

Report of the Committee on the Environment

I. INTRODUCTION

This report will focus on the application of two major developments that occurred in 1992 as they affect the regulated energy industries. These developments will affect those industries in important respects throughout the 1990s. The first development is international, though it has immediate domestic implications. This was the conclusion of the U.N.-sponsored Framework Convention on Climate Change (the Climate Convention) which concluded amidst much publicity in Rio de Janeiro in June 1992. The second is primarily domestic, though it could have significant international impacts. Specifically, this development was the enactment of the Energy Policy Act of 1992 (the 1992 Act).

This report will examine several subject areas emanating in large part from these two developments and, in some cases, from the interaction between them. Part 2 will examine the Climate Convention and the prospects for its international and domestic implementation; treatment of the climate change issue in the 1992 Act and treatment of the issue in state "externality adder" processes. Part 3 will examine FERC's foray into the "externalities" debate through its report under section 808 of the Clean Air Act Amendments of 1990 (CAAA). Part 4 addresses the wide array of provisions in the 1992 Act relating to alternative fuel vehicles (AFVs). Part 5 examines a series of parallel funding provisions in the 1992 Act designed to promote the export of environmentally benign U.S. energy technology.

The last two reports of this Committee focused on the CAAA and, to a lesser extent, on other legislative initiatives in Congress, such as Resource Conservation and Recovery Act (RCRA) reauthorization. No final action was taken on the latter group of legislative initiatives in the 102nd Congress.

As to the CAAA, the first of these reports (Vol. 12, No. 2) dealt extensively with the new acid rain legislation in Title IV relating to controls to reduce emissions of both sulphur dioxide (SO₂) and nitrogen oxides (NO_x). It also reported on the potential long-term implications of Title III of the CAAA relating to "hazardous air pollutants" (air toxics). The second report (Vol. 13, No. 1) described the package of Environmental Protection Agency (EPA) draft rules produced after a dialogue process with affected interests through the Acid Rain Advisory Committee. These covered most aspects of initial implementation of the SO₂ permit, allowance trading, and emission monitoring rules under Title IV.

Since then, the EPA has finalized the draft rules with some significant but not fundamental changes. At the time this report was submitted, the EPA was preparing for its review of the "Phase One" permits filed under the CAAA. Perhaps most significant, the EPA will probably issue its NO_x draft rules under Title IV this year; and major developments may occur as to NO_x control in the area of the ozone non-attainment under Title I. For these reasons, developments under the CAAA will be covered in a future report.

II. CLIMATE CHANGE¹

This report covers three major developments in 1992 relating to climate change: (1) completion of an international, United Nations sponsored "Framework Convention" on Climate Change; (2) adoption of global climate change provisions in national energy legislation; and (3) state initiatives addressed to climate change.

A. *Framework Convention on Climate Change*

The most important development related to climate change in 1992 was the signing of a Framework Convention on Climate Change at the "Earth Summit" held in Rio de Janeiro in June 1992.² The Convention includes several important provisions relevant to the evolution of future international policy on climate change.³ A Secretariat and Conference of the Parties are designated as institutions to oversee the implementation of the Convention. Mechanisms are established for financial assistance to developing countries and periodic review and revision of the science of climate change and national commitments. Signatories are required to submit detailed information on sources of greenhouse gas emissions and to prepare "action plans" that describe the measures they are prepared to take to reduce such emissions. Although not required until six months after the Convention enters into force⁴, the United States released a "National Action Plan for Global Climate Change" in December 1992 for review at a meeting of the convention's International Negotiating Committee in Geneva.⁵

The process created by the Climate Convention is comparable to an earlier agreement which addressed ozone depletion. The Montreal Protocol on Substances that Deplete the Ozone Layer, signed in 1987,⁶ was added to a framework agreement in many respects comparable to that signed to address climate change in Rio. The initial agreement, signed in 1985, also created a process for negotiation without specific commitments or a timetable for action. However, it led to an agreement on both commitments and a timetable relatively quickly. As scientific evidence on ozone depletion has improved and

1. This section of the report is based on the annual report of Alan Miller and David Hodas, *ABA Section on Natural Resources, Energy, and Environmental Law (Special Committee on Global Warming), YEAR IN REVIEW: 1992*. Alan Miller is the Executive Director of the Center for Global Change, University of Maryland, College Park, MD, and David Hodas is Associate Professor of Law, Widener University School of Law, Wilmington, DE. The Committee is grateful to Mr. Miller for contributing this section to our report.

2. The Framework Convention on Climate was printed in 21 INT'L. ENVTL. REP. 3901 (July 1992). For an overview, See Grubb, *Special Report, The Climate Change Convention: An Assessment*, BNA INT'L ENVTL DAILY, Aug. 28, 1992. For assessments of the Earth Summit (actually titled the United Nations Conference on Environment and Development), see ABA STANDING COMMITTEE ON ENVIRONMENTAL LAW, ENVTL. LAW (Vol. 11, No.4), and articles in 34 ENVIRONMENT 6 (Oct. 1992).

3. For an overview, see BUREAU OF OCEANS AND INT'L, ENVTL. AND SCIENTIFIC AFFAIRS, DEPARTMENT OF STATE, ENVIRONMENTAL DOCUMENTATION: UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (Sept. 1992).

4. The Convention requires ratification by 50 countries in order to enter into force, a process expected to require up to two years.

5. Comments on the Action Plan were invited by the President's Council on Environmental Quality.

6. See, e.g., R. Benedick, *OZONE DIPLOMACY* (1991).

concern increased, the Protocol was amended twice to encompass more chemicals and a more rapid timetable for action.⁷

The likelihood of a similarly rapid evolution of protocols or amendments establishing formal international commitments to reduce emissions of greenhouse gases may become evident by the middle of 1993 after the first meetings required by the Convention. These meetings will offer the first opportunity for the Clinton Administration to act on its campaign promises of support for targets and timetables.

