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ZERO EMISSION VEHICLES: THE AIR POLLUTION MESSIAH? NORTHEASTERN STATES MANDATE ZEVs WITHOUT CONSIDERING THE ALTERNATIVES OR CONSEQUENCES

DAVID BENNETT*

Shortly after Congress adopted the 1990 Clean Air Act ("CAA") Amendments,¹ Massachusetts and New York passed a California-type Low Emission Vehicle ("LEV") automobile emissions program.² These programs were in reaction to the Environmental Protection Agency's ("EPA") designation that there were National Ambient Air Quality Standard ("NAAQS") nonattainment areas in the states.³ The states had to submit State Implementation Plans ("SIPs") to the EPA to explain the actions each state was planning in order to reduce pollution levels within the nonattainment areas.⁴

Automobile manufacturers quickly filed suits against the states' environmental departments claiming that the state programs violated the CAA by not exactly adopting the California automobile standards thereby creating

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¹ Pub. L. No. 101-549, 104 Stat. 2399 (codified as amended at 42 U.S.C. §§ 7401-7671q (Supp. V 1993)).

² See MASS. GEN. L. ch. 111, § 142 (1995) (adopting the California motor vehicle emission standards); 6 N.Y. COMP. CODES R. & REGS. tit. 6, § 218 (1995) (adopting the California motor vehicle emission standards). California has an emissions program with four classes of vehicles each with increasingly stricter emissions standards with the final class having no emissions. See *infra* part I.A.3. Automakers have discretion to implement the classes in order to meet an allowable emissions fleet-average which declines through the year 2003. See *infra* part I.A.3.

³ See 56 Fed. Reg. 56,694, 56,776, 56,804-05 (1991) (designating the entire state of Massachusetts as a "serious" nonattainment area for the ozone NAAQS, eight New York counties as "moderate" nonattainment areas for carbon monoxide, and 22 New York counties for nonattainment of the ozone NAAQS).

⁴ See CAA §§ 181(a)(1), 186(a)(1), 42 U.S.C. §§ 7511(a)(1), 7512(a)(1) (Supp. V 1993) (requiring states to prepare a SIP adequate to meet federal air quality standards by specific dates).

a third vehicle.⁵ The manufacturers lost in suits brought against Massachusetts⁶ and New York⁷ and have since been in discussions with those states which form the Ozone Transport Region,⁸ including Massachusetts and New York, to modify the state automobile emission programs. The main focus of the discussion is the mandated sale of a certain percentage of Zero Emission Vehicles ("ZEV"), subject to heavy penalties for noncompliance.

The reduction of air pollution to protect the public health and welfare is a worthy project for the government, both nationally and at the state level. The burden of improving the air quality, however, should not be passed on to the automobile industry through the mandated sales of ZEVs. ZEVs designed for mass production have not been fully tested for performance and safety and their premature introduction to the consumer could have disastrous environmental and economic consequences. The cost of manufacturing ZEVs is not comparable to similar performance internal combustion engines. Therefore, to sell the required percentage of ZEVs in the Ozone Transport Commission ("OTC"), automakers may have to subsidize the vehicles through increasing all vehicle prices nationwide.

ZEVs should be a part of any automobile pollution reduction plan but not in a mandated form. The introduction of LEVs and programs to reduce consumer reliance on the automobile should also be included in a "clean air" plan. States should be willing to compromise with the automobile

⁵ See *American Auto. Mfrs. Ass'n v. Greenbaum*, No. CIV.A.93-10799-MA, 1993 WL 443946 (D. Mass. Oct. 27, 1993) [hereinafter *AAMA I*], *aff'd sub nom.* *American Auto. Mfrs. Ass'n v. Commissioner, Mass. Dep't of Env'tl. Protection*, 31 F.3d 18 (1st Cir. 1994) [hereinafter *AAMA II*] (automobile manufacturers suing over Massachusetts' adoption of the California LEV program); *Motor Vehicle Mfrs. Ass'n of the United States v. New York State Dep't of Env'tl. Conservation*, 810 F. Supp. 1331 (N.D.N.Y. 1993) [hereinafter *MVMA I*], *judgment vacated in part, decision remanded in part on recon.*, 831 F. Supp. 57 (N.D.N.Y. 1993) [hereinafter *MVMA II*], *judgment aff'd in part, rev'd in part*, 17 F.3d 521 (2d Cir. 1994) [hereinafter *MVMA III*] (automobile manufacturers suing over New York's adoption of the California LEV program).

⁶ See *AAMA II*, *supra* note 5, at 18.

⁷ See *MVMA III*, *supra* note 5, at 521.

⁸ The Ozone Transport Region includes the District of Columbia and 12 northeastern states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and the part of Virginia which is within the Consolidated Metropolitan Statistical Area that includes the District of Columbia. National LEV Program Proposal, 60 Fed. Reg. 52,734, 52,736 (proposed Oct. 10, 1995). These 12 states and the District of Columbia are also collectively known as the Ozone Transport Commission. *Id.*

manufacturers to produce a plan that is not just the easiest to legislate and regulate but the best way to reduce air pollution.

This Note will analyze the controversy surrounding the mandated sale of ZEVs. Part I describes the history of automobile emission regulation and the background leading up to the state and automobile manufacturer controversy. Part I.A. discusses the history of the CAA and its amendments with respect to automobile emissions and the California LEV program. Part I.B. examines state adoption of California-type LEV programs and resulting litigation.

Part II discusses the currently available technology for LEVs and ZEVs, focusing on the shortcomings of the technology and the unknown factors which have yet to be considered before the technology is fully adopted. Part III analyzes the federal government's past automobile pollution control mandates and regulations. Additionally, the states' response to the 1990 CAA amendments' NAAQS requirements is examined, along with alternatives to a mandated compliance program, which states have not considered or are not willing to consider.

I. REGULATORY HISTORY OF AUTOMOBILE EMISSION CONTROL AND THE BACKGROUND BEHIND THE STATE AND AUTOMOTIVE MANUFACTURER CONTROVERSY

A. *The Clean Air Act and the California LEV Program*

1. *Clean Air Legislation Before the Clean Air Act of 1970*

a. *Air Pollution Control Act of 1955*⁹

In 1955, Congress passed the first air pollution legislation in the form of the Air Pollution Control Act of 1955 ("APCA").¹⁰ The APCA provided funding for research and training to evaluate pollution and its associated health problems to aid states in abating pollution.¹¹ The APCA, however, did

⁹ Air Pollution Control—Research and Technical Assistance Act of 1955, Pub. L. No. 84-159, ch. 360, 69 Stat. 322 (1955).

¹⁰ *MVMA III*, *supra* note 5, at 524 ("The original Clean Air Act, enacted by Congress in 1955, was aimed primarily at increasing federal research and assistance in air pollution prevention.").

¹¹ Pub. L. No. 84-159, §§ 2, 5, 69 Stat. 322-23 (1955).

not have any provisions creating abatement actions or sanctions for a state's failure to reduce pollution, nor did it create federal motor vehicle emission standards.¹²

b. *Motor Vehicle Air Pollution Control Act of 1965*¹³

In 1965, the Senate Committee on Public Works, noting that several states had begun to adopt their own motor vehicle emission standards, proposed national emission standards for new motor vehicle engines.¹⁴ Congress subsequently enacted the Motor Vehicle Air Pollution Control Act ("MVAPCA"), which replaced Title II of the Clean Air Act of 1963.¹⁵ Under MVAPCA, the Secretary of Health, Education, and Welfare was authorized to promulgate automobile emission standards.¹⁶ Although there is evidence that members of Congress recognized the need for the nation to reduce its dependency on automobiles to abate air pollution,¹⁷ MVAPCA contained no provisions to change motorist behavior.

c. *Air Quality Act of 1967*¹⁸

Despite passage of MVAPCA, several states continued to enact their own automotive emission standards, ignoring the MVAPCA standards.¹⁹ Congress responded by passing the Air Quality Act of 1967 ("AQA"). The purpose of the AQA was to "protect and enhance the quality of the Nation's

¹² See *id.*; *MVMA III*, *supra* note 5, at 524.

¹³ Motor Vehicle Air Pollution Control Act of 1965, Pub. L. No. 89-272, 79 Stat. 992 (1965).

¹⁴ See S. REP. NO. 192, 89th Cong., 1st Sess. 5-6 (1965).

¹⁵ Clean Air Act of 1963, Pub. L. No. 88-206, 77 Stat. 392 (1963).

¹⁶ Pub. L. No. 89-272, § 202(a), 79 Stat. 992-93 (1965).

¹⁷ See, e.g., H.R. REP. NO. 899, 89th Cong., 1st Sess. 44-45 (1965), *reprinted in* 1965 U.S.C.C.A.N. 3608, 3647-48. In a report prepared by the Federal Power Commission, Joseph C. Swidler, Chairman of the Commission, stated that to abate pollution in urban areas, industry needed to develop rechargeable automobile batteries. *Id.* at 44-45. "[E]nergy conversions in modern electric powerplants are far more efficient than those in internal combustion auto engines" Thus, electric cars would significantly reduce a major source of air pollution (automobiles). Swidler also recommended the creation of an electric mass transit system. See *id.* at 45.

¹⁸ Air Quality Act of 1967, Pub. L. No. 90-148, 81 Stat. 485 (codified as amended at 42 U.S.C. § 1857 (Supp. III 1968)).

¹⁹ *MVMA III*, *supra* note 5, at 525.

air resources, so as to promote the public health and welfare and the productive capacity of its population,"²⁰ and to "initiate and accelerate a national research and development program to achieve the prevention and control of air pollution."²¹

The AQA required the Air Quality Advisory Board of the Department of Health, Education, and Welfare to establish air quality criteria for widespread and pervasive air pollutants.²² The AQA directed the Board to determine the health and welfare effects of pollutants such as sulfur dioxide, nitrogen oxides, and particulate matter.²³ States were required to develop, administer, and enforce air quality standards based on the federal criteria.²⁴

The AQA also imposed a federal preemption over motor vehicle emission standards.²⁵ The Secretary of Health, Education, and Welfare was directed by the AQA to establish nationally applicable emission standards²⁶ and fuel and fuel additive registration programs.²⁷ In promulgating these standards, the Secretary of Health, Education, and Welfare was required to take into account the economic and technological feasibility of its standards.²⁸ California was exempted from the federal preemption because it was the only state to regulate automobile emissions before March 30, 1966.²⁹

²⁰ Pub. L. No. 90-148, § 2, 81 Stat. 485 (1967) (amending CAA § 101(b)(1)).

²¹ *Id.* (amending CAA § 101(b)(2)).

²² *Id.* § 2, 81 Stat. 491, 498 (amending CAA §§ 107(b)(1), 110).

²³ *Id.* § 2, 81 Stat. 491 (amending CAA § 107(b)(2)).

²⁴ *Id.* § 2, 81 Stat. 491-97 (amending CAA § 108).

²⁵ *See id.* § 2, 81 Stat. 501 (amending CAA § 208(a)).

²⁶ *Id.* § 2, 81 Stat. 499 (amending CAA § 202).

