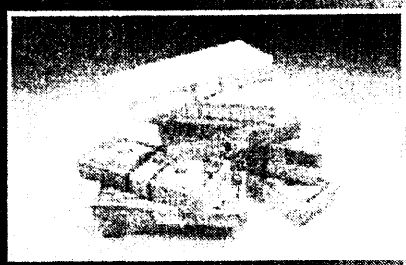
U.S. DEPARTMENT of ENERGY

INCENTIVES AND LAWS

Guide to Alternative Fuel Vehicle Incentives and Laws

September 1998



Clean Cities

Alternative Fuel Information Series

An Official Publication of the Clean Cities Network and the AFDC

On behalf of the U.S. Department of Energy's Clean Cities Program, we are pleased to offer this document in the Alternative Fuel Information Series. This series provides information in support of the National Clean Cities Program, which will assist you in becoming better informed about the choices and options surrounding the use of alternative fuels and the purchase of alternative fuel vehicles. We hope you find the information helpful.

The information printed in this guide is current as of September 15, 1998. To ensure that you have the most up-to-date information, please visit the Alternative Fuels Data Center Web site at http://www.afdc.doe.gov or the Alternative Fuel Vehicle Fleet Buyer's Guide at http://www.fleets.doe.gov.

If you have comments or questions about this document or any of the information contained herein, please call the National Alternative Fuels Hotline at (800) 423-1363 or email: hotline@afdc.nrel.gov. If you have changes to the information, please call Johanna Woelfel at the National Conference of State Legislatures at (303) 830-2200, fax it to (303) 863-8003, or e-mail afv_inlaws@afdc.nrel.gov.

Glossary

Alternative Fuels Utilization Program (AFUP): A program managed by the U.S. Department of Energy (DOE) with the goals of improving national energy security by displacing imported oil, improving air quality by development and widespread use of alternative fuels for transportation and increasing the production of alternative fuel vehicles.

Alternative Fuel: As defined pursuant to the Energy Policy Act of 1992 (EPAct), methanol, denatured ethanol and other alcohols, separately or in mixtures of 85% by volume or more (but not less than 70% as determined by DOE rule) with gasoline or other fuels, compressed natural gas (CNG), liquefied natural gas (LNG), liquefied petroleum gas (LPG), hydrogen, "coal-derived liquid fuels," fuels "other than alcohols" derived from "biological materials," electricity, or any other fuel determined to be "substantially not petroleum" and yielding "substantial energy security benefits and substantial environmental benefits."

Alternative Fuel Vehicles (AFVs): Vehicles with engines designed to run on a fuel other than gasoline or diesel.

Alternative Fuels Data Center (AFDC): A program sponsored by DOE and managed by the National Renewable Energy Laboratory to collect emissions, and operational and maintenance data on all types of AFVs across the country.

Alternative Motor Fuels Act of 1988 (AMFA): Public Law 100-494. Encourages the development, production, and demonstration of alternative motor fuels and AFVs.

Bi-Fuel Vehicle: A vehicle with two separate fuel systems designed to run on either an alternative fuel or conventional gasoline, using only one fuel at a time. These systems are advantageous for drivers who do not always have access to an alternative fuel refueling station. Bi-fuel systems are usually used in passenger cars or trucks.
EPAct Definition: Vehicle designed to operate on a combination of an alternative fuel and a conventional fuel. This includes: a) vehicles using a mixture of gasoline or diesel and an alternative fuel in one fuel tank, commonly called flexible-fueled vehicles; and b) vehicles capable of operating either on an alternative fuel, a conventional fuel or both, using two fuel systems.

British Thermal Unit (Btu): A standard unit for measuring heat energy. One Btu represents the amount of heat required to raise one pound of water one degree Fahrenheit (at sea level).

Butane: A gas, easily liquefied, recovered from natural gas. Used as a low-volatility component of motor gasoline, processed further for a high-octane gasoline component, used in LPG for domestic and industrial applications, and used as a raw materiel for petrochemical synthesis.

California Low Emission Vehicles Program: State requirement for automakers to produce vehicles with fewer emissions than current U.S. Department of Environmental Protection Agency's (EPA's) standards. The four categories of California Low Emission Vehicles Program standards from least to most stringent are transitional-low emission vehicles (TLEVs), low emission vehicles (LEV), ultra-low emission vehicles (ULEVs), and zero emission vehicles (ZEVs).

California Air Resources Board (CARB): A state agency that regulates the air quality in California. Air quality regulations established by CARB are often stricter than those set by the federal government.

Clean Air Act (CAA): Signed into law in 1963, then amended in 1970, and again in 1990. Includes emissions standard for mobile and stationary sources. Enforced by the U.S. Environmental Protection Agency.

Clean Air Act Amendments of 1990 (CAAA): The original Clean Air Act (CAA) was signed in 1963. The law sets emission standards for stationary sources (e.g., factories and power plants). The CAA was amended several times, most recently in 1990 (Public Law 101-549). The Amendments of 1970 introduced motor vehicle emission standards (e.g., automobiles and trucks). Criteria pollutants included lead, ozone, CO, SO_2, NO_x, and particulate matter (PM), as well as air toxins. The CAA include reformulated gasoline (RFG) and oxygenated gasoline provisions. The RFG provision requires use of RFG all year in certain areas. The oxygenated gasoline provision requires use of oxygenated gasoline during certain months, when CO and ozone pollution is most serious. The regulations also require certain fleet operators to use clean fuel vehicles in 22 cities.

Clean Cities Program: A voluntary program established and administered by DOE to increase AFV market penetration, particularly in more polluted urban areas. Clean Cities chapters are recognized by DOE as having successfully established a self-sustaining environment for AFVs. Specific chapters may include federal, state, and local government agencies, vehicle manufacturers and suppliers, fleet managers, utilities, local distributions companies, and other stakeholders. The first international entities joined the program in 1995.

Clean Fuel: A vehicle fuel that produces lower tailpipe emissions than traditional fuels such as gasoline or diesel.

Clean Fuel Vehicle (CFV): Any passenger car, light-duty truck, or heavy-duty truck weighing up to 26,000 lb gross vehicle weight (gvw) that meets a special reduced emission standard applicable to the vehicle's weight classification. Vehicles fueled by alternative fuels, RFG, or clean diesel qualify in the clean fuel category.

Compressed Natural Gas (CNG): Natural gas that has been compressed to high pressures, typically between 2000

and 3600 psi, and stored in a container. CNG is used as a vehicle fuel.

Converted Vehicle: A vehicle originally designed to operate on gasoline or diesel that has been modified or altered to run on an alternative fuel.

Covered Fleet: A vehicle fleet that may include passenger cars, light-, medium-, or heavy-duty trucks, for which a clean fuel vehicle emission standard is required. Usually a fleet that is centrally refueled or capable of being centrally refueled, as specified in the Clean Air Act and Energy Policy Act.

Dedicated Natural Gas Vehicle: A vehicle that operates only on natural gas. Such a vehicle is incapable of running on any other fuel.

Department of Energy: See U.S. Department of Energy (DOE).

Dual-Fuel Vehicle: A vehicle capable of operating on a combination of alternative fuels, such as CNG or LPG, and a conventional fuel, such as gasoline or diesel. Typically, a dual-fuel system is used in heavy-duty or diesel engines. This definition assumes a dual-fuel vehicle has two separate fuel tanks from which both fuels are injected into the combustion chamber simultaneously.

Electric Vehicle (EV): A vehicle powered by electricity, usually provided by batteries. EVs qualify in the zero emission vehicle (ZEV) category for emissions.

Emissions: Pollutants discharged from a polluting source, such as vehicles.

Emission Standards: Limits or ranges established for pollution levels emitted by vehicles as well as stationary sources. The first standards were established under the 1963 Clean Air Act. Emissions limits are imposed on four classes of vehicles: automobiles, light-duty trucks, heavy-duty gasoline trucks, and heavy-duty diesel trucks.

Energy Policy Act of 1992 (EPAct): (Public Law 102-486) A broad-ranging act signed into law on October 24, 1992. Title III, IV, V, XV, and XIX of EPAct deal with alternative transportation fuels. EPAct accelerates the purchase requirements for AFVs by the federal fleet, proposes eliminating the cap on corporate average fuel economy (CAFÉ) credits that manufacturers can earn by producing dual- and flexible-fuel vehicles and requires fleets in large urban areas to purchase AFVs. Establishes tax incentives for purchasing AFVs, converting conventional gasoline vehicles to operate on alternative fuels, and installing refueling or recharging facilities in the private sector.

Environmental Protection Agency: See U.S. Environmental Protection Agency (EPA).

Ethane (C_2H_6): A colorless hydrocarbon gas of slight odor having a gross heating value of 1,773 BTUs per cubic foot. It is a normal constituent of natural gas.

Ethanol (C_2H_4OH): An alcohol fuel made primarily from agricultural products, typically corn.