B. Climate Change and National Energy Legislation

Title XVI of the Energy Policy Act of 1992⁸ adopts several requirements for addressing global climate change, including a "least-cost" energy plan for reducing greenhouse gas emissions that must be subject to public notice and comment. The Act also authorizes the creation of a position titled Director of Climate Protection at the Department of Energy and an assessment of alternatives policies for reducing greenhouse gas emissions, both of which may become significant should the Clinton Administration choose to move more aggressively on this issue.

Another provision in Title XVI, section 1605, creates a voluntary system for calculating and tracking industry reductions in greenhouse gas emissions. The provision resembles legislation proposed by Congressmen Cooper and Synar that would have encouraged industry to reduce greenhouse gas emissions by creating credits that could be used in case of future regulation.⁹ Although voluntary, the provision has led to speculation about prospects for a futures market for greenhouse gases comparable to the emerging market created by the Clean Air Act Amendments of 1990 for sulfur emissions.

C. State Initiatives

The states adopted a wide range of legislative and policy responses to climate change in 1992. The National Conference of State Legislatures issued model legislation based on some of these actions.¹⁰ The Environmental Protection Agency also released a summary of state responses to climate change that illustrated a diverse array of responses.¹¹ Several states, including Connecticut, Missouri, South Carolina and Texas, are assessing the implications of climate change and responses to reduce the potential impacts. Other states,

7. *The New Ozone Accord: 'The Strongest Package of Law. . . But Not Enough'*, 4 GLOBAL ENVTL. CHANGE REPORT 1 (Dec. 4, 1992).

8. Pub. L. No. 102-486, 106 Stat. 2776 (Oct. 24, 1992).

9. *See Greenhouse Gas Offset Bank Sets Stage for Tradeable Permits*, 4 GLOBAL ENVTL. CHANGE REPORT 1 (Oct. 9, 1992).

10. L. RUNYON and L. MORANDI, PROPOSED GLOBAL WARMING LEGISLATION: A FRAMEWORK FOR STATE ACTION (1992).

11. EPA, OFFICE OF POLICY, PLANNING AND EVALUATION, SELECTED SUMMARY OF CURRENT STATES TO CLIMATE CHANGE (1992). For a review of state legislative responses, see P. Wexler *Cool Tools: State and Local Policy Options to Confront a Changing Climate*, CENTER FOR GLOBAL CHANGE WORKING PAPER (1992).

including New York, California, and Vermont, have included climate change as a factor in their energy planning.

Several states have already implemented utility regulatory policies that effectively give some weight to the risks of climate change as a factor in the selection of energy resources. A number of public utility commissions have recognized that the same concerns over greenhouse gas emissions that led to the Framework Convention may result in regulation of CO₂ emissions from power plants, potentially converting previously prudent investment decisions into seriously uneconomic ones.

Wanting to account for future emissions restrictions in today's utility planning, Public Utility Commissions (PUC) are using the classic economics of market pricing, which requires that the price of goods and services must account for all external costs of production, which includes the cost of environmental damage, in order to avoid the inefficiency of society subsidizing certain goods and services by absorbing hidden external costs. Economists describe this as internalizing the environmental externalities.

Applying this theory, the California PUC requires that its utilities must add to the price of a proposed new resource \$7.60 per ton of CO₂ to be emitted over the life of the plant,¹² while Massachusetts requires that \$26 be added,¹³ Wisconsin requires \$14,¹⁴ Nevada requires \$22¹⁵ and New York requires just \$1, although the New York Public Service Commission (PSC) has decided to revisit that value.¹⁶ Imposing a cost for CO₂ emissions has the effect of disfavoring coal, and to a lesser extent, natural gas as resource options, while favoring energy efficiency investments and renewable resources, which have lower external environmental costs and, hence, lower societal cost.

In Massachusetts, twenty-five (25) parties were involved in a review of the externality order adopted in 1990.¹⁷ The Massachusetts Department of Public Utilities (DPU) declined to abandon its "strong commitment to the concept of considering environmental externalities in resource decision making" and "market-based mechanisms of environmental regulation to meet societal environmental objectives in least-cost manner."¹⁸

The DPU reaffirmed its environmental externality values for CO₂ (\$26/metric ton in 1992 dollars), methane (\$265/metric ton), nitrous oxide (\$4,850/metric ton) and carbon monoxide (\$61/metric ton). However, the DPU was willing to allow utilities to avoid the environmental externality costing process for new resources by using a market-based offsets approach if a) the offsets are for surplus emissions in excess of what would have otherwise been emitted, and b) the offsets are readily verifiable and enforceable.¹⁹

12. P.U.C. 92-04-045, April 22, 1992; California Energy Comm'n. Elec. Report (November 1992).

13. Mass. D.P.U. 91-131, Nov. 10, 1992.

14. Wis. P.S.C. 06-EP-6, Sept. 15, 1992.

15. Nevada P.S.C. 89-752, Jan. 22, 1991 (Value in 1990 dollars).

16. N.Y. P.S.C. 92-E-1187, Dec. 29, 1992; the relationship between externalities and Clean Air Act compliance will be considered in a separate proceeding ordered last summer. N.Y. P.S.C. 91-E-0237, Opinion 92-16, June 26, 1992.

