

State of California
AIR RESOURCES BOARD

Final Statement of Reasons for Rulemaking
Including Summary of Comments and Agency Response

Public Hearing Date: March 28, 1996
Agenda Item No: 96-2-2

I. GENERAL

This rulemaking was initiated by the issuance of a notice of public hearing to consider modifications to the zero-emission vehicle (ZEV) requirement, which is one component of the Low Emission Vehicle (LEV) Program adopted by the Air Resources Board (ARB or Board) in 1990. Under the regulations that establish the LEV program, major vehicle manufacturers are required to produce and deliver for sale in California certain numbers of ZEVs each year. The number of ZEVs required is calculated as a percentage of a manufacturer's annual model year production -- two percent in 1998 through 2000, five percent in 2001 and 2002, and ten percent in 2003 and beyond. In this rulemaking action, staff proposed amendments to eliminate the ZEV requirement for 1998 through 2002. The ten percent requirement to be implemented in 2003 is retained.

On February 9, 1996, the Notice of Proposed Rulemaking and the Staff Report: Initial Statement of Rulemaking ("Staff Report"), entitled *Proposed Amendments to the Zero-Emission Vehicle Requirements for Passenger Cars and Light-Duty Trucks*, were released for public review and comment. The Staff Report, including the express terms of the amendments as initially proposed by the staff and a statement of the rationale for the proposal, was available from ARB upon request as required by Government Code § 11346.2. The notice and the Staff Report are incorporated by reference herein. This Final Statement of Reasons also contains a summary of the comments ARB received on the proposed amendments during the formal rulemaking process and ARB's responses to the comments.

On March 28 and 29, 1996, ARB conducted a public hearing to consider the proposed amendments to the ZEV requirement for passenger cars and light-duty trucks. In addition to the proposal to eliminate the ZEV requirement during the period from 1998 through 2002, the staff proposed regulatory language to allow multiple ZEV credits for electric vehicles (EVs) produced prior to the 2003 model year. Multiple ZEV credits would be based directly on vehicle range capabilities or on the specific energy of the battery. As originally proposed the amendments affected §§ 1900 and 1960.1, title 13, California Code of Regulations.¹ At the hearing staff proposed additional amendments to § 1960.1 as well as conforming amendments to § 1976 and to the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" (hereinafter "Standards and Test Procedures"), which is incorporated by referenced in § 1960.1.

¹ All section references are to title 13 of the California Code of Regulations, unless otherwise specified.

At the hearing the Board also considered the terms and conditions of a master Memorandum of Agreement (MOA) negotiated between ARB staff and the seven major auto manufacturers subject to the ZEV requirement in 1998 under the existing regulation: Chrysler, Ford, General Motors, Honda, Mazda, Nissan, and Toyota. Staff recommended that the Board approve the master MOA and direct the Executive Officer to sign a separate agreement with each of the automakers after execution by the company and prior to finalizing the regulatory action. Under the MOAs the automakers have committed to implement a "49-state" program to sell cleaner cars nationwide. The program will provide emissions reductions sufficient to make up the loss of reductions of ozone precursor emissions -- oxides of nitrogen (NO_x) and nonmethane organic gases (NMOG) -- associated with the first five years of the ZEV program, i.e., the emissions reductions that will be lost under the staff's regulatory proposal. This is necessary because the emissions reductions from implementation of the ZEV requirement in 1998 are included in the 1994 state implementation plan for ozone (hereinafter the "1994 Ozone SIP").² If ARB acted to eliminate these emissions reductions without identifying a mechanism to offset the loss, approval of the SIP would be jeopardized. The MOAs also include provisions to promote the successful launch of a sustainable market for ZEVs through advanced technology battery demonstration programs and continued ZEV-related research and development.

At the conclusion of the hearing, the Board adopted Resolution 96-12. In the resolution the Board approved the amendments to §§ 1900, 1976 and 1960.1, title 13, Cal .Code Regs., and the incorporated Standards and Test Procedures. The Board also approved the terms and conditions of the master MOA. The resolution also directed the Executive Officer to:

1. Sign each of the MOAs upon execution by all of the signatory manufacturers.
2. Make the regulations with the modifications presented at the hearing available for an additional public comment period of at least 15 days in accordance with the requirements of Government Code § 11346.8; and to consider written comments submitted during this comment period, to make further modifications to the regulations as appropriate in light of the comments received, and to present the regulations to the Board for further consideration if he determines this is warranted.
3. At the close of the 15-day comment period and after execution of the MOAs, adopt the amendments as proposed with the modifications presented at the hearing.

The 15-day notice package including the modified text of the regulations and an explanation of the reasons for proposing modifications was made available beginning June 14, 1996, for a 15-day period for supplemental public comment. This package is incorporated by reference herein. On June 21, 1996, the same package was mailed to the signators of a petition that had been circulated by the California Public Interest Research Group, for a 15-day period for

² The 1994 Ozone SIP was adopted by the ARB and submitted to the U.S. Environmental Protection Agency for review November 15, 1994, as required under the 1990 Amendments to the federal Clean Air Act.

supplemental public comment. On July 9, 1996, the package was mailed to an additional group of commenters that was inadvertently omitted from the original mailing for a 15-day period for supplemental public comment. After considering the comments received during the supplemental comment periods, the Executive Officer issued Executive Order G-96-048, amending §§ 1900, 1960.1, and 1976, and the Standards and Test Procedures.

The amended Standards and Test Procedures document is incorporated by reference in § 1960.1(k), title 13, Cal. Code Regs. The test procedures document is available upon request from the ARB in accordance with § 1902, title 13, Cal. Code Regs. The test procedures are incorporated by reference because it would be cumbersome, unduly expensive and otherwise impractical to publish them in the California Code of Regulations. It has been a longstanding and accepted practice for ARB to incorporate ARB test methods by reference because the interested audience is small (consisting primarily of those persons who actually conduct the tests).

ARB has determined that this regulatory action will not result in a mandate to any local agency or school district the costs of which are reimbursable by the state pursuant to part 7 (commencing with § 17500), division 4, title 2 of the Government Code.

ARB has further determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed or would be as effective and less burdensome to affected private persons than the action taken by ARB.

II. SUMMARY OF PUBLIC COMMENTS AND AGENCY RESPONSES

ARB received over 4,000 written comments during the 45-day comment period, and received additional comments by way of oral testimony taken over a period of almost 9 hours during the public hearing March 28, 1996. ARB received 14 comments during the 15-day comment periods, only one of which addressed the modifications to the original proposal. The commenter suggested that proposed new § 1976(b)(1)(D) be modified to clarify that the evaporative emissions standard for ZEVs applies to *fuel* evaporative emissions as opposed to emissions from upholstery, plastic or other vehicle equipment. This change has been made. It is non-substantive and consistent with the intent of the proposed regulation.

Set forth below is a summary of each objection or recommendation made regarding the specific regulatory actions proposed, together with an explanation of how the proposed action was changed to accommodate each objection or recommendation, or the reasons for making no change. The comments have been grouped by topic to the extent possible. Comments not involving objections or recommendations specifically directed towards the proposed action or the procedures followed by ARB regarding the rulemaking are not summarized below.

The directly affected vehicle manufacturers generally supported the staff's proposed changes. Each of the seven stated their intent to sign the MOAs and expressed willingness to comply with the provisions included in the MOAs. Additionally, a number of commenters

supported the staff's proposed amendments but had some concerns and wanted to make sure that the commitments in the MOAs are met. These commenters included the California Electric Transportation Coalition and the Natural Resources Defense Council.

A number of commenters supported the original regulations and perceived the staff's proposed amendments as unnecessary. These commenters included the Santa Barbara County Air Pollution Control District, the Planning and Conservation League, the California and Massachusetts Public Interest Research Groups, and numerous private citizens.

A small minority of commenters opposed the amendments to the regulations because a requirement for zero-emission vehicles was maintained in 2003 and beyond. These commenters are opposed to any zero-emission vehicle requirement and believe the marketplace should determine the success or failure of ZEVs without any government intervention. These commenters included Western States Petroleum Industries, Raley's Supermarkets and Drug Centers, and twelve California assembly members and senators.

A. Readiness of Zero-Emission Vehicle Technology and Performance

1. Comment: Electric vehicle technology will be ready to meet the two percent ZEV requirement in 1998. Currently, the Solectria Sunrise gets up to 240 miles per charge using nickel-metal hydride (NiMH) batteries and this range is expected to increase. The Battery Panel's report indicates that NiMH batteries will be produced by the GM Ovonic company at a rate of 20,000 battery packs per year by 2001.³ Although NiMH batteries are more expensive than lead-acid batteries, the durability of NiMH batteries offsets the higher initial cost, and the cost is expected to decrease. Additionally, by 1998 Solectria predicts they can sell EVs that can travel over 100 miles per charge for approximately \$20,000 per vehicle.

Agency Response: ARB believes that there is a substantial risk of market failure associated with adhering to the original ZEV program. Although there are examples of extremely promising emerging ZEV technologies, ARB does not believe that these advances would be widespread enough or available soon enough to ensure a successful market launch of EVs in 1998. For example, even if GM-Ovonic produces 20,000 NiMH battery packs in 2001, that would not help ensure a successful EV launch in 1998, and would be sufficient to supply less than half of the estimated 50,000 ZEVs required to be offered for sale in 2001

³ In August of 1995, ARB commissioned a panel of experts, the Battery Technology Advisory Panel (hereinafter the "Battery Panel"), to assist in the 1996 biennial LEV/ZEV technology review. The panel, which was comprised of four individuals with extensive experience in battery science technology development, was asked to evaluate the readiness of battery technology for the 1998 implementation of the ZEV program. The Battery Panel produced a report entitled "Performance and Availability of Batteries for Electric Vehicles: A Report of the Battery Technical Advisory Panel." The report, dated December 11, 1995, presented the panel's findings regarding the status of battery technology development.

under the current regulation. By allowing the market based introduction of ZEVs in conjunction with field demonstrations of advanced technology batteries, ARB believes that the potential for a successful EV launch is maximized. (See response to Comment 26.)

2. Comment: The market for electric vehicles exists now. For those who would like to purchase an EV now or in the next six years and many others who would be attracted by the benefits of EV ownership, e.g., home refueling, low maintenance, and as a quiet non-polluting motor, the delay of the ZEV requirement will delay the ability of these consumers to purchase EVs.

Agency Response: In the MOAs the seven manufacturers affected by the 1998 ZEV requirement have committed to have the capacity to meet market demand for ZEVs. Although there is no regulatory requirement for commercially available ZEVs until 2003, we understand that some auto manufacturers will make EVs available to consumers in the state of California as early as the fall of 1996. This is evidenced by announcements made by General Motors, Honda, Toyota and other auto manufacturers regarding the introduction of EVs into the new vehicle marketplace. Additionally, EVs powered by advanced technology batteries will be in the marketplace in limited quantities by 1998 as part of the advanced technology demonstration program outlined in the MOAs. Because the new program relies upon market demand to drive the introduction of ZEVs until 2003, consumers will have the opportunity to positively impact EV introduction by purchasing these vehicles long before 2003.

3. Comment: Californians want energy efficient and non-polluting transportation as soon as possible. The people of this state do not want to wait until 2003 for ZEVs.

Agency Response: See response to Comment 2.

4. Comment: Electric vehicles are not ready for the marketplace. They have not been adequately tested for safety and reliability, and the public will not accept a range of less than 100 miles. For example, General Motors' EV1 has the following limitations: a range of only 60-70 miles, lead-acid batteries that must be replaced every 2-3 years at a cost of approximately \$2,000, and at a price that is 2-3 times higher than a similar-sized gasoline-powered vehicle.

Agency Response: The limitations of both technological development and consumer acceptance were key reasons for the proposed amendments to the California ZEV program. The modified program includes a technology demonstration program to field test advanced technology batteries in EVs in the hands of consumers before a large-scale introduction. Electric vehicles powered by advanced technology batteries will provide greater range between recharges and are expected to have a much longer life than lead-acid batteries. In mass production, EVs with advanced technology batteries are expected to provide life cycle costs that are similar to conventional gasoline-powered vehicles. Additionally, given auto

manufacturers' long history of both safety and reliability testing of conventional automotive products, ARB is confident that auto manufacturers will provide adequate safety and reliability testing for all EVs. ARB fully expects EVs with advanced technology batteries to significantly expand the current market for EVs.

It is important to note that although advanced technology battery-powered EVs are expected to appeal to a larger base of consumers, ARB believes niche markets for EVs with a more limited range exist as well. Some auto manufacturers evidently agree, as shown by recent announcements from major auto manufacturers that EVs will be offered for sale as early as 1996.

5. Comment: There is mounting evidence that the pressure to relax the LEV program is a manifestation of covert collaboration between the three largest domestic vehicle manufacturers, the American Automobile Manufacturers Association (AAMA) and the oil industry -- Western States Petroleum Association (WSPA) -- to limit the extent and pace of competition for vehicles and vehicle fuels and to ensure that rival technologies would not find a receptive marketplace. The ARB has accepted uncritically the AAMA- and WSPA-conducted, carefully-orchestrated and well-financed campaign to discredit electric vehicles. The central theme of this campaign has been that the LEV program won't work because battery technology cannot deliver an electric vehicle acceptable to consumers by 1998. The campaign was deemed necessary because early in the 1990s automakers were discovering a strong consumer interest in electric vehicles.

Agency Response: ARB's decision to modify the ZEV program by delaying implementation of the ZEV requirement to 2003 is based on an assessment of technology readiness. (See response to Comment 26.) In addition ARB considered information presented by the auto industry and others, including the Battery Panel commissioned by the ARB to assess the status of battery technology in the context of EV applications. (See also responses to Comments 130 and 181.)

6. Comment: The proposed changes would repeal the ZEV sales mandate for model years 1998 through 2002. Except for only a relatively small number of advanced technology ZEVs that manufacturers will be required to produce each year, the sale of ZEVs would be left "to the marketplace" until 2003.

Agency Response: This statement is an accurate description of the proposed amendments. It is ARB's position that the success of the ZEV program will require a cooperative effort including good faith efforts by automakers to produce marketable ZEVs, enforcement by ARB of reasonable requirements related to the development and production of ZEVs, and ultimately and most importantly the power of the market to take the program to the regulated levels and, hopefully, beyond.

7. Comment: It is not surprising that California is considering some softening of the existing

ZEV mandate based on the results of the technology review. But there is a big difference between making an appropriate adjustment to provide car makers some relief and a wholesale repeal of the mandate until 2003.

Agency Response: ARB made a determination, supported by substantial evidence in the record, that a five year delay of the ZEV production requirements is appropriate based on the status of advanced batteries. Advanced batteries are necessary to support a sustainable market for ZEVs. (See response to Comment 1.) Thus although there is indeed a difference between the two alternatives mentioned in this comment, ARB believes it has selected the appropriate alternative to ensure the long-term success of the ZEV program.

8. Comment: In explaining the repeal of the ZEV mandate, ARB states that the mandate has served its purpose by helping to push the rapid development of electric vehicles and that the market is ready to take over. Apparently ARB accepts the car makers' assurances that they will be selling electric vehicles in numbers that approach what would have been required under the mandate. By this explanation the ZEV mandate is being repealed not because it failed but because it has succeeded.

Agency Response: The proposed amendments to the ZEV requirement were not based on a determination that the affected manufacturers would be introducing electric vehicles in volumes that approximated the regulatory requirements. Prior to proposing the amendments considered in this rulemaking, ARB did obtain confidential information from the automakers that indicated that the seven largest auto manufacturers were poised to enter the market and have indicated a capacity to produce over 14,000 EVs per year beginning in 1998. This level of market penetration is encouraging and signals the likelihood of the ultimate success of the ZEV program but it does not demonstrate that the affected manufacturers could meet the ZEV production mandate in 1998 in a manner that would ensure the long-term success of the program.

9. Comment: ARB also explains the proposed repeal of the ZEV mandate for 1998 through 2002 by focusing on "perceived problems regarding the production of a large number of electric vehicles using the currently available lead-acid batteries." ARB states that the large-scale introduction of electric vehicles using this technology could "poison" the market for ZEVs.

Agency Response: This is an accurate restatement of one of ARB's concerns about retaining the 1998 launch date for the ZEV program. It supports adoption of the proposed amendments.

10. Comment: Given these confusing messages about the reason behind this regulatory proposal, ARB owes everyone a better explanation of why it chose to repeal the ZEV mandate rather than to soften it.

Agency Response: ARB is at a crucial juncture regarding the ZEV program. We do not know for sure, and none of the commenters who have weighed in on the question can know for sure, whether a market sufficient to meet the two percent ZEV requirement in 1998 will exist given the current technology. Or that even if such a market was generated initially, what the response of consumers would be once these vehicles were on the road or the effect of this response on the sustainability of the market. What we do know is that if we assume the market will be there in 1998 even though the most promising technologies are not expected to have reached commercialization by that time and we are wrong, it will be costly and inefficient to do an about face at that time and will likely set back the program by far longer than five years. The Battery Panel findings that advanced technology batteries will be commercially available by 2000 or 2001 coupled with the Board's determination that this technology is necessary for a viable long-term ZEV market makes it clear why the ARB has taken this action. (See also responses to Comments 72, 73 and 74.)

11. Comment: ARB suggests the reason for the proposed amendment to the ZEV program is to create a long-term viable market for electric vehicles. Although ARB concedes, as some vehicle manufacturers have agreed, that the ZEV requirements have driven technological advances in this area, now the agency claims that repealing the ZEV mandate will accelerate development of the electric vehicle market.

Agency Response: The two positions attributed to ARB, when properly articulated, are not inconsistent. By adopting the 1998 ZEV requirement in 1990 ARB signaled to technology developers that ZEVs represented one of the strategies ARB would pursue for reducing motor vehicle emissions. As a result of this signal, significant advances in ZEV technology have been realized and many more are currently underway. But this situation does not signify that ARB's determination in 1990 that the technology would be ready for commercialization in 1998, even if only at two percent of production, was correct. In fact, ARB has determined that although much progress has been made in development of ZEV technology, we are not quite ready for a commercial launch of ZEVs in 1998. (See response to Comment 26.) Thus the correct articulation of ARB's current position is that delaying the ZEV requirement for five years will allow ongoing advanced technology battery research and development to come to full fruition before implementation of the ZEV requirement. This comment and the many comments like it look to the success of the ZEV program created by ARB based on the agency's willingness to exploit innovative new technologies and far-thinking policy and technological judgements. It is ironic that the actions of the ARB in 1990 are given so much more credence in 1996 than the updated judgements of the same agency.

12. Comment: ARB is acting to repeal a technology-forcing standard despite the success of such standards in the past and despite the success of the ZEV requirement itself.

Agency Response: As discussed in the response to the previous comment, ARB agrees that the ZEV requirement has and is successfully driving technology advances necessary to

comply with the requirement and that technology-forcing standards have been successful in driving the creation of effective emission control technologies in the past. But the fact that this “tried-and-true” strategy is working does not ensure that it is working on precisely the time frame established by ARB in 1990. (See response to Comment 176.)

13. Comment: Even though ZEVs are already being sold, ARB wants to repeal the existing mandate that would ensure immediate reductions of NMOG and particulate emissions. It appears that the ARB is more concerned with protecting the economic interests of the automakers than public health.

Agency Response: Although EVs are already available from some sources and soon will be available from some major automakers, ARB has determined that the technology necessary to support a market at the levels specified in the existing regulation will not be ready for commercial introduction in 1998. ARB has acknowledged that by delaying full regulatory implementation of the ZEV program until 2003, there will be a short-term loss of anticipated emission reductions, although by 2007 the emissions reductions benefits of the “49-state” program will fully offset the effects of the proposed regulatory amendments with a premium.

14. Comment: The MOAs should require auto manufacturers to produce ZEVs that can maintain intermittent speeds of 85 miles per hour, can sustain a cruising speed of 65 miles per hour, and have a minimum range, at 65 miles per hour equivalent to comparable gasoline-powered vehicles.

Agency Response: It is not appropriate for ARB to dictate performance standards for EVs. These are marketing choices best made by individual vehicle manufacturers. We note that different vehicles meet different needs. Vehicles that are incapable of meeting subjective performance standards for the market in general may be acceptable in niche markets. The proposed amendments do provide incentives to manufacturers to use more efficient batteries.

15. Comment: The lead acid batteries in an EV can be replaced with advanced batteries when they become available, thus preventing early EVs from becoming quickly outdated.

Agency Response: Although it may be possible to prevent the obsolescence of ZEV battery technology by replacing lead-acid batteries with advanced technology batteries, upgrading of EV batteries may not be a simple procedure. ARB certainly hopes that battery upgrades will be available in the future, but different battery footprints and operating characteristics may make battery upgrading a non-trivial process.

16. Comment: The public will have no real choice between EVs and gasoline-powered vehicles until vehicle price comes down and service is available for EVs. The ZEV requirement is necessary to ensure the infrastructure for EVs is in place.

Agency Response: The original ZEV program did not specifically address the need to develop an EV infrastructure. Under the MOAs, however, ARB has committed to work with state and local authorities and others to ensure the development of ZEV infrastructure and the removal of barriers to the introduction of ZEVs. The MOAs define ARB's role in coordinating activities in support of infrastructure development. ARB believes that the delay in implementation of the ZEV requirement to 2003 gives the automakers the flexibility necessary to be able to offer ZEVs at prices acceptable to consumers.

17. Comment: Advanced batteries are not the only solution to longer-range EVs. Battery packs that can be changed in and out easily would allow EV owners to "recharge" by switching battery packs within a matter of minutes.

Agency Response: ARB agrees that battery swapping could "extend" the range of EVs. This idea has been proposed by numerous parties and is currently used in some electric buses, however, to the ARB's knowledge, no one has attempted a demonstration of battery swapping using light-duty vehicles. Battery swapping faces a number of obstacles including standardization of the battery pack configuration, the capital expenses associated with purchase of a large number of batteries, as well as human factors such as the acceptability of inferior battery packs or battery packs that may have been mistreated by previous users. These obstacles may be overcome in fleet usage, but it appears unlikely that battery swapping will be a viable option for the general public.

18. Comment: The proposed amendments could destroy a critical incentive that is enabling California businesses to establish and maintain their position on the leading edge of new, high technology solutions to the world's environmental problems.

Agency Response: ARB agrees that the proposal may cause some EV-related businesses that were counting on the ZEV requirement to produce business opportunities in 1998 to fail. Additionally, the proposal could cause some ZEV-related businesses to question ARB's commitment to the ZEV program and possibly to decide that it would be better to abandon ZEV-related activities. But ARB cannot use regulatory requirements to shore up marginal businesses. And by retaining the 10 percent ZEV requirement for 2003 ARB has, in large part, preserved the long-term incentive effect of the regulations.

19. Comment: The elimination of the ZEV program may jeopardize attainment in several areas and expose their populations to unhealthful air quality for a longer period of time. The effects of this will be much longer than the three year impact on the regulatory apparatus and economy of local areas as assumed by ARB. An area will not be designated attainment without three clean years, i.e., three years with no more than three exceedances, and because there is a lag time before contingency control measures and other corrective action is implemented, additional exceedances are likely. Thus the date for redesignation to attainment is typically six years after an area misses its deadline. This additional length of

non-attainment area status has significant ramifications and impacts on businesses and the environment.

Agency Response: The elimination of the ZEV program for the period from 1998 through 2002 will not jeopardize attainment of federal ozone standard in any area of California. (See responses to Comments 54, 66, 99, and 183.) ARB has acknowledged that there will be some relatively minor, short-term increases in motor vehicle emissions, which will be fully offset with a premium by 2010 by reductions to be realized from the manufacturers' commitments to implement a "49-state" program. Because ARB has determined that the advanced technology necessary to ensure a successful launch of a sustainable ZEV market will not be commercially available until 2000 or 2001 at the earliest, the delay is intended to and will ensure that a premature implementation of the ZEV program does not adversely impact the potential long-term benefits of the program.

B. ZEV Credits

20. Comment: Multiple ZEV credits will have an adverse effect on long-term emission reductions.

Agency Response: Although availability of multiple ZEV credits may reduce somewhat the numbers of ZEVs introduced in the early years, ARB believes that providing these credits for vehicles with more efficient batteries or longer range will increase the long-term emission benefits of the ZEV program by encouraging the early production and commercialization of EVs powered by advanced technology batteries. Electric vehicles powered by advanced technology batteries will have much broader market appeal, resulting in higher sales and consumer satisfaction. In addition, early introduction of high performing EVs will enhance public perception and increase the possibility that EVs are viewed as a viable alternative to gasoline-powered vehicles.

21. Comment: Factors other than specific energy, such as the cost of producing advanced batteries or battery life, should be considered when establishing the value of ZEV credits.

Agency Response: ARB staff worked with battery manufacturers and the auto manufacturers to develop the ZEV credit system based on battery specific energy or vehicle range. The goal was to keep the credit system simple while maintaining incentive to push the advancement of battery technology. ARB believes the current ZEV credit system is sufficient for its intended purpose. Consideration of such factors as battery cost and life would be useful in comparing battery technologies, however, and staff intends to use the concept of a battery value, that incorporates factors such as battery cost and life in addition to specific energy and range, in our reporting on batteries in the future.

22. Comment: The ZEV credits given for range should continue to increase based on increased range of the ZEV. The ratio in the current proposed regulations could be used to allow for more credits for ZEVs with ranges greater than those represented in the Staff Report.

Agency Response: While ARB commends research and development to produce advanced batteries with greater ranges, we feel it is important not to compromise the number of EVs that are introduced into the marketplace. Extra credits are designed to provide incentives for well-performing technologies, yet still require the introduction of a substantial number of EVs. ZEV credits are based on projections of technology availability, and provide reasonable incentives for auto manufacturers to improve their batteries. ARB believes ZEV credits are important to enhancing technology development, and that the proposed ratio will accomplish this. (See response to Comment 20.)

23. Comment: ARB should include a provision in the MOAs that would require any major auto manufacturer that does not meet the ZEV requirement in 2003 to purchase ZEV credits.

Agency Response: While an important provision of the 2003 ZEV regulation is allowing auto manufacturers flexibility to purchase ZEV credits from other manufacturers, a requirement to do so upon failure of a manufacturer to meet the regulation could pose an excessive cost burden. If a manufacturer falls short of meeting its ZEV requirement in 2003, a requirement to purchase ZEV credits from others to make up for the shortfall could lead to the manufacturer being subject to extremely high-priced credits from other companies. Manufacturers that do not purchase ZEV credits to offset any shortfall in meeting the ZEV requirement in 2003 or later will be assessed a civil penalty of \$5,000 per ZEV required to be but not delivered for sale.

C. ZEV Production Ramp-up

24. Comment: The MOAs do not provide an adequate volume ramp-up of EVs between 2001 and 2003; nor do the MOAs require auto manufacturers to develop and disclose any plans to achieve volume ramp-up of EVs.

Agency Response: ARB will monitor the progress the vehicle manufacturers are making over the next several years to ensure that automakers are encouraging a developing market for ZEVs in preparation for meeting the ten percent ZEV requirement in 2003. As described in the MOAs, each automaker has already provided the ARB with information about its capacity to produce ZEVs for model years 1996 and beyond. The MOAs also require the manufacturers to share their product plans (including updated capacity numbers) with ARB every two years. These product plans are to be consistent with approved product plans used by the manufacturers for internal funding purposes. To the extent available, these plans will include projections for model type or types, vehicle features and specifications, production capacity, prospective battery suppliers, capital allocation, and identification of products to meet the ZEV regulatory requirement in 2003. Although some

of the information provided will be confidential and will not be made publicly available, the staff will report to the Board at a public meeting on the progress automakers are making to ensure a sustainable ZEV market. The staff findings will be verified with site visits, as provided for in the MOAs. If manufacturers are not meeting the obligations of the MOAs, ARB will take further action as necessary.

25. Comment: The MOAs should require auto manufacturers to demonstrate that the progress they are making on EVs is consistent with technology advancements.

Agency Response: ARB believes it is important to allow vehicle manufacturers flexibility in choosing ZEV technology. Each manufacturer must consider trade-offs in performance, cost, and reliability for any battery or component used in an EV. Each manufacturer may have a different perspective on what combination of technological innovations will be marketable to their customers and cost-effective over the long term. Competition among the automakers will help ensure that technology advancements in batteries and components are demonstrated.

ARB will follow the progress made by each manufacturer in meeting the agreements set forth in the MOAs and in meeting the requirement for ZEVs in 2003. (See responses to Comments 24 and 245.)

D. Benefits of Zero-Emission Vehicles

26. Comment: A delay of the ZEV requirement will endanger the long-term goal of achieving clean air, cause an increase in emissions and jeopardize human health and the health of the environment. This delay benefits the auto and oil industries at the expense of the environment.

Agency Response: ARB believes that the ZEV requirement for the first five years of the program under the existing regulation (two percent of a manufacturer's California production and delivery each model year beginning in 1998, increasing to five percent in 2001 and 2002) cannot be met without jeopardizing the future of the ZEV program. Because the ZEV program is vital to our efforts to achieve and maintain healthful air quality, the long-term success of this program must be assured. Currently, the only technology capable of meeting the ZEV requirement is the battery-powered electric vehicle. At the request of the Board, the Battery Panel conducted an assessment of the status of the development of battery technologies to power EVs. The Battery Panel concluded that only improved lead-acid batteries and nickel-cadmium batteries would be available for EV applications in 1998. It also concluded that advanced battery technologies, such as lithium-ion and nickel-metal-hydride could be available for commercial-production in 2000 or 2001 if there are no technical or decision delays in any of the pilot plant, fleet testing, production planning and production implementation phases by battery or car manufacturers.

ARB believes that advanced technology batteries will be necessary to ensure a successful launch of a sustainable EV market. Advanced battery-powered EVs provide consumers with greater range and longer life than current lead-acid or nickel-cadmium batteries. ARB believes these features will be necessary if EVs are to satisfy a broad base of the California population. Based on the findings of the Battery Panel, ARB determined that a delay of the ZEV mandate to 2003 will ensure that one or more advanced batteries will be available for market by the time the requirement takes effect. Under the modified ZEV program each of the auto manufacturers will be able to introduce ZEVs according to its estimate of market readiness shape its own ramp-up to meet the ten percent ZEV requirement in 2003 and beyond.

To ensure that the proposed action does not jeopardize the 1994 Ozone SIP and that ZEV-related research and development continues, ARB has entered into separate MOAs with the seven largest automakers subject to the ZEV requirement in 1998 under the current regulations. The MOAs specify that emission reductions associated with the ZEV requirements in 1998 through 2002 and relied on in the 1994 Ozone SIP will be realized through the introduction of cleaner cars nationwide (this program is named the “49-state” program in the MOAs). To obtain these offsetting emissions reductions by selling cleaner cars nationwide the automakers will opt-in to a voluntary national low emission vehicle program, or NLEV, to be created by U.S. EPA. Alternatively, the manufacturers could certify California LEVs for sale in all 49 states (these vehicles are called “50-state” vehicles). The MOAs would allow an automaker to achieve equivalent NMOG and NOx emission reductions by some other means with the prior approval of the Executive Officer. ARB recognizes that there may be a slight increase in emissions in NMOG and NOx in the early years through 2007. By 2010, however, the cumulative benefits of the “49-state” program will fully offset the NMOG and NOx benefits of ZEVs in 1998 through 2002. There will be very small increases in emissions of other pollutants associated with conventionally-fueled vehicles, such as carbon monoxide, particulate matter and air toxics in the early years of the program. However, ARB determined that it is appropriate to forego a small portion of the total program benefits during the early years in anticipation of much greater benefits associated with the long-term success of the ZEV program.

