncorrosive, cannot be absorbed through the skin, and will not contaminate ground water. Natural gas fueling systems are sealed, or closed loop, so no gas escapes during the refueling process, and virtually zero evaporative emissions are produced.

The use of alternative fuels like CNG and LNG were initially encouraged because of their emissions benefits and potential to displace petroleum. However, the emission benefits have diminished over time due to the increased performance and cleanliness of gasoline engines.

Like electricity, the economic advantage of NGVs, once the relative high initial capital cost is paid, comes through lower fuel and maintenance costs. Depending on market

conditions, the cost of an equivalent amount of fuel for NGVs can be less than the price of gasoline or diesel fuel. Maintenance for NGVs can be less because the fuel does not contaminate the engine oil like gasoline and diesel fuel. Additional benefits of NGVs include extended oil change intervals, increased spark plug life, and extended engine life.

The United States has vast natural gas reserves distributed across the country through extensive pipeline systems extending from the well-head to the end user. As a result, CNG currently is available at approximately 800 refueling stations in 43 states. According to DOE, 132,988 CNG vehicles were in use in 2003. CNG vehicle owners also can refuel their vehicles at home by installing small compressors connected directly to the home's natural gas supply.

Two types of CNG fuel systems are on the market: dedicated vehicles, which operate exclusively on natural gas, and bi-fuel (or dualfuel) vehicles, which can use both natural gas and gasoline. Honda manufactures a dedicated Civic GX natural gas vehicle, and General Motors manufactures a dedicated CNG GMC Sierra and a bi-fuel Chevrolet Silverado. A bi-fuel vehicle has two separate fuel systems, one for gasoline or diesel and one for another fuel, such as natural gas. The bi-fuel design allows the use of an alternative fuel when available. Because CNG is stored in pressurized tanks, the fuel cannot simply be pumped into the gasoline tank. The need for two separate fuel systems and a storage tank for a gaseous fuel increases the cost of bifuel vehicles and reduces cargo space.

A total of 3,030 LNG (primarily heavy-duty) vehicles were in use in 2003, and only 45 LNG refueling facilities are located in six states, with more than half (29) located in California.

PROPANE

Liquefied petroleum gas (LPG or propane) is a mixture of various hydrocarbons (propane, propylene, butane, and butylene) that exist as gases at atmospheric pressure and temperature, yet liquefy at higher pressures. All such fuel mixtures in the United States are named for their major constituent—propane. Propane is a natural derivative of both natural gas processing and crude oil refining. Propane is stored as a liquid onboard a vehicle at pressures between 130 and 170 psi. Tanks are filled to no more than 80 percent of capacity to allow for liquid expansion as ambient temperatures rise.

Propane vehicles can produce fewer ozoneforming emissions than vehicles powered by reformulated gasoline. The use of alternative fuels like propane were initially encouraged because of their emissions benefits and potential to displace petroleum. However, the emission benefits have diminished over time due to the increased performance and cleanliness of gasoline engines. Propane is considered to be nontoxic and non-corrosive, and will not contaminate ground water.

Propane vehicles are typically converted gasoline or diesel vehicles. According to DOE, more than 190,000 vehicles, mostly in fleets, are traveling the nation's highways under propane power. Propane is powering taxis, school buses, sheriff and police cars, and hundreds of other fleet vehicles. Propane is used in light- and medium-duty vehicles and has been used as a transportation fuel around the world for more than 60 years. Service station infrastructure used for conventional fuels can be modified to dispense propane.

More than 190,000 propane vehicles, mostly in fleets, are traveling the nation's highways. There are more than 3,113 propane fueling stations in the US, more than for any other alternative fuel.



ETHANOL

Ethanol (E100) is a clear, colorless liquid with a characteristically agreeable odor. In the United States, ethanol is made primarily from corn. It also can be produced chemically from ethylene or biologically from agricultural wastes or any material containing starch or sugar. The grain alcohol produced is denatured or poisoned prior to shipment to prevent ingestion. One bushel of corn (approximately 56 pounds) produces 2.7 gallons of ethanol. Like gasoline, ethanol contains hydrogen and carbon, but ethanol also contains oxygen in its chemical structure. Ethanol is classified as an oxygenate and is blended with gasoline to reduce carbon monoxide emissions. For a blend of ethanol and gasoline to qualify as an alternative fuel per the Energy Policy Act of 1992 (EPAct), it must be mixed or blended with gasoline at a ratio of at least 85 percent ethanol and 15 percent gasoline. The final product is termed "E85."

The emissions from an E85-powered vehicle are the same as those from a gasoline vehicle, but lower in terms of quantity. E85 cannot be burned in a conventional gasoline vehicle. The vehicle manufacturer must modify the engine and fuel system to accommodate E85.

In some areas of the country, primarily major U.S. cities, the use of E10 is common. E10, a blend of 10 percent ethanol and 90 percent gasoline, has higher octane and is used to improve air quality. The use of E10 in vehicles does not require engine modification.

Minnesota Gov Pawlenty signed a bill into law in May, 2005 (Chapter 52) requiring within eight years that gasoline contain 20 percent ethanol (E20) unless ethanol already makes up one-fifth of gas sold in the state. Minnesota must receive a waiver from the US EPA before the E20 mandate can take effect.

During the past few years, several major automobile manufacturers have developed flexible-fuel vehicles (FFVs) that can run on either gasoline or E85. An FFV has a single fuel tank, fuel system, and engine and is designed to run on unleaded gasoline and an alcohol fuel (usually ethanol) in any mixture. The engine and fuel system in an FFV must be adapted slightly to run on alcohol fuels, which are corrosive. The vehicle must also be specially adapted to analyze the fuel mixture and control the fuel injection and timing to adjust for different fuel compositions.

The FFV offers its owner an environmentally beneficial option whenever the alternative fuel is available. Flex-fuel technology was created by Ford Motor Company in the mid-1980s. FFVs that use E85 are currently available from DaimlerChrysler, Ford Motor Company, General Motors, and Nissan.

To date, 3.4 million FFVs have been produced; but according to a March 2002 study conducted by the U.S. DOE, U.S. DOT and EPA, FFVs run on E85 only 1 percent of the time. Incentives for the production and use of ethanol, and the installation of refueling facilities, may help overcome this market barrier.

Approximately 133,776 vehicles running on E85 were in use in 2003, not including FFVs. There are 209 public and private E85 refueling sites located in 30 states in the United States, with the majority of sites (100) located in Minnesota.

5

BIODIESEL

Biodiesel (fatty acid alkyl esters) is a cleaner burning diesel replacement fuel made from domestic, renewable, organic sources such as new and used vegetable oils and animal fats. Biodiesel is produced via a chemical process known as transesterifcation, where glycerin and methylesters (biodiesel) are separated from fat and vegetable oil with alcohol, such as ethanol.

Just like petroleum diesel, biodiesel can operate in compression-ignition diesel engines with little or no modifications. Biodiesel, in its pure form, is referred to as B100. B100 has received approval as a blend component by the American Society of Testing and Materials (biodiesel standard number ASTM D6751), the premier standard-setting organization for fuels and fuel additives. Today, most biodiesel fuels are biodiesel blends (biodiesel mixed with petroleumbased diesel) such as B2, B5, and B20. For example, B20 is a blend of 20 percent biodiesel mixed with 80 percent diesel. Currently no ASTM standards have been set for B20.

There are 187 biodiesel refueling sites available in 38 states.

Source: U.S. DOE

Biodiesel is desirable as an alternative fuel because it displaces petroleum-based diesel and reduces toxic air emissions and greenhouse gases while supporting agricultural and rural economies. Biodiesel contains 11 percent oxygen by weight. When mixed with petroleum-based diesel, it allows petroleum products to combust more completely and lowers carbon monoxide, particulate, soot, and hydrocarbon tailpipe emissions. However, due to high concentrations of polyunsaturated compounds in the fuel, biodiesel NOx emissions tend to be higher. Biodiesel does not contain any nitrogen or aromatics and typically contains less than 15 ppm of sulfur. B5 is compatible with many of the latest diesel emissions aftertreatment equipment designed for ultra low sulfur diesel.

The energy content of B20 is roughly 10 percent

less than No. 2 diesel; therefore the vehicle miles per gallon will be reduced by approximately 10 percent.

Feedstock costs account for a large percentage of direct biodiesel production costs, including capital cost and return. It takes about 7.3 pounds of soybean oil, which costs about 20 cents per pound, to produce a gallon of biodiesel.

Effective November 1998, Congress approved the use of biodiesel as an Energy Policy Act compliance strategy. The legislation allows EPAct-covered fleets (federal, state, and public utility fleets) to meet 50 percent of their AFV purchase requirements by buying 450 gallons of pure biodiesel (B100) and burning it in new or existing diesel vehicles in at least a 20 percent blend with diesel fuel (B20).

The Future of Biomass: Biofuels

Biomass is a fully renewable, domestically produced resource that can provide heat, make fuels, and generate electricity. Some of the most common biomass energy sources are wood, animal manure, crop residues and "dedicated" crops—those grown specifically for energy—such as willow trees and switchgrass.

Today, biomass (soybean and corn) is burned to produce heat and/or converted to renewable, alternative liquid fuel (biofuel), such as ethanol and biodiesel (B100). According to the U.S. DOE, two of the most promising conversion technologies for expanded biomass use are the sugar platform and the thermochemical platform. These are referred to as "platforms" because the basic technology would generate base or platform chemicals from which industry could make a wide range of fuels, chemicals, materials, and power.

A benefit of biomass is that, unlike fossil fuels, biofuels release carbon dioxide that is balanced by the carbon dioxide captured by the recent growth of the plant materials. Depending on how much fossil energy is used to grow and process the biomass feedstock, this can result in substantially reduced net greenhouse gas emissions.

The U.S. DOE and industry partners are continuing research on producing transportation fuels from biomass.

HYDROGEN

Hydrogen is being explored for use in both internal combustion engines and fuel cell electric vehicles. Hydrogen is the most abundant element in the universe, although practically all of it is found in combination with other elements, for example in water (H₂0) or fossil fuels such as natural gas (CH₄). Therefore, hydrogen must be separated from either fossil fuels or water before it can be used as a fuel.

Today, approximately 95 percent of all hydrogen is produced by steam reforming natural gas, the most energy-efficient, largescale method of production. Carbon dioxide is a byproduct of this reaction. Hydrogen can also be produced by gasification of carboncontaining materials such as coal, a method that produces large amounts of carbon dioxide as a byproduct. Electrolyzing water is another way of generating hydrogen. Electrolysis uses electrical energy to split water molecules into hydrogen and oxygen. The electricity required to electrolyze the water could be generated either from fossil fuel combustion or from renewable sources such as hydropower, solar, or wind energy.

Fuel cell vehicles can then use electricity produced from an electrochemical reaction that takes place when the produced hydrogen flows through the fuel cell stack. The production of electricity using fuel cells takes place without combustion or pollution and leaves only two byproducts—heat and water.

The manufacturing, distribution, and storage infrastructure for hydrogen is in its infancy. According to recent data compiled by Argonne National Laboratory, more than 200 hydrogen production plants exist in the United States today, but most of the plants that produce hydrogen are part of other processes like petroleum refining, ammonia production, and methanol production.

Leading the Way Towards Hydrogen-Based Transportation

California is helping to make hydrogen a viable fuel source for the future by developing hydrogen infrastructure today. In particular, the California Fuel Cell Partnership (CaFCP), a unique collaborative of auto manufacturers, energy companies, fuel cell technology companies, and government agencies whose mission is to promote fuel cell vehicle commercialization, is leading the way.

In April 1999, CaFCP set out to explore and facilitate the path to commercialization and increase awareness of fuel cells for transportation. Since then, the CaFCP has made significant progress demonstrating fuel cell vehicle technology and fuel alternatives. In 2000, the CaFCP constructed a state-of-theart 55,000-square foot hydrogen vehicle demonstration station and refueling facility in Sacramento. The facility serves as an operations base for executing the CaFCP's goals, and it is one of the largest and most successful hydrogen vehicle demonstration projects in the country. In addition to testing fuel cell vehicles, the CaFCP is examining fuel infrastructure issues and beginning to prepare the California market for this new technology.

In addition to the Sacramento facility, the CaFCP also takes the show on the road, traveling around the state raising awareness about hydrogen fuel cell vehicles. By December 2003, the CaFCP had traveled through 26 countries and 54 cities, reaching over 500,000 people through outreach events including annual road rallies and conferences and much more. This collaborative effort to encourage fuel cell vehicle commercialization will continue through 2007.

METHANOL

Methanol (M100) is a clear, colorless liquid with a faintly sweet pungent odor similar to ethyl alcohol. In the United States, methanol is made primarily by steam reforming natural gas; however, it can be made from coal and/or biomass (e.g. wood). The alcohol produced is poisonous, can be absorbed through the skin, and cannot be made nonpoisonous. Like gasoline, methanol contains hydrogen and carbon, but methanol also contains oxygen in its chemical structure. Methanol's physical and chemical characteristics result in several inherent advantages over gasoline as an automotive fuel, including lower emissions of NOx, hydrocarbons, and particulate matter, higher performance, and lower risk of flammability. On the down side, burning methanol emits a high amount of formaldehyde emissions.

Methanol can be used as an alternative fuel in flex-fuel vehicles that are designed to run on M85 (a blend of 85 percent methanol and 15 percent gasoline) and to make methyl tertiarybutyl ether (MTBE), an oxygenate which is blended with gasoline to enhance octane and create cleaner burning fuel. However, both methanol and MTBE have seen a decline in use. Automakers are no longer supplying methanolpowered vehicles. According to DOE, approximately 4,917 vehicles running on M85 were in use in 2003, a significant reduction from the more than 21,000 M85 vehicles in use in 1997.

In the future, methanol could possibly be a source of the hydrogen needed to power fuel cell vehicles.

Approximately 4,917 vehicles running on M85 were in use in 2003, a 77 percent reduction since 1997, when more than 21,000 M85 vehicles were in use.

LAWS AND REGULATIONS – WORKING TO IMPROVE THE EFFICIENCY OF THE TRANSPORTATION SECTOR

The Alliance to Save Energy recognizes the leadership role of states in promoting advanced technology vehicles and alternative fuels, and encourages states to put in place new financial and non-financial incentives to spur their development and use. The federal government also has a significant role in instituting policies and programs to encourage the development and use of cleaner and more efficient transportation technologies. Listed below are a few of the key federal and state laws in force today that affect the transportation technologies of today and tomorrow.

U.S. FEDERAL LAWS AND REGULATIONS

Corporate Average Fuel Economy Standards

Fuel economy standards have improved the fuel efficiency of America's cars and trucks and resulted in dramatic oil savings. The regulation of fuel economy for new light vehicles was established through the enactment of the Energy Policy Conservation Act of 1975. The regulation of light truck fuel economy was implemented in model year 1979.

Corporate Average Fuel Economy (CAFE) standards passed by Congress in 1975 led to a 70 percent increase in America's fuel economy over the subsequent decade. The National Academy of Sciences has estimated this saves about 2.8 million barrels of oil a day (mbd).

However, CAFE standards have remained static for almost two decades. The current standard of 27.5 miles per gallon (mpg) for automobiles first applied in 1985, and the 21 mpg standard for light trucks is only 0.5 mpg above the 1987 standard.

On April 1, 2003, the National Highway Traffic Safety Administration (NHTSA) published a final rule for increasing CAFE standards for light trucks (all pick-up trucks, vans, and sport utility vehicles with a gross vehicle weight rating less than 8,500 pounds). The new CAFE standard requires that the light trucks sold by manufacturers have a minimum average fuel economy of 21.6 mpg for model year 2006 and at least 22.2 mpg for model year 2007. For additional information about the CAFE program, including a list of frequently asked questions, visit: <u>www.nhtsa.dot.gov/cars/rules/</u><u>cafe/overview.htm</u>.

The Clean Air Act

In 1970, the federal Clean Air Act (CAA) established nationwide air quality standards to protect public health. Recognizing the large contribution motor vehicles make to air pollution, the CAA also set the first federal tailpipe standards. The CAA also granted California the authority to set its own vehicle emission standards (i.e. California LEV and LEV II Programs) in recognition of the fact that it had, and continues to have, some of the worst air quality in the United States. The act also allowed other states to adopt California's stricter emissions standards, as long as they were identical to California's.

Federal and California tailpipe standards limit exhaust emissions of five pollutants: hydrocarbons (HC), nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter (PM), and formaldehyde (HCHO). Hydrocarbons and NO_x are the major contributors to urban smog.

Clean Air Act Amendments of 1990

The Clean Air Act Amendments of 1990 (CAAA) established two sets of emission standards for light-duty vehicles. The Tier 1 regulations were published as a final rule on June 5, 1991, and were fully implemented in 1997. The Tier 2 standards were adopted on December 21, 1999, to be phased in beginning in 2004. Below is information pertaining only to the Tier 2 standard, since the Tier I standard has been fully implemented.

Tier 2 Emission Standards

Under the Tier 2 standard, the same emission standards apply to all vehicle weight categories. Therefore, cars, minivans, light-duty trucks and SUVs, fueled by gasoline, diesel, or alternative fuels, must meet the same standards.

The Tier 2 tailpipe standards are structured into eight certification levels of different stringency, called "certification bins," and an average fleet standard for NOx emissions. This fleet averaging program allows vehicle manufacturers the choice to certify particular vehicles to any of the eight bins. At the same time, the average NOx emissions of the entire vehicle fleet sold by each manufacturer will have to meet the average NOx standard of 0.07g/ mi. This provides automakers flexibility for meeting the standards and is considered a costeffective method of reducing overall pollution from automobiles.

The rule of thumb on the federal standards is that the lower the bin number, the cleaner the vehicle. For example, the 2004 Toyota Prius is a Bin 3, while the 2004 Hummer H2 is a Bin 11.

Additional temporary certification bins (bin 9, 10 and a medium-duty passenger vehicle (MDPV) bin) of more relaxed emission limits are available in the transition period—these bins expire after MY 2008.

The Tier 2 standards will be phased in between 2004 and 2009. For new passenger cars and light-duty trucks, Tier 2 standards will phase in beginning in 2004, with the standards to be fully phased in by 2007. For heavy light-duty trucks and MDPVs, the Tier 2 standards will be phased in beginning in 2008, with full compliance in 2009.

For additional details about the Tier 2 emissions standards, please visit: http://www.epa.gov/tier2/.

The cleanest Federal Tier 2 standard – a Zero Emission Vehicle.
Cleaner than the average standard.
"Average" of new Tier 2 standards, roughly equivalent to a LEV II vehicle.
Not as clean as the average requirement for a Tier 2 vehicle.
Least clean Tier 2 bin applicable to cars and light-duty trucks.
Least clean Tier 2 bin applicable to medium-duty passenger vehicles.
The former Federal standard; carried over to model year 2004 for those vehicles not yet subject to the phase-in.

Reduced Sulfur Content in Gasoline

In addition to setting stricter emissions standards for vehicles, the Tier 2 regulation also brings new requirements for fuel quality. Cleaner fuels will be required by advanced emission aftertreatment devices (e.g. calalysts) that are needed to meet the regulations.

The program requires that most refiners and importers of gasoline meet a corporate average gasoline sulfur standard of 120 parts per million (ppm) and a cap of 300 ppm beginning in 2004. By 2006, the average standard will be reduced to 30 ppm with an 80 ppm sulfur cap. Temporary, less stringent standards will apply to some small refiners through 2007. In addition, temporary, less stringent standards will apply to a limited geographic area in the western United States for the 2004-2006 period.

For more information about the new requirements for reduced sulfur content in gasoline, please visit: <u>http://www.epa.gov/otaq/</u>regs/ld-hwy/tier-2/index.htm

New Standards for Diesel Fuel

The Environmental Protection Agency (EPA) also is requiring refiners to start producing diesel fuel with a sulfur content of no more than 15 ppm for use in highway vehicles beginning June 1, 2006. All 2007 and later model year diesel-fueled vehicles must be refueled with this new low-sulfur diesel fuel. In addition to its anticipated positive impact on heavy-duty vehicle emissions, this rule makes clean diesel fuel available in time for implementation of the light-duty Tier 2 standards.

For more information about the new requirements for reduced sulfur content in diesel fuel, please visit: <u>http://www.epa.gov/otaq/regs/fuels/diesel/</u> diesel.htm#500ppm.

Congestion Mitigation and Air Quality (CMAQ) Improvement Program

The Congestion Mitigation and Air Quality (CMAQ) Improvement Program was authorized in 1991 as part of the Intermodal Surface Transportation Efficiency Act (ISTEA). This law provided \$6 billion to fund projects and programs in air quality nonattainment and maintenance areas to reduce transportation related emissions of ozone, carbon monoxide (CO), and small particulate matter (PM-10).

In 1998, the CMAQ Program was reauthorized for another six years (1998-2003) as part of the Transportation Equity Act for the 21st Century (TEA-21). The TEA-21 CMAQ program provided over \$8.1 billion dollars to state DOTs, metropolitan planning organizations (MPOs), and transit agencies to invest in projects that reduce criteria air pollutants regulated from transportation-related sources. CMAQ funds are distributed to states according to a formula based on population and severity of pollution. The CMAQ program is jointly administered by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA).

While the House and Senate both passed bills in 2004 to reauthorize the federal highway, public transportation, highway safety, and motor carrier safety programs for a six-year period (2004-2009), they were unable to reach agreement on the two differing measures. Therefore, President Bush signed into law a long-term extension which funds the highway programs at current levels until late spring 2005. The 109th Congress will need to address this important legislative issue in the 2005 session.

For additional information on the CMAQ Program, please visit: <u>http://www.fhwa.dot.gov/</u> <u>environment/cmaqpgs</u>.

8-Hour National Ozone Standard

On April 30, 2004, the U.S. Environmental Protection Agency (EPA) published the first phase of the final rule for implementing a new 8-hour national ozone standard, as well as the final attainment and nonattainment designations for all counties across the nation. The 8-hour ozone standard (0.08 parts per million (ppm) averaged over eight hours) will replace by June 15, 2005, the less rigorous 1-hour standard (0.12 ppm, measured by hourly readings) that has been in place since 1979. The 8-hour standard was issued in 1997 after a significant body of research showed that longer-term exposure to lower levels of ozone can also affect human health. Implementation of the new standard was held up by a lengthy legal battle

Ground-level ozone is formed when emissions of nitrogen oxides (NOx) and volatile organic compounds (VOCs) "cook" in the sunlight. Cars and trucks are just some of the sources that produce VOC and NOx emissions; other sources include utilities, refineries, and other industrial facilities.

