State of California
California Environmental Protection Agency

AIR RESOURCES BOARD

**Final Statement of Reasons for Rulemaking,
Including Summary of Comments and Agency Responses**

PUBLIC HEARING TO CONSIDER REGULATORY AMENDMENTS TO THE ZERO EMISSION BUS REGULATION

Public Hearing Date: October 19, 2006
Agenda Item No.: 06-9-4

I. GENERAL

Summary. In this rulemaking the Air Resources Board (ARB or the Board) is amending its regulation that requires large transit agencies having over 200 urban buses to purchase zero emission buses (ZBus). The amendments establish Advanced Demonstration Project requirements for diesel path transit agencies, and set a ZBus purchase requirement for diesel path transit agencies in 2011, and for alternative path transit agencies in 2012 (Fleet Rule for Transit Agencies – Urban Bus Requirements, contained in section 2023.1, title 13, California Code of Regulations (CCR), Zero-Emission Bus Requirements, contained in section 2023.3, and the related Reporting Requirements for Transit Agencies, contained in section 2023.4).

The rulemaking was formally initiated on September 1, 2006, with the Board's publication of a notice of public hearing scheduled for October 19, 2006. The Staff Report: Initial Statement of Reasons, entitled "Proposed Amendments to the Zero Emission Bus Regulations" (Staff Report or ISOR) was made available for public review and comment beginning on September 1, 2006. The Staff Report, which is incorporated by reference herein, describes the rationale for the originally proposed amendments. The text of the proposed amendments was included as Appendix A to the Staff Report. These documents were also posted on September 1, 2006 on ARB's Internet site for this rulemaking at http://www.arb.ca.gov/regact/zbus06/zbus06.htm.

This Final Statement of Reasons for Rulemaking (FSOR) updates the Staff Report by identifying and explaining the modifications that were made to the original proposal at the Board's direction, and summarizes and responds to written comments and hearing testimony.

At the Board hearing held on October 19, 2006, the Board considered the amendments proposed by staff affecting transit agencies under the ZBus regulation. The following

transit agencies on the diesel path are affected by this regulation: Alameda Contra Costa Transit (AC Transit), Santa Clara Valley Transportation Authority (VTA), San Mateo County Transit (SamTrans), Golden Gate Transit (GGT), and San Francisco Municipal Railway (SF Muni).[1] The following five transit agencies on the alternative fuel path are also affected by the regulation: Foothill Transit, Los Angeles County Metropolitan Transportation Authority (LA MTA), Orange County Transportation Authority (OCTA), Sacramento Regional Transit (Sac RT), and San Diego Metropolitan Transit System (MTS). There were two main elements of the proposed amendments: 1) postponing the purchase requirement for ZBuses by three years (to 2011) for the transit agencies on the diesel path, and by two years (to 2012) for alternative fuel path transit agencies, and extend the purchase requirement mandate period through 2026, and 2) requiring an advanced demonstration project of the diesel path transit agencies in order to improve current technology and offset emission loses resulting from the postponement.

The Board received written and oral comments at the hearing. At the conclusion of the hearing, the Board adopted Resolution 06-28, in which it approved the originally proposed amendments along with several modifications, some of which were suggested by staff in a document entitled "Staff's Suggested Modifications to the Original Proposal" that was distributed at the hearing. Resolution 06-28 directed the Executive Officer to make the text of the modified amendments, with such other conforming modifications as may be appropriate, available to the public for a supplemental written comment period of at least 15 days. The Executive Officer then was directed either to adopt the amendments with such additional modifications as may be appropriate in light of the comments received, or to present the regulations to the Board for further consideration if warranted.

In preparing the modified regulatory language, the staff made various additional revisions in an effort to best reflect the intent of the Board at the hearing and make the amended regulations work as effectively as possible. The regulatory text with the modifications clearly identified was made available starting July 27, 2007 for a supplemental 15-day comment period ending August 11, 2007 by issuance of a Notice of Public Availability of Modified Text and Supporting Documents. The comment deadline was subsequently extended to August 13, 2007 by an announcement on ARB's website for the rulemaking posted August 7, 2007 and an email notification on that date to ARB's List Serve for all persons who commented in the rulemaking. Seven written comment letters were submitted. After considering the comments, the Acting Executive Officer adopted the amendments to sections 2023.1, 2023.3, and 2023.4 by Executive Order R-07-014 on August 27, 2007. The modifications are described in Section II. below.

Fiscal Impacts. Pursuant to Government Code sections 11346.5(a)(5) and 11346.5(a)(6), the Executive Officer determined that the regulatory action will not create costs or savings to any state agency or in federal funding to the state, costs or mandate to any school district whether or not reimbursable by the state pursuant to Part 7

[1] SF Muni already meets the requirements for this regulation because of their Electric Trolley Bus fleet.

(commencing with section 17500), Division 4, title 2 of the Government Code, or other nondiscretionary savings to state agencies.

The amendments directly impact local agencies that operate transit fleets with more than 200 urban buses. Staff projects an estimated combined cost savings to these transit agencies of approximately $59 million over the four-year period beginning January 2008. Extension of the purchase requirement to cover 2016-2026 is expected to result in a combined cost increase to transit agencies of approximately $32-58 million annually over that 11 year period, relative to no ZBuses being purchased, but cost estimates that far in the future are highly speculative. The cost estimates are not indicative of the actual direct cost to transit agencies because the agencies typically receive federal and regional funds for the acquisition of buses and for implementing alternative fuel infrastructure.

The Board expects that individuals may incur minimal direct costs as a result of these amendments. Transit fares are set based on a variety of factors, including public price sensitivity as well as transit agency expenditures, so there is no direct relationship between transit agencies' financial needs and individual fares. In addition, transit agencies typically offer monthly passes and discounted ticket books as well as individual fares, each of which offers a different price per ride, so it is virtually impossible to predict the proportion that fares may increase in response to a given capital requirement.

Consideration of Alternatives. The Board has determined that no reasonable alternative considered by staff or that has otherwise been identified and brought to the attention of staff 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 or small businesses than the action taken by the Board.

II. MODIFICATIONS TO THE ORIGINALLY PROPOSED AMENDMENTS

Set forth below in narrative form by topic is a description of and the rationale for the adopted modifications to the originally proposed amendments. The section numbers and paragraphs are referenced as renumbered in the final amended regulation text. Set forth in Attachment A hereto is a subsection-by-subsection description of all of the modifications.

A. Performance and Cost-Based Adjustment Clause.

The original proposal allowed the Executive Officer to adjust the purchase requirement based on cost and performance parameters set for fuel cell buses. The Executive Officer's determination would have been made no later than July 2009 for a purchase requirement implementation of 2011, and then would have been reassessed annually by June 30th of each year following until the goals were met. If all goals were met, the 15 percent purchase requirement would be fully implemented. If these goals were not

met, then the Executive Officer could reduce the purchase requirements according to the guidelines presented in the Staff Report.

The Board-approved modifications delete the originally proposed provisions allowing the Executive Officer to modify the purchase requirement. As originally proposed, ARB was directed to review zero emission bus technology and the implementation requirements by July 2009; the modifications provide that based on the review, the Board will decide whether to proceed with implementation or adjust the requirements. Resolution 06-28 directs staff to update the Board with staff's assessment of zero emission bus technology and its readiness for commercialization, on or before July 2009. The staff is directed to consider the implementation criteria listed below, as well as any other relevant factors, in completing its evaluation and recommendation to the Board.

	Implementation Criteria
Purchase Cost Fuel Cell vs. Electric Trolley Bus	1.25 : 1
Fuel Cell Durability or Warranty	20,000 hours
Reliability (Miles between Propulsion Related Road Calls)	10,000 miles

The Board removed the originally-proposed Availability criterion based on comments from the transit agencies. Transit agencies stated that buses could be available but still not be reliable. By making the criteria an "either/or" evaluation, an underperforming bus could qualify. The Board's direction means that only the Reliability criterion will be used.