17. Mass. D.P.U. 91-131.

18. *Id.*

19. *Id.*

In 1992, California extended its concept of prudence by adding the insurance-like requirement of mandatory climate change risk-shifting to the environmental externality procedure previously adopted. California's regulations on acquisition of new electric resources now require that [utilities] "should undertake a long-term purchase [of fossil generation] only if the supplier provides assurance that it alone will bear the cost of meeting any future costs resulting from a carbon tax, acquisition of tradeable emission permits, retrofits, or other carbon emission control strategy or regulation applicable to the supplier's plants."²⁰ All new supply contracts must be drafted to account for the future impact of climate change legal requirements, with the supplier of energy bearing the entire risk of future CO₂ taxes, limitations, or restrictions.²¹

Application of the externalities concept is also being addressed at the federal level. Section 808 of the Clean Air Act Amendments of 1990 requires the FERC to make recommendations on the best ways to reward renewable energy technologies for their environmental benefits. A FERC staff report, issued in response, was somewhat critical of "adders" used by some states to internalize environmental externalities.²² The report suggests that a better approach may be to await the results of work in progress to define damage functions based on empirical studies of the full costs of emissions.²³

III. FEDERAL "EXTERNALITY" INITIATIVES²⁴

The CAAA gave the FERC a role in the current debate about the "externalities" of electricity production.²⁵ Specifically, section 808 of the CAAA²⁶ required FERC to perform a study of the net environmental benefits of using renewables, compared with non-renewables, for electricity production, propose regulatory models for incorporating these benefits, and submit a report to

20. Cal. P.U.C. 92-04-045, April 22, 1992.

21. For more detailed discussion of this development, see Cavanagh, *Utilities and their Carbon Dioxide Emissions: Who Bears the Risk of Future Regulations*, *ELECTRICITY JOURNAL* (forthcoming 1993).

22. FERC, *FERC STAFF REPORT ON SECTION 808, RENEWABLE ENERGY AND ENERGY CONSERVATION INCENTIVES OF THE CLEAN AIR ACT AMENDMENTS OF 1990* (Dec. 1992). The report is discussed in more detail in Part 3, below.

23. The Department of Energy has been concerned that the externality concept as so far implemented by state regulatory agencies unduly tends to discourage use of coal. The Department commissioned the National Coal Council to critique two leading externality studies. See NATIONAL COAL COUNCIL, *EXTERNALITIES*, transmitted by Letter from William R. Wahl, Chairman, National Coal Council, to Admiral Watkins, Secretary of Energy (May 21, 1992). The Coal Council and FERC reports have in turn been challenged by a leading advocate of state adoption of environmental externality concepts. See Richard L. Ottinger, *Memorandum to PSC Commissioners & Press* (Jan. 21, 1993).

24. The Committee is grateful to Howard H. Shafferman, former Chief of Staff to FERC Chairman Allday, for contributing this section to the Committee's report.

25. "Externalities" (or "external costs") are the costs of environmental damage to society which are not priced into a product (here, electricity). Some environmental damage costs *are* priced into a product, implicitly, where an environmental law requires installation of pollution control equipment, and the cost of the equipment is passed through to consumers. The precise definition of "externality" is a subject of active debate.

26. Pub. L. No. 101-549, 104 Stat. 2399 (1990).

the Congress. In December 1992, FERC staff completed this report and submitted it to the Congress.

A. Background

Shortly after passage of the CAAA, FERC staff learned that the U.S. Department of Energy (DOE) and the Commission of the European Communities (EC) had embarked on a major joint study of the external costs and benefits of fuel cycles for electricity production. The purpose and scope of the DOE/EC study were very similar to the requirements for the section 808 study.

Accordingly, to accomplish the section 808 study requirement, the FERC became a contributing participant in the DOE/EC study. DOE's contractors for the study are Oak Ridge National Laboratories (ORNL) and Resources for the Future (RFF). The Europeans are using a multinational team of ecologists and economists.

Fuel cycles being studied by the DOE/EC teams include renewables (photovoltaic, wind, biomass, small hydro) and non-renewables (coal, oil, natural gas, uranium). The teams are studying conservation options as well.

B. The Section 808 Report

The FERC's section 808 report begins by surveying work to date on externalities. It also reviews the methodology used in the DOE/EC study to evaluate the external costs of each fuel cycle.

The report proceeds from the premise that society should internalize environmental externalities efficiently, so that the amount of resources society spends on pollution control is the minimum necessary to achieve the desired environmental quality level. It reviews several regulatory models for internalizing these external costs, and concludes with the following observations and recommendations:

1. FERC staff finds that the "damage function" approach best estimates external costs. This approach equates the external costs of increased pollution with the monetary damages²⁷ caused by the increased pollution rather than the costs of controlling the harmful emissions. The DOE/EC study utilizes this approach.²⁸

2. FERC staff urges states to proceed cautiously with their plans to internalize environmental externalities. The report notes that "social costing" is not an exact science, but better data is on the way. Local environmental conditions and current environmental regulation²⁹ are important in determining environmental costs. Piecemeal internalization of externalities solely from electricity production may actually reduce overall environmental quality and

27. Where monetary damages are not calculable from market sources, a "willingness to pay" or "revealed preference" approach is used. These approaches are also called "social costing."

28. DOE, BACKGROUND DOCUMENT (Nov. 1992) provides further details.

29. The § 808 report urges particular caution in attempting to internalize residual emissions where the type of emission is already regulated.

cause economic distortions in related energy markets.³⁰

3. FERC staff observes that while no single regulatory model for internalizing externalities is superior in all cases, market approaches are preferable to non-market approaches.

C. Approaches to Internalizing Externalities

The FERC staff surveyed a spectrum of approaches, including:

1. Non-market approaches:
 - a. Set-Asides³¹
 - b. Emission Standards³²
2. Quasi-market approaches:
 - a. Adders³³
 - b. Social Cost Dispatch³⁴
3. Market approaches:
 - a. Emission Charges³⁵
 - b. Permit Systems³⁶

Market approaches tend to minimize costs overall and allow utilities flexibility in achieving environmental standards.

Finally, FERC staff observes that more research is needed on methods to estimate environmental impacts and approaches for internalizing externalities. The national experiment of a sulfur dioxide allowance trading market should yield valuable information on the use of market-oriented methods.

The section 808 study does not attempt to quantify external costs. Rather, it awaits the forthcoming results of the DOE/EC study. The FERC will forward these results to the Congress when completed.

D. Current status of DOE/EC study

The DOE/EC study team has completed draft reports for at least five of the eight fuel cycles: coal, oil, biomass, hydro and natural gas. Several of these are now being evaluated by peer-review panels. DOE expects to complete the final report(s) by the end of 1993. Early reports indicate the study

30. That is, if externalities of other fuels with which electricity competes in end-use markets are not required to be internalized, end-use consumers may make fuel choices and consumption decisions which are inefficient or result in greater emissions. Another "piecemeal" inefficiency occurs when powerplants are sited on the basis of differing externality regimes in various states.

