

## **Comment 1 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Jerry

Last Name: Roane

Email Address: JRoane@TriTrack.net

Affiliation: Private Industry

Subject: zero emission school bus possible

Comment:

See attached doc file. Please let me know if it does not open.

Attachment: 'www.arb.ca.gov/lists/zbus06/1-zevcarb.doc'

Original File Name: zevcarb.doc

Date and Time Comment Was Submitted: 2006-09-08 13:32:44

No Duplicates.

## **Comment 2 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Theresa

Last Name: Acerro

Email Address: thacerro@yahoo.com

Affiliation:

Subject: zero emission bus regulations

Comment:

There absolutely is no reason to allow a delay until 2026. This would mean the death of thousands more people from the horrible fumes emitted by diesel buses. All buses should be using natural gas or some other cleaner alternative than smog and disease causing diesel most of them emit. Especially since they spend so much time idling at bus stops and in traffic!!

Attachment: "

Original File Name:

Date and Time Comment Was Submitted: 2006-09-21 16:35:13

No Duplicates.

### **Comment 3 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Michael

Last Name: Eaves

Email Address: meaves@cngvc.org

Affiliation: Calif. Natural Gas Vehicle Coalition

Subject: Proposed revision of ZEB regulations

Comment:

Please accept the attached comments from the California Natural Gas Vehicle Coalition on the proposed revisions to the ZEB regulations.

Attachment: 'www.arb.ca.gov/lists/zbus06/3-zeb\_rule\_response\_9.27.06.doc'

Original File Name: ZEB Rule Response 9.27.06.doc

Date and Time Comment Was Submitted: 2006-09-27 11:10:22

No Duplicates.

## **Comment 4 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Harrie  
Last Name: Geenen  
Email Address: hpcm.geenen@hccnet.nl  
Affiliation: private person (Dutch)

Subject: zero emissionbus  
Comment:

Dear Sir, Madam,

I would like to present an idea to extend your options for clean traffic.

Idea :  
Develop a public electric power distribution system for heavy traffic users (busses and (hybride) trucks). No fixed connection as with trolley busses)

Scope :  
1/ Air quality improvement is very limited when only busses are improved. If trucks can be added the whole situation can change completely.  
2. Certain areas can be designated as no go area for not adapted trucks after implementation of the power system, giving powerfull control options.

technology  
1/ Hybride drive trains for trucks and busses are available.  
2/ A stiff overhead covered profile for intelligent power-distribution and added information technology can be developed (according to Siemens)  
3/ trucks and busses should be equipped with an automatic (whilst driving) connecting/deconnecting device.  
4/ small distances without powerlines can be driven with supercondensators or flywheelsystems.  
5/ Combinations of zero emission (in town) an low emission (elsewhere) can be done with hybride drive trains.  
6/The best option for solar energy to roadtransport

Regards  
Harrie Geenen

Attachment: "

Original File Name:

Date and Time Comment Was Submitted: 2006-10-04 01:23:45

No Duplicates.

## **Comment 5 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Jason

Last Name: Mark

Email Address: jmark@ucsusa.org

Affiliation: Union of Concerned Scientists

Subject: NGO Comments on ZEB Proposal

Comment:

Please see attached document.

Attachment: 'www.arb.ca.gov/lists/zbus06/5-ngo\_zeb\_letter.pdf'

Original File Name: NGO ZEB Letter.pdf

Date and Time Comment Was Submitted: 2006-10-04 12:19:47

No Duplicates.

## **Comment 6 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Glen

Last Name: Tepke

Email Address: gtepke@mtc.ca.gov

Affiliation:

Subject: Proposed Amendments to the Zero Emission Bus Regulation

Comment:

Please see the attached letter offering comments on the Proposed Amendments to the Zero Emission Bus Regulation from the Metropolitan Transportation Commission. Thank you.

Attachment: 'www.arb.ca.gov/lists/zbus06/6-mtc\_comment\_letter.pdf'

Original File Name: MTC comment letter.pdf

Date and Time Comment Was Submitted: 2006-10-16 16:53:51

No Duplicates.

## **Comment 7 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Noordin

Last Name: Nanji

Email Address: Non-web submitted comment

Affiliation: Ballard

Subject: Additional Material in Support of Zero Emission Bus Regulations

Comment:

Please see the attached comment.

