

## PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO THE ZERO EMISSION BUS REGULATIONS

### Staff's Suggested Modifications to the Original Proposal

PRESENTED AT THE OCTOBER 19, 2006 HEARING  
OF THE AIR RESOURCES BOARD

The text of the originally proposed amendments is shown in underline to indicate additions and ~~strike out~~ to indicate deletions, compared to the preexisting regulatory language. The proposed modifications to the original proposal are shown in double underline to indicate additions and ~~double strike out~~ to indicate deletions.

Staff is proposing modifications to the amendments to the zero emission bus regulation as originally noticed and proposed on September 1, 2006. The proposed modifications include significant changes to the Executive Officer adjustment clause, the removal of the availability parameter, the advanced demonstration, and some minor modifications for clarification and alignment with the original intent of the regulation.

#### **1. Drop the proposed Performance and Cost Based Adjustment Clause**

The original proposal allows the Executive Officer to adjust the purchase requirement based on the cost and performance of the fuel cell buses. This determination would be made no later than July, 2009 for a purchase requirement implementation of 2011, and would be reassessed annually by June 30<sup>th</sup> of each year following until the goals are met. If all goals are met, the 15 percent purchase requirement is fully implemented. If these goals are not met, then the Executive Officer can reduce the purchase requirements according to the cost and performance criteria set forth in a Table in the regulation.

Rather than authorizing the Executive Officer to modify the purchase requirement, the regulation would provide that by July, 2009, the Board will consider an update from staff on the status of zero-emission bus technology. The resolution adopted to approve the modified amendments at the October 19, 2006 hearing would direct staff to consider in this review whether the criteria listed in the column headed by 15 percent in the Table in the originally proposed amendments have been achieved with one modification, which will be discussed later. The resolution would express the sense of the Board that if those criteria are achieved, the purchase requirement would be implemented. The resolution would further provide that if the 15 percent criteria are not met, staff is directed as part of the update on the status of zero-emission bus technology to provide a recommendation to the Board on appropriate amendments to the regulation.

Staff recommends that the availability criterion be removed from the guidelines. The original proposal includes Reliability and Availability performance criteria. Either criterion could have been used in the purchase adjustment clause to evaluate the

performance of the buses. Reliability is measure of on-road performance without a service interruption; availability is a measure of if the bus is available for service at the start of day.

Transit agencies commented that buses could be available but still not be reliable. By making the criteria an either or evaluation an underperforming bus could qualify. Staff did not intend to make underperforming buses acceptable. The Availability evaluation criteria will be removed. Staff proposes that only the Reliability criterion will be used.

2023.3(d)

The Air Resources Board shall review zero-emission bus technology and the feasibility of implementing the requirements of subdivision (c) above no later than ~~January 2006~~ July 2009. Based on that assessment, the ~~Board Executive Officer~~ shall decide whether to proceed with the implementation of subdivision (c) or reduce adjust the requirements, based on the following table.

	<u>Purchase Requirement for Zero Emission Buses</u>		
	<u>15%</u>	<u>8%</u>	<u>2%</u>
<u>Purchase Cost Fuel Cell vs. Electric Trolley Bus</u>	<u>1.25 : 1</u>	<u>1.75 : 1</u>	<u>3 : 1</u>
<u>Fuel Cell Durability or Warranty</u>	<u>20,000 hours</u>	<u>15,000 hours</u>	<u>3,000 hours</u>
<u>Reliability (Miles between Propulsion Related Road Calls) or Availability for Service (%)*</u>	<u>10,000 miles of 80%</u>	<u>7,500 miles of 70%</u>	<u>4,000 miles of 60%</u>

\* Only one parameter needs to be met.

## 2. Modifications to staff's proposed amendments to the advanced demonstration

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 clearly are 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, staff proposes that initial demonstration buses be allowed to count towards transit agencies obligations in the advanced demonstration provided the buses are upgraded.

Therefore, staff is recommending that if the buses from the initial demonstration are retrofitted with technology to make comparable to buses used in Advanced Demonstration the buses can be used to meet the Advanced Demonstration requirement.

2023.3 (b)(2)(I)

- (I) Zero-emission buses placed in service to meet the zero-emission bus initial demonstration projects as specified in subdivision (b)(1) are not permitted to count towards the advanced demonstration requirements, unless upgraded with technology advancements to make the bus comparable to vehicles available for the advanced demonstration. One credit shall be earned for each bus.

**3. Minor modifications**

The following minor modifications are suggested for proposed amendments. The modifications identify the regulation provision for the multi transit agency option, clarify the timelines for the multi transit demonstrations, and add a footnote to clarify that the early implementation credits in 2011 apply only to those alternative fuel path transit agencies that participated in the advanced demonstration.