31. In a set-aside, legislators or regulators require a particular portion of forecasted capacity additions to utilize certain technologies such as renewables.

32. Emission standards require a utility to adopt one or more specific control technologies (a "technology standard") or meet a particular emission limit (an "emission rate standard").

33. Adders impose an externality value on the private costs of generating alternatives when regulators consider resource additions.

34. Social cost dispatch requires system operators to add an externality value to the private costs of each plant when making dispatch decisions each day.

35. An emission charge (for example, a tax per unit of carbon dioxide emitted) encourages a producer to control emissions up to the point where its marginal control costs equal the charge.

36. A permit system achieves an overall limit on emissions of a pollutant by distributing the appropriate total number of individual rights (permits) to emit a certain amount of a pollutant. The tradeable sulfur-dioxide allowance scheme of the CAAA is a permit system.

will continue to have a high priority in the Clinton Administration.³⁷

IV. ALTERNATIVE FUEL VEHICLES

1992 was a watershed year for alternative fuel vehicles (AFV) as legislative and regulatory developments created new programs and incentives for the increased use of AFVs. The most significant of these actions was the enactment of the Energy Policy Act of 1992,³⁸ which included a combination of mandates and incentives for AFV use, as well as a variety of programs for research and development and dissemination of information concerning AFVs. Moreover, the Act provides for the federal government to take the lead in developing a market for AFVs by mandating significant AFV purchases for government fleets. On the regulatory front, actions by the FERC reduced potential regulatory restrictions on the sale of natural gas for AFVs, encouraging distributors to market natural gas as a vehicle fuel. Beyond the federal level, by the end of 1992, at least 26 states had in place policies promoting the development and use of AFVs.

A. Federal Legislation — The Energy Policy Act of 1992

The Energy Policy Act prescribes new standards and requirements concerning alternative fuel vehicles at both the state and federal level. Provisions pertaining to AFVs and AFV fleet requirements may be found in Titles III, IV, V, VI, VII, XIX, and XX of the Act. The Act establishes a goal of 10% alternative fuel use in the United States by the year 2000, increasing to 30% by 2010.

Title III provides general definitions and prescribes the minimum federal fleet requirements. Title IV addresses non-federal programs, including authorization for utilities' recovery of certain R & D expenses, the issuance of guidelines for state alternative fuel incentive programs, and the initiation of studies examining the potential use of alternative fuel vehicles for non-road uses. Title V concerns the availability and use of alternate fuels and AFVs, establishing requirements for alternate fuel providers, state and private fleet operators to phase-in use of AFVs. Titles VI, VII and XX mandate demonstration programs for electric vehicles (EV) and for associated equipment, infrastructure and support systems. Lastly, Title XIX contains tax incentives for AFVs and AFV refueling properties. The following discussion addresses these provisions in greater detail.

37. Late in the Bush Administration, DOE Assistant Secretary John Easton wrote to State Public Service Commissioners concerning DOE's externalities efforts. The letter, dated Dec. 22, 1992, summarized interim results of the DOE/EC study and attached a peer review of the 1989 Pace University externalities study. The peer review raised "serious questions about the overall credibility of the Pace Study and its usefulness as a basis for decision making." The Easton letter evoked a strong response from Richard Ottinger, Director of the Pace Energy Project. In a memorandum to State Public Service Commissioners dated January 21, 1993, Ottinger dismissed DOE's peer review as "pure politics" and raised questions about the DOE/EC study's approach. Ottinger also characterized the FERC section 808 report as treading improperly on state prerogatives by virtue of its recommendation that states proceed cautiously with their plans to internalize environmental externalities, pending receipt of improved data.

38. Energy Policy Act, 106 Stat. 2776.

1. Fleet Provisions

One of the key provisions of the Act is the requirement that fleet operators purchase increasing quantities of AFVs. For federal fleets, section 303 directs the federal government to acquire 5,000 light duty AFVs in fiscal year (FY) 1993, 7,500 in FY 1994, and 10,000 in FY 1995. Moreover, the Act also requires that AFVs comprise an increasing percentage of the total number of vehicles acquired by a federal fleet, beginning at 25% in 1996, and escalating to 75% in 1999 and subsequent years. Section 507 of the Act imposes similar requirements for state fleets, mandating that centrally fueled fleets in metropolitan areas with populations of 250,000 or more buy 10% of their new vehicles as AFVs in model year (MY) 1996, increasing to 75% in MY year 2000.

In addition, the Act requires private entities to increase their utilization of AFVs.³⁹ Section 501 directs DOE to issue regulations requiring that alternative fuel providers, such as gas and electric utilities and natural gas pipelines, phase in AFVs. Thirty percent of alternative fuel providers' new vehicles in MY 1996 must be AFVs,⁴⁰ ultimately increasing to 90 percent in 1999. Section 507 establishes a non-federal fleet program that requires any fleet (*e.g.*, corporate, private, or municipal) of 20 or more vehicles to purchase AFVs as 20% of all new vehicles in 1999 and 70% of all new vehicles by 2006.⁴¹

The provisions of the Act prescribing minimum AFV purchase and utilization requirements for certain federal, state and private fleets will serve as an important first step in creating a national market for AFVs. The Natural Gas Vehicle Coalition, an organization which promotes the use of AFVs, particularly those fueled by natural gas, has estimated that the federal fleet requirements alone will result in between 125,000 and 160,000 alternate fuel vehicles in use by the end of the decade. This figure, coupled with the demand for vehicles attributable to state and private fleet requirements, is expected to result in over one million AFVs in use throughout the country by 2000.