This approach will assure that the 2009 technology review will be as transparent as possible and that all interested parties will be able to present their views to the Board. Since the implantation criteria are only some of the factors the staff will be considering in its technology review, and all relevant information will be presented to the Board before it decides which of a full range of options to pursue, it is not necessary for the implementation criteria to be adopted in regulatory form.

B. Transition of Transit Agencies that Grow Into the Purchase Requirement After January 1, 2012.

In Resolution 06-28 the Board directed staff to evaluate an appropriate transition period – from three to five years – for those transit agencies that do not have 200 buses at the time the purchase requirement begins, January 1, 2007. Staff concluded that a three-year transition period is most appropriate, and the modifications accordingly provide that those transit agencies that have an urban bus fleet that does not exceed 200 until after the first year of the purchase requirement will have three years to meet their zero emission requirements. The transition time allows the transit agencies additional time to get infrastructure in place, as well as necessary staff development and training. Three years from when a transit agency first exceeds 200 urban buses is sufficient to get

infrastructure in place and have zero emission buses transitioned into revenue service. There are four transit agencies that could be affected by this portion of the regulation. All four transit agencies are on the Alternative Fuel Path. These transit agencies are aware of their transitional status and three of the four were present at the October Board hearing. Staff estimates the transit agencies not present at the board hearing may reach 200 urban buses around 2026. More than three years is not needed – all transitional transit agencies are aware of their status and those transit agencies with over 150 urban buses are required to submit annual reports.

C. Modifications to Staff's Proposed Amendments to the Advanced Demonstration Provisions.

Staff originally proposed that the buses in the initial demonstration would not count towards the proposed Advanced Demonstration. Staff wanted to maximize the number of buses in the demonstration. However, since there is no assurance that the transit agencies would continue to operate the buses from the initial demonstration (VTA buses are overly outdated) this change will not reduce the number of new fuel cells produced or the number of fuel cell buses operating. It will reduce the cost to the transit operators.

To encourage transit agencies to continue to operate initial demonstration buses, the Board approved staff's proposed modification that allows initial demonstration buses to count towards transit agencies' obligations in the advanced demonstration provided the buses are upgraded. If the buses from the initial demonstration are retrofitted with technology to comparable to technology that would be used on new buses in the advanced demonstration, the buses can be used to meet the advanced demonstration requirement. This provision was identified at the hearing as section 2023.3(b)(2)(I) and with renumbering is now section 2023.3(b)(2)(F).

The Board did not accept staff's initial proposal allowing alternative fuel path transit agencies who participated in the advanced demonstration to have a one-year postponement for their purchase requirement. Instead, the Board directed staff in Resolution 06-28 to allow a two-year postponement of the alternative fuel path transit agencies' purchase requirement, independent of their participation in the advanced demonstration. This modification is effected by a change in the dates specified in section 2023.3(c)(2). The two-year postponement to 2012 means that some of the new provisions proposed by staff are no longer necessary. In post-hearing conforming modifications, staff accordingly deleted originally-proposed subsections 2023.3(b)(2)(B), (F), and (H). Due to these deletions, staff renumbered proposed subsection 2023.3(b)(2)(C) to become (B), proposed subsection (E) to become (C), and proposed subsection (G) to become (E). In addition, the minor modification presented by staff at the hearing adding a footnote to the table in section 2023.3(c)(4)(A) has now been deleted because it is unnecessary in light of the two-year postponement to 2012.

D. Modify Section 2023.4(f)(3)(B), (f)(4)(B), and Add Section 2023.4(f)(5) and (6) to Ensure That Staff Can Assess the Technology in 2009.

The Board approved modifications to the reporting requirements for the preliminary and final reports to ensure that staff receives the necessary information on the performance parameters to assess the progress of the technology. The Board also approved a modification requiring quarterly updates. In a post-hearing modification, staff added a requirement for monthly updates in order to frequently monitor the development of each advanced demonstration before and after the bus has been delivered to the transit property. This also will allow staff to better assist a transit agency's concerns during early stages of development.

E. Other Minor Modifications

A modification to section 2023.3(b)(2)(C)1. clarifies that the timelines apply to multi-transit agency demonstrations as well as single transit agency demonstrations.

In a post-hearing modification, staff added section 2023.1(b)(3)(C)5. and 6., which identify the preexisting timelines for initial documentation and a financial plan for the initial demonstration. Moving the reference to the timelines from section 2023.4(f)(1) and (2) helps consolidate the milestones in one place in the regulation.

Other minor post-hearing conforming modifications were made to the regulation for clarification purposes.

III. SUMMARY OF PUBLIC COMMENTS DURING THE 45-DAY COMMENT PERIOD AND AGENCY RESPONSES

During the 45-day comment period, the Board received written comments from:

Acerro, Theresea	private citizen (Acerro)
Andolina, Tina	Coalition for Clean Air (CCA)
Arieli, Ari	Arieli Associates (Arieli)
Eaves, Michael	California Natural Gas Vehicle Coalition (CNGVC)
Fernandez, Rick	AC Transit (AC Transit)
Frank, Susan**	Steven and Michele Kirsch Foundation (Kirsch Foundation)
Geenen, Harrie	private person, Dutch (Geenen)
Harte, Edwin	Southern California Gas Company (Sempra)
Holmes-Gen, Bonnie**	American Lung Association of California (ALA)
Jablonski, Paul	Metropolitan Transit System (MTS)
Jackson, Laurence	Long Beach Transit (Long Beach)
Karbowski, George	Foothill Transit (Foothill)
Leahy, Arthur	Orange County Transportation Authority (OCTA)
Mark, Jason**	Union of Concerned Scientists (UCS)
Marmaro, Roger	Hythane Company (Hythane)
Nanji, Noordin	Ballard Fuel Cells (Ballard)

Patton, Gary	Planning and Conservation League (PCL)
Plenys, Tom	Coalition for Clean Air (CCA)
Rall, Durand	OmniTrans (OmniTrans)
Roane, Jerry	TriTrack (TriTrack)
Snoble, Roger	Los Angeles Metropolitan Transit Authority (LA MTA)
Tepke, Glen	Metropolitan Transportation Commission (MTC)
Tonachel, Luke**	Natural Resources Defense Council (NRDC)
Tosca, Mike	UTC Power (UTC)
White, V. John	Center for Energy Efficiency and Renewable Technology (CEERT)

The people listed above with double asterisks (**) submitted multiple written comments during the 45-day comment period.

At the October 17, 2006, board hearing, oral testimony was presented by:

Andolina, Tina*	Coalition for Clean Air (CCA)
Arieli, Ari*	Arieli Associates (Arieli)
Campbell, Todd	Clean Energy (Clean Energy)
Douwes, Arthur	Santa Clara Valley Transportation Authority (VTA)
Eaves, Michael*	California Natural Gas Vehicle Coalition (CNGVC)
Fienberg, David	City of Santa Monica's Big Blue Bus (Santa Monica)
Holmes-Gen, Bonnie*	American Lung Association of California (ALA)
Hunt, Richard	Los Angeles Metropolitan Transit Authority (LA MTA)
Karbowski, George*	Foothill Transit (Foothill)
King, Mary	Alameda-Contra Costa Transit District (AC Transit)
Lee, Dana	Long Beach Transit (Long Beach)
Mark, Jason*	Union of Concerned Scientists (UCS)
Marmaro, Roger*	Hythane Company (Hythane)
McMillian, Theresa	Metropolitan Transport Commission (MTC)
Miller, Steven	Golden Gate Transit (GGT)
Murphy, Michael	Bay Area Air Quality Management District (BAAQMD)
Rall, Durand*	OmniTrans (OmniTrans)
Shaw, Josh	California Transit Association (CTA)
Tosca, Michael*	UTC Power (UTC)
Walker, Gene	Golden Gate Transit (GGT)

The people listed above with a single asterisks (*) also submitted written comments.

Set forth below is a summary of each objection or recommendation made regarding the specific adoption, amendment, or repeal proposed, together with an explanation of how the proposed action has been changed to accommodate each objection or recommendation, or the reasons for making no change. The requirement applies only to objections or recommendations directed

at the agency's proposed action or the procedures followed by the agency in proposing or adopting the action. The agency may aggregate and summarize repetitive or irrelevant comments as a group. For the purposes of this paragraph, a comment is "irrelevant" if it is not specifically directed at the agency's proposed action or to the procedures followed by the agency in proposing or adopting the action. The comments have been grouped by topic whenever applicable.

