

ZERO EMISSION BUS REGULATION



Gerhard Ahtelik
California Air Resources Board

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Today's Presentation

- ◆ Urban Transit Bus Regulation / Zero Emission Bus (ZBus) Regulation
- ◆ April 14 Proposal
- ◆ Comments
- ◆ June 21 Proposal

Zero Emission Bus Regulation

- ◆ ZBus purchase requirements
 - ◆ Diesel path
 - ◆ Based on number of buses January 1, 2007
 - ◆ Agencies with > 200 buses
 - ◆ 15% 2008-2015
 - ◆ Alternative-Fuel path
 - ◆ Based on number of buses January 1, 2009
 - ◆ Agencies with > 200 buses
 - ◆ 15% 2010-2015

Affected Transit Agencies

Transit Agency	Fuel Path	January 1, 2005	15 %
Long Beach Transit	D	191	29
Golden Gate Transit	D	221	33
San Mateo County Transit District	D	347	52
Santa Clara Valley Transportation Authority	D	531	80
Alameda/Contra Costa Transit	D	672	101
San Francisco Municipal Railway	D	893	134
North County Transit District	A	155	23
Santa Monica Big Blue Bus	A	174	26
Omnitrans	A	176	26
Sacramento Regional Transit District	A	253	38
Foothill Transit	A	306	46
San Diego Metropolitan Transit System	A	451	68
Orange County Transportation Authority	A	612	92
Los Angeles County MTA	A	2563	384

ZBus Challenges

- ◆ Cost
- ◆ Reliability
- ◆ Availability
- ◆ Fuel cell service life
- ◆ Fueling infrastructure

ZBus Regulation

Modifications Under Consideration

- ◆ Initiate purchase requirement through Advanced Demonstration
- ◆ Advanced Demonstration benefits
 - ◆ Allows transit agencies to phase in ZBuses
 - ◆ ZBuses count towards purchase requirements
- ◆ 15 Percent purchase requirement
 - ◆ Postponed
- ◆ Executive Officer Discretion Clause
 - ◆ Allows technology development to continue
 - ◆ Sets firm targets for manufacturers
 - ◆ Provides transit agencies with performance assurances

April 14, 2006 - Proposal

- ◆ Advanced Demonstration
 - ◆ Single TA
 - ◆ Multi TAs
 - ◆ Both fuel paths
- ◆ Purchase Requirement
 - ◆ Postponed 2 years

Advanced ZBus Demonstration

April 14, 2006 - Proposal

	Diesel	Alt.-Fuel
Solicit Bid Proposals	July 2007	July 2009
Start ZBus Operation	January 2009	January 2011
Infrastructure	Required by Jan 2010	Required by Jan 2012
Purchase Requirement	January 2010	January 2012

Demonstration Options

April 14, 2006 - Proposal

	Diesel Path and Alternative Path	
Number of Transit Agencies (TA)	Single	Multiple
Zero Emission Buses	10	3 per TA Min 12
Maintenance & Operation Training	All Participating Transit Agencies	

Comments

Metropolitan Transportation Authority

Alternative Fuel Path Transit Agencies

- ◆ Postpone purchase requirement to at least 2012
- ◆ Advanced Demonstration Diesel Path only

Comments

Metropolitan Transportation Commission

Diesel Path Transit Agencies

- ◆ Accelerated testing necessary
 - ◆ 2007-2009
- ◆ Demonstration 2009-2012
 - ◆ 7 buses total for 5 agencies
 - ◆ Additional buses if funding granted (up to 17 total)
- ◆ Purchase requirement
 - ◆ 2014 for Diesel path

Fuel Cell Mfr. Comments

	Purchase Requirement	
	Diesel Path	Alternative Fuel Path
United Technologies Corporation	Keep Current Regulation	
Ballard	Keep Current Regulation	

Revised Staff Proposal

June 21, 2006

- ◆ **Advanced Demonstration Modifications**
 - ◆ Alternative Fuel Path Modification and Options
- ◆ **Purchase Requirement Modifications**
 - ◆ Technology review
 - ◆ Executive Officer discretion
 - ◆ Extend purchase requirement

Demonstration Options

June 21, 2006 - Proposal

	Diesel Path		Alt. Fuel	
Number of Transit Agencies (TA)	1	Multiple	1	Multiple
Zero emission buses*	6	Min 3/TA Min 12	6	Min 3/TA Min 12
Start Bus Operation	Jan 2009		Jan 2010	
Maintenance & Operation Training	All Participating Transit Agencies			

*Additional options for Alt. Fuel Path on next slides

Advanced ZBus Demonstration

June 21, 2006 - Proposal

	Diesel	Alternative Fuel	
Demonstration	Required	No	Yes
Solicit Bid Proposals	July 2007	N/A	July 2008
Zero Emission Buses in Operation	Jan 2009	N/A	Jan 2010
Purchase Requirement	Jan 2011	Jan 2011	Jan 2012

Near Zero / Non-Urban Buses

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- ◆ Near Zero or Non-Urban buses may be considered under Executive Officer discretion
 - ◆ Hybrid hydrogen fueled ICE Urban Bus
 - ◆ Non-Urban, battery dominant, fuel cell bus
 - ◆ Battery only bus
- ◆ Develop ZBus through bridging Technologies
- ◆ Emission reductions benefit
- ◆ Early implementation credits reduced

Near Zero / Non-Urban Buses

June 21, 2006 Proposal

- ◆ The following characteristics need to be addressed and discussed
 - ◆ Passenger capacity
 - ◆ Operating characteristics (hours of operation, refueling)
 - ◆ Performance (freeway, grades)
 - ◆ Chassis durability and warranty
 - ◆ Emissions
 - ◆ Other

Options for Alternative Fuel Path

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◆ Option 1

- ◆ Demo = All Zero Emission Buses

◆ Option 2

- ◆ No demo
- ◆ Purchase requirements lines up with Diesel Path

◆ Option 3

- ◆ Demo may include EO approved Near Zero (NZ) or Non Urban (NU) buses
- ◆ NZ +NU Buses = 1/2 of demo (maximum)
- ◆ NZ or NU buses count as 1/3 of a ZBus
- ◆ NZ & NU buses do not count towards purchase requirement

EO Discretion

- ◆ Purchase requirement postponed if cost, durability, and reliability goals are not met
- ◆ Analysis determined 18 months prior to Purchase Requirement Date
- ◆ If goals are not met
 - ◆ Sliding percentage for purchase requirement
 - ◆ Postpone purchase requirement by one year
 - ◆ Re-evaluate annually

Example Scale for Executive Officer

Purchase Requirement	15%	10%	5%	2%
Fuel Cell Bus Cost compared to electric trolley	1 : 1	1.25 : 1	1.5 : 1	1.75 : 1
Durability or Warranty*	20,000	15,000	10,000	5,000
Reliability**	10,000	7,500	5,000	2,000

* Fuel cell life in hours

** miles between service calls—propulsion system related 20

Statewide ZBus Workgroup

- ◆ Form state wide fuel cell bus working group
 - ◆ Coordinate and leverage statewide effort
 - ◆ Share technology learnings
 - ◆ Discuss resource options
 - ◆ Set First Meeting

Next Steps

- ◆ Collect additional input from transit agencies
- ◆ August release of staff report
- ◆ September 2006 Board hearing

Contact Information

Gerhard Ahtelik at:
gachteli@arb.ca.gov
(916) 323-8973

or

Lesley Crowell at:
lcrowell@arb.ca.gov
(916) 323-2913