2. Tax Incentives

In addition to minimum AFV purchasing and utilization requirements, the Act also provides favorable tax treatment for users of AFVs. These provisions are set out in Title XIX of the Act. Section 1913 provides for an income tax credit equal to ten percent (but not to exceed \$4,000) of the cost of a qualified electric vehicle.⁴² Section 1913 also authorizes tax deductions of up

39. The requirement that non-government fleet operators be required to purchase minimum quantities of AFVs was not included in the original House version of the bill, H.R. 776. Rather, this provision originated in the Senate bill, and was carried forward into the Act as enacted.

40. Electric utilities that intend to use electric vehicles to meet the requirement may request that this date be extended to January 1, 1998, provided that they notify DOE by the end of 1995.

41. This provision will not be triggered unless the Secretary determines through a rulemaking initiated no later than November 1994 that the overall alternative fuel goal of 30 percent use by 2010 will not be attained. If the Secretary does not initiate a non-federal fleet program in the first rulemaking, he is directed to institute another rulemaking, not later than April of 1998.

42. A vehicle is a qualified electric vehicle if it is powered primarily by an electric motor, powered by a portable source of electricity, and is acquired for original use, and not for resale, by the taxpayer.

to \$2,000 for clean-fuel vehicles,⁴³ including the cost of an alternative fuel vehicle attributable to the clean-fuel burning engine, property used in the storage or delivery to the engine of the alternative fuel, and the cost of property used to retrofit a conventional vehicle to become a clean-fuel vehicle. This deduction, however, does not extend to electric vehicles qualifying for the ten percent tax credit. These credits are ultimately phased out, in 2002.

In addition, section 1913 allows deductions of up to \$100,000 for qualified clean-fuel vehicle refueling property, including property used for the storage or dispensing of a clean-burning fuel. Property dedicated to the recharging of electric motor vehicles is classified as clean-fuel vehicle refueling property if it is located at the point where the motor vehicle is recharged. Such property includes recharging equipment and connection equipment but does not include property used to generate electricity or the battery of the vehicle.

The Act's tax provisions will provide important incentives for investment in AFVs and the related infrastructure necessary to support their widespread use. These incentives are expected to work in tandem with the Act's fleet requirements to stimulate commercialization of AFV technology and to promote increased use of AFVs.

3. State Incentives

The 1992 Act also directs state governments to provide incentives to encourage AFV use. Section 409 requires the DOE to promulgate regulations establishing guidelines for state alternate fuel and AFV incentive plans. Individual states are "invited" to submit to the DOE plans providing for the introduction of substantial numbers of AFVs in the state by 2000. States are required to consider a variety of incentive programs to help promote AFVs, including: exemption of AFVs from certain state taxes; use of AFVs in state fleets; and special parking for AFVs in public buildings, at airports, and other transportation facilities. Governors may request technical and financial assistance from the federal government with regard to these programs.

4. Other Programs

The 1992 Act contains a number of additional provisions designed to promote the use of AFVs. These components of the Act, which include loan programs to fund vehicle conversions, AFV demonstration programs, and certain regulatory exemptions, are addressed below.

a. Low Interest Loan Program

The Act provides for financial assistance to small businesses that convert fleet vehicles to AFVs. Section 414 of the Act directs the DOE to establish a low interest loan program that will fund, primarily for small businesses, the incremental costs of vehicle conversions and purchases (including non-road

43. Clean-burning fuel is defined as natural gas, liquified natural gas, liquified petroleum gas, hydrogen, and any other fuel if at least 85% of the fuel is methanol, ethanol, or other alcohol, ether or any combination thereof.

vehicles).⁴⁴ The program will give preference to loan repayment schedules that enable the loans to be repaid by the borrower from the cost differential between gasoline and the alternative fuel.

b. Electric Vehicle Commercial Demonstration and Infrastructure Development

The Act also requires the DOE to conduct demonstration programs to increase the use of electric vehicles. Title VI of the Act establishes two such programs: an Electric Motor Vehicle Commercial Demonstration (Commercial Demonstration) Program (Subtitle A) and an Electric Motor Vehicle Infrastructure and Support Systems Development (Infrastructure and Support Development) Program (Subtitle B). The Commercial Demonstration Program seeks to demonstrate the viability of electric vehicles and to create an initial market. This program authorizes the Secretary of Energy to spend up to \$50 million over a ten-year period to support up to ten electric motor vehicle demonstration programs in selected metropolitan areas. The Act also directs the Secretary to request, within eighteen months, proposals for the development of demonstration electric vehicles. Four months after the close of the solicitation period, the Secretary will select demonstration projects to receive financial support, based upon criteria such as the ability of the manufacturer to assist in the demonstration; the suitability, safety and environmental effects of the proposed vehicle; the price differential between the electric vehicles and conventional vehicles; and the proportion of the vehicle made by domestic manufacturers. The program also provides for "discount payments" to users of electric vehicles. These payments are reimbursements intended to make the price of the electric vehicle to the user no more than the price of a similar conventional vehicle.

The introduction of electric vehicles poses a number of questions concerning the necessary supporting infrastructure, including how such vehicles will be maintained, the appropriate electric delivery systems, regulatory treatment, and safety. The Infrastructure and Support Development Program (Subtitle B) directs the Secretary to dedicate \$40 million over five years for up to ten joint ventures in the research, demonstration, development, and commercial application of systems designed to support the use of electric vehicles. Within a year of enactment, the Secretary will solicit proposals from geographically and climatically diverse areas of the country. The Secretary will consider programs in areas such as servicing vehicles, installing charging facilities, rate treatment of infrastructure development by electric utilities, safety and health procedures, information dissemination programs, and guidelines for battery charging, watering, and emissions.