Deadlines for meeting the 8-hour ozone standard range from 2007 to 2021, depending on the severity of an area's ozone problem. For example, areas with more significant ozone problems, such as Los Angeles, may have to apply more rigorous control measures; but they will have a longer time to meet the more stringent ozone standards. According to EPA, part or all of 474 counties in 32 states do not meet the 8-hour ozone standard. This number is more than twice the number of counties failing to meet the existing 1-hour ozone standard.

For additional information about the 8-hour national ozone standard, visit: <u>http://www.epa.gov/ozonedesignations/</u>.

Proposed EPA Standard for Fine Particulate Matter (PM _{2.5})

In addition to regulating VOC and NOx emissions at the state level. EPA is developing a standard to reduce fine particulate matter (PM2.5). Particulate matter, or PM, is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. Particles less than 2.5 micrometers in diameter (PM2.5) are referred to as "fine" particles and are believed to pose a health risk, because they can lodge deeply in the lungs. Sources of fine particles include all types of combustion activities (motor vehicles, power plants, wood burning, etc.) and certain industrial processes. The EPA rule will be proposed in early 2005 and finalized by early 2006. Because of the significant health effects associated with exposure to PM2.5, EPA encourages states to undertake early actions to reduce PM2.5 levels.

For additional information about EPA's plans to regulate fine particulate matter, please visit: <u>http://www.epa.gov/pmdesignations/</u>.

Energy Policy Act of 1992 (EPAct)

In 1992, President Bush signed into law the Energy Policy Act (P.L. 102-486 aka "EPAct"). One of the key objectives of this legislation is to reduce petroleum use in transportation by encouraging the use of alternative fuels in lightduty vehicles (cars and light trucks). The act established goals of having alternative fuels replace at least 10 percent of the petroleum fuels projected to be consumed in 2000 and at least 30 percent of projected consumption in 2010.

To help reach these goals, EPAct also mandated that a portion of the new vehicles acquired for fleets operated by federal agencies, state governments, and alternative fuel providers must be alternative fuel vehicles. In 2005, 75 percent of the new light-duty motor vehicles acquired for both federal and state government fleets must be alternatively fueled; alternative fuel providers (e.g., electric and natural gas utilities) must ensure that 90 percent of their new light-duty vehicle acquisitions are alternatively fueled. In addition to mandating fleets to acquire increasing percentages of AFVs, the law also provided tax incentives to help businesses and individuals purchase and use AFVs and develop the infrastructure required to support the siting and dispensing of alternative fuels. In particular, the law provided a 10 percent tax credit, up to \$4,000, to individuals for the purchase of battery electric vehicles, fuel cell electric vehicles, and hybrid electric vehicles that are primarily powered by electricity. EPAct also provided a tax deduction, based on the incremental cost of the vehicle, for clean-fuel vehicles (including hybrid electric vehicles) from \$2,000 to \$50,000, depending on the weight of the vehicle. Finally, the law provided a \$100,000 tax deduction to businesses for installation of clean-fuel refueling property.

These tax incentives have been extended numerous times since being enacted into law in 1992. For details about the current federal tax incentives for advanced technology vehicles, please see the matrix of federal and state incentives provided toward the back of this document.

For additional details about the fleet provisions included in the Energy Policy Act of 1992, please visit the following U.S. DOE website: <u>http://www.eere.energy.gov/</u>vehiclesandfuels/epact/.



STATE LAWS AND REGULATIONS

California Standards (LEV and LEV II)

California LEV

In 1990, the California legislature passed into law the Low Emission Vehicle (aka LEV) Program. This program, and the more recent, April 2003 LEV II Program, are both fleet average programs, much like the federal Tier 2 standards; but they are based on a fleet hydrocarbon, rather than a NOx, standard.

Manufacturers can certify vehicles to one of several emissions categories as long as the average hydrocarbon emissions of all new vehicles sold meet a specified standard. This standard becomes more stringent each year, forcing manufacturers to move toward a cleaner overall mix of vehicles.

Under the 1990 LEV Program, vehicles could be certified to one of the following four emissions categories:

- Transitional Low Emission Vehicle (TLEV);
- Low Emission Vehicle (LEV);
- Ultra Low Emission Vehicle (ULEV);
- Zero Emission Vehicle (ZEV).

The LEV Program also required a 10 percent zero emission vehicle production by 2003. The only vehicles certified by the California Air Resources Board (CARB) to meet the ZEV standard were battery electric vehicles.

California LEV II

Under the more recent 2003 LEV II Program, vehicles must be certified to much more stringent emission standards than those required under the earlier, LEV Program. The vehicle emission categories under the LEV II Program are:

- LEV;
- ULEV;
- Super Ultra Low Emission Vehicle (SULEV);
- ZEV.

LEV II places a greater emphasis on emissions reductions from partial zero emission vehicles (PZEVs) and advanced technology-partial zero emission vehicles (AT-PZEVs) and requires that manufacturers produce a minimum number of fuel cell and electric vehicles.

LEV II requires that ZEVs make up 10 percent of new vehicle sales in 2005, increasing to 16 percent in 2018 and thereafter. LEV II also includes phase-in multipliers for pure ZEVs and allows 20 percent of the sales requirement to be met with AT-PZEVs and 60 percent with PZEVs. AT-ZEVs and PZEVs are allowed 0.2 credit per vehicle. Under the LEV II Program, some hybrid electric vehicles, extremely low-emission gasoline vehicles, and methanol fuel-cell vehicles, can qualify for "partial ZEV" credits. Partial credits are based on several criteria, including low emissions associated with refining and distribution of the fuel, the all-electric vehicle range, and near-zero evaporative and tailpipe emissions.

For more information on the California LEV and LEV II Programs, please visit: <u>http://www.arb.ca.gov/msprog/levprog/levii/</u><u>levii.htm</u>.

For more detailed information on California's Zero Emission Vehicle Program, please visit: <u>http://www.arb.ca.gov/msprog/zevprog/</u>factsheets/2003zevchanges.pdf.

CARB Regulations Limiting Greenhouse Gas Emissions from Cars and Trucks

On September 24, 2004, the California Air Resources Board (CARB) approved regulations limiting greenhouse gas emissions (GHG) from passenger cars and trucks in the state. The regulation requires automakers to begin cutting of carbon dioxide and other GHG emissions from cars and light trucks starting in the 2009 model year and to achieve 30 percent reductions in GHG emissions from 2002 levels by 2016.

CARB's CO₂-equivalent emissions standards will be incorporated into California's current Low Emission Vehicle Program (aka LEV II) for automobiles and light-duty trucks. On December 7, 2004, the Alliance of Automobile Manufacturers and a group of automobile dealers in California's Central Valley filed a suit in the U.S. District Court in Fresno, California, challenging the regulation of motor vehicle fuel economy under California's greenhouse gas law. The automotive industries bringing suit indicate that federal law grants sole authority to the National Highway Traffic Safety Administration (NHTSA) to set a uniform, national fuel economy standard. Now that the automotive industry has filed the complaint against California, it is up to the courts to determine what happens next regarding the lawsuit.

Adoption of LEV II by States

Section 177 of the Clean Air Act allows states to adopt and enforce motor vehicle standards identical to those of California standards for which a waiver has been granted for that model year, and if the standards are adopted at least two years before the start of a model year. Currently, eight states (Connecticut, Maine, Massachusetts, New Jersey, New York, Rhode Island, Vermont, and Washington) have California LEV II emissions standards in place. These states may be required to adopt California's CO₂ standards in order to keep their emissions standards identical to California's.



RESOURCES

U.S. FEDERAL AGENCIES

U.S. Department of Energy

1000 Independence Ave., SW Washington, DC 20585 Phone: 1.800.dial.DOE http://www.doe.gov

Energy Efficiency and Renewable Energy Alternative Fuels Data Center <u>http://www.eere.energy.gov/afdc/</u>

U.S. Environmental Protection Agency

Ariel Rios Building 1200 Pennsylvania Avenue, N.W. Washington, DC 20460 Phone: 202.272.0167 http://www.epa.gov/

> US EPA, Region 1 1 Congress St. Boston, MA 02114-2023 Phone: New England States 888.372.7341 Phone: Outside New England 617.918.1111 <u>http://www.epa.gov/region1/</u>

US EPA, Region 2 290 Broadway New York, NY 10007-1866 Phone: 212.637.5000 http://www.epa.gov/region02/

US EPA, Region 3 1650 Arch Street Philadelphia, PA 19103 Phone: 1.800.438.2474 http://www.epa.gov/region3/

US EPA, Region 4 Sam Nunn Atlanta Federal Center 61 Forsyth Street, SW Atlanta, GA 30303 Phone: 404.562.9900 Phone: 1.800.241.1754 <u>http://www.epa.gov/region4/</u>

US EPA, Region 5 77 W. Jackson Blvd. Chicago, IL 60604 Phone: 312.353.2000 Phone: 1.800.621.8431 http://www.epa.gov/region5/

US EPA, Region 6 1445 Ross Avenue Suite 1200 Dallas, Texas 75202 Phone: 214.665.6444 Phone: 1.800.887.6063 http://www.epa.gov/region6/ US EPA, Region 7 901 N. 5th Street Kansas City, KS 66101 Phone: 913.551.7003 Phone: 1.800.223.0425 http://www.epa.gov/region7/ US EPA, Region 8 999-18th St. Suite 300 Denver, CO 80202-2466 Phone: 303.312.6312 Phone: 1.800.227.8917 (Region 8 states only) http://www.epa.gov/region8/ US EPA, Region 9 75 Hawthorne Street San Francisco, CA, 94105 Phone: 866EPA.WEST Phone: 415.947.8000 http://www.epa.gov/region9/ US EPA, Region 10 1200 Sixth Avenue Seattle, WA 98101 Phone: 206.553.1200 Phone: 1.800.424.4EPA http://www.epa.gov/region10/ **U.S. Department of Transportation** 400 7th Street, S.W. Washington, D.C. 20590 Phone: 202.366.4000 http://www.dot.gov/ National Highway Traffic Safety Administration 400 Seventh Street, SW Washington, DC 20590 Phone: 1.888.327.4236 Phone: 202.366.0123 http://www.nhtsa.dot.gov/

Federal Transit Administration 400 7th Street SW Washington, DC 20590 Phone: 202.366.4000 http://www.fta.dot.gov/

ASSOCIATIONS

Association of International Automobile

Manufacturers 2111 Wilson Boulevard Suite 1150 Arlington, VA 22201 Phone: 703.525.7788 http://www.aiam.org

Alliance of Automobile Manufacturers

1401 Eye Street, NW, Suite 900 Washington, DC 20005 Phone: 202.326.5500 http://www.autoalliance.org

Alliance to Save Energy

1200 18th Street, NW, Suite 900 Washington, DC 20036 Phone: 202.857.0666 http://www.ase.org

American Council for an Energy Efficient Economy

1001 Connecticut Ave., NW, Suite 801 Washington, DC 20036 Phone: 202.429.8873 http://www.aceee.org/

American Lung Association

61 Broadway, 6th Floor New York, NY 10006 Phone: 212.315.8700 http://www.lungusa.org

Electric Drive Transportation Association

1350 I Street, NW #1050 Washington, DC 20005 Phone: 202.408.7610 http://www.electricdrive.org

Governor's Ethanol Coalition

Energy Square 1111 "O" Street, Suite 223 Lincoln, NE 68508 Phone: 402.471.2867 http://www.ethanol-gec.org/

Methanol Institute

4100 N. Fairfax Drive, Suite 740 Arlington, VA 22203 Phone: 703.248.3636 http://www.methanol.org

Natural Gas Vehicle Coalition 400 N. Capitol Street, NW Washington, DC 20001 Phone: 202.824.7366 http://ngvc.org

National Ethanol Vehicle Coalition

3118 Emerald Lane, Suite 100 Jefferson City, MO 65109 Phone: 573.635.8445 http://www.e85fuel.com

National Hydrogen Association

1800 M Street, NW, Suite 300 North Washington, DC 20036 Phone: 202.223.5547 http://www.hydrogenus.com

National Biodiesel Board

PO Box 104898 Jefferson City, MO 65110-4898 Phone: 1.800.841.5849 http://www.biodiesel.org

Propane Vehicle Council

1150 17th Street, NW, Suite 310 Washington, DC 20036 Phone: 202.530.0479 http://www.propanevehicle.org

U.S. Fuel Cell Council

1100 H Street, NW, Suite 800 Washington, DC 20005 Phone: 202.293.5500 http://www.usfcc.com

ENVIRONMENTAL GROUPS

Environmental Defense 257 Park Avenue South, New York, NY 10010 Phone: 212.505.2100 http://www.environmentaldefense.org

Natural Resources Defense Council 40 West 20th Street New York, NY 10011 Phone: 212.727.2700 http://www.nrdc.org

Union of Concerned Scientists 2 Brattle Square Cambridge, MA 02238-9105 Phone: 617.547.5552 http://www.ucsusa.org World Resources Institute 10 G Street, NE, Suite 800 Washington, DC 20002 Phone: 202.729.7600 http://www.wri.org

STATE-RELATED ORGANIZATIONS

California Air Resources Board 1001 "I" Street P.O. Box 2815 Sacramento, CA 95812 Phone: 916.322.2990 http://www.arb.ca.gov/homepage.htm

California Energy Commission 1516 Ninth Street, MS-29

Sacramento, CA 95814-5512 Phone: 916.654.4287 http://www.energy.ca.gov/

California Fuel Cell Partnership

3300 Industrial Boulevard Suite 1000 West Sacramento, CA 95691 Phone: 916.371.2870 http://www.fuelcellpartnership.org/

National Governor's Association

Hall of States 444 N. Capitol Street Washington, DC 20001 Phone: 202.624.5300 http://www.nga.org/

New York State Energy Research and Development Authority 17 Columbia Circle

Albany, NY 12203-6399 Phone: 1.866.NYSERDA Phone: 518.862.1090 http://www.nyserda.org/

Northeast States for Coordinated Air Use Management 101 Merrimac Street Boston, MA 02114 Phone: 617.259.2000 http://www.nescaum.org/

National Conference of State Legislatures 7700 East First Place Denver, CO 80230 Phone: 303.364.7700 http://www.ncsl.org National Association of State Energy Officials 1414 Prince Street, Suite 200 Alexandria, VA 22314 Phone: 703.299.8800 http://www.naseo.org

American Association of State Highway and Transportation Officials 444 N Capitol Street, NW Suite 249 Washington, DC 20001 Phone: 202.624.5800 http://www.transportation.org/aashto/home.nsf/ FrontPage

State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials 444 N Capitol Street, NW Suite 307 Washington, DC 20001 Phone: 202.624.7864 http://www.cleanairworld.org/

CLEAN CITIES PROGRAM

Main Website: http://www.eere.energy.gov/cleancities/

Clean Cities Coordinators: http://www.eere.energy.gov/cleancities/coordinators.html

Alternative Fuels Data Center: http://www.eere.energy.gov/afdc/

Alternative Fueling Station Locator: http://www.eere.energy.gov/afdc/infrastructure/locator.html

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Ford Escape Hybrid. Ford Motor Company.



Cold weather operation at the

Green Mountain Power wind

plant in New England. Green

Mountain Power Corporation.

National Renewable Energy

Information Exchange. PIX

Laboratory, Photographic

number: 13531.

Alaska Pipeline at the mile marker115, just outside of Fairbanks, Alaska. Green, Bruce. National Renewable Energy Laboratory, Photographic Information Exchange. PIX number: 09407.



1999 dedicated CNG Ford E350 van and 1999 bi-fuel CNG Ford E350 van at DIA's natural gas refueling station. Gretz, Warren. National Renewable Energy Laboratory, Photographic Information Exchange. PIX number: 07342.



Taxis. Copyright Jeff Greenberg/NYC & Company, Inc.



HOV lane restrictions sign. The TMA Group, Franklin, Tennessee.



<u>Ford Escape Hybrid</u>. Ford Motor Company.



Prototype of the Nissan fuel cell Xterra. Eudy, Leslie. National Renewable Energy Laboratory, Photographic Information Exchange. PIX number: 12259.

Solar Concentrator Array

using Linear Element

<u>Technology</u>. ENTECH, Inc. National Renewable Energy Laboratory, Photographic Information

Exchange. PIX number:



<u>Triple biofuels dispenser</u>. Bensinger, Charles and Renewable Energy Partners of New Mexico. National Renewable Energy Laboratory, Photographic Information Exchange. PIX number: 13531.



<u>California State Flag</u>. California State Archives.



State Archives.

Ford E450 H2 ICE. Ford Motor Company.



Courtesy of Linde AG.



Rush Hour Commute. Gretz, Warren. National Renewable Energy Laboratory, Photographic Information Exchange. PIX number: 10639.

13531.



<u>Washington State Capitol</u> <u>Autumn</u>. Washington State Department of General Administration.

Model Year 2005: Alternative Fuel Vehicles and Advanced Technology Vehicles Available or Nearing Completion (March 2005)						
Fuel Type	Model	Vehicle Type	Emission Class	Power-train	Fuel Capacity	Range
	American Honda Me	otor Corporatio	on 888-CCHC	ONDA www.hoi	nda.com	
CNG Dedicated	³ Civic GX	Compact Sedan	SULEV (Tier 2 Bin II) (CA AT-PZEV)	1.7L, 4-cylinder	8 GGE	200 mi - 225 mi
HEV (NiMH)	¹ Accord	Mid-Size	TBD	V6 with Integrated Motor Assist System	TBD	TBD
HEV (NiMH)	^{1,3} Civic Hybrid	Compact Sedan	ULEV (CA AT-PZEV)	1.3L, 4-cylinder VTEC Engine with Integrated Motor Assist System	144 volt NiMH + 13.2 Gal Gasoline	500 - 650 mi
HEV (NiMH)	^{1,3} Insight	Two Seater	ULEV/SULEV (CA ULEV)	1.0 L, 3-cylinder VTEC Engine with Integrated Motor Assist System	144 volt NiMH + 10.6 Gal Gasoline	600-700 mi
	DaimlerChrys	ler 1-800-999-F	LEET www.f	leet.chrysler.co	om	
E85 FFV	² Dodge Ram Pickup 1500 Series	Pickup	Tier 2 Bin 10A	4.7L V8	26 Gal	416 mi
E85 FFV	² Chrysler Sebring Sedan ² Dodge Stratus Sedan	Sedan	Tier 2 Bin 8	2.7L V6	16 Gal	300 mi
E85 FFV	² Dodge Caravan ² Dodge Grand Caravan	Minivan	Tier 2 Bin 9A	3.3L V6	20 Gal	400 mi
	Ford Motor Company 1-8	300-34-fleet ww	w.fleet.ford.	com, www.ford	vehicles.com	
E85 FFV	² Taurus ² Mercury Sable	Sedan/Wagon Sedan	ULEV	3.0L V6	18 Gal	250-360 mi
E85 FFV	² Explorer ² Mercury Mountaineer ² Explorer Sport Trac	SUV	ULEV	4.0L SOHC V6	22.5 Gal	250-350 mi
HEV (NiMH)	¹ Escape Hybrid	SUV	SULEV, PZEV	2.3L ECVT V4	15 Gal	over 400 mi
	General Motors C	orporation 1-88	8-GM-AFT-4	U www.gmaltfu	el.com	
CNG Bi-Fuel/ CNG Dedicated	Chevrolet Silverado GMC Sierra (4x2)	Light-Duty Pickup	LEV (bi-fuel)/ ULEV (dedicated)	6.0L V8	20.6 GGE Bi-Fuel and Dedicated	220-280 mi Bi- fuel and Dedicated
E85 FFV	² Chevrolet Tahoe ² GMC Yukon	SUV	Tier 2 Bin 10	5.3L V8	26 Gal	260-338 mi
E85 FFV	^{2,3} Chevrolet Suburban ^{2,3} GMC Yukon XL ^{2,3} Chevrolet Avalanche	SUV	Tier 2 Bin 10	5.3L V8	32.5 Gal (Avalanche 31 Gal)	309-402 mi (Avalanche TBD)
E85 FFV	² Chevrolet Silverado ² GMC Sierra (4x2 & 4x4)	Light-Duty Pickup	Tier 2 Bin 10, ULEV CA, CFF- LEV	5.3L V8	34 Gal (long box) 26 Gal (short box)	327-392 mi (long)/255-306 mi (short)

Fuel Type	Model	Vehicle Type	Emission Class	Power-train	¹ Fuel Capacity	² Range	
	Mercedes-Benz USA 800-367-6372 www.mbusa.com						
E85 FFV	² C240 Luxury Sedan, Luxury Wagon ² C320 Sport Sedan, Luxury Sedan, Sport Coupe	Sedan, Coupe	LEV	90-degree V6	16.4 Gal	293-441 mi	
		Nissan www.r	nissanusa.co	om			
E85 FFV	² Titan (4X2 4X4)	Light-Duty Pickup	LEV	5.6 Liter V8	28 GAL	400 mi	
	Toyota Motor Sa	ales, USA, Inc. 8	800-GO-Toyo	ota www.toyota	.com		
HEV (NiMH)	^{1,3} Prius	Mid-Size	SULEV (CA AT-PZEV)	1.5 DOHC 16-valve, EFI 4 cylinder/VVT-I	201.6 volts NiMH + 11.9 Gal Gasoline	over 600 mi	
HEV (NiMH)	¹ Highlander	SUV	SULEV	3.3L DOHC 24- valve VVT-I V6	TBD	over 600 mi	
HEV (NiMH)	^{1,4} Lexus RX 400h	SUV	SULEV	3.3L ECVT V6 Synergy Drive	TBD	TBD	
¹ Hybrid electric vel	hicles are considered advanced technology v	ehicles, not alternative fu	el vehicels (AFVs).				
² All E85 vehicles a	re considered flexible fuel vehicles (FFVs).						
³ This information h	has not been confirmed for the 2005 model ye	ear.					
⁴ 2006 model year	vehicle available in early 2005.						
		Glossary of <i>I</i>	Abbreviation	IS			
AT-PZEV = Adva	anced Technology Partial Zero Emissio	ns Vehicle	LPG = Liquefied F	Petroleum Gas (propa	ne)		
CA = California			Mi = Miles				
CNG = Compres	sed Natural Gas		NiMH = Nickel Me	etal Hydride			
E85 = 85% Etha	nol, 15% Gasoline		PbA = Lead Acid				
FFV = Flexible F	uel Vehicle		SULEV = Super L	Jltra Low Emission Ve	hicle		
GGE = Gasoline	Gallon Equivalent		SUV = Sport Utilit	y Vehicle			
Gal = U.S. Gallo	n		TBD = To Be Dete	ermined			
L = Liter			ULEV = Ultra Low	/ Emission Vehicle			
LEV = Low Emis	sion Vehicle		U.S. DOE = U.S.	Department of Energy			
	Other Resources						
Alternative Fuel Vehicle Buyer's Guide www.eere.energy.gov/cleancities/vbg				Fuel Econo www.fuelec	omy Guide onomy.gov		
U.S. DOE Clean Cities Program www.eere.energy.gov/cleancities 1.800.CCITIES			Alternative Fue www.eere.ene 1.800.42	els Data Center ergy.gov/afdc 3.1DOE			

Alliance to Save Energy

Federal and State Incentives Encouraging Purchase/Use of Advanced Technology Vehicles and Alternative Fuels

CURRENT FEDERAL LAWS THAT ENCOURAGE ADVANCED VEHICLE TECHNOLOGIES AND FUELS	 The Working Families Tax Relief Act of 2004 (PL 108-311) 10 percent tax credit, up to \$4,000, available to businesses and individuals that purchase a Battery Electric Vehicle (BEV), Fuel Cell Electric Vehicle (FCEV) or a Hybrid Electric Vehicle (HEV) that is "primarily powered" by electricity before December 31, 2006. The is reduced 75 percent by January 1, 2006. \$100,000 tax deduction available to businesses for installation of clean-fuel* refueling property. Deduction available on property placed into service before December 31, 2006. A tax deduction, based on the incremental cost of the vehicle, for clean-fuel* vehicles (including hybrid electric vehicles) from \$2,000 to \$50,000 depending on the gross vehicle weight (GVW). The deduction is reduced by 75 percent on January 1, 2006 and sunsets December 31, 2006.
	American John Creation Act of 2004 (DI 109 257)
	 Effective January 1, 2005, eliminates the reduced rate of excise tax for most alcohol-blended fuels and replaces it with a credit of \$0.51 per gallon for ethanol; \$1.00 per gallon for agri-biodiesel; and \$0.50 per gallon for other types of biodiesel. The incentive for biodiesel is available through 2006 and the incentive for ethanol is available through 2010.
	 Exempts battery electric vehicles and other clean fuel motor vehicles from federal excise "luxury" taxes and "luxury" depreciation schedules.
	Form Security and Dural Investment Act of 2002 (Dublic Law 407 474)
	Farm Security and Rural Investment Act of 2002 (Public Law 107-171)
	 Makes monies available to eligible producers of bioenergy fuel, based on the quantity of bioenergy produced during a fiscal year that exceeds the quantity of bioenergy produced during the preceding fiscal year, at the following payment rate:
	 Producers of less than 65 million gallons – shall be reimbursed 1 feedstock unit for every 2.5 feedstock units of eligible commodity used for increased production
	 Producers of more than 65 million gallons - – shall be reimbursed 1 feedstock unit for every 3.5 feedstock units of eligible commodity used for increased production
	 \$150 million is available each fiscal year, beginning fiscal year 2003 through fiscal year 2006.
	* Clean-fuel vehicle is defined as one that is fueled by natural gas, liquefied natural gas, liquefied petroleum gas, hydrogen, electricity and any other fuel that is at least 85 methanol, ethanol, and any other alcohol or ether. Clean fuel refueling property is defined to include the fuels noted above.