27. Comment: California has a long history of being a leader in the effort to improve air quality. Postponing the ZEV requirement undermines California’s leadership and affects air quality in other states and countries that seek to adopt California’s regulations.

Agency Response: California’s air quality continues to improve despite the state’s growing vehicle population and the trend toward greater vehicle miles traveled per vehicle. This is due largely to the stringent emission standards and requirements applicable to new vehicles sold in California. The ZEV program is a continuation of these requirements and has the potential to become the cornerstone of our efforts to further reduce emissions from vehicles in California over the long-term.

ARB continues to be committed to the ZEV program. However, as a result of the Battery Panel findings (see response to Comment 37) and the testimony heard at a series of forums on ZEVs, and meetings with stakeholders, ARB concluded that modifications to the ZEV program would be necessary to ensure the program's chances of long-term success. This conclusion is based on the uncertainties surrounding the near-term market for ZEVs, which can be attributed to many factors including, but not limited to, the state of battery technology development. While currently available lead-acid batteries, when used in a well-designed efficient vehicle, can appeal to many consumers with range needs of less than 100 miles, advanced technology batteries providing longer range will substantially increase the market for these ZEVs. But these advanced technology batteries are not expected to be available in production quantities for use in EVs until the early 2000s.

The decision to amend the ZEV program by eliminating the production requirement for model years 1998 through 2002 is intended to ensure the successful introduction of a sustainable market for ZEVs in California and is not intended to reflect on programs outside the state. Although ARB recognizes its leadership role in improving air quality worldwide, that role has come about as a result of California doing what is in the best interest of air quality in this state -- not because of any overt attempt to be a leader. It is in this spirit that ARB approved modifications to our landmark ZEV program. (See responses to Comments 37 and 162.)

28. Comment: The ZEV requirement will not provide any air quality benefits.

Agency Response: ARB staff worked with the California Energy Commission staff to evaluate power plant emissions associated with EVs. The analysis was done using the Electricity Financial model to predict the marginal power usage of EVs in 2010. The results indicate that, even at the high end of the range of estimates, the emissions associated with power plants are ten times lower than the tailpipe emissions from the lowest emitting vehicle required by ARB in the future under any existing regulation. Further, unlike gasoline-powered vehicles, EVs have no emission control equipment that can deteriorate over time. Therefore, each EV will maintain zero tailpipe emissions for the entire life of the vehicle. Finally, EVs do not have any of the evaporative or refueling emissions associated with conventional vehicles.

29. Comment: Air pollution in California is a very serious problem. In addition to requiring ZEVs beginning in 1998, ARB should require other pollution-reducing regulations such as the new gasoline and water mixture, and electric shuttle buses.

Agency Response: ARB agrees that pollution in California is a very serious problem. Zero-emission vehicles are an important part of the effort to reduce pollution in California. As stated in the response to Comment 26, the modifications made to the ZEV requirement are meant to ensure the successful launch of a sustainable ZEV program and not to eliminate the ZEV program. ARB recognizes that other programs, in addition to the ZEV program, will

be necessary to further reduce pollution in California and is continually developing pollution-reducing programs. In fact, the 1994 Ozone SIP prepared by ARB, other state agencies, and local air pollution control agencies in California includes all feasible emission control measures and strategies by public agencies with jurisdiction over the various sources of air pollutants at all levels of government. These measures and strategies affect virtually every category of sources that emit ozone precursors. For example, California currently has the most stringent requirements for gasoline of any state in the nation. Our cleaner burning gasoline program has been shown to provide reductions in pollution equivalent to the elimination of 3.5 million vehicles from California's vehicle population. Local air districts are working with regional transit authorities and other local authorities to implement programs using electric shuttle buses, mail delivery vans and parking patrol vehicles. (See response to Comment 62.)

30. Comment: Zero-emission vehicles provide other environmental benefits such as no necessity for off-shore oil drilling and no oil tanker spills. These benefits cannot be made up by a NLEV program.

Agency Response: The need for off-shore oil drilling and the number of tanker spills would not have been measurably reduced by the ZEV program in 1998 through 2002. These benefits will only be achieved through a successful implementation of the ZEV program and a market for ZEVs that exceeds two to five percent. The proposed modifications are designed to ensure a successful market launch and the long-term success of the ZEV program. (See response to Comment 26.)

31. Comment: Electric vehicles create many pollution problems, e.g., toxic emissions from battery production and recycling and power plant emissions.

Agency Response: At the time ARB considered and adopted the ZEV requirement and during the ensuing period, ARB analyzed ozone precursor emissions from the production and recycling of lead-acid batteries and determined that these emissions are hundreds to thousands of times lower than tailpipe emissions from even the cleanest vehicle required by ARB in the future under the existing regulations. Although there are lead emissions associated with the production and recycling of lead-acid batteries, these emissions are extremely low because they are tightly controlled and occur at a small number of locations. Additionally, although lead-acid batteries have been the dominant battery technology used in vehicles since before World War II, few experts expect them to be widely used in future electric vehicles.

ARB has commissioned a study to evaluate potential emissions related to the production and recycling of advanced technology batteries. Preliminary estimates indicate that risk from toxic pollutants associated with these technologies are much lower than those associated with lead-acid batteries. Further, EVs eliminate the potential for exposure to

toxic emissions in the exhaust and refueling fumes from the millions of gasoline-powered vehicles on the road in California.

As was mentioned in the response to Comment 28 above, power plant emissions associated with EVs are at least ten times lower than emissions from even the lowest emitting vehicle required by ARB in the future. A preliminary evaluation of toxic emissions from power plants indicates that these emissions are much lower than the toxic emissions from gasoline-powered vehicles.

32. Comment: Weakening the ZEV requirement increases the burden on stationary sources to provide the air pollution reductions needed to protect public health.

Agency Response: ARB believes the modifications to the ZEV requirement will result in greater emission reductions from the program over the long term primarily due to the success of EVs in the marketplace. (See response to Comment 26.) This will reduce the burden on stationary sources in the long term. The loss of emission benefits associated with the ZEV program in 1998 through 2002 will be offset within the light-duty mobile source sector through the “49-state” program. Stationary sources will not be expected to bear any of this burden.

33. Comment: The ZEV requirement provides a needed incentive to move towards a sustainable future market for diverse fuel sources, thereby promoting energy diversity and security benefits.

Agency Response: The ZEV requirement remains in place beginning with the 2003 model year. A successful launch of ZEVs into the marketplace is still the goal of the program, but the focus of the early years of the program has shifted from producing specific quantities of ZEVs to producing high-performance ZEVs that will be embraced by the marketplace. ARB believes this focus is the surest way to the successful launch of a sustainable market for ZEVs. In this way ARB will be increasing the likelihood of a future market for diverse fuel sources and the corresponding energy diversity and security benefits.

34. Comment: ARB should promote the use of solar and other renewable sources of electricity to ensure the lowest emissions possible associated with EVs.

Agency Response: ARB does not have the authority to promote the use of particular sources of electricity. We do note, however, that unlike emitting electricity generation sources, such as oil- and gas-fired power plants, solar and wind power generation facilities do not have to comply with the myriad of restrictions on emitting facilities. In addition, the California Energy Commission promotes the generation of clean electricity through demonstration programs and research and development funding.

35. Comment: ARB should be supporting a technology that does not rely on fossil fuels; power plants that generate electricity for EVs burn oil and coal.

Agency Response: In California the use of oil and coal to generate electricity is insubstantial. California power plants are tightly regulated to ensure very low emissions. According to ARB's analysis of marginal power plant emissions associated with EVs, it is likely that much of the electricity used by EVs will be generated in California by these very clean sources. ARB has no authority over power plants outside the state. (See response to Comment 34.)

36. Comment: Automakers have been producing vehicles responsible for most of the pollution in urban areas without paying any of the resulting cost of pollution damage. Electric vehicles will help to alleviate this inequity. However, auto manufacturers should be held accountable for pollution from their vehicles or taxed on the emissions from their vehicles.

Agency Response: Mobile source emissions are a significant contributor to air quality problems throughout California. Accordingly, mobile sources are subject to stringent controls, and light-duty vehicles are very heavily regulated. Vehicle manufacturers are required to certify every vehicle sold in California to the most stringent emission standards in the world. In addition, every new California vehicle is tested to ensure that the emission standards are maintained for a 100,000 mile "useful" life. If a particular model fails in-use emissions testing, ARB has the authority to require the manufacturer to recall the vehicles and correct the noncompliance, and where appropriate to collect civil penalties from the manufacturer. In urban areas, all vehicles are required to get a smog check inspection every two years.

Clearly, automakers have shared in the challenge of bringing non-attainment areas into compliance with ambient air quality standards. They will continue to bear responsibility in the future with both the ZEV program and with Measure 2 of the 1994 Ozone SIP, which calls for increased emission reductions from the light-duty mobile source sector. Thus ARB has been vigilant in holding automakers responsible for pollution generated by the vehicles they sell in this state.

Finally, while ARB does not have the authority to levy a tax on vehicle emissions, vehicle manufacturers are required to pay certification fees to cover the costs of state air quality programs related to mobile sources. (Health & Saf. Code § 43019; 13 Cal. Code Regs., § 1990 et seq.)

37. Comment: Postponing the ZEV requirement until 2003 represents a weakening in ARB's commitment to clean air in response to intense lobbying by the auto and oil industries. The postponement hurts ARB's credibility in its role of pushing business towards environmentally-friendly advanced technologies.

Agency Response: ARB's decision to modify the ZEV program was based primarily on information about the state of battery readiness. (See response to Comment 26.) To fulfill the charge it received from the ARB, the Battery Panel visited nine battery manufacturers and solicited written information from eleven others involved in the development of advanced batteries. The panel concluded that lead-acid batteries will be available for use in EVs in 1998, but noted that automakers believe the limited range of lead-acid batteries will restrict these vehicles to a market share less than the requirements of the existing ZEV program. The Battery Panel also concluded that advanced batteries, which will have better range, are expected to be available for use in EVs in production quantities in the early 2000s.

Although production quantities of lead-acid batteries would be available in 1998, ARB does not believe that lead-acid battery-powered EVs would satisfy two percent of the consumers purchasing new vehicles in 1998. In fact, ARB feared that forcing this technology onto the marketplace at this stage of readiness may harm the future of the ZEV program. Thus, ARB decided to postpone the requirement for ZEVs until 2003.

This postponement does not mean that ARB is relinquishing its role as an agency that encourages business towards environmentally-friendly advanced technologies. ARB is continuing this push currently in the form of the MOAs. The MOAs require vehicle manufacturers to produce and demonstrate a total of approximately 3,750 advanced battery-powered EVs in 1998 through 2000. The MOAs also commit ARB to work toward developing the necessary infrastructure that will ensure the success of ZEVs in the marketplace.

38. Comment: Vehicle manufacturers have not historically made progress in reducing emissions from vehicles without a regulatory requirement. California will not be able to meet its clean air goals without a requirement for ZEVs in 1998 and the pressure that requirement places on the auto industry to produce more environmentally benign products. It is the job of ARB to ensure that automaker profits do not always take precedence over clean air.

Agency Response: As modified the ZEV program still includes a regulatory requirement for ZEVs in 2003 and beyond. Additionally, the MOAs require the auto manufacturers to produce and demonstrate EVs equipped with advanced technology batteries beginning in 1998. It is clear that the original ZEV requirement spurred advances in ZEV technologies. By retaining the ten percent ZEV requirement for 2003, ARB intends to continue the pressure of a regulatory requirement and the momentum in ZEV technology development. The advanced battery-powered EV demonstration programs are intended to continue the momentum in ZEV-related research and development. ARB believes EVs powered by advanced technology batteries are essential to the success of these vehicles in the marketplace.

Because the cost of an EV equipped with an advanced technology battery is quite high in the development phase currently underway, ARB decided to scale back on the number of ZEVs required in the early years and focus on the development of these vehicles. American Automobile Manufacturers Association members, Chrysler, Ford and General Motors, have committed to contributing at least \$19 million during Phase II of the U. S. Advanced Battery Consortium for this purpose. Automakers have invested and will continue to invest in ZEV technologies, in large part due to the regulatory requirement for 2003 as well as the MOAs, that will benefit California's air quality over the long term. (See responses to Comments 1, 26, 130 and 181.)

39. Comment: In Appendix B of the Staff Report, ARB assumes that the entire light-duty truck class will be subject to the ZEV mandate. This assumption is incorrect.

Response: For the purpose of the analysis in Appendix B, it was assumed that all light-duty trucks were subject to the ZEV mandate. In fact, Class T2 trucks are not subject to the mandate. This assumption has little effect on the calculation of the relative benefits of the ZEV and NLEV approaches, however, because the total number of ZEVs was maintained. Therefore, the effect on the total inventory would be an error in the distribution of ZEVs between the passenger car and light truck category and not the magnitude of the benefits. This error has been corrected in the latest version of ARB's emissions inventory model, EMFAC 7G.

40. Comment: If ARB staff evaluated the benefits of the original ZEV program using the corrected version of the EMFAC model that was used in Appendix B, the ozone precursor emissions reductions that would result from the original ZEV requirement beginning in 1998 are only 10.4 tpd in 2010. If ARB were to account for the fact that the proposed requirement does not start until 2003, the 2010 emission benefit of the ZEV program is only 8.8 tpd.

Response: The evaluation in Appendix B was conducted to determine whether the benefits of the NLEV program would be equivalent to the benefits of the ZEV program from 1998 through 2002. The analysis shows that the modified ZEV program will provide equivalent emission benefits to the original ZEV program with a premium by 2010. Although there will be a slight reduction in benefits in the early years under the modified program, by 2010 the ZEV requirement beginning in 2003 and the NLEV proposal will provide sufficient emission reductions to offset any loss of benefits attributable to the delay of the ZEV requirement.

41. Comment: Forecasts of mobile source emissions are overestimated; therefore, the benefits of EVs are overestimated. As outlined in a recent study by Energy and Environmental Analysis (EEA), these are the potential sources of errors in the vehicle miles traveled (VMT) assumptions in EMFAC/BURDEN:

- o Demographic sensitivity of vehicle ownership is not considered in the basic forecasts;
- o Basic population forecasts appear to be overestimated;
- o Trip generation rates are not explicitly dependent on income;
- o Overall travel demand is not adequately sensitive to travel costs; and
- o Trip distribution travel time feedback loop only redistributes trip destinations, no consideration is provided for redistribution of trip origins.

The EEA estimated VMT growth for 2010 is only 21 to 23 percent -- less than half ARB's estimated 47 percent growth.

Agency Response: Although the comments on VMT growth are important considerations for ARB generally, these comments -- true or false -- would not effect the outcome of the comparative ZEV and NLEV analysis because the activity of each were assumed to be equivalent for equivalent vintages of vehicles. Thus, in the comparative analysis, any error would cancel itself out.

42. Comment: The 14 tons per day estimate of emission benefits associated with the ZEV requirement are overstated for four reasons:

- o ARB should assume the fleet average standard is met with or without ZEVs;
- o The emission factors for gasoline-powered vehicles should be lowered, as described in Appendix B of the Staff Report, to reflect an enhanced vehicle inspection and maintenance program and Phase II on-board diagnostics requirements;
- o Power plant emissions associated with EVs should be accounted for; and
- o With the proposed modifications, the number of ZEVs on the road in 2010 will decrease.

Agency Response: To respond on a point by point basis:

- o The fleet-average emission rate was determined based on a mix of emitting vehicles and the requirement of a certain percentage of ZEVs. When calculating the 14 tons per day estimate, ARB staff assumed that vehicle manufacturers would produce some combination of emitting vehicles in place of the required ZEVs, thus altering the fleet average emission rate. In the context of calculating the benefits of ZEVs within the original regulations, it was necessary for ARB staff to estimate the makeup of a fleet without ZEVs and its corresponding fleet-average emission rate. However, in

Appendix B of the Staff Report, when ARB staff estimated the shortfall in emission benefits due to a delay of the ZEV requirement, it was assumed that the fleet-average standard would be met without ZEVs. In this context, the assumption that the fleet-average standard would be met without ZEVs is appropriate because one of the conditions of a delay in the ZEV requirement is an agreement from the auto manufactures to meet the fleet-average emission rate in 1998 through 2003.

- o At the time the 14 tons per day benefit was calculated, the EMFAC/BURDEN model did not adequately reflect the enhanced vehicle inspection and maintenance program or Phase II on-board diagnostics requirements. However, the analysis in Appendix B of the Staff Report is based on the EMFAC/BURDEN updated to reflect these program requirements. Any further assessments of the benefits of the ZEV program will be calculated using the latest version of the EMFAC/BURDEN model which includes the benefits of the enhanced vehicle inspection and maintenance program and Phase II on-board diagnostics requirements.
 - o ARB staff's initial estimates indicate that power plant emissions associated with ZEVs amount to less than one ton per day. Because our estimates are rounded to the nearest ton, the inclusion of power plant emissions associated with ZEVs would not have changed the 14 ton per day estimate. Additionally, it is important to note that refinery and extraction emissions associated with gasoline were not included in the ARB analysis either. ARB contracted with Acurex Environmental, a consulting firm, to determine the fuel cycle emissions associated with both electric vehicles and gasoline-powered vehicles. The study indicates that fuel cycle emissions associated with gasoline powered-vehicles (not including vehicle tailpipe and evaporative emissions) are higher than fuel cycle emissions associated with EVs.
 - o The 14 ton per day estimate is based on the unmodified ZEV program. Although the number of ZEVs decrease as a result of the modifications to the regulations, the NMOG and NOx benefits associated with ZEVs in 1998 through 2002 will be realized as a result of the NLEV program. Therefore, the program as a whole will provide air quality benefits equivalent to the NMOG and NOx benefits of the unmodified program.
43. Comment: The emissions reductions that ARB assigns to the ZEV program are insignificant and result in only a one percent reduction in ozone precursor emissions in the South Coast Air Basin in 2010.

Agency Response: Because there are so many categories of sources of air pollution in California and so many different emission control measures, we must control emissions from hundreds of categories (depending on how finely the categories are broken down) using a myriad of strategies to realize the level of emissions reductions necessary to meet air quality standards. Consequently it is not surprising that the reductions to be realized from a

particular control measure applied to one source category (or portion of a source category) is one percent or less. But taken together each of these small increments is necessary to get us to the ultimate goal. The argument that an emission control strategy should not be pursued because it only provides a one percent reduction in emissions could be applied to many regulated sources and control measures: this approach would quickly decimate an effective air quality program.

To provide a more accurate point of comparison the ZEV program benefits should be compared to the benefits of other on-road mobile source programs. Based on the emission reductions included in the 1994 Ozone SIP, the ZEV requirement provides approximately six times the percentage benefit cited in the comment, when compared with the emission reductions anticipated from on-road mobile sources. Even this estimate of percentage benefit is conservative because although power plant emissions associated with EVs are included, refinery emissions associated with gasoline-powered vehicles are not. In addition, unlike most other mobile source programs, the ZEV program has the potential to grow beyond the current requirements in 2003 and beyond, thereby having an increasingly significant impact over time, which is particularly critical in this state where continued population and VMT growth diminishes even the very substantial emission reductions realized from motor vehicles over the past three decades.

44. Comment: ARB should include power plant emissions in its estimate of the benefits of the ZEV program.

Agency Response: Power plant emissions in California were included in the calculation of ZEV benefits in Appendix B of the Staff Report. Power plant emissions associated with the use of EVs amount to less than one ton per day in 2010 even when ARB uses the high end of the staff's estimate of power plant emissions.

45. Comment: When estimating trip length for an EV, ARB should consider the fact that EVs may not be recharged between trips. To account for this, ARB should assume that each trip only represents one half of a pair of trips of equal lengths and that the EV cannot be recharged between the pair of trips. If an EV has an average range of 100 miles and ARB combined all 50 mile trips into pairs, the effect of the reduced use of an EV would also reduce the benefits associated with the EV.

Agency Response: ARB staff's estimates of the number of trips an EV could replace are based on miles traveled per day not miles traveled per trip. A study done by the Institute of Transportation Studies (ITS) at University of California, Davis found that most Californians drive less than 50 miles each day. It is likely that with the convenience and cost savings of recharging overnight at home, most EV owners will recharge their EVs at home at the end of the day.

46. Comment: Sierra Research estimates the incremental cost of EVs at \$14,600 per EV. If this cost is reflected in the price of all new vehicles and not just the EVs, sales of new vehicles will decline and the value of older vehicles will increase resulting in an older, higher-emitting fleet of vehicles. Sierra Research has done an analysis of this effect and found that the emissions benefits attributable to the ZEV program would be significantly reduced.

Agency Response: ARB believes the cost figures provided by Sierra Research overstate the cost differential significantly. (See response to Comment 81 for a detailed response to the Sierra Research cost figure.)

ARB agrees that there is a chance the additional cost associated with early ZEVs will be distributed over the entire fleet of new vehicles. Historically, auto makers have occasionally offset the cost of losses in a particular model by increasing the price of other models. This practice could reduce the benefits of ZEVs in the early years of the program by slowing fleet turnover. However, this effect is likely to be minimized in the early years of the program due to the availability of monetary incentives. Additionally, the modifications to the ZEV program are intended to reduce the introductory cost of the ZEV program by focusing on the advancement of technology rather than production quantities of early ZEVs. For these reasons ARB believes that the fleet turnover rate will be minimally effected if at all. Further, once the technology has been refined and production of advanced EVs increases, ARB believes that, on average, an EV should not cost more than a comparable gasoline-powered vehicle. Thus, any decrease in ZEV benefits due to an increase in new vehicle costs would be short-lived.

47. Comment: Market research indicates that an EV will often be a second vehicle used for relatively short trips in lieu of a gasoline-fueled vehicle retained by the EV owner for longer trips. Even when an EV displaces an existing gasoline-fueled vehicle, use of the remaining gasoline-fueled vehicle(s) in a multiple-vehicle household is likely to be different from the use of the remaining vehicles if the replacement vehicle were a newer gasoline-fueled vehicle. Either of these scenarios makes the net effect of EV sales on exhaust, evaporative, and refueling emissions quite complicated.

Agency Response: It is true that when a new vehicle is purchased in a household it is likely to be used differently than the vehicle it is replacing and that the use of the other vehicles in a multiple-vehicle household may be affected. It is difficult to determine whether or not such differences will be the same or similar if the replacement vehicle is an EV rather than a new gasoline-powered vehicle. The ITS study discussed in response to Comment 45 concluded that most Californians drive less than 50 miles a day and a General Motors survey that concluded that nearly 85 percent of the drivers in Los Angeles drive less than 75 miles per day. This data supports a determination that a new EV is not likely to signal a significant shift in use patterns relative to a new gasoline-powered vehicle. Moreover, as advanced battery technologies become available in production quantities for use in EVs and

the infrastructure for EV recharging proliferates, the utility of EVs will be extended as will their ability to more fully replace gasoline-powered vehicles.

48. Comment: While the ZEV program poses challenges, it also offers enormous benefits. Those benefits greatly outweigh the risks and it is both prudent and appropriate to proceed with the original schedule for ZEV program implementation.

Agency Response: The risk of concern with the ZEV program is that the 1998 implementation date may be premature. This is not a risk that can be outweighed by the potential benefits of the program: it is a risk that must be addressed to preserve those benefits. That is exactly what the proposed amendments are intended to do. (See response to Comment 26.) The need for this action is amply supported by the record.

49. Comment: The ZEV mandate is not effective and efficient and does not give adequate recognition to the effects on the economy of the state. Thus, it does not meet the stated mission of ARB.

Agency Response: The regulatory proposal under review in this rulemaking proceeding is the amendment of the existing ZEV requirement. Issues related to the effectiveness and efficiency of the ZEV requirement as well as its consistency with ARB's mission to protect air quality were addressed during the LEV rulemaking in 1990 when the ZEV requirement was adopted.

50. Comment: The ZEV requirement in 2003 and beyond should be eliminated as it is not necessary for California to meet federal air quality standards and the requirements of the State Implementation Plan.

Agency Response: The ZEV requirement is a one of the control measures included in the SIP. It is a critical component of the SIP because the ZEV requirement, when it is successfully implemented, has the potential to provide long-term emissions reductions from motor vehicles with no in-use deterioration. (See response to Comment 26.)

E. Air Quality Benefits of the National Low-Emission Vehicle (NLEV) Program

51. Comment: The emission benefits resulting from the migration of cleaner cars into California will not offset the emission benefits lost due to the delay of the ZEV requirement; the staff's projection for emission reductions from migrating cleaner cars is overly optimistic. The in-migration of vehicles is highly volatile and very unpredictable, and ARB has employed the most favorable assumptions regarding the emission characteristics of the in-migrating vehicles.

Agency Response: ARB staff looked at the sensitivity of our assumptions to determine whether they are critical to the end result, which is to ensure that the NLEV program⁴ provides equivalent emission reductions relative to the ZEV program in 1998 through 2002. Had ARB staff used a lower migration rate, say 14 percent rather than the 18 percent migration rate used, the analysis would change as follows:

- o in 2010, the NLEV program would fully offset the lost ZEV benefits with a premium;
- o the cumulative reduction from 1998 to 2010 would offset about 80 to 85 percent of the lost ZEV benefits -- not the 104 percent offset reached using an 18 percent migration factor; and
- o the actual reductions achieved by NLEV would be about 0.3 tons per day less than the reductions from the ZEV program in 1998 through 2002.

Generally ARB staff does not devote significant resources to sources with emission of less than one ton per day. Thus we concluded that reasonable differences in assumptions were not critical to the policy issues at hand.

52. Comment: Replacing the ZEV requirement with a NLEV program will result in an increase in particulate matter, greenhouse gas, and toxic air contaminant emissions.

Agency Response: ARB recognizes that because there may be fewer ZEVs in 1998 through 2002 and the NLEV program does not begin until 2001, there may be a slight increase in particulate matter, greenhouse gas, and toxic air contaminant emissions in the introductory years of the program. In those years, the emission benefits of the original ZEV program would not be fully offset by the “49-state” program to be implemented by 2001 under the terms of the MOAs. However, ARB believes that the long-term success of the ZEV program and concomitant reductions of particulate matter, greenhouse gases and toxic air contaminants can only be assured if automakers are allowed more flexibility during the introductory years of the program (from 1998 to 2002). Thus, ARB found that it is appropriate to forego a small portion of the total projected ZEV program benefits during the early years in anticipation of much greater benefits associated with a long-term successful ZEV program. (See response to Comment 26.)

⁴ In the MOAs, the signatory manufacturers have committed to implement a “49-state” vehicle program. Under this program, manufacturers will sell the equivalent of California LEVs nationwide. This may be accomplished by opting into the National Low-Emission Vehicle (NLEV) program created by U.S. EPA or by certifying a California LEV as a “50-state” vehicle for sale nationwide. Alternatively a manufacturer may provide the emissions reductions benefits by some other measure with prior approval by the Executive Officer that the benefits of the alternative would be equivalent to the benefits from implementation of the NLEV program.

53. Comment: The MOAs contractually bind ARB to accept the NLEV program beginning in 2001 as providing equivalent emissions to the ZEV program in 1998 through 2002. Given all the uncertainties, ARB should commission a more detailed study on the benefits of the NLEV program to ensure that California's air quality is not adversely affected.

Agency Response: The ARB intends to continue monitoring the effects of all of the mobile source control measures included in the SIP. In that context ARB will monitor implementation of the "49-state" program to confirm that the benefits of the NLEV program, or one of the alternatives allowed under the MOAs, provides the reductions assumed in the SIP. In accordance with the requirements of the federal Clean Air Act, any shortfall will have to be addressed by ARB, presumably through additional mobile source reductions.

54. Comment: The benefits of the NLEV program will not offset the benefits of the ZEV program until at least 2007. Thus, the NLEV program will not meet the interim goals set in the State Implementation Plan and will not provide emission benefits equivalent to the ZEV program.

Agency Response: By 2007 the emissions reductions from the "49-state" program will exceed the reductions to be realized if the ZEV requirement was successfully implemented in 1998, and the cumulative benefits of the "49-state" program will offset the lost benefits of the ZEV program with a premium in 2010. Further, ARB has determined that the amendment of the ZEV program will not jeopardize any of the rate-of-progress or attainment demonstrations in the SIP because vehicle manufacturers must continue to meet the fleet-average NMOG standard and because the "49-state" program will provide sufficient offsetting emissions reductions even for those milestones occurring prior to 2007.

55. Comment: The staff's analysis of the benefits of the NLEV program suggests emissions will increase in the South Coast Air Basin until 2006 when the benefits of the NLEV program begin to offset the benefits of the ZEV program in 1998 through 2002. The analysis done by the Union of Concerned Scientists (UCS) suggests emissions will increase until 2007.

Agency Response: The ARB staff's analysis indicates that the benefits of the NLEV program will offset the benefits of the ZEV program in 1998 through 2002 by the year 2007. Therefore, both ARB and UCS agree on this aspect of the analysis.

56. Comment: When calculating the benefits of the NLEV program, ARB staff assumed that all migrating vehicles from model years 2001 and later would be low-emission vehicles. In fact the benefits of the NLEV program are overstated because the Northeast States have already adopted California's low-emission vehicle program and vehicle manufacturers other than the largest seven will not be effected by the NLEV requirements.

Agency Response: New York and Massachusetts have already adopted the California LEV program under § 177 of the FCAA. The Ozone Transport Commission (OTC) LEV decision would require all Ozone Transport Region (OTR) member states⁵ to adopt a low-emission vehicle program based on the California LEV program. This program would be created by a federal rulemaking creating a voluntary national low-emission vehicle (NLEV) program. The Notice of Proposed Rulemaking for the NLEV program was published October 10, 1995, but the final rule has not yet been promulgated. Moreover, statistics pertaining to in-migration from other states indicate that approximately one percent of the population relocating to California originate from the Northeast States that make up the OTR. The in-migration of vehicles from New York and Massachusetts represents only a portion of this one percent. Because this percentage is so small, no explicit adjustment for the fact that some Northeast States have adopted California standards was made. Finally, although the analysis in Appendix B assumes all manufacturers are subject to the NLEV program, ARB staff also assumed all manufacturers would have been subject to the ZEV program in 1998 through 2002.

57. Comment: The Northeast States have been negotiating with the automakers regarding the sale of cleaner cars nationwide. California's actions today may increase the likelihood of a NLEV program but, because the MOAs would allow alternatives to the NLEV program, they do not ensure an NLEV program. In fact, the manufacturers are still equivocating on whether or not they intend to actually produce low-emission vehicles for sale nationwide. The automakers will probably base a decision regarding the NLEV program on what happens in the Northeast. Therefore, it may not be appropriate for ARB to take full credit for emission reductions associated with the NLEV program.