General Concerns

A. General

1. Comment: The Board received support to keep the regulation as adopted in 2004. (Ballard)

   Agency Response: After reviewing the status of technology and bus availability, staff saw a need to revise regulation timelines due to high costs of ZBus technology, unproven durability and reliability of ZBus technology, and manufacturers' ability to produce the number of buses required by the regulation. In furtherance of ZBus goals, the amendments require an additional Advanced Demonstration to allow technology makers time to increase production numbers, improve upon technology durability and reliability, as well as give transit agencies adequate time to prepare themselves for the new technology.

2. Comment: The regulation should be fuel-neutral and permit all developing technologies. The Board should establish a zero emission requirement and then leave it up to the transit agencies to develop their own approach to meet the zero emission requirements. (LA MTA)

   Agency Response: The regulation is fuel-neutral. The regulation does not exclusively require a specific technology to be used to meet the ZBus mandate. Staff evaluated fuel cell bus technology for the ISOR because it is the technology currently being used to demonstrate compliance with the regulation. However, San Francisco has met the ZBus mandate through use of electric trolley buses. Fuel cell bus technology is not exclusively required to meet the ZBus mandate. Section 2023.3(a) specifies the definition of a "zero emission bus."

3. Comment: There should be a penalty for non-compliance written in the regulatory language beyond what is already written for non-compliance for reporting requirements. (UTC)

   Agency Response: The Board is committed to ensuring compliance with this ZBus regulation and will actively work with transit agencies to monitor the status of its implementation. Health and Safety Code section 43016, specifies legal procedures and penalties for addressing criminal and civil noncompliance with the ARB's regulations and for administering noncompliance penalties. In addition to fines and penalties up to $50,000 per day for intentional noncompliance with regulatory requirements, injunctive orders designed to enable the ARB to recoup lost emission benefits and other appropriate equitable relief are available through a court order directed to any transit agency that fails to comply with the regulation.

4. Comment: For all urban transit agencies that reach the 200 urban bus mark after January 1, 2007, allow a three-to five year transitional period so that they can

prepare for and operate a ZBus program successfully. (OmniTrans; Santa Monica Big Blue Bus; Long Beach; CTA)

Agency Response: At the October 19, 2006 hearing, the Board directed staff to evaluate providing a three-to-five year transition period for transitional transit agencies. Staff determined that three years was appropriate for the reasons identified in Section III.B. The modification can be found in section 2023.3(c), title 13, CCR.

5. Comment: Based on initial evaluation, we believe that financial, economic and air quality impacts have not been adequately addressed in making the recommendations. (MTS)

   Agency Response: Staff used the best available information provided in public workshops and meetings with industry members and transit agency operators to determine costs for cost-benefit and cost-effectiveness analyses. The ARB emissions modeling group ran numbers using the most recent projections, EMFAC 2002, as well as current fleet numbers for transit agencies. Using the widely accepted Urban Bus rule to determine fleet turnover rates, survival and accrual rates, and emission factors, the projections assumed a 1 percent growth rate. Staff based all emission impacts as well as cost effectiveness on these projections.

6. Comment: Regulations that are proposed must reasonably accommodate the market for these products. The manufacturers simply cannot provide the buses at a reasonable price with respectable reliability factors in even the new timeline provided. (OCTA)

   Agency Response: This concern was one of the reasons for amending the regulation. After meetings with manufacturers, staff included an Advanced Demonstration in the regulation amendments in order to allow more time for manufacturers to develop their technologies. Additionally, staff is required to return to the Board in 2009 to provide a technology update, allowing the Board to determine future mandated ZBus purchase requirements for transit agencies. The 2009 technology review will help to determine manufacturer readiness and production capabilities based on updated information.

7. Comment: Postpone any consideration for change in the regulation until after the Zero Emission Vehicle Technology Review in 2007. This would allow ARB staff to take full advantage of the review's findings and make future adjustments within the realm of the state's zero-emission and climate change goals. (UCS; CCA; Kirsch Foundation; NRDC; ALA; CEERT; PCL)

   Agency Response: Immediate amendments are needed due to the time it requires a transit agency to go through the procurement process for new buses. The original regulation's timeline would adversely impact transit agencies, enforcing a technology that is not ready for transit agency use.

8. Comment: (Comment submitted in a subsequent letter to rescind Comment A-7) Do not delay the consideration of the decision for one year due to funding constraints and limitations placed on the progress of the Advanced Demonstration. (ALA; UCS; Kirsch Foundation; NRDC)

   Agency Response: We appreciate the support for the timing of this regulatory action.

9. Comment: Postpone the decision to modify the current ZBus regulation until a later Board Hearing. (MTS; Long Beach)

   Agency Response: See response to Comment A-7.

10. Comment: It is unreasonable to try to compare the cost of $800,000 for electric trolleys and $1.2 million for hydrogen fuel cell buses, when the delta is significantly different. (OmniTrans)

    Agency Response: Staff measured fuel cell buses against electric trolley buses for various reasons. First, electric trolley buses are a widely accepted ZBus technology. Staff also determined that because SF Muni meets the ZBus requirement with its electric trolleys, it would be reasonable to compare them with the price of a fuel cell bus. SF Muni runs electric trolley buses with overhead wiring along San Francisco streets. These trolley buses work on the same routes as their diesel buses. The $800,000 price for an electric trolley does not include infrastructure, which significantly increases the investment for the technology. In meetings held with operators at SF Muni, staff learned that though the capital investment for electric trolley buses and infrastructure is high, the maintenance and operation is significantly less compared to their diesel buses. Thus fuel cell buses fell under the same circumstances as electric trolley buses, and viewed the comparison as reasonable.

11. Comment: We remain concerned about the cuts in the number of buses due to the delay in the purchase requirement and the ratcheting down of the whole transit bus regulation. (ALA)

    Agency Response: We understand that the delay in the purchase requirement will cut down the number of ZBuses on the road comparative to the original regulation. However, after a review the status of technology and bus availability, there is a definite need to revise timelines and require an Advanced Demonstration. This delay will allow for the technology to develop in order to be ready for statewide implementation. Once the purchase requirement is in effect, transit agencies will still be mandated to make 15 percent of their new purchases or leases to be ZBuses.

12. Comment: There is no reason to allow a delay until 2026. (Acerro)

Agency Response: The proposed amendments did not indicate a delay until 2026. The amended regulation provides a two-year delay for transit agencies, meaning 2011 for diesel path transit agencies and a three-year delay for alternative fuel path transit agencies, meaning 2012. For reasoning behind the delay, please see response to Comment A-6.

Technology and Infrastructure

B. Infrastructure

1. Comment: The Board received general concerns regarding hydrogen fueling facilities and maintenance facilities as well as associated costs. (MTC; Long Beach; Foothill; OmniTrans; Arieli Associates; LA MTA; MTS)

   Agency Response: Comment noted. The amendments to the regulation delay the purchase requirement date for large transit agencies, subsequently delaying the need for infrastructure. Therefore, transit agencies on the diesel path under regulatory mandate will experience a cost savings between 2008 and 2011, and transit agencies on the alternative fuel path will experience a cost savings between 2010 and 2012.

   As noted in the Staff Report, hydrogen stations built during the Initial Demonstration are not comparable in cost to a CNG or diesel station. CNG and diesel stations on transit properties are built to accommodate over two hundred buses per day, while hydrogen stations are built to accommodate between six and 20. Also, many hydrogen stations are currently being used as testing and research facilities. Staff expects the cost of hydrogen stations to decrease over time as demand grows and the process for making hydrogen is perfected.

   Also note that a "zero emission bus" is defined in section 2023.3(a), title 13, CCR. The regulation is not specifically limited to hydrogen powered buses.