²⁷ *Id.* § 2, 81 Stat. 502-03 (amending CAA § 210).

²⁸ *Id.* § 2, 81 Stat. 499 (amending CAA § 202(d)).

²⁹ *See id.* § 2, 81 Stat. 501 (amending CAA § 208(b) to permit waiver of preemption); *see also* S. REP. NO. 403, 90th Cong., 1st Sess. 33 (1967) (noting that California's then-Senator Murphy convinced the Senate that California's "unique problems and [its] pioneering efforts" warranted a waiver from the preemption). California was the only state exempted under this section. *See MVMA III*, *supra* note 5, at 525.

2. *Clean Air Act Amendments of 1970 and Succeeding Amendments*

a. *Clean Air Act Amendments of 1970*³⁰

Congress passed the Clean Air Act Amendments of 1970 in order for the federal government to gain a more prominent role in controlling pollution while preserving the states' primary role of air pollution control.³¹ Through the Environmental Protection Agency, the federal government developed air quality criteria based on specific public health and welfare concerns.

The Act required the EPA to establish a NAAQS which defined specific levels of air quality that must be achieved in order to protect public health and welfare.³² The NAAQS was used as a basis for the limitation of individual source emissions to be established by the states through SIPs.³³ The EPA would have a continuing oversight role to ensure that the states implemented and enforced the requirements of the Act pertaining to the NAAQS.³⁴ If a state did not develop adequate SIPs, the EPA would step in to implement the Act for the state.³⁵ For the separate issue of mobile source pollution, Congress balanced environmental and economic concerns and set specific, technology enforcing emission standards and deadlines for attainment.³⁶

b. *1977 Clean Air Act Amendments*

In response to a wave of litigation over the Clean Air Act, Congress

³⁰ Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676 (codified as amended at 42 U.S.C. §§ 7401-7642 (1988 & Supp. V 1993)).

³¹ See *A Clean Air Act Primer: Part I*, 22 Env'tl. L. Rep. (Env'tl. L. Inst.) 10,159, 10,161 (Mar. 1992); F. WILLIAM BROWNELL ET AL., GOVERNMENT INSTITUTES, INC., CLEAN AIR HANDBOOK 3 (2d ed. 1993).

³² Pub. L. No. 91-604, § 4(a), 84 Stat. 1678-80 (adding CAA §§ 108, 109) (codified as amended at 42 U.S.C. §§ 7408, 7409 (1988 & Supp. V 1993)).

³³ See *id.* § 4(a), 84 Stat. 1681 (adding CAA § 110(a)(1)) (codified as amended at 42 U.S.C. § 7410(a)(1) (Supp. V 1993)).

³⁴ See *id.*

³⁵ *Id.* (adding CAA § 110(c)) (codified as amended at 42 U.S.C. § 7410(c) (1988 & Supp. V 1993)).

³⁶ See *id.* § 6(a), 84 Stat. 1690 (amending CAA § 202(b)(1)(B)) (codified at 42 U.S.C. § 7521(b)(1)(B) (1988)).

amended the Clean Air Act in 1977.³⁷ Through the amendments, Congress backed down from some of automotive emission requirements of the CAA Amendments of 1970 by adjusting the dates for attainment of the NAAQS.³⁸ The 1977 amendments, however, did require that nonattainment areas make "reasonable further progress" toward attainment through annual incremental reductions in emission of air pollutants.³⁹ Congress was attempting to "find the proper balance between federal compulsion and state discretion to reconcile national, regional, and local interests."⁴⁰

c. 1990 Amendments to the Clean Air Act

Congress renewed the national commitment to clean air and the public health and welfare by further amending the Clean Air Act in 1990.⁴¹ The amendments strengthened the enforcement provisions of the CAA by reevaluating the nonattainment programs⁴² and mobile source, fuel, and fuel additives programs.⁴³

Amendments to Title I set new requirements for areas that do not attain ambient air quality standards.⁴⁴ An incremental approach to attainment of the NAAQS was emphasized by the amendments through ranking areas by the seriousness of the nonattainment problem, and providing more stringent controls and longer deadlines for areas with more serious nonattainment problems.⁴⁵

Modifications of the SIP program increased both federal control over

³⁷ Clean Air Act Amendments of 1977, Pub. L. No. 95-95, 91 Stat. 685 (codified as amended in scattered sections of 42 U.S.C.).

³⁸ See *id.* § 129(b), 91 Stat. 746 (amending CAA § 172(a)(1)(C)) (codified as amended at 42 U.S.C. § 7502(a)(1)(C) (1988 & Supp. V 1993)).

³⁹ See *id.* § 129(b), 91 Stat. 745-77 (amending CAA §§ 171(1), 172(c)(2)) (codified as amended at 42 U.S.C. §§ 7501(1), 7502(c)(2) (Supp. V 1993)).

⁴⁰ BROWNELL, *supra* note 31, at 15.

⁴¹ 1990 Clean Air Act Amendments, Pub. L. No. 101-549, 104 Stat. 2399 (codified at 42 U.S.C. §§ 7401-7671q (Supp. V 1993)).

⁴² See Title I of the CAA, 42 U.S.C. §§ 7401-7515 (Supp. V 1993). For a general discussion regarding the amended requirements, see BROWNELL, *supra* note 31, at 18-20.

⁴³ See Title II of the CAA, 42 U.S.C. §§ 7521-7574 (Supp. V 1993). For a general discussion regarding the amended requirements, see BROWNELL, *supra* note 31, at 21.

⁴⁴ BROWNELL, *supra* note 31, at 18.

⁴⁵ *Id.*

air pollution regulation and state accountability.⁴⁶ Once a state adopted a SIP, the EPA was required to review the SIP to determine the adequacy of the plan with respect to the CAA criteria.⁴⁷ The EPA was allowed to approve individual aspects of the SIP without approving or rejecting the submittal of the SIP as a whole.⁴⁸ If the EPA deemed the SIP to be unsatisfactory, then the EPA was required to promulgate a federal implementation plan.⁴⁹

Title II was significantly amended through the substantial tightening of mobile source emission standards and by the creation of two new fuel requirements to achieve automotive emission reductions.⁵⁰ The amendments reduced tailpipe emissions of hydrocarbons and nitrogen oxides by thirty-five percent and sixty-five percent respectively, over previous emission standards. The new tailpipe emission standards applied to 40% of the vehicles sold in 1994, and to all vehicles sold in 1996.⁵¹ A further reduction of 50% in mobile source emissions would be implemented in 2003 unless it would be technologically infeasible, not cost-effective, or if air quality improved to such a level that it would become unnecessary.⁵²

The two new fuel-related programs dealt with reformulated fuels and clean fuels.⁵³ In certain carbon monoxide and severe ozone nonattainment areas, the sale of special reformulated gasoline would be required beginning in 1992 and 1995.⁵⁴ The reformulated gasoline was designed to reduce volatile organic chemicals and tailpipe emissions of toxic air pollutants.⁵⁵

The clean fuels⁵⁶ program set more stringent emission standards than the reformulated fuel program.⁵⁷ The amendments established a California pilot test program which required the production and sale of 300,000 clean

⁴⁶ *Id.*

⁴⁷ *Id.* at 19.

⁴⁸ CAA § 112(f), 42 U.S.C. § 7412(f) (Supp. V 1993).

⁴⁹ 42 U.S.C. § 7410(c)(1) (Supp. V 1993).

⁵⁰ BROWNELL, *supra* note 31, at 21.

⁵¹ CAA § 202, 42 U.S.C. § 7521 (Supp. V 1993).

⁵² *Id.*

⁵³ CAA §§ 211(k), 241-250, 42 U.S.C. §§ 7545(k), 7581-7590 (Supp. V 1993).

⁵⁴ CAA § 211(k)(8), (m), 42 U.S.C. § 7545(k)(8), (m) (Supp. V 1993).

⁵⁵ CAA § 211(k)(1), 42 U.S.C. § 7545(k)(1) (Supp. V 1993).

⁵⁶ These regulated fuels include methanol, ethanol, natural gas, and reformulated gasoline. 42 U.S.C. § 7581(2) (Supp. V 1993).

⁵⁷ BROWNELL, *supra* note 31, at 21.

fuel vehicles annually by 1999.⁵⁸ The test program was based upon the clean fuel program, which required operators of centrally-fueled fleets of ten or more vehicles in certain carbon monoxide and ozone nonattainment areas to purchase and use clean fuel vehicles beginning in 1998.⁵⁹

After the 1990 Amendments to the CAA, states still have the primary responsibility for controlling air quality within their borders.⁶⁰ States are required to develop SIPs that specify the manner in which the primary and secondary NAAQS will be achieved.⁶¹ The SIPs must still be submitted to the EPA to ensure that the plans meet minimum requirements.⁶²

Sanctions for inadequate SIP submittal are severe. The EPA Administrator may cut off federal highway funding⁶³ or require additional emission offsets of at least two-to-one for new or modified sources seeking new source permits until the state corrects its clean air deficiency.⁶⁴ If the state fails to correct the deficiency within six months, the Administrator may implement both sanctions until there is compliance.⁶⁵ If a state fails to comply with the requirement regarding the review of new source permits in nonattainment areas, the Administrator may ban the construction or modification of any major source of emissions in the nonattainment area.⁶⁶

The 1990 amendments contained several measures to reduce the mobile source emissions in nonattainment areas. Each state containing any carbon monoxide or ozone nonattainment area classified as serious or worse must implement an enhanced motor vehicle inspection and maintenance program in the nonattainment area if the area has a 1980 population of 200,000 or more.⁶⁷ These states are required to submit a SIP revision adopting specific transportation control measures sufficient to offset any growth in emissions resulting from an increase in "vehicle miles traveled," and to attain reasonable progress toward the required periodic emission

⁵⁸ CAA § 249, 42 U.S.C. § 7589 (Supp. V 1993).

⁵⁹ CAA § 246(b), 42 U.S.C. § 7586(b) (Supp. V 1993).

⁶⁰ CAA §§ 107, 110, 42 U.S.C. §§ 7407, 7410 (1988 & Supp. V 1993).

⁶¹ CAA § 110(f), 42 U.S.C. § 7410(f) (Supp. V 1993).

⁶² *Id.*

⁶³ CAA § 179(b)(1), 42 U.S.C. § 7509(b)(1) (Supp. V 1993).

⁶⁴ CAA § 179(b)(2), 42 U.S.C. § 7509(b)(2) (Supp. V 1993). The 2:1 offset means that for every new unit of pollution permitted, two previously permitted units of pollution must be withdrawn. *Id.*

⁶⁵ CAA § 179(a), 42 U.S.C. § 7509(a) (Supp. V 1993).

⁶⁶ CAA § 113(a)(5), 42 U.S.C. § 7413(a)(5) (Supp. V 1993).