1

PROVISION	STATE
#1 : REBATES AND TAX CREDITS	VEHICLE RELATED ONLY
	AZ - Tax credit up to \$75 available to individuals for installation of residential EV recharging outlets constructed by a taxpayer (ARS 43-1090 and ARS 43-1176).
	AR - 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 percent rebate 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 percent rebate up to \$2,000 is also available for the incremental cost of purchasing an OEM AFV. Local governments and private individuals are eligible for these rebates; however fuel suppliers and state governments are not. The rebates extend to the incremental cost of purchasing an OEM AFV.
	CA 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 GVWR of 10,000 pounds (lbs.) or less. Qualifying vehicles must be certified as a super ultra low emission vehicle (SULEV), partial zero emission vehicle (PZEV) or zero emission vehicle (ZEV). Incentives range from \$1,000 to \$5,000 per vehicle.
	CO – Offers an income tax credit to individuals for the purchase of new AFVs and for the conversion of vehicles to operate on alternative fuels, including HEVs, through June 30, 2011. Credits are based on the US EPA emissions classifications of the vehicles (e.g., LEV, ULEV, ILEV, SULEV or ZEV). A tax credit also is available for the purchase of a hybrid electric vehicle and also is based on the EPA emissions classifications noted above; the credit value ranges from \$2,430 to \$4,310. 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. (Reference <u>Colorado Revised Statutes</u> (CRS) §39-22-516 and §39-33-102)
	CT – Prior to January 1, 2008, a corporate business tax credit is available for 10 percent of the incremental cost of a new dedicated CNG, LNG, LPG, or electric vehicle. The credit may be carried forward for up to three years. (Reference <u>C.G.S.</u> 12-217i and Senate Bill 218 (Public Act 04-231), 2004)
	GA – Offers an income tax credit of 20 percent 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 and hydrogen fuel cell vehicles. (Reference Georgia Code Sec. 48-7-40.16)
	GA – 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 value of the credit is 10 percent of the purchase or conversion cost, or \$2,500, whichever is less. (Reference Georgia Code Sec. 48-7-40.16)
	IL – The Illinois Alternate Fuels Rebate Program provides rebates for 80 percent 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 electricity. E85 and biodiesel rebates also are provided. For E85, the rebate is up to \$450 per year for 3 years for each flexible fuel vehicle that uses E85 at least half the time. For biodiesel, the fuel must contain at least 80 percent biomass content to be eligible. The Rebate Program was extended indefinitely in June 2003 and is funded. Eligibility is open to all Illinois residents, businesses, government units, and organizations 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 percent biodiesel fuel in Illinois. (Reference 415 ILCS 120/30)

KS – Provides a tax credit in the amount not to exceed the lesser of \$750 or 5 percent of the cost of an AFV.
MT An income tax credit is available to businesses or individuals for up to 50 percent 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 up to 10,000 lbs. 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 his/her own vehicle to operate on the alternative fuel that he/she sells. (Reference Montana Code Annotated (MCA) 15-30-164 and 15-31-137)
NY – Provides taxpayers a \$2,000 tax credit for HEV purchases.
OK Tax credits may be applied to hybrid electric vehicles only to the extent (percentage) that they are propelled by electricity. (O.S. §68-2357.22 and O.S. §68-2101)
OR 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. (Reference ORS 469.160-469.180)
RI For tax years beginning on or after January 1, 2001, a taxpayer entitled to the federal qualified tax credit shall be entitled to a tax credit equal to 25.5 percent of the federal credit for tax year 2001 and 25 percent of the federal qualified EV tax credit for tax year 2002 and thereafter. (Reference <u>Rhode</u> <u>Island Code</u> (R.I.C.) §44-30-2.6)
TX - The Texas Emission Reduction Plan (TERP) offers a Light-Duty Motor Vehicle Purchase or Lease Incentive (LDPLI) Program which provides financial incentives (rebates) for the purchase or lease of an eligible new car and light truck, model year 2003 or newer. To be eligible, the vehicles must meet EPA's Tier 2 Bin 4 or cleaner NOx emissions standards and must have been purchased or leased after August 1, 2002. The rebates are subject to available funding. This program is currently not funded .
UT The state provides an income tax credit for 50 percent of the incremental cost (\$3,000 maximum) of a clean-fuel vehicle built by an OEM and/or an income tax credit for 50 percent 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 hybrid electric vehicles, except the Honda Civic hybrid. Expires December 31, 2005. (Reference Utah Code 59-7-605 and 59-10-127)
WI 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 state deduction is reduced by 25 percent for vehicles placed in service in 2004, by 50 percent for vehicles in 2005 and by 75 percent for vehicles in 2006. No deduction is available for clean fuel vehicles placed in service in 2007. (Reference Wisconsin Statutes 71.01(6))
WV 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 GVWR, as shown below, and cannot exceed the incremental or conversion cost. Eligible alternative fuels include CNG, LNG, LPG, blends of 85 percent 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.

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
	400,000	<i>400,000</i>
Reference West Virginia Code § 11-6D)		
FUEL USE-PRODUCTION-INSTALLATION ON	LY	
AR – Provides an income tax credit for biodiesel facilities and equipment used in the wholesale or §15-4-2803)	suppliers of up to 5 r retail distribution of	percent of the costs of the biodiesel fuels. (Arkansas Code
CO- Offers a tax credit for the construction, reconfacilities through June 30, 2011. The credit value 2009; and 20 percent from 2009-2011. The credit consecutive five-year period for each refueling fa facility is used by the public and if 70 percent of the derived from renewables. (CRS§39-22-516)	nstruction or acquisit e is 50 percent from dit has a maximum va acility. The value of t the alternative fuel di	ion of alternative fuel refueling 1998-2006; 35 percent from 2006- alue of \$400,000 in any he credit increases if the refueling spensed from the facility is
HI – Provides income tax deductions ranging from tax deductions) for the installation of clean-fuel re	m \$2,000 to \$50,000 efueling property as	(identical to the federal income defined in EPAct (PL 102-486).
IA – Provides a tax credit to retail service station gasoline sold through metered pumps are ethand threshold, they are eligible for a tax credit of \$0.0 gasoline sold during the tax year, from 2002 thro	s at which more thar ol-blended. Once ow 025 for every additior ough 2007. (Reference	a 60 percent of the total gallons of ners pass the 60 percent hal gallon of ethanol-blended be <u>lowa Code</u> 422.33)
IN – A taxpayer that produces biodiesel at a facil gallon of biodiesel that is used to produce blende percent biodiesel). If a taxpayer produces <u>blend</u> gallon of blended biodiesel. (Reference <u>Indiana</u>	lity located in Indiana ed biodiesel (diesel/b <u>led</u> biodiesel, he/she <u>Code</u> 6-3.1-27)	a is entitled to a credit of \$1 per nodiesel blends of at least 2 is entitled to a credit of \$0.02 per
IN – Fuel retailers operating service stations in Ir through a metered pump are entitled to a credit or dispensed through all the metered pumps at the	ndiana which sell ble of \$0.01 per gallon of service station. (Ref	nded biodiesel that is dispensed f blended biodiesel sold and erence <u>Indiana Code</u> 6-3.1-27)
KS – The Kansas Qualified Agricultural Ethyl Alc alcohol producers to apply to the Department of	ohol Producer Fund Revenue for a produ	enables qualified agricultural ethyl ction incentive.
ME Tax credit is available for the construction charging station for the purposes of providing cle vehicles. The qualifying percentage is 25 percen December 31, 2005. (Reference <u>MRSA</u> Title 36 g	or installation of, or i ean fuels to the gene t for expenditures ma § 5219-P)	mprovements to, any refueling or ral public for use in motor ade from January 1, 2002 to
ME State income tax credit of \$0.05 per gallon or otherwise substitute for liquid fuels. (Referenc <u>Revised Statutes</u> (MRSA) Title 36 §5219-W)	o for the production o the <u>Legislative Docum</u>	f biofuels for use in motor vehicles <u>ent (LD)</u> 1492, 2004 and <u>Maine</u>
MN For fiscal years 2004 through 2007, there	is an ethanol produc	tion incentive of \$0.13 per gallon

of ethanol produced, up to \$1.95 million annually to any one producer. This incentive may return to \$0.20 after 2007 and expires June 30, 2010. (Reference <u>Minnesota Statutes</u> §41A.09)
MS Mississippi's Commissioner of Agriculture and Commerce is authorized to make direct payments to new ethanol producers in the amount of \$0.20 per gallon, up to 30 million gallons per year per producer, for a period of up to 10 years. The incentive program expires June 30, 2015. (Reference Mississippi Code §69-51-5)
MO 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 <u>Missouri Revised Statutes</u> (RSMo) 142.028 and 142.029)
MO 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. (Reference <u>RSMo</u> 142.031)
NC Taxpayers who construct, purchase, or lease "renewable energy property" are eligible for a tax credit equal to 35 percent of the cost of the property. "Renewable energy property" includes: equipment that uses renewable biomass resources to produce ethanol, methanol, biodiesel, or methane produced via anaerobic biogas utilizing agricultural and animal waste or garbage; and related devices for converting, conditioning, and storing the liquid fuels and gas produced with biomass equipment. The credit must be taken in five equal installments beginning with the taxable year in which the property is placed in service. A ceiling of \$250,000 per installation applies to renewable energy property placed in service for any purpose other than residential. Property must be placed in service before January 1, 2006. (Reference North Carolina General Statutes §105-129.15 and §105-129.16A)
NC A tax credit is available for qualified refueling facilities that dispense biodiesel, 100 percent ethanol or ethanol/gasoline mixtures consisting of at least 70 percent ethanol. The credit is equal to 15 percent of the cost to the taxpayer of constructing and installing the part of the dispensing facility, including pumps, storage tanks, and related equipment, that is directly and exclusively used for dispensing or storing the fuel. The credit must be taken in three equal annual installments beginning with the taxable year in which the facility is placed in service. Facilities must be placed in service before January 1, 2008. (Reference House Bill 1636, 2004)
NC - A tax credit is available for the production or processing of biodiesel, 100 percent ethanol or ethanol/gasoline mixtures consisting of at least 70 percent ethanol. The credit is equal to 25 percent of the cost of constructing and equipping the facility. The credit must be taken in seven equal annual installments beginning with the taxable year in which the facility is placed in service. Facilities must be placed in service before January 1, 2008. (Reference House Bill 1636, 2004)
ND 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 \$10M. (Reference North Dakota Century Code 4-14.1-07, 4-14.1-08 and 4-14.1-09)
ND – A five-year corporate income tax credit for biodiesel production equipment costs. The tax credit is worth up to 10 percent 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 percent biodiesel fuel by volume. To qualify, a facility must produce 10 million gallons annually. (Reference North Dakota Century Code 57-38-30.6)

OK – Allows a tax credit for ethanol production facilities of 20 cents (\$0.20) per gallon of ethanol produced before denaturing beginning January 1, 2004 and ending December 31, 2010. The credit is allowed for 60 months beginning with the first month for which the facility is eligible to receive the credit and may only be claimed if the ethanol facility maintains an average production rate of at least 25 percent of its name plate design capacity for at least six (6) months after the first month for which it is eligible to received the credit. (O.S. § 68-2357.66)
RI 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 power motor vehicles. This incentive is valid from January 1, 1998, to December 31, 2007. (Reference <u>R.I.C.</u> §44-13-5)
SD 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)
SD - 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-136)
WA Beginning July 1, 2003, a tax deduction is available for the sale or distribution of biodiesel or alcohol fuel (comprised of at least 85 percent alcohol fuel by volume). Additionally, fuel delivery vehicles and machinery, equipment, and related services that are used for the retail sale of biodiesel or alcohol fuel are exempt from state retail fuel sales and use taxes. (Reference RCW 82.04, 82.08 and 82.12)
WY - 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, beginning July 1, 2003. To be eligible to receive this credit, 25 percent 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 producer shall not exceed \$4 million per year, and the total credits redeemed by any individual ethanol producer shall not exceed \$2 million 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 percent 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)
VEHICLE AND INFRASTRUCTURE INCENTIVES CT – Prior to January 1, 2008, a Corporation Business Tax credit is available for 50 percent 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 <u>Connecticut General Statutes</u> (C.G.S.) 12-217i and Senate Bill 218 (Public Act 04-231), 2004)
GA – Provides a 10 percent tax credit or \$2500 to any business for the purchase/lease of an electric charger located in Georgia. (Reference Georgia Code Sec. 48-7-40.16)

KS – Provides an income tax credit for 50 percent of the incremental or conversion cost of qualified AFVs. Credits range for \$3,000 -\$50,000 based on GVWR. For AFVs placed into service after January 1, 2005, the incentive values are reduced to a range of \$2,400 - \$40,000. The state also offers an income tax credit for 50 percent, up to \$200,000, for the cost of a qualified alternative fuel refueling station. After January 1, 2005, this tax credit is reduced to 40 percent, not to exceed \$160,000. (Reference Kansas Statutes 79-32,201)
LA – Provides an income tax credit worth 20 percent of the cost of converting a vehicle to operate on an alternative fuel, 20 percent of the incremental cost of purchasing an OEM AFV, and 20 percent 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 percent of the total vehicle cost or \$1,500. (Reference <u>Revised</u> <u>Statutes</u> (RS) §47:38 and §47:287.757)
NY 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 ICE (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 percent of the incremental cost, up to \$5,000 per vehicle. Purchasers of AFVs are eligible for a tax credit worth 60 percent of the incremental cost of the vehicle. The maximum value of the incentive is \$5,000 for vehicles with less than 14,000 lbs. 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 percent 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. Expired December 31, 2004.
OK Prior to January 1, 2009, Oklahoma provides a one-time income tax credit for 50 percent of the cost of converting a vehicle to operate on an alternative fuel, or for 50 percent of the incremental cost of a new OEM AFV up to \$2,000. The state also provides a tax credit for 10 percent of the total vehicle cost, up to \$1,500, if the incremental cost cannot be determined or 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 percent of the cost of installing refueling infrastructure for AFVs. These tax credits may be carried forward for up to three years. Alternative fuels eligible for the credit include CNG, LNG, LPG, ethanol, methanol, and electricity. This tax credit extends to low-speed electric vehicles (LSVs) as defined by NHTSA in 49 C.F.R. 571.500 and to forklifts and other similar self-propelled vehicles. (Reference <u>Oklahoma Statutes</u> §68-2357.22)
OR 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 and production facilities. The tax credit is 35 percent of the incremental cost of the system or equipment and is taken over five years. (Reference ORS 469.185; 315.354; 315.356)
RI Alternative Fueled Vehicle and Filling Station Tax Credit entitles taxpayers to a tax credit equal to 50 percent 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 percent 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 <u>R.I.C.</u> §44-39.2-2)
VA The Commonwealth of Virginia provides individuals, private entities, and corporations a state tax credit in an amount equal to 10 percent 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)
#2: REDUCED TAX RATES	AL – In lieu of an excise tax on LPG and CNG used to propel motor vehicles, an annual fee ranging from \$75 to \$175 is levied on vehicles ranging from passenger to tractor/trailer units. (Code of Alabama 40-17-160)
	AR - LPG vehicles are taxed through a yearly flat-fee sticker tax in lieu of the gasoline road tax. The amount of the sticker fee is based on the vehicle's GVWR. (Reference <u>Arkansas Code</u> §26-56-301)
	CA - The excise tax imposed upon CNG, LNG, and LPG as vehicle fuels can be paid through an annual flat-fee rate sticker tax, ranging from \$36 to \$168, based on GWVR ranging from 4,000 lbs. to 12,001 lbs. Alternatively, owners and operators may pay excise tax on CNG of \$0.07 per cubic feet, LNG of \$0.06 per gallon, and LPG of \$0.06 per gallon. Excise taxes on ethanol and methanol containing not more than 15% gasoline or diesel fuel are reduced to \$0.085 per gallon. (Reference <u>California Revenue and Taxation Code</u> Section 8651 to 8651.8)
	CO – Owners of CNG and LPG vehicles are granted an exemption from fuel taxes. They are required to purchase an annual tax decal for \$70, \$100 or \$125 based on the vehicle's GVWR. All CNG and LPG vehicles must display a current fuel tax decal. (CRS §39-27-102.5)
	CO – Vehicles, vehicle power sources, or parts used for converting a vehicle power source certified to federal Low Emission Vehicle standards or better are exempt from state sales taxes. This exemption applies to vehicles, power sources, or parts for vehicles over 10,000 lbs GVWR. (CRS§39-26-114)
	CT 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 <u>C.G.S.</u> 12-412-67, 68, 69, and 115, and Senate Bill 218 (Public Act 04-231))
	CT – Natural gas or propane sold as a motor fuel by a public utility company prior to July 1, 2008 is
	earnings tax on the sale of petroleum products. (Reference <u>C.G.S.</u> 12-264(a) and Senate Bill 218 (Public Act 04-231), 2004)
	CT – Prior to July 1, 2008, CNG, LPG, and LNG are not subject to the motor fuels tax. (Reference <u>C.G.S.</u> 12-458f and Senate Bill 218 (Public Act 04-231), 2004)
	DC – Hybrid vehicles are exempt from the excise tax as of 2005. (A15-704)
	FL - A person operating an AFV must purchase an annual decal from the Florida Department of Motor Vehicles in lieu of the excise tax on gasoline. (Reference Florida Statutes 206.877)
	GA – LPG and special fuels sold in bulk to a licensed consumer distributor are exempt from excise taxes. (Reference Georgia Code Sec. 48-9-3)
	HI – Alcohol fuels are exempt from the 4 percent state excise tax on retail sales. Expires 1/1/07. (Reference <u>HRS</u> §237-27.1)
	HI – Every distributor of any fuel for operation of an internal combustion engine is required to pay a