Attachment: 'www.arb.ca.gov/lists/zbus06/7-zbus06-7.pdf'

Original File Name: zbus06-7.pdf

Date and Time Comment Was Submitted: 2006-10-17 10:03:26

No Duplicates.

## **Comment 8 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Laurence

Last Name: Jackson

Email Address: dlee@lbtransit.com

Affiliation: Long Beach Transit

Subject: Agenda Item #06-8-4-Amendments to the Zero Emission Bus Regulation  
Comment:

Please see the attached comment.

Attachment: 'www.arb.ca.gov/lists/zbus06/8-zbus06-8.pdf'

Original File Name: zbus06-8.pdf

Date and Time Comment Was Submitted: 2006-10-17 16:44:44

No Duplicates.

## **Comment 9 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: George

Last Name: Karbowski

Email Address: gkarbowski@foothilltransit.org

Affiliation:

Subject: ZBUS

Comment:

Please accept this comment from Foothill Transit.

Attachment: 'www.arb.ca.gov/lists/zbus06/9-carb\_letter\_10-16-06.pdf'

Original File Name: CARB Letter 10-16-06.pdf

Date and Time Comment Was Submitted: 2006-10-17 19:34:25

No Duplicates.

## **Comment 10 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Bonnie

Last Name: Holmes-Gen

Email Address: bhgen@alac.org

Affiliation: Am. Lung Assoc. of CA

Subject: Final Comments on Zero Emission Bus Rule

Comment:

Attached is the final comment letter on the Zero Emission Bus regulation from the American Lung Association of California, the Union of Concerned Scientists, the Natural Resources Defense Council, and the Steven and Michele Kirsch Foundation.

Attachment: 'www.arb.ca.gov/lists/zbus06/10-ngo\_zeb\_letter\_2\_oct\_17.pdf'

Original File Name: NGO ZEB Letter 2 Oct 17.pdf

Date and Time Comment Was Submitted: 2006-10-17 23:24:39

No Duplicates.

## **Comment 11 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Mike  
Last Name: Tosca  
Email Address: mike.tosca@utcpower.com  
Affiliation: UTC Power

Subject: Oral Statement on Revised CARB Proposal for Zero Emission Bus Requirements  
Comment:

Please see attached document for:  
Oral Statement On Revised California Air Resources Board (CARB)  
Proposal for Zero Emission Bus Requirements  
Michael Tosca  
Senior Product Manager, Transportation Programs  
UTC Power  
October 19, 2006

Attachment: 'www.arb.ca.gov/lists/zbus06/11-utc\_power\_oral\_statement\_10-19-06\_-\_final.doc'

Original File Name: UTC Power Oral Statement 10-19-06 - Final.doc

Date and Time Comment Was Submitted: 2006-10-18 09:44:23

No Duplicates.

## **Comment 12 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Bryan  
Last Name: Murach  
Email Address: bryan.murach@utcpower.com  
Affiliation: UTC Power

Subject: UTC Power Comments on CARB ZEB Regulation Order  
Comment:

See attached document for:  
UTC POWER COMMENTS ON CALIFORNIA AIR RESOURCES BOARD (CARB)  
PROPOSED REGULATION ORDER CONCERNING ZERO EMISSION BUS  
REQUIREMENTS  
OCTOBER 18, 2006

Attachment: 'www.arb.ca.gov/lists/zbus06/12-zeb\_revisions\_proposed\_by\_utc\_power\_-  
\_10.18.2006.doc'

Original File Name: ZEB Revisions Proposed by UTC Power - 10.18.2006.doc

Date and Time Comment Was Submitted: 2006-10-18 09:50:59

No Duplicates.

## **Comment 13 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Roger  
Last Name: Marmaro  
Email Address: rmarmaro@hythane.com  
Affiliation: Hythane Company

Subject: Comments on Proposed Amendments to Zero Emission Bus Regulation  
Comment:

October 19, 2006  
Clerk of the Board  
Air Resources Board  
1001 I Street

Sacramento, California 95814  
RE: Comments on Proposed Amendments to Zero Emission Bus  
Regulation

Dear Air Resources Board:

Hythane Company appreciates the Air Resources Board's (ARB) interest in providing bus fleets with an opportunity to meet some of the obligations of the Zero Emission Bus Regulation through the use of "zero emission enabling technologies" such as Hythane® or other hydrogen/natural gas fuel blends. We are grateful that the ARB recognizes the important role that Hythane® can play in easing the transition to zero emission bus technology by transit agencies that have elected to achieve emission compliance. We are deeply troubled, however, by the minimal incentive that ARB has chosen to provide transit agencies that have already invested in the alternative fuel path and are interested in further reducing their emissions through the use of zero emission enabling technologies. Although Hythane® and other hydrogen/natural gas fuel blends can enable any transit agency to integrate both hydrogen production and dispensing in to their operations more cost effectively than fuel cell technology, the approach suggested by the revised rule will not encourage transit agencies to take this important intermediary step. Providing bus fleets with only a one year delay in the zero emission bus purchase requirement in exchange for the implementation of a demonstration project that incorporates the use of zero emission enabling technology is insufficient. This minimal delay does not offer fleets any incentive to implement advanced technology demonstrations and is therefore an ineffective means of achieving ever lower emissions in the present. Moreover, the amendments provide little incentive for fleets to invest in demonstrations that would facilitate the deployment the hydrogen fueling infrastructure that is necessary for future deployment of zero emission buses in California. If leveraged appropriately, Hythane® can deliver tremendous emission reductions for a fraction of the cost of the proposed zero emission bus technology. As we presented to

staff, conversion of 30% of the existing natural gas bus fleet in California to Hythane® would cost only \$37 million, would lead to the construction of 40 hydrogen production/fueling facilities, and would yield nearly 2,000 tons of NOx emissions over the remaining useful lives of those buses. Thus, the development of a real incentive to incorporate zero emission enabling technologies would yield far more desirable and cost effective results than the current staff proposal.

We suggest amending the rule to allow for meaningful incentive for zero emission enabling technologies.

A mechanism which would postpone the purchase requirement by the same number of years that a transit agency implements a demonstration project would be a good start, as long as that demonstration project yields the same or greater emission reduction benefit as if the agency began to make 15% of its purchases zero emission buses, per the current revised proposal. Thus, if a transit agency implemented a demonstration project in 2007 that yielded the same or greater emission reductions as the purchase requirement, the transit agency would not be subject to the purchase requirement until 2014. Such an approach would likely provide a real encouragement to transit agencies to accelerate emission reductions.

Hythane® and other zero emission enabling technologies can provide a real bridge to the zero emission transit future that ARB envisions, but only if the agency finds an effective means of encouraging it. With the change to the amendment that we suggest, Hythane® and other zero emission enabling technologies can not only provide a link to a cleaner transit bus future, but can also deliver real verifiable surplus NOx emission reductions almost immediately.

Please don't hesitate to contact me if you have any questions or would like further information on

Hythane®.

Sincerely yours,  
Roger W. Marmaro  
President

Attachment: 'www.arb.ca.gov/lists/zbus06/13-hythane\_company\_comments\_on\_arb\_zbus\_amendments\_final.pdf'

Original File Name: Hythane Company Comments on ARB ZBus Amendments\_Final.pdf

Date and Time Comment Was Submitted: 2006-10-18 12:04:49

No Duplicates.

## **Comment 14 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Edwin

Last Name: Harte

Email Address: Non-web submitted comment

Affiliation: Southern CA Gas Company

Subject: Proposed Amendments to the Zero Emission Bus Regulation

Comment:

Please see the attached document.

Attachment: 'www.arb.ca.gov/lists/zbus06/15-zbus06-14.pdf'

Original File Name: zbus06-14.pdf

Date and Time Comment Was Submitted: 2006-10-19 07:52:42

No Duplicates.

## **Comment 15 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Roger

Last Name: Snoble

Email Address: Non-web submitted comment

Affiliation: Metropolitan Transportation Authority

Subject: Comment for Zero Emission Bus Regulation

Comment:

Please see the attached document.

Attachment: 'www.arb.ca.gov/lists/zbus06/16-zbus06-15.pdf'

Original File Name: zbus06-15.pdf

Date and Time Comment Was Submitted: 2006-10-19 07:54:17

No Duplicates.

## **Comment 16 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Paul

Last Name: Jablonski

Email Address: Non-web submitted comment

Affiliation: Metropolitan Transit System

Subject: Proposed Amendments to the Zero Emission Bus Regulation

Comment:

Please see the attached comment.