⁶⁷ CAA § 182(c)(3)(A), 42 U.S.C. § 7511(c)(3)(A) (Supp. V 1993).

reductions.⁶⁸

3. California's "Low Emission Vehicle/Clean Fuel" Program

California is the only state that adopted its own vehicle emission standards prior to March 30, 1966, and is therefore exempt from the federal automobile emissions standards preemption.⁶⁹ The exemption allows California to maintain its own emissions standards subject to EPA approval.⁷⁰ The CAA requires automobiles manufactured for sale in the United States to be either a "federal car"⁷¹ or a "California car."⁷² This requirement avoids "placing an undue burden on the automobile manufacturing industry"⁷³ by prohibiting any states from creating a vehicle standard different from the federal or California emission standards.⁷⁴ Other states may opt-in to the California program by adopting standards that are identical to those of California.⁷⁵

California's emission limitation plan was created by the California Air Resources Board as directed by the California legislature.⁷⁶ The Board's task was "to adopt the most cost-effective combination of motor vehicle controls, vehicle fuel restrictions, and in-use vehicle control requirements to achieve a fifty-five percent reduction in organic gas emissions by December 31, 2000."⁷⁷

California adopted a LEV program that created four classes of light and medium duty passenger vehicles to be phased-in over the next decade: Transitional Low-Emission Vehicles, LEVs, Ultra-Low-Emission Vehicles,

⁶⁸ CAA §§ 182(d)(1), 187(a)(2)(B), 187(b)(2), 42 U.S.C. §§ 7511a(d)(1), 7512a(a)(2)(B), 7512a(b)(2) (Supp. V 1993).

⁶⁹ See S. REP. NO. 403, 90th Cong., 1st Sess. 33 (1967).

⁷⁰ CAA § 209(b)(2), 42 U.S.C. § 7543(b)(2) (Supp. V 1993). See *MVMA III*, *supra* note 5, at 526. California, however, does not require EPA approval for its fuel regulation program. See CAA § 211(c)(4)(B), 42 U.S.C. § 7545(c)(4)(B) (1988).

⁷¹ Automobiles must be "certified to meet federal vehicle emission standards as set by the EPA." *MVMA III*, *supra* note 5, at 526-27.

⁷² Automobiles must be "certified to meet California's emission standards." *Id.* at 527.

⁷³ *Id.*

⁷⁴ This is the "third vehicle" prohibition. See 1990 CAA Amendments, Pub. L. No. 101-549, § 232, 104 Stat. 2399, 2529.

⁷⁵ CAA § 177, 42 U.S.C. § 7507 (1988 & Supp. V 1993).

⁷⁶ See CAL. HEALTH & SAFETY CODE §§ 39,002, 43,018 (West 1996).

⁷⁷ *MVMA III*, *supra* note 5, at 528; CAL. HEALTH & SAFETY CODE § 43,018 (West 1996).

and ZEVs.⁷⁸ Each vehicle category set a more stringent emission standard for carbon monoxide, nitrogen oxides, and formaldehyde.⁷⁹ All the vehicles sold in California by a manufacturer in a given year must meet an overall "fleet average" emission requirement.⁸⁰

The fleet average emissions requirement took effect in 1994 and declines each year until 2003.⁸¹ Fleet averaging allows automobile manufacturers flexibility to determine the volume and class of vehicle to manufacture and sell.⁸² The only mandatory vehicle requirement for fleet averaging is a sales quota for ZEVs.⁸³ Two percent of all vehicles certified for sale in California must be ZEVs in 1998, increasing to five percent in 2001 and to ten percent in 2003.⁸⁴ All manufacturers who sell more than 35,000 light and medium duty vehicles in California must meet the ZEV sales quota or be subject to fines.⁸⁵

The California regulations also have a clean fuel component.⁸⁶ The clean fuel plan introduces reformulated gasoline into California in two steps.⁸⁷ The reformulated gasolines have a lower sulfur content than gasoline sold in the rest of the nation.⁸⁸ Even before Phase II gasoline was introduced, California allowed vehicle manufacturers to certify, both pre-sale and in-use, their new vehicles using a Phase II-type fuel.⁸⁹

⁷⁸ See CAL. CODE REGS. tit. 13, § 1960.1(g)(1) (1995).

⁷⁹ *Id.*

⁸⁰ See *id.* § 1960.1(g)(2) (1995); *MVMA III*, *supra* note 5, at 528.

⁸¹ CAL. CODE REGS. tit. 13, § 1960.1(g)(2) (1995).

⁸² See *MVMA III*, *supra* note 5, at 528. Additionally, manufacturers have the ability to earn emission "credit" for selling more LEVs than required to meet the fleet average. *Id.* Credits may be used to offset future emission shortfalls or may be sold to other manufacturers. *Id.*

⁸³ *Id.*

⁸⁴ CAL. CODE REGS. tit. 13, § 1960.1(g)(2) (1995).

⁸⁵ *Id.* Beginning in 2003, the ZEV sales quota applies to all manufacturers who sell more than 3,000 vehicles in California. *Id.*

⁸⁶ CAL. CODE REGS. tit. 13, §§ 2300-2317 (1995).

⁸⁷ *Id.* Phase I gasoline must be sold in California after January 1, 1992. Phase II, with more stringent requirements, was implemented March 1, 1996. See *id.*; *MVMA III*, *supra* note 5, at 529.

⁸⁸ *MVMA III*, *supra* note 5, at 529. For example, Venezuelan gasoline sold on the east coast has a high sulphur content. *Id.*

⁸⁹ *Id.* Indolene, a non-commercial fuel used by the EPA to certify vehicles in the rest of the nation, is the Phase II-type fuel used by California to certify vehicles before a Phase II commercial fuel is introduced. *Id.*

B. *OTC Adoption of the California LEV/ZEV Program*

Currently, areas in forty states and the District of Columbia are not in compliance with the ozone or carbon monoxide NAAQS established by the EPA pursuant to the 1990 CAA amendments.⁹⁰ Each state must submit an SIP that will meet the federal air quality standards for carbon monoxide by the end of 1995 and ozone by the year 2007.⁹¹ The SIPs must also achieve a fifteen percent reduction in volatile organic compounds ("VOCs") from 1990 levels by 1996, and a three percent reduction in VOC emissions each year thereafter until the federal standard is met.⁹² Failure to meet these requirements will cause the implementation of sanctions.⁹³ Sanctions for non-compliance include the two-to-one emission offset requirement to new and modified stationary sources of pollution and the prohibition of federal approval or award of grants for highway construction or improvement projects.⁹⁴

Twelve states from the Northeast and the District of Columbia⁹⁵ that were not in compliance with the ozone or carbon monoxide NAAQS joined together to form the Ozone Transport Region ("OTR"). The purpose of the OTR is to create a regional area with the unifying goal of controlling air pollution. The regional aspect significantly reduces the dilemma of pollution crossing state boundaries for which the downwind state suffers the consequences of the pollution without the ability to regulate it. Massachusetts and New York spearheaded the mobile source pollution control campaign through their SIP adoption of California's LEV/ZEV standard. The other OTC states plan to follow the lead of Massachusetts and New York,⁹⁶ so the litigation and negotiation between the two states and the automakers will have a significant impact on many states and possibly the entire nation.

⁹⁰ *Id.*

⁹¹ See CAA §§ 181(a)(2), 186(a)(1), 42 U.S.C. §§ 7511(a)(2), 7512(a)(1) (Supp. V 1993).

⁹² See CAA § 181(a)-(c), 42 U.S.C. § 7511(a)-(c) (Supp. V 1993).

⁹³ See CAA § 179(b), 42 U.S.C. § 7509(b) (Supp. V 1993).

⁹⁴ See *id.*

⁹⁵ See *supra* note 8.

⁹⁶ See *Electric Vehicles: Big 3 Turn Up Heat, Pressure MA Gov*, Greenwire, July 31, 1995, available in LEXIS, News Library, GRNWRE File.

1. Motor Vehicle Mfrs. Ass'n of the United States v. New York State Dep't of Env'tl. Conservation⁹⁷a. *District Court I*

New York adopted California's LEV program on May 28, 1992, in response to the EPA's designation of noncompliance with the ozone and carbon monoxide NAAQS in New York.⁹⁸ New York only applied the California-based regulation to light-duty vehicles.⁹⁹ California's clean fuel program was not adopted by New York because it concluded that the program was not cost-effective.¹⁰⁰ The adoption of the California program in New York occurred more than six months before the EPA granted California a waiver to the LEV program.¹⁰¹

The Motor Vehicle Manufacturers Association of the United States ("MVMA") filed a complaint against the New York State Department of Environmental Conservation ("DEC"). MVMA alleged that the DEC's adoption of the LEV standards violated section 177 of the CAA.¹⁰²

After the district court's initial decision that there was no undue burden on the MVMA and that the two year leadtime requirement was complied with,¹⁰³ the DEC, in a motion for reargument, persuaded the district

⁹⁷ See *supra* note 5.

⁹⁸ *MVMA III*, *supra* note 5, at 529.

⁹⁹ *Id.* California's LEV program also applied to medium-duty vehicles. See *id.*

¹⁰⁰ *Id.* In the ozone nonattainment areas in New York classified as marginal or worse, federal reformulated gasoline was marketed beginning January 1, 1995. See 57 Fed. Reg. 7926, 7926-27 (1992). Federal reformulated gasoline is not as "clean as California's Phase 2 gasoline." *MVMA III*, *supra* note 5, at 530.

¹⁰¹ See *MVMA III*, *supra* note 5, at 530.

¹⁰² *Id.*

(1) DEC's failure to adopt the CF component of California's regulations violates the "identity" requirement and (2) violates the "undue burdens" and "third vehicle" prohibitions of [section] 177; (3) DEC's adoption of California's regulations before California had received a waiver from the EPA violates Sec. 177 and (4) did not comply with the two year leadtime requirement; (5) DEC's ZEV sales quota contravenes the prohibition on all plans that limits the sales of California certified vehicles and (6) contravenes the prohibition against a "third vehicle."

Id.

¹⁰³ *Id.*

court to modify its original decision¹⁰⁴ on the following counts. On count one, summary judgment was granted to the DEC because the California clean fuel program did not require an EPA waiver and was not part of the California plan submitted to the EPA so there was no "identity violation."¹⁰⁵ On count two, the DEC claimed that the higher sulfur content in non-California fuels would cause manufacturers to modify their California LEVs in all states other than California and would therefore create a third vehicle violating section 177 of the CAA.¹⁰⁶ After initially granting a summary judgment for the DEC,¹⁰⁷ the district court upon reconsideration determined there was a genuine issue as to a material fact and ordered a trial.¹⁰⁸

On count three, summary judgment was granted for the DEC.¹⁰⁹ The district court held that the CAA did not prevent California from adopting regulations; the CAA only prohibited the enforcement of the regulations prior to approval.¹¹⁰ Therefore, New York had the ability to adopt standards prior to a waiver being granted by the EPA.¹¹¹

On count four, the district court determined the DEC's adoption of the California LEV program on May 28, 1992, provided a two year leadtime for the 1995 model year.¹¹² Upon reconsideration, the court modified its holding to include a finding that any manufacturer that could show that production of the 1995 model year commenced before May 28, 1994, would be exempt from the plan for 1995.¹¹³ The plaintiffs appealed, arguing that a model year is an industry-wide standard and that a delay of implementing the DEC regulation must be granted to all manufacturers.¹¹⁴ The defendants wanted each manufacturer to demonstrate manufacturing commencement on an engine-by-engine or model-by-model basis.¹¹⁵

On count five, the district court concluded that the sales of other

¹⁰⁴ *MVMA II*, *supra* note 5.