8

license tax of \$0.01 for each gallon of alternative fuel sold or used by the distributor. In addition, every			
distributor is required to pay a license tax for each gallon of fuel sold or used by the distributor for			
operating a motor vehicle(s) on state public highways according to the following rates:			
	Fuel Type	Тах	
	Ethanol	0.145 times the rate for diesel	
	Methanol	0.11 times the rate for diesel	
	Biodiesel	0.25 times the rate for diesel	
	LPG	0.33 times the rate for diesel	
For other alternative fuels, the diesel fuel, using a lower heatin tax rate, on an energy content §243-4).	rate shall be based on the eneng value of 130,000 BTUs per basis, is equal to one-quarter t	ergy content of the fuels as compared to gallon as a standard for diesel, so that the the rate for diesel fuel (Reference HRS	
ID – While motor fuels received apply to special fuels dispense displays a valid gaseous specia engines and hydrogen. There equivalent. An annual fee in lie fuels, based on the GVWR of t 63-2401, 63-2402, 63-2423 and	d by distributors are taxed at a d into a motor vehicle which us al fuels permit. Special fuels in is, however, an excise tax on eu of the excise tax may be co he vehicle. (Reference House d 63-2424)	rate of \$0.25 per gallon, this tax does not ses gaseous special fuels and which nclude CNG, LPG, fuel suitable for diesel special fuels, on a gasoline gallon llected on a vehicle powered by gaseous Bill 684, 2004 and Idaho Statutes, Sec.	
ID – Provides a business tax de ethanol. Gasoline and diesel b subsection shall not exceed 10 special fuel which is or contain	eduction for each licensed dist plends containing either fuel an percent of (i) the volume of ga s biodiesel. (Idaho Code 63-24	tributor for the use of biodiesel and e eligible. The deduction provided in this asohol reported on the report or (ii) the 407)	
IL – Sales and use taxes do no percent ethanol) sold between <u>Statutes</u> (ILCS) Chapter 35 120	t apply to ethanol-blended fue July 1, 2003 and December 3 0/2-10)	ls (containing between 70 percent and 90 1, 2013. (Reference <u>Illinois Compiled</u>	
IL – Sales and use taxes apply (containing between 1 percent 31, 2013. However, if these tax blends will apply to 100% of the sale of biodiesel blends contain proceeds from sales made the	to 80 percent of the proceeds and 10 percent biodiesel) mac kes are ever imposed at a rate e proceeds of sales. These tax hing more than 10% biodiesel reafter. (Reference 35 <u>ILCS</u> 12	from the sale of biodiesel-blended fuels de between July 1, 2003 and December of 1.25%, then the tax on these biodiesel kes do not apply to the proceeds from the made. The taxes apply to 100% of the 20/2-10)	
IN - A governmental body, state essential governmental function for the purchase of fuels which alcohol) made from biological r ignition engines. (Reference In	e educational institution, or ins ns on a statewide or local basi are at least 20% biodiesel or naterials, including oilseeds ar <u>diana Code</u> Sec. 5-22-15-19)	strumentality of the state that performs is is entitled to a price preference of 10% a primarily ester-derived fuel (other than and animal fats, for use in compression and	
IA – Ethanol-blended gasoline taxed at a scheduled rate, depu- calendar year. Currently, the n gas is taxed at \$0.16 per gallor file for a refund for the difference ethanol-blended gasoline and t June 30, 2007. (Reference <u>low</u>	is taxed at \$0.19 per gallon, we ending on the amount of ethan ion-ethanol blended gasoline t in equivalent. Those who blend ce between sales taxes paid o the tax due on the ethanol-bler ra Code 452A.21)	hile non-ethanol blended gasoline is nol-blended fuel sold in the previous ax rate is 20.5 cents per gallon. Natural d conventional motor fuel with ethanol may n the motor fuel purchased to produce nded gasoline. This tax incentive expires	
KY – Liquefied petroleum gas (on the public highways, given t the Natural Resources and Env	(LPG) is exempt from excise ta hat these vehicles are equippe vironmental Protection Cabine	ax when it is used to propel motor vehicles ed with carburation systems approved by t. (Reference KRS 234.321)	

ME For original equipment manufacturer (OEM) vehicles, the incremental cost of the sale or lease of a clean-fuel vehicle (including hybrids) for which there is an identical gasoline-powered vehicle is tax- exempt. If there is no identical vehicle powered by gasoline, 30 percent of the sale or lease price of an internal combustion engine clean fuel vehicle, and 50 percent 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.
ME – The State Highway tax for each special fuel used in transportation is based on each fuel's energy content relative to gasoline. Currently, ethanol (E85) is taxed at a rate of \$0.185 per gallon, propane (LPG) at \$0.19 per gallon, methanol (M85) at \$0.148 per gallon, and compressed natural gas (CNG) at \$0.226 per 100 standard cubic feet. Gasoline is taxed at a rate of \$0.26 per gallon. (Reference MRSA Title 36 §3203).
MI – Exempts certain "alternative energy personal property" from property taxes. "Alternative energy personal property" is defined to include an alternative energy vehicle, an alternative energy system, all personal property of an alternative energy technology business, and the personal property of a business that is used solely for the purpose of research, developing, and manufacturing an alternative energy technology. Applies to taxes levied after December 31, 2002 and before January 1, 2013. (Reference <u>Michigan Compiled Laws</u> (MCL) 207.552 and 207.803, House Bill 4010, 2004, and Senate Bill 824, 2004)
MN – E85 is taxed at the rate of \$0.142 per gallon, blends of 85 methanol and 15 gasoline (M85) are taxed at the rate of \$0.114 per gallon, LPG is taxed at \$0.15 per gallon, LNG is taxed at \$0.12 per gallon, and CNG is taxed at a rate of \$1.7939 per thousand cubic feet or \$0.20 per gasoline equivalent. Gasoline is taxed at a rate of \$0.20 per gallon. (Reference Minnesota Statutes §296A.07 and 296A.08)
MO The \$0.17 per gallon motor fuel tax does not apply to passenger motor vehicles, certain buses or commercial motor vehicles that are powered by an alternative fuel. Instead, the owners or operators of such vehicles shall pay an annual alternative fuel decal fee ranging from \$75 - \$1,000 based on the vehicle's GVWR (ranging from < 18,000 lbs. to > 36,000 lbs.). (Reference <u>RSMo</u> 142.803 and 142.869)
MT – 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 percent as compared to the tax on gasoline. (Reference MCA 15-70-204 and 15-70-321)
MT – Retail sales for CNG and LPG used in vehicles are subject to a modified tax based on energy content. (Reference MCA 15-70-711)
NE Motor fuels sold to an ethanol or biodiesel facility, and motor fuels manufactured at an ethanol or biodiesel facility, are exempt from certain motor fuel tax laws enforced by the Motor Fuels Division of the Department of Revenue. (Reference Legislative Bill 983, 2004; and Nebraska Statutes 66-489 and 66-496)
NE – Compressed Fuels Act covers LPG and CNG and states that an excise tax of \$0.105 per gallon or gallon equivalent is levied and imposed on all compressed fuel sold for use in registered motor vehicles. Additionally, each retailer of such fuel shall pay an excise tax of \$0.02 per gallon or gallon equivalent on all compressed fuel sold for use in registered motor vehicles. (Reference Nebraska Statues 66-6,100;66-6,107; 66-6, 108; 66-6109)
NJ Zero emission vehicles (ZEVs) sold on or after May 1, 2004, are exempt from state sales and use tax
NJ - The tax paid upon the sale and use of liquefied petroleum gas (LPG) and CNG when used as transportation fuel is equal to \$0.0525 per gallon, half the tax paid for gasoline and diesel. (Reference <u>New Jersey Statutes</u> §54:39-27.1)
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NM HEVs with an EPA fuel economy rating of at least 27.5 mpg are eligible for a one-time exemption from the motor vehicle excise tax. Expires June 30, 2009. (Reference Senate Bill (SB) 86, 2004 and New Mexico Statutes (NMSA) 1978 7-14-6)
NM – Excise tax imposed on alternative fuel distributed is \$0.12 per gallon.
NM - Owners of AFVs with a GVWR not exceeding 54,000 lbs. may pay an annual tax in lieu of the per gallon tax, ranging from \$60 - \$1,100 based on the vehicle's GVWR (ranging from < 6,000 lbs. up to 54,000 lbs.). (Reference NMSA 1978 7-16B)
NV - Clean-burning fuels have a reduced special fuels tax. (Reference NRS 366.190)
NY Sales tax exemption 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. Expired December 31, 2004.
OK - Owners of LPG, CNG, LNG, methanol, or blends of 85% methanol and 15% gasoline (M85) powered vehicles are required to pay an annual fee (ranging from \$50 to \$150) in lieu of motor fuel excise taxes. (Reference Oklahoma Statutes §68-723)
RI Organically produced biodiesel fuels are exempt from motor fuel tax (Reference House Bill 8085, 2004).
SC Alternative fuels are exempt from the state sales and use tax. (Reference <u>South Carolina Code</u> <u>of Laws</u> §12-36-2120)
SD E85 and M85 are taxed at a rate of \$0.10 per gallon, LPG is taxed at a rate of \$0.20 per gallon, CNG is taxed at a rate of \$0.10 per gallon, and ethanol blends are taxed at a rate of \$0.20 per gallon. (Reference South Dakota Statutes §10-47B-4)
TN – A use tax of \$0.14 per gallon is imposed on liquefied gas used for the propulsion of motor vehicles on public highways or a user of liquefied gas for the propulsion of a motor vehicle on public highways shall pay an annual vehicle tax ranging from \$70 to \$114 based on a vehicle's GVWR (ranging from <9,000 lbs. to >26,000 lbs.). Gasoline is taxed at a rate of \$0.20 per gallon (Reference Tennessee Code 67-3-2202, 67-3-2203, and 67-3-2206TN).
TN - A use tax of \$0.13 is imposed on compressed natural gas (CNG) used for the propulsion of motor vehicles on public highways. (Reference Tennessee Code 67-3-2213, 67-3-2214, and 67-3-2218).
TX Biodiesel or ethanol blended with taxable diesel, that is identified when sold or used as a biodiesel or ethanol fuel blend, is exempt from the diesel fuel tax. (Reference <u>Texas Statutes</u> , Tax Code, §162.001 and §162.204)
UT – Owners of alternative fuel vehicles that use an alternative fuel, including LPG, CNG, and electricity, are required to pay a clean special fuel tax annually in lieu of the motor fuel excise tax. A vehicle with two axles and up to 26,000 lbs. GVWR has an annual fee of \$82 and a vehicle with three axles or over 26,000 lbs. has an annual fee of \$126. (Reference Utah Code 59-13-304)

	WA – Owners of CNG and LPG powered vehicles are required to pay an annual fee, based on GVWR, in lieu of motor fuel excise taxes. The fee ranges from \$45 to \$250 based on a vehicle's GVWR (ranging from < 10,000 lbs. to > 36,000 lbs.). To determine the actual annual license fee imposed by this section for a registration year, the appropriate dollar amount shall be multiplied by the motor vehicle fuel tax rate in cents per gallon, 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 CNG or LPG permit. (Reference RCW 82.38.075)
	WI No county, city, village, town, or other political subdivision shall levy or collect any excise, license, privilege, or occupational tax upon motor vehicle fuel or alternative fuels or upon the buying, selling, handling, or consuming of motor vehicle fuel or alternative fuels. (Reference <u>Wisconsin Statutes</u> 78.82)
	WI - Effective April 1, 2004, the excise tax on alternate fuel is 21.3¢ per gallon for LPG and 23.3¢ per gallon for CNG. An alternative fuel is defined as all combustible gases and liquids, other than motor vehicle fuel or aviation fuel, used for the generation of power to propel a motor vehicle; e.g., LPG and CNG. Effective April 1, 2004, the excise tax on motor vehicle fuel (gasoline and diesel) is 29.1¢ per gallon. (Reference <u>Wisconsin Statutes</u> 78.40)
#3: LOW-INTEREST LOANS	CAR CONVERSION
	CT – The Business Environmental Clean-Up Revolving Loan Fund offers loans for working or development capital to businesses that convert gas and diesel-powered vehicles to run on alternative fuels. To qualify, a business must be at least two years old; have gross revenues under \$3 million or 150 employees; derive at least 75 percent of gross revenues from motor vehicle fuel conversion activities; and, demonstrate that it is unable to obtain financing from conventional sources on reasonable terms or in reasonable amounts. (Reference <u>C.G.S.</u> 32-23z)
	MO Missouri Energy Center has developed an administrative plan for implementing a loan program that provides financial assistance to political subdivisions for establishing the use of alternative fuels in their vehicle fleets. The loans can be used toward the purchase of new AFVs, conversion of gasoline motor vehicles to operate on alternative fuels, or construction of alternative fuel refueling stations. The loans will be available for a maximum of \$2,000 for the incremental cost of purchasing a new AFV or the conversion of a new or existing vehicle to operate on an alternative fuel, and a maximum of \$100,000 for the construction of an alternative fuel refueling station. There is currently no appropriation for the implementation of this legislation. (Reference <u>RSMo</u> 414.353, 414.356, and 414.359)
	NM Alternative Fuel Acquisition Act of 1992 authorized a \$5 million revolving loan fund for AFV acquisitions by state agencies, political subdivisions, and educational institutions. The maximum amount of a loan to acquire a vehicle shall not exceed the actual cost of acquiring the vehicle or \$3,000, whichever is less. Loans shall be made for a period of time not to exceed seven years with an annual interest rate of 5 percent. A loan shall be repaid in equal annual installments, with the first annual installment due within one year of the date on which the loan is issued. (Reference NMSA 1978 13-1B)
	OK Alternative Fuels Loan program to help convert public fleets to operate on alternative fuels. This program provides no-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 \$10,000 per converted or new vehicle and up to \$150,000 for refueling infrastructure. Repayment is made from fuel savings during a maximum seven-year period. If the alternative fuel 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.
	OK - A private loan program with a 3 percent 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.
RI 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).
UT The Utah Clean Fuels Grant and Loan Program provides grants worth up to 50 percent of the cost of converting a vehicle to run on a clean fuel (\$2,500 maximum) and/or up to 50 percent 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. Please note, the Loan program has been put on hold . Bi-fuel vehicles must operate on the clean fuel at least 70 percent of vehicle miles traveled beginning at the time of conversion or purchase of the vehicle. (Reference Utah Code 63-34-202 to 63-34-204)
FUEL PRODUCTION
IA – Funded by the state's investor-owned utilities, the Alternate Energy Revolving Loan Program offers zero-percent interest loans for up to half the cost of biomass or alternative fuels-related fuel production projects, to a maximum of \$250,000 per facility. Fuel production facilities must be located in lowa. (Reference <u>lowa Code</u> 476.46)
MEAgriculturally Derived Fuel Fund was developed to provide direct loans and subsidies to a business or cooperative for the design and construction of a facility to produce agriculturally derived fuel, such as methanol and ethanol. It is a non-lapsing fund, which is controlled by the Finance Authority of Maine. Currently, there is no funding available for this program . (Reference <u>MRSA</u> Title 10 §997-A)
COMBINATION OR OTHER
IA – 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. R&D projects are not eligible for the program. (Reference Iowa Code 261.57)
IA – A biodiesel fuel revolving fund, consisting of money received from the sale of EPAct credits banked by the Iowa Department of Transportation (IDOT) as of April 19, 2001, was established to purchase biodiesel fuel for use in IDOT vehicles. (Reference <u>lowa Code</u> 307.20)
KS - Alternative fuels loan program was established for the purpose of making loans to government agencies that own and operate motor vehicles to encourage the use of alternative fuels and the development of the alternative fuel infrastructure. However, no funds have been allocated for this program. (Reference Kansas Statutes 75-37,116 through 75-37,119)
ME Clean Fuel Vehicle Fund, a non-lapsing revolving loan fund that may be used for direct loans to finance all or part of any clean-fuel vehicle project. The Authority may also insure up to 100 percent of mortgage payments with respect to mortgage loans for clean-fuel vehicle projects. Currently, there is no funding available for this program . (Reference <u>MRSA</u> Title 10 §1023-K and §1026-P)
NE Dollar and Energy Saving Loans Program makes low-cost loans available for a variety of alternative fuel projects. 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 percent or less and may be adjusted semi-annually.
#4: grants	AR – 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 5 years. (Arkansas Code §15-4-2804)
	CA 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.
	CA The Ventura County APCD offers the Clean Air Fund, which seeks 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.
	CA 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.
	IA - The Alternative Vehicle Demonstration Program authorizes the Iowa Department of Natural Resources, conditioned upon the availability of funds, to award 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. A grant shall be for the purpose of conducting research connected with the fuel or the vehicle, and not for the purchase of the vehicle itself, except that the money may be used for the purchase of the vehicle if all of the following conditions are satisfied: a) the department retains the title to the vehicle; b) the vehicle is used for continuing research; and c) if the vehicle is sold or when the research related to the vehicle is completed, the proceeds of the sale of the vehicle shall be used for additional research. (Reference lowa Code 214A.19)
	KS – Kansas Qualified Agricultural Ethyl Alcohol Producer Fund enables qualified agricultural ethyl alcohol producers to apply to the Department of Revenue for a production incentive. Ethyl alcohol producers who began production before July 1, 2001 are eligible to receive \$0.05 for each gallon sold to an alcohol blender during 2002, 2003, and 2004. If the producer who is in production prior to July 1, 2001, increases production capacity by an amount of 5 million gallons over the producer's base sales, \$.075 may be collected for each gallon sold to an alcohol blender that is in excess of the producer's base sales (up to 15 million gallons). Producers who start production on or after July 1, 2001 and who have sold at least 5 million gallons to an alcohol blender may receive \$0.075 for each gallon sold (up to 15 million gallons). Expires June 30, 2011. (Reference Kansas Statutes 79-34,163)
	KY - Eligible diesel fleet operators may submit project proposals requesting funds to buy down the additional cost of biodiesel in comparison to conventional diesel fuel. To be eligible, an operator must have a municipal fleet of diesel vehicles in Kentucky. The fleet must be centrally fueled and not subject to other government mandates that already require the use of alternative fuels. (SEP Block Grant)
	ME Sustainable Energy Trust Fund - Sustainable energy projects eligible for financial support may include demonstration projects that promote or support clean transportation alternatives. (Reference LD 805, 2003)
	NJ 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. HEVs also qualify for the rebates. Eligible entities include local governments, state colleges and universities, school districts, and governmental authorities.

Rebate Amount Rebate Amount Vehicle Weight (dedicated or hybrid) (bi-fuel)
<8,500 lbs. Up to \$4,000 Up to \$2,000
NJ 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.
NJ 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 percent 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. (NVEA Funds)
NM - 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. (Reference House Bill 251, 2004)
NC 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 (including hybrids), vehicle conversions, and constructing or implementing alternative fuel public refueling facilities.
 PA Alternative Fuels Incentive Grant (AFIG) Program. Qualified projects will receive funding for 20 percent 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 percent of the funds may go to any one applicant each funding cycle, and no more than 15 percent may go to any one county. (Reference Pennsylvania Code Chapter 311) Under a new law, the state is offering rebates year round to cover the incremental cost of purchasing a hybrid vehicle. In addition, state-based companies producing renewable motor unbide fuel. Such as a strangel and biadiscal, are sligible to reasing an incentive of \$0.05 percent.
vehicle fuels, such as ethanol and biodiesel, are eligible to receive an incentive of \$0.05 per gallon up to 12.5 million gallons produced each year. Finally, tax-exempt entities, such as school districts, transit authorities, municipal governments and other non-profits who operate a fleet, are eligible for a grant to help buy-down the added costs to purchase and use renewable fuels, such as biodiesel and ethanol. (Reference Act 178 (SB 255, 2003)
TX 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 <u>Texas Statutes</u> , Agriculture Code, Chapter 16)
TX - Texas Emissions Reduction Plan (TERP) established a voluntary financial incentive programs, as well as other assistance programs, to help improve the air quality in Texas (Reference <u>Texas Statutes</u> , Health & Safety Code, Chapter 386), Programs include:

	 New Technology Research and Development (NTRD) Program - provides incentives to encourage and support research, development and commercialization of technologies that reduce pollution in Texas. Light-Duty Motor Vehicle Purchase or Lease Incentive (LDPLI) Program is a statewide program to provide financial incentives (rebates) for the purchase or lease of an eligible new car and light truck, model year 2003 or newer. To be eligible, the vehicles must meet EPA's Tier 2 Bin 4 or cleaner NOx emissions standards and must have been purchased or leased after August 1, 2002. The rebates are subject to available funding.
	transportation providers who purchase and operate clean fuel vehicles exclusively using approved clean fuels (as designated by State of Utah Statute 59-13-102). Eligible vehicles are those that operate on CNG, propane, hydrogen, electricity, or are hybrid electric. The incentives are in the form of a credit against ground transportation fees. Incentive credit amounts are \$2,500 for each OEM or certified vehicle converted to run on an alternative fuel. (Reference Salt Lake City Department of Airports Clean Fuel Policy Number 10.07.100)
	WA - 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)
	WV 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. 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 percent of the purchase price not to exceed \$20,000 per governmental entity. Grants must be matched by the local government by at least 50 percent 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.
#5: PRIVATE FLEETS	DC, MD – Metro Washington Council of Governments (MWCOG) administers the Advanced Technology Vehicle Program - The Clean Alternative, which is funded by the Maryland Department of Transportation (MDOT) and offers flexible incentives to private companies and local governments to cover the incremental cost of dedicated CNG and 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.
	NY The New York City Clean Fuel Taxi Program provides up to \$8,000 towards the purchase of new CNG taxi cabs or the conversion of gasoline cabs to operate on CNG. (Program has been on hold but is being renewed in Spring 2005.)
#6: INSURANCE PREMIUMS	MEAn insurer may credit or refund any portion of the premium charges for an insurance policy for a clean-fuel vehicle in order to encourage its policyholders to use clean-fuel vehicles if insurance premiums on other vehicles are not increased to fund these credits or refunds. (Reference <u>MRSA</u> Title 24-A §2303-B)
	FL - Electric vehicles (EVs) are protected from insurance surcharges based on factors such as new technology, passenger payload, weight-to-horsepower ratio, and the types of material used to manufacture the vehicle unless the Department of Insurance determines from actuarial data submitted