Attachment: 'www.arb.ca.gov/lists/zbus06/17-zbus06-16.pdf'

Original File Name: zbus06-16.pdf

Date and Time Comment Was Submitted: 2006-10-19 07:55:42

No Duplicates.

## **Comment 17 for Zero Emission Bus Regulation (zbus06) - 45 Day.**

First Name: Arthur

Last Name: Leahy

Email Address: Non-web submitted comment

Affiliation: Orange County Transportation Authority

Subject: Proposed Amendments to the Zero Emission Bus Regulation

Comment:

Please see the attached comment.

Attachment: 'www.arb.ca.gov/lists/zbus06/22-zbus06-17.pdf'

Original File Name: zbus06-17.pdf

Date and Time Comment Was Submitted: 2006-10-24 10:24:17

No Duplicates.

## **Comment 1 for Zero Emission Bus Regulation (zbus06). (At Hearing)**

First Name: Durand

Last Name: Rall

Email Address: Non-web submitted comment

Affiliation: Omnitrans

Subject: Proposed Amendments to the Zero Emission Bus Regulation

Comment:

Please see the attached comment.

Attachment: [www.arb.ca.gov/lists/zbus06/18-zbus06-ws-1.pdf](http://www.arb.ca.gov/lists/zbus06/18-zbus06-ws-1.pdf)

Original File Name: zbus06-ws-1.pdf

Date and Time Comment Was Submitted: 2006-10-24 09:31:02

No Duplicates.

## **Comment 2 for Zero Emission Bus Regulation (zbus06). (At Hearing)**

First Name: Adi

Last Name: Arieli

Email Address: Non-web submitted comment

Affiliation:

Subject: Proposed Amendments to the Zero Emission Bus Regulation

Comment:

Please see the attached comment.

Attachment: [www.arb.ca.gov/lists/zbus06/19-zbus06-ws-2.pdf](http://www.arb.ca.gov/lists/zbus06/19-zbus06-ws-2.pdf)

Original File Name: zbus06-ws-2.pdf

Date and Time Comment Was Submitted: 2006-10-24 09:32:17

No Duplicates.

### **Comment 3 for Zero Emission Bus Regulation (zbus06). (At Hearing)**

First Name: Tina

Last Name: Andolina

Email Address: Non-web submitted comment

Affiliation: Coalition for Clean Air

Subject: Proposed Amendments to the Zero Emission Bus Regulation

Comment:

Please see the attached comment.

Attachment: [www.arb.ca.gov/lists/zbus06/20-zbus06-ws-3.pdf](http://www.arb.ca.gov/lists/zbus06/20-zbus06-ws-3.pdf)

Original File Name: zbus06-ws-3.pdf

Date and Time Comment Was Submitted: 2006-10-24 09:33:17

No Duplicates.

## **Comment 4 for Zero Emission Bus Regulation (zbus06). (At Hearing)**

First Name: Mary

Last Name: King

Email Address: Non-web submitted comment

Affiliation: AC Transit

Subject: Proposed Amendments to ZEB Regulations

Comment:

Please see the attached comment.

Attachment: [www.arb.ca.gov/lists/zbus06/21-zbus06-ws-4.pdf](http://www.arb.ca.gov/lists/zbus06/21-zbus06-ws-4.pdf)

Original File Name: zbus06-ws-4.pdf

Date and Time Comment Was Submitted: 2006-10-24 09:34:47

No Duplicates.

## **Comment 1 for Zero Emission Bus Regulation (zbus06) - 15-1.**

First Name: Christopher

Last Name: Blood

Email Address: cg\_blood@prodigy.net

Affiliation:

Subject: Reducing tailpipe emissions

Comment:

The proposed regulation should also include incentives for use of engine oils containing Fluorinated ZDDP (F-ZDDP). This additive was just positively reviewed by the federal EPA, and has been shown to greatly reduce phosphorous levels in tailpipe emissions when compared with ZDDP, the additive in most oils that is used to reduce friction. Use of F-ZDDP extends the life of catalytic converters and it is likely that only through the use of products with F-ZDDP that the impending federal EPA mandate for reduced catalytic converter emissions can be met. Use of F-ZDDP lubricants should be ubiquitous throughout California to reduce hazardous emissions and to encourage all citizens to be more environmentally conscious in a cost-effective manner that benefits us all.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2007-08-04 11:08:42

No Duplicates.