2. Comment: Construction of hydrogen fueling and maintenance facilities carries a considerable cost. This cost would compound the financial impact already being felt by alternative fuel path operators who have had to fully switch their fleet over to alternative fuels. (MTS; LA MTA)

   Agency Response: The original 2000 ZBus regulation was a part of a larger fleet rule for transit agencies. Transit agencies could choose one of two paths: alternative fuel path or diesel fuel path. Those who chose to stay on the diesel fuel path were required to demonstrate ZBus technology. Alternative fuel path transit agencies were required to convert 85 percent of their fleet to alternative fuels. Because of this rule, most transit agencies in California have encountered substantial costs in efforts to help improve air quality.

The Board did not adopt staff's suggestions to include alternative fuel path transit agencies in the Advanced Demonstration. Additional amendments extend the purchase requirement implementation date to 2012. This allows additional time for alternative fuel path transit agencies to line up funding for ZBuses and associated infrastructure costs. See response to Comment B-1.

3. Comment: Costs associated with hydrogen infrastructure are prohibitive to service, and necessitate a delay in new bus purchases and new light rail extensions. (MTS)

   Agency Response: See responses to Comments B-1, D-1, and D-2.

4. Comment: There are many safety concerns associated with a hydrogen infrastructure. These concerns include safety of the surrounding residential areas in relation to hydrogen tanks and installation of hydrogen tanks. (Long Beach; OmniTrans; LA MTA)

   Agency Response: Though this regulation does not directly require the exclusive use of hydrogen, note that hydrogen stations are required to go through the same amount of testing and certification as CNG and diesel fueling stations. It is not the intent of the Board to jeopardize the safety of transit agencies.

5. Comment: Facility requirements for hydrogen use are different than those required for natural gas use. There must be a way to measure leakage or other problems with the fuel. They are not equipped to detect or locate hydrogen leaks. (OmniTrans)

   Agency Response: ARB understands that all transit agencies will need to build new fueling facilities on their transit properties. Many CNG stations, however, are compatible with hydrogen fuel. The storage tanks and piping are capable of much higher pressures than the CNG system will ever see, making it feasible to upgrade to hydrogen. Also, many accepted technologies are currently available to detect hydrogen leakages and any other problem associated with the equipment. See responses to Comments B-1 and B-4.

C. Fuel Cell Technology

1. Comment: Fuel-cell technology is not feasible nor has it undergone the adequate amount of testing to show its viability for an industry-wide implementation. (Long Beach; LA MTA; OmniTrans; OCTA; MTC; MTS)

   Agency Response: We understand that fuel cell bus technology, as well as other ZBus technologies, is not ready for statewide implementation. This was the main reason for delaying the regulation. The Advanced Demonstration will provide an opportunity for the technology to be further tested and proven ready for commercialization. Also, the Board is requiring staff to complete a technology

review in July 2009. This will allow staff to asses the available ZBus technology and report back to the Board and reevaluate the regulation. See response to Comment A-6.

Note that fuel cell bus technology is not exclusively required by this regulation. Though a hydrogen-fuel cell bus qualifies as a ZBus, an electric trolley and battery-powered bus also qualify as ZBus technologies, under section 2023(a), title 13, CCR. For example, SF Muni meets the ZBus regulation through its fleet of electric trolleys.

2. Comment: Concerns regarding maintenance staff's ability and expertise required to repair a fuel cell system. The Board should take into consideration that no mechanic in any ZEB demonstration project has actually repaired a fuel cell. (Golden Gate; CNGVC)

   Agency Response: We recognize that maintenance of any ZBus technology is an important factor in commercialization. Transit agencies participating any of the three demonstrations in California have been provided warranties by the fuel cell manufacturers. Also, many of these manufacturers have provided their own maintenance staff during demonstration to ensure the fuel cell works properly. Staff has been informed by demonstration participants that the warranty provided by the fuel cell manufacturer is a key to a successful demonstration. As provided in Resolution 06-28, staff will use the implementation criteria as well as other important factors to assess available ZBus technology and will report back to the Board in July 2009.

3. Comment: Too much time is required to maintain the fuel cell system. (MTS)

   Agency Response: We acknowledge that fuel cell technology has not yet met the standards for regular use in a transit agency. We anticipate that the delay in the purchase requirement will allow for development and testing of the fuel cell system and other ZBus technologies. Maintenance and service requirements for fuel cell systems are expected to decrease as these developments occur. Also, see responses to Comments C-1 and C-2.

4. Comment: The fuel range for hydrogen buses is not adequate for revenue service. The fuel cells and tanks add so much weight to the bus and limits passenger capacity. (MTS)

   Agency Response: Range has not been an issue experienced by transit agencies in current demonstrations. Size and weight reduction of fuel cell technology are expected as the technology develops.

5. Comment: There are concerns with operators being required to purchase buses that are not adequate in their reliability and durability needed for revenue service. (MTC: Golden Gate; LA MTA)

Agency Response: See response to Comment C-1.

Cost of Regulation and Funding

D. Cost of Regulation

1. Comment: There is general concern for the high cost of the proposed regulation. (MTC; Long Beach; LA MTA; OCTA; OmniTrans; MTS; Foothill; MTC; Arieli Associates)

   Agency Response: Comment noted. The proposed regulation will actually result in cost savings over the original regulation in the near term. A delay in the purchase requirement will allow more time for transit agencies to line up funding and have the necessary time for procurement. The cost of fuel cell technology is expected to decrease as the technology develops and production volumes increase.

2. Comment: Due to the prohibitive cost of the regulation, there will be less service provided, requiring more single occupancy auto use and could result in an increase in emissions. (MTS; Foothill)

   Agency Response: Though capital costs are expected to be high for transit agencies during the Advanced Demonstration, operating costs are expected to be lower for ZBus technologies as they are perfected. Also, transit agencies should experience a cost savings over the original regulation due to the delay in purchase requirement for both fuel paths. This will allow time for transit entities to plan their budget accordingly to ensure service to their ridership.

3. Comment: The proposed purchase requirement costs would take away from individual transit agencies' capital, fleet replacement plans, and fleet operation. (LA MTA)

   Agency Response: The modifications to the original proposal provide cost savings in the delay of the purchase requirement. The delay will allow transit agencies adequate planning time for the purchase requirement. The operating costs of ZBus technology are expected to be far less than standard diesel and alternative fueled buses. See response to Comment D-1.

4. Comment: The Board received concerns that the high cost of the regulation will be felt by individuals who are dependent on transit. (Arieli Associates)

   Agency Response: See responses to Comments D-1 and D-2.

5. Comment: Requiring medium-sized transit agencies to embark on the major capital infrastructure, technology, and training investment required by the purchase of ZEB vehicles will put a huge financial strain on our agency and limit the agency's ability to provide for its customers. (Long Beach)

Agency Response: The Board adopted section 2023.3(c), title 13, CCR, which allows smaller transit agencies who reach 200 urban buses after January 1, 2007 for the diesel path and January 1, 2009 for the alternative fuel path a three year transition period into the regulation. This will allow smaller transit agencies time to plan for the ZBus purchase requirement. Also, see response to Comment D-3.

E. General Funding

1. Comment: Not enough dedicated funding is available to transit agencies for these types of Zero Emission Bus programs. (MTC; Long Beach)

   Agency Response: Staff understands that transit agencies obtain funds from a variety of sources to purchase buses, and ARB is committed to assisting them in identifying these funding sources as well as any other sources that become available.

2. Comment: ARB should allocate funding to new ZBus programs. (VTA; MTC)

   Agency Response: Comment noted. It is difficult for staff to determine future funding opportunities through ARB for ZBus programs at this time. Staff is committed to informing transit agencies as well as transit commissions about ZBus funding opportunities through ARB.

F. Federal Funding and Compliance

1. Comment: High costs associated with the regulation could make it difficult to maintain funding from the Transit Development Act, which requires 20 percent of operating costs to be from farebox revenues. (OmniTrans)

   Agency Response: Staff anticipates that ZBus technologies, namely fuel cell, battery electric, and trolley bus, will have lower operating costs compared to diesel and alternative fuel urban buses. Therefore, farebox revenues should not change significantly enough to affect money allocated from the Transit Development Act.