	to it that the surcharge is justified. (Reference Florida Statutes 627.06535)
#7: STATE POLICIES	AZ – For each year after December 21, 2000, specifically designated governing bodies of cities and/or towns must operate at least 75 percent of their government fleet on alternative fuels and clean burning fuels. With the use of an alcohol-fueled vehicle, the state agency must demonstrate that the fuel for the vehicle is available within a ten-mile radius of the primary home base of that vehicle. (ARS 9-500.04, 41-803)
	CA - The state's 21 interstate freeways are now designated as the "California Hydrogen Highway Network," and the state is committed to working with legislators, energy providers, automakers, and others to achieve the following by 2010: 1) Build a network of hydrogen refueling stations; 2) Ensure that hydrogen vehicles are commercially available for purchase; 3) Incorporate hydrogen vehicles into the state fleet; 4) Develop safety standards for hydrogen refueling stations and vehicles; and 5) Establish incentives to encourage the use of hydrogen vehicles and encourage the development of renewable sources of energy for hydrogen production. (Reference Executive Order S-7-04, 2004)
	CO - By July 10, 2010, the Executive Director of the Department of Personnel must adopt a policy that at least 10 percent of all state-owned bi-fuel vehicles are to be fueled exclusively with an alternative fuel. (CRS §24-30-1104)
	CT - The fleet average for cars and light-duty trucks purchased by the state must have an EPA estimated fuel economy of at least 40 mpg; comply with EPAct's state fleet acquisition requirements; obtain the best achievable fuel economy per pound of carbon dioxide emitted in its vehicle class. AFVs purchased by the state to comply with these requirements must be capable of operating on the alternative fuel that is available in the state. Law enforcement vehicles and other special purpose designated vehicles are exempt from these provisions. (Reference <u>C.G.S.</u> 4a-67d and Senate Bill 218 (Public Act 04-231), 2004)
	DC – Requires 70 percent all light duty fleet vehicles to be clean fuel vehicles by 2000 and every year thereafter. (D.C. Act 10-201)
	IL – In awarding contracts that require procurement of vehicles, state agencies must give preference to an otherwise qualified bidder who will fulfill the contract through the use of vehicles powered by ethanol produced from Illinois corn or biodiesel fuels produced from Illinois soybeans. (Reference 30 <u>ILCS</u> 500/45-60)
	IN - 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:
	 For the purchase of OEM AFVs for which the manufacturer produces a conventionally fueled equivalent, 80% of the incremental cost is eligible for funding. 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. For the conversion of vehicles to run on an alternative fuel, 80% of the cost of conversion is eligible for funding. 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. 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.
KS – As of MY 2000, 75 percent of new light-duty motor vehicle acquisitions by the state fleet and its agencies are to be alternative fuel vehicles. (Reference Kansas Statutes 75-4616)
MD The State shall ensure that an average of 50 percent of the fuel used by bi-fuel and flex-fuel vehicles shall be alternative fuel. The State shall help develop the refueling and maintenance infrastructure required to make certain types of AFVs practical and may provide technical assistance and other incentives to use clean technology, where practical, in State transit fleets. (Reference Executive Order 01.01.2001.02)
ME - Except for cars and light-duty trucks purchased for law enforcement and other special use purposes as designated by the State Purchasing Agent, the State Purchasing Agent may not purchase or lease any car or light duty truck for use by the State or any department or agency of the State unless, beginning January 1, 2000, the car has a manufacturer's estimated highway mileage rating of at least 45 mpg and the light-duty truck has a manufacturer's estimated highway mileage rating of at least 35 mpg. (Reference <u>MRSA</u> Title 5 §1812-E)
MO Biodiesel Fuel Revolving Fund uses the money generated by the sale of EPAct credits to cover the incremental cost of purchasing fuel containing B20 or higher biodiesel blends for use by state fleet vehicles. (Reference <u>RSMo</u> 414.407)
MO Any state agency operating a fleet of more than 15 motor vehicles must ensure that 50 percent of new vehicles acquired by the fleet between July 1, 1998, and July 1, 2000, and each biennial period thereafter, are capable of running on alternative fuels. Excess acquisitions of AFVs may be credited towards future biennial goals. If a state agency fails to meet a biennial acquisition goal, purchases of any non-AFVs are not permitted until the goals are met or an exemption or goal reduction has been granted. In addition, 30 percent of the fuel purchased annually for use in state fleet vehicles must be alternative fuels. (Reference <u>RSMo</u> 414.400 and 414.410)
MO By July 1, 2004, at least 50 percent and by July 1, 2005, at least 75 percent of the MoDOT vehicle fleet and heavy equipment that use diesel fuel must be fueled with B20 or higher biodiesel blends, if such fuel is commercially available. The blended biodiesel fuel shall be presumed to be commercially available if the incremental cost of purchasing the fuel is not more than \$0.25. To the maximum extent practicable, MoDOTshall obtain funding for the incremental cost of the blended biodiesel fuel from the Biodiesel Fuel Revolving Fund. (Reference <u>RSMo</u> 414.365)
MT – The Montana Hydrogen Futures Project shall be established as the key economic development focus of the state. By the year 2020, 50 percent of all vehicles and equipment in Montana and 100 percent of all state-run vehicles will be powered by alternative fuels; all intercity bus systems will use hydrogen; distribution of synthetic fuels and hydrogen will be provided for the trucking industry; a school bus retrofit and hydrogen power program will be established; and incentives will be provided for conversion of internal combustion engines to hydrogen. (Reference House Joint Resolution 26, 2003, and the Montana Hydrogen Futures Project)
NC – Establishes a goal that on and after January 1, 2004 at least 75 percent of the new or replacement light duty cars and trucks (8,500 pounds or less GVWR) purchased by the State will be AFVs or low emission vehicles. (Reference North Carolina General Statutes §143-215.107C)
NJ - New Jersey is committed to exceeding the Energy Policy Act's AFV acquisition mandates for state government fleets by 5% per year. In Model Year 2001 and thereafter, the vehicles acquired to fulfill this enhanced commitment must meet or exceed California Air Resources Board Ultra Low Emission Vehicle standards. (Reference Executive Order 94, 1999)

 NM - 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) 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) 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) 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) 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)
NMThe Alternative Fuel Acquisition Act of 1992 requires that 75 percent of state government and educational institution fleet vehicles acquired in fiscal year 2003 and thereafter, except authorized exemptions, be bi-fuel or dedicated AFVs or gas-electric hybrid vehicles. (Reference NMSA 1978 13-1B)
NV Fleets containing 10 percent or more vehicles that are owned, leased, or operated by the state, a state agency, or a political subdivision of the state in a county whose population is 100,000 or more are mandated to acquire AFVs or U.S. Environmental Protection Agency certified ultra low emission vehicles (ULEVs). Beginning in fiscal year 2000 and each year thereafter, 90 percent of new vehicles obtained by covered fleets must be either AFVs or certified ULEVs. A fleet may meet the acquisition requirements by converting existing or newly acquired vehicles to operate on alternative fuels. An AFV acquired in compliance with this mandate must operate solely on the alternative fuel except when operating in an area where the appropriate alternative fuel is unavailable. Fleets with buses and/or heavy-duty vehicles are included. (Reference <u>Nevada Administrative Code</u> 486A.160)
NY State agencies and other affected entities must procure increasing percentages of AFVs as part of their annual vehicle acquisition plans; HEVs qualify under these requirements. By 2005, at least 50 percent of new light duty vehicles acquired by each agency and affected entity must be AFVs, and by 2010, 100 percent of all new light duty vehicles must be AFVs, with the exception of designated specialty, police, or emergency vehicles. (Reference Executive Order No. 111)
NY New York City Council established a program in 1991 requiring the purchase and/or conversion of AFVs for city government use. The program requires 80 percent of the city's light duty, non- emergency fleet, and 20 percent of bus fleets operated in New York City to be AFVs. (Reference Administrative Code of the City of New York 24-163.1 and 24-163.2)
OR State law requires that the state agencies and transit districts purchase AFVs to the maximum extent possible, except when it is not economically or logistically possible to purchase or refuel an AFV. (Reference <u>Oregon Revised Statutes</u> 283.327 and <u>ORS</u> 267.030)
WA – Directs state agencies to take all reasonable actions to achieve a target of a 20% reduction in petroleum use in the operation of state vehicles and privately owned vehicles used for state business by September, 1, 2005. Provisions include: agencies shall freeze the purchase of any four-wheeled drive sport utility vehicles and shall instead purchase two-wheeled drive vehicles; state agencies shall give priority to the purchase and use of hybrid gas/electric and other fuel efficient/low emission and new petroleum efficient technology vehicles, and; by September 1, 2009, state agencies shall replace

	standard diesel with a 20% biodiesel blend and as soon as practicable, begin using a minimum 5% biodiesel blend. (Reference Executive Order 05-01)
	 WA The 'Clean Green Fleet Action Plan' specifies the following: Beginning in 2003, ensure at least 50 percent of new compact cars purchased each year are either alternative fuels or achieve at least 45 miles per gallon; By 2005, reduce annual fleet fuel use by 5 percent compared to 1999; By the end of 2003, use a fuel blend of 20 percent biodiesel with 80 percent ultra-low sulfur diesel in the 902 diesel vehicles (on-road and off-road); By the end of 2004, complete the emission control retrofit project to install emissions control equipment on 400 existing heavy-duty diesel trucks. WA At least 30 percent of all new vehicles purchased through a state contract must be clean-fuel vehicles; this percentage shall increase at the rate of 5 percent each year. It is preferred that dedicated clean-fuel vehicles be purchased; in the event that dedicated clean-fuel vehicles are not available or would not meet operation requirements, conventionally powered vehicles may be converted to clean fuel or dual fuel use. (Reference RCW 43.19.637)
	WV - The Secretary of Administration was given the authority to require state, county and municipal government fleets to purchase AFVs on the following schedule: 20 percent of new vehicle acquisitions in fiscal year (FY) 1995, increasing to 50 percent in FY 1997, and 75 percent in FY 1998 and each year thereafter. (Reference West Virginia Code § 5A-2A-2)
#8: STATE BONDS	NY – Funds are available for state assistance payments to municipalities, state agencies and departments, and state public authorities that acquire alternatively-fueled buses and supporting infrastructure, including electric and hybrid electric buses. (NY Public Law – Chapter 413)
#9: VEHICLE REGISTRATION SURCHARGE	CA - State Air Quality Management Districts (AQMDs) are given the authority to issue a surcharge on vehicle registration fees to be used specifically to reduce air pollution from motor vehicles. Surcharges range from \$1 (South Coast AQMD) to \$6 (Sacramento AQMD). (California Health and Safety Code §44220)
#10: VEHICLE USE EXEMPTIONS.	INSPECTIONS
	AZ – Exempts electric, solar and hydrogen vehicles from emissions inspections if vehicles are used to commute into metro Phoenix or metro Tucson areas. New AFVs being registered for the first time are not required to undergo emissions testing, but emissions testing will be required in subsequent years. All other AFVs are required to have emissions testing before the vehicle can be registered. An in-lieu fee may be paid for MY 2001 and newer OEM AVFs instead of having the emissions test performed. (ARS 49-542)
	CA HEVs have been exempted from biennial and change-of-ownership Smog Check inspections until January 1, 2010.
	MD – Exempts HEVs from mandatory vehicular emissions testing and inspection requirements if the vehicle obtains an EPA rating of at least 50 mpg during city fuel economy tests. Effective October 1, 2003 until September 30, 2006.
	MI Dedicated alternative fuel vehicles are exempt from emissions inspection requirements. (Reference <u>MCL</u> 324.6311 and 324.6512)
	MO Vehicles that are powered exclusively by electric or hydrogen power, or by fuels other than gasoline which are exempt from motor vehicle emissions inspection under federal regulation, are exempt from state emissions inspection requirements. (Reference <u>RSMo</u> 643.315)

NV AFVs are exempt from emissions testing. (http://www.dmvstat.com/emission.htm)
OH AFVs are exempt from certain motor vehicle inspection and maintenance programs. (Reference <u>Ohio Revised Code</u> §3704.14)
OR Dedicated OEM natural gas vehicles (NGVs) and electric vehicles are not required to be equipped with a certified pollution control system. (Reference <u>ORS</u> 815.300)
VA – Exempts HEVs that obtain an EPA rating of at leat 50 mpg during city fuel economy tests and AFVs from emission inspection.
WA Electric, CNG, LPG, and hybrid motor vehicles that obtain an EPA rating of at least 50 mpg during city driving are exempt from emission control inspections. (Reference RCW 46.16.015)
LICENSE PLATE FEES/TAXES
AZ – Initial annual vehicle license tax on an AFV is lower than the license tax on conventional vehicles. The vehicle license tax on an AFV is \$4 for every \$100 in assessed value. The assessed value of the AFV is determined as follows: during the first year after initial registration, the value of the AFV is 1 percent of the manufacturer's base retail price (as compared to 60 percent for conventional vehicles); during each succeeding year, the value of the vehicle is reduced by 15 percent. The minimum amount of the license tax is \$5 per year for each motor vehicle subject to the tax. (ARS 28-5805 and 28-5801)
CA In order to equalize the vehicle license fee between AFVs and conventional fuel vehicles, the incremental cost of an AFV is exempt from the 2 percent vehicle license fee when it costs more than the most comparable conventional fuel vehicle, as determined by the California Energy Commission. This reduction applies towards new, light-duty AFVs that are certified to meet or exceed ULEV standards. This program runs from January 1, 1999 to January 1, 2009. (Reference <u>California</u> <u>Revenue and Taxation Code</u> Section 10759.5)
PARKING FEES
AZ- Allows a person driving an AFV to park without penalty in parking areas that are designated for carpool operators (ARS 28-877)
CA The City of Sacramento offers free parking to individuals who own or lease electric vehicles (EVs) with an EV parking pass in downtown parking lots. Free charging stations also are available. (City Council Resolution 2000-646)
CA - San Francisco International Airport allows drivers of CNG taxis a front-of-the-line incentive allowing them one jump per shift.
CA - Los Angeles Airport offers free parking and recharging for EVs.
REGISTRATION FEES
DC – Reduced (by 50 percent) registration fees for hybrid vehicle owners. (A15-704)
PA – Exempts AFVs from annual vehicle registration fee. (P.A. 92-139)

HOV EXEMPTION
AZ- Provides HEVs and AFVs access to high occupancy vehicle (HOV) lanes at any time, regardless of occupancy.
CA - Qualified AFVs can use HOV lanes regardless of the number of occupants. An identification sticker must first be obtained from the California Department of Motor Vehicles (DMV). From January 1, 2004 until January 1, 2008, qualified AFVs are the following: SULEVs or ZEVs which also meet the federal ILEV evaporative emission standard; 2) Ultra Low Emission Vehicles (ULEVs) produced during Model Year 2004 (MY2004) or earlier that also meet the federal Inherently Low Emission Vehicle (ILEV) standard; 3) pending approval by the federal government, HEVs produced during MY2004 or earlier that have a fuel economy rating of 45 miles per gallon (mpg) or greater and also meet the state ULEV, SULEV, or PZEV standards. At this time, only HEVs that also meet the federal ILEV standard qualify for the above HOV lane exemption.
CO - Vehicles that meet or exceed the EPA ILEV classification and have a GVWR of 26,000 lbs. or less may be operated upon HOV lanes regardless of the number of occupants and without payment of a special toll or fee. A special sticker must be obtained from the state Department of Transportation. At this time, HEVs do not qualify as ILEVs due to the use of traditional fuel and cannot receive the HOV exemption decal. (Reference <u>CRS</u> §42-4-1012)
DC - Clean fuel vehicles in fleets whose operators control at least 10 vehicles in an ozone non- attainment area and have been certified by the Environmental Protection Agency as an Inherently Low Emission Vehicle (ILEV), and continues to be in compliance with applicable ILEV emission standards, is exempt from High Occupancy Vehicle lane restrictions. (Reference <u>D.C. Code</u> , Division VIII, Title 50, Subtitle III § 50-714)
FL 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. (Reference Florida Statutes 316.0741)
GA – AFVs and HEVs shall be authorized to use HOV lanes, regardless of the number of passengers, if the U.S. Congress or U.S. Department of Transportation approves such authorization through legislative or regulatory action. (Reference Georgia Code Section 32-9-4, 40-2-76)
HI - Vehicles with special "electric vehicle" plates are allowed to park for free at parking meters and use the HOV lane at any time. (Reference Act 290)
UT 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. (Reference Utah Code 41-1a-1211, 41-6-53.5, and 63-55-241)
VA 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 hybrid electric vehicles qualify. (Reference Virginia Code §33.1-46.2 and §46.2-749.3)
OTHER
DC - Clean fuel vehicles in fleets whose operators control at least 10 vehicles in an ozone non- attainment area, as defined by the Clean Air Act, are exempt from time-of-day and day-of-week restrictions and commercial vehicle bans. (Reference <u>D.C. Code</u> , Division VIII, Title 50, Subtitle III § 50-714)

#11: REDUCE OR ELIMINATE TOLLS	CA – Vehicles certified to California's Super Ultra Low Emission Vehicle (SULEV) standard or better, AND the U.S. Environmental Protection Agency's Inherently Low Emission Vehicle (ILEV) standard, are permitted to use the toll-free and reduced-rate passage privilege on specified bridges if the owner of the vehicle has obtained an automatic vehicle identification account and he/she is registered to an address in the 9-county San Francisco Bay region. <u>Eligible vehicles</u> do not include HEVs currently offered for sale in California.
#12: LEVERAGING FEDERAL HIGHWAY TRANSPORTATION FUNDING	DC, MD – Metro Washington Council of Governments (MWCOG) administers the Advanced Technology Vehicle Program - The Clean Alternative, which is funded by the Maryland Department of Transportation (MDOT) and offers flexible incentives to private companies and local governments to cover the incremental cost of dedicated CNG and 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.
	GA - 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. Currently, there is no funding available for this program .
	NY 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 50 percent of the incremental cost of purchasing new light-duty CNGs or EVs. 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.
	NY The Greater Long Island Clean Cities Coalition allocates awards for fleet AFV purchases and support for infrastructure projects. Reimburses up to 80% of the cost of alternative fuel vehicles.
	TX Congestion Mitigation and Air Quality (CMAQ) Improvement Program Grants are available through the Houston-Galveston Area Council, through the Houston-Galveston Clean Cities Coalition, to cover 75 percent of the incremental cost for new OEM clean fuel vehicle purchases, and clean fuel vehicle conversions/repowers. This grant is for government and private entities in the eight county Houston-Galveston non-attainment area.
	TX Under the Texas Clean Fuel Fleet Program, clean-fuel vehicle acquisition requirements apply to certain mass transit, local government, and private fleets located in the state's non-attainment areas. Affected fleets are required to ensure that a certain percentage of their fleet vehicles are certified to meet the EPA's LEV standards. Fleets may use any vehicle/fuel combination that is certified by EPA standards. Beginning September 1, 2002, local governments with fleets of more than 15 vehicles and private fleets with more than 25 vehicles located in non-attainment areas are required to ensure that 70 percent of light-duty vehicle purchases and 50 percent of heavy-duty vehicle purchases meet LEV standards. Mass transit authorities are required to convert 50 percent of their total fleet to run on alternative fuels. Vehicles weighing over 26,000 lbs. are exempt. (Reference Texas Statutes §382.131 to §382.142)
#13: VOLUNTARY VEHICLE RETIREMENT	CA – A non-mandated, market-based, voluntary vehicle retirement program to meet emissions- reduction goals has been established. Participants sell eligible vehicles to an approved enterprise so that entire vehicle may be destroyed in order to generate mobile source emission reduction credits.

	Each retired vehicle is subject to a series of emissions tests to calculate the emissions benefits achieved by removing the vehicle from the road. The value of a retired vehicle is dependent on the value of emission reduction credits in the air district in which the vehicle is registered. Typically, this translates into \$400 - \$700 per vehicle. (CCR 13§2600)
#14 : ECONOMIC DEVELOPMENT	AR – Provides a tax credit up to 50 percent of the amount spent during the taxable year for any Arkansas taxpayer who constructs a facility in Arkansas that would produce electric vehicles, fuel cells and/or photovoltaic devices. (Arkansas Code §15-4-2104)
	HI – Through December 31, 2005, taxpayers who make 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 percent of the activities are qualified research (75 percent of which is conducted in Hawaii) and in which more than 75 percent of the income is derived from qualified research. "Qualified research" includes research related to non-fossil fuel energy-related technology. The tax credit is equal to a percentage of the investment made, ranging from \$700,000 in the first year to \$200,000 in the fourth year following investment. (HRS) §235-7.3 and §235-110.9)
	IN - The Indiana Department of Commerce may designate an area as a certified technology park if certain criteria are met, including a firm commitment from at least one business engaged in a high technology activity creating a significant number of jobs. The establishment of high technology activities and public facilities within a technology park serves a public purpose and is of benefit to the general welfare of a unit by encouraging investment, job creation and retention, and economic growth and diversity. "High technology activity" includes advanced vehicles technology, which is any technology that involves EVs, HEVs, or AFVs, or components used in the construction of these vehicles. (Reference Indiana Code 36-7-32)
	MI – Taxpayers engaged in research, development, or manufacturing of alternative energy technology and certified as eligible may claim a nonrefundable credit against their single business tax liability. In addition, certain businesses located within an "Alternative Energy Zone" may be eligible for a refundable tax credit on its Qualified Payroll. (Reference <u>Michigan Compiled Laws</u> (MCL) 208.39e)
	MI – Personal property that is certified as "Alternative Energy Personal Property" is exempt from the collection of personal property taxes. The exemption applies only to personal property that is new to Michigan. The personal property tax exemption applies to taxes levied after December 31, 2002 and before January 1, 2013. (Reference <u>Michigan Compiled Laws</u> (MCL) 208.39e)
	MI 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. (Reference Michigan Compiled Laws (MCL) 207.552 and 207.803, House Bill 4010, 2004, and Senate Bill 824, 2004)
	VA A job-creation tax credit worth \$700/per full-time employee is provided 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)
	 VT 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 percent of qualified research and development expenditures; A credit against export taxes;

Alliance to Save Energy

Federal and State Incentives Encouraging Purchase/Use of Advanced Technology Vehicles and Alternative Fuels

	 5 percent to 10 percent of total investments in plants or facilities and machinery and equipment (small business investment tax credit); Up to 6 percent of investments in machinery and equipment (\$100,000 per year maximum); Up to 6 percent of investments for renovation of existing facilities to provide cable, fiber or telecommunications access; 20 percent 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)
	WA Qualifying high technology businesses, including developers of alternative energy resources, are exempt from state sales and use taxes.
	WA 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 percent applies to persons engaged in manufacturing of alcohol fuel, biodiesel fuel, or biodiesel feedstock. The typical rate for manufacturing businesses is .484 percent. (Reference Revised Code of Washington (RCW) 82.04.260, 82.08, 82.12, 82.14, 82.29A.135, 82.32, and 84.36)
#15 : RENEWABLE INVESTMENT FUNDS	CT – Makes technology that produces hydrogen or efficiently converts hydrogen to electricity eligible for funding under the Renewable Energy Investment Fund. (C.G.S. 16-245n(a) as amended by P.A. 3-135)

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Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

STATE	PROVISIONS
ALABAMA	Reduced Tax Rates:
	 In lieu of an excise tax on LPG and CNG used to propel motor vehicles, an annual fee ranging from \$75 to \$175 is levied on vehicles ranging from passenger to tractor/trailer units. (Code of Alabama 40-17-160)
ALASKA	NONE
ARKANSAS	Rebates and Tax Credits:
	 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 percent rebate 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 percent rebate up to \$2,000 is also available for the incremental cost of purchasing an OEM AFV. Local governments and private individuals are eligible for these rebates; however, fuel suppliers and state governments are not. Provides an income tax credit for biodiesel suppliers of up to 5 percent of the costs of the facilities and equipment.
	used in the wholesale or retail distribution of biodiesel fuels. (Arkansas Code §15-4-2803) Reduced Tax Rates:
	 LPG special fuel vehicles are taxed through a yearly flat-fee sticker tax in lieu of the gasoline road tax. The amount of the sticker fee is based on the vehicle's Gross Vehicle Weight (GVW). For example, the sticker fee for a pick-up truck is around \$195 per year. (Reference <u>Arkansas Code</u> §26-56-301)
	Grants:
	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 5 years. (Arkansas Code §15-4-2804)
	Economic Development:
	 Provides a tax credit up to 50 percent of the amount spent during the taxable year for any Arkansas taxpayer who constructs a facility in Arkansas that would produce electric vehicles, fuel cells, and/or photovoltaic devices. (Arkansas Code §15-4-2104)
ARIZONA	Rebates and Tax Credits:
	 Tax credit up to \$75 available to individuals for installation of residential EV recharging outlets constructed by a taxpayer. (ARS 43-1090 and ARS 43-1176)
	State Policies:
	 Specifically designated governing bodies of cities and/or towns must operate at least 75 percent of their government fleet on alternative fuels and clean burning fuels. With the use of an alcohol-fueled vehicle, the state agency must demonstrate that the fuel for the vehicle is available within a ten-mile radius of the primary home base of that vehicle. (ARS 9-500.04, 41-803)
	Vehicle Use Exemptions:
	 Initial annual vehicle license tax on an AFV is lower than the license tax on conventional vehicles. The vehicle license tax on an AFV is \$4 for every \$100 in assessed value. The assessed value of the AFV is determined as follows: during the first year after initial registration, the value of the AFV is 1 percent of the manufacturer's base retail price (as compared to 60 percent for conventional vehicles); during each succeeding year, the value of the vehicle is reduced by 15 percent. The minimum amount of the license tax is \$5 per year for each motor vehicle subject to the tax. (ARS 28-5805 and 28-5801)
	 Exempts electric, solar and hydrogen vehicles from emissions inspections if vehicles are used to commute into metro Phoenix or metro Tucson areas. New AFVs being registered for the first time are not required to undergo emissions testing, but emissions testing will be required in subsequent years. All other AFVs are required to have emissions testing before the vehicle can be registered. An in-lieu fee may be paid for MY 2001 and newer OEM AVFs instead of having the emissions test performed. (ARS 49-542). Allows a person driving an AFV to park without penalty in parking areas that are designated for carpool operators (ARS 49-20 CTR).
	 (ARS 28-877) Provides HEVs and AFVs access to high occupancy vehicle (HOV) lanes at any time, regardless of occupancy. (ARS 28-2416)

Footnote: Generally, laws that have expired prior to January 1, 2005 are NOT included in this document.

