



**California  
Electric  
Transportation  
Coalition**

February 28, 2006

**The Honorable Alan C. Lloyd, Ph.D.**

Agency Secretary  
California Environmental Protection Agency  
1001 I Street  
P.O. Box 2815  
Sacramento, CA 95812-2815

**The Honorable Sunne Wright McPeak**

Agency Secretary  
Business, Transportation & Housing Agency  
980 9<sup>th</sup> Street, Suite 2450  
Sacramento, CA 95814-2719

**Re: Comments on the Draft Emission Reduction Plan for Ports and International Goods Movement in California, December 1, 2005**

Dear Secretaries Lloyd and McPeak:

The California Electric Transportation Coalition (CalETC) is pleased to provide the following comments on the Draft Emission Reduction Plan for Ports and International Goods Movement in California, December 1, 2005.

We want to note that we also provided comments on January 10, 2006 on the Goods Movement Action Plan Phase II Progress Report: Draft Framework for Action, dated December, 2005. However, we have not heard any response to our comments, and we noticed that they have not been posted on the website with comments from other parties. So we are wondering if these earlier comments have gotten lost or misplaced. We would appreciate your looking into this for us.

There are quite a few zero-emission transportation technologies which are directly applicable, and available, in goods movement applications. These include: alternative marine power (aka shore power or port electrification); truck idling reduction with electrification; electric standby for truck refrigeration units; electric rail; electric airport ground support equipment; and electric cargo handling equipment (lift trucks, tow tractors, industrial tugs, burden and personnel carriers, etc).

Electric transportation and goods movement technologies can provide very large public health and environmental benefits, particularly at ports and other intermodal facilities which currently have a high concentration of diesel and gasoline air pollution. Electric technologies provide zero-emissions at the source (as well as very low upstream emissions), so they directly address community environmental justice concerns. Further, electric technologies provide across the board benefits in terms of reducing criteria pollutants, toxic air contaminants, greenhouse gases, and petroleum dependence.

◆  
**David L. Modisette**  
Executive Director

◆  
**Julee Malinowski-Ball**  
Legislative Director

◆  
1015 K Street Suite 200  
Sacramento CA 95814

916-551-1943  
FAX-441-3549  
CalETC@ix.netcom.com

A non-profit association  
promoting cleaner, healthier air  
through the development and use of  
zero-emission electric vehicles,  
hybrid electric vehicles,  
electric mass transit buses and rail.

Our comments on the Draft Emission Reduction Plan focus on Chapter III, Emission Reduction Strategies. We have organized these comments in the same way that Chapter III is organized, in the following categories:

- A. Ships
- B. Commercial Harbor Craft
- C. Cargo handling Equipment
- D. Trucks
- E. Locomotives

And we have added one additional category, which is currently not included in the Draft Plan, involving reduction of air emissions from California's airports. It appears that airports were not included in the current Draft Plan, even though there is significant goods movement through our airports, and air emissions from airports is very large. So we are providing information on one near-term strategy to get additional emissions reductions from airports through the electrification of airport ground support equipment.

## **A. Ships**

(page III-5)

One ship produces 4 tons of pollutants at the dock from its auxiliary diesel engines. On a typical day, 16 container ships arrive at the LA/Long Beach port complex, producing emissions equal to 1 million cars. The Port of LA is the single largest source of pollution in the air basin – emitting twice the pollution of all power plants combined. And cargo shipment growth is projected to increase 100% in the next 10 years.

So CalETC applauds CalEPA and the BT&H Agency for recognizing the very large emission reduction benefits of Shore Based Electrical Power (aka, Alternative Marine Power, cold ironing, or port electrification) and including it in the Emission Reduction Plan.

We note the aggressive schedule proposed for implementation of Shore Based Electrical Power in the Plan: 20 percent of ship calls at California ports by 2010 will be made by vessels that use shore power; 60 percent by 2015; and 80 percent by 2020. It will take sustained effort and funding to achieve these goals, and so we are pleased that the Governor has included funding for this purpose in his proposed Infrastructure Bond proposals that are part of his Strategic Growth Plan.

## **B. Commercial Harbor Craft**

(page III-16)

The Draft Plan also includes Shore Based Electrical Power for commercial harbor craft. This is appropriate, and we applaud its inclusion. However the implementation goals for this application are less clear than for Ships above. We urge the next version of the Draft Plan to be more specific in this regard.

## C. Cargo Handling Equipment

(page III-22)

As the Draft Plan notes, this category encompasses a very wide variety of equipment to move cargo between transportation modes. Some types of this equipment have been powered by electricity for many years; as the Plan notes, the largest stationary cranes to move containers off ships are primarily electric. Electric forklifts also enjoy significant market share; although these have historically been used mostly in indoor (warehousing) applications, technological advances have allowed them to achieve greater use in outdoor operation.