¹⁰⁵ *MVMA I*, *supra* note 5, at 1343.

¹⁰⁶ *Id.*

¹⁰⁷ *Id.* at 1345.

¹⁰⁸ *MVMA II*, *supra* note 5, at 61. Defendants did not appeal Count 2. *MVMA III*, *supra* note 5, at 530.

¹⁰⁹ *MVMA I*, *supra* note 5, at 1347.

¹¹⁰ *Id.*

¹¹¹ *Id.*

¹¹² *Id.* at 1348.

¹¹³ *MVMA II*, *supra* note 5, at 64.

¹¹⁴ *MVMA III*, *supra* note 5, at 531.

¹¹⁵ *Id.*

California-certified vehicles would be limited by a ZEV sales quota.¹¹⁶ Summary judgment was granted to the manufacturers on count five and count six.¹¹⁷ On count six, the district court concluded that because New York has distinct features, such as climate and market differences, a ZEV quota would require the manufacturing of a third vehicle violating section 177 of the CAA.¹¹⁸

b. *Court of Appeals*

On the first appeal to the United States Court of Appeals for the Second Circuit, the court analyzed the DEC adoption of the California LEV program with respect to identicality, adoption before EPA approval of the California Program, two-year leadtime, and the ZEV sales quota.¹¹⁹ The court found for the DEC on the identicality requirement.¹²⁰ "[T]he plain language of [section] 177 not only provides that New York need not adopt California's clean fuel plan, it actually precludes New York's adoption of such plan under this provision, as the plan was not part of [California's] waiver application."¹²¹ New York would still have allowed manufacturers to certify their cars on the reformulated gasoline.¹²² Therefore, the court held that the DEC LEV program was identical to the California LEV program without the adoption of the clean fuel plan.¹²³

On the issue of the DEC adoption of the California program prior to the granting of a waiver by the EPA, the court held for the DEC.¹²⁴ The DEC adopted the California standard on May 28, 1992, but the EPA granted California a waiver enforcement of the regulation prior to January 7, 1993.¹²⁵ The manufacturer wanted the court to hold that the DEC could not begin

¹¹⁶ *MVMA I*, *supra* note 5, at 1346.

¹¹⁷ *Id.* at 1346-47.

¹¹⁸ *Id.* at 1347.

¹¹⁹ *MVMA III*, *supra* note 5, at 531-38.

¹²⁰ *Id.* at 531-33.

¹²¹ *Id.* at 532. Because CAA § 209 only covers automobile emission standards, it would not be possible for California to obtain a preemption waiver of its clean fuel plan under § 209(b). *See id.*

¹²² *See* 6 N.Y. COMP. CODE R. & REGS. tit. 6, § 218-5(b) (1992).

¹²³ *MVMA III*, *supra* note 5, at 533-34.

¹²⁴ *Id.*

¹²⁵ *Id.*

enforcement before that same date.¹²⁶ The court concluded, however, that approval of California's waiver applications was almost a certainty,¹²⁷ and therefore the LEV program was allowed so long as enforcement did not begin before the EPA waiver was granted.¹²⁸

The Court of Appeals for the Second Circuit overturned the district court's decision concerning the two-year leadtime by concluding that model years should be applied on an industry-wide basis.¹²⁹ The basis of the court's decision was that the LEV program allows manufacturers to utilize a fleet average emissions concept, giving them flexibility to develop varying emissions within their fleet to satisfy the goal.¹³⁰ Requiring an engine-by-engine or model-by-model model year determination would complicate the fleet average calculations and place the manufacturers on uneven ground.¹³¹

The court analyzed two ZEV issues: the ZEV quota creating a limitation on the sale of California-certified vehicles, and the third vehicle prohibition. The court found the limitation on the sales of California-certified vehicles to be a straightforward statutory analysis.¹³² The court interpreted section 177 of the CAA to prohibit only an attempt by states to limit the sale of a particular type, not number, of California-certified vehicles.¹³³ The ruling hinged on the fact that a ZEV sales quota may "affect" the sale of non-ZEV California-certified vehicles but it would not "limit" the sale.¹³⁴

The court also turned to the plain meaning of the statute to analyze the third vehicle prohibition.¹³⁵ The court determined that the third vehicle prohibition bars "a state from administering and enforcing standards identical to California's in such a burdensome way as to effectively require a third vehicle."¹³⁶ Because New York had precisely adopted the California standards and the issue of enforcement was not raised, the court concluded

¹²⁶ *Id.* at 533.

¹²⁷ *Id.* at 534 (citing *Ford Motor Co. v. EPA.*, 606 F.2d 1293, 1297 (D.C. Cir. 1979)).

¹²⁸ *Id.*

¹²⁹ *Id.* at 535.

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² *Id.* at 536.

¹³³ *Id.*

¹³⁴ *Id.* The court also would not consider "[h]ow the manufacturers will insure the sale of ZEVs . . . [because] the sale of ZEVs will hinge on marketing and competitive factors, fields in which the manufacturers are experts." *Id.*

¹³⁵ *Id.* at 537-38.

¹³⁶ *Id.* at 537 (emphasis omitted).

that the DEC regulation did not violate the third vehicle prohibition.¹³⁷ The court chose to ignore the manufacturers' claim that New York's colder climate would require a more powerful heater than California vehicles and noted that "whatever heater the manufacturers choose to install is a marketing choice of theirs and not a requirement imposed by DEC."¹³⁸

c. District Court II

The district court revisited the case to determine the remaining issue of the original complaint: whether New York's failure to adopt California's clean fuel plan requires manufacturers to redesign the California-certified vehicles' exhaust systems because of New York's higher-sulfur gasoline.¹³⁹ The manufacturers argued that New York's failure to adopt California's clean fuel plan would require them to create a catalytic converter that would be able to withstand the higher-sulfur gasoline, or to move the converter closer to the engine thereby creating a third vehicle.¹⁴⁰ The manufacturers also claimed that the high-sulfur fuel may require the onboard diagnostic systems required for California-certification to illuminate falsely, requiring more frequent replacement of the catalytic converter. This problem would force the manufacturers to design a new converter in order to make the replacements less expensive.¹⁴¹

The district court found the manufacturer's evidence vague¹⁴² and the arguments unpersuasive. Adopting the Second Circuit's marketing argument, the court concluded that any modifications the manufacturers made would be on their own initiative and not required by New York.¹⁴³ The court stated that, by exempting California fuels, "Congress made a judgment that the design modifications and compromises with which auto manufacturers might be forced to contend because of the distinctions between California and

¹³⁷ *Id.*

¹³⁸ *Id.* at 538. The court may have ruled differently on this issue if more detailed facts had been available. *Id.*

¹³⁹ *Motor Vehicle Mfrs. Ass'n of the United States v. New York State Dep't of Env'tl. Conservation*, 869 F. Supp. 1012 (N.D.N.Y. 1994).

¹⁴⁰ *Id.* at 1015.

¹⁴¹ *Id.*

¹⁴² *Id.* at 1017 n.6.

¹⁴³ *Id.* at 1019.

federal fuels, were acceptable"¹⁴⁴

2. *American Auto. Mfrs. Ass'n v. Commissioner, Mass. Dep't of Envtl. Protection*¹⁴⁵

On January 31, 1992, the Commissioner of the Massachusetts Department of Environmental Protection ("DEP") adopted the LEV component of California's LEV program.¹⁴⁶ The DEP did not include a fleet average requirement because it preferred to let the market determine the mix of new California vehicles in the state.¹⁴⁷ The American Automobile Manufacturers Association, composed of the Massachusetts Automobile Dealers Association and two trade groups of automobile manufacturers, filed an action requesting the district court to grant an injunction on the DEP's regulations.¹⁴⁸

a. *District Court*

The plaintiffs based their motion on four claims:

[1] the regulations are not "identical" to California's, in that DEP did not adopt California's clean fuels [sic] rules; [2] the regulations force manufacturers to create a "third vehicle" because of the higher sulfur content of gasoline in Massachusetts; [3] the regulations were adopted by DEP before EPA granted California a [section] 209(b) waiver; and [4] the two-year leadtime requirement precluded DEP from applying the regulations to any 1995 models because two automakers planned to begin producing 1995 cars before two years passed after the regulations were adopted.¹⁴⁹

The district court did not grant the injunction because, on balancing the equities, it concluded that the risk of harm to the public interest

¹⁴⁴ *Id.* at 1020.

¹⁴⁵ *See supra* note 5.

¹⁴⁶ *See* MASS. REGS. CODE tit. 310, §§ 7.40-7.60 (1995); *AAMA II*, *supra* note 5, at 20.

¹⁴⁷ *See AAMA II*, *supra* note 5, at 22.

¹⁴⁸ *Id.*

¹⁴⁹ *Id.*

outweighed the risk of irreparable injury caused by the cost of vehicle emissions controls.¹⁵⁰ The district court reserved the "third vehicle" claim for trial because it found material facts at issue.¹⁵¹ The plaintiffs dismissed all of their appeals except the leadtime issue because of the Second Circuit's ruling on the identity, waiver, and third vehicle claims.¹⁵²

b. *Court of Appeals*

The United States Court of Appeals for the First Circuit granted the plaintiffs' motion to dismiss, over the objection of the DEP, leaving only the leadtime issue to be adjudicated.¹⁵³ The First Circuit held that the district court was correct in denying the injunction for enforcement of the LEV standards in the 1995 model year.¹⁵⁴ Contrary to the Second Circuit, the court held that compliance with the LEV standards would be determined on an engine-family-by-engine-family basis and not on a manufacturer-by-manufacturer or industry-wide basis.¹⁵⁵ This conclusion was based on the fact that the EPA had made many determinations concerning particular models and would, therefore, be able to distinguish among them when imposing emission standards.¹⁵⁶

II. AVAILABLE TECHNOLOGY

A. *Low Emission Vehicles*

There are several different methods for approaching the design of a LEV. Most manufacturers have designed LEVs by either modifying current gasoline engines, creating a hybrid vehicle,¹⁵⁷ or creating an alternate fuel

¹⁵⁰ *Id.* The court also found that the plaintiffs failed to show the likelihood of prevailing on the merits. *Id.*

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ *Id.* at 22-23. The DEP wanted the First Circuit to rule on the third vehicle claim as a matter of law. *Id.*

¹⁵⁴ *Id.* at 27.

¹⁵⁵ *Id.* at 24-26.

¹⁵⁶ *Id.* at 25-26.