Agency Response: The issue here is not who can take credit for getting the automakers to agree to sell cleaner cars nationwide prior to model year 2004, the earliest data U.S. EPA may adopt mandatory LEV standards under the Clean Air Act. The 1994 Ozone SIP emissions baseline currently assumes reductions that would be realized from successful implementation of the ZEV requirement in 1998. ARB has determined that the technology is not ready to ensure successful implementation in 1998 and has determined that the program should be delayed for five years. (See response to Comment 26.) In order to protect the SIP, ARB must identify emissions reductions to offset the loss of the anticipated reductions from the current ZEV program. To maintain compliance with federal law, the new emissions reductions may not come from control measures already included in the SIP. Measure M2 in the SIP commits ARB to provide additional tons of emissions reductions from as yet unspecified measures for light-duty vehicles, and the SIP includes other control measures that have not yet been detailed, including in the South Coast measures that rely on the development of new technologies. Until these various commitments have been fulfilled,

⁵ The OTR is made up of: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland, the District of Columbia, and that part of Virginia that is in the CMSA that includes the District of Columbia.

emissions reductions from measures applicable to these sources that are within ARB authority must be considered encumbered until the obligation represented by M2 (and any other similar measures) has been fulfilled. The significance of the “49-state” program is that because California has no authority to set emissions standards for vehicles sold outside California, there is no way the benefits of this program could have been included in the SIP. That is, the “49-state” program emissions reductions bring something completely new into the mix of SIP control strategies. In this context it is irrelevant whether vehicle manufacturers agree to implement the NLEV program solely because of the MOAs with ARB or for any other reason. The benefits are as real and as available for SIP purposes. (See responses to Comments 58 and 59.)

58. Comment: Because the NMOG fleet average standard remains in effect the repeal of the ZEV mandate will not result in an increase in NMOG gases, which are ozone precursors, but the action will result in an increase in NO_x, another ozone precursor, and toxic emissions. ARB is relying on the introduction of cleaner cars nationwide -- that is, the lower emissions from these vehicles when they come into California from out-of-state -- to make up the differences. But the manufacturers’ agreement to opt into the National Low Emission Vehicle program to produce these reductions is not surprising because they previously offered implementation of such a program as an alternative to state-by-state adoption of the California standards.

Agency Response: The application of the fleet average NMOG exhaust emission standard will ensure no increase in exhaust NMOG emissions even if the ZEV requirement for model years 1998 through 2002 is eliminated. But there will be very small, short-term increases in NMOG emissions due to evaporative and refueling emissions. Similarly there will be minimal, short-term increases in other motor vehicle emissions as a result of the proposed delay. Implementation of the “49-state” vehicle -- or NLEV -- by the automakers as provided in the MOAs will fully offset these emissions increases with a premium by 2010.

In negotiating the agreement that calls for the implementation of the NLEV program to offset the loss of emissions reductions resulting from the delay of the ZEV requirements for five years, ARB was aware that the automakers had offered the NLEV program as an alternative to adoption of the California program by the OTR states in the context of the federal OTC rulemaking requiring adoption of the California LEV program (OTC LEV). The voluntary NLEV program was to be established by regulations adopted by U.S. EPA. Under these regulations the program would be implemented if and when all the OTR states and all the vehicle manufacturers agreed to the program. While a number of OTR states appeared to be poised to accept this offer, at least two states -- Massachusetts and New York -- that had already adopted the California LEV program including the ZEV requirements had made it clear that they would not forego the ZEV program for NLEV. Vehicle manufacturers just as adamantly maintained that they would not sign on to the NLEV program unless all the OTR states did so and gave up the right to maintain a separate California program. The program had been stalled for many months prior to this rulemaking

because of this impasse and there was no sign that a resolution could be reached by the affected parties. In fact, it was not clear whether U.S. EPA would even finalize the voluntary NLEV program regulations (§ 202(b)(1)(C) of the federal Clean Air Act prohibits U.S. EPA from adopting mandatory NLEV standards before the 2004 model year) at the time ARB entered into and concluded negotiations with the affected automakers. By securing agreement of the seven largest automakers to implementation of the NLEV program, California was able to obtain the benefits of this program not only for this state but the rest of the nation as well. That the automakers had offered to implement such a program in another context does not detract from the benefits secured under the MOAs. (See response to Comment 57.)

59. Comment: The manufacturers' commitment to the NLEV program will not ensure that the repeal of the ZEV mandate for five years will not result in one additional ounce of air pollution. The manufacturers will either implement the NLEV program or will not regardless of California's actions. California is getting nothing from this commitment in the MOAs.

Agency Response: The emission reductions to be realized by the NLEV program will benefit California whether it is done as a result of the MOAs with ARB only or the California MOAs in concert with agreements with U.S. EPA and the OTR states. (See responses to Comments 57 and 58.)

60. Comment: California's reliance on the NLEV program is unfounded because the program does not exist. The NLEV program will not go into effect without being endorsed by all of the OTR states. Massachusetts has submitted comments to U.S. EPA questioning the benefits of the proposed NLEV program as well as its legality. Thus there are questions about whether California can take credit for such emission reductions in its 1994 Ozone SIP. The MOAs provide a contingency provision that calls for the vehicle manufacturers to make up the emission reductions by some other unspecified control measures. But this does not provide the level of assurance required under federal law.

Agency Response: The MOAs were written to allow vehicle manufacturers to fulfill their "49-state" program obligation by opting-in to the federal NLEV program if U.S. EPA finalized the regulations establishing such a voluntary program in time to meet the commitment in the MOAs. If such regulations are not finalized, the automakers must meet this obligation by producing the equivalent of a California LEVs for sale nationwide. This can be accomplished by certifying a California LEV for nationwide distribution. Manufacturers have produced and sold such "50-state" cars in the past, for example, when state and federal standards are similar. The MOAs authorize manufacturers to propose an alternative method of attaining the emission reductions from the "49-state" program, but this cannot be done without a prior determination by ARB that emission reductions from the alternative would be equivalent to those from the "49-state" program. In determining the equivalency of the emission reductions the Executive Officer must consider all relevant

factors including the unique nature of these reductions as reductions that ARB could not otherwise accomplish to meet as yet unspecified 1994 Ozone SIP measures.

61. Comment: ARB should monitor migration of cleaner cars into California to ensure that the emission reductions they provide are equivalent to the emission reductions that the ZEV requirement in 1998 through 2002 would have provided.

Agency Response: ARB intends to follow up on the benefits of the NLEV program to ensure that the emission benefits projected are realized. (See response to Comment 53.)

62. Comment: ARB staff has ignored Secretary Stock's principle of a technology-based clean-air premium. The 12-year cumulative benefit of the NLEV program provides only a four percent emissions premium, hardly a "significantly greater" benefit when one considers the inherent uncertainty in the mobile source emissions inventory.

Agency Response: The 1994 Ozone SIP already includes all reasonably feasible control measures for all source categories including mobile sources such as light-duty vehicles. The SIP includes measures that must be implemented by federal, state, regional and local agencies. All of these measures are necessary to ensure timely attainment of the ozone standard. Due to the magnitude of the problem in some areas of the state, the measures identified in the SIP include commitments to implement as yet undefined control strategies for certain source categories based on assumptions about the development of advanced technologies and market-based strategies. In this context, an additional cumulative benefit of four percent is not insignificant. Moreover, in addition to the four percent premium in 2010, the "49-state" program will continue to provide additional benefits after 2010 as out-of-state vehicles continue to migrate to California. These benefits are technology based: they are the result of the proliferation of LEV technology across the country.

63. Comment: The cleaner vehicles migrating into California as a result of the NLEV program will be gasoline-powered, therefore, their emission control equipment will deteriorate and perhaps malfunction which will further decrease the benefits of the migrating vehicles relative to electric vehicles. Deterioration for out-of state vehicles and equipment malfunction factors are not adequately calculated in the EMFAC/BURDEN model.

Agency Response: As stated in Appendix B of the Staff Report, it was assumed that vehicles certified to similar standards would emit, and deteriorate, identically once in California, regardless of their origin. California's in-use emission control programs have a profound effect on maintaining lower emissions from vehicles which originated out of state.

64. Comment: The EMFAC/BURDEN model already assumes future in-migrating vehicles are even cleaner than the proposed 49-state car. To do their share of reducing California's emission inventory the automakers would have to build a 49-state car in addition to being responsible for the foregone ZEV program emission benefits.

Agency Response: Although EMFAC 7F assumed that future in-migrating vehicles would be cleaner than NLEVs, this erroneous assumption had no bearing on the analyses performed in Appendix B of the Staff Report. This is true because the model was used only to estimate the relative benefits of ZEVs and NLEVs. Thus, the assumption of migrating vehicles being cleaner than NLEVs was not carried over. To correct the error in our current model, the basic emission rates used in EMFAC are being adjusted to reflect the correct emissions rates for in-migrating vehicles.

65. Comment: Any program that replaces EVs with vehicles powered by internal combustion engines cannot provide equivalent emission reductions because the source of emissions associated with EVs is centralized in a minimal number of locations. Therefore, it is more effective and efficient to control emissions associated with EVs. Further, if the electricity used to power EVs is generated at a solar, wind or hydro-electric power plant, there are no emissions associated with EVs.

Agency Response: ARB recognizes the relative ease of controlling a few centralized power generation sources, some of which may be pollution-free, versus the difficulty of controlling emissions from millions of vehicles on the road. This fact is one of the reasons the ZEV program is considered such a vital part of California's long-term strategy to attain and maintain ambient air quality standards. The NLEV program is not meant to replace the ZEV program. Rather, the intent is to obtain emissions reductions equivalent to the reductions associated with the ZEV program in 1998 through 2002, while delaying the ZEV requirement to allow auto manufacturers more time to commercialize advanced battery-powered ZEVs. (See response to Comment 26.) As stated in the response to Comment 37, ARB believes EVs powered by advanced technology batteries are necessary to the sustained success of ZEVs in the marketplace.

66. Comment: Even if California is successful at getting an NLEV program implemented, the proposed changes would still result in dirtier air in California than with the current ZEV mandate. ARB's own analysis shows that prior to 2010 the proposed repeal of the ZEV mandate will result in a shortfall in emissions reductions even if NLEV is fully implemented. Thus ARB must provide additional emissions reductions to offset the reductions lost from repeal of the mandate.

Agency Response: ARB is responsible for ensuring that all of the emission reductions from mobile source regulations and programs contained in the 1994 Ozone SIP are attained on a timely basis. While the proposed action will defer some of the benefits currently associated with the ZEV program, the loss of emissions reductions during this period is minimal and will not impact any rate-of-progress or attainment demonstration in the 1994 Ozone SIP. (See responses to Comments 54, 99 and 183.)

67. Comment: Because changes in federal law could result in U.S. EPA adopting mandatory national low-emission vehicle standards earlier than 2003 [sic] and because individual states could adopt the California LEV program and require introduction of low-emission vehicles before 2003 [sic], it is uncertain that the NLEV program in the MOAs will provide actual emissions benefits as projected. Therefore, the MOAs must include additional compensatory mitigation measures that would be triggered if the full measure of emissions benefits do not materialize.

Agency Response: While it is possible that Congress could change the law to allow U.S. EPA to establish national LEV standards earlier than model year 2004 as now provided in § 202(b)(1)(C) or that individual states in addition to Massachusetts and New York could adopt the California standards under § 177, both of these occurrences are quite speculative and need not be considered by ARB in this rulemaking proceeding. Even if either of these possibilities came to pass, it would not change the emissions impact of these vehicles in California. The purpose for implementing the NLEV program is to realize the associated emission reductions. If these reductions are realized as a result of changes in federal law and action by U.S. EPA or by concerted action of individual states that have not adopted the California LEV program, the emission reductions are not included in or encumbered by the SIP, and will have the same effect in terms of maintaining consistency with the SIP.

68. Comment: It is premature and inappropriate for ARB to adopt any proposal that would link compliance with NLEV revisions to the low-emission vehicle regulations for three reasons. First, there are serious unanswered questions in the U.S. EPA's authority to certify or enforce more stringent emission standards for new vehicles beyond those specified in the federal Clean Air Act as amended in 1990. Second, the U.S. EPA lacks the authority to certify NLEV vehicles utilizing California's on-board diagnostics II system. Third, the U.S. EPA may not have the ability to certify a California low-emission vehicle outside of California.

Agency Response: Implementation of the NLEV program is the primary mechanism considered by the parties to the MOAs for meeting the commitment to sell cleaner cars nationwide. If the NLEV regulations are not finalized for any reason, however, the MOAs would allow manufacturers to comply by certifying California LEVs for sale nationwide by certifying them as "50-state" vehicles, i.e., vehicles meeting both California and federal requirements (applicable in all states that have not adopted the California program).

69. Comment: Problematic assumptions in ARB's emissions analysis include the following:
(1) future 49-state vehicles will have durable, extremely effective emissions control systems;
(2) a continuously high rate of clean vehicles will move from other states to California; and
(3) Smog Check and OBD II will become more successful despite highly uncertain factors including technological improvements and motorist behavioral changes and despite the failure to subject ARB's emissions model to public review and comment on these issues.

Agency Response: ARB considered the sensitivity of the assumptions used to determine whether they were critical to the end result, which is to ensure no loss of emissions reductions. In considering the sensitivity of the assumption that 18 percent of all new registrations in California each year involve cars originally sold in another state, i.e., a 49-state vehicle, staff found that even if this number dropped to 14 percent, the NLEV program would fully offset the loss of anticipated ZEV-related emissions reductions with a premium in 2010. (See hearing transcript, pp. 45-47.) In the analysis performed in Appendix B, it was assumed that vehicles certified to the same standards that were subject to the same in-use compliance programs would have indistinguishable emissions characteristics. Simply stated, it was assumed that emissions from federally-certified LEVs would be equivalent to emissions from California-certified LEVs. No specific claims were made concerning the benefits of Smog Check or OBD short of the assumptions that any benefits derived from either control measure would be equivalent for all low emission vehicles regardless of origin. (See also responses to Comments 42 and 63.)

ARB's emission factor models are subject to rigorous review prior to the release of any update. At that time, public workshops are held to present the results of relevant analyses and solicit feedback on the modeling process. Finally, the model is submitted to the U.S. EPA for approval. This approval must be granted prior to the use of the models for development of conformity and air quality management plans.

70. Comment: ARB's emissions analysis suggests an unrealistic level of certainty and is likely to overstate the benefits of the proposed substitution. Nevertheless, ARB's analysis fails to identify any source for remedying deficiencies in emissions reductions. This could jeopardize California's SIP obligations.

Agency Response: See responses to Comments 51, 53, 61 and 202.

F. Alternatives to the Proposed Amendments

71. Comment: Instead of a market-based approach, ARB should take regulatory action that provides greater flexibility while retaining the force of the original ZEV mandate, as presented at previous Board hearings and workshops.

Agency Response: ARB believes the proposed amendments do provide greater flexibility, while retaining the force of the original mandate. In addition, the amendments promote a partnership and commitment between ARB and automakers to move EV technology forward. (See responses to Comments 26 and 38.)

72. Comment: ARB should move the requirement for ZEVs back to 1999 or 2000, not back to 2003.

Agency Response: ARB believes a requirement for ZEVs in 1999 or 2000 would not allow enough implementation flexibility, nor promote the market-based aspects of the program modifications. Even assuming a “complete success scenario,” advanced technology batteries are not expected to be ready for commercial production until the early 2000s. ARB has determined that an EV launch relying solely on lead-acid battery technology could “poison the well” for future sales if consumer perceptions of limited range EVs and battery replacement needs are negative. The proposed amendments reflect the high priority ARB places on ensuring a successful introduction and proliferation of ZEV technology. ARB believes this can best be accomplished by allowing market forces to dictate the vehicle numbers and pace of the ZEV ramp-up to the 2003 requirement.

73. Comment: If ZEV technology is not ready for a large-scale market, ARB should scale back its ZEV requirements in the early years, not eliminate the requirement entirely.

Agency Response: The MOAs require auto manufacturers to place limited numbers of EVs powered by advanced technology batteries in demonstration projects beginning in 1998. The demonstration program will allow auto manufacturers to better determine the potential market for a large-scale introduction of ZEVs. (Also see responses to Comments 1, 71 and 72.) In addition, vehicle manufacturers have committed to have the capacity to meet consumer demand for ZEVs.

74. Comment: It was clear from the forums and from the hearings prior to March 28 and 29, 1996, that the overwhelming majority of the public favored maintaining the ZEV requirement in 1998 through 2002. Was there any public input that persuaded ARB to propose a voluntary plan?

Agency Response: While ARB takes into consideration all public input, ultimately we must determine whether a regulation will be a technologically feasible and cost-effective means of achieving clean air in California. Certainly, public surveys indicated that the majority of Californians supported the original ZEV regulation and comments received at public workshops and hearings demonstrated that the majority of vocal stakeholders were against modifications to the regulation. But this does not necessarily indicate how the majority of Californians, as consumers, would view the ZEVs produced by manufacturers in 1998. Political polls and public opinion surveys may not accurately reflect actual consumer purchase behavior. Because the effectiveness of the ZEV regulation hinges on consumers purchasing and using ZEVs, ARB necessarily places emphasis on the status of technology and potential for market success in determining that modifications to the ZEV requirement were needed. If in fact consumer demand is as strong as expressed public opinion indicates, EVs will be available to meet the demand as a result of manufacturer commitments in the MOAs to have the capacity to meet market demand for ZEVs.

75. Comment: ARB should set performance standards for emission reductions and permit the competitive marketplace to find the most efficient, least costly, and least disruptive means of achieving those standards.

Agency Response: ARB typically sets performance-based emission standards and allows industry to meet those standards in any way they choose. In addition to the typical performance-based emissions standards (and the added flexibility of the fleet-average NMOG standard), ARB's Low-Emission Vehicle regulations include a requirement to produce specified numbers of ZEVs. ARB also considers the ZEV program to be more of a performance than a prescriptive standard. (See response to Comment 159.) The real underlying concern expressed in this comment is that the ZEV standards are technology forcing. At the time the LEV regulations were adopted, ARB determined that the potential for ZEV technology existed. ARB recognized that although ZEVs represented the potential for vehicles with no tailpipe emissions throughout their useful lives regardless of maintenance and no refueling emissions, without a major push, there were many hurdles blocking the development and introduction of ZEVs. By establishing the original two, five and ten percent requirements, ARB successfully spurred development of ZEV technology. By retaining the ten percent requirement for 2003 and beyond, ARB intends to ensure that progress does not slow or stop now that we are so close to success. If not for the push of the original ZEV program, instead of considering the best way to introduce a nascent technology, we would likely still be debating the best way to push ZEV technology development.

The amendments to the original regulations, in tandem with the MOAs, ensure that automakers will introduce ZEVs according to market demand. This combination of a market-based launch and a requirement in 2003 and beyond provides sufficient flexibility to ensure the successful introduction of ZEVs while maintaining a regulatory push to continue research and development. ARB believes the ZEV regulation as amended and the MOAs are the most efficient and cost-effective means of achieving the emission reduction benefits of ZEV to meet our air quality goals.

To provide further flexibility in meeting the requirement for ZEVs in 2003, the ARB staff is currently developing a regulatory proposal to establish a new category of vehicle with emission levels equivalent to that of a battery-powered electric vehicle. This proposal is described in more detail in the response to Comment 78.

76. Comment: The modified ZEV program is not market-based and still represents a mandate. Mandates are bad public policy and the ZEV mandate should be repealed entirely.

Agency Response: For the first five years of the modified ZEV program, automakers have committed in the MOAs to have the capacity meet consumer demand for ZEVs. But the program retains the ten percent requirement beginning in 2003. The retention of a firm ten percent requirement in 2003 and beyond will help ensure that both ZEV battery and vehicle

technology development efforts will continue to progress, building on the success of the past six years since ARB first adopted the requirement. (See response to Comment 75.)

77. Comment: If ZEVs are to be “voluntarily” introduced, why must there be a mandate for their sales?

Agency Response: See response to Comment 76.

78. Comment: Allowing hybrids to get partial ZEV credits or credits as an equivalent zero-emission vehicle (EZEV) will give vehicle manufacturers an alternative to EVs.

Agency Response: ARB staff is currently developing a regulatory proposal to establish a new category of vehicle with emission levels equivalent to that of a battery-powered EV operating in the South Coast Air Basin. Each vehicle certifying to this new EZEV category would receive one ZEV credit (equivalent to replacing one EV). Any technology that can meet the standard could qualify as an EZEV. Some hybrid-electric vehicle (HEV) technologies may qualify for EZEV credit.

In 1997, ARB will re-address the issue of whether HEVs with significant all-electric range that do not qualify as EZEVs should receive partial ZEV credit. Due to the lack of real-world emission test data on HEVs, ARB has not yet taken a position on this issue. However ARB supports the introduction of HEVs in California and recognizes their potential to achieve extremely low emissions. The current LEV regulations already provide extra NMOG credit for HEVs with all-electric range greater than 40 miles. This extra credit is described in more detail in the response to Comment 126.

79. Comment: California’s problem demonstrating equivalent emission reductions could be reduced by retaining the ZEV mandate even a softened one. ARB should have considered this alternative to the proposed elimination of the ZEV requirement for five years. Then California could claim reductions from the mandate as retained and the NLEV program if it is adopted.

Agency Response: ARB does not have a problem showing equivalent emissions reductions. The “49-state” program commitments in the MOAs will provide the reductions. ARB considered a softened ZEV mandate as an alternative to the proposal but rejected it. As stated in the Staff Report, this alternative was rejected because it would not provide the flexibility necessary to ensure a successful launch of a sustainable market for ZEVs. Based on information provided by the Battery Panel, ARB determined that it would be necessary over the next several years to push the continued research and development efforts related to advanced technology batteries and that this goal would best be accomplished in a partnership with the automakers. (See also response to Comment 73.)

G. Zero-Emission Vehicle Costs

80. Comment: Electric vehicles are too expensive. Consumers will not be willing to pay a premium for EVs that cannot perform as well as gasoline-powered vehicles.

Agency Response: Although not all consumers would be willing to pay extra for a non-polluting vehicle, a review of the comments received at the ZEV forums and in response to the public hearings conducted in October, November and December of last year indicates that there is at least limited consumer interest in purchasing current technology EVs. In addition, some automakers have announced their intention to offer EVs to the general public as early as fall of 1996. Such announcements indicate that these manufacturers believe there is a market for even limited-range premium-price EVs.

It should also be noted that the price of EVs is not expected to remain high for the long-term. All new technologies are initially priced high. As volume increases, and production processes are refined, prices generally decrease. Electric vehicles are expected to follow much the same pattern. In the early years, some federal and local incentive monies will be available to offset the higher cost. As the cost of EV production decreases over time, these incentives sunset, forcing EVs to compete on their own with other vehicles. Electric vehicles will be able to effectively compete in the market not only because prices will equalize but also because vehicle performance characteristics are expected to improve markedly when advanced technology batteries are available to power EVs.

81. Comment: Implementation of just the early years of the ZEV program will cost over \$20 billion and every EV will cost an average of \$14,600 more than a comparably-sized gasoline-powered vehicle. This would amount to a surcharge of \$2,000 on every gasoline-powered vehicle sold in California.

Agency Response: The import of this comment apparently is that ARB did not go far enough with the current regulatory proposed and should instead eliminate the ZEV requirement altogether. ARB does not agree that such action is necessary because the cost analysis presented is flawed.

ARB staff has examined the assumptions used in deriving the \$20 billion figure as well as the \$14,600 figure and has identified a number of areas of disagreement. First, both figures apply to the original requirements for ZEVs beginning in 1998, and not to the modified program. The modifications to the regulations allow vehicle manufacturers to introduce EVs into the marketplace according to demand, and in whatever way makes the most economic sense. Automakers will be able to invest in longer-term technology that has the potential for broader market success, thereby avoiding the production development costs associated with technology that could be quickly outdated. Vehicle manufacturers and EV component and battery suppliers will have additional time to move further along the learning curve in developing their manufacturing processes which could lower the costs of EVs for manufacturers and consumers. Additional time to conduct on-road tests of EVs could prevent system failures that could be costly to both manufacturers and EV purchasers.

Additionally, the market demand for high-performance EVs will be greater than the demand for lead-acid battery-powered EVs. This will encourage manufacturers to spread their costs over production of more units domestically and internationally, enabling lower prices for California buyers. All these factors contribute to a reduced cost associated with the introduction of this new technology under the modified ZEV program.

ARB also disputes the cost estimate done by Sierra Research (the consulting firm that conducted the assessment that produced the \$20 billion figure). They based their analysis on high fixed costs for EVs costs. These high costs were amortized over a short time frame at low production volumes that do not depict a growth market. Because these assumptions are overly adverse to EVs, ARB does not accept Sierra Research's cost estimates for ZEVs.

It is important to note that ARB believes that once the production of EVs increases and the technology has been refined, an EV should cost no more than a comparable gasoline-powered vehicle. The cost of the vehicle itself has been estimated by one executive at Ford Motor Company as well as in a study done by the University of California, Davis to be approximately equal to the cost of a gasoline-powered vehicle. ARB estimates of EV life cycle costs, based on projections by manufacturers and we believe that the lifetime vehicle operating costs, including batteries, of EVs will be similar to the costs of a similar model gasoline-powered vehicle.

To recoup any additional cost associated with EVs in the early years of the program some automakers may choose to increase new vehicle prices. But ARB does not believe it is reasonable to assume that all manufacturers would risk losses in market share by raising the price of all of their California product lines by \$2,000. Although vehicle manufacturers have, in the past, increased the price of certain models to help offset losses in another model, such price increases are not targeted at every model in only one state. Rather such price increases are targeted at specific models chosen because sales of these models are not significantly affected by slight price increases. Further, such increases are not specific to any particular state or country. Instead, any increases are carefully planned to have little or no effect on vehicle sales.

82. Comment: Sierra Research has estimated that, even with the proposed amendments, the added cost of the ZEV program will be \$17 billion. This means that the cost of the ZEV requirement in 2010 is over ten times higher than that of other emission control measures.

Agency Response: Although this version of Sierra Research's cost figure claims to account for the amendments to the ZEV program, it does not allow for any cost savings due to the market-based introduction of ZEVs. For this reason and the other reasons outlined in the response to Comment 81, ARB does not agree with these estimates.

83. Comment: Assuming advanced technology batteries are developed and available for \$250 per kilowatt-hour (kWh) to \$350 per kWh, initial battery costs alone for a small four

passenger EV with a 100 mile range (requiring a 30 kWh battery pack) could be \$7,500 to \$10,500. This is five to eight times the estimated \$1,350 battery cost ARB projected for year 2000 at the 1990 ARB hearing.

Agency Response: At the time the original ZEV program was adopted by ARB in 1990, a detailed evaluation of battery costs associated with electric vehicles was impossible to make due to limited information. At that time staff committed to update the Board every other year, incorporating battery cost information as it became available. Since 1990, there have been tremendous changes in both battery technology and the availability of technical and cost information regarding EV batteries. The battery cost information from the 1990 ARB hearing should be considered in the context of its time.

More recently the Battery Panel's report cites potential advanced technology battery prices of \$125 to \$180 per kWh in large volume production. Even if advanced battery prices remain somewhat high, there are other factors that may reduce battery-related costs. For example, advanced batteries may be higher-priced than lead-acid batteries, but if they last the life of the vehicle, they could be more cost-effective than lead-acid batteries. It should also be noted that ARB expects that battery prices will decline with increasing volume, and have the potential to be significantly lower than the prices suggested in the comment. In addition, if battery leasing programs are offered, they may help offset the up-front costs of EV batteries.

84. Comment: ARB should be promulgating regulations that are more cost-effective than the ZEV requirement, such as scrapping medium-duty vehicles, motorcycle standards, lower NOx standard for trucks that weigh between 3751 and 5750 pounds and/or more stringent inspection and maintenance program requirements.

Agency Response: The ZEV program is only one part of ARB's air quality plan, which already includes many other mobile source elements such as vehicle scrappage, reformulated gasoline, and cleaner cars and trucks. But the state still faces as yet undefined emission reductions commitments in the 1994 Ozone SIP. Potentially effective measures which are not already in the plan, such as medium-duty scrap, motorcycle standards, and other items will be needed *in addition to the ZEV program* to meet these commitments as well as any future shortfalls that may occur. The ZEV program provides important benefits no other mobile source measure can by guaranteeing zero exhaust, evaporative and refueling emissions over the life of the vehicle, regardless of driver behavior.

85. Comment: It is questionable whether or not electricity cost for EVs will be lower than gasoline costs for gasoline-powered vehicles. This is due to the relatively high electricity consumption reported for EVs in realistic use, inclusion of an EV's fair share of road taxes, high electricity rates for on-peak charging, and extremely high electricity costs for fast charging.

Agency Response: The cost of electricity for use in electric vehicles will, of course, depend on the individual charging patterns of each EV owner. But ARB believes that EVs will realize a fuel cost advantage when compared to gasoline for a number of reasons. First, in order to maximize range, it is likely that EV drivers will drive conservatively and more efficiently, contributing to lower fuel costs. Second, because cost will be an issue, especially in the early years of EV introduction, ARB expects that drivers will be very cognizant of the cost of electricity, and will endeavor not to charge during expensive on-peak hours and not to rely on quick-charging as the primary means of recharging their vehicles. Finally, the convenience of recharging at home overnight will facilitate off-peak charging of EVs. Most utilities have proposed lower rates for off-peak electricity used to recharge EVs.

When performing operating cost assessments, ARB staff normally assumes that transportation taxes for electricity are assessed on an energy equivalent basis with gasoline and that utility, state energy, and state sales taxes are assessed. This is done despite the fact the EVs do not currently pay transportation taxes. ARB agrees that EVs should pay their fair share of transportation taxes. At this time, however, the transportation tax collection infrastructure is not structured to collect transportation taxes from EVs. The Legislature must determine the appropriate level of taxes for EVs, how those taxes should be collected, and whether utility and state energy taxes should continue to be assessed for electricity sold for transportation purposes.

86. Comment: It is in California's best interest to strengthen air pollution reduction programs in other states. The MOAs may weaken programs in the Northeast States and, by reducing the number of ZEVs required in 1998 through 2002, eliminate the price benefits associated with economies of scale.

Agency Response: ARB believes that the modified ZEV program represents the best chance for development of a sustainable market for ZEVs in California. Although the staff was aware that modifications to the California program would have an impact on states in the Northeast, ARB's primary responsibility is to do what is best for California's program.

With regard to the price benefits associated with economies of scale, advanced battery technology will do more for the ultimate success of the market than small price reductions in the early years. Once ZEVs are successfully introduced, the market will encourage increasing sales, and the declining prices associated with economies of scale will be an additional market-builder.

87. Comment: As with many other technological advancements, the long-run costs of EVs will likely be significantly less than estimated by the automakers. Additionally, it is important to maintain the ZEV requirement in 1998 through 2002 because economies of scale will also reduce the costs associated with ZEVs.

Agency Response: ARB believes EVs have the potential to experience significant decreases in price as volume increases and manufacturing processes are refined. But economies of scale will not materialize if the market fails because the technology is not sufficiently developed. The delay to 2003 proposed by ARB is intended to address the concern that a market launch in 1998 would be premature. (See responses to Comments 26, 80 and 86.)