Flexible-Fuel Vehicle: A vehicle that can operate on alternative fuels such as E-85 or M-85, 100 percent petroleum-based fuels, or a mix of alternative fuels and petroleum-based fuels.

Fuel Cell: An electrochemical engine with no moving parts that converts the chemical energy of a fuel (e.g., hydrogen) and an oxidant (e.g., oxygen) directly into electricity. Fuel cells may use natural gas as a feedstock.

Gasoline Gallon Equivalent (gge): A proposed unit for measuring compressed natural gas sold at public fueling stations.

Global Warming: The theoretical escalation of global temperatures caused by the increase of greenhouse gas emissions in the lower atmosphere.

Greenhouse Effect: A warming of the earth and its atmosphere as a result of the thermal trapping of incoming solar radiation by CO_2, water vapor, methane, nitrous oxide, chlorofluorocarbons, and other gases, both natural and man-made.

Gross Vehicle Weight (gvw): Maximum weight of a vehicle, including payload.

Heavy-Duty Vehicle: According to EPA, a heavy-duty vehicle is any vehicle weighing 8,500 lb gvw or more. In California, vehicles weighing more than 14,000 lb gvw are classified as heavy-duty vehicles.

Inherently Low Emission Vehicle (ILEV): FEDERAL ONLY. Describes vehicle meeting EPA's CFV ILEV standards. Tailpipe standards may be LEV, ULEV, and ZEV, but include the requirement that evaporative emissions be near zero. ILEVs will be dedicated AFVs (no gasoline on board) in most cases. ILEVs may be exempt from certain transportation control measures, including high occupancy vehicle lane restrictions.

Light-Duty Vehicles: According to the EPA, a light-duty vehicle is any vehicle weighing 8,500 lb gvw or less. In California, vehicles weighing less than 6,000 lb gvw are classified as light-duty vehicles.

Liquefied Natural Gas (LNG): Natural gas that has been condensed to a liquid typically by cryogenically cooling the gas.

Liquefied Petroleum Gas (LPG): A hydrocarbon and colorless gas found in natural gas and produced from crude oil, used principally as a home heating fuel or motor fuel. Also known as propane or butane.

Liter (L): A metric measurement used to calculate the volume displacement of an engine. One liter is equal to 1,000 cubic centimeters or 61 cubic inches.

LNG to CNG Station: A station, supplied with LNG, that pumps and vaporizes the liquid supply to vehicles as CNG fuel, generally at the correct pressure and temperature (i.e., the temperature effect of compression is factored into the design).

LNG vehicle: A vehicle that uses LNG as its fuel.

Low Emission Vehicle (LEV): Describes a vehicle meeting either EPA's CFV LEV standards or CARB's California Low Emission Vehicles Program LEV standards. LEVs produce fewer emissions than TLEVs.

Medium-Duty Vehicle: A truck, van, or specialized vehicle weighing between 8,500 and 14,000 lb.

Methane (CH_4): The simplest of the hydrocarbons and the principle constituent of natural gas. Pure methane has a heating value of 1,012 Btu per standard cubic foot.

Methanol (CH_2OH): An alcohol fuel usually made from natural gas or coal.

Mobile Source Emissions: Emissions resulting from the operations of any type of motor vehicle.

National Ambient Air Quality Standards (NAAQS): Ambient standards for air pollutants specifically regulated under the CAA. These pollutants include ozone, CO, NO_2, lead, PM, and SO_x.

Natural Gas: A mixture of gaseous hydrocarbons, primarily methane, occurring naturally in the earth and used principally as a fuel.

Natural Gas Distribution System: This term generally applies to mains, services, and equipment that carry or control the supply of natural gas from a point of local supply, up to and including the sales meter.

Natural Gas Transmission System: Pipelines installed for the purpose of transmitting natural gas from a source or sources of supply to one or more distribution centers.

Non-Attainment Area: A region, determined by population density in accordance with the U.S. Census Bureau, which exceeds minimum acceptable NAAQS for one or more "criteria pollutants" (see Clean Air Act Amendments). Such areas are required to seek modifications to their State Implementation Plans, setting forth a reasonable timetable using EPA-approved means to achieve attainment of NAAQS for these criteria pollutants by a certain date. Under the CAA, if a non-attainment area fails to attain NAAQS, EPA may superimpose a Federal Implementation Plan with stricter requirements or impose fines, constructions bans, cutoffs in federal grant revenues, and so forth, until the area achieves the applicable NAAQS.

Non-Road Vehicle (off-road vehicle): A vehicle that does not travel streets, roads, or highways. Such vehicles include construction vehicles, locomotives, forklifts, tractors, golf carts, and so forth.

Original Equipment Manufacturer (OEM): The original manufacturer of a vehicle or engine.

Oxygenated Fuels: Fuels blended with an additive—usually methyl tertiary butyl ether (MTBE) or ethyl tertiary butyl ether (ETBE)—to increase oxygen content, allowing more thorough combustion for reduced carbon monoxide emissions.

Ozone: Tropospheric ozone (smog) is formed when volatile organic compounds, oxygen, and NO_x react in the presence of sunlight (not to be confused with stratospheric ozone, which is found in the upper atmosphere and protects the earth from the sun's ultraviolet rays). Though beneficial in the upper atmosphere, at ground level, ozone is a respiratory irritant and considered a pollutant.

Ozone Transport Region (OTR): The Clean Air Act Amendments of 1990 enable EPA to establish Ozone Transport Regions to reduce the likelihood ozone and its precursors will be carried from one area to another, lowering air quality in the downward location. The first such region consists of the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and the District of Columbia.

Particulate Matter (PM): Unburned fuel particles that form smoke or soot and stick to lung tissue when inhaled. A pollutant.

Portable Fueling System: A system designed to deliver natural gas to fueling stations. Such systems are usually configured as tube trailers and are mobile. Fuel delivery usually occurs via over-the-road vehicles.

Pounds Per Square Inch (psi): An expression of pressure used to determine gas volume.

Private Fleet: A fleet of vehicles owned by a non-government entity.

Propane (C_3H_8): A gas whose molecules are composed of three carbon and eight hydrogen atoms. Propane is present in most natural gas in the United States, and is the first product refined from crude petroleum. Propane contains about 2,500 BTUs per cubic foot.

Public Fueling Station: Refers to fueling station that is accessible to the general public.

Reformulated Gasoline (RFG): Gasoline that has been chemically reformulated to reduce or eliminate one or more toxic substances as specified by EPA.

Retrofit: To change a vehicle or engine after its original purchase, usually by adding equipment such as conversion systems.

Smog: A petrochemical haze caused primarily by the reaction of hydrocarbons and NO_x with sunlight.

State Implementation Plan (SIP): A plan that a state must submit to EPA under the CAA to demonstrate compliance to NAAQS.

Tax Incentives: In general, a means of employing the tax code to stimulate investment in or development of a socially desirable economic objective without direct expenditure from the budget of a given unit of government. Such incentives can take the form of tax exemptions or credits.

Therm: A unit of heating value equivalent to 100,000 British Thermal Units (BTUs).

Toxic Emission: Any pollutant emitted from a source that can negatively affect human health or the environment.

Toxic Substance: A generic term referring to a harmful substance or group of substances. Typically, these substances are especially harmful to health, such as those considered under EPA's hazardous substance program. Technically, any compound that has the potential to produce adverse health effects is considered a toxic substance.

Transitional Low Emission Vehicle (TLEV): Describes vehicles meeting either EPA's CFV TLEV standards or CARB's California Low Emission Vehicles Program TLEV standards. TLEVs produce fewer emissions than Federal Tier 1 vehicles. TLEVs are eligible for the Federal California Pilot Program, but not eligible for the Clean Fuel Fleet Program.

U.S. Department of Energy (DOE): A department of the federal government, established by the Carter Administration in 1977, to consolidate energy-oriented programs and agencies. The DOE mission includes the coordination and management of energy conservation, supply, information dissemination, regulation, research, development, and demonstration. The department includes the Office of Transportation Technologies, the umbrella for the Office of Alternative Fuels.

U.S. Environmental Protection Agency (EPA): A governmental agency, established in 1970, responsible for the protection of the environment and public health. EPA seeks to reduce air, water, and land pollution and pollution from solid waste, radiation, pesticides and toxic substances. EPA also controls emissions from motor vehicles, fuels, and fuel additives.

Ultra-Low Emission Vehicle (ULEVs): Describes a vehicle meeting either EPA's CFV ULEV standards or CARB's California Low Emission Vehicles Program ULEV standards. ULEVs produce fewer emissions than LEVs. Fleets who purchase CFV ULEVs may earn credits under the Clean Fuel Fleet Vehicle Program. Manufacturers that sell CFV ULEVs may earn credits under the federal California Pilot Program.

Vehicle Conversion: Retrofitting a vehicle engine to run on an alternative fuel.

Volatile Organic Compound (VOC): Hydrocarbon gasses released during combustion or evaporation of fuel and regulated by EPA. VOCs combine with NO_x in the presence of sunlight to form the ozone.