¹⁵⁷ Hybrid vehicles use both a battery and an internal combustion engine as a power source. See *infra* notes 159-163 and accompanying text.

engine.¹⁵⁸ Honda is currently marketing a vehicle in California that has achieved LEV status.¹⁵⁹ The Honda Civic subcompact will be the first mass-produced, gasoline-powered LEV.¹⁶⁰ The 1996 Civic will reduce the emission levels more than fifty percent from the 1995 model year California standards.¹⁶¹ The reduction in the emission levels was facilitated by completely redesigning the engine, including moving the catalytic converter closer to the engine and by using a new method of combustion.¹⁶²

A hybrid vehicle runs partially on gasoline and partially on electricity, or it can operate solely on electricity.¹⁶³ During the electric vehicle mode, the car produces no emissions.¹⁶⁴ The hybrid vehicle does not qualify for the ZEV mandate because of pollution the vehicle produces when using gasoline.¹⁶⁵ Although there are currently no vehicles ready for marketing, General Motors has a hybrid vehicle called the Optima that it plans to manufacture in 1998.¹⁶⁶ The Optima satisfies the strict ultra-low emission vehicle standard.¹⁶⁷ It has been proposed to allow hybrid vehicles to get partial credit toward the ZEV mandate.¹⁶⁸

The hybrid car would significantly reduce emissions over currently produced cars, while allowing time for the manufacturers to bridge the gap between the performance of gasoline powered vehicles and electric vehicles. California Air Resources Board staff have made two recommendations as to how hybrid cars should gain credit for the ZEV mandate. First, a hybrid car could get credit based on the range (in miles) of the car operating on batteries

¹⁵⁸ Alternate fuel engines utilize alternate fuels such as hydrogen and natural gas which produce little or no emissions.

¹⁵⁹ Alex Law, *Civic's Low-Emission Engine Meets Strict California Law*, TORONTO STAR, Sept. 9, 1995, at J2. The vehicle was scheduled to be at dealerships by the end of October, 1995. *Id.*

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ Jennifer Silverman, *Air Pollution: General Motors Hybrid Vehicle Said to Achieve ULEV Standards*, Daily Env't Rep. (BNA) No. 172, at d6 (Sept. 6, 1995).

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

¹⁶⁸ See Marla Cone, *Change in Zero Emission Mandate Sought; Pollution: Compromise Would Allow Partial Credit for Hybrid Cars that Can Switch Between Gas and Batteries*, L.A. TIMES, Aug. 10, 1995, at A3.

alone.¹⁶⁹ The other option is to create a new category giving full ZEV credit to a hybrid car if the vehicle's exhaust is equivalent to the pollution generated at a power plant when providing electricity to recharge the vehicle's batteries.¹⁷⁰

B. *Zero Emission Vehicles*

There are several battery powered vehicles that major automobile manufacturers are preparing to market. They are primarily larger vehicles such as vans or trucks that would be provided to companies that have their own fleet of self-fueled vehicles and need to satisfy the California fleet requirements. The manufacturers plan on selling the vehicles in 1998 when the ZEV mandate begins. Chrysler is preparing to sell a battery-powered version of its popular minivan.¹⁷¹ The minivan, priced as much as \$20,000 more than the gasoline vans, is expected to go sixty miles on one battery charge. The batteries will need to be replaced every two to three years at a cost of \$6,000 for each replacement.¹⁷² Ford plans to offer a battery-powered Ranger compact pickup.¹⁷³ The electric Ranger is only expected to be sold to commercial fleets because of its \$30,000 price tag (about \$10,000 above the gasoline-powered Ranger) and lack of performance (fifty miles between charges).¹⁷⁴

General Motors has taken a different approach by designing a vehicle strictly powered by batteries.¹⁷⁵ The GM Impact is a two-seater electric vehicle with a range of seventy miles.¹⁷⁶ GM is still testing the Impact and has not discussed its price or whether the Impact will be sold to satisfy the ZEV mandate.¹⁷⁷ GM has also converted a Chevrolet S-10 pickup to battery power, which has a range of fifty miles.¹⁷⁸

¹⁶⁹ *Id.*

¹⁷⁰ *Id.*

¹⁷¹ James Healey, *Electric-Vehicle Deadline Approaches; Battery Technology Short-Circuits Carmakers' Development Plans*, USA TODAY, Sept. 28, 1995, at E11.

¹⁷² *Id.*

¹⁷³ *Id.*

¹⁷⁴ *Id.*

¹⁷⁵ As opposed to the Chrysler and Ford vehicles which are conventional cars converted to battery power, GM is designing a new car to be battery-powered. *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ *Id.*

¹⁷⁸ *Id.*

Small manufacturers may be a major source of ZEVs. AC Propulsion¹⁷⁹ has designed the AC 150 electric vehicle drive system which uses the body of a Honda Civic.¹⁸⁰ The AC 150 has a range between eighty and 110 miles at normal highway speed and can be recharged in one hour on a 220 volt current or eight hours on a 110 volt household current.¹⁸¹ The California Air Resources Board has rated the AC 150's performance as the best of any electric vehicle so far tested.¹⁸² The main advantage of the AC 150 is that it has a drive system that can be adapted to virtually any vehicle chassis or layout.¹⁸³

Suntera, a Hawaiian firm, and Boston Electric Utility Company are two other companies that have entered the ZEV rush.¹⁸⁴ Suntera has already sold 2,000 golf-cart-sized, mini-pickups to a Japanese company.¹⁸⁵ The U.S. Department of Commerce recently awarded Boston Electric \$6.5 million for their Solectra Sunrise project.¹⁸⁶ Boston Electric plans to build small factories across the nation to manufacture the Sunrise, much like a "microbrewery concept for electric cars."¹⁸⁷ The Sunrise is planned to roll off the assembly line in 1998.¹⁸⁸

C. Issues Regarding Battery Power

A U.S. General Accounting Office ("GAO") report published in December 1994¹⁸⁹ raised questions about the feasibility of the California ZEV

¹⁷⁹ AC Propulsion was founded by a former GM contract engineer with the purpose of designing and building a workable electric vehicle. Eric Peters, *Real-World ZEV Passing Tests*, WASH. TIMES, Sept. 29, 1995, at E9.

¹⁸⁰ *Id.*

¹⁸¹ *Id.*

¹⁸² *Id.*

¹⁸³ *Id.*

¹⁸⁴ Healey, *supra* note 171.

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ *Id.*

¹⁸⁸ *Id.*

¹⁸⁹ U.S. GENERAL ACCOUNTING OFFICE REP., GAO/PEMD 95-7, ELECTRIC VEHICLES—LIKELY CONSEQUENCES OF U.S. AND OTHER NATIONS' PROGRAMS AND POLICIES 3 (Dec. 30, 1994) [hereinafter GAO REP.].

mandate.¹⁹⁰ The report listed five major barriers to the immediate introduction of the electric vehicle: insufficient battery capacity, lack of needed infrastructure, unresolved questions about safety, consumer resistance, and significantly higher purchase prices than conventional automobiles.¹⁹¹

1. *Lack of Battery Capacity*

Lack of battery capacity has been the strongest argument by manufacturers against the immediate introduction of the electric automobile. Since 1991, an automakers consortium, the government, and battery makers have invested over \$123 million in research without finding a solution to the battery capacity problem.¹⁹² Currently, battery-powered vehicles have a range of fifty to one-hundred miles.¹⁹³ Recharging of vehicle batteries may exceed eight hours.¹⁹⁴ Some of the advanced design batteries, such as the sodium sulfur battery tested in the Ford Ecostar,¹⁹⁵ lose storage capacity and battery life in cold weather.¹⁹⁶

Professor Daniel Sperling, a prominent electric car advocate, and his colleagues at the University of California—Davis Institute of Transportation Studies concluded that it is hard to determine a battery's life span and performance in road conditions because battery chemistry is not understood very well and there is not much information on how people drive.¹⁹⁷ The

¹⁹⁰ William Campbell, *Pro/Con: Clearing the Air on the Electric-Vehicle Controversy, Technology is Not Good Enough*, S.D. UNION-TRIB., June 11, 1995, at G3.

¹⁹¹ *Id.*; GAO REP., *supra* note 189, at 3.

¹⁹² Healey, *supra* note 171.

¹⁹³ *See id.*; Cone, *supra* note 168; Peters, *supra* note 179.

¹⁹⁴ *See* Alan Kerr, *Electric Vehicle Ford Ecostar is Easy to Drive; Battery Weakest Part of Vehicle*, PROVIDENCE SUNDAY J., Aug. 20, 1995, at I18; Campbell, *supra* note 190.

¹⁹⁵ Ford Ecostar is a conversion of the European Ford Escort delivery van, and is currently being leased to utility companies for long-term evaluation. *See* Kerr, *supra* note 194.

¹⁹⁶ *See id.* Sodium sulfur batteries must be kept at 554 to 662 degrees Fahrenheit or severe damages occurs in the battery. The requirement of high temperature batteries means the battery must expend energy even when the vehicle is off to heat the batteries. If temperature is outside the required range, severe damages occurs to the batteries. Replacement batteries run \$46,000 so care of the batteries is extremely important. *Id.* Other advanced batteries use lithium, sodium, zinc, and nickel components instead of the standard lead in lead-acid batteries. *See* Carolyn Whetzel, *Air Pollution: Scientists Say Lead Acid Batteries Only Technology Ready for 1998 Electric Cars*, Daily Env't Rep. (BNA) No. 199, at d6 (Oct. 16, 1995).

¹⁹⁷ *See* Keay Davidson, *Charging into Future; Electric Autos Have a Long Road Ahead Before They Get to Market*, S.F. EXAMINER, Sept. 24, 1995, at A1.

GAO reported in August that "[a]dvanced batteries that would make electric vehicles fully competitive with gasoline-powered vehicles have not yet been proved to be feasible."¹⁹⁸ Four scientists at California Air Resources Board¹⁹⁹ conducted an unbiased audit of current battery technology on October 11, 1995. The independent group of scientists concluded that commercial production of high-energy, high-power batteries that offer the range and acceleration offered in gasoline-fueled cars will not be possible until after the turn of the century.²⁰⁰ The scientists reiterated the UC—Davis study's concern that batteries have to be evaluated under representative conditions for performance, reliability, and life.²⁰¹

2. *Lack of Infrastructure*

Another major inhibiting factor of the electric vehicle is the lack of infrastructure. Infrastructure can best be explained by looking at the infrastructure for gasoline-powered vehicles. Automobile dealers which sell gasoline powered vehicles exist across the nation; competing stations to refuel the vehicles (gas stations) are available on almost every corner; and service stations exist to perform maintenance and repair work on gasoline-powered vehicles.²⁰² This type of infrastructure is not available for electric vehicles and will require a significant amount of funding to create.²⁰³ A Sierra Research study predicted that the ZEV mandate will cost taxpayers nearly \$20 billion

¹⁹⁸ Healey, *supra* note 171, at E11.

¹⁹⁹ The scientists involved were: Fritz Kalhammer, vice president of the Palo Alto-based Electric Power Research Institute; Carl Moyer, a chief scientist at Acurex Environmental Corp. (Mountain View, CA); Akiya Kozawa, retired from Union Carbide; and Boone Owens, an electrochemical technical specialist with Research Internations. Whetzel, *supra* note 196, at d6.

²⁰⁰ *Id.*

²⁰¹ *See id.*

²⁰² Ken McGraw of Renaissance Cars, a manufacturer of electric cars in Palm Bay, Florida, stated that electric vehicles will require less maintenance than internal combustion engines because of fewer parts in electric cars (less than 1,000 as compared to more than 10,000). Davidson, *supra* note 197, at A1.