2. Comment: Transit agencies need at least 15 to 20 years of planning in order to ensure compliance with Federal Transit Administration funding requirements. (Foothill)

   Agency Response: The modifications to the original proposal allow for additional time for transit agencies to prepare for the purchase requirement. The commenter has not provided support for the extremely long lead time sought.

3. Comment: There are concerns with the Surface Transportation and Uniform Relocation Assistance Act (STURAA) of 1987 (section 317) compliance which pertains to Federal money spent prior to meeting significant vehicle testing

requirements. Unless the entire purchase is locally funded and/or Federal waivers are granted, bus manufacturers would be required to meet these significant vehicle testing requirements. (LA MTA)

Agency Response: Staff finds it difficult to determine ZBus compliance with Federal standards at this time. Currently, prototype buses, electric buses, and trolley buses, if less than six buses are procured at one time, are exempt from Altoona Bus Testing required by STURAA. Also, fuel cell buses that have been purchased in California for demonstration projects have been disqualified from STURAA due to other constraints. Staff also learned that no fuel cell bus has ever been tested at the Altoona testing facilities. Staff does understand the concerns surrounding this comment and would like to work with manufacturers towards STURAA compliance for all ZBus technologies.

G. Advanced Demonstration

1. Comment: Support was expressed for the advanced demonstration as proposed in the ISOR. (MTC; GGT; UTC; BAAQMD)

   Agency Response: Staff appreciates the support received for the Advanced Demonstration. The Board adopted staff's modified recommendations as presented at the board hearing for the advanced demonstration in section 2023 (b)(2), title 13, CCR.

2. Comment: Do not require an Advanced Demonstration from the alternative fuel path transit agencies. ARB should postpone the purchase requirement for the Alternative Fuel path transit agencies to 2012 no matter compliance with the Advanced Demonstration. (CNGVC; Southern California Gas Company; MTS; CTA; LA MTA)

   Agency Response: The Board adopted modifications to the original proposal to not require an Advanced Demonstration from transit agencies on the alternative fuel path and to postpone their purchase requirement until 2012 in section 2023.3(c)(2), title 13, CCR. Also, see response to Comment B-2.

3. Comment: The initial demonstration should be given credit for the advanced demonstration if technology is updated and the buses are run during the advanced demonstration period. (MTC; GGT)

   Agency Response: The modifications appearing in section 2023.3(b)(2)(F) in the Final Regulation Order allow buses that participate in the initial demonstration to count during the Advanced Demonstration, if updated with current, comparable ZBus technology as used in the Advanced Demonstration.

4. Comment: Metro has doubts about the usefulness of the proposed Advanced Demonstration Program. (LA MTA)

Agency Response: As stated in the Staff Report, the Advanced Demonstration will allow transit agencies to gain experience in fleet operations of a new ZBus technology while gaining confidence in the technology's ability to deliver adequate performance. The Advanced Demonstration also makes up for some of the lost emission reductions due to the delay in the purchase requirement. The Board adopted staff's proposed Advanced Demonstration for diesel path transit agencies in section 2023.3(b)(2), title 13, CCR, confirming the importance of an additional demonstration for the ZBus regulation. Also, see response to Comment A-6.

5. Comment: Advanced Demonstrations will provide useful data, but scattered projects throughout the state will not promote commercialization. (Foothill)

Agency Response: Advanced Demonstrations at various Transit Agency sites will provide unique perspectives and experiences with the technology. Also, scattered Advanced Demonstrations will help to assess different types of ZBus technology and manufacturers.

6. Comment: Remove the zero-emission enabling option from the Advanced Demonstration. (UTC)

Agency Response: The zero-emission enabling option was only available for the alternative fuel path transit agencies during their Advanced Demonstration. The Advanced Demonstration for the alternative fuel path was not approved by the Board. For additional information, see Section II.C. and response to Comment G-2.

7. Comment: The Board received general support for the zero-emission enabling bus option. (Hythane; CNGVC)

Agency Response: The Board did not adopt the zero-emission enabling option, a part of the requirements for Advanced Demonstration for the alternative fuel path transit agencies, for the reasons given in Section II.C. and the response to Comment G-2.

8. Comment: A zero emission enabling option could be more cost effective than the proposed regulation. (Hythane)

Agency Response: See responses to Comment G-2 and G-6.

9. Comment: We suggest amending the rule to allow for a more meaningful incentive for zero emission enabling technologies. Alternative fuel path transit agencies choosing the zero-emission enabling option for the Advanced Demonstration should be allowed a postponement in their purchase requirement based on the type of emission reductions obtained during their demonstration. (Hythane)

Agency Response: See responses to Comment G-2 and G-6.

10. Comment: A one-year extension is not likely to provide the kind of technological advancements and cost reductions that would need to occur in that time. (OCTA)

    Agency Response: The one-year extension refers to staff's proposal in the ISOR, which would have given transit agencies on the alternative fuel path an additional one year delay for participating in the Advanced Demonstration. The Board did not approve an Advanced Demonstration option for transit agencies on the alternative fuel path, providing instead an overall two-year delay for these agencies. Also, see response to Comment G-2.

11. Comment: The solicitation bids for the Advanced Demonstration should be required by the first quarter of 2007. (UTC)

    Agency Response: Staff considered this suggestion, but concluded that it would impose additional paperwork without corresponding benefit.

12. Comment: ARB should increase the demonstration life to a minimum of 24 months. (UTC)

    Agency Response: The amendments as adopted specify that initial documentation and financial plans must be submitted by January 1, 2008. Buses must be in revenue service by January 1, 2009. The final report is to be submitted to the Executive Officer by May 1, 2010. This allows the transit partners to plan and execute an effective demonstration program in a two-and-a-half year time period. The timeline as adopted by the Board allows the diesel path transit agencies participating in the demonstrations to complete their demonstrations and begin to prepare for the January 1, 2011 purchase requirement. A 24-month demonstration life of the buses would push out the implementation for the purchase requirement even further than the adopted two-year delay. The adopted Advanced Demonstration and purchase requirement timelines promote testing and improvement upon the technology while ensuring the adoption of the technology through a statewide mandate.

H. Purchase Requirement

1. Comment: The Board received general support for the extension of the purchase requirement out to 2026. (MTC; BAAQMD; Coalition for Clean Air; UTC)

   Agency Response: ARB appreciates support for this amendment, which was adopted in section 2023.3(c), title 13, CCR.

2. Comment: Do not delay the purchase requirement for three years. (TriTrack; UTC)

Agency Response: Staff's assessment of current ZBus technologies demonstrated a need to postpone the purchase requirement after their assessment of current ZBus technologies. The delay will allow for technology development through a mandated Advanced Demonstration for transit agencies on the diesel path. The model years for each fuel path were set after extensive talks with industry members and manufacturers, as well as transit agencies familiar with ZBus technologies. Also, see response to Comment A-1.

3. Comment: Delay the purchase requirement for more than three years. (MTS; OCTA)

   Agency Response: Staff met with industry members while developing the amendments to the original regulation. Industry representatives indicated a two-year delay of the purchase requirement would be an adequate amount of time for their companies to prepare for transit agency demand. The Board adopted a three year delay for transit agencies on the diesel fuel path in section 2023.1(b) and a two year delay for transit agencies on the alternative fuel path in section 2023.1(c), title 13, CCR.

4. Comment: Delay the purchase requirement for the alternative fuel path transit agencies until 2013, allowing a two-year phasing-in as required by the existing regulation. (CNGVC)

   Agency Response: The originally proposed amendments did not call for a two-year phase-in, as stated by the commenter. The Board adopted a 2012 implementation for the alternative fuel path purchase requirement, a two-year extension of their original purchase requirement date. This should provide enough time to prepare for ZBus procurement and adoption.

5. Comment: Delay the purchase requirement for one year and revaluate after the 2007 Zero Emission Vehicle Technology Review. (UCS; ALA; CCA; Kirsch Foundation; NRDC; CEERT; PCL)

   Agency Response: See responses to Comments H-3.