Zero Emission Vehicle (ZEV): Describes a vehicle meeting either EPA's CFV ZEV standards or CARB's California Low Emission Vehicles Program ZEV standards. ZEV standards, usually met with electric vehicles, require zero vehicle (not power plant) source emissions. ZEVs earn more Clean Fuel Fleet Vehicle Program credits than ULEVs. ZEVs also may meet ILEV standards if evaporative emissions are near zero.

Acronyms

AFV	Alternative fuel vehicle
APCD	Air Pollution Control District
APS	Arizona Public Service
AQMD	Air Quality Management Districts
ARKLA	Arkansas Louisiana Gas
BTU	British thermal unit
CAAA	Clean Air Act of Amendments
CARB	California Air Resources Board
CFVs	Clean fuel vehicles
CNG	Compressed natural gas
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DPU	U.S. Department of Public Utilities
E10	10% ethanol fuel
E85	85% ethanol fuel
EPA	U.S. Environmental Protection Agency
EPAct	Energy Policy Act of 1992
EV	Electric vehicle
GEC	Governor's Ethanol Coalition
Gge	Gasoline gallon equivalent
gvw	Gross volume weight
gvwr	Gross volume weight rating
HB	House Bill
HOV	High occupancy vehicle
Hp	Horsepower
ILEVs	Inherently low emission vehicles
kWh	Kilowatt hour
LEVs	Low emission vehicle
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
M85	85% methanol fuel
mpg	Miles per gallon
NCGA	National Corn Growers Association
NEVC	National Ethanol Vehicle Coalition
NGV	Natural gas vehicle
OEM	Original equipment manufacturer
RFP	Request for proposals
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SEP	State Energy Program
SIP	State Implementation Plan
SULEVs	Super ultra-low emission vehicles
TLEVs	Transitionally low emission vehicle
ULEVs	Ultra-low emission vehicles
ZEV	Zero Emission Vehicle

Why alternative fuels?

The value of the automobile and the importance of transportation are intrinsic to life in the United States. The U.S. transportation sector has an enormous impact on our economy, our nation's energy security, and our environment. Every year we increase our dependence on imported oil, which increases the trade deficit, costs us jobs, and undermines our national security. Moreover, emissions from vehicles are the single largest contributor to air pollution in many cities, making our air unhealthy to breathe and increasing our health care costs. Expanding the use of the alternative fuels through the Clean Cities Program offers solutions to many of these problems.

What is Clean Cities?

Clean Cities is a *locally-based* government/industry partnership, coordinated by the U.S. Department of Energy (DOE) to expand the use of alternatives to gasoline and diesel fuel. By combining local decision-making with voluntary action by *partners*, the "grassroots" approach of Clean Cities departs from traditional "top-down" federal programs. It creates an effective plan, carried out at the local level, for creating a sustainable, nationwide alternative fuels market.

How does Clean Cities work?

Clean Cities builds on local initiatives, provides options to local problems, and creates partnerships as the mechanism to develop solutions. Clean Cities works directly with local businesses and governments to guide them through the goal-setting, coalition-building, and commitments process necessary to establish the foundations for a viable alternative fuels market. Then, by sharing local innovation along the Clean Cities network "mayor-to-mayor," by relating local problems to state and federal objectives, and by providing continuous feedback to industry and government stakeholders, Clean Cities can continually pioneer innovations and aspire to effect national as well as local achievements. DOE will be working with Clean Cities coalitions nationwide to:

- **Create new jobs and commercial opportunities** - Alternative fuels and alternative fuel vehicles (AFVs) can benefit the economy in many ways. Converting conventional vehicles to AFVs, developing new technologies and products, using domestically-produced alternative fuels, increasing crop (feedstock) production, and expanding alternative fuel infrastructure create commercial opportunities, new jobs, and businesses nationwide.
- **Facilitate alternative fuel vehicle production and conversion** - By pledging AFV acquisitions through the year 2005, the thousands of registered Clean Cities stakeholders have shown that significant demand exists for these vehicles. Clean Cities will work to transform these pledges into validated vehicle acquisition and conversion plans useful to manufacturers challenged to develop market-driven production lines.
- **Advance Clean Air objectives** - The Clean Cities Program will advance the objectives of the Clean Air Act and seek to integrate its 1990 Amendments into each Clean City coalition's decision-making process.
- **Increase public awareness** - Clean Cities will pursue an active public education campaign to ensure that citizens are aware of the benefits of using alternative fuels over gasoline and diesel.
- **Provide greater fuel choices** - The variety of fuel choices has enabled Clean Cities to choose the alternative fuels that best serve their local community and economy. This choice gives the community an opportunity to utilize the fuels that provide them with the best fuel performance, reduced emissions, and financial incentives.
- **Develop "Clean Corridors"** - Clean Cities recognizes the need for "clean corridors" and will build links between existing Clean Cities to ensure that refueling facilities will be available for inter-regional transit.
- **Expand refueling infrastructure** - Concurrent with Clean Cities expansion of the AFV market, the program will build on fuel supplier commitments to provide the refueling infrastructure critical for service and maintenance of AFVs. In addition, the program will make available existing private refueling stations for wider use.
- **Support regulated fleets** - Through the Clean Cities Program, DOE will provide local assistance to federal and state requirements for AFV acquisitions and conversions.

Where do I get more information?

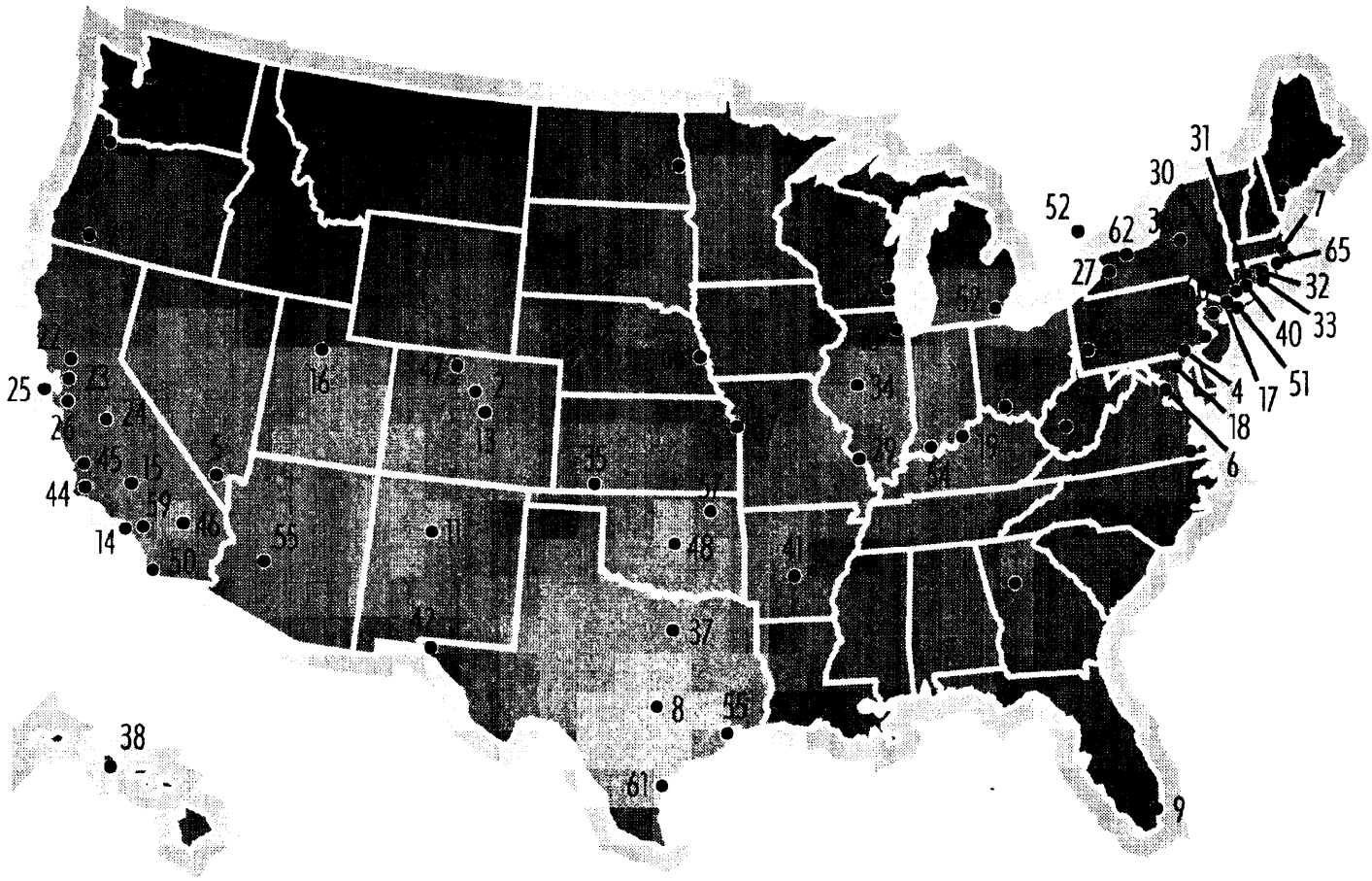
The Clean Cities Hotline at (800) CCITIES or 800 224-8437 and the Clean Cities Web site at http://www.ccities.doe.gov will provide answers to questions on funding, alternative fuel and AFV questions, program planning, and other issues. The Hotline also makes several resources available for Clean Cities use, including the following publications:

- *The Clean Cities Roadmap*, which explains how your community can join forces with the national network of Clean Cities to help accelerate the introduction and expand the use of alternative fuels and AFVs.
- *The Alternative Fuel Newsletter*, which provides news on the Clean Cities programs six times a year.
- *Alternative Fuels and Vehicles Information Resources*, which provides other avenues to pursue information on the Clean Cities Program and the Alternative Fuels Data Center.