²⁰³ The South Coast Air Quality Board approved a \$6 million discount for electric vehicles purchased in the Los Angeles Basin. One million dollars goes to turning cities along the San Diego Freeway, Santa Monica Freeway, Interstate 215, or California 91 into "electric vehicle corridors." Subsidies will be given to cities which pass ordinances requiring electric vehicle charging equipment in new homes and commercial parking lots. Marla Cone, *Electric Car Discounts of \$5,000 OKd*, L.A. TIMES, July 15, 1995, at A1.

over the next fifteen years with \$1.3 billion going toward the construction of an infrastructure for electric cars.²⁰⁴

3. *Unresolved Questions About the Safety of Electric Vehicles*

Rushing electric vehicles to the market may result in vehicles that are unsafe to the consumer. Although automakers may not knowingly sell unsafe vehicles, engineers at Chrysler have conceded that manufacturers are more concerned with getting a vehicle to market that reliably meets federal (crash) impact standards.²⁰⁵

There are different safety concerns associated with electric vehicles than conventional gasoline vehicles. In a crash, it must be certain that the battery cases do not rupture and leak toxic chemicals, and if they do, the passengers must be protected from the chemicals. The National Institute of Emergency Vehicle Safety and the California Fire Chiefs Association are concerned with deadly short circuits if battery-powered vehicles crash in deep water.²⁰⁶ These associations also worry about rescuers trying to free crash victims and accidentally cutting through battery cables and electrocuting themselves or the vehicle's passengers.²⁰⁷ Although the director of Ford's electric vehicle program is confident that testing and engineering will eliminate all hazards whether the ZEV mandate is rescinded or pushed back,²⁰⁸ it is necessary to ensure that new technology vehicles are given ample time to test for safety.

4. *Consumer Resistance*

The automobile manufacturers have painted a very grim picture of the future of electric vehicles if a vehicle is placed on the market that does not meet consumer expectations for price and performance.²⁰⁹ The ZEV mandate forces manufacturers to sell electric cars but does not force consumers to buy

²⁰⁴ Campbell, *supra* note 190, at G3.

²⁰⁵ James Healey, *Group Questions Safety of Electric Vehicles*, USA TODAY, Oct. 11, 1995, at B1.

²⁰⁶ *Id.*

²⁰⁷ *Id.*

²⁰⁸ *Id.*

²⁰⁹ See Eric Peters, *GM Claims ZEV Law Hurts Its Electric Car*, WASH. TIMES, Sept. 29, 1995, at E8.

the electric cars. The electric vehicles have approximately a fifty mile range, which has been described as driving "every day with the 'low-fuel' light on."²¹⁰ The vehicles also take up to eight hours to recharge.²¹¹ The electric vehicles are very much a "niche" car for those drivers who can control their driving.²¹²

The niche of the electric car is further limited by the price. It has been estimated that electric vehicles will cost between \$20,000 and \$50,000, with replacement batteries ranging from \$1,500 to \$6,000.²¹³ These prices are up to \$10,000 more than comparable gasoline-powered automobiles which further restricts the target market.²¹⁴ By mandating ZEVs, automobile manufacturers are required to sell ZEVs regardless of whether it is technologically feasible or commercially viable.²¹⁵ Free market concerns are that selling inferior cars will turn consumers off from the prospect of electric cars.²¹⁶ If the initial buyers of the electric vehicles, dubbed "fashion buyers," are disappointed with the vehicle's value and performance, consumer demand will fall and destroy whatever potential the electric vehicles would have when perfected for the clean-air solution.²¹⁷ As the market shrinks, the automobile manufacturers will be hit even harder by the mandate.²¹⁸

III. FEDERAL AND STATE ACTION AND POLLUTION REDUCTION ALTERNATIVES

A. *Government v. Technological Advancement*

The federal government began to significantly reduce automobile

²¹⁰ Davidson, *supra* note 197, at A1.

²¹¹ *Id.* at A1; Peters, *supra* note 209, at E8.

²¹² Davidson, *supra* note 197, at A1.

²¹³ See *Electric Vehicles May Be on the Way, But Jury Still Out on Their Impact*, 33 Air Water Pollution Rep. (Business Publishers, Inc.) No. 33 (Aug. 14, 1995), available in LEXIS, News Library, CURNWS File; Davidson, *supra* note 197, at A1; Ken Leiser, *Battery Remains Weak Link in Drive for Electric Vehicles*, S.D. UNION-TRIB., Oct. 13, 1995, at C1.

²¹⁴ Davidson, *supra* note 197, at A1; Leiser, *supra* note 213, at C1; Peters, *supra* note 209, at E8.

²¹⁵ Peters, *supra* note 209, at E8.

²¹⁶ Campbell, *supra* note 190, at G3.

²¹⁷ *Id.*

²¹⁸ *Id.*

emissions through the Clean Air Act Amendments of 1970.²¹⁹ This forced automobile manufacturers to reduce the emissions of cars by ninety percent.²²⁰ The legislation, however, included a variance clause that permitted postponement of compliance for up to two years if manufacturers could show that such compliance was impossible despite their good faith efforts.²²¹

In 1977, through amendments to the Clean Air Act, Congress further delayed the compliance dates for the emission requirement.²²² Congress, by creating a national emission standard, was able to balance the health and safety of the public with the economic concerns of the automobile industry. Even though the CAA created a technology-forcing emission standard,²²³ Congress was able to temper its effects through statutory variances and congressional oversight.

In 1990, thirteen years after the last CAA amendments and twenty years after Congress had last set emission standards, the CAA was again amended.²²⁴ In addition to strictly tightening automobile emission standards,²²⁵ the 1990 CAA amendments set new requirements for areas that do not attain ambient air quality standards.²²⁶ The original CAA was the last time that Congress set an emissions standard.²²⁷ The major problem with the 1990 CAA amendments is not the stricter emissions standards but the NAAQS and the SIP requirements.

Through the 1990 CAA amendments, Congress increased federal control and state accountability for air pollution.²²⁸ If a state does not meet the NAAQS, the state is required to submit a SIP that can be adopted by the state, specifying the manner in which the NAAQS will be achieved.²²⁹ The

²¹⁹ See CAA § 202(b)(1)(A)-(B), (b)(2), 42 U.S.C. § 7521(b)(1)(A)-(B), (b)(2) (1988).

²²⁰ CAA § 202(b)(1)(A), 42 U.S.C. § 7521(b)(1)(A) (1988).

²²¹ *Id.*

²²² Pub. L. No. 95-95, § 406, 91 Stat. 795 (1977) (codified at 42 U.S.C. § 7401 (1988)).

²²³ Government deliberately set performance standards at a level higher than what can be achieved using current available equipment. ZYGMUNT J.B. PLATER ET AL., ENVIRONMENTAL LAW AND POLICY: A COURSEBOOK ON NATURE, LAW, AND SOCIETY 728 (1992).

²²⁴ Pub. L. No. 101-549, 104 Stat. 2399 (1990).

²²⁵ Pub. L. No. 101-549, §§ 201-207, 104 Stat. 2472-83 (1990) (amending CAA § 202) (codified at 42 U.S.C. § 7521 (Supp. V 1993)).

²²⁶ Pub. L. No. 101-549, §§ 101-111, 104 Stat. 2399-2411 (1990).

²²⁷ The 1977 amendments actually loosened the mandate on emissions standards by pushing back the compliance date.

²²⁸ See BROWNELL, *supra* note 31, at 18.

²²⁹ Pub. L. No. 101-549, § 110, 104 Stat. 2470 (1990).

SIP is reviewed by the EPA, which has the power to approve or disapprove all or part of the SIP.²³⁰ If the EPA finds the SIP to be unsatisfactory, the EPA can enforce a federal implementation plan.²³¹ For states to maintain control over their pollution, it is necessary for them to promulgate standards which satisfy the EPA requirements. States may implement excessively-strict SIPs fearing that the EPA may sanction the state for inadequate SIP submittal. Sanctions of cutting off highway funds or requiring emission offsets of two-to-one for new or modified sources seeking new source permits²³² could stifle economic growth within a state by making it harder for industry to build new plants or modify old ones.

California has adequate SIPs because the federal government has granted California an exemption from the federal automobile standards.²³³ The easy solution for other states with nonattainment areas is to adopt the California LEV program. This easy solution, however, is not necessarily the best solution, especially because California is significantly different from the OTC states.

Automobile emissions have been regulated by California since 1960.²³⁴ This not only creates a strong legislative history, but also shows California's strong commitment to reduce mobile source pollution, a commitment which is lacking in the OTC states. California, as part of its LEV program, has a clean fuel component which requires the sale of reformulated gas with a lower sulfur content than standard gasoline.²³⁵ New York, however, decided against the clean fuel component of the California LEV program because it was not cost-effective.²³⁶ California also has a four dollar fee attached to its annual vehicle registration, in part to subsidize the sale of electric vehicles, create an infrastructure for the electric vehicle, and buy alternate-fuel-powered public transportation.²³⁷ None of the OTC states have shown this type of broad-based commitment to reducing automobile pollution.

California also differs physically and economically from the OTC states. The terrain surrounding cities such as Los Angeles is much more

²³⁰ CAA § 112(k)(3), 42 U.S.C. § 7412(k)(3) (Supp. V 1993).

²³¹ *Id.*

²³² CAA § 179(b), 42 U.S.C. § 7509(b) (Supp. V 1993).

²³³ CAA § 209(b)(1), 42 U.S.C. § 7543(b)(1) (Supp. V 1993).

²³⁴ See CAL. HEALTH & SAFETY CODE §§ 24,378-24,398 (West 1996).

²³⁵ See CAL. CODE REGS. tit. 13, §§ 2300-2317 (1991).

²³⁶ See *MVMA III*, *supra* note 5, at 530.

²³⁷ Cone, *supra* note 203, at A1.

suitable for the electric vehicle, which works best on relatively even ground, than northeastern cities. In the Northeast, the climate can get much colder than the mild California weather which would require the automakers to install more powerful heaters in OTC electric vehicles than are currently planned for the California electric vehicle.²³⁸ The increased power required for the heaters further reduces the range of the electric vehicle. Also, nearly twice as many new vehicles are sold in California than in any OTC state.²³⁹ The economic size of California makes it much more cost-efficient for manufacturers to deal with it than any one OTC state. Instead of jumping on California's LEV bandwagon, OTC states need to carefully consider their own particular situation and then create a well-rounded pollution reduction program that fits their needs.

The main sticking point between the OTC and automobile manufacturers is the ZEV mandate.²⁴⁰ This mandate requires the automobile manufacturers to adopt completely new technology. The current standard is the internal combustion engine, for which automakers have extensive ties with the oil industry. The ZEV mandate, however, forces the use of an electric vehicle which is a chemically-powered vehicle. Automakers will not only have to forge new and major relationships with another industry, they will be fighting against their old ally, the oil industry. The oil industry has spent millions of dollars lobbying against a ZEV mandate.²⁴¹

Automobile manufacturers are not averse to electric vehicles, but are concerned with the commercial and economic viability of current electric vehicles.²⁴² They do not plan on entering the electric vehicle industry to lose

²³⁸ See *MVMA III*, *supra* note 5, at 538.