1

Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

CALIFORNIA	Reduced Tax Rates:
	 The excise tax imposed upon CNG, LNG, and LPG as vehicle fuels can be paid through an annual flat-fee rate
	sticker tax, ranging from \$36 to \$168, based on GVWR ranging from 4,000 lbs. to 12,001 lbs. Alternatively,
	owners and operators may pay an excise tax on CNG of \$0.07 per cubic feet, LNG of \$0.06 per gallon, and LPG
	of \$0.06 per gallon. Excise taxes on ethanol and methanol containing not more than 15% gasoline or diesel fuel
	are reduced to \$0.085 per gallon. (Reference California Revenue and Taxation Code Section 8651 to 8651.8)
	State Policies:
	• The state's 21 interstate freeways are now designated as the "California Hydrogen Highway Network." and the
	state is committed to working with legislators, energy providers, automakers, and others to achieve the following
	by 2010; 1) Build a network of hydrogen refueling stations; 2) Ensure that hydrogen vehicles are commercially
	available for nurchase: 3) Incorporate hydrogen vehicles into the state fleet: 4) Develop safety standards for
	hydrogen refueling stations and vehicles: and 5) Establish incentives to encourage the use of hydrogen vehicles
	and encourage the development of renewable sources of energy for hydrogen production. (Reference Executive
	Ω order S-7-04 2004)
	Vehicle Registration Surcharge:
	• State Air Quality Management Districts (AQMDs) are given the authority to issue a surphares on vahials
	 State Air Quality Management Districts (AQMDS) are given the authomy to issue a surcharge on vehicle registration fees to be used encodingeably to reduce oir pollution from mater vehicles. Surcharges renge from \$1
	(Courte Cooper AOMD) to CC (Cooperations to AOMD). The following are complete of pressons that are funded by the
	(South Coast AQMD) to \$6 (Sacramento AQMD). The following are samples of programs that are funded by the
	Vehicle registration surcharge (California Health and Safety Code §44220):
	 venicie incentive Program – Enables public agencies to acquire tow emission, light-duty AFVs. Qualificing vehicles must be certified as a CUI EV, DZEV, or ZEV, lesentives range from \$1,000 to
	Qualifying venicles must be certified as a SULEV, PZEV, or ZEV. Incentives range from \$1,000 to
	\$5,000 per venicie. Makiela Dura Bask Deservanta A autoritaria en energi that neuro sum ano ta nativa alimiteta, aldan, an anti-ra
	 venicle Buy Back Program - A voluntary program that pays owners to retire eligible, older, operating, and excitate dust birdes. Descrete the page from \$500 (Ore Disers AOMD (MV 4075 to MV 4075)) to \$550
	and registered venicies. Payments range from \$500 (San Diego AQMD (MY 1975 to MY 1985)) to \$650
	(Bay Area AQMD (MY 1985 and older)).
	• 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.
	Vehicle Use Exemptions:
	In order to equalize the vehicle license fee between AFVs and conventional fuel vehicles, the incremental cost of
	an AFV is exempt from the 2 percent vehicle license fee when it costs more than the most comparable
	conventional fuel vehicle, as determined by the California Energy Commission. This reduction applies towards
	new, light-duty AFVs that are certified to meet or exceed ULEV standards. This program runs from January 1,
	1999 to January 1, 2009. (Reference <u>California Revenue and Taxation Code</u> Section 10759.5)
	 The City of Sacramento offers free parking to individuals who own or lease electric vehicles (EVs) with an EV
	parking pass in downtown parking lots. Free charging stations also are available. (City Council Resolution 2000-
	646)
	 San Francisco International Airport allows drivers of CNG taxis a front-of-the-line incentive allowing them one
	jump per shift.
	 Los Angeles Airport offers free parking and recharging for EVs.
	Qualified AFVs can use HOV lanes regardless of the number of occupants. An identification sticker must first be
	obtained from the California Department of Motor Vehicles (DMV). From January 1, 2004 until January 1, 2008,
	gualified AFVs are the following: SULEVs or ZEVs which also meet the federal ILEV evaporative emission
	standard; 2) ULEVs produced during Model Year 2004 (MY2004) or earlier that also meet the federal ILEV
	standard; 3) pending approval by the federal government, HEVs produced during MY2004 or earlier that have a
	fuel economy rating of 45 mpg or greater and also meet the state ULEV, SULEV, or PZEV standards. At this time,
	only HEVs that also meet the federal ILEV standard qualify for the above HOV lane exemption.
	Reduce or Eliminate Tolls:
	Vehicles certified to California's SULEV standard or better. AND the U.S. Environmental Protection Agency's
	ILEV standard, are permitted to use the toll-free and reduced-rate passage privilege on specified bridges if the
	owner of the vehicle has obtained an automatic vehicle identification account and he/she is registered to an

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Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

	address in the Q county San Francisco Pay region. Eligible vehicles do not include HEV/c currently offered for
	address in the 9-county San Francisco Day region. Engine venicles do not include HEVS currently onered for
	Sale III California.
	Voluntary venicle Retirement:
	A non-mandated, market-based, voluntary vehicle retirement program to meet emissions-reduction goals has
	been established. Participants sell eligible vehicles to an approved enterprise so that entire vehicle may be
	destroyed in order to generate mobile source emission reduction credits. Each retired vehicle is subject to a
	series of emissions tests to calculate the emissions benefits achieved by removing the vehicle from the road. The
	value of a retired vehicle is dependent on the value of emission reduction credits in the air district in which the
	vehicle is registered. Typically, this translates into \$400 - \$700 per vehicle. (CCR 13§2600).
COLORADO	Rebates and Tax Credits:
	Offers an income tax credit to individuals for the purchase of new AFVs and for the conversion of vehicles to
	operate on alternative fuels, including HEVs, through June 30, 2011. Credits are based on the US EPA vehicle
	emissions classifications (e.g., LEV, ULEV, ILEV, SULEV or ZEV). A tax credit also is available for the purchase
	of a hybrid electric vehicle and also is based on the EPA emissions classifications noted above: the credit value
	ranges from \$2,430 to \$4,310. If the motor vehicle that qualifies for the AFV credit is owned by the state a
	notifical subdivision of the state, or a tax exempt organization, and is used in connection with the official activities
	of the aptity, the aptity will be aligible for a relate in the same amount as apacified above. (Deference Colorade
	Divised Otatutas (ODD) \$20.00 540 and \$20.00 400)
	<u>Revised Statutes</u> (CRS) §39-22-516 and §39-33-102)
	Offers a tax credit for the construction, reconstruction or acquisition of alternative fuel refueling facilities through
	June 30, 2011. The credit value is 50 percent from 1998-2006; 35 percent from 2006-2009; and 20 percent from
	2009-2011. The credit has a maximum value of \$400,000 in any consecutive five-year period for each refueling
	facility. The value of the credit increases if the refueling facility is used by the public and if 70 percent of the
	alternative fuel dispensed from the facility is derived from renewables. (CRS§39-22-516)
	Reduced Tax Rates:
	Vehicles, vehicle power sources, or parts used for converting a vehicle power source certified to federal LEV
	standards or better are exempt from state sales taxes. This exemption applies to vehicles, power sources, or
	parts for vehicles over 10.000 lbs GVWR. (CRS§39-26-114)
	Owners of CNG and LPG vehicles are granted an exemption from fuel taxes. They are required to purchase an
	annual tax decal for \$70, \$100 or \$125 based on the vehicle's GVWR. All CNG and LPG vehicles must display a
	current fuel tax decal (CRS \$39-27-102 5)
	State Policies:
	Didle Fulcies.
	• By July 10, 2010, the Executive Director of the Department of Personnel must adopt a policy that at least 10
	percent of all state-owned bi-fuel venicles are to be fueled exclusively with an alternative fuel. (CRS §24-30-
	Vehicle Use Exemptions:
	 Vehicles that meet or exceed the EPA ILEV classification and have a GVWR of 26,000 lbs. or less may be
	operated upon HOV lanes regardless of the number of occupants and without payment of a special toll or fee. A
	special sticker must be obtained from the state Department of Transportation. At this time, HEVs do not qualify as
	ILEVs due to the use of traditional fuel and cannot receive the HOV exemption decal. (Reference <u>CRS</u> §42-4-
	1012)
CONNECTICUT	Rebates and Tax Credits:
	Prior to January 1, 2008, a corporate business tax credit is available for 10 percent of the incremental cost of a
	new dedicated CNG, LNG, LPG, or electric vehicle. The credit may be carried forward for up to three years.
	(Reference C.G.S. 12-217i and Senate Bill 218 (Public Act 04-231), 2004)
	 January 1 2008 a Corporation Business Tax credit is available for 50 percent of the following expenditures: the
	construction of improvements to or equipment for any CNG LNG or LPG refueling station or an electric vehicle
	repharming station; and the nurchase and installation of equipment used in dedicated or dual first CNC.
	L DC, an electric vehicle conversione. (Deference Converting the Converting the Vehicle COC) 40,047 and Convert Difference
	LPG, or electric vehicle conversions. (Reference <u>Connecticut General Statutes</u> (C.G.S.) 12-21/1 and Senate Bill
	2 10 (PUDIIC ACT 04-231), 2004)

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3

Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

	 Reduced Tax Rates: 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 <u>C.G.S.</u> 12-412-67, 68, 69, and 115, and Senate Bill 218 (Public Act 04-231)) 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 <u>C.G.S.</u> 12-264(a) and Senate Bill 218 (Public Act 04-231), 2004) Prior to July 1, 2008, CNG, LPG, and LNG are not subject to the motor fuels tax. (Reference <u>C.G.S.</u> 12-458f and Senate Bill 218 (Public Act 04-231), 2004) Drior to July 1, 2008, CNG, LPG, and LNG are not subject to the motor fuels tax. (Reference <u>C.G.S.</u> 12-458f and Senate Bill 218 (Public Act 04-231), 2004) The Business Environmental Clean-Up Revolving Loan Fund offers loans for working or development capital to businesses that convert gas and diesel-powered vehicles to run on alternative fuels. To qualify, a business must be at least two years old; have gross revenues under \$3 million or 150 employees; derive at least 75 percent of gross revenues from motor vehicle fuel conversion activities: and demonstrate that it is unable to obtain financing.
	from conventional sources on reasonable terms or in reasonable amounts. (Deference C.C.S. 22.22-)
	State Delicies:
	 The fleet average for cars and light-duty trucks purchased by the state must have an EPA estimated fuel economy of at least 40 mpg; comply with EPAct's state fleet acquisition requirements; obtain the best achievable fuel economy per pound of carbon dioxide emitted in its vehicle class. AFVs purchased by the state to comply with these requirements must be capable of operating on the alternative fuel that is available in the state. Law enforcement vehicles and other special purpose designated vehicles are exempt from these provisions. (Reference C.G.S. 4a-67d and Senate Bill 218 (Public Act 04-231), 2004)
	Renewable Investment Funds:
	 Makes technology that produces hydrogen or efficiently converts hydrogen to electricity eligible for funding under the Renewable Energy Investment Fund. (C.G.S. 16-245n(a) as amended by P.A. 3-135)
DELAWARE	NONE
DISTRICT OF	Reduced Tax Rates:
COLUMBIA	Hybrid vehicles are exempt from the excise tax as of 2005. (Act 15-704)
	 State Policies: Requires 70 percent of all light duty fleet vehicles to be clean fuel vehicles by 2000 and every year thereafter. (D.C. Act 10-201) Vehicle Use Exemptions:
	 Reduced (by 50 percent) registration fees for hybrid vehicle owners. (Act 15-704)
	 Clean fuel vehicles in fleets whose operators control at least 10 vehicles in an ozone non-attainment area and have been certified by the Environmental Protection Agency as an ILEV, and continues to be in compliance with applicable ILEV emission standards, is exempt from High Occupancy Vehicle lane restrictions. (Reference <u>D.C.</u> <u>Code</u>, Division VIII, Title 50, Subtitle III § 50-714)
	Clean fuel vehicles in fleets whose operators control at least 10 vehicles in an ozone non-attainment area, as
	defined by the Clean Air Act, are exempt from time-of-day and day-of-week restrictions and commercial vehicle
	bans. (Reference D.C. Code, Division VIII, Title 50, Subtitle III § 50-714)
FLORIDA	Reduced Tax Rates:
	 A person operating an AFV must purchase an annual decal from the Florida Department of Motor Vehicles in lieu of the excise tax on gasoline. (Reference Florida Statutes 206.877)
	Insurance Premiums:
	 Electric vehicles (EVs) are protected from insurance surcharges based on factors such as new technology, passenger payload, weight-to-horsepower ratio, and the types of material used to manufacture the vehicle unless the Department of Insurance determines from actuarial data submitted to it that the surcharge is justified.

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Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

	(Reference Florida Statutes 62	27.06535)		
	Vehicle Use Exemptions:			
	 ILEVs and HEVs that are certif 	fied and labeled	in accordance with federal regulations ma	ay be driven in HOV lanes
	at any time, regardless of the r	number of passe	engers. (Reference <u>Florida Statutes</u> 316.0	741)
GEORGIA	Rebates and Tax Credits:			
	Offers an income tax credit of 2	20 percent of the	e cost to purchase or lease a ZEV, or \$5,0	000, whichever is less.
	ZEVs include, but are not limite	ed to, battery-or	ly electric vehicles and hydrogen fuel cell	vehicles. (Reference
	Georgia Code Sec. 48-7-40.16	5) 		
	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 bei	tter) by EPA. II	ne value of the credit is 10 percent of the p	ourchase or conversion
	cost, or \$2,500, whichever is le	ess. (Reference	Georgia Code Sec. 48-7-40.16)	te de la companya de
	Provides a 10 percent tax cred Coorgin (Deference Coorgin)	lit of \$2500 to al	iy business for the purchase/lease of an e	electric charger located in
	Beduced Tex Peters	Code Sec. 40-7-	40.10)	
	PG and special fuels sold in h	oulk to a license	d consumer distributor are exempt from ex	voiso taxos (Poforonoo
	LFG and special fuels sold in the Georgia Code Sec. 48.9.3)			Cise laxes. (Reletence
	Vehicle Use Exemptions:			
	• AFVs and HEVs shall be author	orized to use HC	N/ lanes regardless of the number of pass	sengers if the LLS
	Congress or U.S. Department	of Transportatio	n approves such authorization through lec	nislative or regulatory
	action (Reference Georgia Co	de Section 32-9	-4 40-2-76)	giolative of regulatory
	Leveraging Federal Highway Transpo	rtation Funding	1;	
	Alternative Fuel Vehicle Increm	nental Cost Ince	, ntive Program is available to local busines	sses, governments, and
	authorities throughout the 13-c	ounty Metropoli	tan Atlanta area. The program provides ar	n incentive for fleets to
	purchase AFVs by offering fun	ding to offset the	e incremental cost difference of AFVs fron	n comparable gasoline- or
	diesel-powered vehicles. Curr	rently, there is	no funding available for this program.	
HAWAII	Reduced Tax Rates:			
	Alcohol fuels are exempt from	the 4 percent st	ate excise tax on retail sales. Expires 1/1/	07. (Reference <u>HRS</u>
	§237-27.1)			
	 Every distributor of any fuel for 	operation of an	internal combustion engine is required to	pay a license tax of
	\$0.01 for each gallon of alterna	ative fuel sold or	used by the distributor. In addition, every	y distributor is required to
	pay a license tax for each gallo	on of fuel sold or	used by the distributor for operating a mo	otor vehicle(s) on state
	public highways according to the	ne tollowing rate	S:	
	Fuel Tw	20	Tax]
	Ethanol	he	0 1/5 times the rate for diesel	
	Methano		0.11 times the rate for diesel	
	Biodiese	<u>ام</u>	0.25 times the rate for diesel	
			0.33 times the rate for diesel	
]
	For other alternative fuels, the	rate shall be ba	sed on the energy content of the fuels as	compared to diesel fuel.
	using a lower heating value of	130.000 BTUs	per gallon as a standard for diesel, so that	the tax rate, on an
	energy content basis, is equal	to one-quarter t	he rate for diesel fuel. (Reference HRS §2	243-4)
	Vehicle Use Exemptions:	·	, ů	,
	Vehicles with special "electric v	vehicle" plates a	re allowed to park for free at parking meter	ers and use the HOV lane
	at any time. (Reference Act 29			
	Economic Development:	-		
	Through December 31, 2005, t	taxpayers who r	nake a "high technology business investm	ent" 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 per	cent of the activ	ities are qualified research (75 percent of	which is conducted in

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	Hawaii) and in which more than 75 percent of the income is derived from qualified research. "Qualified research" includes research related to non-fossil fuel energy-related technology. The tax credit is equal to a percentage of the investment made, ranging from \$700,000 in the first year to \$200,000 in the fourth year following investment. (HRS) §235-7.3 and §235-110.9)
IDAHO	Reduced Tax Rates:
	 While motor fuels received by distributors are taxed at a rate of \$0.25 per gallon, this tax does not apply to special fuels dispensed into a motor vehicle which uses gaseous special fuels and which displays a valid gaseous special fuels permit. Special fuels include CNG, LPG, fuel suitable for diesel engines and hydrogen. There is, however, an excise tax on special fuels, on a gasoline gallon equivalent. An annual fee in lieu of the excise tax may be collected on a vehicle powered by gaseous fuels, based on the GVWR of the vehicle. (Reference House Bill 684, 2004 and Idaho Statutes, Sec. 63-2401, 63-2402, 63-2423 and 63-2424)
	venicle Use Exemptions:
	 Provides a business tax deduction for each licensed distributor for the use of biodiesel and ethanol. Gasoline and diesel blends containing either fuel are eligible. The deduction provided in this subsection shall not exceed 10 percent of (i) the volume of gasohol reported on the report or (ii) the special fuel which is or contains biodiesel. (Idaho Code 63-2407)
ILLINOIS	Rebates and Tax Credits:
	 The Illinois Alternate Fuels Rebate Program provides rebates for 80 percent 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 electricity. E85 and biodiesel rebates also are provided. For E85, the rebate is up to \$450 per year for 3 years for each flexible fuel vehicle that uses E85 at least half the time. For biodiesel, the fuel must contain at least 80 percent biomass content to be eligible. The Rebate Program was extended indefinitely in June 2003 and is funded. Eligibility is open to all Illinois residents, businesses, government units, and organizations 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 percent biodiesel fuel in Illinois. (Reference 415 ILCS 120/30) Reduced Tax Rates:
	 Sales and use taxes do not apply to ethanol-blended fuels (containing between 70 percent and 90 percent ethanol) sold between July 1, 2003 and December 31, 2013. (Reference <u>Illinois Compiled Statutes</u> (ILCS) Chapter 35 120/2-10)
	 Sales and use taxes apply to 80 percent of the proceeds from the sale of biodiesel-blended fuels (containing between 1 percent and 10 percent 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)
	State Policies:
	 In awarding contracts that require procurement of vehicles, state agencies must give preference to an otherwise qualified bidder who will fulfill the contract through the use of vehicles powered by ethanol produced from Illinois corn or biodiesel fuels produced from Illinois soybeans. (Reference 30 <u>ILCS</u> 500/45-60)
INDIANA	Rebates and Tax Credits:
	 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 percent biodiesel). If a taxpayer produces blended biodiesel, he/she is entitled to a credit of \$0.02 per gallon of blended biodiesel. (Reference Indiana Code 6-3.1-27)
	 Fuel retailers operating service stations in indiana which sell biended biodiesel that is dispensed through a metered pump are entitled to a credit of \$0.01 per gallon of blended biodiesel sold and dispensed through all the metered pumps at the service station. (Reference Indiana Code 6-3.1-27)
	Reduced Tax Rates:
	A governmental body, state educational institution, or instrumentality of the state that performs essential