DOE has also appointed Clean Cities Program managers at each of the DOE Regional Support Offices to assist local Clean Cities with their alternative fuels program development. In addition, the vast network of local Clean Cities coordinators is available to share information and provide assistance. The names and phone numbers of the Clean Cities coordinators and the Clean Cities program managers at the DOE Regional Support Offices are listed in this document under each state's Points of Contact section. They are also available on the Clean Cities Web site at http://www.ccities.doe.gov.

To obtain more information, call the Clean Cities Hotline at (800) CCITIES or (800) 224-8437, or write to: U.S. Department of Energy, EE-34, Clean Cities Program, 1000 Independence Avenue SW, Washington, DC 20585, or visit the Clean Cities Web site at: http://www.ccities.doe.gov.

Designated Clean Cities – Designation Dates



1. Atlanta, GA - 9/8/93
2. Denver, CO - 9/13/93
3. Philadelphia, PA - 9/22/93
4. Delaware - 10/12/93
5. Las Vegas, NV - 10/18/93
6. Washington, DC - 10/21/93
7. Boston, MA - 3/18/94
8. Austin, TX - 4/18/94
9. Florida Gold Coast - 5/3/94
10. Chicago, IL - 5/13/94
11. Albuquerque, NM - 6/1/94
12. Wisconsin, SE Area - 6/30/94
13. Colorado Springs, CO - 7/13/94
14. Long Beach, CA - 8/31/94
15. Lancaster, CA - 9/22/94
16. Salt Lake City - 10/3/94
17. White Plains, NY - 10/4/94
18. Baltimaore, MD - 10/7/94
19. Louisville, KY - 10/18/94
20. Rogue Vally, OR - 10/18/94
21. State of WV - 10/18/94
22. Sacramento, CA - 10/21/94
23. Oakland, CA - 10/21/94
24. San Joaquin Valley, CA - 10/21/94
25. San Fransisco, CA - 10/21/94
26. South Bay (San Jose), CA - 10/21/94
27. Western New York - 11/4/94
28. Portland, OR - 11/10/94
29. St. Louis, MO - 11/18/94
30. Norwalk, CT - 11/21/94
31. Waterbury, CT - 11/21/94
32. Norwich, CT - 11/22/94
33. New London, CT - 11/22/94
34. Peoria, IL - 11/22/94
35. SW Kansas - 3/30/95
36. Central New York - 6/15/95
37. Dallas/Ft. Worth, TX - 7/25/95
38. Honolulu, HI - 8/29/95
39. Missoula, MT - 9/21/95
40. New Haven, CT - 10/5/95
41. Central Arkansas - 10/25/95
42. Paso del Norte, TX - 11/17/95
43. Pittsburgh, PA - 12/5/95
44. SO. California Assoc. of Governments - 3/1/96
45. Los Angeles, CA - 3/22/96
46. Coachella Valley, CA - 4/22/96
47. Weld/Larimer/RMNP, CO - 5/21/96
48. Central Oklahoma - 5/29/96
49. Hampton Roads, VA - 10/4/96
50. San Diego, CA - 12/12/96
51. Long Island, NY - 10/18/96
52. Detroit, MI/Toronto, ON - 12/18/96
53. Tri-State (Cincinnati, OH) - 1/29/97
54. Evansville, IN - 1/30/97
55. Houston, TX - 9/4/97
56. Portland, ME - 9/4/97
57. Tulsa, OK - 9/22/97
58. Maricopa Assoc. of Governments, AZ - 10/8/97
59. Riverside, CA - 10/24/97
60. North Jersey, NJ - 10/30/97
61. Corpus Christi, TX - 3/30/98
62. Genesee Region (Rochester, NY) - 5/28/98
63. Red River Valley, (Grand Forks, ND) - 8/10/98
64. Puget Sound (Seattle, WA area) - 8/13/98
65. Providence, RI - 9/14/98
66. Omaha, NE - 9/18/98
67. Kansas City, KS/MO - 11/18/98

Introduction to the Guide

Funding is a central issue in any effort to use alternative fuel vehicles (AFVs). Incentives are very important, especially as they help to defray the incrementally higher costs of acquiring AFVs. However, the wide variety and types of incentives can be confusing, so the Clean Cities Program has sorted the issues out by creating this guide. The *Guide to Alternative Fuel Vehicle Incentives and Laws* contains a listing of state, federal, and private incentives offered to encourage the expanded use of AFVs. Of these incentives, private sources of funding are becoming more important as partners are recognizing the commercial value of the growing market. We have tried to include a contact name and phone number with each incentive, so you can get more details on the programs that apply to you. You can always call the Clean Cities Hotline at (800) CCITIES or (800) 224-8437, if you seek more in-depth answers to your queries.

Applying incentives to purchases of AFVs can be like clipping coupons. Think of this guide as a coupon book that shows what discounts and incentives can be applied to your purchases. The incentives can be grouped together to significantly defray the final purchase price of an AFV. Because most incentives are only available in certain states or areas, and many of the private company incentives apply only to people in that company's service area, you may need to call to confirm your eligibility for some of the rebates or programs. This is why we have included points of contact for each listing. This is the third edition of this guide, and we've made every effort to ensure the information is current. However, programs, laws, and contacts change constantly, and we encourage you to access the Incentives and Laws section of the Alternative Fuel Vehicle Fleet Buyer's Guide Web site (http://www.fleets.doe.gov) for the most accurate and updated information. If your organization is not listed, or if the information on your organization's programs has changed, please contact Johanna Woelfel, National Conference of State Legislatures, at (303) 830-2200, (303) 863-8003-fax; or email afv_inlaws@afdc.nrel.gov, so corrections can be made in the database.

Alternative Fuel Vehicle Funding Worksheet Instructions

Clean Cities realizes that most of you do not have the time to search for funding opportunities. This guide identifies available funding opportunities and presents the information clearly and concisely. We have created an easy-to-use worksheet so you can calculate a cumulative AFV funding potential. Examples of completed worksheets are included, as well as a blank worksheet for you to calculate your potential savings.

The worksheet is composed of two parts. The first part includes a section for tabulating various potential sources of funding. The second part of the funding worksheet allows you to calculate the individual payback periods for your AFV purchases.

Completing Part 1 of the Worksheet

To complete the first part of the worksheet on sources of funding, please turn to your state's section of this book. Look at the AFV funding opportunities in your state and insert those incentives for which you are eligible into the worksheet. In addition, read through your state's section to see if there are any other possible sources of funding. You may need to make some phone calls to get the details on some programs. Also examine the Federal section of this guide to determine any other incentives that you are eligible for.

Part 1 of the worksheet, "Sources of Funding," is divided into four headings: I. State Incentives, II. Utilities/Private Incentives, III. State Laws & Regulations, and IV. Federal Tax Incentives. Headings I - III correspond to headings under each state section. Heading IV corresponds to the federal section of the book.

I. **State Incentives** - If any state incentives apply to you, fill in the name of the programs on the lines, and enter the total dollar amount in the corresponding box under the "Amount You Expect to Receive" column.

II. **Utilities/Private Incentives** - If your local utility has an incentive program listed, you can insert that into the worksheet here. You may want to call the contact person listed to get the details on the program. In addition to what is listed, many local utility companies will work with customers on a case-by-case basis to provide custom incentives for AFVs. Call the local utility in your area for details. Some alternative fuel providers that are not utilities offer incentives for AFVs. In addition, when purchasing a new AFV, check with the manufacturer for any rebates.

III. **State Laws & Regulations** - Some state laws and regulations can provide savings for AFVs. For instance, several states offer sales tax exemptions for AFV purchases. If your state offers this exemption, you could figure out how much tax you would have paid and enter that amount in the worksheet. If the fuel tax in your state is lower on your alternative fuel of choice than on gasoline, you could calculate your fuel tax savings by multiplying the difference between the gasoline fuel tax and the alternative fuel tax by the vehicle's miles per gallon (mpg) to find the dollars per mile fuel tax savings. Then multiply the dollars per mile fuel tax savings by the annual driving distance you expect for your vehicle to find the fuel tax savings for the first year. Again, enter the total amount in the corresponding box.