Other types of cargo handling equipment are currently dominated by diesel or gasoline operation, including: gantry cranes; yard trucks; top handlers; side handlers; reach stackers; sweepers; tow tractors; and other burden and personnel carriers. Emissions of diesel PM and other criteria pollutants from this equipment are very large, as Table III-6 on page III-24 shows.

We believe there is a significant opportunity for the ARB and others to encourage the development of zero-emission electric technology in the cargo handling arena. For decades electric powered vehicles and equipment have operated in underground mines, moving heavy loads of ore, equipment, and personnel. This mining technology could be transferred to the above ground material handling environment, if there were sufficient incentives to do so. For example, diesel powered gantry cranes are on land and move containers from one spot to another. In addition, they use rubber tires so they can be moved around the yard. Electric gantry cranes, so far, have used rail tracks, appears to have limited their applications to a few ports in the world. But rubber tire electric gantries – with long, giant electric cords similar to mining trucks – might be possible.

There are also significant technological advances being made with medium- and heavy-duty hybrid technologies, including plug-in hybrids.

It is worth mentioning that two companies debuted three new battery electric truck applications at the Faster Freight Cleaner Air conference in February 2006. These companies (Rosch and Boshert) modified street-legal pick-ups that are made in Brazil and Korea to battery electric trucks for use in US ports, railyards and similar “campus” type applications. These vehicles are larger and more capable than burden and personnel carriers that are sometimes used to move small amounts of goods and people in factories, warehouses and similar applications.

The Draft Plan mentions “Zero or Near-Zero Emission Equipment” but only in the category of “Implementation Possible by 2020”. We believe that earlier implementation is possible if the ARB and other agencies make a concerted effort to encourage the development and commercialization of zero-emission cargo handling equipment, through the following existing programs: technology RD&D funding available through the ARB’s ICAT program; technology RD&D funding through the California Energy Commissions Public Interest Energy Research (PIER) program; the Carl Moyer Air Quality Incentive program administered by the ARB and air districts; and through eligibility as a voluntary compliance option under state and local air quality rules.

For some existing zero-emission cargo handling equipment, implementation is possible by 2010, with the incentives described above. And new zero-emission cargo handling technologies will be available for implementation by 2015, if the ARB and other agencies encourage them through the existing programs described above.

We note that the Draft Climate Action Team Report to the Governor and the Legislature, dated December 8, 2005 specifically calls for reduction in climate change gases through the introduction of electric off-road transportation and goods movement technologies (page 56).

Estimated “achievable” emissions reductions from electric cargo handling and goods movement equipment are:<sup>1</sup>

	<b>2010</b>	<b>2015</b>	<b>2020</b>
NOx + ROG Avoided (tpd)	9.60	10.80	12.20
PM Avoided (tpd)	0.26	0.23	0.32
GHG Displaced (mtpy)	2.00	2.20	2.40
Petroleum Displaced (mgpy)	170.00	188.00	205.00
Achievable Population	327,000	356,000	384,000

## **D. Trucks**

(page III-29)

In addition to the emission reduction strategies listed in this section of the Draft Plan, there are two other Truck strategies which we recommend be added to the next version of the Plan:

1. Truck Idling Reduction with Electrification.
2. Electric Standby for Truck (and container) Refrigeration Units.

These strategies can provide significant emissions reductions beyond what is proposed (as described below), and the ARB already has some programs to encourage these technologies. So we were surprised to see that the Draft Plan did not mention them.

---

<sup>1</sup> TIAX Update to 2002 Arthur D. Little LEV Electric Vehicle Market Assessment, TIAX, LLC, October 25, 2005. These are statewide figures and include goods movement technologies at all facilities, not just ports. For example, containers from ports travel to inland distribution centers, warehouses and factories and thus are “inland ports” with significant emissions impacts. The numbers in this table do not reflect use of electric gantry cranes or development of large cargo handling equipment such as plug-in hybrid yard hostlers and side pickers.

## 1. Truck Idling Reduction with Electrification

(aka truck parking space electrification, truck stop electrification)

Truck Idling Reduction with Electrification allows a truck to turn off its main diesel engine while stationary (waiting or resting), and to power the heating/air conditioning and appliances with electric power. There are generally two types of Truck Idling Reduction with Electrification: (1) “Off-Board Systems” which provide heating/air conditioning and electrical power from systems which are all located off the truck (i.e., Idle Aire); and (2) “On-Board/Off-Board Systems” which use of electric heating/air conditioning systems on the truck and literally plug-in to electric power outlets at the truck parking space.

The application of this technology at intermodal goods movement facilities is that instead of physically queuing trucks while they wait to pick up loads, they would be directed to a holding area with electric truck idling reduction infrastructure available (for air conditioning/heating, etc), where they would be queued electronically, and notified through the electrification system when their load was ready to be picked up.