- a. **Modify section 2023.3 (b)(2)(B)(1) and (C) to identify the regulatory section that identifies the multi transit agency option in the advanced demonstration.**

- (B) Alternative fuel path transit agencies may choose one of three following options:
  - 1. Follow the single or joint path demonstration as described in 2023.3 (2) (D) or (2) (G) of this section.
- (C) A diesel fuel path transit agencies may choose to follow the single or joint path demonstration as described in 2023.3 (2) (D) or (2) (G).

- b. **Modify section to 2023.3 (b)(2)(E)1. and (F)1. to clarify that the timelines apply to multi transit agency demonstrations as well as single transit agency demonstrations.**

- (E) When planning and implementing the Advanced Demonstration Project for transit agencies on the diesel path, the operator or owner shall meet the following milestones:
  - 1. No later than January 1, 2009, place ~~at least six~~ all required zero emission buses in operation.

(F) When planning and implementing the Advanced Demonstration Project for transit agencies on the alternative-fuel path, the operator or owner shall meet the following milestones:

1. No later than January 1, 2010, place ~~at least six zero~~ all required emission buses in operation.

c. **Modify section 2023.3 (c)(4)(A) to clarify staff's original intentions.**

The proposed amendments allow alternative fuel transit agencies purchasing buses to meet the 2011 purchase requirements to get extra credits. This was not staff's intention.

Staff intended that transit agencies purchasing buses prior to the requirements be allowed to get extra credits. Alternative fuel path transit agencies opting to participate in the advanced demonstration meet this requirement. Therefore, staff is proposing the addition of a footnote to the table clarifying the original intent of the proposed modifications. This modification would allow alternative fuel path transit agencies participating in an advanced demonstration to earn extra credits for purchasing buses early in 2011.

(4) (A) Earning Credits

(A) Transit agencies on either the diesel path or alternative-fuel path may earn credits for use in meeting the purchase requirements for zero-emission buses specified in paragraphs (c)(1) and (c)(2) by placing zero-emission buses in service prior to the dates specified in paragraphs (c)(1) and (c)(2). For each zero-emission bus placed into early service and above what is required by section 2023.3 in paragraphs (b)(2), (c)(1) and (c)(2), credits shall be accrued according to the following table. Each earned credit is equivalent to one zero-emission bus.

Path	Credits per Year Placed					
	<u>2000-2003</u> <del>7</del>	<u>2004-2005</u> <del>8</del>	<u>2006</u> <del>9</del>	<u>2007</u> <del>10</del>	<u>2007</u> <del>11</del>	<u>2009</u>
Diesel	<u>3</u> <del>2.5</del>	<u>2.5</u> <del>2</del>	<u>2</u> <del>1.5</del>	1.5	-	-
Alternative-fuel	<u>3</u> <del>2.5</del>	<u>2.5</u> <del>2</del>	2	1.5	1.5 <sup>1</sup>	4

<sup>1</sup> Only applicable for alternative fuel path transit agencies that have participated in the advanced demonstration.

d. Modify section 2023.4(f)(3)(B), (f)(4)(B), and add section 2023.4 (f)(5) to ensure staff can assess the technology in 2009.

Reporting requirements for the preliminary and final were modified to ensure staff received the necessary information on the performance parameters to assess the progress of the technology. In addition, staff proposes adding a provision to receive quarterly updates.

Sections 2023.4(f)(3)(B) and 2023.4(f)(4)(B)

- (B) a comparison with conventional buses on the following parameters: miles driven per bus in revenue service, miles between propulsion related road calls, miles between road calls, availability of bus for pull out, fuel economy, fueling costs, infrastructure costs, initial cost of bus, maintenance costs of propulsion related components, warranty of fuel cell and propulsion related components, bus down time (scheduled and unscheduled), safety incidents, driver and mechanic training conducted, and maintenance (both scheduled and unscheduled),

Section 2023.4(f)(5)

- (5) Beginning two months after the start of a demonstration and every three months thereafter, an update on the demonstration shall be provided to staff. These updates shall provide staff zero emission and conventional bus data on the following parameters: miles driven per bus in revenue service, miles between propulsion related road calls, miles between road calls, availability of bus for pull out, fuel economy, fueling costs, infrastructure costs, initial cost of bus, maintenance costs of propulsion related components, warranty of fuel cell and propulsion related components, bus down time (scheduled and unscheduled), safety incidents, driver and mechanic training conducted, and maintenance (both scheduled and unscheduled),