IV. **Federal Tax Incentives** - The federal tax incentives on page 150 can be plugged right into the worksheet. For electric vehicles, the tax credit of 10% of the vehicle cost (up to $4,000) can be entered directly in the corresponding box under numeral IV. For other AFVs, the value of the tax deduction will depend on your tax rate. To find the dollar value of the tax deduction, multiply the amount of the deduction by your tax rate. For example, if you were purchasing an AFV that qualified for the $2,000 tax deduction, and your income level put you in the 28% tax bracket, the value of the tax deduction would be $560. Check with your tax advisor for the details of how the federal tax incentives would apply to your specific situation, or call the Internal Revenue contact person listed with the federal tax incentives on page 150.

Once you have identified all the incentives that apply to you, simply add them up to see your potential savings, then enter the total in the box labeled **Total Funding**.

Completing Part 2 of the Worksheet

Part 2 of the worksheet involves determining the payback period for your AFV. To calculate the payback period, follow these step-by-step instructions.

1. Determine the **Incremental Cost** for your vehicle by subtracting the cost of a comparable gasoline vehicle from the initial cost of your AFV. For converting existing vehicles, use the conversion cost as the **Incremental Cost**.
2. Subtract the **Total Funding** that you calculated in **Part 1** from the Incremental Cost (1a). This will give you the **Net Incremental Cost** (2a) of the AFV. If the **Net Incremental Cost** is less than zero, then your incentives offset the incremental cost for the AFV. You do not need to continue to figure your payback period, because you do not have any additional costs to pay back. For most people, the incentives will not be enough to cover the additional incremental costs of the AFV. However, if it costs you less to run your vehicle on the alternative fuel than it would to run it on gasoline, then you can use steps 3 through 5 to determine how many miles you will need to drive the vehicle to save enough in fuel costs to pay back the **Net Incremental Cost** of the AFV.
3. Determine your fuel costs per mile for using both the alternative fuel and gasoline. Complete section 3a, and then complete one of the two remaining sections, 3b or 3c, depending on the type of fuel for your AFV.
   a) For gasoline, divide the per gallon price of gasoline by the vehicle's miles per gallon (mpg). For example, if the average price in your city for a gallon of gasoline is $1.20, write $1.20 in the box labeled "$ per gallon." If your vehicle gets 20 miles per gallon, write 20 in the box labeled "vehicle mpg." Then divide $1.20 by 20 to get $0.06 per mile fuel cost.
   b) For the alternative fuel, divide the price per gasoline gallon equivalent (gge) by the vehicle's miles per gge (mpgge) when operating on the alternative fuel. If you are buying a new vehicle, the manufacturer can provide you with this number. If you are converting a vehicle, the conversion company can provide you with an estimate of the mpg. For example, if you are converting to a natural gas vehicle (NGV), and natural gas will cost you $0.75 per gge, write $0.75 in the box labeled "$ per gge." If the vehicle, once converted to natural gas will get 20 miles per gge, write 20 in the box labeled "vehicle mpgge." Then divide $0.75 by 20 to get $0.0375 per mile fuel cost.
   c) For an electric vehicle, divide the price of electricity per kilowatt hour (kWh), by the miles the vehicle will get per kWh. The manufacturer or conversion company will be able to give you this figure. For example, if your electric rate is $0.041 per kWh, write $0.041 in the box labeled "$ per kWh." If the vehicle will get 4 miles per kWh, enter 4 in the box labeled "vehicle miles per kWh." Then divide $0.041 by 4 to get $0.01025 per mile fuel cost.
4. Find your **$ savings per mile** by subtracting the per mile fuel cost of the alternative fuel (box 3b or 3c) from the per mile gasoline cost (box 3a). For example, for the NGV shown above in 3b, subtract $0.0375 per mile fuel cost from $0.06 per mile gasoline cost in 3a to get a cost savings of $0.0225 per mile.
5. To find the **Payback Period**, divide the **Net Incremental Cost** (box 2a) by the **$ savings per mile** (box 4a) to get the payback period in miles. This calculates the number of miles the vehicle would need to be driven to pay back the additional incremental cost of the AFV.

AFV FUNDING WORKSHEET – State of _____

PART 1 - Sources of Funding | **Amount You Expect to Receive**

I. State Incentives
_____
_____
_____
$ [ ]

II. Utilities/Private Incentives
_____
_____
_____
+ $ [ ]

III. State Laws & Regulations
_____
_____
_____
+ $ [ ]

IV. Federal Tax Incentives
_____
_____
_____
+ $ [ ]

Total Funding = $ [ ]

PART 2 - Payback Period

1) To calculate an AFV's payback period, you first need to know the **Incremental Cost** of that vehicle compared to a comparable gasoline vehicle:

$ [ ] Initial Cost of AFV − $ [ ] Cost of Comparable Gasoline Vehicle = $ [ ] Incremental Cost * 1a

* NOTE: If you are converting existing fleet vehicles, then substitute the conversion cost for the **Incremental Cost**.

2) Subtract the **Total Funding** (the last box in Part 1) from the **Incremental Cost** (box 1a) to get the **Incremental Cost**.

$ [ ] Incremental Cost (from box 1a) − $ [ ] Total Funding (from part 1) = $ [ ] Net Incremental Cost 2a

3) To find the **$ per mile fuel cost**, divide your fuel cost per gasoline gallon equivalent (gge) by your vehicle's miles per gallon (mpg). Do this calculation for both gasoline and the alternative fuel.

a) gasoline: $ [ ] $ per gallon ÷ [ ] mpg vehicle mpg = $ [ ] $ per mile fuel cost 3a

b) alternative fuel: $ [ ] $ per gge ÷ [ ] mpgge vehicle mpgge = $ [ ] $ per mile fuel cost 3b

c) electric: $ [ ] $ per kWh ÷ [ ] mi/kWh vehicle miles per kWh = $ [ ] $ per mile fuel cost 3c

4) Then subtract the **$ per mile fuel cost** of your alternative fuel from the **$ per mile fuel cost** of gasoline to find your **$ savings per mile**.

$ [ ] $ per mile fuel cost gasoline (from box 3a) − $ [ ] $ per mile fuel cost alternative fuel (from box 3b or 3c) = $ [ ] $ savings per mile 4a

5) Then divide the **Net Incremental Cost** (box 2a) by the **$ savings per mile** (box 4a) to get the payback period for your AFV in terms of miles.

$ [ ] Net Incremental Cost (from box 2a) ÷ $ [ ] $ savings per mile (from box 4a) = [ ] miles Payback in miles

Examples of Completed Worksheets

Example 1

Example 1 (on page 10) is the completed worksheet for the purchase of a new OEM (original equipment manufacturer) CNG (compressed natural gas) vehicle in Indiana (see page 57). Suppose you live in Indiana and are interested in purchasing a new CNG Ford F-Series Truck. In this example, the cost of the vehicle is $27,580, and the cost of a comparable gasoline vehicle is $24,000. The vehicle gets 18 miles to the gallon on either gasoline or CNG. Gasoline costs are $1.20 per gallon, and CNG costs are $0.75 per gge.

On page 57 you find, in the Indiana Highlights section, that the Small Business Energy Initiative Grant program will help pay for the incremental costs for the natural gas option on your vehicle. The minimum grant amount is $2,000. The Small Business Energy Initiative program is put under the **State Incentives** heading in **Part 1** of the worksheet, with the amount of $2,000 in the box in the **Amount You Expect to Receive** column. On page 57, you see that if you live in the service area of Southern Indiana Gas and Electric, you can receive a $1,000 rebate on the purchase of an OEM AFV. Assuming that Southern Indiana Gas and Electric is your local gas utility, the rebate is put under the **Utilities/Private Incentives** heading in Part 1 of the worksheet, with the amount $1,000 in the box in the **Amount You Expect to Receive** column. The text for each state also includes additional information on other AFV programs in the state.

For the **Federal Tax Incentives** heading, turn to page 150. The CNG truck qualifies for a $2,000 tax deduction. If you are in the 28% tax bracket, the value of the tax deduction would be $560. The $2,000 federal tax deduction is put under the **Federal Tax Incentives** heading in **Part 1** of the worksheet, with the amount of $560 in the box in the **Amount You Expect to Receive** column. Add together all of the numbers in the **Amount You Expect to Receive** column to get a **Total Funding** amount of $3,560.