Beyond these two programs, section 2025 directs the DOE to conduct a

44. Energy Policy Act § 414, 106 Stat. 2776, 2886.

five year R&D program on electric motor vehicles⁴⁵ and associated equipment in cooperation with the electric utility industry, the automobile industry, and battery manufacturers.

c. Urban Buses and School Buses

The legislation authorizes the DOE to enter into cooperative agreements and joint ventures with municipal, county, or regional transit authorities to demonstrate the commercial application of alternative fueled mass transit buses in urban areas with populations of 100,000 or more. Federal funding will be for 80% of the project costs, and private or municipal sector funding is required for the balance.

d. Regulatory Directives

i. AFV Research & Development Cost Recovery

Section 408 authorizes the FERC to consider environmental and other benefits of research and development on authorized fuel vehicles by the Gas Research Institute and the Electric Power Research Institute. If the FERC determines that the benefits to existing and future ratepayers exceed the direct costs of the research to these ratepayers, the FERC may allow natural gas pipelines and electric utilities to recover the costs for contributing to such research in their rates. The Act authorizes the FERC to allow recovery of these expenses in advance pursuant to section 4 of the Natural Gas Act (NGA) and section 205 of the Federal Power Act (FPA).

ii. Vehicular Natural Gas Exemption

The Act also exempts non-utilities (e.g., gasoline retailers) from federal and state regulation of the transportation and sale of natural gas by providing that the sale of vehicular natural gas (VNG) will not trigger regulation under federal or state law. Specifically, section 404(a) of the Act amends section 1 of the NGA to provide that persons not otherwise within the scope of the NGA will not become subject to regulation solely as the result of the sale of VNG. Section 404 also provides that a person engaged in VNG sales may not be subject to regulation under Public Utility Regulatory Policy Act (PURPA), and that the sale of VNG will not be regulated as part of the transportation and sale of natural gas under state law.

Section 404 built upon a recent FERC order which reduced significantly the regulatory barriers to the sale of natural gas as a vehicle fuel. In July of 1992, the Commission authorized sales of VNG pursuant to a blanket certificate, which would authorize any person to make jurisdictional sales of VNG

45. This includes hybrid electric vehicles that incorporate an electric power train into a liquid fueled vehicle.

without submitting a prior application or other filing with the FERC.⁴⁶ In addition, Order No. 543 codified the FERC's prior decision in *Northern Illinois Gas Co.*,⁴⁷ which held that natural gas sold as a vehicle fuel was "ultimately consumed" when the fuel is sold and delivered into a vehicle fuel tank, regardless of whether the vehicle subsequently travelled across state lines.⁴⁸ Thus, persons engaged in sales of vehicular natural gas will not risk losing their exemption from regulation under the NGA as a result of these sales.⁴⁹

B. State Actions

In addition to federal legislative and regulatory activities, important developments concerning AFVs have taken place at the state level.

1. California

On January 7, 1993, the EPA granted California a waiver of federal preemption pursuant to section 209(b) of the Clean Air Act, to enforce amendments to its motor vehicle emission standards and test procedures, allowing California to phase-in its substantially more stringent "low emission vehicle" (LEV) standards for light-duty vehicles.⁵⁰ Section 209(b) allows California to receive a waiver of federal preemption of its new motor vehicle emissions standards if those standards satisfy certain criteria because of the extraordinary and compelling air quality problems in that state.⁵¹ Section 177 of the Clean Air Act allows states to decide whether to follow the federal vehicle emissions standards or any stringent California type plan which has been granted waiver under section 209(b). Thus, the EPA's action here has a potentially nationwide impact.

The California motor vehicle emissions plan requires, beginning with the 1994 model year, that each manufacturer's fleet of light-duty vehicles meets an average non-methane organic gas (NMOG) requirement, which declines from 0.250 grams per mile (gpm) in 1994 to 0.062 gpm in 2003 and thereafter.⁵² California's plan also provides for four categories of light-duty vehicles which satisfy specific levels of NMOG, carbon monoxide (CO), oxides of nitrogen (NO_x), particulate matter (PM), and formaldehyde (HCHO) emissions. In order of decreasing emissions, these categories are transition LEV's (TLEVs) which meet the same standards as Tier I of the 1990 Clean Air Act emission

46. Order No. 553, *Regulations Governing Vehicular Natural Gas*, III F.E.R.C. Stats. & Regs. ¶ 30,948 (1992).

47. 20 F.E.R.C. ¶ 61,267 (1982).

48. *Id.* at 61,504.

49. However, if the state in which the person operates deregulates such sales, sales of VNG would then take place in accordance with the blanket certificate.

50. California State Motor Vehicle Pollution Control Standards; Waiver of Federal Preemption, 58 Fed. Reg. 4166 (Jan. 13, 1993); New York and Massachusetts have also adopted the California standards; *See generally Manufacturers argue Calif. program in N.Y. would mandate a third car*, THE ENERGY REPORT Jan. 18, 1993, at 19.

51. California State Motor Vehicle Pollution Control Standards; Waiver of Federal Preemption; Decision, Docket A-91-71, mimeo. at 3 and 46-57.

52. *Id.* at 12.

standards for CO, NO_x, PM and HCHO; LEVs, which meet or slightly exceed Phase I of the 1990 Clean Air Act emission standards for CO/NO_x; and ultra LEVs (ULEV), which roughly match the proposed Phase II standards.⁵³ The plan also provides for Zero Emission Vehicles (ZEV), which emit no pollutants, to make up 2% of new cars sold for 1998 through 2000, 5% in 2001 and 2002, and 10% in 2003. The ZEVs will be electric vehicles.⁵⁴ The plan allows manufacturers to choose what amount of what category of vehicles to produce in order to meet the average fleet standards, except for ZEVs, which must be produced in the amounts specified above. In a likely scenario suggested by the California Air Resources Board, manufacturer's new motor vehicle fleets must consist of at least 10% TLEVs in 1994 and 20% by 1996; 25% LEVs by 1997 and 75% by 2003, and 2% ULEVs by 1997 and 15% by 2003.⁵⁵

Because California is such a large market, and because its plan may be adopted by other states, the California plan has the potential to significantly encourage the development of alternative fuel vehicles in general and electric vehicles in particular.