## **Comment 2 for Zero Emission Bus Regulation (zbus06) - 15-1.**

First Name: Jerry  
Last Name: Roane  
Email Address: JRoane@TriTrack.net  
Affiliation:

Subject: zero emission bus  
Comment:

To: Clerk of the Board, Air Resources Board  
1001 I Street, Sacramento, CA 95814

<http://www.arb.ca.gov/lispub/comm./bclist.php>

fax 916-322-3928

The State of California  
Air Resources Board Amendments to the zero emissions bus  
regulation

In response to the mailed package I was sent for comment:

Comments to the CARB zero emission public comment period. Our product is the TriTrack, which could conceivably replace buses with personalized taxi-like service to either a city or a school district. The method to replace a large number of seats on a traditional bus is to go much faster delivering people or students to their individual destinations. The biggest change that the TriTrack requires is the building of more elevated infrastructure around the present city layout. While this may seem an impossible task at impossible cost it is not. The TriTrack guideway is intended to be very low cost and built in a fraction of the time it normally takes to improve a city's mobility. The idea for bus replacement is to take the same driving staff as the bus enterprise now, but instead of putting that work force out on the streets in lumbering big box transit they would be driving much faster 4-passenger all electric un-tethered electric cars that have an infinite range while in the bounds of the city and the city's suburbs.

There are many gains that are made by converting to this newer approach. The air pollution will be essentially zero and the energy used will be drastically less. Also this will be lower cost both initially and operationally. School children will no longer have to endure long bus rides to school and back home but rather they only sit in the seat for the time it takes to take 3 children home at high speed. This will give them more study time or more family time before homework.

We are not sure how to amend the document to include the possibility of exchanging buses for TriTrack cars driven by the same staff as the buses. It would seem like there could be wiggle-words in the document that describe the net effect and then let technology fill the answers with hardware and systems. Although well meaning, the document does unduly cater to the

diesel engine manufacturers lobbyist. This is odd since it is their poor invention that has caused the problem. The document reads more like a planned obsolescence scheme to buy and trash diesel equipment with a phased cleanup. That sends the wrong message that we should reward the makers of the offending machinery with multiple future purchases. I am sure you are aware of the gasoline hybrid buses that pollute a fraction of what the diesel hybrid buses emit at a lower cost. Because the hybrid electric portion provides the boost on takeoff a normal car engine with full catalytic converter can be used. I do not understand why governments are so inclined to continue to buy diesel especially for school buses. They should be immediately banned until they are cleaner than gasoline versions with full exhaust treatment to the state of the art. It is like the big three are playing a big game by holding back every single step of the way and only shipping product that barely meets that year's requirements. This document falls right into that master scheme by specifying that buses bought in the short term are for sure going to be scrap before their normal wear-out. On this point it seems this document is on the wrong side of the pollution issue. Gasoline buses are cheaper to purchase and hiring mechanics to drop new gas engines in every 200,000 miles at factory crate prices is much cheaper than the initial purchase bump for being a nasty diesel.

I have one other suggestion for the document and that is to refer to these low emitting vehicles as low emitting and put a number on that typical pollution based on the energy mix for the power company in the area. This will do more good than you would think giving the public true measured information rather than painting them too clean. The net effect is the public has a hard time understanding why they are called "zero" when it is painfully obvious that they are not truly zero emitting. Even if we consider the solar version of the TriTrack where the energy needed to power these cars with wheels retracted is less than the energy that can be taken from the sunshine that comes down onto the right of way for the guideway, the factory that made the solar panel did use some pollution source to make them initially. This is a tiny number but still not zero. It would be like truth in advertising to actually assign the best estimate of the pollution used to build and power each vehicle system so the public has correct information and they can believe the answers. The per-passenger NOx pollution for a TriTrack compared to a per-passenger diesel bus from 1989 is a 99.5% reduction in pollution. It is unfathomable that these diesel engines are so dirty but that has been hidden from the public for too long. How bazaar is it that diesel engines are allowed to pollute based on the nameplate brake horsepower. That entire rating system is ridiculous. It should be measured per passenger and the bus-with-engine should be considered as a system. All they have to do to a nonconforming engine is up the horsepower rating and then magically it is allowed to pollute more and that is OK. Well that is not OK but an artifact of a flawed measurement system. Also diesels are allowed to emit that start up black plume and that is not counted in the measure of pollution. That gets a total free pass in the measuring method yet our children's lungs do not have a valve that they can shut off to not breath that black plume that gets by the present measurement system. If you can't go electric or solar then as a bare minimum save \$4,000 per bus and buy gasoline and make sure they don't leave off the converter just because they can. The gas hybrids are probably the best immediate solution if you have to continue with big box transit. I saw nothing that requires these