Part 2 of the worksheet calculates the payback period. In Step 1, subtract the $24,000 cost of a comparable gasoline vehicle from the $27,580 cost for the NGV to get the **Incremental Cost** of $3,580. In Step 2, subtract the **Total Funding** of $3,560 from the **Incremental Cost** of $3,580 to get $20 as your **Net Incremental Cost** after applying incentives. In Step 3a, divide the price of $1.20 per gallon for gasoline by the vehicle fuel efficiency of 18 mpg, to get $0.0667 per mile fuel cost. In Step 3b, divide $0.75 per gge cost of CNG by the vehicle fuel efficiency of 18 mpg to get $0.0417 per mile fuel cost. In Step 4, subtract the $0.0417 per mile fuel cost (box 3b) from the $0.0667 per mile gasoline cost (box 3a) to get a cost savings of $0.025 per mile. In Step 5, divide the **Net Incremental Cost** of $20 (box 2a) by the fuel cost **$ savings per mile** of $0.025 (box 4a) to get 800 miles as the payback period. The vehicle would need to be driven 800 miles to pay back the additional incremental cost of the AFV.

Example 2

Example 2 (on page 11) is a completed worksheet for a CNG conversion in Illinois. The worksheet uses a conversion cost of $4000, and fuel efficiencies of 18 miles per gge for the original gasoline vehicle and the vehicle on CNG after conversion. The cost for gasoline is assumed to be $1.20 per gallon, and for CNG to be $0.75 per gge. The state of Illinois offers a rebate of 80% of the conversion cost, up to $4,000 (see page 54). This rebate is worth $3,200 which is put under the **State Incentives** heading of Part 1 of the worksheet, and entered in the **Amount You Expect to Receive** column. The Federal tax deduction is then calculated and entered into the worksheet under **Federal Tax Incentives** as in Example 1, with $560 entered in the **Amount you expect to receive** column. Adding together all of the figures in the **Amount You Expect to Receive** column, you get $3,760 as the **Total Funding** amount.

Part 2 of the worksheet calculates the payback period as was done in Example 1. The conversion cost of $4,000 is entered into **Incremental Cost** box 1a in Step 1 and again in Step 2 as shown in the worksheet. The **Total Funding** amount is subtracted from the **Incremental Cost**, and the resulting $240 entered into the **Net Incremental Cost** box 2a. Step 3 calculates the **$ per mile fuel cost** for the original gasoline vehicle and then for the converted CNG vehicle. The results, $0.0667 for gasoline and $0.0417 for CNG, are then subtracted in Step 4 to get a savings of $0.025 per mile for the converted CNG vehicle. In Step 5, the **Net Incremental Cost** from box 2a is divided by the **$ savings per mile** from box 4a to calculate the **Payback in miles** of 9,600 miles.

Example 3

Example 3 (on page 12) is a completed worksheet for the purchase of an EV in California. The incentives for California are on page 23. The worksheet assumes that the EV cost is $32,000, and the cost of a comparable gasoline vehicle is $20,000. A $5,000 incentive for EV purchases is available from the South Coast Air Quality District. The federal tax credit for EVs is based on 10% of the vehicle cost, up to $4,000. For the vehicle in the worksheet, the credit would be 10% of $32,000 or $3,200. Add these two incentives to get a **Total Funding** amount of $8,200. **Part 2** assumes a cost for gasoline of $1.20 per gallon, and a cost of electricity of $0.041 per kWh, and an EV fuel efficiency of 4 miles per kWh. Using these figures, the payback period for the EV would be 76,381 miles.

NOTE: These examples are provided to give you an idea of how to use the worksheets. Your individual situation may be different, even if you live in the same state used in one of the examples. Be sure to call to your state regional Clean Cities contact to confirm the details of incentives that apply to you.

EXAMPLE 1
AFV FUNDING WORKSHEET – Indiana - Natural Gas Vehicle Purchase

PART 1 - Sources of Funding | **Amount You Expect to Receive**

I. State Incentives
Small Business Energy Initiative Grant Program (see page 56)
provides grants for AFV projects
minimum grant - $2,000
$ 2,000

II. Utilities/Private Incentives
$1,000 rebate from Southern Indiana Gas and Electric
(see page 60)
+ $ 1,000

III. State Laws & Regulations
+ $ 0

IV. Federal Tax Incentives
$2,000 tax deduction (see page 149)
* $2,000 * 0.28 = $560
(28% tax bracket)
+ $ 560

Total Funding = $ 3,560

PART 2 - Payback Period

1) To calculate an AFV's payback period, you first need to know the **Incremental Cost** of that vehicle compared to a comparable gasoline vehicle:

$ 27,580 (Initial Cost of AFV) – $ 24,000 (Cost of Comparable Gasoline Vehicle) = $ 3,580 (Incremental Cost *) 1a

* NOTE: If you are converting existing fleet vehicles, then substitute the conversion cost for the **Incremental Cost**.

2) Subtract the **Total Funding** (the last box in Part 1) from the **Incremental Cost** (box 1a) to get the **Incremental Cost**.

$ 3,580 (Incremental Cost (from box 1a)) – $ 3,560 (Total Funding (from part 1)) = $ 20 (Net Incremental Cost) 2a

3) To find the **$ per mile fuel cost**, divide your fuel cost per gasoline gallon equivalent (gge) by your vehicle's miles per gallon (mpg). Do this calculation for both gasoline and the alternative fuel.

a) gasoline: $ 1.20 ($ per gallon) ÷ 18 (vehicle mpg) mpg = $ 0.0667 ($ per mile fuel cost) 3a

b) alternative fuel: $ 0.75 ($ per gge) ÷ 18 (vehicle mpgge) mpgge = $ 0.0417 ($ per mile fuel cost) 3b

c) electric: $ ($ per kWh) ÷ (vehicle miles per kWh) mi/kWh = $ ($ per mile fuel cost) 3c

4) Then subtract the **$ per mile fuel cost** of your alternative fuel from the **$ per mile fuel cost** of gasoline to find your **$ savings per mile**.

$ .0667 ($ per mile fuel cost gasoline (from box 3a)) – $ .0417 ($ per mile fuel cost alternative fuel (from box 3b or 3c)) = $ .025 ($ savings per mile) 4a

5) Then divide the **Net Incremental Cost** (box 2a) by the **$ savings per mile** (box 4a) to get the payback period for your AFV in terms of miles.

$ 20 (Net Incremental Cost (from box 2a)) ÷ $ 0.025 ($ savings per mile (from box 4a)) = 800 (Payback in miles) miles

EXAMPLE 2

AFV FUNDING WORKSHEET – Illinois - Compressed Natural Gas Vehicle Conversion

PART 1 - Sources of Funding | **Amount You Expect to Receive**

I. State Incentives
80% rebate for conversion cost
Conversion cost = $4,000; $4,000 * 0.80 = $3,200
(see page 53)
$ 3,200

II. Utilities/Private Incentives
+ $

III. State Laws & Regulations
+ $

IV. Federal Tax Incentives
IRS tax deduction 0.28 * $2,000 = $560 (see page 149)
(28% tax bracket)
+ $ 560

Total Funding = $ 3,760

PART 2 - Payback Period

1) To calculate an AFV's payback period, you first need to know the **Incremental Cost** of that vehicle compared to a comparable gasoline vehicle:

$ _____ (Initial Cost of AFV) – $ _____ (Cost of Comparable Gasoline Vehicle) = $ 4,000 (Incremental Cost *) 1a

* NOTE: If you are converting existing fleet vehicles, then substitute the conversion cost for the **Incremental Cost**.

2) Subtract the **Total Funding** (the last box in Part 1) from the **Incremental Cost** (box 1a) to get the **Incremental Cost**.

$ 4,000 (Incremental Cost (from box 1a)) – $ 3,760 (Total Funding (from part 1)) = $ 240 (Net Incremental Cost) 2a

3) To find the **$ per mile fuel cost**, divide your fuel cost per gasoline gallon equivalent (gge) by your vehicle's miles per gallon (mpg). Do this calculation for both gasoline and the alternative fuel.

a) gasoline: $ 1.20 ($ per gallon) ÷ 18 (vehicle mpg) mpg = $ .0667 ($ per mile fuel cost) 3a

b) alternative fuel: $ 0.75 ($ per gge) ÷ 18 (vehicle mpgge) mpgge = $ .0417 ($ per mile fuel cost) 3b

c) electric: $ _____ ($ per kWh) ÷ _____ (vehicle miles per kWh) mi/kWh = $ _____ ($ per mile fuel cost) 3c

4) Then subtract the **$ per mile fuel cost** of your alternative fuel from the **$ per mile fuel cost** of gasoline to find your **$ savings per mile**.

$ .0667 ($ per mile fuel cost gasoline (from box 3a)) – $ .0417 ($ per mile fuel cost alternative fuel (from box 3b or 3c)) = $ .025 ($ savings per mile) 4a

5) Then divide the **Net Incremental Cost** (box 2a) by the **$ savings per mile** (box 4a) to get the payback period for your AFV in terms of miles.