C. New York

Following California's lead, in May of 1992 the New York State Department of Environmental Control (NYDEC) adopted California's strict tailpipe emission controls on motor vehicles. However, this action was challenged by the Motor Vehicle Manufacturers Association (MVMA), which sought to enjoin the implementation of these standards. The MVMA argued that New York's adoption of the California tailpipe emission standards violated several provisions of the Clean Air Act, alleging that New York had unlawfully failed to adopt the clean fuel provisions of the California standards, that the New York tailpipe standards would impose an "undue burden" and would require production of a "third vehicle" in violation of the Clean Air Act, and that the New York regulations violated a statutory prohibition on indirect sales limits of electric vehicles.

On January 22, 1993, the U.S. District Court for the Northern District of New York granted summary judgment in favor of the MVMA.⁵⁶ In granting summary judgment, the Court held that New York was not required to enact the clean fuels component of the California standards together with the tailpipe standards. New York was found to have violated the strict directives of the Clean Air Act which prohibits states from adopting standards that would require production of a "third" vehicle different from those meeting federal or California standards. The court also ruled that New York's regulatory requirement that a small percentage of vehicles sold be ZEVs constituted an impermissible limitation on the sale of California-certified vehicles and, because of differences between the New York and California markets, also

53. *Id.* at 14.

54. *Id.* at 12 and 15.

55. *Id.* at 15.

56. *Motor Vehicle Manufacturers Assoc. v. New York State Dep't of Env'tl. Conservation*, 1993 U.S. Dist. LEXIS 752 (N.D.N.Y. 1993).

violated the statute's "third vehicle" prohibition. NYDEC is expected to appeal the court's decision.

V. EXPORTING "GREEN" TECHNOLOGY UNDER THE ENERGY POLICY ACT

The Energy Policy Act of 1992 is generally devoted to domestic energy issues but there are provisions which are international in scope and purpose. Three such provisions promote the export of environmentally benign U.S. energy technology. These provisions establish the Innovative Renewable Energy Technology Transfer Program⁵⁷ (Renewables Program), the Innovative Environmental Technology Transfer Program⁵⁸ (Environmental Program), and the Innovative Clean Coal Technology Transfer Program (Clean Coal Program).⁵⁹ The programs are administered by the Department of Energy, often working through the Agency for International Development.

The Renewables Program and the Environmental Program mirror each other. The Renewables Program is intended to foster the development and exportation of non-polluting, renewable energy technologies. The Environmental Program is intended to foster the development and exportation of technology which reduces emissions caused in the production of energy. The Clean Coal Program involves a non-renewable, traditional energy source but is intended to foster the development and exportation of technologies which reduce emissions from coal burning plants.⁶⁰

A. *Section 1211: Innovative Renewable Energy Technology Transfer Program*

Section 1211 establishes the Renewables Program to be codified at 42 U.S.C. section 13316. Renewable energy technologies include: hydropower, photovoltaic electricity, wind energy, and solar thermal technologies.⁶¹

The purpose of the Renewables Program is to, *inter alia*: reduce the balance of trade deficit by exporting new technologies; create jobs; develop markets for U.S. renewable energy technologies to meet environmental and energy requirements of foreign countries; foster greater participation by U.S. firms in the financing, ownership, design, construction, or operation of renewable energy technology projects in foreign countries; and, assist U.S. firms in competing with non-U.S. firms in foreign countries.⁶²

In selecting the proposal, the Secretary of Energy (Secretary) is to consider, *inter alia*: the degree to which the equipment used is manufactured in the U.S.; the long term competitive viability of the U.S. technology and the ability of the U.S. company to compete in the development of additional

57. Energy Policy Act, § 1211, 106 Stat. 2776, 2965.

58. Energy Policy Act, 106 Stat. 2776, 3003.

59. Energy Policy Act, § 1608, 106 Stat. 2776, 2979.

60. Holding companies and utilities seeking to take advantage of the § 715 reformation of Public Utilities Holding Companies Act (PUHCA) restrictions and diversify abroad could consider whether these cost-sharing programs are compatible with their investment strategies.

61. Energy Policy Act § 1211, 106 Stat. at 2965.

62. *Id.* § 1211(b), 106 Stat. at 2965.

energy projects using such technology in the host country and in other foreign countries; the extent of technical and financial involvement of the host country in the project; and, the extent to which the project meets the purposes of the program.⁶³ The project should also do more than a comparable host country project could do to reduce emissions; to be cost-effective; or, to make greater use of indigenous renewable energy resources.⁶⁴

The Secretary is to establish the program, identify potential energy projects, and solicit proposals from U.S. firms for the design, construction, testing, and operation of the identified project.⁶⁵ Any solicitation will require: that the U.S. firm have an equity interest in the project, that the project utilize U.S. renewable energy technology in meeting the applicable energy and environmental requirements of the host country, and that the proposal is submitted by a U.S. firm.⁶⁶

The solicitation is to be modeled after the Clean Coal Technology program.⁶⁷ That domestic program is administered by the Department of Energy (DOE) pursuant to 42 U.S.C. section 5903(d) (1992). The DOE issues Program Opportunity Notices (PONs) for projects that demonstrate technologies which reduce emissions from coal burning plants.⁶⁸ The project sponsor might be issued a grant or offered a contract or cooperative agreement.⁶⁹

The 1992 Act authorizes the establishment of a mechanism to provide financial assistance to U.S. firms to participate in energy projects in developing countries utilizing U.S. energy technologies but the provision is less than clear.⁷⁰ Financial assistance may be provided in combination with non-U.S. funding that is available to the project or may be used to create a financing package for renewable energy technology projects financed through other governmental programs.⁷¹ Under the domestic Clean Coal Technology Program (the model for selection but not necessarily for the financial mechanism), the DOE finances up to 50% of the project, sharing the costs with the project sponsor at each phase of the project (ie. design, construction, and operation).⁷² If the demonstration project turns commercial profits, the sponsor might be required to repay the government's share on an annual repayment schedule

63. *Id.* § 1211(h)(2), 106 Stat. at 2967.

64. *Id.* § 1211(h)(3), 106 Stat. at 2968.

65. *Id.* § 1211(c), (e), 106 Stat. at 2966.