This technology could also be employed at product distribution centers, commercial truck stops, highway rest stops, etc.

Achievable benefits of Truck Idling Reduction with Electrification (all applications) are estimated to be:<sup>2</sup>

	2010	2015	2020
NOx + ROG Avoided (tpd)	4.80	7.45	11.68
PM Avoided (tpd)	0.14	0.20	0.28
GHG Displaced (mtpy)	0.28	0.44	0.69
Petroleum Displaced (mgpy)	24.38	37.60	59.11
Achievable Population	18,000 (spaces)	25,000 (spaces)	35,000 (spaces)

## 2. Electric Standby for Truck (and Container) Refrigeration Units

(aka electric TRUs, or e-TRUs)

To keep their perishable cargo cold, most trucks use a transport refrigeration unit (TRU), which is powered by a diesel auxiliary engine usually located on the truck trailer or container.

Electric Standby for Transport Refrigeration Units allows the truck driver to turn off the diesel auxiliary engine, when they are at a loading dock or parked, and use electricity to run the refrigeration unit. Electric Standby requires both electric infrastructure and additional equipment

---

<sup>2</sup> Ibid.

on the TRU to use electricity. Electric Standby TRUs are common in Europe and most other countries the world because of high fuel prices and air pollution.

There are about 40,000 TRUs in California (32,000 semi-trailers, 4,600 delivery vans, 1,900 large bobtail trucks, and 1,850 ocean ship containers) of which 4,000 to 7,000 are electric. This represents an opportunity for California; although the trucks are already equipped with electric TRUs, they do not have an opportunity to plug in frequently or to take advantage of the benefits of electric TRUs since most distribution and delivery locations lack the infrastructure.

We note that the the Draft Climate Action Team Report to the Governor and the Legislature, dated December 8, 2005 specifically calls for reduction in climate change gases through the accelerated deployment of Electric Standby for TRUs (page 56).

Achievable benefits of Electric Standby for TRUs are estimated to be:<sup>3</sup>

	<b>2010</b>	<b>2015</b>	<b>2020</b>
Nox + Rog Avoided (tpd)	3.28	8.53	12.80
PM Avoided (tpd)	0.27	0.69	1.02
GHG Displaced (mtpy)	0.08	0.19	0.28
Petroleum Displaced (mgpy)	9.90	24.70	36.70
Achievable Population	13500	25500	34900

## **E. Locomotives**

(page III-39)

We were somewhat surprised that this section did not include consideration of rail electrification as a possible future implementation strategy. The air quality benefits of rail electrification are very large, and also provide localized reductions which are the concern of environmental justice communities. We would urge that, at a minimum, rail electrification be evaluated so that its benefits and costs can be weighed by policy makers as a possible future implementation strategy. . For example, rail implementation might be implemented on an incremental basis using a 100-year old technology called dual-mode freight rail electrification, where the locomotive is propelled via overhead wires (catenaries) in sensitive areas or when traveling up or down mountains, yet uses the diesel engine on relatively flat areas of the Western US.

---

<sup>3</sup> Ibid.

## F. Electric Airport Ground Support Equipment

Most airport ground support equipment today are powered by diesel or gasoline engines, but they also have electric counterparts including baggage tugs, pushback tractors, belt loaders, and preconditioned air units, which are powered from the Jet-way instead from a diesel auxiliary power unit. Airports around the nation are turning to electric ground support equipment and Jet-way power to reduce their overall emissions inventory. Major electrification projects are underway in Denver, Chicago, Dallas, and throughout Europe.

Electric GSE is operating in small numbers at many of the state's airports. Preconditioned air units are being demonstrated at John Wayne, Ontario and Palm Springs airports. Southwest Airlines is converting its ground support equipment to electric at several airports in California.

In order to use electric ground support equipment, airports have to upgrade their electric infrastructure.

Achievable benefits of Airport Ground Support Equipment Electrification are estimated to be:<sup>4</sup>

	<b>2010</b>	<b>2015</b>	<b>2020</b>
NOx + ROG Avoided (tpd)	0.78	0.58	0.59
PM Avoided (tpd)	0.03	0.02	0.02
GHG Displaced (mtpy)	0.07	0.07	0.07
Petroleum Displaced (mgpy)	5.70	5.80	5.90
Achievable Population	3500	4000	4500

The California Electric Transportation Coalition appreciates this opportunity to provide comments on the Draft Emission Reduction Plan. We hope that you will incorporate our comments in the next version.

Please do not hesitate to contact us for additional information or assistance.

Sincerely,



DAVID L. MODISETTE  
Executive Director

---

<sup>4</sup> Ibid.

cc: Catherine Witherspoon