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Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

	governmental functions on a statewide or local basis is entitled to a price preference of 10% for the purchase of fuels which are at least 20% biodiesel or a primarily ester-derived fuel (other than alcohol) made from biological materials, including oilseeds and animal fats, for use in compression and ignition engines. (Reference Indiana Code Sec. 5-22-15-19) State Policies:
	 Alternative Fuel Transportation Grant Program for projects that involve the purchase of AFVs, conversion of conventionally fueled vehicles to operate on alternative fuels, installation of AFV refueling facilities, purchase and use of renewable transportation fuels, or combinations of these purposes. AFVs include those 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:
	 For the purchase of OEM AFVs for which the manufacturer produces a conventionally fueled equivalent, 80% of the incremental cost is eligible for funding. 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.
	 For the conversion of vehicles to run on an alternative fuel, 80% of the cost of conversion is eligible for funding
	 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.
	 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 AFVs under the Energy Policy Act of 1992 are not eligible for grants under this program.
	 The Indiana Department of Commerce may designate an area as a certified technology park if certain criteria are met, including a firm commitment from at least one business engaged in a high technology activity creating a significant number of jobs. The establishment of high technology activities and public facilities within a technology park serves a public purpose and is of benefit to the general welfare of a unit by encouraging investment, job creation and retention, and economic growth and diversity. "High technology activity" includes advanced vehicles technology, which is any technology that involves EVs, HEVs, or AFVs, or components used in the construction of these vehicles. (Reference Indiana Code 36-7-32)
IOWA	Rebates and Tax Credits:
	 Provides a tax credit to retail service stations at which more than 60 percent of the total gallons of gasoline sold through metered pumps are ethanol-blended. Once owners pass 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 lowa Code 422.33)
	Reduced Tax Rates:
	 Entranoi-biended gasoline is taxed at \$0.19 per gallon, while non-ethanol blended gasoline is taxed at a scheduled rate, depending on the amount of ethanol-blended fuel sold in the previous calendar year. Currently, the non-ethanol blended gasoline tax rate is 20.5 cents per gallon. Natural gas is taxed at \$0.16 per 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 attention of the produce ethanol-blended gasoline and the tax due on the attention of the produce ethanol-blended gasoline and the tax due on the attention of the produce ethanol-blended gasoline and the tax due on the attention of the produce ethanol-blended gasoline attention of the produce ethanol-blended gasoline and the tax due on the attention of the produce ethanol-blended gasoline attention of the produce ethanol blended gasolin
	emanor-biended gasoline. This tax incentive expires June 30, 2007. (Reference lowa Code 452A.21)
	 Funded by the state's investor-owned utilities, the Alternate Energy Revolving Loan Program offers zero-percent interest loans for up to half the cost of biomass or alternative fuels-related fuel production projects, to a maximum of \$250,000 per facility. Fuel production facilities must be located in Iowa. (Reference <u>lowa Code</u> 476.46)

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	 The lowa 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. R&D projects are not eligible for the program. (Reference lowa Code 261.57) A biodiesel fuel revolving fund, consisting of money received from the sale of EPAct credits banked by the lowa Department of Transportation (IDOT) as of April 19, 2001, was established to purchase biodiesel fuel for use in IDOT vehicles. (Reference lowa Code 307.20) Grants: The Alternative Vehicle Demonstration Program authorizes the lowa Department of Natural Resources, conditioned upon the availability of funds, to award 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. A grant shall be for the purpose of conducting research connected with the fuel or the vehicle, and not for the purchase of the vehicle itself, except that the money may be used for the purchase of the vehicle is used for continuing research; and c) if the vehicle is sold or when the research related to the vehicle is completed, the proceeds of the sale of the vehicle shall be used for additional research. (Reference lowa Code 214A.19)
KANSAS	Rebates and Tax Credits:
	The Kansas Qualified Agricultural Ethyl Alcohol Producer Fund enables qualified agricultural ethyl alcohol producers to apply to the Department of Revenue for a production incentive. Ethyl alcohol producers who began production before July 1, 2001 are eligible to receive \$0.05 for each gallon sold to an alcohol blender during 2002, 2003, and 2004. If the producer who is in production prior to July 1, 2001, increases production capacity by an amount of 5 million gallons over the producer's base sales, \$.075 may be collected for each gallon sold to an alcohol blender that is in excess of the producer's base sales (up to 15 million gallons). Producers who start production on or after July 1, 2001 and who have sold at least 5 million gallons to an alcohol blender may receive \$0.075 for each gallon sold (up to 15 million gallons). Expires June 30, 2011. (Reference Kansas Statutes 79-34.163)
	 Provides a tax credit in the amount not to exceed the lesser of \$750 or 5 percent of the cost of an AEV
	(Reference Kansas Statutes 79-32 201)
	 Provides an income tax credit for 50 percent of the incremental or conversion cost of qualified AFVs. Credits range for \$3,000-\$50,000 based on GVWR. For AFVs placed into service after January 1, 2005, the incentive values are reduced to a range of \$2,400 - \$40,000. The state also offers an income tax credit for 50 percent, up to \$200,000, for the cost of a qualified alternative fuel refueling station. After January 1, 2005, this tax credit is reduced to 40 percent, not to exceed \$160,000. (Reference Kansas Statutes 79-32,201)
	Low-Interest Loans:
	 Alternative fuels loan program was established for the purpose of making loans to government agencies that own and operate motor vehicles to encourage the use of alternative fuels and the development of alternative fuel infrastructure. However, no funds have been allocated for this program. (Reference <u>Kansas Statutes</u> 75- 37,116 through 75-37,119)
	State Policies:
	 As of MY 2000, 75 percent of new light-duty motor vehicle acquisitions by the state fleet and its agencies are to be alternative fuel vehicles. (Reference <u>Kansas Statutes</u> 75-4616)
KENTUCKY	Reduced Tax Rates:
	 Liquefied petroleum gas (LPG) is exempt from excise tax when it is used to propel motor vehicles on the public highways, given that these vehicles are equipped with carburation systems approved by the Natural Resources and Environmental Protection Cabinet. (Reference KRS 234.321) Grants:
	 Eligible diesel fleet operators may submit project proposals requesting funds to buy down the additional cost of biodiesel in comparison to conventional diesel fuel. To be eligible, an operator must have a municipal fleet of diesel vehicles in Kentucky. The fleet must be centrally fueled and not subject to other government mandates that already require the use of alternative fuels. (SEP Block Grant)
	8

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LOUISIANA	Rebates and Tax Credits:	
	 Provides an income tax credit worth 20 percent of the cost of converting a vehicle to operate on an alternative 	
	fuel (including HEVs), 20 percent of the incremental cost of purchasing an OEM AFV (including HEVs), and 20	
	percent 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 percent of the total vehicle cost or \$1,500. (Reference Revised Statutes (RS) §47:38 and §47:287.757)	
MAINE	Rebates and Tax Credits:	
	• 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 percent for expenditures made from January 1, 2002 to December 31, 2005. (Reference MRSA Title 36 § 5219-P)	
	• 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. (Reference Legislative Document (LD) 1492, 2004 and Maine Revised Statutes (MRSA)	
	Title 36 §5219-W)	
	Reduced Tax Rates:	
	I he State Highway tax for each special fuel used in transportation is based on each fuel's energy content relative	
	to gasoline. Currently, etnanol (ESS) is taxed at a rate of \$0.185 per gallon, propane (EPG) at \$0.19 per gallon, methodel (MSS) at \$0.149 per gallon, and compressed natural app (CNC) at \$0.226 per 100 standard subjection for the second sec	
	Gasoline is taxed at a rate of \$0.26 per gallon, (Reference MRSA Title 36.83203)	
	 For original equipment manufacturer (OEM) vehicles the incremental cost of the sale or lease of a clean-fuel 	
	vehicle (including hybrids) for which there is an identical gasoline-powered vehicle is tax-exempt. If there is no	
	identical vehicle powered by gasoline, 30 percent of the sale or lease price of an internal combustion engine	
	clean- fuel vehicle, and 50 percent 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. (Reference MRSA Title 36 §1752 and §1760-79)	
	Agriculturally Derived Fuel Fund was developed to provide direct loaps and subsidies to a business or	
	Agriculturally Derived Fuel Fund was developed to provide direct loans and subsidies to a business or	
	and ethanol. It is a non-lansing fund, which is controlled by the Finance Authority of Maine. Currently, there is	
	no funding available for this program. (Reference MRSA Title 10 §997-A)	
	• Clean Fuel Vehicle Fund, a non-lapsing revolving loan fund that may be used for direct loans to finance all or part	
	of any clean-fuel vehicle project. The Authority may also insure up to 100 percent of mortgage payments with	
	respect to mortgage loans for clean-fuel vehicle projects. Currently, there is no funding available for this	
	program. (Reference <u>MRSA</u> Title 10 §1023-K and §1026-P)	
	Grants:	
	 Sustainable Energy Trust Fund - Sustainable energy projects eligible for financial support may include demonstration projects that promote or support along transportation alternatives. (Reference LD 905, 2002) 	
	Insurance Premiums:	
	An insurer may credit or refund any portion of the premium charges for an insurance policy for a clean-fuel	
	vehicle in order to encourage its policyholders to use clean-fuel vehicles if insurance premiums on other vehicles	
	are not increased to fund these credits or refunds. (Reference MRSA Title 24-A §2303-B)	
	State Policies:	
	Except for cars and light-duty trucks purchased for law enforcement and other special use purposes as	
	designated by the State Purchasing Agent, the State Purchasing Agent may not purchase or lease any car or	
	the car has a manufacturer's estimated highway mileage rating of at least 45 mpg and the light-duty truck has a	
	manufacturer's estimated highway mileage rating of at least 35 mpg. (Reference MRSA Title 5 \$1812-F)	
MARYLAND	State Policies:	
	• The State shall ensure that an average of 50 percent of the fuel used by bi-fuel and flex-fuel vehicles shall be	
	alternative fuel. The State shall help develop the refueling and maintenance infrastructure required to make	

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Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

	certain types of AFVs practical and may provide technical assistance and other incentives to use clean				
	technology, where practical, in State transit fleets. (Reference Executive Order 01.01.2001.02)				
	Vehicle Use Exemptions:				
	Exempts HEVs from mandatory vehicular emissions testing and inspection requirements if the vehicle obtains an				
	EPA rating of at least 50 mpg during city fuel economy tests. Effective October 1, 2003 until September 30,				
	2000. Leveraging Federal Highway Transportation Funding:				
	Metro Washington Council of Governments (MWCOG) administers the Advanced Technology Vehicle Program				
	The Clean Alternative, which is funded by the Maryland Department of Transportation (MDOT) and offers flexible				
	incentives to private companies and local governments to cover the incremental cost of dedicated CNG and				
	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 its 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				
MASSACHUSETTS					
MICHIGAN	Reduced Tax Rates:				
	Exempts certain "alternative energy personal property" from property taxes. "Alternative energy personal				
	property" is defined to include an alternative energy vehicle, an alternative energy system, all personal property of				
	an alternative energy technology business, and the personal property of a business that is used solely for the				
	purpose of research, developing, and manufacturing an alternative energy technology. Applies to taxes levied				
	after December 31, 2002 and before January 1, 2013. (Reference Michigan Compiled Laws (MCL) 208.39e)				
	Dedicated AEVs are exempt from emissions inspection requirements (Reference MCL 324 6311 and 324 6512)				
	Economic Development:				
	Taxpayers engaged in research, development, or manufacturing of alternative energy technology and certified as				
	eligible may claim a nonrefundable credit against their single business tax liability. In addition, certain businesses				
	located within an "Alternative Energy Zone" may be eligible for a refundable tax credit on its Qualified Payroll.				
	(Reference <u>Michigan Compiled Laws</u> (MCL) 208.39e)				
	 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. (Reference <u>Michigan Complied Laws</u> (MCL) 207.352 and 207.803, House Bill 4010, 2004, and Separte Bill 824, 2004)				
MINNESOTA	Rebates and Tax Credits:				
	For fiscal years 2004 through 2007, there is an ethanol production incentive of \$0,13 per gallon of ethanol				
	produced, up to \$1.95 million annually to any one producer. This incentive may return to \$0.20 after 2007 and				
	expires June 30, 2010. (Reference Minnesota Statutes §41A.09)				
	Reduced Tax Rates:				
	• E85 is taxed at the rate of \$0.142 per gallon, blends of 85 methanol and 15 gasoline (M85) are taxed at the rate				
	of \$0.114 per gallon, LPG is taxed at \$0.15 per gallon, LNG is taxed at \$0.12 per gallon, and CNG is taxed at a				
	rate of \$1.7959 per thousand cubic reet of \$0.20 per gasoline equivalent. Gasoline is taxed at a rate of \$0.20 per gallon. (Reference Minnesota Statutes \$296A.07 and 296A.08)				
MISSISSIPPI	galion. (Neielende Millinesola Statutes 9230A.07 and 230A.00) Rebates and Tax Credits:				
	Mississioni's Commissioner of Agriculture and Commerce is authorized to make direct navments to new ethanol				
	producers in the amount of \$0.20 per gallon, up to 30 million gallons per vear per producer. for a period of up to				
	10 years. The incentive program expires June 30, 2015. (Reference Mississippi Code §69-51-5)				

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10

MISSOURI	Rebates and Tax Credits:				
	 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)				
	 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. (Reference <u>RSMo</u>				
	142.031)				
	Reduced Tax Rates:				
	 The \$0.17 per gallon motor fuel tax does not apply to passenger motor vehicles, certain buses or commercial meter uchicles that are neurored by an alternative fuel, instead, the suprare or enerotates of such vehicles shall. 				
	motor vehicles that are powered by an alternative rule. Instead, the owners of operators of such vehicles shall have a annual alternative fuel decal fee ranging from \$75 \$1,000 based on the vehicle's GV/WP (ranging from <				
	pay an annual alternative rule decarrier ranging norm $\frac{5}{5}$ - $\frac{5}{5}$,000 based on the vehicle's GV WK (ranging norm > 18,000 based on the vehicle's GV WK (ranging nor				
	10,000 lbs. (0 > 50,000 lbs.). (Relefence <u>RSIMU</u> 142.005 dnu 142.005)				
	Missouri Energy Center has developed an administrative plan for implementing a loan program that provides				
	financial assistance to political subdivisions for establishing the use of alternative fuels in their vehicle fleets. The				
	loans can be used toward the purchase of new AFVs, conversion of gasoline motor vehicles to operate on				
	alternative fuels, or construction of alternative fuel refueling stations. The loans will be available for a maximum of				
	\$2,000 for the incremental cost of purchasing a new AFV or the conversion of a new or existing vehicle to operate				
	on an alternative fuel, and a maximum of \$100,000 for the construction of an alternative fuel refueling station.				
	There is currently no appropriation for the implementation of this legislation. (Reference RSMo 414.353, 414.356,				
	and 414.359)				
	State Policies:				
	 Any state agency operating a fleet of more than 15 motor vehicles must ensure that 50 percent of new vehicles 				
	acquired by the fleet between July 1, 1998, and July 1, 2000, and each biennial period thereafter, are capable of				
	running on alternative fuels. Excess acquisitions of AFVs may be credited towards future biennial goals. If a state				
	agency fails to meet a biennial acquisition goal, purchases of any non-AFVs are not permitted until the goals are				
	for use in state float visibles must be alternative fuels. (Deference DSMs 414 400 and 414 410)				
	IN USE IN State neet vehicles must be alternative rules. (Reference <u>RSIMD</u> 414.400 and 414.410)				
	 By July 1, 2004, at least 50 percent and by July 1, 2005, at least 75 percent of the MoDOT vehicle neet and begin equipment that use discal fuel must be fueled with P20 or higher biodiscal blonds, if such fuel is 				
	commercially available. The blended biodiesel fuel shall be presumed to be commercially available if the				
	incremental cost of purchasing the fuel is not more than \$0.25. To the maximum extent practicable. MoDOT shall				
	obtain funding for the incremental cost of the blended biodiesel fuel from the Riodiesel Fuel Revolving Fund				
	(Reference RSMo 414.365)				
	 Biodiesel Fuel Revolving Fund uses the money generated by the sale of EPAct 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)				
	Vehicle Use Exemptions:				
	• Vehicles that are powered exclusively by electric or hydrogen power, or by fuels other than gasoline which are				
	exempt from motor vehicle emissions inspection under federal regulation, are exempt from state emissions				
	inspection requirements. (Reference <u>RSMo</u> 643.315)				
MONTANA	Rebates and Tax Credits:				
	An income tax credit is available to businesses or individuals for up to 50 percent 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 up to 10,000 lbs. or less GVWR and up to \$1,000 for vehicles over 10,000 lbs. GVWR.				
	I ne creat must be applied in the year the conversion is made, and the seller of an alternative fuel may not				
	receive a credit for converting his/her own vehicle to operate on the alternative fuel that he/she sells. (Reference				

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11

Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

	Reduced Tax Rates:				
	 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 percent as compared to the tax on gasoline. (Reference MCA 15-70-204 and 15-70-321) 				
	 Retail sales for CNG and LPG used in vehicles are subject to a modified tax based on energy content. (Reference MCA 15-70-711) 				
	State Policies:				
	 The Montana Hydrogen Futures Project shall be established as the key economic development focus of the state. By the year 2020, 50 percent of all vehicles and equipment in Montana and 100 percent of all state-run vehicles will be powered by alternative fuels; all intercity bus systems will use hydrogen; distribution of synthetic fuels and hydrogen will be provided for the trucking industry; a school bus retrofit and hydrogen power program will be established; and incentives will be provided for conversion of internal combustion engines to hydrogen. (Reference House Joint Resolution 26, 2003, and the Montana Hydrogen Futures Project) 				
NEBRASKA	Reduced Tax Rates:				
	 Motor fuels sold to an ethanol or biodiesel facility, and motor fuels manufactured at an ethanol or biodiesel facility, are exempt from certain motor fuel tax laws enforced by the Motor Fuels Division of the Department of Revenue. (Reference Legislative Bill 983, 2004; and Nebraska Statutes 66-489 and 66-496) 				
	 Compressed Fuels Act covers LPG and CNG and states that an excise tax of \$0.105 per gallon or gallon equivalent is levied and imposed on all compressed fuel sold for use in registered motor vehicles. Additionally, each retailer of such fuel shall pay an excise tax of \$0.02 per gallon or gallon equivalent on all compressed fuel sold for use in registered motor vehicles. (Reference Nebraska Statues 66-6,100;66-6,107; 66-6, 108; 66-6109) 				
	Low-Interest Loans:				
	 Dollar and Energy Saving Loans Program makes low-cost loans available for a variety of alternative fuel projects. 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 percent or less and may be adjusted 				
	semi-annually. (PVEA Funds)				
NEVADA	Reduced Tax Rates:				
	Clean-burning fuels have a reduced special fuels tax. (Reference <u>NRS</u> 366. 190) State Policies:				
	 Fleets containing 10 percent or more vehicles that are owned, leased, or operated by the state, a state agency, or a political subdivision of the state in a county whose population is 100,000 or more are mandated to acquire AFVs 				
	or U.S. Environmental Protection Agency certified ULEVs. Beginning in fiscal year 2000 and each year thereafter, 90 percent of new vehicles obtained by covered fleets must be either AFVs or certified ULEVs. A fleet may meet				
	AFV acquired in compliance with this mandate must operate solely on the alternative fuel except when operating in an area where the appropriate alternative fuel is unavailable. Elects with buses and/or beau, duty vehicles are				
	included. (Reference <u>Nevada Administrative Code</u> 486A.160) Vehicle Use Exemptions:				
	 AFVs are exempt from emissions testing. (http://www.dmvstat.com/emission.htm) 				
NEW HAMPSHIRE	NONE				
NEW JERSEY	Reduced Tax Rates:				
	 Zero emission vehicles (ZEVs) sold on or after May 1, 2004, are exempt from state sales and use tax. (New Jersey P.L. 2003, c.266 (C.54:32B-8.55)) 				
	 The tax paid upon the sale and use of LPG and CNG when used as transportation fuel is equal to \$0.0525 per gallon, half the tax paid for gasoline and diesel. (Reference <u>New Jersey Statutes</u> §54:39-27.1) 				
	Grants:				
	 Invew Jersey's AFV Repare Program offers repares to local government entities that convert vehicles to operate on 				

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Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

	alternative fuels or purchase original equipment manufacturer (OEM) AFVs. HEVs also qualify for the rebates. Eligible entities include local governments, state colleges and universities, school districts, and governmental authorities.			
	Vehicle Weight Rebate Amount Rebate Amount (dedicated or hybrid) (bi-fuel)			
	<8,500 lbs. Up to \$4,000 Up to \$2,000			
	 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. (PVEA Funds) 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 percent 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. (PVEA Funds) 			
	State Policies: New Jersey is committed to exceeding the Energy Policy Act's AEV acquisition mandates for state government			
	fleets by 5% per year. In Model Year 2001 and thereafter, the vehicles acquired to fulfill this enhanced commitment must meet or exceed California Air Resources Board ULEV standards. (Reference Executive Order 94, 1999)			
NEW MEXICO	Reduced Tax Rates:			
	 Through June 30, 2009, HEVs with an EPA fuel economy rating of at least 27.5 mpg are eligible for a one-time exemption from the motor vehicle excise tax. (Reference Senate Bill (SB) 86, 2004 and New Mexico Statutes (NMSA) 1978 7-14-6) 			
	 Owners of AFVs with a GVWR not exceeding 54,000 lbs. may pay an annual tax in lieu of the per gallon tax, ranging from \$60 - \$1,100 based on the vehicle's GVWR (ranging from < 6,000 lbs. up to 54,000 lbs.). (Reference NMSA 1978 7-16B) 			
	Low-Interest Loans:			
	 Alternative Fuel Acquisition Act of 1992 authorized a \$5 million revolving loan fund for AFV acquisitions by state agencies, political subdivisions, and educational institutions. The maximum amount of a loan to acquire a vehicle shall not exceed the actual cost of acquiring the vehicle or \$3,000, whichever is less. Loans shall be made for a period of time not to exceed seven years with an annual interest rate of 5 percent. A loan shall be repaid in equal annual installments, with the first annual installment due within one year of the date on which the loan is issued. No funds currently available for this program. (Reference NMSA 1978 13-1B) 			
	Grants:			
	 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. (Reference House Bill 251, 2004) 			
	State Policies:			
	 Hydrogen and Fuel Cell 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) 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) 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) 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			

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13

	 (4) 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) The Alternative Fuel Acquisition Act of 1992 requires that 75 percent of state government and educational institution fleet vehicles acquired in fiscal year 2003 and thereafter, except authorized exemptions, be bi-fuel or dedicated AFVs or gas-electric hybrid vehicles. (Reference NMSA 1978 13-1B)
NEW YORK	Rebates and Tax Credits:
	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 ICE (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 percent of the incremental cost, up to \$5,000 per vehicle. Purchasers of AFVs are eligible for a tax credit worth 60 percent of the incremental cost of the vehicle. The maximum value of the incentive is \$5,000 for vehicles with less than 14,000 lbs. 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 percent 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. Expired 12-31-04, but extension included in Governor's budget proposal.
	Reduced Tax Rates:
	 Sales tax exemption for the incremental cost of AFVs 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. Expired 12-31-04, but extension included in Governor's budget proposal.
	Private Fleets:
	 The New York City Clean Fuel Taxi Program provides up to \$8,000 towards the purchase of new CNG taxi cabs or the conversion of gasoline cabs to operate on CNG. (Program has been on hold but is being renewed in Spring 2005.)
	State Policies:
	 State agencies and other affected entities must procure increasing percentages of AFVs as part of their annual vehicle acquisition plans; HEVs qualify under these requirements. By 2005, at least 50 percent of new light duty vehicles acquired by each agency and affected entity must be AFVs, and by 2010, 100 percent of all new light duty vehicles must be AFVs, with the exception of designated specialty, police, or emergency vehicles.
	 New York City Council established a program in 1991 requiring the purchase and/or conversion of AFVs for city government use. The program requires 80 percent of the city's light duty, non-emergency fleet, and 20 percent of bus fleets operated in New York City to be AFVs. (Reference Administrative Code of the City of New York 24-163.1 and 24-163.2)
	State Bonder
	Funds are available for state assistance navments to municipalities, state agencies and departments, and state
	• Futures are available for state assistance payments to municipalities, state agencies and departments, and state
	by brid electric buses (NY Public Law - Chanter 413)
	Leveraging Federal Highway Transportation Funding
	New York City Private Elect Alternative Eucl/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 50 percent of the incremental cost of purchasing new light-
	duty NGVs or EVs. 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.
	 The Greater Long Island Clean Cities Coalition allocates awards for fleet AFV purchases and support for infrastructure projects. Reimburses up to 80% of the cost of AFVs.