88. Comment: The ZEV requirement would have necessitated the sale of EVs equipped with advanced technology batteries at reasonable prices. Without the ZEV requirement, vehicle manufacturers can price ZEVs at any price they choose without regard to ensuring the success of ZEVs in the marketplace.

Agency Response: The existing two, five, and ten percent ZEV requirement does not stipulate vehicle price, and this is not a typical concern of ARB in establishing emission standards for motor vehicles. ARB believes that the modified ZEV program provides a better and more viable means to achieve the goal of reasonably priced advanced battery powered-vehicles. Because the modified program incorporates a market-based introduction, we believe that it is, in fact, more likely that advanced battery-powered EVs will be offered at “reasonable” prices due to competition between manufacturers.

89. Comment: Electric vehicle costs can be reduced if batteries are leased from electric utilities.

Agency Response: ARB does not have the authority to require electric utilities to lease electric vehicle batteries. And it is not possible for ARB to assess the economic feasibility of this concept since, to date, no electric utility has stepped forward with such a proposal.

90. Comment: ARB should not set prices for pilot ZEVs.

Agency Response: ARB will not set prices for pilot ZEVs.

91. Comment: The MOAs should require auto manufacturers to produce ZEVs that cost within \$5,000 of comparable gasoline-powered vehicles.

Agency Response: Under the MOAs each signatory manufacturer is required to place a specified number of ZEVs in demonstration projects. In order to do this the manufacturer will likely set vehicle price at a reasonable level. Moreover, as the purpose of the demonstration projects is to provide a mechanism to prove-out the capabilities of developing technologies, we do not want to place limits such as vehicle cost on the types of technologies that will be tested.

92. Comment: If ZEVs can generate emission reductions at a cost savings of \$2,000 to cost of \$10,000 per ton, they represent one of the lowest cost techniques for accomplishing emissions reductions. In contrast, control measures instituted in Santa Barbara County to

replace high-polluting, exempt sources (certain internal combustion engines) cost between \$20,000 to \$40,000 per ton.

Agency Response: The \$2,000 cost savings to \$10,000 cost per ton estimate comes from a Bevilacqua-Knight study. ARB believes this range is reasonable. However, the ZEV program was modified for reasons other than cost effectiveness. The primary reason for modifying the ZEV program was ARB's concerns about the success of the program as a whole in the time frame established by the existing regulations. (See response to Comment 26.) Based on the findings of the Battery Technology Advisory Panel, ARB believes that advanced-technology batteries will not be available in production quantities for use in vehicles until the early 2000s. ARB believes these batteries are essential to the success of EVs in the marketplace. (See also response to Comment 37 for more information on the recommendations of the Battery Technology Advisory Panel.)

H. Environmental Impacts

93. Comment: California needs every bit of emissions reductions that it can muster in order to clean up its air and meet the state's obligations under the Clean Air Act. This makes the proposed regulatory action perplexing.

Agency Response: California does need to obtain emissions reductions from all feasible emission control strategies for ozone precursor emissions to meet its obligations under the Clean Air Act. The primary purpose behind this regulatory action is ARB's determination that it is necessary to delay the implementation of the ZEV mandate to ensure the creation of a successful and sustainable market for ZEVs and to ensure the significant, long-term emissions reductions benefits anticipated from the program to meet these obligations. It is ARB's responsibility to monitor the progress of ZEV technology and determine whether or not the ZEV program should be modified. There is substantial evidence in the record to support the necessity for modifications to the ZEV program at this time. Specifically, the conclusions of the Battery Panel about the availability of advanced technology batteries together with the expert opinions of the car companies and ARB's own staff that current lead-acid battery technology will not likely support a market sufficient to meet the two percent mandate in 1998.

94. Comment: The proposed amendments could seriously undermine an essential element of California's air quality attainment plans and will expose more people to unhealthy air pollution than is necessary.

Agency Response: The ZEV program is an essential element of California's efforts to attain and maintain federal and state ambient air quality standards. Because the significant benefits of this program are so crucial to air quality particularly in the long-term, ARB determined that it would be unwise to risk a premature implementation of the program and has acted to

delay the ZEV requirement for five years. (See response to Comment 26.) This will, as the Staff Report concedes, result in the loss of anticipated emission reductions, but appropriate actions have been proposed to offset these losses through the implementation of the “49-state” vehicle program under the MOAs. ARB concedes that the benefits of the “49-state” program will not offset the anticipated emissions reductions one-for-one in the early years of the program. However, by 2010 the ZEV program and the NLEV program will provide sufficient reductions to fully offset the losses from a delayed ZEV program with a premium.

95. Comment: ZEVs are a necessary part of California’s future by virtue of their significance to air quality improvement and potential economic growth.

Agency Response: This is absolutely true and is the primary motivation for this rulemaking. (See responses to Comments 26 and 179.)

96. Comment: By deleting the ZEV requirement for 1998 to 2002 and removing this element of the SIP, other sources will be able to introduce ZEVs voluntarily to obtain emission reduction credits rather than providing other forms of emission reductions. This robs air quality improvement efforts of these reductions that would otherwise be required for such sources.

Agency Response: Because the 1994 Ozone SIP already calls for the implementation of all feasible and cost-effective emission controls for NO_x and ROG, including commitments to reductions to be realized by as yet undefined controls that which will be necessary to attain the ozone standard in the South Coast Air Basin by 2010, it is not likely credits will be used to avoid easy reductions. While the early introduction of ZEVs would not result in additional emission reductions if credits are granted and used for other emitting activities, the early introduction of ZEVs will have other beneficial effects. For example, early ZEV introduction by motivated users is likely to have a ripple effect in terms of infrastructure development as well as market “seeding.” This will have an unquantifiable but beneficial effect for the 2003 model year implementation date retained as part of the ZEV program. Finally, it should be noted that the ZEV regulation does not require purchase or use of ZEVs by any person or enterprise. It has been anticipated that many strategies would be used to encourage the purchase and use of these vehicles, including possibly emissions reductions credits for businesses that purchase and use the ZEVs. Finally, we note that no credits would be available for ZEVs required under the MOAs nor for ZEVs to be counted toward the manufacturer’s ZEV requirement in 2003.

97. Comment: The crediting of the “early market launch” is inappropriate because the SIP assumes these reductions will be obtained in this period. Issuing credits against future obligations upsets the integrity of the original program and lessens the benefits that will derived from the program after 2005 when the mandate will revive.

Agency Response: ARB will not “credit” emission reductions from an early market launch against the current SIP. Such crediting of reductions occurring in the 1998 to 2002 time frame would of course involve double counting in such a comparison. Rather ARB considers emission reductions from an early market launch in the context of describing the emissions reduction loss that will result from the proposal, i.e., the scope of the effect on the SIP as a result of the amendment of the ZEV program. In another context, it should be noted that the multiple ZEV credit provisions of the proposed amendments are expected to have beneficial effects on market development and the long-term viability of the ZEV program and, therefore, represent an overall benefit to the program. (See response to Comment 20.)

98. Comment: Any action that exposes sensitive receptors, e.g., the elderly or persons with respiratory ailments, to substantial pollutant concentrations creates a significant environmental impact under the CEQA Guidelines, Appendix G(x). A significant portion of the residents of Ventura County and the South Coast Air Basin are sensitive receptors.

Agency Response: The short-term loss of anticipated emissions reductions resulting from the proposal will not expose sensitive receptors to *substantial* pollutant concentrations. ARB, together with the affected air districts and others, are actively engaged in planning and carrying out efforts to reduce the exposure of all citizens, including sensitive receptors to air pollutants such as ozone and CO. The ZEV program is one part of the complex whole represented by the SIP, and even strategies that will result in small emissions reductions play a significant part in the SIP. In this case, the emissions reductions losses from the amendment of the ZEV program that will not be offset in the early years represent a very small increment (less than one percent) of the total emission reductions represented by mobile source component of the SIP. By 2007, the benefits associated with the NLEV program will fully offset with a premium the benefits of the ZEV program in 1998 through 2002. In any event, ARB did treat these impacts as significant adverse environmental impacts. Based on ARB’s determination that the delay represented by the proposed amendment is necessary to ensure the long-term benefits of the ZEV program, this action will have significant, long-term beneficial effects for these sensitive receptors.

99. Comment: While local air pollution control districts may regulate stationary sources of air pollution, ARB has the exclusive jurisdiction over mobile sources. Because mobile sources constitute approximately 50 percent or more of the total inventory in virtually every non-attainment area, these districts rely on ARB to meet its commitments to reduce emissions from the mobile source sector to demonstrate attainment. While some areas may have a buffer in the form of emission reductions in excess of that needed to demonstrate attainment, other areas, including Sacramento and Ventura, rely on every ton of emissions reductions obtained through ARB’s mobile source regulations. Since the proposed amendments will reduce expected emission reductions from the affected sources until approximately 2004, the reasonable further progress and attainment demonstrations for Ventura and Sacramento will be jeopardized.

Agency Response: ARB has fulfilled its obligations under state and federal law to provide emissions reductions from motor vehicles by setting the most stringent technologically feasible and cost effective standards for all classes of motor vehicles. The emissions reductions from these standards -- both actual and anticipated -- are included in the rate-of-progress and attainment demonstrations for ozone nonattainment areas including Sacramento and Ventura. Both these areas rely on emissions reductions from ARB's mobile source program, particularly the LEV program of which the ZEV requirement is an important component. In delaying implementation of the ZEV requirement for five years, a portion of the anticipated emissions reductions will be lost and, due to the timing of the implementation of the "49-state" vehicle program, will not be fully offset by 2005 when both these areas must attain the standard. But the amount of anticipated emissions reductions forgone at this time is so small -- less than one percent of the mobile source inventory -- that it will not adversely affect the rate-of-progress or attainment demonstrations for these areas.

100. Comment: Any delays in attaining the ozone, CO or PM10 ambient air quality standards will have adverse effects on human health and California's economic productivity. ARB has documented these adverse health, environmental and economic effects in numerous studies and reports, which are incorporated herein by reference.

Agency Response: It is not possible to incorporate in the record unidentified studies and reports. Including such information in the record is not necessary, however. ARB agrees that ozone, carbon monoxide and particulate matter pollution have adverse effects on human health and economic productivity. The Staff Report does not purport to justify the proposed amendment of the ZEV program by discounting the seriousness of the affects of air pollution. Rather the information presented in support of the proposal reflects ARB's concern that staying the course set by the existing regulation may result in a premature market launch of ZEVs that will not realize even the short-term benefits of the program and more importantly may have serious adverse consequences for its long-term prospects. This is found to be an important concern precisely because of the seriousness of the effects of ozone, CO and PM10.

101. Comment: ARB is allowing the slippage of one of a number of air pollution reduction techniques that has the potential to entirely eliminate emissions from 20,000 cars. ARB has also weakened the enhanced Inspection and Maintenance program, praised the elimination of the federal implementation plan, weakened pesticide emissions reduction rules, and made hundreds of individual concessions that weaken the fabric of California air quality improvement programs. The cumulative effect of these actions is significant.

Agency Response: Yes, the ZEV program has the potential to eliminate the emissions from 20,000 and more cars. But this will happen only if the program is a success. The intent of the proposed amendments is to assure the success of the program. (See response to Comment 26.) The commenter may disagree with the Board's ultimate determination

regarding this question, but the record includes more than sufficient data to support the Board's finding.

ARB has not ignored the cumulative impacts of the proposed amendment. In fact the affect of this program in the context of the 1994 Ozone SIP has been a primary focus of the rulemaking. ARB has not weakened the enhanced Inspection and Maintenance program or weakened the pesticide emission reduction rules. ARB's criticism of the FIP, with its unrealistic, costly and anti-competitive provisions, is irrelevant to any matter under consideration in this rulemaking. The vague reference to "hundreds of individual concessions that weaken the fabric of California air quality improvement programs" is unwarranted. ARB, as it is legally obligated to do, has been instrumental in creating the SIP to ensure attainment of the national ambient air quality standards, and in creating and updating the plans to ensure attainment of the state standards as well. In this effort, ARB, together with its federal, state, regional, and local public agency partners, has imposed or committed to impose stringent emission control requirements on virtually all classes and categories of mobile and stationary sources, and is now actively involved in moving forward to fulfill the commitments and implement the controls on a timely basis. In putting together such a complex system it is necessary from time to time to make adjustments, but ARB has undertaken this effort with a recognition of its obligation to attain air quality standards as expeditiously as practical through the creation of standards and requirements that are technologically feasible and in consideration of economic impacts.

102. Comment: Air districts in California rely on ARB to reduce emissions from the mobile source sector, yet ARB proposes to weaken those programs. The cumulative effect of this action together with other related developments to air quality, attainment, and human health and environmental quality are all very significant.

Agency Response: Air districts and the citizens of this state do rely on ARB to reduce emissions from mobile sources. (See response to Comment 99.) ARB has effectively secured such reductions over the past three decades by adopting regulations that have reduced emissions from new passenger cars and light-duty trucks by 95% or more. In fact ARB has diligently keep its eye on the goal of requiring the maximum level of emission reductions from these sources, ratcheting down standards and strengthening test procedures over time anticipating and forcing the development and refinement of emission controls. The decision to delay implementation of the ZEV program does not detract from this record. The general trend of developments in air quality improvement and its effects on attainment status, human health and environmental quality has been significant and positive. Certainly more must be done. But to paint a decision to delay the ZEV program because the technology necessary to ensure its success did not develop as fast as ARB projected in 1990 as just one more in a long line of unspecified actions that have weakened air quality programs simply is not accurate. (See also response to Comment 101.)

103. Comment: The ZEV mandate would result in a reduction of fine particulate matter pollution. Mounting scientific evidence indicates that exposure to fine particulate matter is substantially more detrimental to human health than previously understood. Therefore, environmental review for this proposal must consider the effect of the elimination of the ZEV mandate on PM10 exposure and attainment. Other issues and problems related to the proposal's impact on the formation of fine particulate matter must also be considered.

Agency Response: Conventionally-fueled vehicles other than diesels do not contribute significantly to directly emitted PM10. In some areas, particularly the South Coast Air Basin, NOx emissions may contribute to the formation of PM10. However, by 2010 the NOx emission reduction losses resulting from the five-year delay of the ZEV program will be offset by reductions from the sale of cleaner cars nationwide under the provisions of the MOAs.

104. Comment: The staff's proposed regulatory modifications could threaten the attainment status for California given that the benefits of the national low-emission vehicle program accrue later than the benefits of the ZEV requirement.

Agency Response: See responses to Comments 54, 66, 99 and 183.

105. Comment: The MOA does not ensure emission reductions equivalent to the early years of the ZEV program will be achieved. This is an onerous challenge given the lower lifetime emissions of criteria pollutants and air toxics associated with thousands of ZEVs between now and 2003; in fact, the MOA will result in higher pollution through 2007. Furthermore, any environmental premium the MOA provides is delayed until 2010 and is dependent on a number of very uncertain factors.

Agency Response: See responses to Comments 51, 52, 53, 54 and 62.

106. Comment: Emissions benefits from NLEVs will be a "windfall" to California because ARB does not control production of cleaner vehicles for other states or their migration to California. NLEV benefits should therefore be represented as "black box" emissions reductions rather than substitutes to the 1998 ZEV requirement.

Agency Response: ARB has no authority to take any action to require vehicle manufacturers to sell cleaner cars outside California. Therefore, the "49-state" program is not available as a "black box" measure. The emissions reductions are available to ARB in the context of this rulemaking because the affected vehicle manufacturers are willing to voluntarily obligate themselves to implement such a program to provide the offsets ARB must obtain in order to eliminate the ZEV requirement for five years without jeopardizing the approval of the 1994 Ozone SIP.

107. Comment: Recent test data from U.S. EPA reveals that benzene, formaldehyde, 1,3 butadiene, acetaldehyde, diesel particulate matter, gasoline particulate matter and gasoline vapors from motor vehicle emissions pose serious cancer risks.

Agency Response: ARB certainly agrees that toxic air contaminants in gasoline and diesel-fueled motor vehicle exhaust pose serious health risks. Reduction of emissions of toxics from conventionally-fueled passenger cars and light-duty trucks is one of the benefits ARB identified from the creation of the ZEV program. The Staff Report states that one of the potential impacts of the proposal will be a short-term loss of currently anticipated reductions of these emissions. But, as the Staff Report further explains, ARB believes that to ensure the success of the ZEV program and to realize these reductions it is necessary at this time to delay implementation until 2003. (See response to Comment 26.)

I. Economic Impacts

108. Comment: The ZEV requirement is necessary to maintain U.S. and California competitiveness in the emerging EV industry. As California leads the way in developing componentry and infrastructure for electric vehicles, this state stands to gain a large economic advantage and export market. Postponing the ZEV requirement will slow technological innovation and reduce the job growth and economic development that has occurred since the ZEV requirement was adopted in 1990.

Agency Response: ZEV technologies have the potential to boost California's economy by creating jobs in advanced technology industries that supply components to EV manufacturers and services to EV purchasers, and by increasing exports of high-technology products to an emerging global industry. For this reason, it is important to maintain the momentum of the program. Toward this end, the MOAs formalize commitments between ARB and the automakers to develop a long-term market for ZEVs in California. The MOAs commit the signatory manufacturers to place EVs equipped with advanced technology batteries in demonstration projects and the ARB offers ZEV credit incentives to manufacturers that produce high-performance ZEVs. Maintaining the 2003 model year ZEV requirement signals investors that the program is still on track and that ARB is committed to the ZEV program. The ARB believes this combination will continue the momentum in ZEV development. Moreover, the beneficial impacts of the ZEV program will not be realized unless the program results in the successful launch of a sustained market for ZEVs, which the proposed amendments are intended to secure. (See response to Comment 26.)

109. Comment: Small businesses that have invested in ZEV technology will be adversely affected by the change in the regulations and the instability of ARB's commitment to the ZEV requirement.

Agency Response: In compliance with Government Code §§ 11346.2(b)(4)(B) and 11346.5(a)(3)(B), the Executive Officer determined that the proposed amendments would have a potentially significant adverse economic impact on small business. If automakers produce fewer ZEVs in the near term, economic growth in California's advanced transportation industries, which include small businesses, may be slowed. ARB is cognizant of the importance of avoiding mixed or contradictory messages about the viability or importance of programs such as the ZEV program. But to retain the requirement to introduce ZEVs beginning in 1998 when current information indicates that the technology necessary to assure a successful market launch will not be ready in time (see response to Comment 26) would not be responsible and would not serve the needs of small businesses. Failure of ZEVs in the marketplace would hurt all businesses invested in ZEVs, including small businesses. ARB believes that the modified program will sustain the growth of advanced transportation industries in the long term and protect the legitimate expectations of all California businesses including small business enterprises.

In the near term, the modified program may lessen or delay for a few years the expected economic benefits of the ZEV program as reflected in business creation or expansion and job growth. This may happen because some California companies have made business plans based on the original ZEV requirements and the modified program raises the risk of making significant investments in the near term. Small California companies without the financial capability to withstand an investment delay may lose the ability to compete in this market, thereby losing the investments they made to date in the expectation of a two percent ZEV market penetration in 1998. Nonetheless, the long-term potential for economic benefits and job growth still exists, and should be more certain due to the increased market potential of higher-performing ZEVs. Therefore, even though it is possible that certain small businesses may be adversely affected by the modified ZEV program, ARB anticipates no broad negative impacts on employment and the viability and competitiveness of California businesses overall.

110. Comment: Investors are less likely to invest in ZEV technology without a ZEV requirement to act as a security for their investment. This will slow technology advancement.

Agency Response: Maintaining the 2003 model year ZEV requirement signals investors that the program is still on track and that ARB is committed to the ZEV program. To maintain the momentum in technology development, the MOAs require auto manufacturers to produce advanced battery-powered ZEVs and commit ARB to infrastructure development. (See response to Comment 108.)

111. Comment: Environmental regulations such as the ZEV requirement are good for business in that they establish new markets and promote a better quality of life.

Agency Response: ARB agrees that environmental regulations can spur economic activity and promote better quality of life. However, to attain these goals, the technology

implementation must be successful: The benefits of economic activity and improvements in quality of life are dependent upon a sustainable market. ARB believes a market-based introduction for ZEVs in tandem with a regulatory requirement for ZEVs in 2003 is the best way to achieve a sustainable ZEV market. (See responses to Comments 26 and 108.)

112. Comment: The ZEV requirement is good for California's economy because electricity sales for use in EVs will benefit California companies rather than foreign oil-producing companies.

Response: The modifications to the ZEV requirement are intended to facilitate the successful introduction of a sustainable market for ZEVs. ARB believes that this approach will lead to the realization of the benefits of ZEVs, including the economic benefits of electricity sales by California electric utilities.

113. Comment: The MOAs violate the spirit and intent of the ZEV mandates and the consequent good faith efforts of engineers, designers, inventors and innovators worldwide in the search for new workable ZEV technology.

Agency Response: ARB believes that the modified ZEV program offers the best chance for a successful market launch in California. The efforts of engineers, designers and innovators who are working on ZEV technology will be best served if the ZEV program is successful. (See also responses to Comments 1, 26 and 108.)

114. Comment: Weakening the ZEV program will result in potential loss of federal funds if pollution reduction targets are not met.

Agency Response: Based on analyses performed by ARB, modification of the ZEV program is necessary to preserve its benefits. (See response to Comment 26.) As a whole, the modified program, including the manufacturers' commitments to implement a "49-state" vehicle program, will fulfill all the air quality commitments of the original ZEV program and provide an air quality premium. ARB anticipates that all pollution reduction targets will be met under the modified program. (See responses to Comments 54 and 55, and 99 and 183.)

115. Comment: It is too risky to invest time and money into a single technology such as electric vehicles.

Response: California must have the most innovative emissions control strategies because we have the most challenging air quality concerns to address. One of the most promising ways to achieve clean, healthful air in California while allowing a growing population the unlimited driving privileges they now enjoy is to reduce emissions from vehicles to near zero. The alternatives proposed by the federal government in the Federal Implementation Plan, such as no drive days and required car pooling, would severely restrict the freedom of motorists in California and have generally been rejected by the public. Although the only

technology currently capable of meeting the ZEV requirements is the electric vehicle, ARB fully expects other future technologies, such as fuel cell-powered vehicles, to qualify as ZEVs. Further, ARB is proposing ZEV credit for vehicles with emissions equivalent to the power plant emissions associated with EVs. For more information on this proposal, please refer to Comment 78.

116. Comment: The California economy cannot support subsidies for ZEVs.

Response: ARB does not have the authority to provide monetary subsidies for ZEVs. Any monetary subsidies or incentives offered for ZEVs would have to be approved by the legislature. Thus far, subsidies offered for ZEVs have come from funding that existed prior to the introduction of ZEVs and the subsidies have been offered for a limited period of time. Under existing laws, there is an allotment of money that is to be used towards clean air. Zero-emission vehicles may be entitled to some portion of that allotment.

J. Incentives and Government Programs

117. Comment: Taxpayer dollars should not be used to pay for the ZEV program. Nor should ARB force auto manufacturers to produce vehicles that are significantly more expensive than conventional vehicles. The extra cost of producing ZEVs is passed down to tax payers and, therefore, is a de facto tax subsidy. In a free-market economy, ZEVs should be required to compete with other vehicles without the benefit of a regulatory requirement or tax subsidies.

Agency Response: ZEVs will become increasingly cost competitive and will compete with other vehicles. But because the market place does not always reflect the value of externalities such as environmental impacts, the main benefit of EVs -- zero tailpipe emissions -- may not receive adequate recognition. This makes it difficult for EVs to get over the hurdles of technology development and introduction. By providing regulatory support for EV development and introduction, these barriers can be lowered or removed, opening the way to a larger EV market and the realization of significant public benefits in the form of cleaner air.

The existing and proposed incentives for ZEVs are all designed to help EVs overcome barriers to their introduction to the marketplace and sunset in the near future. For the ultimate success of the program, EVs must stand on their own and successfully compete in the marketplace. (See response to Comment 116.)

118. Comment: The state should be concerned about the impropriety of spending public monies to subsidize ZEV businesses.

Agency Response: In the context of ARB's obligation to take steps to clean the air in California, we have provided research funding for some EV projects to examine and resolve

ZEV technology issues. ARB does not have the authority to provide or dispense funds for incentives or business subsidies. This authority lies with the Legislature. ARB does support moderate incentives for EV development and introduction that would help lower market barriers to EV introduction. (See also response to Comment 117.)

119. Comment: Government mandates do not create markets; a requirement for ZEVs effectively forces consumers to purchase these vehicles rather than allowing for a more market-based approach in which shareholders who expect to profit must share in the initial costs.

Agency Response: ARB agrees that the marketplace will serve as the ultimate arbiter of the success of the ZEV program. In fact, that was one of the key reasons for the modification of the original ZEV program. It should be noted, however, that the environmental benefits of ZEVs are not adequately rewarded in the market place, making it necessary for the government to provide a push to ZEV technology to achieve the benefit of clean air. (See also responses to Comments 117 and 118.)

120. Comment: ARB should not be paying or promoting payment to auto companies to redesign their products.

Agency Response: ARB does not have authority to provide or dispense funds for business subsidies. (See also responses to Comments 117 and 118.)

121. Comment: ARB should promote legislation that would encourage economic development towards ZEVs and provide incentives to EV purchasers.

Agency Response: ARB has pledged, in the MOA, to “support the development and implementation of reasonable incentive programs that enhance the near-term marketability of ZEVs.”

122. Comment: ARB should support every effort to reduce the price of ZEVs produced in the early years of the program to help spark public interest and purchase of ZEVs.

Agency Response: It would be inappropriate for ARB to pledge categorically to support “every effort” (including those that have not even been proposed yet) regardless of merit, feasibility, or effectiveness. ARB is committed to supporting reasonable incentives and participating in public education campaigns to inform California citizens about ZEVs. The MOAs obligate ARB to “[s]upport the development and implementation of reasonable incentive programs that enhance the near-term marketability of ZEVs.” ARB believes there may be additional, non-monetary ways to help spark public interest and purchase of EVs, including high-occupancy vehicle lane access and public education.

123. Comment: All federal, state and local government fleets should be required to purchase and use ZEVs. ARB should take the lead in this goal.

Agency Response: In 1994, Governor Pete Wilson issued Executive Order W-100-94 outlining the state's commitment to develop, purchase, and use advanced transportation technologies. This executive order pledged that the state would comply with the fleet

requirements in the 1992 Energy Policy Act (EPAAct) by purchasing not less than the following percentages of alternative fueled vehicles in the following years:

1996	25%
1997	33%
1998	50%
1999	75%

The Executive Order also specified that, if funds are appropriated for the purchase, operation, and maintenance of ULEVs and ZEVs, at least 10 percent of state fleet purchases in 1996 and beyond shall be ULEVs and ZEVs as certified by ARB. These goals exceed the goals mandated in EPAAct.

The Department of General Services is responsible for implementing Executive Order W-100-94 and is working with electric vehicle manufacturers, as well as other state and local agencies, to facilitate purchases of EVs by government agencies in California. ARB does not operate a large fleet of vehicles, but is evaluating the feasibility of incorporating EVs into the fleet.

124. Comment: The State of California should run a pilot program that would allow consumers throughout the state to drive electric vehicles. Such a program would allow the state to work through any difficulties with the transition from gasoline-powered vehicles to EVs, and allow consumers to discover whether or not an EV could meet their needs.

Agency Response: The ARB does not have the funding to support a large-scale consumer demonstration program for electric vehicles. However, the state is actively involved in purchasing alternative fuel vehicles, including EVs, as described in the response to Comment 123.

The MOAs require the seven largest auto manufacturers to participate in a Technology Development Partnership that will place up to 3,750 EVs using advanced batteries into demonstration programs in California.

125. Comment: ARB's confidence in the marketability of EVs is contradicted by promises (in the MOAs) to directly or indirectly subsidize EV introduction.

Agency Response: ARB's obligations in the MOA do not represent a lack of faith in the marketability of EVs, but rather recognition on the part of the state that the successful introduction of EVs to alleviate California's air pollution problems must be a cooperative effort involving both the private sector and state government. (See also responses to Comments 117 and 118.) Although there are many areas which are best left to the private

sector, there are important ZEV implementation activities that can most effectively be undertaken by the state. Examples of these activities include investigating the purchase ZEVs for appropriate applications in state fleets to comply with the Governor's Executive Order (W-100-94), ensuring that EV owners are able to register their vehicles and obtain vehicle insurance, and developing training programs for emergency response personnel. As the agency primarily responsible for the California ZEV program, ARB will to assist other state agencies in their efforts to ensure a level playing field for EVs.

With regard to EV incentive programs, ARB does not have the authority to provide or dispense funds for incentives or business subsidies. However, ARB does believe that providing moderate incentives for EV development and introduction can lower market barriers to EV introduction. (See responses to Comments 116 and 117.)

126. Comment: Creating incentives for and expanding the Technology Development Partnership to include many hybrid technologies can allow for a reduction in emissions from vehicles as well as supporting research and development by small business.

Agency Response: Hybrid technologies are not included in the Technology Development Partnership because the MOAs focused on revising the original ZEV program, which did not include conventional hybrid technology. Currently, incentives for hybrid-electric vehicles (HEVs) are provided as part of the Low-Emission Vehicle program. ARB allows extra credit towards meeting the annual fleet-average emission rates for HEVs if: (1) the HEVs all-electric range is equal to or greater than 40 miles and (2) the HEVs auxiliary power unit (APU) emission rates are equivalent to or lower than transitional-, low-, or ultra-low-emission vehicle standards. For example, a HEV with an all electric range of 60 miles and an APU certified to ultra-low emission vehicle standards would get double the credit of an ultra-low-emission vehicle.

In addition, ARB staff is proposing to establish a new type of vehicle category, named Equivalent Zero-Emission Vehicle (EZEV), to which clean HEVs may be able to certify. More information about the EZEV proposal is contained in the response to Comment 78.

127. Comment: ARB should develop a Task Force for Electric Transportation, modeled after the Cleaner-Burning Gasoline Task Force, to identify and overcome obstacles that hinder EV development. NRDC and other environmental organizations are committed to such a cooperative endeavor.

Agency Response: The Board in Resolution 96-12 directed its Executive Officer to create an implementation committee made up of representatives of the Board, the public and the affected industries to monitor the status of the ZEV program.

K. Compliance and Enforcement Issues

128. Comment: The terms of the MOAs are unenforceable and full of loopholes. The penalties in the MOAs cannot be enforced and are not high enough to deter auto manufacturers from breaking their commitments. Automakers may simply choose to buy their way out of producing ZEVs before 2003.

Agency Response: The MOAs are enforceable under state law as contracts. The MOAs, not unlike other legal documents including statutes and regulations, do include some terms and conditions that require ARB to make determinations at some point in the future (e.g., availability of batteries at reasonable pilot-level prices for demonstration projects). These provisions are necessary to give guidance about what should happen if circumstances outside the control of either party would subvert the intentions of the parties entering into the agreements. In much the same way that ARB would approach enforcing new motor vehicle standards or other regulatory requirements, we will monitor the manufacturers' activities under the MOAs to determine whether they are meeting their commitments on an on-going basis throughout the term of the agreements. If a manufacturer fails to implement the "49-state" vehicle program, the consequence is quite significant -- the manufacturer's pro rata share of \$100 million. The MOAs also specify lesser monetary consequences for other compliance failures, each being equal to or greater than the compliance penalty under the original ZEV regulation. While a vehicle manufacturer could "buy" its way out of placing EVs with advanced technology batteries in demonstration programs by paying \$25,000 per vehicle not placed, they could "buy" their way out of producing ZEVs under § 1960.1(g)(2), note 9.d., of the ZEV existing regulation by paying \$5,000 per vehicle. Manufacturers have indicated this is not their policy due to potentially far greater losses from the public relations impact. Finally it should be noted that the emissions reductions attributable to the current ZEV program represents an enforceable commitment under federal law. (See response to Comment 129.)