$ 240 (Net Incremental Cost (from box 2a)) ÷ $ .025 ($ savings per mile (from box 4a)) = 9,600 (Payback in miles) miles

EXAMPLE 3
AFV FUNDING WORKSHEET – California - Electric Vehicle Purchase

PART 1 - Sources of Funding	Amount You Expect to Receive
I. State Incentives	
South Coast Air Quality Management District	
$5,000/Electric Vehicle (see pages 23–24)	$ 5,000
II. Utilities/Private Incentives	
	+ $
III. State Laws & Regulations	
	+ $
IV. Federal Tax Incentives	
Federal tax credit for electric vehicle (see page 149)	
10 percent of vehicle cost up to $4,000	+ $ 3,200
Vehicle cost = $32,000 * 0.10 = $3,200	
Total Funding	= $ 8,200

PART 2 - Payback Period

1) To calculate an AFV's payback period, you first need to know the **Incremental Cost** of that vehicle compared to a comparable gasoline vehicle:

$ 32,000 (Initial Cost of AFV) – $ 20,000 (Cost of Comparable Gasoline Vehicle) = $ 12,000 (Incremental Cost *) 1a

* NOTE: If you are converting existing fleet vehicles, then substitute the conversion cost for the **Incremental Cost**.

2) Subtract the **Total Funding** (the last box in Part 1) from the **Incremental Cost** (box 1a) to get the **Incremental Cost**.

$ 12,000 (Incremental Cost (from box 1a)) – $ 8,200 (Total Funding (from part 1)) = $ 3,800 (Net Incremental Cost) 2a

3) To find the **$ per mile fuel cost**, divide your fuel cost per gasoline gallon equivalent (gge) by your vehicle's miles per gallon (mpg). Do this calculation for both gasoline and the alternative fuel.

a) gasoline: $ 1.20 ($ per gallon) ÷ 20 mpg (vehicle mpg) = $ 0.06 ($ per mile fuel cost) 3a

b) alternative fuel: $ ($ per gge) ÷ mpgge (vehicle mpgge) = $ ($ per mile fuel cost) 3b

c) electric: $ 0.041 ($ per kWh) ÷ 4 mi/kWh (vehicle miles per kWh) = $ 0.01025 ($ per mile fuel cost) 3c

4) Then subtract the **$ per mile fuel cost** of your alternative fuel from the **$ per mile fuel cost** of gasoline to find your **$ savings per mile**.

$ .06 ($ per mile fuel cost gasoline (from box 3a)) – $ 0.01025 ($ per mile fuel cost alternative fuel (from box 3b or 3c)) = $ 0.04975 ($ savings per mile) 4a

5) Then divide the **Net Incremental Cost** (box 2a) by the **$ savings per mile** (box 4a) to get the payback period for your AFV in terms of miles

$ 3,800 (Net Incremental Cost (from box 2a)) ÷ $ 0.04975 ($ savings per mile (from box 4a)) = 76,381 miles (Payback in miles)

The information in this guide is current as of September 15, 1998. However, programs and laws change constantly, so this information will need to be updated continuously. We encourage you to access the Incentives and Laws information on the Alternative Fuel Vehicle Fleet Buyer's Guide Web site at http://www.fleets.doe.gov for the most current data. If your organization is not listed, or if the information on your organization's programs has changed, please contact Johanna Woelfel, National Conference of State Legislatures, at (303) 830-2200, (303) 863-8003-fax, or email afv_inlaws@afdc.nrel.gov so corrections can be made in the database.

The information in this guide is current as of September 15, 1998. However, programs and laws change constantly, and this information will need to be updated frequently. The most current information can be obtained through the Alternative Fuel Vehicle Fleet Buyer's Web site at http://www.fleets.doe.gov. If your organization is not listed, or if the information on your organization's programs has changed, please email the information to afv_inlaws@nrel.gov or contact Johanna Woelfel, National Conference of State Legislatures, at (303) 830-2200 or (303) 863-8003-fax so corrections can be made in the database.

Overview

The main federal incentives for the purchase or conversion of individual alternative fuel vehicles (AFVs) are the federal income tax deductions of $2,000–$50,000 for clean fuel vehicles, and the income tax credit of up to $4,000 for electric vehicles (EVs). An income tax deduction is also available for the installation of refueling or recharging facilities for AFVs.

Except for the federal tax credits and deductions, most of the federal incentives are programmatic grants oriented toward large investments such as infrastructure and larger purchases. The lead federal agencies for AFV programs are the U.S. Department of Treasury (i.e., IRS), the U.S. Department of Energy (DOE), the U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA).

* * * * * * * * * * * * *

The information listed below is organized according to the federal agency responsible for enactment or enforcement. Please contact the person(s) listed or your state's representative of that agency for more information.

Highlights

A $2,000–$50,000 federal income tax deduction is available for the purchase or conversion of qualified clean fuel vehicles.

Up to $4,000 federal tax credit is available for 10% of the purchase price of an EV.

U.S. Internal Revenue Service (IRS) U.S. Department of Treasury, 1111 Constitution Avenue, NW, Room 5214, CC:PSI:8, Washington, DC 20224.

Federal Tax Deduction This is a deduction for clean fuel vehicles and certain refueling properties. A tax deduction for the purchase of a new original equipment manufacturer (OEM) qualified clean fuel vehicle, or for the conversion of a vehicle to use a clean-burning fuel, is provided under the Energy Policy Act of 1992 (EPAct), Public Law-102-486, Title XIX-Revenue Provisions, Sec. 179A. The amount of the tax deductions for qualified clean fuel vehicles is based on the gross vehicle weight (gvw) and types of vehicles as follows:

- Truck or van, gvw of 10,000–26,000 lb = $5,000
- Truck or van, gvw more than 26,000 lb = $50,000
- Buses, with seating capacity of 20+ adults = $50,000
- All other vehicles, off-road vehicles excluded = $2,000.

The tax deduction for clean fuel vehicles is available for business or personal vehicles, except EVs eligible for the federal EV tax credit. The deduction is not amortized and must be taken in the year the vehicle is acquired. A tax deduction of up to $100,000 per location is available for qualified clean fuel refueling property or recharging property for EVs. The equipment must be used in a trade or business.

Electric Vehicle Tax Credit. A tax credit for the purchase of qualified EVs and hybrid electric vehicles (HEVs) is provided under EPAct Public Law-102-486, Title XIX-Revenue Provisions, Sec. 30, Credit for Qualified Electric Vehicles. The size of the credit is 10% of the cost of the vehicle, up to a maximum credit of $4,000. Beginning in 2001, the size of the credit is reduced by 25% per year until the credit is fully phased out. To qualify for the credit, the vehicle must be powered primarily by an electric motor drawing current from batteries or other portable sources of electric current. All dedicated, plug-in only EVs qualify for the tax credit. All series and some parallel HEVs meet these qualifications. The tax credit for EVs is available for business or personal vehicles.

The dollar amount for the Clean Fuel Vehicle tax deductions and credits will be reduced after the year 2001 according to the following schedule: 2002–25% reduction, 2003–50% reduction, and 2004–75% reduction. These deductions and credits are available between December 20, 1993, and December 31, 2004. For more information, contact Winston

Douglas, Alternative Fuels Tax Provisions, at (202) 622-3110; or Frank Boland, Alcohol Fuel Tax Information, at (202) 622-3130; or call the toll-free order desk at (800) 829-3676, and ask for publication #535, *Business Expenses*.

U.S. Department of Energy (DOE) 1000 Independence Avenue, SW, Washington, DC 20585. General telephone number: (202) 586-5000.

Energy Policy Act of 1992 (EPAct) Congress passed EPAct, or Public Law 102-486, on October 24, 1992, to accelerate the use of alternative fuels in the transportation sector. With EPAct in place, DOE's primary goals are to decrease the nation's dependence on foreign oil and increase energy security through the use of domestically produced alternative fuels. DOE's overall mission is to replace 10% of petroleum-based motor fuels by the year 2000 and 30% by the year 2010. EPAct mandates federal, state, and alternative fuel provider fleets to purchase AFVs.

Federal fleets must follow guidelines established in Executive Order 12844 (April 21, 1993) and subsequently reinforced by Executive Order 13031 (December 13, 1996). An AFV guide for federal fleets is located at http://www.whitehouse.gov/WH/EOP/OMB/html/mheda/afvguide.html. State and fuel provider fleets must meet the requirements outlined in the Alternative Fuel Transportation Program, Final Rule [10 CFR Part 490], located at the Web site: http://www.afdc.doe.gov/ottdocs/fprovrule.pdf.

Clean Cities Program DOE's Clean Cities Program coordinates voluntary efforts between locally based government and industry to accelerate the use of alternative fuels and expand AFV refueling infrastructure. For more information, please see the Clean Cities Section of this guide on pages 1-13.

Federal Incentives EPAct establishes an incentive program for the purchase of AFVs and conversion of conventional gasoline vehicles to alternative fuels. Through federal tax incentives, companies and private individuals can offset a portion of the incremental costs associated with the purchase or conversion of an AFV.