²³⁹ GAO REP., *supra* note 189, at 13. New vehicles sold in 1990 per state: California—1,221,800; New York—644,700; Pennsylvania—490,400; New Jersey—405,600; Maryland—290,000; Massachusetts—255,800; the remainder of the OTC states sold less than 56,000 new vehicles. *Id.*

²⁴⁰ See *AAMA Decisions Force Automakers to Set Deadline for Clean Air in Northeast States*, PR NEWSWIRE, July 6, 1995, available in LEXIS, News Library, GRNWRE File; *Don't Zap ZEVs; New York is Right to Keep Insisting That Detroit Produce Zero-Emission Vehicles*, NEWSDAY, Oct. 14, 1995, at A22; *Electric Vehicles II: State—Industry Talks at an Impasse?*, GREENWIRE, Aug. 11, 1995, available in LEXIS, News Library, GRNWRE File.

²⁴¹ *U.S. Oil Firms Spending to Stop Electric Cars—Study*, REUTERS, Sept. 12, 1995, available in LEXIS, News Library, CURNWS File.

²⁴² See *AAMA Decisions Force Automakers to Set Deadline for Clean Air in Northeast States*, *supra* note 240.

money.²⁴³ If the ZEV mandate forces automobile manufacturers to take a loss in specific pockets of the country, they will spread the loss to the whole country so state actions will have a national economic impact. When dealing with a national industry such as the automobile manufacturers, states need to look beyond their boundaries to determine the national impact of their action.

The states' ZEV mandates differ from previous federal emission programs in that the federal programs are monitored and have an escape for manufacturers if the mandate is not feasible. As discussed earlier, Congress pushed back the enforcement date of the original CAA emission standards when there was a question of whether the manufacturers could meet it.²⁴⁴ Additionally, when the 1990 CAA amendments expire in 2003 and a further fifty percent reduction in automobile emissions over the 1990 standards is required, the legislation provides an escape provision: the new emission standards will not be enforced if the standards are not technologically feasible or cost-effective.²⁴⁵ States which have adopted the California ZEV mandate do not include such a provision. California, on the other hand, is willing to reconsider its ZEV mandate and modify it if necessary.²⁴⁶

B. *Pollution from Alternate Technology*

There is dispute over whether electric vehicles are as environmentally sound as they are in theory. In a 1994 report, the GAO noted that the electricity used to charge electric batteries often comes from a fossil fuel power plant.²⁴⁷ Power plants that burn fossil fuel create their own pollution, such as sulfur dioxide from burning coal.²⁴⁸ The GAO report stated the areas that rely heavily on power plants fired by coal and oil may see moderate increases in carbon dioxide and nitrogen oxides in the air and substantial

²⁴³ See Peters, *supra* note 209, at E8.

²⁴⁴ See *supra* part II.C.4.

²⁴⁵ Pub. L. No. 101-549, § 201(1)(A), 104 Stat. 2472 (1990) (codified at 42 U.S.C. § 7521(a)(3)(A) (Supp. V 1993)).

²⁴⁶ See Andrea Orr, *Electric Car Batteries Not Seen Feasible by 1998*, REUTERS, Oct. 11, 1995, available in LEXIS, News Library, CURNWS File ("[California] has indicated it may change its current rule rather than force an immature or high-cost technology onto the market."); Leiser, *supra* note 213, at C1 ("[California's] state air board is scheduled to decide early next year whether the electric car mandate is achievable or must be scaled back.").

²⁴⁷ Davidson, *supra* note 197, at A1.

²⁴⁸ *Id.*

increases in sulfur dioxide emissions.²⁴⁹ California Air Resources Board responded by stating that power plants are stationary and relatively few in number, and therefore it is easier to set and control their emissions at the plants rather than with millions of automobiles.²⁵⁰

A study by researchers for Carnegie Mellon University in Pittsburgh found that lead-acid batteries used in electric vehicles could drastically increase lead pollution in the air.²⁵¹ Over the life-cycle of a battery from manufacturing to recycling, the study determined that electric vehicle lead-acid batteries would release several times more lead into the air than leaded-gasoline powered automobiles which are now banned in the United States.²⁵² California Air Resources Board claims that the Carnegie Mellon study overestimated the amount of lead pollution generated in the production of lead-acid batteries for electric vehicles by forty-four to one thousand times.²⁵³

Although lead-acid batteries have proven to be the most reliable fuel source for electric vehicles, California Air Resources Board states that few experts expect them to be widely used in the future.²⁵⁴ This statement is strengthened by the fact that automakers are spending millions of dollars to research and develop advanced batteries, such as nickel-metal hydride batteries.²⁵⁵ Both sides of the ZEV issue agree, however, that the first generation of mass-produced electric vehicles will utilize lead-acid batteries.²⁵⁶ Neither scientists nor regulators have had the last word on the environmental and public health effects of the lead-acid battery or future battery technology. Instead of leaping into new technology under the assumption that it will be better than current technology, caution should be exercised and time should

²⁴⁹ *Id.*

²⁵⁰ *Id.*

²⁵¹ Michael Parrish, *Lead Batteries More Polluting, Researchers Say; Cars: Auto Industry Welcomes Study's Results, Environmentalists Hotly Criticize the Findings*, L.A. TIMES, May 10, 1995, at D2. The study was funded indirectly by the National Science Foundation, AT&T Foundation, and IBM Corp., none of which have an interest in the outcome. *Id.*

²⁵² *Id.* The life-cycle of a battery includes lead released during mining, smelting, recycling, manufacturing, and use of the batteries. *Id.*

²⁵³ *Calif [sic] Regulators Dispute Lead Acid Battery Study*, REUTERS, June 22, 1995, available in LEXIS, News Library, CURNWS File.

²⁵⁴ *Id.*

²⁵⁵ *Id.*

²⁵⁶ *Id.*

be allowed to more fully explore these controversial issues.²⁵⁷

C. *Alternatives to Mandatory Compliance of Automobile Regulations*

1. *EPA's 49-State Plan*

The 49-state plan was originally introduced by the automobile manufacturers in response to northeastern states adopting the California LEV program.²⁵⁸ The automakers proposed the plan stating that it would result in cleaner air nationwide, not just in the Northeast.²⁵⁹ The EPA, in response to the stalemate between the automobile manufacturers and OTC states, adopted the automakers' idea by proposing rules for a national LEV program.²⁶⁰

The EPA program would require the implementation of an "increasingly stringent" non-methane organic gas manufacturer fleet-average standard applicable in the OTR for light-duty vehicles ("LDV") and light-duty trucks ("LDT") from model years 1997 to 2001.²⁶¹ In model year 2001, manufacturers would have to meet nationwide non-methane organic gas fleet-average standards for LDVs and LDTs that are equivalent to a one hundred percent LEV fleet.²⁶²

²⁵⁷ Forcing the timely implementation of technology can be necessary when there is stalling on the part of industry. This is not the case with the EV. The ZEV mandate, established in 1990 when the technology was not cost-effective, requires a marketable new technology vehicle in eight years. To date, no manufacturer has produced a mass-marketable ZEV.

²⁵⁸ See Jake Brown, *Air Pollution: EPA Proposes 49-State Car Option, But Automakers, States Continue Talks*, Daily Env't Rep. (BNA) No. 189, at d12 (Sept. 29, 1995).

²⁵⁹ *AAMA Decisions Force Automakers to Set Deadline for Clean Air in Northeast States*, *supra* note 240.

²⁶⁰ National LEV Program Proposal, 60 Fed. Reg. 52,734 (proposed Oct. 10, 1995). The "national" LEV program would exempt California from its standards. See *supra* note 29 and accompanying text.

²⁶¹ National LEV Program Proposal, *supra* note 260, at 52,741. The complete national LEV program includes:

- (1) tailpipe emissions standards for NMOG [non-methane organic gas], NO_x [nitrogen oxide], CO, HCHO [formaldehyde], and PM [particulate matter];
- (2) fleet average NMOG values; (3) allowance for the use of California reformulated gasoline II as test fuel for the tailpipe standards; (4) California on-board diagnostic system requirements (OBD II); (5) averaging, banking and trading of provisions; and (6) low volume manufacturer provisions.

Id.

²⁶² *Id.*

The CAA prohibits the EPA from mandating new automobile emission standards before model year 2004,²⁶³ so the automobile manufacturers would have to voluntarily consent to the standard.²⁶⁴ Once a manufacturer voluntarily opts into the national LEV program, the EPA is able to enforce the requirements as if they were traditional federal motor vehicle emissions programs.²⁶⁵ If a manufacturer fails to meet the requirements, it would be subject to the same enforcement measures that exist for mandatory federal programs.²⁶⁶ Once a manufacturer voluntarily opts into the national LEV program, it could opt out only “(1) if any OTC State does not meet or keep the commitments it agrees it will make regarding adoption of OTC LEV or ZEV mandates; or (2) if, over manufacturer objections, EPA makes certain specified requirements more stringent, except as needed to harmonize with corresponding California requirements.”²⁶⁷

States also have the option of opting in or out of the national LEV program.²⁶⁸ Adoption of the national LEV program by OTC states would relieve them of their duty to adopt and implement a state motor vehicle program to control mobile source emissions.²⁶⁹ States, once they opt in, can opt out of the program at any time, but by doing so would allow manufacturers to also opt out if the states’ removal affects any commitment the states made regarding LEV or ZEV mandates.²⁷⁰ Although it is considered a national LEV program, not all states will opt in. This is not a concern for the automakers as long as the OTC states opt in because, at this point, no states outside the OTC, other than California, have raised the issue of setting up an auto emission program stricter than the proposed national LEV standard. Beginning in 2001, the national LEV standard would apply to LDVs and LDTs offered for sale in all states except California even if a particular state did not opt in.²⁷¹

²⁶³ CAA § 202(b)(1)(C), 42 U.S.C. § 7521(b)(1)(c) (Supp. V 1993).

²⁶⁴ See National LEV Program Proposal, *supra* note 260, at 52,740. The EPA has the ability to introduce voluntary standards pursuant to CAA §§ 202, 301, 42 U.S.C. §§ 7521, 7601 (Supp. V 1993). *Id.*

²⁶⁵ *Id.* at 52,741.

²⁶⁶ *Id.*

²⁶⁷ *Id.*

²⁶⁸ *Id.* at 52,740.

²⁶⁹ *Id.* at 52,735-36.

²⁷⁰ See *id.* at 52,741.

²⁷¹ See *id.*

The opting in/out issue has added to the stalemate between the OTR and automakers. If the states opt in and find a shortfall in the emission reductions, the states fear they will be forced to suffer with no alternative.²⁷² Thus, the automakers have taken the position that they will not opt in until they are assured that advanced technology vehicle mandates will not be imposed if they invest in a 49-state vehicle.²⁷³ Neither side is willing to compromise.