129. Comment: Repealing the ZEV requirement significantly reduces ARB's leverage to force progress and compliance with the provisions in the MOAs.

Agency Response: It is true that the important air quality benefits of the MOAs will only be achieved if all manufacturers strictly adhere to the provisions of the agreements. Therefore, the MOAs establish significant consequences for noncompliance in accordance with established principles of contract law. The primary consequence of a failure to comply is a monetary payment in the form of liquidated damages. The amounts specified in the agreements for failure to implement a NLEV program, failure to place vehicles in demonstration projects, failure to continue ZEV related research and development, and/or failure to submit reports as required under the agreements are set at levels commensurate with the full range of the harms associated with noncompliance. ARB believes the monetary consequences established in the agreement are sufficient to ensure that manufacturers will meet these requirements. Of course, ARB also retains under state law the authority to

reinstate a requirement for ZEVs if a manufacturer does not comply with the agreements set forth in the MOAs. This is confirmed in section V.D. of the MOAs. (See response to Comment 128.)

130. Comment: Delaying the ZEV requirement until 2003 will set a precedent of compromise and increase the likelihood of automakers requesting that even the requirement in 2003 be rescinded.

Agency Response: ARB has a long history of working with the auto industry to ensure that our emissions standards and related requirements are health protective and reasonable, i.e., necessary, technologically feasible and cost-effective. The modifications to the ZEV requirements represent a continuation of this process in an effort to provide Californians with a ZEV program that has a high chance of success and the concomitant air pollution reductions. To ensure that technology continues advancing at a rapid pace toward the proliferation of ZEVs in the marketplace by 2003, ARB will continually review technology status and auto manufacturer progress. (See response to Comment 181.)

131. Comment: If ZEV production is to be “voluntary,” why must auto manufacturers agree to financial penalties for non-compliance with “voluntary” contractual obligations?

Agency Response: Although the MOAs were negotiated on a voluntary basis, it is important to recognize that these agreements represent binding commitments by the automakers that were an important aspect of the Board’s determination that the adoption of the proposed amendments would not jeopardize approval of the 1994 Ozone SIP. The MOAs also ensure that adoption of the regulatory proposal will not strand ZEV-related research and development work, including the work that the Battery Panel has indicated is critical to the successful commercialization of advanced technology batteries. The liquidated damages provisions of the agreements are necessary to ensure that vehicle manufacturers live up to their promise to make up the emission benefits lost with the elimination of the ZEV requirement in 1998 through 2002 and to provide assurances that automakers are working to meet the ten percent requirement which begins in 2003. The emission benefits associated with the ZEV program in 1998 through 2002 and the ten percent requirement in 2003 and beyond are necessary if California is to meet ambient air quality standards and avoid onerous federal intervention.

132. Comment: The MOAs do not require vehicles manufacturers to use the NLEV program to offset the air quality benefits of the ZEV program. The automakers can come up with anything that ARB's Executive Officer finds acceptable as a replacement for the ZEV program and call it a NLEV program.

Agency Response: In the MOAs the manufacturers have committed to implement a “49-state” program by 2001. The program is defined as selling vehicles meeting emissions standards equivalent to the California LEV standards. ARB anticipates that the automakers

will meet this obligation by opting in to the NLEV program, assuming the U.S. EPA moves forward to finalize the regulations and the program is implemented. If the NLEV programs are not promulgated in a timely fashion or if they are not implemented because they include provisions unacceptable to automakers or Ozone Transport Region member states, the signatory vehicle manufacturers will meet the “49-state” program requirement by selling 50-state certified California LEVs. The MOAs allow auto manufacturers to implement an alternative program(s) which offers emission reduction benefits that are equivalent to the NLEV program with prior approval of the Executive Officer. An alternative program would not be approved by the Executive Officer as providing equivalent emissions reduction benefits unless California’s SIP obligations would not be compromised.

133. Comment: Enforcement of the terms of the MOAs should be part of the regulations and not the MOAs. Flexibility can be built in by adding alternative compliance factors based on specific conditions. If those conditions are met the ZEV requirement would not apply until 2003. If those conditions are not met, the ZEV requirement would be enforced prior to 2003.

Agency Response: ARB is authorized to adopt and implement emission standards for new motor vehicles that are necessary, technologically feasible and cost-effective. (Health & Saf. Code secs. 43013 and 43101.) In determining whether to adopt and implement such standards, it is both necessary and appropriate for ARB to consider the effects of the state of technology development on the likelihood of successful implementation. That is precisely what ARB has done in this rulemaking action. In doing so, however, the Board was faced with the need to obtain emission reductions to offset the loss of anticipated emission reductions from this action to make sure that the 1994 Ozone SIP would not fall out of compliance with federal law. This was accomplished through the MOAs, which also resolved other important ARB concerns regarding the need to implement the recommendations of the Battery Panel and to continue to support ZEV-related research and development.

134. Comment: Given the auto manufacturers' recent campaign against ZEVs, it is unlikely these same auto manufacturers will voluntarily work toward the success of ZEVs in the marketplace.

Agency Response: Major auto manufacturers did express their opposition to the 1998 ZEV requirement, largely due to their concerns about the readiness of ZEV technology. But the automakers have also clearly stated they are not opposed to ZEVs. The modifications to the ZEV program allow vehicle manufacturers more time to develop commercially viable ZEVs. Each of the manufacturers expressed support of the modified ZEV program and a willingness to enter into a partnership with ARB to ensure the success of ZEVs in the marketplace. ARB believes competition among automakers to introduce and market advanced battery-powered ZEVs in California will be more effective in securing a long-

term, sustainable market than the near-term ZEV requirements. In fact, three manufacturers have already announced plans to demonstrate ZEVs prior to their 1998 MOA commitments.

135. Comment: If ARB eliminates the ZEV requirement in 1998 through 2002, ARB should ensure that auto manufacturers do not continue to publicly criticize ZEVs. Without a requirement for ZEVs in 1998 through 2002, auto manufacturers are more likely to publicly criticize ZEVs to avoid a requirement to produce ZEVs in the future.

Agency Response: If ARB had maintained the near-term ZEV requirements, it is likely that the automakers would have continued to publicly indicate their belief that ZEV technology is not ready for a large-scale introduction to the California market. Removing the near-term ZEV requirement offers manufacturers flexibility to introduce ZEVs to meet market demand and ensure the technology will be accepted by consumers. Given this additional flexibility, manufacturers are more likely to promote ZEV technology, in particular their own vehicles. This will communicate positive impressions concerning the marketability of ZEVs. While automaker public pronouncements in derogation of ZEVs would hurt consumer acceptance, it would be difficult if not impossible to fashion a prohibition of the type suggested without violating First Amendment protections.

136. Comment: A requirement for ZEVs beginning in 1998 would succeed because California represents such a large market and the auto manufacturers cannot afford to ignore the state's regulations.

Agency Response: Automakers have indicated that they would not have ignored the ZEV requirement and that if the regulation stayed on the books, they would have complied. However, premature introduction of EVs that do not meet the needs of consumers and sit on showroom floors unsold would not benefit air quality and would significantly harm the public's perception of these vehicles. It would also have an adverse effect on business investment, which, once disappointed, would be hard to activate again. In the long run, ARB believes that the modified ZEV program is the most promising means to secure a viable and stable ZEV market.

137. Comment: Important public policy issues and developments will be shielded from public scrutiny under the agreements between ARB and the affected car makers. For example, under the MOAs, each car makers capacity to produce ZEVs prior to 2003 are treated as trade secrets.

Agency Response: Information regarding automaker compliance with the MOAs will be disclosed to the public unless it is exempt from disclosure under the California Public Records Act (CPRA), Government Code § 6250 et seq. This is confirmed in section VII of the MOAs. The information submitted by vehicle manufacturers regarding their capacity to produce ZEVs is properly treated as confidential under the terms of the CPRA. Similarly, information of the type to be included in ZEV product plans is likely to be proprietary, or

trade secret, data. Information qualifies as trade secret data that is shielded from disclosure by Government Code § 6254(k) and 17 Cal. Code Regs. § 91022. ARB did release the capacity-to-produce information in an aggregated format to provide the widest public access to the information without breaching the confidentiality of the information submitted by individual manufacturers. Thus the treatment afforded this information under sections I.B. and C. of the MOAs is a direct result of the application of state law. Moreover, the Board has committed “to making information regarding the status of the implementation of the ZEV program and the MOAs available to all interested parties consistent with disclosure and confidentiality provisions of the CPRA (see Resolution 96-12, page 9).

138. Comment: There are significant practical impediments to effective enforcement of the provisions of the MOAs, citing *Natural Resources Defense Council v. EPA*, 22 F.3d 1125, 1133-35 (D.C. Cir. 1994).

Agency Response: The MOAs include a number of provisions to ensure enforceability of the agreements. Manufacturers are required to submit annual reports regarding placement of ZEVs generally and the placement of EVs in demonstration programs as well as the purchase of advanced technology battery prototypes and for AAMA members contributions to Phase II of the USABC program. In addition the manufacturers will provide ARB on-site access to ZEV-related activities and hardware in preparation for the biennial ZEV technology reviews. Although we have no anticipation that any of the signatory manufacturers will fail to meet the commitment to sell clean cars nationwide, the agreement specifies liquidated damages of several million dollars for any manufacturer that fails to carry out the commitment. The manufacturer with the largest market share, General Motors, would pay damages of almost \$25 million and the amount ranges down based on market share with liquidated damages for Mazda, the smallest of the seven manufacturers subject to the ZEV requirement, at more than \$3.5 million. Even a delay in start up will subject the manufacturer a requirement to offset the lost emission reductions and to pay liquidated damages of \$100,000. Finally, the Board’s purpose and intent in entering into these agreements as part of the overall proposal presented here was that the ZEV requirements could not be eliminated unless offsetting emission reductions, such as those provided by the “49-state” program, were found and implemented. If any manufacturer breaches this obligation the Board has signaled its intention to take appropriate action to avoid jeopardizing the SIP.

139. Comment: Section V of the Master MOA sets up the enforcement provisions, which are designed to ensure compliance with the proposed amendments. These provisions are inadequate because they will require ARB to meet an unnecessarily high burden of proof to determine that a manufacturer has breached the agreement and because they foreclose public oversight. Specifically, section V.2. of the MOA provides that a breach may be determined based upon information submitted by the manufacturer and other relevant data made available to the manufacturer. Apparently this would exclude the possibility of finding a breach of contract based on information submitted by the public. By placing its ability to

enforce the MOAs solely in the hands of manufacturers and their willingness to self-report a violation, ARB abdicates its statutory duty to protect public health through an intensive, coordinated state, regional, and local effort to protect and enhance the ambient air quality of the state as required by Health & Safety Code § 39001.

Agency Response: The purpose of section V.2. is to allow ARB to base contract enforcement on relevant information from any source with the reasonable caveat that where such information comes from a source other than the manufacturer, the information will be shared with the manufacturer prior to taking any enforcement action.

140. Comment: Section V of the Master MOA sets up the enforcement provisions, which are designed to ensure compliance with the proposed amendments. These provisions are inadequate because they provide a manufacturer with a loophole allowing for suspension of its obligations under the MOA by claiming that inadequate battery technology prevents them from meeting the terms of the agreement. Based on ARB's reading of the Battery Panel report as finding that advanced batteries will not be available on a commercial scale until 2001, it would appear that the basis for a manufacturer to opt out of the agreement has already been established.

Agency Response: The commenter's reading of section V.3. is somewhat distorted. This section merely provides that ARB, in determining whether the manufacturer has breached the MOA, will consider whether the failure of fulfill an obligation was caused by events or circumstances outside the manufacturer's control including the failure of battery manufacturers to develop, produce and make available viable advanced technology batteries at a reasonable pilot-level price. It would not be reasonable to hold a manufacturer responsible for events or circumstances outside its control. ARB is confident that under this provision, it will be possible to make reasoned decisions regarding when a breach requiring responsive action has occurred. In this regard it should be noted that this *force majeure* provision does not, as the commenter implies, look to the commercial availability of advanced technology batteries. Rather it directs ARB to consider whether batteries based on these developing technologies are being made available to the manufacturer at reasonable pilot-level prices. The purpose of this provision was to ensure that battery developers would not be in an unfair position vis-a-vis the automakers in the purchase of these new technologies as a result of obligations undertaken in the MOAs. This provision is necessary and appropriate in part because ARB has no reason to want to encourage to development of high-cost battery technologies.

141. Comment: The structure of the liquidated damages arrangement itself may contradict ARB's conclusion that these damage provisions are sufficient to enforce compliance because as written the damages are paid into an escrow account to fund mutually agreeable ZEV-related projects, i.e., the violating manufacturer has a say in how the funds are spent.

Agency Response: It is the payment of damages that removes the incentive to default on a contract obligation. The fact that the manufacturer will have a say in how such funds are spent will not allow the manufacturer to reduce any of the financial effect of making the payment. ARB believes the liquidated damages are sufficient to ensure compliance. (See responses to Comments 128 and 129.)

142. Comment: It is vital that ARB maintain the authority to reinstate the original ZEV requirements if an automaker(s) does not comply with the commitments set forth in the MOAs and/or emission reductions are not equivalent to the original ZEV requirement.

Agency Response: The Board retains full authority under the Health and Safety Code to reinstate the original ZEV requirement or take other appropriate regulatory action should one or more of the affected automakers fail to meet its obligations under the MOAs. This is reflected in section V.D of the MOAs.

143. Comment: The intent of the MOA is in conflict with itself in that section VI assigns certain rights or decision making power to the vehicle manufacturers that the MOA later (in section XIII) admits should not be done.

Agency Response: Section VI of the MOAs concerns the term of the agreement while section XIII concerns nonassignability. There is no apparent inconsistency between the two provisions.

144. Comment: The MOAs could result in a de novo review by a judge.

Agency Response: It is true that in a contract enforcement action the court would conduct a de novo review of the determination of breach.

145. Comment: ARB should include a formal statement on the intent of the MOAs within the MOAs.

Agency Response: The initial sections of the MOAs spell out purpose and factual basis for the agreements.

146. Comment: The automakers' "ZEV Product Plans" to be submitted in 1997, 1999 and 2001 may not provide an adequate level of detail for ARB to evaluate the companies' commitment to advancing new technology. This is because the MOA states that product plans must include specific information only "to the extent available," inviting car company refusal to disclose crucial information under a claim that it is not available.

Agency Response: The product plans manufacturers must submit under the MOA are based on internal product planning documents already being created by the companies. The qualifier was intended to reflect ARB's agreement that the information we wanted to see

was in fact the information developed in that internal planning process and that the companies would not be required to produce additional documentation regarding that process. This qualifier also provides recognition that the information available during the earlier phases of product planning will be less specific and less refined than what will be available as we move closer to 2003. The MOAs further provide that each company will provide ARB on-site access to review activities and hardware related to its ZEV program in the context of the biennial technology reviews. Together these provisions will provide ARB with the information necessary evaluate the status of technology development through 2003 when the ten percent ZEV requirement takes effect.

147. Comment: ARB has no power to sanction a car company for unsatisfactory progress toward the ten percent requirement in 2003.

Agency Response: It is true that there are no specific enforceable ramp-up provisions in the MOAs. Rather each manufacturer will be expected to determine the proper shape of its approach to compliance with the ten percent requirement in 2003. The MOAs do specify various activities the manufacturers will undertake during the period leading up to 2003, including conducting demonstration projects and product planning. If a manufacturer fails to provide an adequate ramp-up and so does not meet the ZEV requirements in 2003, the regulations do provide penalties.

148. Comment: The MOAs contain language that protects automakers in the event they do little to secure a supply of batteries, e.g., “if battery manufacturers fail to develop, produce, and make available viable advanced technology batteries at a reasonable pilot-level price.” It also invites litigation about what defines a “reasonable” small-scale battery production price.

Agency Response: This provision of the MOA will not protect manufacturers that do little to secure a supply of batteries. The language quoted by the commenter must be read in the larger context of section V.3. of the MOA. Under this section a manufacturer’s inability to obtain batteries would be considered by the Executive Officer in determining whether a breach has occurred only if it was “outside [the] Manufacturer’s reasonable control [and] not caused by the fault or negligence of the Manufacturer.” While the use of the term “reasonable” does require interpretation that may result in disagreement between ARB and a manufacturer in the case of a noncompliance situation, it simply is not possible to define what constitutes a reasonable price for batteries that would be used in electric vehicles in pilot programs without knowing a great deal about the battery and its performance capabilities. Additionally, there is a real concern that if an amount was specified it would have an unintended and unwanted impact on battery pricing.

149. Comment: Only for “complete failure” to implement a 49-state program would companies be subject to pro rata shares of \$100 million. The MOA does not define “complete failure” and even minimal steps by car companies toward implementation can be a defense against this violation.

Agency Response: In the course of negotiating the enforcement section of the MOA it was first determined that liquidated damages should be specified for a manufacturer that failed to implement a 49-state program and it was agreed that due to the importance of this obligation in the context of California's SIP obligation and potential direct and indirect effects on other controlled sources of emissions the damages would be significant. At some point after the \$100 million aggregate number was agreed upon, the automakers expressed concern that it was possible that a short delay in implementing the program would trigger this damages provision, even if the program could still be fully implemented and any emissions reductions losses resulting from the delay offset. ARB agreed that under these circumstances the purposes of the agreement were far better served if the manufacturer implemented the program and removed all consequences of the delay. In order to distinguish the basic \$100 million provision from the provisions related to delay, the qualifier "complete failure" was added to the former and language regarding delay was included in the latter. Thus, the phrase "complete failure" should be read in context as describing any failure other than a mere delay in implementing the program.

150. Comment: Trivial penalties are imposed for major violations of the MOA. For example, the failure of car companies to place advanced technology battery vehicles in the partnership programs is penalized with only \$25,000 per vehicle shortfall. Because prototype vehicles cost hundreds of thousands of dollars, it would always be more economical for automakers to violate the promise to place advanced battery EVs than to develop and place them in programs. The exceedingly low penalty of \$5,000 per day for a maximum of 30 days for failure to produce plans or annual reports about ZEVs also provides no real incentive for car companies to share product plans or reports with the ARB.

Agency Response: The enforcement provisions of the MOA are not penalties, they are liquidated damages. Under general provisions of contract law, the amounts specified as liquidated damages must represent a good faith effort on the part of the parties to the contract to fix reasonable damage amounts. (Civil Code § 1671.) ARB believes that the liquidated damages are valid and, therefore, enforceable because they are consistent with § 1671. We also believe the damage amounts are sufficient to ensure compliance with the underlying obligations. (See responses to Comments 128 and 129.) The value of vehicles placed in pilot programs may be as low as the \$25,000 figure specified in the MOA. Demonstration program vehicles equipped with more efficient batteries are expected to be more costly. But the vehicles with more efficient batteries would count as two or three vehicles under section I.D.2.(i) of the MOA: the consequence of the failure to place such vehicles would actually be \$50,000 or \$75,000. The \$5,000 per day penalty for failure to submit product plans or reports is only limited to 30 days if ARB does not notify the manufacturer of the noncompliance. With notification, the manufacturer is subject to damages of \$5,000 per day until the required plan or report is submitted.

151. Comment: The Staff Report states that the MOAs formalize enforceable automaker commitments to introduce LEVs nationwide in 2001. This is not true since the MOA allows car companies to undertake other emission reduction programs with equivalent benefits. Given that ARB's emissions analysis only depicts one possible NLEV scenario without consideration of other scenarios, it is inadequate as emissions equivalency of other scenarios to the NLEV scenario are not studied.

Agency Response: The commenter's rendition of ARB's description of the manufacturers' obligation under the MOA is incomplete. The description in the Staff Report explains that manufacturers may provide equivalent emissions reductions through an alternative to selling LEVs nationwide -- either through the NLEV program or by certifying and selling California and federally-certified California LEVs -- with prior approval of the Executive Officer. (Section 3.2.1 of the Staff Report at pages 13-14.) Because the basis for approving an alternative is that it provides equivalent emissions reductions, it is not necessary -- nor is it possible because no alternative has yet to be identified -- to analyze other scenarios. An alternative will be analyzed if presented. The suggested comparison will be completed and the alternative will be approved only if it provides emissions reductions truly equivalent to the reductions from the NLEV/50-state vehicle primary requirement. (See, e.g., response to Comment 53; see also responses to Comments 60 and 197.)

L. Legal/Procedural Issues

152. Comment: Despite ARB's finding of no significant adverse economic impacts, information in the rulemaking file including information from interested parties indicates that economic impacts are likely to occur.

Agency Response: The economic impact analyses by the ARB are based on the effects of eliminating the existing ZEV requirement for the period from 1998 through 2002 because that is the proposal presented to the Board for consideration and approval. The Staff Report accurately indicates that the seven largest automakers and consumers may benefit from the proposal to eliminate the ZEV requirement from 1998 through 2002 for specified reasons (Staff Report (SR), p. 25). The Staff Report discusses the potential impact on small businesses involved in the electric vehicle industry, who may be adversely affected by the loss of businesses opportunities as a result of the delay (SR, pp.25-26). The Staff Report explains that these impacts are the unavoidable result of actions necessary to ensure the successful launch of a sustainable market for ZEVs in California and to preserve the long-term benefits -- including economic benefits for these small business -- of the ZEV program. The Staff Report further notes that the impacts have been minimized by the retention of the ZEV requirement for 2003 and subsequent model years, and will be further ameliorated by specific provisions of the MOAs that are intended to maintain existing ZEV-related research and development efforts and to ensure that manufacturers have the capacity to produce electric vehicles to meet market-demand beginning as early as this year.

153. Comment: A cost-benefit analyses should be performed for the major alternatives considered to ensure that the goals of air quality improvement, increased investment in new technology, and economic progress are achieved. The rulemaking file contains no cost or benefits data for the staff proposal [based on Concept B], or for the two identified alternatives [Concept A and Concept C] or other alternatives presented by outside parties as required by Health and Safety Code § 57005 or the provisions of the Administrative Procedure Act (APA) relating to the final statement of reasons for the Board’s action (Government Code § 11346.9(a)(4) and (5)).

Agency Response: Under the State Administrative Procedure Act (Government Code § 11340 et seq.), ARB must include in the Staff Report, which constitutes the initial statement of reasons required by Government Code § 11346.2, a description of the staff’s regulatory proposal, as well as any alternatives to the proposal considered by the agency and the reasons for rejecting those alternatives. In compliance with this requirement, the Staff Report issued for this rulemaking describes and explains the staff proposal and includes information regarding the cost and economic impacts of the proposal. The Staff Report also contains a description of the two alternatives considered in proposing the amendments. Government Code § 11346.9(a)(4) and (5) and Health and Safety Code § 57005 require ARB to consider alternatives identified by the agency or submitted in response to the notice of public hearing, including alternatives that may lessen the economic impacts on business, including small businesses, and private persons. The results of this consideration must be reflected in the final agency action and must be set out in the final statement of reasons with supporting information. Consistent with these statutory requirements and standard agency practice, ARB made the required determinations, which are set out in this final statement of reasons with supporting information.

154. Comment: ARB has not provided cost data for the staff proposal [Concept B]. Instead the Staff Report includes general statements relating to the feasibility of Concept B such as:

- “• ‘Staff believes that the differences between EVs and gasoline vehicles are likely to become their strongest attraction.’ (ISOR, p. 19)
- “• ‘Staff believes that in time EV costs will match or even be lower than the costs of gasoline vehicles.’ (ISOR, p.21)
- “• ‘... staff believes the life-cycle costs of EVs may ultimately be equal to or less than the life-cycle costs of gasoline vehicles ...’ (ISOR, p.21)
- “• ‘... staff believes that, in its current form, the ZEV program may not result in a successful ZEV launch’ (ISOR, p.25)”

Without supporting data, it is not possible for businesses and other affected parties to effectively comment on the cost effectiveness of the proposed regulation.

Agency Response: As stated in the Staff Report, the economic impact of the proposal to suspend the ZEV requirement for five years is beneficial for all affected parties with the possible exception of small businesses involved in the electric vehicle industry. (See Response to Comment 152.) The potential economic impacts on these small businesses was described in the Staff Report at pages 25-26.

The quoted statements from the Staff Report come from section 4.0 of the report, which discusses general issues related to electric vehicles. The report includes a separate section 5.2, which provides the staff's economic impact analysis.

155. Comment: One of the alternatives included in the Staff Report would be to eliminate the existing ZEV requirement altogether and rely solely upon performance standards and market forces to bring ZEVs to California. It is not possible to determine whether this alternative would be more effective, or as effective and less burdensome than the staff proposal. The final statement of reasons prepared by ARB must document, with supporting information, the acceptance of the staff proposal over this and other alternatives considered by the Board.

Agency Response: The APA (Government Code § 11346.2(b)(4)) requires ARB to describe the alternatives considered by the agency, including alternatives that would lessen any adverse impact on small business. The final statement of reasons must include a determination that no alternative considered by the agency would be more effective at carrying out the purpose of the proposed regulation or as effective and less burdensome and an explanation for rejecting any alternative that would lessen the economic impact on small business. (Government Code § 11346.9(a)(4) and (5).) Health and Safety Code § 57005 requires the Board to evaluate any alternatives to a major regulation submitted to the agency and to consider whether there is a less costly alternative or combination of alternative than would be equally as effective in achieving increments of environmental protection consistent with statutory mandates and in the same period of time. Thus in considering alternatives it is entirely appropriate to make a preliminary determination whether an alternative is as effective as the proposed regulation. ARB considered the two alternatives identified as Concept A and Concept C, but rejected both as not meeting the primary objective of the proposed amendments, i.e., ensuring the successful launch of a sustainable market for ZEVs. The discussion of Concept A in the Staff Report (section 2.5, p. 9) supports the staff's determination that this alternative would not be as effective as the staff proposal. While it is possible to disagree with ARB's determination and explanation, if such disagreement had been expressed, ARB would have considered the points in opposition and either modified its own determination or explained why we disagreed.

Moreover, this conclusion is based on a misunderstanding of the proposal considered by the ARB. The two, five and ten percent ZEV requirements to phased in beginning in 1998 are a part of the existing regulation: these ZEV requirements are not a part of the staff proposal. The determination of economic impact is based on the proposal to eliminate the ZEV

requirements for five years from 1998 through 2002. As noted in the Staff Report, while these impacts are primarily beneficial, some California businesses involved in the development of electric vehicles may be adversely impacted by the delay in implementation of the ZEV mandate. Section 5.2 of the Staff Report identifies and discusses this impact. (SR, pp. 24-25.) (See also responses to Comments 152 and 154.)

156. Comment: ARB should do an economic analysis that includes externality costs to determine the full effects of rescinding the ZEV requirement in 1998 through 2002.

Agency Response: ARB believes that the modified program will have minimal, short-term losses of expected emissions reductions associated with implementation of the ZEV requirement for the period from 1998 through 2002. However, ARB has determined that the loss of these emissions reductions will be offset through implementation of the “49-state” program under the MOAs. Also, the impact on emissions will be moderated to the extent that automakers have indicated that they will begin introducing ZEVs in California almost immediately with the demonstration project placements to begin by 1998. Because the modified program did not change the ten percent ZEV requirement for 2003 and offers incentives for early introduction, vehicle manufacturers will have a business incentive to develop a market for ZEVs before the requirement becomes effective in 2003. ARB expects no significant impacts on the health of California residents, on agricultural yield, or on the California economy.

In addition, ARB believes that there are substantial market risks associated with the original ZEV program, leading to the possibility that very few of the emission benefits would be realized if the regulations were not amended. The modified program offers the best chance for a successful and sustainable market introduction, and for obtaining the associated emission benefits. (See responses to Comments 1 and 26).

157. Comment: The need for supporting information is particularly important because ARB has indicated that the proposed regulation could adversely impact some small businesses. The final statement of reasons must state the reasons for rejecting any proposed alternatives that would lessen the adverse economic impact on small businesses.

Agency Response: In the Staff Report ARB explains that the staff proposal may have an adverse economic impact on small businesses in the short-term because in delaying the ZEV mandate these businesses may lose anticipated business opportunities. (See response to Comment 109.) In fact Concept A, which would eliminate the ZEV requirement permanently, would exacerbate not ameliorate these effects. Concept C, which is discussed in the Staff Report at pages 8 and 9, suggested that ARB maintain the ZEV production requirement for 1998 but at a lower level. Unlike Concept A, Concept C arguably would have lessened the adverse economic impact on small businesses. As explained in the Staff Report at page 9, however, ARB rejected this alternative after concluding that it would not be as effective as the proposed amendment at ensuring the long-term success of the ZEV

program, which is the purpose of the underlying rulemaking. Interestingly, this commenter agrees that Concept C was properly rejected by ARB. (See Comment 158).

158. Comment: ARB properly rejected an alternative that would have maintained the existing ZEV program structure with a slower phase-in than under the existing regulation combined with incentives for advanced technology incentives for pre-1998 model-year ZEV sales because Government Code § 11340.1 requires agencies to substitute performance standards for prescriptive standards wherever performance standards can be reasonably expected to be as effective and less burdensome.

Agency Response: ARB rejected this alternative based on a determination that maintaining a ZEV requirement for 1998 -- even a softer requirement -- would not ensure the long-term success of the program. ARB does not believe the ZEV percentage requirements are properly considered to be prescriptive standards. (See response to Comment 159.)

159. Comment: Concept A is preferable because it is a performance rather than a prescriptive standard.

Agency Response: ARB does not consider the ZEV percentage requirement to be a prescriptive standard. A prescriptive standard is “a regulation that specifies the sole means of compliance with a performance standard by specific actions, measurements, or other quantifiable means, while a performance standard is “a regulation that describes an objective with the criteria stated for achieving the objection.” (Government Code § 11342(d) and (f).)

The dividing line between a performance and a prescriptive standard is not always easy to define. For example, in its broadest sense, a performance standard related to air quality would do no more than state that a source must reduce its emissions to the lowest technologically feasible level or must not emit at levels that interfere with attainment of ambient air quality standards, and even this latter may include a specific numerical limit that could be called prescriptive. But such standards are too vague and would be useless to a regulated source as well as to the public agency charged with enforcing it. A standard that limits emissions from a motor vehicle to a specific level, e.g., 0.7 grams NO_x per mile, is more prescriptive than the previous examples, but less prescriptive than a requirement to install a catalytic converter on the vehicle to meet such an emissions limit.

Traditionally, ARB has not specified the type of control equipment a manufacturer must use to reduce vehicle emissions. Instead we have surveyed available (both existing and capable of being timely developed) control equipment and strategies and determined what constitutes a reasonable level of vehicle emissions in light of the need to reduce emissions from motor vehicles, technological feasibility and cost-effectiveness. Thus, while a specific numerical standard is established, it does not specify the sole means of compliance. ARB does not consider such standards to be prescriptive standards.