State and Alternative Fuel Provider Fleets AFV Credits Program Congress created the credits program to encourage fleets or covered fleet operators to use AFVs early and aggressively. Credits are allocated to state fleet operators and covered Alternative Fuel Provider fleet operators when AFVs are acquired over and above the amount required, or earlier than expected. Since credits can be traded and sold, fleets have the flexibility to acquire AFVs on the most cost-effective schedule without impeding the achievement of EPAct national oil displacement goals. Please see the AFV Acquisition and Credits Web site for more information on the credits program at www.ott.doe.gov/credits, or call the National Alternative Fuels Hotline at (800) 423-1DOE or (800) 423-1363.

ANOPR DOE published an advance notice of proposed rulemaking (ANOPR) for AFV acquisition requirements for private and local government fleets on Friday, April 17, 1998. Programs potentially created by the ANOPR would help ensure that DOE meets its energy replacement goals. Public feedback will be incorporated into the rulemaking, which must be finalized by January 1, 2000. A copy of the ANOPR is available on the *Federal Register* Web site at http://www.access.gpo.gov/su_docs/aces/aces140.html or directly from the Web site at http://www.ott.doe.gov/pdfs/anopr.pdf.

State Energy Program States will promote the conservation of energy, reduce the rate of growth of energy demand, and reduce dependence on imported oil through the development and implementation of a comprehensive State Energy Program. The State Energy Program is the result of the consolidation of two formula grant programs—the State Energy Conservation Program and the Institutional Conservation Program. The State Energy Program includes provisions for competitively awarded financial assistance for a number of state-oriented special project activities, including alternative fuels. See your individual state and local incentives for more information. In addition to funding for special project activities, states may choose to allocate base formula funds to program activities to increase transportation efficiency, including programs to accelerate the use of alternative transportation fuels for government vehicles, fleet vehicles, taxis, mass transit, and privately owned vehicles. For more information, contact your State Energy Office or the DOE Regional Office for your region, listed under the Points of Contact section for your state, or contact Ron Santoro at DOE Headquarters at (202) 586-8296.

DOE/Urban Consortium Funds DOE's Municipal Energy Management Program has funded about 300 projects that demonstrate innovative energy technologies and management tools in cities and counties through the Urban Consortium Energy Task Force (UCETF). Each year the task force requests proposals from urban jurisdictions including cities, counties, and recognized tribal governments. After a review process, UCETF funds those projects that best define and demonstrate innovative and realistic technologies, strategies, and methods that can facilitate urban America's efforts to become more energy efficient and environmentally responsible. In the past, many AFV projects have received funding from UCETF. For more information or a copy of the request for proposals (RFPs), call Sharron Brown or Ama Frimpong, the Urban Consortium, (202) 626-2400, or Eric Thomas, DOE Program Manager at Municipal Energy

Management, (202) 586-2242, (202)-586-1233-fax, or email eric.thomas@hq.doe.gov. The RFPs will be available in January 1999, from the Web site at http://pti.nw.dc.us.

Petroleum Violation Escrow (PVE) Account Oil overcharge funds, also known as petroleum violation escrow (PVE) funds, became available as a result of oil company violations of the federal oil pricing controls that were in place from 1973-1981. Several companies paid fines or funds settlements that have been made available to the states for use in energy efficiency programs. These funds may be used in one or more of three federal energy-related grant programs: the State Energy Program and the Weatherization Assistance Program (administered by DOE), and the Low-Income Home Energy Assistance Program, which is administered by the Department of Health and Human Services. A portion of the funds may also be used for a broader range of energy-related programs, at the discretion of the state and with DOE review. To date, more than $4 billion in oil overcharge (PVE) funds has been made available to the states. Please contact Faith Lambert, U.S. Department of Energy, Office of State and Community Programs, at 202-586-2319, or your State Energy Office for more information (listed under your state's Points of Contact section of this guide).

U.S. Department of Transportation (DOT) Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), 400 7th Street, SW, Washington, DC 20590. General telephone number: (202) 366-4000.

Congestion Mitigation and Air Quality (CMAQ) Improvement Program The CMAQ program was reauthorized in the recently enacted Transportation Equity Act for the 21st Century (TEA-21). The primary purpose of the CMAQ program remains the same: to fund projects and programs in non-attainment and maintenance areas that reduce transportation-related emissions. However, TEA-21 made some changes to the CMAQ program, which are included in interim guidance that was published in the *Federal Register* on October 26, 1998. This information can be obtained from the *Federal Register Online* at the Government Printing Office Web site: http://www.access.gpo.gov.

The interim guidance provides (1) informational items on issues related to the re-authorized CMQ program, (2) new provisions regarding eligible geographic areas under TEA-21, and (3) guidance related to projects now eligible for CMAQ funds. With the exception of the issues discussed in the interim guidance, all provisions of the CMAQ policy guidance issued on March 7, 1996 (61 FR 50890, September 27, 1996) continue to apply.

DOT is expected to issue final CMAQ guidance in December 1998. For further information, contact Michael J. Savonis, Office of Environment and Planning, FHWA, at (202) 366-2080; Abbe Marner, Office of Planning, FHWA, at (202) 366-4317; S. Reid Alsop for legal issues, at (202) 366-1371; or contact your state or local FHWA representative.

Section 3 Discretionary and Formula Capital Program This program provides funding for the establishment of new rail projects, improvement and maintenance of existing rail projects, and the rehabilitation of bus systems. Funding is not specifically designated for AFVs, but the funds provided by this program may be used to purchase alternative fuel buses. For most projects funded through Section 3, FHWA will pay 80% of the total project costs. For more information, contact the regional FHWA office for your state, which is listed in your state's Points of Contact section of this guide.

U.S. Environmental Protection Agency (EPA) 401 M Street, SW, Washington, DC 20460. General telephone number: (202) 260-2090.

Clean Air Act Amendments of 1990 The *Clean Air Act* (CAA) was passed in 1970 to improve air quality nationwide. Congress amended the law in 1990, passing the *Clean Air Act Amendments of 1990* (CAAA) and thus creating several initiatives to reinforce one of the original goals of the CAA to reduce mobile source pollutants. CAAA sets emissions standards for stationary and mobile sources. The CAAA establishes targets, standards, and procedures for reducing human and environmental exposure to a range of pollutants generated by industry and transportation.

The Clean Fuel Fleet Program (CFFP) is an initiative implemented by the EPA in response to the CAAA. The CFFP requires fleets in cities with significant air quality problems to incorporate vehicles that will meet clean fuel emissions standards. For more information on requirements, covered fleets, and affected areas, please call your state EPA contact listed in the individual state Point of Contact section of this guide, or visit one of the following EPA Web sites: http://www.epa.gov/OMSWWW or http://www.epa.gov/oms/eff.htm.

National Low Emission Vehicle (NLEV) Program The NLEV program, effective March 2, 1998, is a voluntary program between the EPA, nine of the Ozone Transport Commission (OTC) states, and the automobile manufacturers. The program is designed to reduce unhealthy levels of smog and other toxic air pollutants formed from vehicle tailpipe emissions. Automobile manufacturers will provide cars and light-duty trucks that are cleaner burning than currently required by law. For model year 1999, vehicles will be available in Connecticut, Delaware, Maryland, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Virginia, and the District of Columbia, then, elsewhere across the country by 2001.

Documents relating to this program are available on the Web site at http://www.epa.gov/OMSWWW/lev-nlev.htm. For more information on the NLEV program, please contact Karl Simon, U.S. Environmental Protection Agency's Office of Mobile Sources, at (202) 260-3623, (202) 260-6011-fax, or email simon.karl@epamail.epa.gov.

Air Pollution Control Program This program, known as Section 105 grants, assists state and municipal agencies in planning, developing, establishing, improving, and maintaining adequate programs for prevention and control of air pollution or implementation of national air quality standards. States and municipalities may receive up to 60% federal funds to implement their plans. Requests for application forms and completed applications are submitted to the appropriate EPA Regional Grants Administration Branch. For program information, contact Jerry Stubberfield, EPA, at (919) 541-0876 or email stubberfield.jerry@epamail.epa.gov.

Pollution Prevention Grants Program This program supports the establishment and expansion of state pollution prevention programs and addresses various sectors of concern such as energy, transportation, industrial toxins, and agriculture. Funds available under this grant/cooperative agreement are awarded to support innovative pollution prevention programs that address the transfer of potentially harmful pollutants across all media—air, land, and water. State agencies are required to contribute at least 50% of the total cost of their project. For more information, contact the Pollution Prevention Coordinator in your EPA Regional Office, which is listed in the Points of Contact Section for your state.

U.S. Department of Energy

Office of Energy Efficiency and Renewable Energy

Clean Cities Hotline
(800) CCITIES/(800) 224-8437
http://www.ccities.doe.gov

National Alternative Fuels Hotline
(800) 423-1DOE/(800) 423-1363

For updates on information in this document, visit the Web site at http://www.afdc.doe.gov or the Alternative Fuel Vehicle Fleet Buyer's Guide at http://www.fleets.doe.gov. Please e-mail corrections to the information in this document to afv_inlaws@afdc.nrel.gov.

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