The automakers have the stronger position. First, the EPA claims the national LEV will reduce pollution at least as much as the states' programs.²⁷⁴ Second, if a state opts in, that means that the EPA accepts the state's SIP so no sanctions can be imposed against the state.²⁷⁵ The burden of reducing automobile pollution would be placed on the EPA since it would become their program. The state's shortfall concern, therefore, is no longer important. On the manufacturers' side, a significant capital investment will be required in the vehicle design and manufacturing facilities for a 49-state LEV. Many models would have to be redesigned to meet the LEV requirements. The AAMA does not believe that automakers or consumers could afford both the 49-state LEV and ZEV mandate.²⁷⁶

2. *Advantages to the National LEV Program*

The EPA stated several advantages of implementing the national LEV program instead of the OTC LEV program. The national LEV program would be "a significant step towards the goal of reducing smog in heavily populated urban areas [nationwide]."²⁷⁷ Of the heavily populated areas, there are fifty-seven ozone nonattainment areas outside the OTR and California.²⁷⁸ A national-LEV-certified vehicle will emit 400 pounds less pollution than a federal Tier 1 vehicle resulting in significant reduction in pollution nationwide,

²⁷² Susan Bruninga, *49-State Car Proposal Gets Mixed Reviews at Hearing; EPA Extends Comment Period*, Daily Env't Rep. (BNA) No. 212, at d9 (Nov. 2, 1995).

²⁷³ *See id.*

²⁷⁴ National LEV Program Proposal, *supra* note 260.

²⁷⁵ *See supra* notes 45-47 and accompanying text.

²⁷⁶ *See* Bruninga, *supra* note 272, at d9.

²⁷⁷ National LEV Program Proposal, *supra* note 260, at 52,736.

²⁷⁸ *Id.* at 52,737. These areas include several areas classified as "serious" or "severe" for ozone. *Id.*

not just in a small region of the United States.²⁷⁹

One problem with LEV programs that are not nationwide in scope, such as the OTC LEV program, is that of pollution migration. The migration of non-LEV vehicles causes an increase in pollution in LEV-program states. The EPA estimates "the migration of non-LEV vehicles would result in a 16 ton [per] day increase in VOC emissions and a 28 ton [per] day increase in NO_x emissions in the year 2005" as compared to the OTC program without migration.²⁸⁰ A national LEV program is expected to greatly reduce the pollution caused by vehicle migration.²⁸¹

The reduction in pollution resulting from the national LEV program would also have significant health benefits, including a reduction of ground-level ozone,²⁸² particulate matter,²⁸³ and formaldehyde.²⁸⁴ The EPA also expects significant economic benefits for states involved in a national LEV program, automobile manufacturers, and consumers.²⁸⁵ A national LEV program, as an alternative to the OTC LEV program, would result in the use of fewer regulatory, legislative, and litigation resources.²⁸⁶ More money could be spent on making the program work rather than litigating state-by-state over the adoption of the OTC LEV.²⁸⁷

The national LEV program would allow the creation of a single test procedure and standard for each type of emission.²⁸⁸ As the program

²⁷⁹ *Id.* A national LEV program vehicle would be 70% cleaner than Tier 1 vehicles. EPA estimates that a national LEV program will nationally reduce NO_x emissions by 400 tons per day in the year 2005 and 1200 tons per day in the year 2015, and NMOG emissions by 279 tons per day in the year 2005 and 778 tons per day in 2015. *Id.*

²⁸⁰ *Id.*

²⁸¹ *See id.* The national LEV program has more stringent emissions standards for particulate matter and formaldehyde than the federal Tier 1 standards. *Id.*

²⁸² *Id.* at 52,736. Ground-level ozone, the principal harmful component in smog, can damage lung tissue, reduce lung function, and sensitize the lungs to other irritants leading to chest pain, coughing, nausea, and pulmonary congestion. Studies indicate that the effects of exposure to ozone are generally reversible but may depend on the length of exposure and individual activity level. *Id.*

²⁸³ *Id.* at 52,737. Particulate matter has been associated with obstructive pulmonary disease, chronic bronchitis, and premature mortality in sensitive individuals. *Id.*

²⁸⁴ *Id.* at 52,738. Long-term exposure and inhalation of formaldehyde, a "probable human carcinogen," is linked to certain types of tumors. *Id.*

²⁸⁵ *See id.*

²⁸⁶ *Id.*

²⁸⁷ *Id.*

²⁸⁸ *Id.*

harmonizes with California's program, there will be a reduction in automobile manufacturers' design and testing costs, and streamlining of the process for certifying a vehicle for sale, ultimately resulting in a savings to the consumer.²⁸⁹ Consumers will also benefit from the economies of scale manufacturers will realize from their ability to sell vehicles nationwide.²⁹⁰ As more cars are sold, the smaller the percentage of research and development costs placed on each product. Also, increased production decreases the cost to manufacture each unit. The automobile industry has "consistently demonstrated rapid price decreases in successive model years for newly-introduced technology."²⁹¹

3. *Reducing Reliance on Automobiles*

There are other methods for reducing air pollution other than focusing solely on automobile emissions. By focusing on automotive emissions, the states are being reactive instead of proactive. The real problem is the consumers' reliance on the automobile.²⁹² As consumers' reliance on the automobile increases, the total emissions from automobiles will increase, forcing states to continually increase the stringent emission standards. Eventually all vehicles would be required to meet ZEV standards. However, it seems the states have not considered the consequences if the EV does not live up to its "green" expectations.²⁹³ In order to have a permanent significant effect on pollution reduction, citizens must reduce their dependency on the

²⁸⁹ See *id.*

²⁹⁰ *Id.*

²⁹¹ *Id.*

²⁹² See Penny Mintz, *Transportation Alternatives Within the Clean Air Act: A History of Congressional Failure to Effectuate and Recommendations for the Future*, 3 N.Y.U. ENVTL. L.J. 156 (1994).

²⁹³ Gasoline is much more energy efficient than any battery currently available. The specific energy of gasoline is 350 times, and its energy density about 120 times, that of a lead acid battery. The specific energy is the ratio of its energy capacity to its weight, usually measured in watt hours per kilogram. The energy density is the ratio of the energy capacity to its volume, usually expressed in watt hours per liter. The electric motor is three to four times more efficient than the internal combustion engine, so the system can make better use of the smaller amount of energy in terms of actual power output. See GAO REP., *supra* note 189, at 17-18.

automobile and change their driving habits.²⁹⁴

A statutory base currently exists to reduce the dependence on the automobile by, for example, statutory mandates to build mass-transit systems. Congress passed the Intermodal Surface Transportation Efficiency Act of 1991,²⁹⁵ which gives states the option of using highway funds to pay for transit projects, carpool projects, bicycle and pedestrian facilities, and any other transportation control measures listed in section 108(f) of the CAA.²⁹⁶ However, the metropolitan planning organizations²⁹⁷ have shown "little interest . . . in seriously reducing automobile dependency."²⁹⁸

The Federal Highway Administration is attempting to remedy this problem by requiring metropolitan planning organizations to draw up new long-range plans which meet the Intermodal Surface Transportation Efficiency Act requirements.²⁹⁹ Eligibility for federal transportation funds requires states to implement long-range plans aimed at reducing traffic congestion through bicycle and pedestrian walkways, and other "methods which reduce motor vehicle travel, particularly single-occupant motor vehicle travel."³⁰⁰ The implementation of programs that reduce consumer reliance in conjunction with the reduction of automobile emissions nationwide will have more of a beneficial effect than emission reduction standards alone, especially if only implemented in limited areas of the country.

²⁹⁴ See Robert E. Yuhnke, *The Amendments to Reform Transportation Planning in the Clean Air Act Amendments of 1990*, 5 TUL. ENVTL. L.J. 239, 240-41 (1991). "The main contributor to air pollution . . . in nonattainment urban areas continue to be over-dependence on motor vehicles." Mintz, *supra* note 292, at 179.

²⁹⁵ Pub. L. No. 102-240, 105 Stat. 1914 (1991) (codified as amended at 23 U.S.C. § 133 (Supp. V 1993)).

²⁹⁶ 23 U.S.C. § 133(b) (Supp. V 1993). "Other transportation control measures" excludes emission control programs and old-vehicle removal programs. *Id.*

²⁹⁷ Under the Highway Act, every urban area with a population of 50,000 or more must establish a metropolitan planning organization. The organization is a regional transportation planner which must develop a transportation system for the urban area that "embrac[es] various modes of transportation . . . [to] maximize mobility . . . and minimize . . . air pollution." *Id.* § 134(a).

²⁹⁸ See Mintz, *supra* note 292, at 184.

²⁹⁹ Intermodal Surface Transportation Efficiency Act: Implementation Guidance, 57 Fed. Reg. 14,880, 14,945-46 (1992).

³⁰⁰ 23 C.F.R. § 450.208(a) (1995). See Mintz, *supra* note 292, at 185-91 (surveying efforts being made in some of the nation's worst ozone noncompliance areas to meet the Act's transportation requirements).

IV. CONCLUSION

Improving the air quality to protect the public health and welfare is the main goal of the Clean Air Act, but this should not be accomplished at the expense of the economy and the automobile industry. From its inception, the Clean Air Act required that economic and technological feasibility be taken into account before pollution-reduction standards were promulgated.³⁰¹ States, reacting to designation as NAAQS nonattainment areas, are attempting to push technology beyond reasonable limits. Automobile manufacturers have designed LEVs and hybrid vehicles and are on the brink of designing a ZEV for full production, but most scientists agree that full production models will not be available until after the year 2000.³⁰²

There are many questions, however, that remain about the ZEV that need to be answered before production can begin. Batteries have not been designed which will meet consumer expectations in price or performance.³⁰³ New safety considerations arise when there are toxic chemicals and high voltage sources traveling on America's highways.³⁰⁴ Once the ZEVs have been completely designed and tested, before full scale production can begin, it is necessary to ensure that an infrastructure exists to use and maintain ZEVs.³⁰⁵ Forcing a ZEV onto the market before these important issues are resolved could lead to catastrophic results for manufacturers, consumers, and the environment.

The EPA has proposed an alternative to the states' adoption of the California LEV program: the 49-state LEV.³⁰⁶ It is expected to be beneficial to the states, the automobile manufacturers, and consumers.³⁰⁷ Even if the 49-state LEV is not adopted, states should not take the easy road and adopt the ready-made plan of California. It was not until after the EPA designated the states' nonattainment areas that these states became environmental advocates.

The states are attempting to externalize the cost through regulating the automobile industry instead of controlling their own citizens. Before blaming the automobile industry for their air pollution, states should consider reducing

³⁰¹ See, e.g., CAA § 202(b)(1)(B), 42 U.S.C. § 7521(b)(1)(B) (Supp. V 1993).

³⁰² See *supra* notes 198-200 and accompanying text.

³⁰³ See *supra* part II.C.1.

³⁰⁴ See *supra* part II.C.3.

³⁰⁵ See *supra* part II.C.2.

³⁰⁶ See *supra* part III.C.1.

³⁰⁷ *Id.*

citizens' reliance on the automobile through means such as mass transportation systems and the promotion of carpooling. Reducing citizens' reliance on automobiles, in conjunction with lowering automobile emissions, will not only benefit those states suffering from air pollution but also the United States and future generations.