6. Comment: The purchase requirement should be determined by the Board after Advanced Demonstrations are underway and details can be provided to the Board about linkages between technology performance and fuel cell readiness for transit bus application. (ALA)

   Agency Response: Comment noted. The 2009 technology review will occur between the preliminary and final Advanced Demonstration reports. Though the Board adopted a purchase requirement at the October hearing, staff will be able to evaluate available ZBus technology and make their recommendations to the Board by July 2009.

7. Comment: Postpone the purchase requirement until the technology meets the reliability and cost-effectiveness needs of transit. (OCTA)

   Agency Response: The adopted amendments allow for an additional Advanced Demonstration. The purpose of this Advanced Demonstration is to allow manufacturers time to demonstrate, test, and validate ZBus technology in order to show readiness for commercialization. Additionally, staff has been directed by the Board to return in July 2009 with an assessment of all ZBus technologies. This will allow staff to evaluate implementation criteria in Resolution 06-28 as well as other relevant information, in order to make further recommendations to the Board about the ZBus regulation. Also, see response to Comment H-3.

Purchase Requirement Implementation

I. ZBus Technology Review

1. Comment: Staff should perform a technology review in 2009. (OmniTrans; Golden Gate Transit; ALA; LA MTA; MTC; CNGVC; CTA; Foothill; UCS)

   Agency Response: The adopted amendments to section 2023.3(d), title 13, CCR, require staff to report back to the Board by July 2009 about the status of ZBus technology and feasibility of statewide implementation, for the reasons set forth in Section II.A.

2. Comment: If the staff were to perform a 2009 technology review, include near-zero emission technologies in the review. (CNGVC)

   Agency Response: We do not believe that near-zero emission technologies would meet the State's ZBus goals. Also, near-zero emission buses do not count towards a transit agency's ZBus purchase requirement. The definition for zero emission technologies that do count towards this mandate can be found in section 2023.3(a), CCR, title 13. Staff will review the contributions near-zero technology could make to further develop ZBus technology.

3. Comment: If the staff were to perform a 2009 technology review, a high-speed, high-intensity, high-use light rail line should be included into the review. (CTA)

   Agency Response: Though a high-speed, high-intensity, high-use light rail line has advantages and benefits, this type of transit cannot replace the mobility and flexibility needed for a transit agency provided by buses. The 2009 review is intended to assess available ZBus technologies which fall under the definition of a "zero-emission bus" as found in section 2023.3(a), title 13, CCR.

4. Comment: The Technology Review should be completed and a decision rendered on the minimum buy requirement no later that July 1, 2009, and annually

thereafter. As written now, ARB has to review by July 2009 with no deadline for decision. (UTC)

Agency Response: As Resolution 06-28 is written, staff is required to report back to the Board on or before July 2009 after completing its evaluation. At that time, staff is to make its recommendation to the Board. Section 2023.3(d) provides that the review is to be conducted no later than July 2009. This implies that the Board will have a staff proposal to vote on by July 2009.

J. Executive Officer Discretion

1. Comment: General support for the Executive Officer discretion clause. (MTC)

   Agency Response: Due to public comments and for the reasons stated in Section II.A, the modifications to the original proposal removes the provision on Executive Officer discretion. Instead, section 2023.3(d) as amended requires a 2009 technology review, thus allowing the Board to have full discretion over the purchase requirement. This approach provides greater transparency and assures that all interested parties will be able to express their positions to the Board.

2. Comment: Remove provision that gives the Executive Officer discretion to delay purchase requirements. Transfer this discretionary power to the Board. (UCS; ALA; CCA; Kirsch Foundation; NRDC; CEERT; PCL)

   Agency Response: Section 2023.3(d) has been modified as requested by the commenters.

K. Implementation Criteria

1. Comment: General support for the performance standards to determine zero-emission bus purchase requirement based on a sliding scale. (UTC; MTC; MTS)

   Agency Response: The sliding scale associated with the implementation criteria was removed from the regulatory language for the reasons identified in Section II.A. The criteria – with the "availability" element eliminated – are identified in Resolution 06-28 as factors to be considered by staff, along with other relevant factors, for the 2009 technology review.

2. Comment: The performance-based criteria should be dropped completely because it undermines the commitment to ZBus technology. (CCA)

   Agency Response: The implementation criteria in the originally proposed amendments were not adopted as part of the final regulatory action. However, as the staff conducts its 2009 technology review, it is appropriate for staff to take into account factors pertinent to readiness for commercialization. Resolution 06-28

identifies criteria to be considered by staff, along with other relevant factors, for the 2009 technology review.

3. Comment: Postpone considerations about the implementation criteria until after more information becomes available. Allow the Board to make the decision on the implementation criteria. (ALA; UCS; Kirsch Foundation; NRDC)

   Agency Response: See the responses to the two preceding comments.

4. Comment: Life Cycle for performance criteria costs should be based on a period of 12 years and compared to a diesel, hybrid-diesel, and electric trolley bus. (UTC)

   Agency Response: Implementation criteria, as stated by Resolution 06-28, are to be used for consideration in staff's 2009 technology review, "…as well as any other relevant factors…" In the ISOR, staff commented on life cycle data, stating that it would be useful but that no accurate or mature data was available for analysis. Staff appreciates the suggestion, and looks forward to working with industry to review and monitor ZBus technology along appropriate guidelines.

5. Comment: Increase the intervals of purchase requirement percentages in the performance criteria, from 2, 8 and 15, to 5, 10, and 15. This would spread out the purchase requirements more evenly and the minimum requirement would increase. (UTC)

   Agency Response: The Board did not include purchase requirement percentages in the Implementation Criteria chart found in Resolution 06-28. See response to Comment K-1. The Board will have a full range of options it can consider in response to the 2009 technology review.

6. Comment: The technology standards proposed to determine the commercial viability of the zero-emission bus should be modified. Modifications should be as follows: $1 million cost threshold should include the mid-life replacement of propulsion system components; warranty for the fuel cell system should be 25,000 hours; the availability criteria should be treated separately from the reliability standard or removed; and reliability should be 10,000 miles between propulsion-related road calls. (MTC)

   Agency Response: Staff originally developed the Implementation criteria based on average warranties, reliability, and initial purchase costs of diesel, natural gas, electric trolley, and fuel cell buses. This information was provided by industry and transit agencies throughout California. The criteria placed in Resolution 06-28 were developed with the best available information and data. However, implementation criteria identified in Resolution 06-28 is intended to be used for consideration rather than set thresholds for purchase requirement percentages as originally proposed in the ISOR. Also, see responses to comment K-4 and K-5.

7. Comment: Metro questions the proposed service, durability and reliability levels. Buses that do not meet more strict standards have limited utilization at large transit properties. (LA MTA)

   Agency Response: The standards developed for the Implementation Criteria adopted by the Board in Resolution 06-28 were vastly researched by staff. Through meetings with manufacturers and transit operators, the cost, reliability, and warranty numbers were chosen to reflect the availability of technology and appropriate transit application. Also, see response to Comment K-6.

8. Comment: The Board should consider an altered resolution that would direct staff to consider a range of performance criteria in the update, but delete specific reference to any performance criteria numbers. (UCS; ALA)

   Agency Response: Resolution 06-28 clearly states that the implementation criteria should be used for staff's consideration during the 2009 technology review, as well as any other relevant factors. This will allow staff to thoroughly assess ZBus technology development and commercialization readiness. Also see responses to Comments K-4 and K-7.

9. Comment: Remove linkages between technology performance and standards for implementation of purchase requirement. (UCS; ALA; CCA; Kirsch Foundation; NRDC; CEERT; PCL)

   Agency Response: Staff created the implementation criteria to ensure that transit agencies would be safeguarded from purchasing inadequate technology. The criteria and percentages were developed in conversations with manufacturers and transit agencies. At the October hearing, the Board placed the Implementation Criteria into Resolution 06-28, with the intention that staff use the criteria as a guideline for consideration during the 2009 technology review. Nothing in the Resolution indicates exclusive linkage or standards for implementation of a purchase requirement. Also note that Resolution 06-28 clearly states that staff is to use the Implementation Criteria along with other relevant information for their technology assessment and recommendations.