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14

Alliance to Save Energy Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

NORTH CAROLINA	Rebates and Tax Credits:			
	 Taxpayers who construct, purchase, or lease "renewable energy property" are eligible for a tax credit equal to 35 percent of the cost of the property. "Renewable energy property" includes: equipment that uses renewable biomass resources to produce ethanol, methanol, biodiesel, or methane produced via anaerobic biogas utilizing agricultural and animal waste or garbage; and related devices for converting, conditioning, and storing the liquid fuels and gas produced with biomass equipment. The credit must be taken in five equal installments beginning with the taxable year in which the property is placed in service. A ceiling of \$250,000 per installation applies to renewable energy property placed in service for any purpose other than residential. Property must be placed in service before January 1, 2006. (Reference North Carolina General Statutes §105-129.15 and §105-129.16A) A tax credit is available for qualified refueling facilities that dispense biodiesel, 100 percent ethanol or ethanol/gasoline mixtures consisting of at least 70 percent ethanol. The credit is equal to 15 percent of the cost to the taxpayer of constructing and installing the part of the dispensing facility, including pumps, storage tanks, and related equipment, that is directly and exclusively used for dispensing or storing the fuel. The credit must be taken in three equal annual installments beginning with the taxable year in which the facility is placed in service. Facilities must be placed in service before January 1, 2008. (Reference North Carolina General Statutes §105-129.15, House Bill 1636, 2004) A tax credit is available for the production or processing of biodiesel, 100 percent ethanol or ethanol/gasoline mixtures consisting of at least 70 percent ethanol. The credit is equal to 25 percent of the cost of constructing and equipoint the facility. The credit must be taken in seven equal annual installments beginning with the taxable year in which the facility. The credit must be taken in seven equal			
	in which the facility is placed in service. Facilities must be placed in service before January 1, 2008. (Reference			
	North Carolina General Statutes §105-129.15, House Bill 1636, 2004) Grants:			
	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 (including hybrids), vehicle conversions, and constructing or implementing alternative fuel public refueling facilities.			
	State Policies:			
	 Establishes a goal that on and after January 1, 2004 at least 75 percent of the new or replacement light duty cars and trucks (8,500 pounds or less GVWR) purchased by the State will be AFVs or low emission vehicles. (Reference <u>North Carolina General Statutes</u> §143-215.107C) 			
NORTH DAKOTA	Rebates and Tax Credits:			
	 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 \$10M. (Reference North Dakota Century Code 4-14.1-07, 4-14.1-08, 4-14.1-09, and 4-14.1-10) 			
	 A five-year corporate income tax credit for biodiesel production equipment costs. The tax credit is worth up to 10 percent 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 percent biodiesel fuel by volume. To qualify, a facility must produce 10 million gallons annually. (Reference North Dakota Century Code 57-38-30.6) 			
OHIO	Vehicle Use Exemptions:			
	AFVs are exempt from certain motor vehicle inspection and maintenance programs. (Reference <u>Ohio Revised</u> <u>Code</u> §3704.14)			
OKLAHOMA	Rebates and Tax Credits:			
	 Prior to January 1, 2009, Oklahoma provides a one-time income tax credit for 50 percent of the cost of converting a vehicle to operate on an alternative fuel, or for 50 percent of the incremental cost of a new OEM AFV up to \$2,000. The state also provides a tax credit for 10 percent of the total vehicle cost, up to \$1,500, if the incremental cost cannot be determined or when an AFV is resold, as long as a tax credit has not been previously 			
	15			

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	taken on the vehicle. Additionally, the state provides a tax credit for up to 50 percent of the cost of installing refueling infrastructure for AFVs. These tax credits may be carried forward for up to three years. Alternative fuels eligible for the credit include CNG, LNG, LPG, ethanol, methanol, and electricity. This tax credit extends to low-speed electric vehicles (LSVs) as defined by NHTSA in 49 C.F.R. 571.500 and to forklifts and other similar self-propelled vehicles. (Reference <u>Oklahoma Statutes</u> §68-2357.22)			
	electricity. (Reference O.S. §68-2357.22 and O.S. §68-2101)			
	 Allows a tax credit for ethanol production facilities of 20 cents (\$0.20) per gallon of ethanol produced before denaturing beginning January 1, 2004 and ending December 31, 2010. The credit is allowed for 60 months beginning with the first month for which the facility is eligible to receive the credit and may only be claimed if the ethanol facility maintains an average production rate of at least 25 percent of its name plate design capacity for at least six (6) months after the first month for which it is eligible to received the credit. (O.S. § 68-2357.66) 			
	Keduced lax kates:			
	 Owners of LPG, CNG, LNG, filetration, of blends of 85% methanol and 15% gasoline (M85) powered vehicles are required to pay an annual fee (ranging from \$50 to \$150) in lieu of motor fuel excise taxes. (Reference <u>Oklahoma</u> <u>Statutes</u> §68-723) 			
	Low-Interest Loans:			
	 Alternative Fuels Loan program to help convert public fleets to operate on alternative fuels. This program provides no-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 \$10,000 per converted or new vehicle and up to \$150,000 for refueling infrastructure. Repayment			
	Is made from fuel savings during a maximum seven-year period. If the alternative fuel 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. (Reference O.S. §74-130.4)			
	 A private loan program with a 3 percent 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. 			
OREGON	Rebates and Tax Credits:			
	 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. (Reference ORS 469.160-469.180) 			
	 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 and production facilities. The tax credit is 35 percent of the incremental cost of the system or equipment and is taken over five years. (Reference ORS 469.185; 315.354; 315.356) 			
	State Policies:			
	 State law requires that the state agencies and transit districts purchase AFVs to the maximum extent possible, except when it is not economically or logistically possible to purchase or refuel an AFV. (Reference <u>Oregon</u> Revised Statutes 283.327 and ORS 267.030) 			
	Vehicle Use Exemptions:			
	Dedicated OEM natural gas vehicles (NGVs) and electric vehicles are not required to be equipped with a certified pollution control system. (Reference <u>ORS</u> 815.300)			
PENNSYLVANIA	Grants:			
	 Alternative Fuels Incentive Grant (AFIG) Program. Qualified projects will receive funding for 20 percent 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 percent of the funds may go to any one applicant each funding cycle, and no more			

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Alliance to Save Energy Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

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	than 15 percent may go to any one county. (Reference <u>Pennsylvania Code</u> Chapter 311)
	• Under a new law, the state is offering rebates year round to cover the incremental cost of purchasing a
	hybrid vehicle. In addition, state-based companies producing renewable motor vehicle fuels, such as
	ethanol and biodiesel, are eligible to receive an incentive of \$0.05 per gallon up to 12.5 million gallons
	produced each year. Finally, tax-exempt entities, such as school districts, transit authorities, municipal
	governments and other non-profits who operate a fleet, are eligible for a grant to help buy-down the
	added costs to purchase and use renewable fuels, such as biodiesel and ethanol. (Reference Act 178
	(SB 255, 2003)
	Vehicle Use Exemptions:
	Exempts AFVs from annual vehicle registration fee. (P.A. 92-139)
RHODE ISLAND	Rebates and Tax Credits:
	• For tax years beginning on or after January 1, 2001, a taxpayer entitled to the federal qualified tax credit shall be
	entitled to a tax credit equal to 25.5 percent of the federal credit for tax year 2001 and 25 percent of the federal
	gualified EV tax credit for tax year 2002 and thereafter. (Reference Rhode Island Code (R.I.C.) §44-30-2.6)
	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 nower motor vehicles. This incentive is valid from January 1 1998
	to December 31, 2007 (Reference R I C, §44-13-5)
	 Alternative Eveled Vehicle and Filling Station Tax Credit entitles taxnavers to a tax credit equal to 50 percent of
	• Alternative I deled vehicle and I ming Station Tax Orean entities taxpayers to a tax credit equal to 50 percent of the construction of or improvement to any alternative fuel
	refueling or recharging station providing demostically produced alternative fuel. Taxpavers are also entitled to a
	terretuening of recital ging station providing domestically produced alternative rule. Taxpayers are also entitled to a
	tax credit equal to 50 percent of the incremental cost incurred for the purchase of an AFV of the capital, fabor,
	and equipment cost of converting a motor venicle to run on an alternative rule. 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)
	Reduced Tax Rates:
	Organically produced biodiesel fuels are exempt from motor fuel tax. (Reference <u>House Bill</u> 8085, 2004)
	Low-Interest Loans:
	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).
SOUTH CAROLINA	Reduced Tax Rates:
	 Alternative fuels are exempt from the state sales and use tax. (Reference South Carolina Code of Laws §12-36-
	2120)
SOUTH DAKOTA	Rebates and Tax Credits:
	 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)
	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-136)
	Reduced Tax Rates:
	• E85, M85, and CNG are taxed at a rate of \$0,10 per gallon; LPG and ethanol blends are taxed at a rate of \$0,20
	per gallon. (Reference South Dakota Statutes §10-47B-4)
TENNESSEE	Reduced Tax Rates:
	• A use tax of \$0.14 per gallon is imposed on liguefied gas used for the propulsion of motor vehicles on public
	highways or a user of liguefied gas for the propulsion of a motor vehicle on public highways shall bay an annual

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Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

	vehicle tax ranging from \$70 to \$114 based on a vehicle's GVWR (ranging from <9,000 lbs. to >26,000 lbs.).			
	Gasoline is taxed at a rate of \$0.20 per gallon (Reference Tennessee Code 67-3-2202, 67-3-2203, and 67-3-			
	2206)			
	• A use tax of \$0.13 is imposed on CNG used for the propulsion of motor vehicles on public highways. (Reference			
ΤΕΥΛΟ	Tennessee Code 07-3-2213, 07-3-2214, and 07-3-2210).			
TEXAS	Rebates and Lax Credits:			
	 The Texas Emission Reduction Plan (TERP) offers a Light-Duty Motor Vehicle Purchase or Lease Incentive (LDPLI) Program which provides financial incentives (rebates) for the purchase or lease of an eligible new car and light truck, model year 2003 or newer. To be eligible, the vehicles must meet EPA's Tier 2 Bin 4 or cleaner NOx emissions standards and must have been purchased or leased after August 1, 2002. The rebates are subject to available funding. This program is currently not funded. 			
	Reduced Tax Rates:			
	Biodiesel or ethanol blended with taxable diesel, that is identified when sold or used as a biodiesel or ethanol fuel			
	bloulesel of ethanoi biended with taxable diesel, that is identified when sold of used as a biodlesel of ethanoi fuel blend is exempt from the diesel fuel tax (Reference Texas Statutes Tax Code \$162,001 and \$162,204)			
	Grants:			
	 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) Texas Emissions Reduction Plan (TERP) established a voluntary financial incentive programs, as well as other assistance programs, to help improve the air quality in Texas (Reference Texas Statutes, Health & Safety Code, Chapter 386). Programs include: New Technology Research and Development (NTRD) Program - provides incentives to encourage and support research, development and commercialization of technologies that reduce pollution in Texas. Light-Duty Motor Vehicle Purchase or Lease Incentive (LDPLI) Program is a statewide program to provide financial incentives (rebates) for the purchase or lease of an eligible new car and light truck, model year 2003 or newer. To be eligible, the vehicles must meet EPA's Tie 2 Bin 4 or cleaner NOx emissions standards and must have been purchased or leased after August 1, 2002. The rebates are 			
	subject to available funding.			
	Leveraging Federal Highway Transportation Funding:			
	 Congestion Mitigation and Air Quality (CMAQ) Improvement Program Grants are available through the Houston-Galveston Area Council, through the Houston-Galveston Clean Cities Coalition, to cover 75 percent of the incremental cost for new OEM clean fuel vehicle purchases, and clean fuel vehicle conversions/repowers. This grant is for government and private entities in the eight county Houston-Galveston non-attainment area. Under the Texas Clean Fuel Fleet Program, clean-fuel vehicle acquisition requirements apply to certain mass transit, local government, and private fleets located in the state's non-attainment areas. Affected fleets are required to ensure that a certain percentage of their fleet vehicles are certified to meet the EPA's LEV standards. Fleets may use any vehicle/fuel combination that is certified by EPA standards. Beginning September 1, 2002, local governments with fleets of more than 15 vehicles and private fleets with more than 25 vehicles located in non-attainment areas are required to ensure that 70 percent of light-duty vehicle purchases and 50 percent of heavy-duty vehicle purchases meet LEV standards. Mass transit authorities are required to convert 50 percent of their total fleet to run on alternative fuels. Vehicles weighing over 26,000 lbs. are exempt. (Reference Texas Statutes \$382 131 to \$382 142) 			
UTAH	Rebates and Tax Credits:			
	The state provides an income tax credit for 50 percent of the incremental cost (\$3,000 maximum) of a clean-fuel			
	vehicle built by an OEM and/or an income tax credit for 50 percent of the cost (\$2,500 maximum) of the after-			

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18

Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

	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 hybrid electric vehicles, except the Honda Civic hybrid. Expires December 31, 2005. (Reference Utah Code 59-7-605 and 59-10-127) Reduced Tax Rates:					
	 Owners of AFVs that use an alternative fuel, including LPG, CNG, and electricity, are required to pay a clean special fuel tax annually in lieu of the motor fuel excise tax. A vehicle with two axles and up to 26,000 lbs. GVWR has an annual fee of \$82 and a vehicle with three axles or over 26,000 lbs. has an annual fee of \$126. (Reference Utah Code 59-13-304) 					
	Low-Interest Loans:					
	The Utah Clean Fuels Grant and Loan Program provides grants worth up to 50 percent of the cost of converting a vehicle to run on a clean fuel (\$2,500 maximum) and/or up to 50 percent 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. Please note, the Loan program has been put on hold. Bi-fuel vehicles must operate on the clean fuel at least 70 percent of vehicle miles traveled beginning at the time of conversion or purchase of the vehicle. (Reference Utah Code 63-24, 202 to 63, 34, 204)					
	Grants:					
	 The Salt Lake City Department of Airports provides incentives to commercial ground transportation providers who purchase and operate clean fuel vehicles exclusively using approved clean fuels (as designated by State of Utah Statute 59-13-102). Eligible vehicles are those that operate on CNG, propane, hydrogen, electricity, or are hybrid electric. The incentives are in the form of a credit against ground transportation fees. Incentive credit amounts are \$2,500 for each OEM or certified vehicle converted to run on an alternative fuel. (Reference Salt Lake City Department of Airports Clean Fuel Policy Number 10.07.100) 					
	Vehicle Use Exemptions:					
	 Vehicles with clean fuel group license plates are authorized to travel in HOV lanes regardless of the number of occupants. This incentive expires December 31, 2005. (Reference Utah Code 41-1a-1211, 41-6-53.5, and 63-55-241) 					
VERMONT	Economic Development:					
	 Businesses in Vermont that are involved exclusively in design, development, and manufacture of EVs, AFVs, or HEVs are eligible for up to three of the following income tax credits: A percentage of increased payroll costs; 10 percent of gualified research and development expenditures; 					
	\sim Δ credit against export taxes:					
	 5 percent to 10 percent of total investments in plants or facilities and machinery and equipment (small business investment tax credit); 					
	 Up to 6 percent of investments in machinery and equipment (\$100,000 per year maximum); Up to 6 percent of investments for renovation of existing facilities to provide cable, fiber or 					
	 20 percent 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)					
VIRGINIA	Rebates and Tax Credits:					
	 The Commonwealth of Virginia provides individuals, private entities, and corporations a state tax credit in an amount equal to 10 percent 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) 					

Footnote: Generally, laws that have expired prior to January 1, 2005 are NOT included in this document.

Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

 Vehicle Use Exemptions: Exempts HEVs that obtain an EPA rating of at least 50 mpg during city fuel economy tests and APVs from emission inspection. AFVs displaying the Virginia 'Clean Special Fuels' license plate can use the Virginia HOV lanes, regardless of the number of occupanis, until July 1, 2006. Dedicated AFVs and hybrid electric vehicles quality. (Reference Virginia Code 333, 146.2 and 948.2-749.3) Economic Development: A job-creation tax credit worth 5700/per full-time employee is provided for businesses involved with alternative fuels. The credit is allowed in the taxable year: baselining on or after January 1, 1996, through December 31, 2006. (Reference Virginia Code §58.1-439.1) Rebates and Tax Credit: 8 tax deduction is available for the sale or distribution of biodiesel or alcohol fuel (comprised of at least 85 percent alcohol fuel by volume). Additionally, tuel delivary vehicles and machiney, equipment, and related services that are used for the retail sale of biodiesel or alcohol fuel (comprised of at least 85 percent alcohol fuel by volume). Additionally, tuel delivary vehicles and machiney, equipment, and related services that are used for the retail sale of biodiesel or alcohol fuel are exempt from state retail fuel sales. The fer engres from \$45 to \$250 based on a evide (S GVWR (ranging from < 10,000 bs. to 36,000 bs.). To determine the actual annual license fee imposed by this section for a registration year, the appropriate doinary annual fees. Babed on GWWR, in lieu of motor fuel exists is and operation of date fuel public transit vehicles, to asbibly programs at vocational-technical institutes to certify cienchue very eact and the product three of shall be divided by \$0.12. In addition, there is a \$5 handling fee in order to receive a CNG or LPG permit. (Reference RCW 82.38.07) Grants: M					
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		fuel use. (Reference RCW 43.19.637)			

Footnote: Generally, laws that have expired prior to January 1, 2005 are NOT included in this document.

Alliance to Save Energy M Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

	 Vehicle Use Exemptions: Electric, CNG, LPG, and HEVs that obtain an EPA rating of at least 50 mpg during city driving are exempt from emission control inspections. (Reference RCW 46.16.015) Economic Development: 			
	 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 percent applies to persons engaged in manufacturing of alcohol fuel, biodiesel fuel, or biodiesel feedstock. The typical rate for manufacturing businesses is .484 percent. (Reference Revised Code of Washington (RCW) 82.04.260, 82.08, 82.12, 82.14, 82.29A.135, 82.32, and 84.36) 			
WEST VIRGINIA	Rebates and Tax Credits:			
	 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 GVWR, as shown below, and cannot exceed the incremental or conversion cost. Eligible alternative fuels include CNG, LNG, LPG, blends of 85 percent 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 Secretary of Administration was given the authority to require state, county and municipal government flee to purchase AFVs on the following schedule: 20 percent of new vehicle acquisitions in fiscal year (FY) 1995, increasing to 50 percent in FY 1997, and 75 percent in FY 1998 and each year thereafter. (Reference <u>West Virginia Code</u> § 5A-2A-2) 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. 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 percent of the purchase price not to exceed \$20,000 per governmental entity. Grants must be matched by the local government by at least 50 percent 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.			
WISCONSIN	 Rebates and Tax Credits: The Wisconsin Department of Revenue offers a state 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 state deduction is reduced by 25 percent for vehicles placed in service in 2004, by 50 percent for vehicles in 2005 and by 75 percent for vehicles in 2006. No deduction is available for clean fuel vehicles placed in service in 2007. (Reference Wisconsin Statutes 71.01(6)) 			

Footnote: Generally, laws that have expired prior to January 1, 2005 are NOT included in this document.

21
Alliance to Save Energy Ma Comprehensive Matrix of Incentives for Advanced Technology Vehicles and Alternative Fuels Organized by STATE

	Reduced Tax Rates:
	 No county, city, village, town, or other political subdivision shall levy or collect any excise, license, privilege, or occupational tax upon motor vehicle fuel or alternative fuels or upon the buying, selling, handling, or consuming of motor vehicle fuel or alternative fuels. (Reference <u>Wisconsin Statutes</u> 78.82) Effective April 1, 2004, the excise tax on alternate fuel is 21.3¢ per gallon for LPG and 23.3¢ per gallon for CNG. An alternative fuel is defined as all combustible gases and liquids, other than motor vehicle fuel or aviation fuel, used for the generation of power to propel a motor vehicle; e.g., LPG and CNG. Effective April 1, 2004, the excise tax on motor vehicle fuel (gasoline and diesel) is 29.1¢ per gallon. (Reference <u>Wisconsin Statutes</u> 78.40)
WYOMING	Rebates and Tax Credits:
	 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, beginning July 1, 2003. To be eligible to receive this credit, 25 percent 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 producer shall not exceed \$4 million per year, and the total credits redeemed by any individual ethanol producer shall not exceed \$2 million 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 percent 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)

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Acronym Definitions: AFV – Alternative Fuel Vehicle; BEV – Battery Electric Vehicle; CNG – Compressed Natural Gas; EV – Electric Vehicle; FCEV – Fuel Cell Electric Vehicle; GVWR – Gross Vehicle Weight Rating; HEV – Hybrid Electric Vehicle; ICE – Internal Combustion Engine; ILEV - Inherently Low Emission Vehicle; LNG – Liquefied Natural Gas; LPG – Liquefied Petroleum Gas; LSV – Low Speed Vehicle; MPG – Miles per Gallon; PZEV - Partial Zero Emission Vehicle; SULEV - Super Ultra Low Emission Vehicle; ULEV – Ultra Low Emission Vehicle.