66. *Id.* § 1211(e)(3), 106 Stat. at 2966.

67. *Id.* § 1211(e)(2), 106 Stat. at 2966.

68. 48 C.F.R. § 917.72 (1991).

69. See 10 C.F.R. Pt. 600 (Financial Assistance Rules); 48 C.F.R. Pt. 917 (1991) (Special Contracting Methods).

70. See *supra* note 57, § 1211(d), 106 Stat. at 2966. Federal funds are to be used, in part, to counterbalance the financial assistance provided by foreign governments to their companies with which U.S. companies must compete in the global economy.

71. *Id.* at § 1211(d)(2).

72. Projects may be divided into budgeting periods, with a separate application made to continue beyond each period. See 10 C.F.R. § 600.21. If the DOE appropriated funds are not available, the DOE could disapprove continuation of the cost-sharing. In their dissenting views, certain members of the House Committee on Science, Space, and Technology questioned the fiscal responsibility of the overall spending in the Energy Policy Act, which necessarily includes the technology transfer programs, in light of the deficit. H.R. Rep. No. 102-474, 102d Cong., 2d Sess., pt. 2, at 201.

out of the gross revenues from equipment sales/leases and the royalties and licensing fees.

Congress has appropriated \$1 million to the Renewables Program for each of the fiscal years 1993 through 1998. As a six year program, it is what the House Committee on Science, Space, and Technology might call a "mid-goal" program, authorized to extend between five and ten years.⁷³

B. Section 1608: Innovative Environmental Technology Transfer Program

Section 1608, which will be codified at 42 U.S.C. section 13387, establishes the Environmental Program for the exportation of pollution control technology and related services to foreign energy producers. The House Committee on Energy and Commerce called the program a "win-win" policy for the environment and for United States competitiveness. It establishes a cost-sharing program for transferring U.S. technology that will result in significant reductions in greenhouse gas emissions and increased markets for U.S. industry.⁷⁴

The purposes of the Environmental Program run parallel to those of the Renewables Program and the Clean Coal Program, discussed below. This program, however, is intended to transfer technology to reduce environmental pollutants from the host country's developing energy industry.⁷⁵ The Secretary is to identify potential energy projects in host countries that substantially reduce environmental pollutants, including greenhouse gases.⁷⁶ Eligible projects might also include technologies which do not emit pollutants, such as: fuel cell power plants, aeroderivative gas turbines, ocean thermal energy conversion technology, and anaerobic digester and storage tanks.⁷⁷

The selection process is similar to that for the Renewables Program. In addition, the project should do more than a comparable project in the host country to increase overall efficiency of energy use.⁷⁸

Project solicitation runs parallel to that provided for in the Renewables Program and is also to be modeled after the Clean Coal Technology program.⁷⁹ Any solicitation will require that the project utilize U.S. energy technologies and related services that substantially reduce greenhouse gas emissions in the production of energy.⁸⁰ The Environmental Program is a "mid-goal" program, with \$1 million dollars appropriated for each of the next six fiscal years.⁸¹

73. H.R. Rep. No. 102-474, 102d Cong., 2d Sess., pt. 2, at 68.

74. H.R. Rep. No. 102-474, 102d Cong., 2d Sess., pt. 1, at 152. Carbon Dioxide, produced by the combustion of fossil fuels, is the most prevalent of the greenhouse gases which include Nitrous Oxide and methane. Carbon Dioxide clogs the atmospheric window through which the earth would otherwise vent heat and in so doing contributes to the so-called greenhouse effect.

75. Energy Policy Act § 1608, 106 Stat. at 3003.

76. *Id.* § 1608(c), 106 Stat. at 3004.

77. *Id.* § 1608(h), 106 Stat. at 3006.

78. *Id.* § 1608(i)(3)(C), 106 Stat. at 3006.

79. *Id.* § 1608(e), 106 Stat. at 3005.

80. *Id.* § 1608(e)(3)(B), 106 Stat. at 3005.

81. *Id.* § 1608(n), 106 Stat. at 3007.

C. Section 1332: Innovative Clean Coal Technology Transfer Program

Section 1332 establishes the Clean Coal Program which is to be codified at 42 U.S.C. section 13362. In addition to balance-of-trade-deficit reduction and job creation espoused by the other technology transfer programs, the Clean Coal Program is to develop markets for U.S. clean coal technologies as well as coal resources.⁸²

Project solicitation and selection mechanics of this program parallel those of the other two technology transfer programs. In addition, the proposed project must use U.S. coal resources, where appropriate, to meet the host country's environmental and energy needs.⁸³ The project must also meet one of three criteria in a manner which exceeds that of any comparable host country project, *e.g.*, increased efficiency of the utilization of coal, including energy conversion efficiency, and, where appropriate, production of products derived from coal.⁸⁴

The financial provisions of the Clean Coal Program are slightly different from those of the other programs.⁸⁵ For example, financial assistance for this program expressly targets countries which are moving from non-market to market economies.⁸⁶ In addition, the program's financial assistance includes financing incremental costs attributable only to expenditures to prevent or abate emissions. Financing might cover only the difference between the costs of a conventional coal project in the host country and a clean coal project.⁸⁷ The Clean Coal Program is a "mid-goal" program, with 1 million dollars appropriated for each of the next six fiscal years beginning in 1993.⁸⁸

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82. *Id.* note 59, § 1332(b), 106 Stat. at 2979.

83. *Id.* § 1332(e), (h), 106 Stat. at 2981, 2982.

84. *Id.* § 1332(h)(3)(B), 106 Stat. at 2983.

85. *See, e.g.*, H.R. Rep. No. 102-474, 102d Cong., 2d Sess., pt. 1, at 212. The House Committee on Energy and Commerce contemplated that the government would share up to 50 per centum of project costs under this program.

86. Energy Policy Act § 1332(d)(1)(A), 106 Stat. at 2981.

87. *Id.* § 1332(d), 106 Stat. at 2981.

88. *Id.* § 1332(m), 106 Stat. at 2984.