L. Emissions

1. Comment: Staff should, in a 15-day rule change, include a near-term reductions requirement for transit agencies to offset emissions. Staff should also develop strategies to make up for lost bus numbers. (ALA; UCS; Kirsch Foundation; NRDC; CCA)

   Agency Response: The lost emissions for this regulation are not significant in comparison to other rulemakings. While many regulations propose reductions as "tons per day," this ZBus rulemaking expresses its emissions in "tons per year." Though any lost emissions can negatively impact air quality, the purpose and

long-term goal of this regulation supersedes the short term emissions experienced during the delay in the purchase requirement.

In 2000, the Board established its commitment to ZBus technology as an important tool in achieving significant emission reductions. The ZBus modifications presented at the October 19, 2006 board hearing were designed to preserve the technology-forcing nature of the ZBus regulation, spur more rapid investment in ZBus technology, and maintain sufficient volumes to achieve cost reductions. The amendments to the regulation set more realistic timelines for the technology and include a provision to asses the technology in future years.

2. Comment: Advanced Demonstrations will not help to reduce emissions, especially if they require that older buses continue to operate in revenue service. (Foothill)

   Agency Response: The purpose of the Advanced Demonstration is not exclusively to help reduce emissions; it will help with reductions due to the delay in the purchase requirement. The Advanced Demonstration will foster and allow time for ZBus technologies to develop and be ready for statewide implementation. The Advanced Demonstration program for diesel path transit agencies is appropriate to help further ZBus development, eventually leading to the commercialization of zero-emission technologies. Additionally, the Board has confirmed that this is a technology-forcing regulation, with the goal of making zero-emission technology a reality.

3. Comment: Emissions benefits from ZBus technologies are not significant. (LA MTA)

   Agency Response: We understands that the emission reductions in this regulation are not significant compared to other regulations. However, the emission benefits from ZBus technologies and other zero emission technologies for vehicular application are essential to reaching the State's air quality standards. In 2000, the Board affirmed this commitment when it adopted the new fleet rule for transit agencies, in which the original ZBus proposals were also adopted. Since then, the Board has reaffirmed its commitment to ZBus technologies through its amendments to the original rule. In addition, the ZBus regulation is one of a series of regulations that will reduce diesel PM emission. Also, see response to Comment L-1.

4. Comment: There is very little benefit in NOx reduction compared to the high price of the regulation. (Arieli)

   Agency Response: The Board views the cost-effectiveness of the ZBus regulation in the context of its long-term vision. Though the regulation is very costly, transit agencies affected by the regulation will experience a near-term cost savings due to a delay in the purchase requirement. Additionally, while many regulations propose reductions in units of "tons per day," this ZBus rulemaking expresses its emissions

in units of “tons per year.” Though any lost emissions can negatively impact air quality, the purpose and ultimate effect of this regulation supersedes the lost emissions. Also, see response to Comment L-1.

M. Miscellaneous

1. Comment: ARB should consider smaller vehicles that could be more easily incorporated into transit agencies. (LA MTA)

   Agency Response: This regulation applies to transit agencies that operate over 200 urban buses and is intended to provide a ZBus option for the “urban” bus which is the predominant bus type nationwide. Changing the nature of the vehicles affected by this regulation falls outside the scope of the notice.

2. Comment: ARB staff should contact larger bus manufacturers, such as NABI, Gillig, New Flyer, and Orion, and obtain written comments from these companies prior to establishing procurement requirements. (LA MTA)

   Agency Response: Staff held four public workshops on October 27, 2005, January 27, 2006, April 14, 2006, and June 21, 2006. The hearing notice was released to the public on September 1, 2006. The purpose of this document was to inform the public of the release of staff’s ISOR and to open a 45-day comment period before the Board Hearing. All interested parties had the opportunity to comment during this time.

3. Comment: Foothill Transit technical staff suggests that ARB consider a proposal to pursue the design, construction, deployment, and operation of a fleet of at least 50 fuel cell buses in a single fleet to make a genuine attempt to jump start the commercialization of that technology. This recommendation is predicated on the availability of funding for the purchase of the bus and infrastructure, as well as funding to support the on-going operation of the bus, availability of a lightweight transit bus platform, and the availability and guarantee of sufficient supplies of fuel. (Foothill)

   Agency Response: Staff sees benefits in transit agencies being able to utilize ZBus technology. The real-life application and demonstration of viable ZBus technology for transit agency use is one of the goals of the Advanced Demonstration. ARB agrees that larger deployment of fuel cell ZBuses is essential to foster technology development and cost reductions. ARB is working with the Californian Fuel Cell Partnership Bus Team to coordinate transit agencies interested in fuel cell ZBuses and to assure that experience gained from current demonstration is shared. The CaFCP Bus Team with the participating transit agencies could be used to coordinate larger ZBus deployment. Also, see response to Comment G-2.

4. Comment: Transit agencies should not be responsible for perfecting zero emission technology. (LA MTA)

   Agency Response: Comment noted. In February 2000, the Board confirmed its commitment toward improving emissions from public transportation by establishing a new fleet rule for transit agencies, more stringent emission standards for new urban bus engines, and the promotion of advanced technologies by adopting ZBus requirements. The commitment to the development of ZBus technologies through transit agencies and technology developers has been reaffirmed by the Board in subsequent Board hearings.

5. Comment: If the Board chooses to amend the original rule, create a backstop which would integrate the hydrogen into the system. (Clean Energy)

   Agency Response: Staff views the 2009 technology review as a beneficial device for both the Board and transit agencies affected by the regulation. Transit agencies can be assured that ZBus technology is fairly and widely assessed two years before the purchase requirement. Also, the Board will be able to survey ZBus technologies and make recommendations as the technology is improved upon and advancements are made during the Advanced Demonstration.

6. Comment: Develop a public electric power distribution system for buses. (Geenen)

   Agency Response: This comment falls outside the scope of the regulation.

7. Comment: Replace all bus service with zero-emission vehicles on a grid system, called TriTrack. (TriTrack)

   Agency Response: Staff does not believe that smaller vehicles would be able to replace bus service for a transit agency. The State does not specify how transit agencies meet their needs of their customers. A transit agency could choose the TriTrack system or other vehicle options to meet their customers' needs.

IV. SUMMARY OF 15-DAY SUPPLEMENTAL COMMENTS AND AGENCY RESPONSES

During the 15-day supplemental comment period, the Board received written comments from:

Blood, Christopher	Private Citizen (Blood)
Jackson, Laurence W.	Long Beach Transit (Long Beach)
Leahy, Arthur T.	Orange County Transportation Authority (OCTA)
Roane, Jerry	TriTrack (TriTrack)
Tepke, Glen	Metropolitan Transportation Commission (MTC)
Tosca, Michael	UTC Power (UTC)
Zugnoni, Michele	California Transit Association (CTA)

A. General

1. Comment: The members of the California Transit Association are extremely concerned about the plan for implementation of the purchase requirements due to be considered in July 2009. (CTA)

   Agency Response: It is in the interest of staff to work with transit agency operators as well as manufacturers to evaluate all ZBus technology and its application during its technology assessment. Staff is also committed to working with all transit agency operators to develop the most realistic recommendation possible to the Board.

2. Comment: The wording "…or from the start of model year of Zero Emission Bus purchases…" in section 2023.3(c)(1), is not clear. The sentence could be interpreted to mean that the ZEB purchase requirement for diesel path operators takes effect in 2011 or in whichever year an operator first purchases buses. (MTC)

   Agency Response: The wording for this section is clear when read in context with the paragraph immediately preceding (section 2023.3(c)).

B. Comments not Related to the Modifications to the Originally Proposed Amendments

1. Comment: The Durability/Warranty criterion of 20,000 hours as well as the 10,000 miles between propulsion related road calls is a very high bar to set for an emerging bus drive train technology. We ask that the Durability and Reliability criteria be lowered to less than 10,000 hours and less than 5,000 miles between propulsion related road calls, respectively. (UTC)

   Agency Response: The implementation criteria are no longer part of the regulation. As discussed in Section II.A and the responses to Comments K-1 and K-2, the

implantation criteria were identified in Resolution 06-28 as factors to be considered by staff, along with other relevant factors, for the 2009 technology review.