diesels to remain clean burning. There is a discrepancy between the projected life of the engine and the projected life of the pollution bolt-ons to clean up the NOx. It will do no good to have a urea tank that stops functioning at 90,000 miles if the engine runs another 300,000 miles. Where is the provision that provides a metric for total miles driven or how hard the driver pushing the equipment? These measures are token at best unless they realistically represent the pollution that will result from the irresponsible purchase of yet more diesels with large displacements.

A quick progress report on the TriTrack. We have been accepted into the Automotive X PRIZE race. We are one of 30 competitors representing 5 countries. The Automotive X PRIZE is from the same folks who brought the space X PRIZE and the prize money is significant for this next challenge. Our patented battery swap technology combined with our patented circular cross section guideway car, even driven on the street, will give us a huge advantage in this race. It is the fastest car that still gets 100 mpg equivalent while seating four passengers comfortably. Things are starting to move quickly now. All-electric is what the public believes is the long term answer so our suggestion is to skip some of the more polluting intermediate steps and go for the goal.

Thank you for the opportunity to input to this document.

Jerry Roane  
101 S. Laurelwood Drive -- and Palo Alto CA  
Austin, TX 78733  
512-263-5344 512-294-1960cell JRoane@TriTrack.net  
www.TriTrack.net

Attachment: [www.arb.ca.gov/lists/zbus06/24-comments\\_to\\_the\\_carb\\_zero\\_emission\\_public\\_comment\\_period.doc](http://www.arb.ca.gov/lists/zbus06/24-comments_to_the_carb_zero_emission_public_comment_period.doc)

Original File Name: Comments to the CARB zero emission public comment period.doc

Date and Time Comment Was Submitted: 2007-08-06 21:37:32

No Duplicates.

### **Comment 3 for Zero Emission Bus Regulation (zbus06) - 15-1.**

First Name: Michele  
Last Name: Zugnoni  
Email Address: michele@caltrans.org  
Affiliation: California Transit Association

Subject: California Transit Association Comment on Amended Regulations  
Comment:

Our staff has reviewed the subsequent amendments, and have come to the conclusion that they appear to be consistent with the direction the board took in October 2006. Still, we wish to emphasize that our members are extremely concerned about the plan for the implementation of the purchase requirements due to be considered in July 2009.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2007-08-09 11:14:31

No Duplicates.

## **Comment 4 for Zero Emission Bus Regulation (zbus06) - 15-1.**

First Name: Michael  
Last Name: Tosca  
Email Address: michael.tosca@utcpower.com  
Affiliation:

Subject: Zero Emission Bus Regulation – Modified Text and Resolution 06-28  
Comment:

August 10, 2007

Clerk of the Board  
Air Resources Board  
1001 I Street  
Sacramento, CA 95814

RE: Zero Emission Bus Regulation – Modified Text and Resolution  
06-28

UTC Power greatly appreciates the efforts of the California Air Resources Board (CARB) members and staff to address concerns regarding the proposed revisions to California's zero emission bus regulations. We also appreciate the opportunity to submit these brief comments on the modified text and Resolution 06-28.

UTC Power has been involved in fuel cell bus applications since 1998 and our PureMotion power plant has provided propulsion for buses deployed in Washington, DC, Spain, Italy, Belgium, California, and Connecticut. We have been an active participant in the subject proceeding and testified before the Board on this matter on October 19, 2006. We have consistently stressed our concerns regarding the potential chilling effect changes in this rule could have on fuel cell supplier confidence and investment as well as the need to sustain market demand while technology validation efforts continue.

UTC Power would like to comment on the Board's direction to staff to consider implementation criteria for Durability/Warranty and Reliability. The Durability/Warranty criterion of 20,000 hours is a very high bar to set for an emerging bus drive train technology. Suitable validation for such a criterion would require several years of fielded bus operation with a statistically significant number of buses fielded (validation fleet).