In this case we add a little twist to the issue by specifying a compliance percentage -- 2, 5 and 10 percent -- together with a non-prescriptive numerical emissions limit. But this should not affect the analysis whether the standard is prescriptive or not. In fact a standard typically includes an “unspoken” compliance percentage -- 100 percent. The only difference in this case is that ARB has applied the numerical standard to only a portion of the vehicles in a class. While the existing regulation does require the largest automakers to produce a specified percentage of ZEVs beginning in 1998, beyond the specification of number of ZEVs to be produced (stated as a percentage of total production), manufacturers are free to meet the ZEV standards using any available technology, i.e., the ZEV standard itself does not specify the means by which the standard can be met. It is true that the only technology developed enough to power vehicles that meet the zero emission standards at this time is electro-chemical batteries, but other technologies are currently under development and should be available in the not to distant future, e.g., fuel cells. (See response to Comment 115.) Additionally the ZEV regulations provide a significant amount of flexibility in that manufacturers can sell and buy ZEV credits and may obtain multiple ZEV credits by producing EVs with superior range or battery efficiency.

Finally, it should be noted that the thrust of this comment goes to the underlying, existing regulation rather than the staff proposal to amend the regulation by eliminating the ZEV requirement for five years. The question of the appropriateness of the ZEV production requirement -- even assuming it is a prescriptive standard -- was a question for the 1990 rulemaking. In this regard we note that if ARB takes no action regarding the proposed amendments, the existing ZEV requirements will remain in effect.

160. Comment: The proposed regulation will impact many aspects of the California economy. ARB’s economic impact analysis, however, provides only a limited qualitative assessment of the potential economic impacts. In contrast, several interested parties presented quantitative impact estimates to ARB at the Benefits and Costs forum. ARB has neither accepted or rejected those estimates, nor provided its own estimates as required by law.

Agency Response: ARB has provided complete and adequate analyses of the economic impact of the proposal to amend the existing ZEV program by eliminating the ZEV requirement for the period from 1998 through 2002. This assessment is set out in section 5.2 of the Staff Report at pages 24-25; additional discussion of these impacts is woven through the Staff Report. While the information presented is qualitative, this is appropriate in light of the nature and effects of the proposed amendments. The claim that ARB was required to provide an analyses of the impact of the existing ZEV production mandate in order to adopt the proposed amendment is the result of a misunderstanding of the proposal before the Board or the applicable rulemaking requirements.

The economic impact information referenced by this commenter concerns the impacts of the existing ZEV requirement. This is not the proposal under consideration. Moreover, the cost information provided at the Benefits and Costs forum varied significantly. Sierra

Research, for example, suggested the existing ZEV requirement would cost California \$20 billion and the cost of ZEV program with the proposed amendments would be \$17 billion. These figures are based on an assumptions that each ZEV costs approximately \$21,000 in the early years and \$10,500 by 2010. ARB has questioned the validity of this data. (See responses to Comments 46 and 81.) Other commenters at the forum put the cost of each ZEV in the early years of the program at approximately \$7,400 with a zero cost by the early to mid 2000s. The Battery Panel estimated the cost of batteries would drop tenfold (from approximately \$300 per kilowatt-hour (kWh) to \$3,000 per kWh in low-volume production to approximately \$100 per kWh to \$400 per kWh in high-volume production). A \$100 per kWh to \$400 per kWh cost for batteries would bring operating costs associated with EVs within the range of these costs associated with conventional gasoline-powered vehicles.

161. Comment: ARB has not adequately explained the reasoning behind the proposed amendments. ARB's claim that the changes will not result in increased air pollution are not supported by the agency's own analyses.

Agency Response: The Staff Report includes a complete explanation of ARB's decision to eliminate the ZEV production requirement for the first five years of the program. In short the Board believes that the delay is necessary to ensure the long-term success of the program because the necessary battery technology will not be commercially available until after 1998. (See responses to Comments 26 and 37.) The Battery Panel concluded that this technology will be commercially available by 2000 or 2001, assuming no delays in the pilot testing and commercialization activities. They believed this time frame was realistic because of the competitive aspect of the several efforts now underway. ARB has conceded that there will be some short-term loss of emission reductions from the proposal. However, the manufacturers' commitments in the MOAs to implement a "49-state" vehicle program will offset any loss of emission reductions with a premium by 2010. ARB has provided a complete explanation of how the sum of the proposed actions will ensure the integrity of the 1994 Ozone SIP, and has complied with the requirements of California Environmental Quality Act (CEQA) for identifying, considering and responding to potential significant environmental impacts.

162. Comment: ARB has abandoned the special leadership role it is afforded under the federal Clean Air Act. Although the state's actions may have a significant impact on other states that have adopted the California Low Emission Vehicle (LEV) program under § 177 of the Clean Air Act, ARB made no effort to coordinate or even discuss the proposed action before striking a deal with the car makers.

Agency Response: ARB's leadership role in the field of reducing emissions from motor vehicles is unparalleled and it does not find its source in the provisions of the federal Clean Air Act (FCAA). (See response to Comment 27.) Rather § 177 as well as § 209 of the FCAA are included in recognition of this leadership position. California does not relinquish this role by extending the implementation date of the ZEV program established by the ARB

six years ago. In fact, it is just this ability to innovate early coupled with the flexibility to make appropriate adjustments that brings ARB this well-deserved distinction. The provision of the FCAA that allows other states to adopt California's motor vehicle program has an unavoidable impact on this state. ARB is well aware of this situation and where appropriate we have made special accommodation to the interests of other states that have adopted California's motor vehicle program under § 177. But California cannot be forced and should not be asked, by virtue of this federal authorization that allows other states to adopt the California program, to subjugate the best interests of the state to the needs of these other states. Particularly where, as here, the issue is an apparent difference of opinion between experts in California and those in these other states about the best course of action for preserving the ZEV program. (See responses to Comments 26 and 37.)

163. Comment: ZEVs are a necessary part of California's strategy to meet the requirements of the FCAA as amended in 1990. In fact, ARB's approval of the MOAs in place of the regulations in 1998 through 2002 circumvents § 177 of the FCAA.

Agency Response: ARB agrees that ZEVs are an important part of California's long-term strategy to meet air quality standards. The regulatory amendments delaying implementation of the program for five years were approved because it would protect the program and ensure its success. (See response to Comment 26.) ARB is not subject to any requirements under § 177 of the FCAA, so circumvention is not an issue. (See also responses to Comments 27 and 162.)

164. Comment: The NLEV or "49-state" program will occur (or not occur) independently of California's ZEV program. The Staff Report suggests that California is providing more flexibility to automakers concerning the ZEV program in exchange for an NLEV commitment. Not only does the MOA not commit manufacturers to NLEV, but discussions regarding NLEV are beyond California's control. In fact, should NLEVs fail to retain good emissions characteristics, ARB cannot force manufacturers to recall them within other states. Therefore, NLEV cannot serve as an enforceable substitute to the 1998 ZEV requirement in California's SIP.

Agency Response: The Staff Report does not suggest that the regulatory amendments are being provided in exchange for an NLEV program. Rather the "49-state" commitments in the MOAs, which will be fulfilled by implementing the NLEV program or by other specified means, are necessary to respond to the emissions impact of the regulatory action. (See also responses to Comments 57, 58, 59 and 60.)

165. Comment: Until California has identified and adopted measures to replace the benefits that will be lost by the repeal of the ZEV mandate, the car makers' assertions that the modifications to the California ZEV program will require corresponding changes in the Massachusetts program would give Massachusetts standing to challenge the adequacy of California's air pollution efforts.

Agency Response: The intent of this claim is not clear. Rather than engage in speculation regarding the comment, it is sufficient to note that ARB believes it has (or at the completion of this rulemaking proceeding will have) complied with all state and federal requirements relating to adoption of the proposed amendments, ARB's responsibilities to protect air quality in California, and ARB's 1994 Ozone SIP obligations under federal law as a part of the process of finalizing this regulatory action.

166. Comment: The amendments were not developed and proposed in accordance with the requirements of state and federal law, including legal requirements to ensure consideration of environmental and certain social ramifications, and evaluation of alternatives to a proposed action; thus, any decision will be defective and subject to judicial review and reversal.

Agency Response: ARB complied with all requirements of the rulemaking procedures of the APA, the CEQA and all applicable provisions of federal law.

167. Comment: The proposed action by the ARB is subject to the requirements of the CEQA. Although ARB is a Certified Regulatory Program, it is exempt only from the requirements of Chapters 3 and 4 and § 21167 of the Public Resources Code and must comply with the substantive requirements of CEQA.

Agency Response: ARB agrees with these general statements regarding certified regulatory programs under CEQA. The ARB complied with all applicable CEQA requirements and the requirements of the Board's certified regulatory program (17 Cal. Code Regs. §§ 60005 to 60007).

168. Comment: The Staff Report's treatment of the environmental impacts of the proposed regulatory action is too brief and conclusory. The record does not include substantial evidence to support any of the substantive findings necessary to demonstrate CEQA compliance or adoption of the proposed amendments. There is no information, reference to information, or analytical discussion reflecting the existence of substantial evidence in the record to demonstrate that the ARB has analyzed and considered the ecological implications of the proposed action as required under § 15003 of the CEQA guidelines or *People ex rel Dept. Of Public Works v. Bosio* (1975) 47 Cal.App. 3d 495. The complete environmental impact analysis comprises less than one full page of the Staff Report, and the analysis including that found in other sections of the Staff Report and its appendices is cursory and conclusory. Given the substantial role that ZEVs play in California air quality issues, including impacts on public health and the environment, ignoring the significant and substantial environmental issues raised by the proposed amendments is detrimental to the process.

Agency Response: ARB agrees that the proposed amendment of the ZEV regulation is a project subject to CEQA. ARB rulemaking is a Certified Regulatory Program under CEQA. This means that ARB is not required to prepare an environmental impact report or negative declaration. The Staff Report serves the same purposes as these CEQA documents. (17 Cal. Code Regs. § 60005.) As required by § 60005, the Staff Report contains a description of the proposed action, an assessment of anticipated significant long- and short-term adverse and beneficial impacts associated with the proposed action and “a succinct analysis of those impacts.”

Contrary to the statements in this comment, however, much of the information included in the Staff Report is directly related to the issue of the potential environmental impacts of the proposed amendments, including those components of the proposal as a whole that will offset the loss of anticipated emissions reductions from the delay of the yet to be implemented ZEV requirement. While section 5.1 of the Staff Report, specifically entitled Environmental Impact Analysis is short -- approximately 1 page out of the 26 -- it provides a summary of the issues and by no means constitutes the complete treatment of the potential significant adverse impacts of the proposal. The primary focus of the board’s consideration of the proposal was the loss of anticipated emission reductions from the ZEV program if it was delayed. This discussion is woven throughout the Staff Report and is the subject of the 12 pages of Appendix B to the Staff Report. (See response to Comment 192.)

169. Comment: The staff proposal will cause significant adverse environmental impacts that have not been disclosed, mitigated or considered.

Agency Response: The ARB is not aware of any significant adverse environmental impacts that were not disclosed and properly considered and addressed by the board. As stated in response to Comment 168, the Staff Report identifies the significant adverse environmental impacts, which were considered and dealt with by the Board in accordance with all applicable CEQA requirements.

170. Comment: Available alternatives and mitigation measures could accomplish the purpose of the proposal without compromising environmental quality.

Agency Response: It is not clear what available alternatives or mitigation measures the commenter believes could accomplish the purpose of the proposal without compromising environmental quality. The ARB did consider alternatives to the proposal, including an alternative that would have retained a ZEV requirement for 1998 but at a lesser level. As explained in the Staff Report, however, ARB determined that this option would not provide the flexibility necessary to ensure the long-term success of the program. (See responses to Comments 29 and 62; see also Comment 187.)

171. Comment: The public has not been given adequate information to comprehend and participate in this rulemaking.

Agency Response: In addition to the Notice of Proposed Rulemaking and Staff Report, the record for this proceeding incorporates the record of 8 public forums and workshops conducted in 1995, three Board hearings conducted in October, November and December of 1995, and numerous additional appendices, studies, reports, surveys, and the like, all of which are identified in the Staff Report, provide the information necessary to comprehend and participate in this rulemaking. This provided the public with all the information considered by the Board in the context of the rulemaking proceeding and provided sufficient information for interested persons to fully understand the nature and rationale supporting the staff proposal and Board action.

172. Comment: ARB will not make the proposed findings to support the recommended action available until they are presented to the board. This prevents an interested, apprehensive public the opportunity to review the findings as intended under the CEQA process. Further, ARB has not provided written responses to comments regarding the proposed action as required by its own regulations, title 17, Cal. Code Regs, § 60007. Thus any final action on the proposal is defective and should be delayed until the agency complies with these requirements.

Agency Response: Consistent with standard ARB practice and regulations, the Board did adopt findings as required by CEQA. (See Resolution 96-12, pages 5-8.) The Staff Report and supporting information provide the basis for the findings. These materials have been made available for public review and comment for 45 days as required by the APA (Government Code § 11346.2) and ARB regulations (17 Cal. Code Regs. § 60005). Also consistent with standard ARB practice and regulations, this final statement of reasons includes written responses to comments regarding the proposed action prior to final action on the regulations.

173. Comment: All documents contained in the U.S. EPA Docket No. A-96-01, California State Implementation Plan submittal, November 15, 1995, EPA's Notice of Proposed Rulemaking re: 40 C.F.R. Part 52, CA114-1-7280 are directly connected to the subject matter of this action, particularly the 1994 Air Quality Management Plans submitted by the Counties of Ventura and Sacramento and the South Coast Air Basin. These documents should be incorporated by reference in the record of this rulemaking. These documents have been reviewed and acted upon by the ARB and therefore the board is familiar with their contents. The documents are large and unwieldy and need not be reproduced for inclusion in the record.

Agency Response: Some or all of these documents are available from the ARB. These documents are public records and were available during the course of the rulemaking period. But as the commenter does not cite any specific information from these documents and makes no specific points based on their content, it would appear that wholesale inclusion of these documents in the record of this proceeding is unwarranted.

174. Comment: Although ARB has a Certified Regulatory Program (CRP), under CEQA, ARB's CRP regulations (17 Cal. Code Regs. §§ 60005 to 60007), and applicable case law, the agency must comply with all CEQA's polices, evaluation criteria and substantive standards. As a CRP, ARB is exempt from the requirement to prepare a document called an environmental impact report or negative declaration. But ARB must prepare a Staff Report for the proposed regulation including a description of the environmental background, a complete description of the project, a list of all potential impacts, including explanation of any that it determines are not significant; alternatives and mitigation measures must be employed where feasible; findings must be made; and a mitigation plan adopted. Neither the Staff Report or the action by the Board meets these requirements.

Agency Response: ARB did comply with all applicable CEQA requirements and ARB's CRP regulations. The Staff Report provides a description of the relevant environmental background, a full description of the project, i.e., the proposed amendment to the ZEV regulation, and a complete discussion of the potential significant adverse environmental impacts of the proposal. (See response to Comment 168.) Given the unique circumstances of California's air quality planning status, feasible mitigation measures and alternatives are not available. (See response to Comment 170.) The Board made the required CEQA findings in a resolution approved at the March 28-29 public hearing. (See response to Comment 172.) No mitigation plan is required because no mitigation measures were incorporated. (See response to Comment 194.)

175. Comment: The Staff Report contains no express or implicit evaluation of the full range of adverse effects of the proposal on land, air, water and other environmental resources. A fair argument may be made that the proposed action will cause adverse impacts to California air quality, transportation systems, small businesses, biological systems that are affected by adverse air quality, agricultural productivity, human health. Many of these will disproportionately affect people of color and of low economic means and will contribute to widespread non-attainment of California and federal ambient air quality standards for ozone, PM10, and other criteria pollutants. The Staff Report does not evaluate any of these issues although it does recognize that the action may affect attainment of air quality standards and prolong public exposure to unhealthful air quality.

Agency Response: Approximately six years ago ARB, based on the best technical information available at the time, determined that the technology necessary to bring ZEVs to the market could be ready by the time 1998 model year vehicles went into production. Because California then faced and still faces serious and intractable air quality problems, especially in the South Coast Air Basin, Ventura County and Sacramento Valley area, the Board further determined that this new technology should be implemented as quickly as possible. The technology was not available in 1990 when this decision was made and ARB made a commitment to monitor technology development on an ongoing basis, with the clear understanding that the program could be modified if developments indicated that was warranted. As a result of the last biennial technology review and the results of an

assessment of the status of advanced technology battery development by the Battery Panel, the Board determined that its 1990 finding that the necessary ZEV technology would be ready for introduction in the 1998 model year was a bit optimistic and that a delay of five years would be necessary to ensure a successful launch of a sustainable market for ZEVs. (See response to Comment 26.) Reasonable minds may differ about the Board's determination as to the most likely outcome if the existing regulatory requirement was retained, but the Board has been charged by the Legislature with responsibility to make this decision and is constituted of members with special expertise necessary to make such a decision. And the determination of the Board is supported by the record, particularly by the Battery Panel Report and the Board's own conclusions about consumer acceptance of currently available ZEVs.

In taking this action, however, ARB is cognizant of its obligation to analyze potential environmental impacts of proposals such as the current proposal to amend the ZEV regulation by eliminating the ZEV requirement for model years 1998 through 2002. ARB did consider the full range of potential environmental impact of the proposal. The Staff Report reflects the ARB's efforts in this regard. The Staff Report includes a description of the existing regulatory requirements and the effects of the proposal. The report discloses that there will be a potential adverse environmental impact from the proposed regulatory amendments. The proposal will impact air quality, but that impact, while significant because any emissions increase must be considered significant until all areas of California attain both state and federal air quality standards, is limited as to time and the actual amount of anticipated emissions reductions foregone. Moreover, although there will be minimal impacts, the loss of anticipated emissions reductions will be fully offset with a premium by 2010 as a result of the implementation of the "49-state" program under the MOAs. No specific mitigation measures or alternatives were considered for these limited impacts because, in fact, none are available. California has already implemented or committed to implement all available emission reduction strategies for ozone precursor pollutants and more in the 1994 Ozone SIP. (See responses to Comments 168 and 170.) The Staff Report also indicates that there will be increases in other motor vehicle pollutants such as carbon monoxide and toxics such as benzene because the gasoline-powered vehicles that will be sold instead of ZEVs will emit these contaminants. Similarly the proposal will increase particulate matter emissions. But these impacts too are relatively small and of limited duration because the proposal does not involve eliminating the ZEV program altogether rather the start of the program has been delayed for five years and because the "49-state" commitments in the MOAs provide offsetting emissions reductions. The Board made findings to this effect in Resolution 96-12. The Board further found that despite the unmitigable impacts, the proposed action should be approved because it would ensure the long-term success of the ZEV program securing increasing significant benefits over time following a successful launch of a sustainable market for ZEVs. ARB does not agree that the proposal will cause adverse impacts to transportation systems, biological systems that are affected by adverse air quality, agricultural productivity or human health, or that the proposal will have a disproportionate effect on persons of color or low economic means,

particularly since the purpose of this action is to preserve the long-term benefits of the program. The commenters suggestion otherwise is at best vague and speculative.

176. Comment: There is no statement of justification of the need for the proposed amendments, nor a clear description of the purpose of the proposal. The stated intent is to preserve, not abandon the ZEV program, but the Staff Report and other available information disclose that technology-forcing standards have historically succeeded despite automakers' claims that they are not achievable and that the technology is now available to produce a vehicle for which a sufficient market exists. Evidence from the affected vehicle manufacturers to the contrary must be discounted as self-serving and likely biased.

Agency Response: The record contains ample support for the proposed amendments, which are fully described in the Notice of Proposed Rulemaking and Staff Report. The fact that vehicle manufacturers have resisted stringent emission standards in the past but then met them once imposed does not in and of itself constitute proof that the manufacturers' claims regarding the readiness of electric vehicles for a 1998 market launch are wrong. This history is certainly a factor for the Board to consider in weighing information submitted by the automakers, and, in fact, the Board has often discounted industry protestation regarding technological infeasibility to impose new emission standards with the successful outcome noted by the commenter. But in this case the independent judgment of ARB staff together with the recommendations submitted by the Battery Panel confirm that there is a substantial risk that vehicles capable of meeting reasonable consumer demands will not be ready by 1998 and that even assuming no delays the advanced technology batteries the Board found necessary for a successful market launch will not be available commercially until 2001. The Board is charged with the responsibility for making determinations of the feasibility of vehicle emission standards under Health and Safety Code §§ 39601, 43013 and 43101. The market readiness study conducted by the Institute of Transportation Studies at UCD notwithstanding, ARB remains concerned that electric vehicles powered by lead-acid batteries will ultimately fail to meet the expectations of users who are accustomed to vehicles with more range, refueling flexibility and unit costs that reflect economies of scale when they are face-to-face with a decision to purchase a vehicle or when they are confronted by the new challenges of electric vehicle operation.

177. Comment: Assuming that ARB intends to require introduction of ZEVs as quickly as possible, there is no credible or substantial evidence that the existing regulations will not serve this purpose. In fact the Staff Report recognizes that battery powered electric vehicles meeting the ZEV standards are currently available.

Agency Response: To the contrary the Staff Report and the rulemaking record as a whole support a determination that the current implementation date for the ZEV program may be premature and that maintaining this start date could have long-term, deleterious consequences for the program. ARB understands that there are battery-powered electric vehicles on the road now, and that several of the automakers that are subject to the ZEV

requirements intend to certify and introduce electric vehicles even before 1998. But these vehicles are meeting special niche markets, including the more adventurous consumers who can be described as “early technology adopters.” Exploiting these market segments is a good way to get electric vehicles on the road and to foster the development of a mature EV infrastructure. But these conditions cannot be equated with full marketability (at least at the level required under the existing ZEV regulations) of the products currently available. (See also response to 1.)

178. Comment: Only the self-serving arguments of the automakers and allied interests support the proposed regulatory change. All independently collected evidence indicates the ZEV program could be successfully launched on the original schedule. ARB’s stated belief that it would not be prudent to require lead acid powered EVs is contrary to the acknowledged potential popularity of such vehicles, which has been confirmed by a independent survey of consumer acceptance.

Agency Response: See responses to Comments 176 and 177.

179. Comment: ARB’s repeated reference to a “sustainable” ZEV program is without any further definition, explanation, statutory reference or common sense support.

Agency Response: The concept of a sustainable ZEV program is simple. The state will not enjoy significant or long-term air quality benefits if the ZEV roll-out consists of the introduction of 20,000 vehicles for a year or two and then collapses due to consumer dissatisfaction. In conception, the ZEV program was seen as a long-term effort to permanently alter the vehicle mix in California to include more and more vehicles the use of which results in no or virtually no emissions over the full life of the vehicle. ARB cannot be content to trade that long-term goal for an on-time but ultimately unsuccessful implementation of the program. This is a particularly compelling argument in consideration of the uncertainty that surrounded the selection of the 1998 model year as the program implementation date. Even as the ZEV program was adopted in 1990 and incorporated in the 1994 Ozone SIP, ARB signaled the need to carefully monitor the situation, as evidenced by the Board’s insistence on ongoing review of the progress being made toward meeting the requirements and the assurances given that adjustments, if found to be necessary, could and would be made.

180. Comment: ARB must show that the ZEV requirements are not sufficient to accomplish attainment of the ambient air quality standards as expeditiously as practicable, and that the proposed modifications to the regulations meet that standard.

Agency Response: ARB has an obligation to take action as necessary and authorized to ensure attainment of the ambient air quality standards as expeditiously as practicable. But there is no legal requirement for ARB to show that an existing regulation is not sufficient for this purpose as a condition precedent to amending the regulation. Nevertheless, the ARB

has determined that the existing regulation may result in the premature implementation of the program and that it is necessary to eliminate the ZEV requirement for the period from 1998 through 2002 in order to ensure the long-term success of the program. Thus it is ARB's determination that the proposed amendment of the ZEV regulation is necessary to attain air quality standards as expeditiously as practical. But to serve this purpose the program must be successfully implemented.

181. Comment: The record does not support the conclusion that the proposed amendments are necessary or advisable. A moderately cynical, disinterested observer would likely conclude that the proposed regulations were simply an accommodating the interests of the major automakers.

Agency Response: The record contains ample evidence in support of the Board's action. History has shown the ARB to be clear-sighted in its recognition of motor vehicles as a primary cause of air pollution in California. ARB has been the prime mover in the world in terms of identifying potential emission reduction technologies early and aggressively pushing their development and application to motor vehicles. (See response to Comment 176.) The rest of the nation and the world has benefitted greatly from ARB's efforts in this regard. This history did not occur in a context of accommodation of the interests of automakers.

182. Comment: CEQA requires a description of the existing environmental baseline against which the impacts of a proposal are measured. The Staff Report assumes a "worst case" environmental baseline based on a prediction that the ZEV mandate will fail completely if left unmodified. This presents the relative environmental impacts of the proposal as beneficial. The baseline must assume that the ZEV mandate will meet the objective goals of the existing regulation, including the interim emissions reductions from 1998 to 2005, as anticipated in the SIP and local district attainment plans. Under this scenario it is clear that the proposal, which will result in a loss of emission reductions in the mobile source sector of the inventory, will have an adverse impact on air quality.

Agency Response: The Staff Report does use the existing regulations, i.e., two percent ZEVs in 1998, 1999 and 2000, five percent in 2001 and 2002, and ten percent in 2003 and beyond as the baseline, and describes the impacts of the proposal using that baseline. (See SR, pp. 23-24 and Appendix B.) But under the circumstances of this matter it would not be realistic to treat this comparison as the only relevant factor in considering the potential environmental impacts of the proposal. There is nothing to be gained in analyzing the impacts of the proposal in shutting our eyes to what we believe is the most accurate description of real the "baseline." When ARB adopts a technology-forcing regulation such as the ZEV requirement, that act does not make the technology a reality. Thus the fact that the report also articulates ARB's concern that the existing ZEV requirement is not likely to produce the intended result because the necessary technology will not be ready by the time forecast in 1990 and supports the proposed action on that basis does not render the report inadequate; to the contrary it makes for a more accurate assessment of the real

environmental impacts of the proposed action. Nevertheless, as indicated above, the Staff Report identifies the potential for the loss of anticipated emissions reductions based on the successful implementation of the existing ZEV regulation and acknowledges that this represents a potential adverse environmental impact. (See response to Comment 183.)

183. Comment: The Staff Report fails to articulate the role of the ZEV program in the SIP submittal and in each local air pollution control district's attainment plan.

Agency Response: Information about the importance of the LEV program including the ZEV requirement is woven throughout the Staff Report. In section 1.4 the benefits of the ZEV program are outlined. Other parts of the report focus on ARB's efforts to ensure that the loss of emissions reductions resulting from the elimination of the first five years of the ZEV program some of the associated emission reductions, which are included in the 1994 Ozone SIP, are offset. (See SR, section 3.2.6, pp. 17-18.) The staff proposal includes a recommendation that the Board approve MOAs that contain commitments by the affected manufacturers to benefit air quality in California by selling cleaner cars nationwide. ARB concedes that the reductions will not completely offset these increases until 2007 but they will not interfere with any rate-of-progress or attainment demonstration in the SIP. (See response to Comment 99.)

184. Comment: ARB's analysis of the modifications to the ZEV program hides the true impacts of the proposal by understating the significance of the changes. This is inconsistent with CEQA, which requires a good faith effort at full disclosure of impacts.

Agency Response: ARB has stated that the proposal will result in a loss of emission reductions included in the SIP. The results of these changes have not been understated. (See responses to Comments 26, 52 and 175.) All impacts have been fully and accurately disclosed consistent with CEQA requirements.

185. Comment: The environmental review document must identify and focus on possible significant environmental impacts of a proposed action. The analysis must focus on those impacts that are most significant and most likely to occur, including direct and indirect effects over both the long and short-term. Cumulative impacts must be discussed, and cumulative impacts on air quality must be analyzed and the basis for a conclusion of insignificance explained.

Agency Response: The impacts of the proposed action are discussed in the Staff Report, which provides a full discussion of the most significant and more likely impacts, direct and indirect, over both the long and short term. (See response to Comment 175.)

The circumstances under which this proposal is considered are unique; that is, a limited change in a small but significant component of a comprehensive planning document. The most significant impacts of this proposal are those relating to California's efforts to attain

and maintain ambient air quality standards for ozone. On November 15, 1994 ARB approved a state implementation plan, which provides a comprehensive description of how ozone precursor emissions -- NO_x and ROG -- will be reduced to ensure timely attainment of the federal ozone standard. The SIP includes control measures at the federal, state, regional and local levels targeting all controllable sources of ozone precursor emissions. The ARB has considered the proposed amendment to the ZEV program, which is included in the 1994 Ozone SIP, in the context of the plan, and in doing so has complied with applicable CEQA requirements.

186. Comment: The Staff Report does not identify potentially significant adverse impacts as required by CEQA. Any action that will cause or contribute to a violation of the state or federal ambient air quality standard is considered to have a significant impact under the CEQA Guidelines, Appendix G(x). Virtually every urban area of the state fails to meet the state ambient air quality standard for ozone, and many areas exceed the federal ozone standard. Many areas also exceed state and federal standards for other pollutants. These areas rely on every available emissions reduction strategy to demonstrate attainment as expeditiously as practicable as required by the Clean Air Act. Whether that reliance is formally included in the local SIP component, generically relied upon in the baseline emissions inventory, or simply expected as a portion of ARB's commitment and responsibility to control emissions from mobile sources, the proposed action presents a problem. The loss of the emissions reductions from elimination of the ZEV requirement during the period from 1998 to 2003, even if only in the short-term, will cause or contribute to violations of the ambient air quality standards in various parts of the state and thus will have a significant impact under CEQA.

Agency Response: ARB did explain that the overall proposal including the "49-state" program would not fully offset the loss of anticipated emissions reductions from the ZEV program in the early years. This was identified as a significant adverse environmental impact based in part on the reasoning presented by this comment and dealt with accordingly.

187. Comment: The Staff Report fails to address secondary adverse environmental impacts. The emission reductions in the SIP represent a zero-sum exercise; therefore, whenever emission reductions are lost, other reductions must be identified and adopted as replacements. Because the pool of available emission control strategies has shrunk dramatically as more and more controls are included in the SIP, the remaining strategies are those with greater adverse human health, environmental or economic impacts. For example, additional emissions reductions from increased regulation of pesticides may impact agricultural productivity, requiring the conversion of additional acreage into intensive agricultural production, creating impacts in the form of additional land use conflicts and increased residential exposure to agricultural chemicals.

Agency Response: The Staff Report does not address indirect adverse environmental impacts because none were identified. One of the unique aspects of the "49-state" program

commitment in the MOAs, which is included as a part of the overall proposal to eliminate the emissions reduction losses resulting from the proposed amendment to preserve the SIP, is that it represents a very “clean” source of emission reductions that could not otherwise be realized by the ARB. As discussed in the response to Comment 57, ARB does not have the authority to require automakers to sell clean cars nationwide or to set standards for vehicles sold for use and operation outside California. So this program represents a true addition to the stable of strategies available to ARB and its state and local public agency partners in planning for attainment of the ambient air quality standards. With this “49-state” program in place, the concerns regarding secondary environmental impacts such as those cited by the commenter do not surface.