2. Comment: General concerns about cost, reliability and feasibility of purchasing fuel cell buses and infrastructure. (Long Beach, OCTA)

   Agency Response: This suggestion falls outside of the scope of the 15-day modifications. However, staff notes that the regulation does not specifically require fuel cell buses; the regulation is technology neutral. In the 2009 technology review staff will assess the status of all ZBus technologies and will make the most appropriate recommendation to the Board concerning the regulation requirements.

3. Comment: General concerns with the effects of the proposed modified amendments have on the implementation criteria for fuel cell buses. (OCTA)

   Agency Response: This suggestion falls outside of the scope of the 15-day modifications since the implementation criteria are no longer in the regulation. See the responses to the two preceding comments.

4. Comment: The cost targets for fuel cell buses and electric trolley buses do not compare with alternative fuel buses. (OCTA)

   Agency Response: This suggestion falls outside of the scope of the 15-day modifications. Zero emission bus technologies should not be compared with non-zero emission bus technologies. However, the zero emission bus technology cost issue is addressed above in the response to Comment A-10.

Two of the comment letters submitted did not direct any objections or recommendations at the Board's proposed modifications or to the procedures followed by the Board in rulemaking action.

5. Comment: The proposed regulation should also include incentives for use of engine oils containing Fluorinated ZDDP. (Blood)

   Agency Response: This suggestion falls outside of the scope of the 15-day modifications and the regulation as a whole. This technology is not appropriate for zero emission technologies as most zero emission technologies use electric drives and motors, which do not require engine oil.

6. Comment: The proposed regulation should also include a novel technology that would replace transit buses entirely. (Roane)

   Agency Response: This suggestion falls outside of the scope of the 15-day modifications and the regulation as a whole. This technology is still in development and needs to be demonstrated before inclusion into regulation language. While the regulation does not specifically address this technology, transit agencies can

explore this option if they believe it to meet their needs. (See response to Comment M-7.)

ATTACHMENT A

SUBSECTION-BY-SUBSECTION DESCRIPTION OF THE MODIFICATIONS TO THE ORIGINALLY PROPOSED AMENDMENTS TO TITLE 13, CALIFORNIA CODE OF REGULATIONS

§ 2023.1 – Fleet Rule for Transit Agencies – Urban Bus Requirements

Paragraph (b)(6) was modified by removing the 2010 model year requirement and replacing it with a 2012 model year requirement for alternative fuel path transit agencies.

Paragraph (c)(5) was modified by changing the diesel transit agency purchase requirement model year from 2008 to 2011.

§ 2023.3 – Zero-Emission Bus Requirements

Section (b) was modified to head subsequent paragraphs relating to zero-emission bus demonstration projects. Subsection (b)(1) was titled “Initial Demonstration Project,” and was modified by dividing it into paragraphs (A), (B), (C) and (D) in order to improve clarity. Paragraph (b)(1)(A) specifies requirements for the initial zero-emission demonstration project required by the 2004 regulation to accommodate an additional demonstration. Paragraphs (B), (C), and (D) in the same subsection outline further specifications, requirements, and milestones for the initial ZBus demonstration project. Line (C)(5) and (C)(6) were moved from section 2023.4 (f)(1) and (2) to indicate deadlines for the Initial Demonstration. All subsections and paragraphs in section (b) were renumbered and lettered appropriately.

Subsection (b)(2) was added to specify requirements for an additional Advanced Demonstration Project. Paragraph (b)(2)(A) requires all transit agencies on the diesel path with more than 200 urban buses in active service on January 1, 2007 to implement an Advanced Demonstration Project. Paragraphs (B), (D), and (E) in the same subsection outlines requirements and specifications for either single or multiple transit agency options during the Advanced Demonstration Project. Paragraph (C) provides milestones for placement and reporting requirements in relation to the Advanced Demonstration ZBuses.

Paragraph (b)(2)(F) was added to allow zero-emission buses that are placed in service to meet the initial demonstration project to count toward the advanced demonstration requirements, if upgraded with advanced technology.

Section (c) was modified to include language regarding transit agencies with less than 200 urban buses prior to January 1, 2007. A transit agency that increases its fleet of urban buses to more than 200 as of January 1 of any subsequent year will be brought

under the requirements of the ZBus regulation, with a built-in three year transition period. The number of urban buses for each transit agency will be reviewed annually.

Paragraph (c)(1) was modified to specify the new purchase requirement period for the diesel path transit agencies, from model year 2011 through model year 2026. Similarly, paragraph (c)(2) was modified to specify the new purchase requirement period for the alternative fuel path transit agencies, from model year 2012 through model year 2026.

Paragraph (c)(4) was modified to be a new subsection specifying credit earning. Paragraph (c)(4)(A) was modified to include credits earned during the advanced demonstration and new purchase requirement period. Paragraph (B) in the same subsection was modified to clarify credit earning during the initial demonstration project cannot be applied to the new regulation unless necessary technology advancements are made on the buses. Paragraph (C) was added to specify credits earned during the Advanced Demonstration. The table relating to paragraph (B) was modified with the appropriate credits earned in the initial and advanced demonstrations by both alternative and diesel fuel path transit agencies. The table relating to paragraph (C) was added to show credits earned during the advanced demonstration period by diesel path transit agencies.

Section (d) was modified to include a technology and feasibility review in July 2009. During this time, the Board shall decide whether or not to proceed with the implementation of the purchase requirement, by following parameters specified in the 06-28 Board Resolution.

§ 2023.4 – Reporting Requirements for Transit Agencies

Paragraphs (a)(3) and (b)(2) were modified to require diesel and alternative fuel path transit agencies with 150 or more urban buses to report on the number, manufacturer, make, and model year of engines, and fuel used. These reports shall be submitted annually through the year 2027.

Paragraphs (f)(1) and (2) were modified to remove “be submitted by January 31, 2003.” This language was placed in section 2023.3, paragraph (b)(1)(C)(5) and (6) for improved clarity.

Paragraph (f)(3) was modified to remove the July 31, 2005 deadline for preliminary reporting requirements. Subsection (f)(3)(B) was modified to include parameters for comparison between conventional and ZBuses. These comparisons include: miles between propulsion-related road calls, availability of bus for pull-out, fuel economy, fueling costs, infrastructure costs, initial bus costs, maintenance costs of propulsion-related components, and warranty of fuel cell and propulsion-related components.

Paragraph (f)(4) was modified to remove the July 31, 2007 deadline for final reporting requirements. Subsection (f)(4)(B) was modified to include parameters for comparison between conventional and ZBuses. These comparisons include: miles between

propulsion-related road calls, availability of bus for pull out, fuel economy, fueling costs, infrastructure costs, initial bus costs, maintenance costs of propulsion-related components, and warranty of fuel cell and propulsion-related components.

Paragraph (f)(5) was added to require information updates from fuel cell demonstration programs on a monthly basis beginning one month after the start of the program. The paragraph specifies information necessary in each update: brief description of each bus operation, number of days in operation, bus down time, reason for bus down time, outreach events, and requests for future participation in outreach events.

Paragraph (f)(6) was added to require information updates from fuel cell demonstration programs on a quarterly basis beginning two months after the delivery of the bus and quarterly thereafter. The paragraph specifies information necessary in each update: reliability, defined as miles between propulsion-related road calls, operating and maintenance costs, maintenance conducted, warranty issues, availability of bus for pull-out, fuel economy, technology performance, bus downtime (scheduled and unscheduled), safety incidents, issues with fueling equipment, outreach efforts, and driver and mechanic training conducted.

Paragraph (g)(1) was modified to remove specific deadlines for initial reports for new ZBuses purchased.

Paragraph (g)(3) was modified to extend the reporting requirements of new ZBuses purchased through 2026. Paragraph (4) was similarly modified.

Section (k) was modified to specify the heading of the subsequent section relating to failure of a transit agency to comply with reporting requirements. Paragraph (k)(1) was modified to include language specifying the penalty for transit agencies with more than 150 buses that fail to comply with the reporting requirements.