The delay in the California zero emission bus purchase requirement will postpone the introduction of a meaningful validation fleet, hence slowing the validation that would support a 20,000 hour warranty or life prediction. A 20,000 hour power train warranty rivals the extended warranty offered for internal combustion engine bus drive trains that have been in development and production for over 100 years. UTC Power requests that the revised Zero Emission Bus regulation emphasize that the 20,000 hour criterion is a commercial product requirement and that fuel cell technology that is demonstrated to be improving at a rate that would allow full commercial life in the future would be a

candidate for a minimum purchase requirement in California.

UTC Power would also apply this same logic to the 10,000 miles between propulsion related road calls (MBPRC) reliability metric. That figure is representative of today's commercial products and will only be properly field validated after several years of operation with a statistically significant population of fuel cell buses in operation. It is very unlikely that field validation to support a 10,000 MBPRC metric will be complete when the board considers the staff recommendations in mid-2009.

In summary, UTC Power would like the Durability/Warranty and Reliability implementation criteria to be considered in the spirit of a developing technology where the trajectory of these criteria is given as much consideration as the absolute value during the 2009 staff evaluation. Additionally, we ask that the criteria be lowered in accordance with the practical limits of field validation between now and the staff evaluation. Specifically, we ask that the Durability and Reliability criteria be lowered to >10,000 hours and >5,000 MBPRC (the lower threshold for today's diesel fleets), respectively.

Thank you for the opportunity to comment. Please feel free to contact me if you have questions regarding this issue.

Sincerely,

Michael Tosca  
Senior Product Marketing & Sales Manager  
UTC Power  
195 Governor's Highway  
South Windsor, CT 06074  
860-727-7324  
michael.tosca@utcpower.com  
www.utcpower.com

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2007-08-10 10:46:54

No Duplicates.

## **Comment 5 for Zero Emission Bus Regulation (zbus06) - 15-1.**

First Name: Glen

Last Name: Tepke

Email Address: gtepk@mtc.ca.gov

Affiliation: Metropolitan Transportation Commission

Subject: Modified Text for the Proposed Amendments to the Zero Emission Bus Regulation  
Comment:

Section 2023.3(c)(1) states "For transit agencies on the diesel path, in accordance with the requirements in section 2023.1, a minimum 15 percent of purchase and lease agreements, when aggregated annually, for model year 2011, or from the start model year of Zero Emission Bus purchases, through model year 2026 urban buses shall be zero-emission buses." The meaning of the phrase "or from the start model year of Zero Emission Bus purchases" is not clear. It is our understanding that the phrase is intended to refer to transit operators that are not currently subject to the ZEB regulation and become subject to the regulation in the future, but this is not evident from the wording. 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 a ZEB. Two Bay Area transit operators have already purchased ZEBs, but they are not yet subject to the purchase requirement. The wording of the sentence should be revised to make clear when diesel path operators will be subject to the purchase requirement. The same phrase appears in 2023.3(c)(2). Thank you for your consideration.

Attachment:

Original File Name:

Date and Time Comment Was Submitted: 2007-08-10 17:53:29

No Duplicates.

## **Comment 6 for Zero Emission Bus Regulation (zbus06) - 15-1.**

First Name: Laurence

Last Name: Jackson

Email Address: Non-web submitted comment

Affiliation: Long Beach Transit

Subject: Resolutions 06-28 & Amendments to ZEB Reg.

Comment:

Please see the attached comment.

Attachment: [www.arb.ca.gov/lists/zbus06/28-zbus06-15day-6.pdf](http://www.arb.ca.gov/lists/zbus06/28-zbus06-15day-6.pdf)

Original File Name: zbus06-15day-6.pdf

Date and Time Comment Was Submitted: 2007-08-14 11:08:30

No Duplicates.

## **Comment 7 for Zero Emission Bus Regulation (zbus06) - 15-1.**

First Name: Arthur

Last Name: Leah

Email Address: Non-web submitted comment

Affiliation: OCTA

Subject: Proposed modified amendments to the ZEB Regs.

Comment:

Please see the attached comment.

Attachment: [www.arb.ca.gov/lists/zbus06/29-zbus06-15day-7.pdf](http://www.arb.ca.gov/lists/zbus06/29-zbus06-15day-7.pdf)

Original File Name: zbus06-15day-7.pdf

Date and Time Comment Was Submitted: 2007-08-14 11:17:04

No Duplicates.