188. Comment: The Staff Report ignores the loss of long-term emissions reduction benefits that will accrue in the years following the ZEV launch. Whenever they are introduced, ZEVs are the only source category whose growth will substantially reduce emissions. This is an open-ended emissions reductions potential. In the context of California’s long-term air quality challenges, the deferral of these benefits for the period from 1998 to shortly before 2003 will have a significant adverse environmental impact.

Agency Response: The emissions reduction benefits of the ZEVs that would have been placed on the road in California during the period from 1998 through 2002 would have been realized during the period these vehicles would have been on the road in California. Based on nominal “useful life” of passenger cars and light-duty trucks under ARB regulations this is 100,000 miles. The benefits disappear once the vehicles are no longer in operation. ARB believes that a “multiplier” effect on ZEV acceptance will put more and more electric vehicles on the road at any particular point in time after the successful launch of a sustainable ZEV market. On the other hand we are concerned that a less than successful market launch could have a multiplier effect, but an adverse one. This is why ARB has determined that a delay in the implementation of the ZEV program is necessary.

189. Comment: The Staff Report does not address potential impacts from the NLEV program. Specifically, there is no discussion of the loss of reductions in refinery emissions or the life-cycle emissions of NLEVs versus ZEVs. That is, while NLEVs have lower emissions than conventional vehicles, they have considerably more emissions than ZEVs. The life-cycle emissions of NLEVs are exacerbated because a larger number and proportion of vehicles must be sold to offset emissions reductions attributable to ZEVs, further perpetuating the internal combustion engine-powered vehicle in markets that might otherwise switch to electric powered vehicles.

Agency Response: The Staff Report does deal with impacts from the NLEV program. Refueling emissions from gasoline-powered vehicles are the largest component of fuel cycle emissions associated with gasoline-powered vehicles. These emissions were included in the NLEV analysis. Refinery emissions are slightly lower than power plant emissions; both are very small. ARB recognizes the need to more fully quantify refinery and other fuel cycle

emissions attributable to gasoline-powered vehicles. In future analyses and follow-up on the progress made in the NLEV program, ARB will continue to refine the analysis of these emissions.

The implementation of the NLEV program will not result in the sale of more vehicles. Nor will the NLEV program result in the sale of gasoline-powered vehicles rather than ZEVs since they will be sold in states other than California. Such states either have no requirement for ZEVs or have requirements that must be met regardless of the NLEV program. The benefits of this program are realized because the 49-state commitment will result in a much cleaner national vehicle fleet. California will benefit because emissions from vehicles that migrate into or visit the state will be lower. The number of migrating or visiting vehicles will not be affected by this proposal.

190. Comment: ARB's environmental analysis must articulate the potential ramifications of the probable outcome of the proposed action. The Staff Report ignores the effect delaying the ZEV mandate will have on infrastructure development and thus the long-term effectiveness of the program. While ARB encourages continued infrastructure development, the agency ignores the more likely outcome that pre-implementation steps will be delayed, which will translate into future acceptance difficulties and further loss of emissions reduction opportunity from the proposed action and the concomitant lost emissions reduction opportunities.

Agency Response: The Staff Report does articulate the potential ramifications of the proposal. ARB has determined that by eliminating the ZEV requirement during the period from 1998 through 2002, we will avoid implementation of the program before the technology necessary to support the program requirements is available. While the delay could result in a concomitant delay in infrastructure development, ARB believes that the additional time will have the benefit of ensuring that the necessary infrastructure will be in place to meet the needs of EV owners as the program rolls out over the next several years. The MOAs include several provisions that establish how the ARB and automakers will foster the development of EV infrastructure. The commenters concern that the necessary infrastructure will not be in place for a delayed ZEV program would be even stronger in relationship to implementation in 1998.

191. Comment: The Staff Report includes no explanation of its cumulative impact analysis. There is an acknowledgment that emissions will increase in the short-term, but there is no quantification of the impact on the 1999 and 2005 attainment areas. The SIP has numerous other shortfalls that need to be "made up" for 2010 areas to demonstrate reasonable further progress and attainment, but there is no analysis of the effect of the delayed and reduced ZEV roll-outs on those programs. ARB must identify the effect of foregoing the emission reductions associated with implementation of the ZEV mandate in 1998, including a quantification of the number of people affected and the projected adverse health effects.

Agency Response: See responses to Comments 54, 99, 101 and 183 .

192. Comment: ARB must consider mitigation measures for any significant impacts. The proposal has two clear adverse effects on ZEV production and acceptance that were not, but could be, fully mitigated. The NLEV program will not fully mitigate the loss of emissions reductions from the proposal in the period from 1998 through 2002. ARB must develop additional interim emissions reduction strategies to offset this short-term emissions loss. Specifically, equivalent emissions reductions could be obtained by, e.g., moving up the effective date of the pesticide rules in the SIP and making them mandatory; enhancing the effectiveness of the enhanced Inspection and Maintenance program; retrofitting existing, exempt sources; or implementing other innovative strategies including condemning or discounting banked emissions. Additionally, because ZEV acceptance will build upon earlier experience, any delay will set back consumer exposure and acceptance of ZEVs by a period at least as long as the delay. This impact could be mitigated by adopting additional production and sales mandates, such as 15% in 2005, 20 % in 2007 or 25% in 2009, etc. This will provide additional incremental long-term benefit that may compensate for lost emissions due to the reduced market penetration resulting from the delay of the ZEV requirements.

Agency Response: ARB has complied with CEQA mitigation requirements. In response to air quality planning requirements of state and federal law, ARB and the affected air districts and other public agencies have been pressed to identify emission reduction strategies for all source categories within their respective jurisdictions. For every ozone nonattainment area the SIP approved by ARB and submitted to U.S. EPA under the federal Clean Air Act includes all reasonably available emission reduction strategies for ozone precursors plus commitments to do more. (See responses to Comments 29, 62 and 170.) In the SCAB the SIP includes as yet unspecified control measures as authorized under § 182(e)(5). Thus the stable of feasible mitigation measures to offset the loss of anticipated emissions reductions from this proposal is empty. The ZEV program represents one of the many innovative and far-reaching strategies included in the 1994 Ozone SIP, but to assume that there are other substitute measures that can easily be plugged into the ZEV slot reflects a lack of understanding about the lengths to which the affected agencies have already gone. Fortunately, the “49-state” program commitment included in the MOAs will fully offset emissions reductions foregone with a premium by 2010. While anticipated emissions reductions from implementation of the ZEV requirement in 1998 will not be fully offset in the early years, this impact will be small and spread over several areas of the state. Given these circumstances it would be very difficult if not impossible to fashion effective, reasonable mitigation measures or alternatives that are not already included in the SIP.

193. Comment: The loss of emissions reductions not offset by the NLEV program could be mitigated by establishing a program similar to the Innovative Technologies Program (ITP), created by the Santa Barbara Air Pollution Control District to generate emissions reduction credits through the replacement of high polluting engines by modern, more efficient and less

air pollution intensive engines in various applications from marine fishing vessels to trash trucks to heavy-duty construction equipment. In this program polluters pay a fee per ton of pollutant, which is then used to subsidize one of the identified control technologies to generate offsetting emission reductions. This must be considered as a viable alternative and additional mitigation measure.

Agency Response: ARB does not have authority to impose fees for such a program and would have to seek legislative changes for this purpose. Moreover, due to the nature and scope of the impact in question, mitigation of the type suggested will not be effective. Additional control measures to provide emission reductions from motor vehicles, through some market-based mechanism or other approach, are not available either. To the extent such measures are available and feasible, they are encumbered by measure M2 in the 1994 Ozone SIP.

194. Comment: Under CEQA, the Staff Report must distinguish between measures proposed by the proponent for inclusion in the project and those that could or should be imposed as mitigation measures. The Staff Report is deficient because it fails to make this distinction.

Agency Response: The Staff Report makes it clear that the proposal to enter into MOAs with the seven automakers directly affected by the proposed amendment is part of totality of the action being proposed to the board. This meets the requirement of § 15126 © of the CEQA Guidelines. No additional mitigation was identified or considered because no feasible mitigation measures were available. (See responses to Comments 29, 62, 170, 192.)

195. Comment: Public Resource Code § 21080.6 requires that mitigation measures be “fully enforceable through ... agreements or other measures.” Therefore, ARB must “incorporat[e] the mitigation measures into the plan, policy, [or] regulation’.” The Staff Report and MOAs fail to satisfy this requirement. The MOAs are unenforceable, the “liquidated penalties” are set so low as to neither promote or ensure compliance nor to prove adequate replacement resources for ARB to accomplish equivalent emissions reductions. Therefore, there is no likelihood that the mitigation measures will accomplish the stated objectives or that the adverse impacts will be reduced below significance.

Agency Response: In taking final action on this proposal ARB did not adopt any mitigation measures to monitor. (See response to Comment 194.) We do note, however, that the MOAs are enforceable agreements (see responses to Comments 128, 129 and 138) and that the agreements include specific monitoring provisions that will allow ARB to track compliance with the “49-state” vehicle program as well as the technology development demonstration project and ramp-up planning.

196. Comment: CEQA requires a mitigation monitoring plan when a project is approved based on the availability of measures to mitigate some or all of the adverse environmental impacts. The Staff Report admits that short-term emissions will rise from adoption of the proposed

rule [SR at p. 18] but that the early implementation of the ULEV standards nationwide as well as the long-term benefits of enhanced customer acceptance of ZEVs would adequately mitigate the forgone short-term emissions reductions, but no mitigation monitoring plan has been adopted. This is not the situation presented in *Dunn-Edwards*, where OSHA had exclusive regulatory authority to protect worker safety, which was the impact at issue. Here, ARB may monitor the registration of imported ULEVs and ZEV sales and calculate the effectiveness of the mitigation measures.

Agency Response: ARB does not consider the projects/programs included in the MOAs to be mitigation measures. They are a part of the original proposal. (See response to Comment 194.) Moreover, the MOAs include provisions for monitoring manufacturer compliance with the “49-state” vehicle program as well as other manufacturer obligations under the agreements.

197. Comment: The mitigation monitoring plan is particularly important because the MOAs give the manufacturers unfettered discretion to employ substitute strategies. ARB must develop and seek public involvement in the review of the adequacy and equivalence of any proposed substitute mitigation measures through a process stated in the mitigation monitoring plan.

Agency Response: As indicated in the response to Comment 194, the MOA is not a mitigation measure: It is part of the staff proposal. Therefore, no mitigation monitoring plan is required. Nevertheless the MOAs include provisions for monitoring the implementation of the “49-state” vehicle program and commitment. Further, the MOAs do not give automakers unfettered discretion to employ substitute strategies. The MOA allows the manufacturer to provide emission reductions from a substitute measure or measures only with prior executive officer approval that equivalent emissions reductions will be realized. As a condition of approving an alternative strategy under this provision, the Executive Officer will take whatever steps are necessary, including requiring provisions to allow monitoring of the implementation of the alternative strategy, to ensure that equivalent emissions reductions are in fact realized. (See also response to Comment 60.)

198. Comment: Public involvement in agency decision making is the cornerstone of our democracy and an “essential part of the CEQA process.” Guidelines § 15201.” Section 60007 of ARB’s CRP regulations “requires that the agency obtain and respond to agency and public comments.” CEQA mandates meaningful opportunities for public involvement and requires that findings be circulated before the hearing so that the public may understand and respond to the logical analysis employed by the staff. ARB has failed to adequately apprise and involve the public in this process, tainting the outcome. Although tentative consideration of these issues has occurred in the course of public hearings conducted in November and December of 1995, no CEQA analysis was completed as a part of those hearings. It is unlikely that the Board will fulfill the comment and response requirements of its own regulations in the formal rulemaking, but will simply treat the CEQA review process and other public participation requirements as formalities with no substantive significance.

Without such a review, the ultimate document becomes a post-hoc rationalization devoid of effect or significance.

Agency Response: The findings approved by the Board are based on the Staff Report and other information that was available to the public for review and comment more than 45 days prior to the public hearing when the findings were adopted. This provided ample opportunity for meaningful public involvement. The ARB has fulfilled its obligation to respond to public comment and concerns. The level of public involvement in this rulemaking was very high at all stages from workshops described in section 2.1 of the Staff Report at pages 4 to 6, to the preliminary Board hearings that lead to the direction to develop the proposal presented to the Board March 28 and 29 of this year up to and including that hearing.

199. Comment: Delay of the ZEV mandate conflicts goals and environmental goals established by Health and Safety Code § 43000(e) and Public Resources Code § 25000.5. This is an independent basis for a finding of significant impact under CEQA and the Guidelines, Appendix G(a). Thus adoption of the proposed amendments without making findings that such action is in conformity with the policies of Public Resources Code § 25000.5 is invalid.

Agency Response: Delay of the ZEV requirement furthers the legislative goal of reducing dependence on petroleum-based fuels only if the program could have been successfully implemented on the original schedule. ARB determined that it is necessary to delay implementation of the ZEV requirement for five years to ensure the successful launch of a sustained market for ZEVs. (See response to Comment 26.) Inaction that leads to the failure of the ZEV program is likely to delay a successful start up for far longer than five years and will have a long-range adverse impact on the goals set out in the referenced statutes.

200. Comment: The existing ZEV mandate is included in the California State Implementation Plan (SIP) and the attainment demonstration in the SIP relies on emissions reductions from this measure. ARB cannot rescind the ZEV requirements until U.S. EPA approves a substitute control strategy with equivalent emissions reductions in terms of both time and quantity. This proposal infects the legal and technical adequacy of each air district's air quality management plan and SIP component. This is contrary to Health and Safety Code § 43000.5(d), which requires ARB to establish programs to reduce emissions from mobile source emissions that can be used by local air districts in the air quality planning process, including SIP elements.

Agency Response: ARB recognizes the need to offset the loss of emission reductions credited in the SIP in accordance with the requirements of the federal Clean Air Act. The MOAs provide the necessary emissions reductions to ensure that the rate-of-progress and attainment demonstrations in the SIP are not jeopardized and that the state will meet the ambient air quality standards as expeditiously as practicable. But it is not necessary to have

a SIP revision capturing the offsetting emissions prior to amendment of the existing regulation. It is sufficient to proceed, as ARB has done, to process both actions in tandem. The proposed action is not inconsistent with the general direction of Health and Safety Code § 43000.5(d) to implement long- and short-range programs to reduce vehicle emissions that districts can rely upon in developing air quality plans to meet state ambient air quality standards. The totality of regulatory actions by ARB to reduce vehicle emissions is more than adequate to meet this directive. Moreover, given ARB's determination that the state of EV technology readiness indicates that implementation of the program in 1998 would not be successful particularly in the long-term, this action is necessary to meet the directive.

201. Comment: Because the proposed action may cause areas in California to fail to attain federal standards by the statutory deadlines, additional controls are mandated by the federal Clean Air Act. ARB failed to consider the potential significant adverse environmental effects of these measures. For example, any area with a 1996 attainment date that is "bumped up" to 1999 will have to institute an enhanced inspection and maintenance program and more stringent new source review (NSR) rules. ARB did not consider the environmental impacts of constructing new mobile source air pollution testing facilities. Increased application of NSR rules to smaller projects and the imposition of greater offset ratios will increase competition for emissions reductions credits, inhibiting economic growth in these areas and encouraging the continuation of older, higher polluting sources to preserve entitlement to more valuable ERCs in the future.

Agency Response: The proposed amendment will not affect any rate-of-progress or attainment demonstration in the SIP. (See responses to Comments 54, and 99 and 183.) Nor will the amendment cause any area to be "bumped up." Consequently none of the impacts the commenter speculates about will occur as a result of the adoption of this proposal.

202. Comment: The pending SIP approval relies on emissions reductions from ZEVs. ARB risks the legal and technical adequacy of the entire SIP with the proposed action. ARB opposed the federal implementation plan for the South Coast Air Basin and Ventura County, yet it flaunts SIP disapproval, sanctions, enormous uncertainty and possibly a FIP for the entire state.

Agency Response: The emissions reductions in the SIP associated with the first five years of the ZEV program will be made up by the implementation of the "49-state" program included in the MOAs. While the timing of the reductions means that there will be fewer emissions reductions in the earlier years than would be realized from the successful implementation of the ZEV requirement, on a cumulative basis the "49-state" program will more than offset the loss of emissions reductions from the delay. The effect of this delay will not impact any rate-of-progress or attainment demonstration in the SIP. (See responses to Comments 54, and 99 and 183.) Moreover, given ARB's determination that the state of EV technology readiness indicates that implementation of the program in 1998 would not be successful, it is

not reasonable to assume that all the emissions reductions anticipated for the first five years of the program would in fact be realized if no change in the regulation was made. Implementation of the “49-state” program of the MOAs will ensure that ARB will meet the emission reductions commitments of the SIP; therefore, adoption of the proposed amendments does not risk SIP disapproval or sanctions (including a FIP).

203. Comment: In light of the California SIP submittal and the potential for substantial shortfalls in the effectiveness of control measure M1 and other SIP elements, the significance of the ZEV program and potential emissions reductions increases several-fold. No other control measure or strategy considered for inclusion in the SIP has the potential for both short-term and long-term emissions reductions. It is the only program that can provide virtually unlimited additional emissions reductions credits through enhanced program implementation. Adoption of the proposed amendments defers the advancement of this crucial panacea and thus jeopardizes the timely and expeditious attainment of the ambient air quality standards statewide, with enormous ecological and economic ramifications. This threat is evidenced by Governor Wilson’s “Ueberroth” Report, which blames environmental regulations for lost economic productivity. The Governor has stated his belief that only with economic prosperity can California look to enhanced environmental protection. If ARB compromises on timely attainment in any area of the state through delayed implementation of the ZEV program other adverse environmental impacts will accrue.

Agency Response: ARB agrees that the successful implementation of the ZEV program is an important component of the overall strategy to reduce motor vehicle emissions. This importance will not be affected by the success or failure of control measure M1 or other SIP elements. In fact, while the short-term benefits of the ZEV program are not unimportant, the real value of this program is its potential for significant long-term benefits. These benefits are important even if, as we assume, measure M1 and all other SIP measures are a complete success because of their ability to address pressures of human and vehicle (including VMT) population growth. It is to protect these critical long-term benefits that ARB has determined that it is necessary to delay implementation of the ZEV program for five years. (See response to Comment 26.) This action, when coupled with the commitments in the MOAs to implement a “49-state” vehicle program, will not jeopardize timely attainment of the ambient air quality standards in California. (See responses to Comments 54, and 99 and 183.) And this is in no way compromised by the concern that environmental regulation must be accomplished in a manner that minimizes economic impacts on California businesses.

204. Comment: Any delay in the attainment of state and federal ambient air quality standards will have enormous ripple effects on ecological and economic systems. ARB’s proposed action will jeopardize attainment in many areas by a factor that is not evident in the Staff Report or the record in this action. ARB is violating the public trust doctrine in failing to first calculate the effect of its actions on attainment in each area of the state and upon the health and well-being of the residents and visitors to this state.

Agency Response: Adoption of the proposed amendments will not delay attainment of state and federal ambient air quality standards in any area of the state. (See responses to Comments 54, 66, and 99 and 183.) ARB did consider the potential effects of the proposal before acting. The clear message from ARB regarding this action is that it is necessary to preserve the long-term benefits of the ZEV program, including contributions to attainment and maintenance of air quality standards to protect public health. (See response to Comment 26.)

205. Comment: Before the ARB can approve the proposed amendments substantial additional technical and public process must be undertaken to fulfill the requirements of CEQA and other laws, including ARB's CRP regulations. The proposal has the potential for significant adverse environmental impacts that could be mitigated as required by CEQA. Alternatives that could accomplish the plausible objectives of this action have not been fully considered. The proposed action could jeopardize the adequacy and approvability of the SIP under federal law as well as compliance with the California Clean Air Act. Unless these deficiencies are addressed any action will be subject to judicial review.

Agency Response: All of these issues have been addressed. ARB has complied with all applicable requirements of state and federal law, including CEQA and ARB's CRP regulations (17 Cal. Code Regs. §§ 60005 to 60007), the APA and the FCAA. ARB realized that by delaying the ZEV program it would be necessary to address the loss of the emissions reductions associated with the period of the delay to ensure the approvability of the SIP. To address this issue the affected vehicle manufacturers committed to implement a program to sell cleaner cars nationwide, which benefits California when these vehicles are brought into the state permanently or temporarily. It was determined that the reductions associated with the "49-state" program would fully offset the emissions reduction loss resulting from the proposed amendments. This action is important because under the SIP ARB is committed to delivering the emission reductions associated with the LEV program including the ZEV requirement. ARB further determined that as a result of the two actions, no rate-of-progress or attainment demonstration for any area of the state would be jeopardized.

206. Comment: In preparing the Staff Report, the ARB did not pay sufficient attention to the economic impacts of the proposed retreat from the ZEV mandate. ARB is required to analyze the economic effects of the proposed action and to include a number of statements regarding these effects. The ARB must prepare a statement of reasons for proposing the amendments as required by Government Code § 11346.2(b). The notice indicates that this information is included in the Staff Report. In the Staff Report these requirements have been treated indirectly or ignored completely.

Agency Response: ARB did analyze the economic impacts of the proposed action and the record includes all of the required statements. The Staff Report constitutes the initial

statement of reasons required by Government Code § 11346.2(b) and provides the required information in an appropriate level of detail. (See responses to Comments 160 (first ¶) and 214.)

207. Comment: The statement of reasons prepared by the agency must include a description of the public problem, administrative requirement, or the condition or circumstance that each adoption, amendment or repeal is intended to address. Under § 11346.2(b)(3), the statement of reasons must also identify each technical, theoretical, and empirical study, report, or similar document upon which the agency relies in proposing the adoption, amendment, or repeal of a regulation. But the Staff Report identifies no documents except the Report of the Battery Panel. With this as the only support for the proposal, the Staff Report fails to provide the interested public with information about ARB's decision-making process.

Agency Response: The Staff Report includes a thorough description of the public problem, conditions and circumstances that the proposal is intended to address. The Staff Report identifies 18 reports and other documents including the Battery Panel Report as references and includes two substantive appendices that provide additional information in support of the proposal. This represents the information relied upon by the ARB staff in proposing the amendment of the ZEV requirements. Thus ARB fully complied with § 11346.2(b)(1) and (3) as well as all other requirements of this section providing the public with all the information and explanation necessary to fully understand the Board's decision making process.

208. Comment: The section of the Staff Report that provides the rationale for pursuing Concept B is filled with unsupported conclusions that rest on simple assertions, e.g., “staff does not believe that performance-based standards alone can achieve ARB's long-term air quality goals for the ZEV program.” And it rests on simple assertions by the industry that is being regulated, e.g., “automakers believe producing large numbers of EVs with current technology would be too costly.”

Agency Response: ARB has relied on information provided by the regulated industry as well as the expert opinions of staff and many independent sources including the Battery Panel in developing the proposed amendments.

209. Comment: ARB may seek to cure the lack of information in the initial statement of reasons in an improved final statement of reasons, but if new data or reports referenced in the final statement of reasons must be made available for public comment. Moreover, the failure to provide such information as part of the initial statement of reasons is a violation of both the letter and intent of the statute, which requires the rulemaking agency to provide the public with the information that was the basis of its decision.

Agency Response: ARB did not add any information to the record except what was identified in the 15-day notice as required by Government Code § 11346.8(d).

210. Comment: Government Code § 11346.2(b)(4) requires consideration of alternatives and the effects of the primary proposal or alternatives on business in California. The only treatment of alternatives in the Staff Report [section 2.3] completely fails to address any alternatives to lessen any adverse impact on small business. While the statute does not require the ARB to construct artificial alternatives, the fact that the proposal was found to have potential impacts on small businesses that relied on the 1998 ZEV mandate makes the lack of an alternatives analysis problematic.

Agency Response: ARB did consider an alternative that would have lessened the impact on small ZEV-related businesses. This is the alternative identified as Option C in the alternatives analysis. This alternative was rejected because ARB determined it would not provide sufficient flexibility to ensure that the initial launch of the ZEV market would succeed. That is, even the proposal to require a smaller percentage of ZEV in the early years of the program could have forced the introduction of too many electric vehicles before the advanced technology that is more likely to meet consumer demands is available based on the conclusions of the Battery Report.

211. Comment: Throughout the limited alternatives analysis [Staff Report, section 2.3], there is no discussion whether any of the alternatives would be more burdensome or less effective than the proposal.

Agency Response: The primary focus of the discussion for both alternatives is that neither would be as effective as the staff proposal at meeting the objective of avoiding the risk of a premature implementation of the ZEV program.

212. Comment: The statement of reasons includes no evidence to support the ARB's finding that the action will not have a significant adverse economic impact on business. This is a violation of both the letter and intent of the law, which is designed to allow the public an opportunity to understand and comment on the material used as the basis of an agency's decision.

Agency Response: The Staff Report contains the basis for the findings regarding economic impacts on business at pages 24 to 26.

213. Comment: In preparing the Staff Report, the ARB did not provide adequate opportunity for public input and comment.

Agency Response: Under the APA, the Staff Report (initial statement of reasons) and regulatory proposal must be available for public comment for a period of at least 45 days. (Government Code § 11346.4(a).) The Staff Report and supporting materials including the

express text of the proposed amendments was released to the public February 9, 1996. This was 48 days before the March 28-29 public hearing. Prior to the development of the specific staff proposal and Staff Report, ARB conducted numerous workshops, which are described in the section 2.1 of the Staff Report at pages 4-6, and presented substantive informational updates at public board meetings in October, November and December of 1995 each of which provided an opportunity for public comment.

214. Comment: In addition to the statement of reasons, separate statutory authority [Government Code § 11346.3(a)] requires the ARB to assess the potential for adverse economic impact on California business enterprises and individuals when proposing to adopt, amend or repeal a regulation. The regulatory proposal must be based on adequate information concerning the need for, and consequences of, the action. The Economic Impact Analysis in the Staff Report is less than two pages and includes no references to evidence, reports, or any other documentation used as the basis for the proposal. Rather it uses broad conclusory statements that appear to be the result of an ARB staff huddle, not a rational, documented process. With no basis for the conclusions presented, the staff asserts that the proposed regulations are likely to have a positive impact for consumers, and that they could reduce total program costs. The failure to include this information prevents the public from being able to review and comment meaningfully on the proposed amendments to the ZEV program.

Agency Response: The specific regulatory action presented is the elimination of the ZEV requirements for model years 1998 through 2002. As described in the Staff Report at page 25, the primary economic impact of this action is a decrease in costs to those manufacturers subject to the requirement during that period. It does not require a complex analysis to determine that by giving affected manufacturers additional time and flexibility to allow them to focus on the most promising technologies (as recommended by the Battery Panel) and to allow each manufacturer to establish the most favorable ramp-up to commercial production at the 10 percent level in 2003, you will reduce program costs, or to postulate that some of the reduction will be reflected in the price of ZEVs to consumers. In this case the economic analysis is not more detailed because the proposal under consideration -- the delay of the ZEV requirement for five years -- is quite discreet. ARB also indicated that the proposal could adversely affect some ZEV-related small businesses that were relying on an 1998 regulatory requirement. Given the nature and scope of the economic impacts, this treatment is sufficient for the intended purpose.

215. Comment: Also in the Economic Impact Analysis section of the Staff Report, ARB staff concedes that small California companies without the financial capability to withstand an investment delay may lose the ability to compete in the electric vehicle market. But the Staff Report fails to provide a statement of the potential cost impact of the proposed action on private persons or businesses directly affected as considered by the agency during the regulatory development process, as required by Government Code § 11346.5(a)(9). The

failure to include this information prevents the public from being able to review and comment meaningfully on the proposed amendments to the ZEV program.

Agency Response: Government Code § 11346.5(a)(9) provides that the notice of proposed action must include “[a] statement of the potential cost impact of the proposed action on private persons or businesses directly affected, as considered by the agency during the regulatory development process.” This section defines “cost impact” as “the reasonable range of costs, or a description of the type and extent of costs, direct or indirect, that a representative private person or business necessarily incurs in reasonable compliance with the proposed action.” The only entities that incur any costs in compliance with the ZEV regulations are the seven largest automakers. The notice correctly describes the type and extent of costs as a reduction in costs due to elimination of the requirement to produce specified percentages of ZEVs during the period in question and further notes, although this is not required under the applicable statute, that the reduced costs to manufacturers could result in lower vehicle costs to consumers.

216. Comment: As presented the staff proposal is illegal, and it is unacceptable. It ducks the obligation to provide information and insight regarding the decision making process. Both the environmental and economic analyses, which are intended to provide interested parties information to understand the consequences of a proposed regulatory action and ensure that regulators act on the basis of comprehensive information, are deficient, preventing businesses from making decisions with the knowledge that their interests will be considered. This violates both the letter and spirit of the law.

Agency Response: The Staff Report and supporting documentation provide a complete description of the proposed action and its potential environmental and economic impacts. Specifically in carrying out this rulemaking action the ARB complied with the applicable requirements of the APA and CEQA. The purpose and reasoning behind the board’s decision to amend the ZEV program by eliminating the ZEV requirement until model year 2003 was fully disclosed and discussed through a series of preliminary workshops and public meetings, including the March 28-29 public hearing to consider a specific regulatory proposal. The ARB’s action comport fully with the letter and spirit of the applicable laws.

217. Comment: The 1994 Ozone SIP specifies the means by which California will deal with ozone nonattainment areas in the state. The SIP includes a number of unspecified, or so-called “black box,” measures. It is not good policy to take a regulatory action that will result in near-term emissions increases before establishing the final measures that will make up the shortfall represented by the “black box.” Adoption of the proposed amendments to the ZEV program means the “black box” has grown larger.

Agency Response: ARB is well aware of the importance of maintaining the progress outlined in the SIP and the danger of backsliding. During the public hearing for the adoption of the SIP, the board made two points. One: the SIP, which is a planning

document, is not written in stone and could be modified in the future if additional information indicated that change was warranted. And two: in order to change the SIP in such a way as to reduce the level of emission reductions included in the SIP, ARB would have to take action as necessary to offset the loss. In this rulemaking, ARB exercised the flexibility referenced in point one, but did so only after identifying non-SIP emission reductions, in the form of manufacturer commitments to sell cleaner cars nationwide, to offset the loss represented by eliminating the ZEV requirement for 1998 through 2002. Therefore, this action will not increase the size of the black box. Moreover, ARB has amended the existing ZEV requirement to ensure the long-term success of the program. (See response to Comment 26.)

218. Comment: ARB adopted the ZEV requirements in 1990 before the technology necessary to meet the requirement existed. Now that the technology does exist, as established by GM's announcement to begin selling EVs in 1996 (two years ahead of schedule), ARB is making a turn-around. This change in regulatory course threatens the success of the existing mandate. It is arbitrary and capricious. An agency cannot decide a matter one way today and a similar matter another way tomorrow. *Doubleday Broadcasting Co. v. FCC* 655 F.2d 417, 423 (D.C.Cir. 1981)

Agency Response: As discussed in the responses to the previous two comments, ARB's actions are not inconsistent, and they are not arbitrary and capricious. Yes, ARB adopted the ZEV requirement for 1998 in 1990 before the technology necessary to meet the requirements existed based on a determination that the technology would be ready by that time. Yes, as a result of that regulatory action, we are much closer to realization of the technology necessary to meet the requirement. But ARB has determined that although we are close, we are not quite there yet. So, on the verge of implementation (1998 model year vehicles typically are available by mid-year of the calendar year before the model year, so 1998 model year vehicles will be sold beginning in mid-1997), ARB has determined that it is necessary to delay implementation of the program by repealing the regulatory language that creates the requirements for model years 1998 through 2002. While public agencies have a responsibility to provide equitable treatment to all persons, where changes in circumstances dictate a change in policy, an agency has an obligation to avoid acting arbitrarily by ignoring those changes. (*Rust v. Sullivan* (1991) 500 U.S. 173, 186-188, 111 S.Ct. 1759, 1769.)

219. Comment: ARB has incorrectly focuses on the condition of the market, rather than the ability of the ZEV requirement to reduce emissions of NOx and NMOG as well as benzene and formaldehyde. This ignores the traditional role of government in establishing clean air standards.

Agency Response: There is a difference in how regulatory agencies such as ARB approach the question of setting ambient air quality standards and the means for achieving those standards. The question of technological feasibility or economic impacts, as they would apply to the issue of market readiness, are not proper considerations when agencies decide

what level of air quality is necessary to protect public health. But in adopting and now amending the ZEV requirement, ARB is considering not what constitutes healthful air quality, but how to meet established air quality standards. Contrary to the assertions of the commenter, in carrying out this activity ARB has a statutory obligation to adopt standards for motor vehicles that are technologically feasible and cost-effective (Health & Safety Code §§ 43013, 43018 and 43101) and to consider the economic impacts of any such action (Government Code §§ 11346.3 and 11346.5).

220. Comment: ARB should act in a manner that ensures California will make progress toward meeting its SIP requirements, continue to encourage rapid ZEV technological development, and protect the public from an immediate health threat.

Agency Response: ARB believes that adopting the proposed amendments will ensure real and sustained progress toward improving air quality in California both to meet SIP commitments and to protect public health.

221. Comment: ARB failed to comply with the requirement to make available to the public the express terms of the proposed regulation. Specifically, while ARB released a document entitled Master Memorandum of Agreement the exact terms of the individual agreements with each affected manufacturer were not made available for public review. This limits the ability of members of the public to comment on the actual substance and implementation of the agreements between ARB and the automakers, and raises questions about ARB's ability to discharge its responsibilities in an open and democratic manner.

Agency Response: The MOAs are not regulatory; therefore, they were not required to be made available for public review under Government Code § 11346.2. Rather the MOAs represent a portion of the factual information relied upon by the Board in considering and approving regulatory amendments to the ZEV program. As such the Master MOA was made available for public review under Government Code § 11347.3. The Master MOA included as Appendix C to the Staff Report represented exactly the agreements negotiated by ARB staff and the automakers. Where the agreements differed from automaker to automaker the master document reflected those differences and included sufficient information to determine the actual terms for each manufacturer. Ultimately the Board approved the MOAs as negotiated and directed the Executive Officer to execute just those agreements with the manufacturers. Thus, the public was afforded a full and complete opportunity to review and comment on the MOAs.

222. Comment: The Staff Report identified adverse impacts on small businesses involved in the development of ZEV-related technologies. Nevertheless, ARB did not provide a description of the alternatives identified to lessen the adverse impact on small businesses as required by Government Code § 11346.2[(b)(4)(B)]. This disregards the spirit of sound analysis and reasoned decisions making as embodied in the APA.

Agency Response: ARB did determine that some small businesses could be adversely impacted by the delay in implementation of the ZEV program. ARB believes that maintaining the 2003 ZEV requirement signals that the state has not abandoned the need for ZEVs as part of the mix of emission control strategies necessary to achieve and maintain the ambient air quality standards. This will minimize the effect of the delay on continued interest and business investment in these technologies. But just as it would not serve long-term air quality needs to force the premature initiation of a ZEV program that ultimately fails, it would not serve the long-term needs of ZEV-related small businesses to take such action. Government Code § 11346.2(b)(4)(B) requires an agency proposing to adopt a regulation to describe those alternatives considered by the agency that would lessen any adverse impact on small business. The section specifically states, however, that the agency is not required to construct artificial alternatives. Of the three alternatives discussed in the Staff Report, one could have lessened the impact on small businesses. This alternative was rejected, however, because it would not have served the purpose of the staff proposal.

223. Comment: ARB has not provided any evidence to support the determination that the proposed amendments will not have a significant adverse impact on small business.

Agency Response: ARB did not determine that the proposed amendments will not have a significant adverse impact on small business. In fact, ARB determined just the opposite. This determination is discussed in section 5.2 of the Staff Report at pages 24-25. (See also responses to Comments 214 and 222.)

224. Comment: ARB misinterprets the requirement of Government Code § 11346.3(a) as being triggered only if there is a specific impact on an individual or California business. Consequently ARB failed to provide the required analysis of how the proposed regulation will affect the creation of jobs in California, the creation of new businesses or the elimination of existing businesses in California, or the expansion of current California businesses.

Agency Response: The APA (Government Code § 11346.5(a)(9)) requires ARB to assess the cost impacts on directly affected persons and businesses. The determinations regarding the direct costs of compliance were provided in response to this requirement. The APA further requires ARB to assess the economic impacts on California businesses and individuals (Government Code § 11346.3(a)). In this case the proposed regulatory action does not place any requirements on individuals or California business, rather it eliminates an existing requirement affecting certain vehicle manufacturers. Thus ARB properly determined that the proposed regulatory action would not have an adverse economic impact on California business or individuals, including the creation or elimination of jobs and the creation, elimination or expansion of businesses. ARB did find that there may be an adverse economic impact on some small businesses: this effect is described in the notice and discussed in the Staff Report at pages 24 and 25. (See also response to Comment 214.)

225. Comment: ARB failed to provide a statement of the potential cost impacts of the proposal on directly affected businesses in violation of Government Code § 11346.5(a)(9).

Agency Response: The Staff Report indicates that costs to directly affected businesses, i.e., businesses that are required to comply with the regulation, will decrease.

226. Comment: ARB supports the proposed amendments on the premise that the MOAs between ARB and each of the affected manufacturers will achieve equivalent or better NMOG emission reductions. While ARB provides air emission modeling as a justification for its finding of equivalence, the agency fails to provide a thorough analysis of its ability to enforce the compliance necessary to obtain the benefits of the MOAs.

Agency Response: ARB is not replacing the existing regulatory requirement with contractual obligations. Rather, ARB has proposed to amend the existing ZEV requirement in order to ensure a successful market launch of a sustained market for ZEVs. In proposing the amendments to delay the ZEV requirement for five years, ARB staff, mindful of the need to maintain compliance with our SIP commitments, negotiated agreements with the affected automakers to offset the loss of anticipated emission reductions from the introduction of ZEVs during the period from 1998 through 2002, which are included in the SIP. Specifically, the MOAs include a commitment by the automakers to implement the “49-state” vehicle program, as well as commitments to maintain the pace of technology development. The MOAs are fully enforceable as contracts under state law. (See response to Comment 138.)

227. Comment: The adoption of the proposed amendments through MOAs represents a significant shift in the ability of ARB to enforce manufacturer compliance with the new ZEV requirements and the provisions of the MOAs. This alteration in legal relationship is so significant that it mandates the agency to provide the public with a full analysis of its ramifications for enforcement capabilities prior to adoption of the proposed amendments. Where agencies are provided broad discretion in exercising and enforcing regulatory authorities, ARB will be held to the “four-corners” of the document in enforcement of the MOAs. Manufacturers will have legal defenses under the MOAs that would not be available under the existing regulatory framework. While ARB claims that the existing regulatory requirements can be reimposed if manufacturers fail to comply with the agreements, these defenses will make it difficult to establish noncompliance.

Agency Response: ARB is aware that the proposed regulatory action represents a change in the way ZEVs will be introduced over the period from 1998 through 2002. ARB determined that the additional flexibility provided by delaying the ZEV requirement for five years was necessary to ensure the long-term success of the program. The MOAs provide a mechanism to offset the loss of emissions reductions credited in the SIP, and is enforceable as a contract under state law. (See response to Comment 138.)

228. Comment: Because ARB failed to provide the express language of each MOA between ARB and the affected manufacturers, the public could only comment on the agency's ability to enforce a vague and uncertain MOA.

Agency Response: As explained in response to Comment 221, ARB did provide the public with the specific language of each of the MOAs proposed to and ultimately approved by the board.

229. Comment: In order to achieve emission reduction equivalence, the automakers must commit to participation in a voluntary "49-state" vehicle program, commonly known as NLEV. Since the NLEV program has not yet been established, the public has had no opportunity to comment meaningfully on the program. Moreover, ARB completely ignores the possibility that U.S. EPA will not be able to implement the NLEV program.

Agency Response: The automakers have committed to selling cleaner cars nationwide. The obligation refers to passenger cars and light-duty trucks meeting standards equivalent to California LEV standards. ARB did, in fact, consider how the manufacturers' commitments to sell cleaner cars nationwide would be implemented if U.S. EPA did not adopt the NLEV program in a timely manner. As stated in section 3.2.1 of the Staff Report at page 13, if the NLEV program is not available the manufacturers must sell a 50-state certified California LEV to meet the obligation. (See also responses to Comments 57 and 60.)

230. Comment: ARB provides only a cursory discussion of the MOA enforcement issue, noting that the primary consequence of noncompliance is in the form of liquidated damages. ARB states that the liquidated damage amounts are sufficient to ensure compliance but provides no substantive support for this conclusion.

Agency Response: The MOA is enforceable under general principles of contract law. (See responses to Comments 128 and 129.) Consistent with those principles of contract law applicable to liquidated damages, ARB and the manufacturers agreed that it would be difficult if not impossible to fix the amount of damages from a failure to meet specific obligations under the agreements. The parties made a good faith effort to fix the damages. In each case the amounts established are reasonable and sufficient to ensure compliance with the MOAs. (See also response to Comment 138.)

231. Comment: The terms of the MOAs will result in ARB coercing the Department of Insurance, other state agencies, and the state banking authorities to help ensure the successful introduction of ZEVs into the marketplace. ARB has neither the authority nor the means to fulfill these obligations.

Agency Response: Under Health and Safety Code § 39600, ARB has broad authorities to carry out activities that are necessary to the execution of its duties under state law. This

general authority permits ARB to undertake to work with other public agencies and private entities to remove barriers to the successful introduction of ZEVs in California.

232. Comment: Since the ZEV requirement adopts technology-forcing measures and prescriptive equipment standards and rejects the use of performance emission standards, the requirement is beyond ARB's authority, departs from the intent of the Legislature, and is not sound public policy. ARB's statements in the Staff Report explaining the basis for its rejection of performance standards as an alternative to the ZEV requirement fail to comply with the requirements of Government Code §§ 11346.2 (b)(2) and 11346.3.

Agency Response: ARB's authority to adopt technology forcing standards is well established. ARB does not believe the ZEV requirement is properly described as a prescriptive standard. (See response to Comment 159.) Finally, adoption of the basic ZEV requirement is not the subject of this rulemaking. The subject is the elimination of the ZEV requirement for five years.

233. Comment: The ZEV requirement fails to meet the "necessity" and "cost-effectiveness" standards embodied in California law (Health and Safety Code, § 57005 and the California Administrative Procedures Act, Government Code § 11340 et seq.). ARB's decision to eliminate the ZEV requirement in 1998 through 2002 confirms that the mandate was not properly adopted in 1990. Accordingly, ARB should eliminate the ZEV requirement in its entirety.

Agency Response: The fact that ARB has determined that the ZEV program should be modified by eliminating the ZEV requirement for the period from 1998 to 2002 does not "prove" that adoption of the requirement in 1990 was improper. In 1990 ARB used the best information available at the time to determine that the ZEV requirement would be technologically feasible and cost effective in 1998. In March 1996, ARB had more specific and detailed information, including the findings of the Battery Panel, on which to make the determination that the proposed five year delay in implementing the requirement will be sufficient to ensure the readiness of ZEV technology by 2003. ARB did consider eliminating the ZEV requirement altogether as an alternative to the proposal. This alternative was rejected because it would not serve the purpose of ensuring that we achieve the long-term air quality goals of the ZEV program, nor would it foster ZEV technology or infrastructure development as explained in the Staff Report at page 9.

234. Comment: ZEVs still do not meet the statutory requirements of technical feasibility (Health and Safety Code, §§ 43101 and 43018). The Battery Panel reported to ARB that only lead-acid and nickel-cadmium batteries would be available for EVs in 1998 and that even after 2000, advanced batteries meeting mid-term performance goals would still cost \$250/kWh.

Agency Response: ARB proposed to eliminate the ZEV requirement for the period from 1998 through 2002 based in part on these findings by the Battery Panel. Because of the life

of advanced batteries expected to be available \$250/kWh equates to operating costs for EVs that are similar to those of a gasoline-powered vehicle. Thus, the existing requirement for ZEVs in 2003 is technically feasible and cost effective.

235. Comment: Under § 57005 of the Health and Safety Code, if a proposed regulation will have an economic impact on California's economy of at least \$10 million, ARB is required to consider alternatives and determine if such alternatives could more cost-effectively achieve California's environmental protection goals. The ZEV requirement will cost the State well over \$10 million and the requirements imposed on ARB by the MOA will carry substantial costs that have not been estimated in the Staff Report. The failure of ARB to provide an estimate of the economic impact of the proposed amendments, including the requirements in the MOAs, does not comply with § 57005.

Agency Response: ARB has complied with Health and Safety Code § 57005. The proposed amendment is the delay of the ZEV requirement for five years. This action will not have any adverse impact on the economy of the state. The only adverse economic impact identified by ARB is potential impacts on some small businesses that have relied on the 1998 implementation date to bring in business opportunities. The MOAs are not a part of the regulatory proposal and are not, therefore, subject to the requirements of Health and Safety Code § 57005. Moreover, ARB did consider two alternatives to the proposed amendment of the ZEV requirement. These alternatives were proposed by various stakeholder groups. Both were rejected because they did not serve both purposes of the staff's proposal: to ensure a successful launch of a sustainable ZEV market and to encourage ongoing ZEV-related research and development.

236. Comment: The confidentiality language in the MOAs violates both the Public Records Act and ARB's own implementing regulations. The language should be deleted or modified to state that all confidentiality claims shall be handled pursuant to the California Public Records Act and ARB's implementing regulations. (See response to Comment 137.)

Agency Response: The MOAs provide in section VII that all confidentiality claims shall be handled in accordance with the provisions of the CPRA and ARB's CPRA regulations.

237. Comment: Part of the MOA violates the laws and regulations of California in that it assigns decision making power to the auto manufacturers that are in the purview of ARB. ARB is responsible for setting the standards of performance and/or acceptable emissions that must be adhered to by vehicle manufacturers.

Agency Response: The MOAs do not delegate ARB authority to set vehicle emissions standards or other requirements for motor vehicles to the automakers.

238. Comment: ARB does not have the authority to influence the marketplace by requiring ZEVs, which really amounts to requiring electric vehicles.

Agency Response: ARB has the authority to establish necessary, technologically feasible and cost-effective regulations. The ZEV standards meet these criteria. Although electric vehicles are the only currently available technology that can meet the ZEV standards, there are other technologies expected to be available in the future that could meet ZEV standards, such as fuel cell-powered vehicles. (See response to Comment 115.) Additionally, ARB is currently developing a regulatory proposal to establish a new category of vehicle with emission levels equivalent to that of a battery-powered ZEVs. (See response to Comment 78 for more information on this proposal).

239. Comment: The MOAs suggest that automaker ZEV product plans will be submitted confidentially to the ARB. While specific designs or vehicle features may be protected as confidential, the public needs to know what the companies are doing to meet their air quality obligations by monitoring the success of the ARB-industry technology partnership. While ARB staff has stated an intention to protect sensitive, competitive elements of the plans while making public detailed information from the plans, ARB should clarify what kind of product plan information will be publicly revealed to avoid any misunderstanding or conflict.

Agency Response: ARB will treat information submitted under the MOAs as public or confidential in accordance with the provisions of the California Public Records Act (Government Code § 6250 et seq.) and ARB's implementing regulations (17 Cal. Code Regs. § 91000 et seq.) as provided in section VII of the MOA. (See response to Comment 137.) ARB has committed to make all public information available and to "aggregate or otherwise present confidential information in a manner that will protect its confidentiality while allowing the broadest release of information possible." (See Resolution 96-12, page 9.)

240. Comment: ARB should not force technology.

Response: ARB has a long history of promulgating regulations that force technological advances. Industry has been responsive to the challenges and has worked closely with ARB to establish requirements that are tough and reasonable. Although forcing technology is not the primary goal of ARB, the result of requiring industries to reduce emissions in California has been a proliferation of innovative technologies. This result has benefited not only California's air quality but also our nation's economy and export potential. The whole world now looks to California for cutting edge pollution reducing technologies and programs. Other states have adopted California's motor vehicle standards and the nation's air quality has benefited.

241. Comment: Neither the Assembly Appropriations or Tax Committees were consulted before the MOAs were signed by ARB. The incentive obligations outlined in the MOAs are inappropriate without first consulting these two committees.

Agency Response: These commitments will be carried out within the bounds of ARB's existing legal authority. Should ARB determine that legislation is necessary the issue could be presented to the Legislature for consideration.

242. Comment: The MOAs properly belong under the purview of the Legislature.

Agency Response: Under Health and Safety Code § 39600, ARB has been delegated authority by the Legislature to do such acts as may be necessary for the proper execution of the powers and duties granted to or imposed on the Board under division 26 of the Health and Safety Code. In division 26, ARB has been charged with responsibility for controlling emissions from motor vehicles (Health & Saf. Code §§ 39003, 40000 and 43000 et seq.) and for preparation of the SIP (Health & Saf. Code § 39602). Under these authorities the MOAs are properly within the purview of the ARB.

243. Comment: In addition to a comment letter, Western States Petroleum Association (WSPA) sent a box of documents relating to the Low Emission Vehicle regulations and electric vehicles. The box contains letters, reports, memoranda, speeches and testimony. The topics covered include the market potential for EVs, air quality benefits associated with EVs, costs of EVs and the state of EV and low-emission vehicle technology. Authors include ARB, Sierra Research, the United States Advanced Battery Consortium, the U.S. Department of Energy, and WSPA.

Agency Response: The documents presented express a wide variety of opinions and findings regarding all aspects of the ZEV program and electric vehicles. One of the reports from Sierra Research concludes that, "ZEVs include costs that substantially outweigh the air quality benefits," whereas ARB's Staff Report, which was also included in the box, supports the idea that the life-cycle costs of electric vehicles may ultimately be equal to or less than the life-cycle costs of gasoline vehicles. A Carnegie Mellon study and a report from the Reason Foundation which were included in the box allege that electric vehicles will not improve air quality and are unmarketable. In contrast, the box also contains a report from the Department of Energy which concludes that EV use significantly reduces emissions of ozone-forming pollutants, carbon monoxide and particulate matter and a University of California, Davis market survey which concludes that the market potential for EVs in California exceeds ten percent of the annual new light-duty vehicle market in California.

Western States Petroleum Association appears to want to make sure that ARB is aware of the differing information and opinions about all aspects of the ZEV program. ARB staff had reviewed most of the documents in the box prior to receipt from WSPA. In making the recommendation to modify the ZEV program, ARB staff used the information considered most relevant and this information is referenced in the Staff Report. Much of the information referenced in the Staff Report is included in the box of documents sent by WSPA. For example, the University of California, Davis market study, the Report of the Battery Technical Advisory Panel and the information gathered at public forums was used

by ARB staff in making the recommendation to amend the ZEV requirements and is included in the box of documents submitted by WSPA.

The Board agreed with the staff's recommended modifications to the ZEV program and approved the modifications as presented on March 28, 1996. Although ARB believes the modifications are necessary and will be conducive to continuing progress in ZEV technology, it is clear that continued monitoring of the program is necessary. ARB is aware of the plethora of reports, memorandums, speeches and testimony that cover all aspects of the ZEV program and come to any number of possible outcomes for the program (some of which were included in the box from WSPA). Therefore, we have pledged to continue with the biennial review process and work with all stakeholders to ensure the success of the ZEV program.

M. Public Awareness and Review Issues

244. Comment: The MOAs do not provide for a public review process on the progress being made towards the commercialization of electric vehicles and meeting the commitments in the MOAs. There should be some regular and consistent review process.

Agency Response: The MOAs specify that ARB will hold biennial public hearings, commencing in 1998, to conduct comprehensive reviews of the ZEV program, including the status of battery technology. (See responses to Comments and 99 24 and 245.)

245. Comment: ARB should develop a publicly available methodology to determine the progress that is being made towards ZEV development. This methodology should be used at each of the biennial reviews.

Agency Response: The MOAs require vehicle manufacturers to take steps to ensure that ZEV development progresses. Vehicle manufacturers are required to place advanced battery ZEVs in demonstration projects. They are also required to continue ZEV research and development to ensure the infrastructure and market for EVs continues to expand. Manufacturers must file reports annually providing information on ZEV placement and advanced battery prototypes, and provide ARB access to their facilities. The MOAs specify that ARB will hold biennial public hearings, commencing in 1998, to conduct comprehensive reviews of the ZEV program, including the status of battery technology. While some of the information from the manufacturers may be deemed proprietary, ARB's biennial review process ensures disclosure of the overall indicators of progress being made toward the 2003 requirement. Furthermore, ARB plans to fund publicly-available research on advanced battery ZEVs along with other stakeholders to better estimate progress. Also see response to Comment 24.

246. Comment: The biennial reviews should include all information generated to evaluate EVs such as:

- o kWh per mile at plug and from the battery in vehicle use including any pre-heating or pre-cooling of the EV and battery thermal maintenance;
- o actual EV range achieved per charge;
- o miles traveled per EV on a monthly or annual basis;
- o monthly or annual miles traveled by other vehicles in the EV household, before and after the introduction of the EV;
- o relative amount of charging at on-peak and off-peak times, and resulting actual electricity costs; and
- o cost of EV and battery replacements.

ARB should establish an advisory group on the generation and documentation of data regarding EV use and performance.

Agency Response: ARB is planning to provide research funds for the collection and analysis of data on advanced battery demonstration EVs. The research items listed above will be considered in this context and, with the exception of any confidential information, will be made available for public review.

247. Comment: ARB should instigate a collaborative process with automakers, utilities and environmental groups, facilitate public involvement in the process, and implement a comprehensive campaign to educate the public about zero-emission vehicles. These activities would go a long way towards ensuring the success of ZEVs in the marketplace.

Agency Response: ARB is spearheading the formation of the ZEV Implementation Advisory Committee (“Committee”), a group of stakeholders charged with promoting the development of a sustainable market demand for ZEVs and the establishment of necessary ZEV infrastructure. Vehicle manufacturers, utilities and environmental groups will be included on the Committee. The Committee will advise ARB on implementation issues by providing annual reports that evaluate the progress and by recommending actions that would promote a seamless introduction of ZEVs and increase the certainty of a successful ZEV market. The Committee will appoint smaller groups to address any potential barriers, such as lack of public education. The smaller groups will identify actions needed to ensure the potential barrier does not impede a sustainable ZEV market and, to the extent possible, undertake those actions through a coordinated effort of the stakeholders represented on the Committee.

248. Comment: California should work to increase consumer awareness of the benefits of EVs.

Agency Response: ARB intends to participate in public awareness activities to publicize the benefits of ZEVs. Toward that end, ARB has released a number of fact sheets about ZEVs. These fact sheets discuss the benefits of ZEVs and address many of the other ZEV-related issues of interest.

249. Comment: ARB should make information about the performance and cost of EVs publicly available to the extent possible.

Agency Response: ARB makes non-confidential information on the performance of electric vehicles and batteries available to the public, primarily through its biennial review process. For example, ARB contracted with the Battery Panel for information on battery performance and costs and the Battery Panel's report was made available to the public in December 1995. In addition, ARB is currently sponsoring an EV cost study that is scheduled to be completed in Spring 1997. The information in the cost study will also be made publicly available.

250. Comment: Repealing the ZEV requirement until 2003 gives the public the impression that EVs are not ready for the marketplace. ARB should reassure the public that this is not the case.

Agency Response: ARB believes EVs are ready for the marketplace; however, we recognize that the current market is limited. Lead-acid battery technologies provide limited range and are expected to be welcomed by specialized, or niche, markets. By delaying implementation of the ZEV requirement we allow battery technologies to progress and the marketplace and infrastructure to expand. Therefore, ARB has modified the ZEV program to allow a market-based introduction of ZEVs. To ensure that the marketplace is ready for ZEVs, the MOAs commit ARB to work with state and local governments and others to help ensure the development of ZEV infrastructure and the removal of barriers to ZEV introduction.

251. Comment: ARB should develop a Task Force for Electric Transportation, modeled after the Cleaner-Burning Gasoline Task Force, to identify and overcome obstacles that hinder EV development. NRDC and other environmental organizations are committed to such a cooperative endeavor.

Agency Response: The Board in Resolution 96-12 directed its Executive Officer to create an implementation committee made up of representatives of the Board, the public and the affected industries to monitor the status of the ZEV program.

N. Expansion of the Definition of a Zero-Emission Vehicle

252. Comment: The MOAs need to clarify Executive Officer approval of non-battery ZEV technologies.

Agency Response: Any technology that meets the ZEV requirements would be considered a ZEV. Additionally, ARB is considering further flexibility through the rulemaking process. Staff is developing a proposed regulation for the certification of Equivalent Zero Emission Vehicles (EZEVs). (See response to Comment 78.)

253. Comment: The MOA should be amended to include fuel cell technologies.

Agency Response: ARB is currently proposing to amend the LEV regulations to offer credits to equivalent zero-emission vehicles (EZEV), i.e., vehicles that offer the same cumulative emission benefits as EVs. Fuel cell technologies may qualify for this credit under the regulation. Should this occur, ARB will consider allowing fuel cell EZEV credit under the MOA. (See response to Comment 78.)

O. Miscellaneous

254. Comment: It is important that ARB ensure that spending for research and development of ZEV technologies is not scaled back or eliminated.

Agency Response: Although ARB has no direct authority over most research and development expenditures, the MOAs include a provision that requires vehicle manufactures to continue ZEV and battery research and development to facilitate the earliest possible commercial introduction of ZEVs and creation of a sustainable market for ZEVs. These research and development activities will include the acquisition and evaluation of advanced technology battery prototypes prior to 1998. American Automobile Manufacturers Association members have committed to contributing at least \$19 million during Phase II of the U. S. Advanced Battery Consortium. The MOAs also obligate ARB to work with state and local authorities and others to ensure the development of ZEV infrastructure and the removal of barriers to the introduction of ZEVs.

255. Comment: ARB did not facilitate the public process by allowing public discourse during negotiations with the auto manufacturers in developing the MOAs. Because of this, it is difficult to comment and/or criticize the specifics of the terms of the MOAs.

Agency Response: ARB provided substantial opportunities for public review and input in the process of developing the staff proposal and during the formal rulemaking proceeding. (See response to Comment 216.) Prior to the initiation of the formal rulemaking, ARB staff negotiated the terms of the master MOA with the seven affected vehicle manufacturers.

While this process was not open to the public, the result of that process -- the master MOA -- was a part of the material made available to the public for review and comment during the rulemaking proceeding.

256. Comment: The fuel cycle study that has been commissioned by ARB should be completed and published so that policy makers and the public can be fully aware of the full fuel cycle emissions associated with all types of fuel/vehicle combinations including gasoline-powered vehicles.

Agency Response: The fuel cycle study commissioned by ARB will be finalized by the end of the year and will be made available to the public at that time.

257. Comment: ARB should ensure that deregulation of the utility industry does not interfere with ZEV development.

Agency Response: ARB does not have authority to regulate the financial decisions made by utilities. If and when legislative or regulatory proposals affect programs necessary to protect air quality, ARB will comment as appropriate. However, ARB is obligated under the MOAs to work with the utilities and trade groups representing electrical contractors to provide training for installation and maintenance of electric vehicle charging systems. ARB will also work with utilities whenever necessary to remove any barriers to the introduction of ZEVs.

258. Comment: Utilities will need access to production and sales estimates for EVs to prepare for the necessary infrastructure.

Agency Response: The market-based approach recognizes that as demand for EVs grows, cooperation between EV manufacturers, utilities, and other entities, including local governments and state agencies, who will play a role in developing the necessary infrastructure becomes increasingly crucial. The MOAs address this need for cooperation and define the role of ARB in coordinating activities in support of infrastructure development. ARB will assist utilities to the extent practical.

259. Comment: The MOAs should clarify that the NLEV program will not require vehicles to use California reformulated gasoline or any other special fuels outside California.

Agency Response: ARB does not currently require California-certified vehicles to use a particular fuel when outside the state and does not have any regulatory power outside of California.

260. Comment: Why is there as a disclaimer on the Staff Report? This disclaimer should be removed if ARB agrees with the views and policy statements in the Staff Report.

Agency Response: The disclaimer is intended to inform the reader that it was prepared by the staff of the ARB and is being presented to the Board for consideration.

261. Comment: The Staff Report appears to conclude that the only valuable EV is one that can fully replace a gasoline-powered vehicle.

Agency Response: ARB does not believe that an EV needs to have the exact same capabilities as replace a gasoline-powered vehicle to be valuable. It will be important for EVs that are commercially available in the early years of the program to perform sufficiently well to convince consumers that EVs can replace gasoline-powered vehicles reliably for most purposes. A study commissioned by ARB concluded that most Californians drive less than 75 miles per day and most California households own more than one vehicle. Therefore, it is reasonable to assume that an advanced battery-powered EV with a range of 100 or more miles can replace a gasoline-powered vehicle in many California households. It is also important to note that EVs provide benefits that are not available with gasoline-powered vehicles such as home recharging capabilities and a very quiet motor.

262. Comment: The profit that oil companies make on the sale of gasoline encourages them to fight regulations, at the expense of the environment. Therefore, oil companies should not be allowed to profit from their product.

Agency Response: It is not within ARB's authority to regulate the profit of oil companies or any other industries.

263. Comment: Given the recent record profits and large capital investments of the U.S. auto industry, the ZEV requirement in 1998 through 2002 seems justified and reasonable.

Agency Response: The recent ZEV program modifications do not reflect the ability of the major vehicle manufacturers subject to the regulation to invest in ZEVs. Rather, the modifications are designed to allow further development and commercialization of advanced batteries prior to the large-scale introduction of ZEVs in California. This will ensure more battery options for consumers and minimize uncertainties regarding EV performance, thereby increasing the potential for a successful and sustainable ZEV market in California. (See response to Comment 26.)

264. Comment: ARB should include a continuing biennial review requirement in the regulations, not just in the MOAs.

Agency Response: ARB has been conducting biennial technology reviews in connection with the LEV program since 1990 under direction from the Board. These technology reviews will continue through the roll out of the ZEV program as reflected in section IV of the MOAs. There is no purpose to be served by including this in the regulation.