

**Attachment A:  
POLB's Comments on  
"Evaluation of Port Trucks and Possible Mitigation Strategies"**

The POLB strongly supports fleet modernization as an important method to reduce diesel emissions from on-road drayage trucks. This is evidenced by our role as a co-founder of the Gateway Cities Clean Air Program, and our ongoing participation on its steering committee. We believe CARB's general approach -- using fleet modernization as the foundation for mitigating port truck emissions -- is sound. Unfortunately, it is apparent that CARB staff has hastily prepared a regulatory and incentive framework for the draft port truck modernization program. This undermines the potential to successfully implement such a program.

Our concerns are further detailed below.

**1. General Comments on CARB's Draft Report and Proposed Strategies**

**Understanding the Dynamics of Port Trucking Operations**

We are concerned that CARB staff has not spent sufficient time or effort to fully understand how port truckers operate. It is important that CARB's underlying assumptions and premises for the proposed strategies are based on more than just anecdotal information about the port trucking business. It is clear that CARB staff who drafted the report had little or no direct interaction with the trucking industry in general, or specifically with independent owners-operators (IOOs) who dominate port drayage. CARB's approach to the issue seems to be predicated on a mistaken belief that container hauliers work directly for the ports' tenants (the terminals), instead of acting as independent contractors to off-site carrier companies. POLB believes CARB staff must obtain first-hand input and concerns from both carrier companies and the IOOs, to fully characterize and account for the socio-economic and logistical dynamics that drive port trucking operations.

Examples of issues that may need further consideration, with major input from IOOs and carrier companies, include the following:

- IOOs may not be able to afford the insurance and DMV registration on a newer truck costing more than \$100,000.
- Further understanding is needed about the income tax implications that the proposed program may have on port truckers. Currently under virtually all government incentive programs of this type (including the Gateway Cities fleet modernization program), grantees receive a government-issued 1099 form for the amount of their incentive award. It is true that grantees can depreciate the value of their award over many years, but this assumes that IOOs will have access to an accountant who gives sound tax advice. The tax burden associated with receiving a \$100,000 government grant can be very daunting to workers in this socio-economic category. CARB may need to develop outreach efforts, and/or consider petitioning the IRS for an official ruling as to whether 1099 forms are necessary under this type of "public good" environmental program.<sup>1</sup>

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<sup>1</sup> The Gateway Cities program administrators have queried IRS officials about this issue, and received conflicting answers. It is believed that the IRS will provide an "official" written opinion for an associated charge.

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- The report has insufficient discussion of whether and how modern electronic trucks with aftertreatment devices can be smoothly and effectively assimilated into port drayage operations. IOOs operate and maintain their trucks differently than fleets. A typical port trucker with an older (mechanically controlled) Class 8 truck often personally performs maintenance on the vehicle, or uses a local mechanic with expertise and equipment suitable only for older trucks and engines. IOOs who purchases newer (electronically controlled) trucks may need assistance (e.g., through outreach efforts) to ensure that resources are available for maintaining their newer trucks.
- The report includes a good general discussion about diesel particulate filter (DPF) technology, but fails to acknowledge or discuss the specific case of retrofitting DPFs on port trucks. On page 23, CARB oversimplifies things with the statement that "staff expects that all 1994 and newer port trucks could be successfully equipped with DPFs." The application of aftertreatment devices on used Class 8 trucks in this vocation is still basically "uncharted territory." It is unknown, for example, whether each individual replacement truck will need to be datalogged to determine if sufficient temperatures for filter regeneration will be achieved. CARB notes that there will be annual costs associated with DPFs, but the report should further discuss the need to educate IOOs about regular filter maintenance. Disposal of hazardous materials will be an issue; even fleets with far greater resources than IOOs have encountered problems disposing of zinc from ash during DPF cleaning. Also, experience with the Gateway Cities fleet modernization program has shown that verified Level 1 PM-reduction devices, which are generally assumed to be "plug and play" equipment less complex than DPFs, have resulted in significant problems when installed on MY2000 and newer replacement trucks. If not carefully planned and orchestrated, retrofitting DPFs on replacement port trucks could lead to significant unintended consequences that cannot easily be resolved.
- Any discussion of a DPF retrofit strategy for port trucks, and the associated costs and cost effectiveness, must account for the fact that a significant percentage of potential replacement trucks come equipped with dual exhaust. Based on experience with the Gateway Cities program, roughly 10 to 12% of used Class 8 trucks at the dealerships are equipped with dual exhaust. This is often more cosmetic than functional; usually the two exhaust pipes can be teed together without causing exhaust backpressure problems for the engine. Still, there may be cases where two DPFs are required to accommodate replacement trucks with higher horsepower and greater exhaust flow. Those instances would make the DPF retrofit option considerably less cost effective.

**Relationship to Existing Carl Moyer Program's Fleet Modernization Source Category**

The report is generally unclear or vague about how the existing Carl Moyer Program's new fleet modernization source category will fit in with the proposed port trucker program. Frankly, we see little indication that CARB's Stationary Source Division coordinated their draft strategies with CARB's Moyer program staff. As described further in these comments, there are significant differences between CARB's applied cost effectiveness and emissions calculation methodologies for the Port Truck strategies compared to the Moyer Program. CARB should clarify why this is the case, and possibly normalize all calculations with the Moyer methodologies. In addition, commonalities and consistencies should be checked with CARB's private fleet rule for on-road trucks.

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### General Lack of Sources Cited

Many important parts of the report, including most graphs and data tables, do not cite sources for the information provided. At times, but not consistently, the text cites a general source without any details. All graphs, figures and tables that cite data estimates and projections should include a complete listing of the source. Also, the report often relies on anecdotal information without clear citation of the source. For example, page 12 includes extensive discussion to characterize the economics of port trucking (how much port truckers earn, their costs to work in the vocation, etc.). CARB cites only "TIAX" as well as "a Port of Oakland truck dispatcher" as sources for the information. This is not a credible means to cite references that help build important background or define key parameters for a potential regulatory framework. At a minimum, names and affiliations of individuals on both ends of the conversation should be cited, along with the date of discussion.

## 2. Specific Comments on Assumptions and Data Sources

### Truck Port Trips

The report notes that (on average) port truckers make "2-3 trips each, either to or from the Ports of Los Angeles or Long Beach" per day. This estimate may be low, based on applications submitted to the Gateway Cities Fleet Modernization program by port truckers. CARB should identify the source of the estimated trip average. CARB should clarify if it considered different "subvocations" within the port trucker vocation, or strictly focused on haulers who pick up at terminals and drop containers within a 20-mile radius.

### Conversion of TEU's to Containers

We recommend that CARB staff re-visit the assumptions and calculations for this conversion factor, which can have important implications regarding estimated truck trips at the ports. At best, the report is vague or confusing as to how this factor was derived, exactly how it is used, and if an appropriate methodology was incorporated. Even better than the use of a conversion factor would be if CARB can cite accurate estimates of throughput for actual container units (rather than TEUs), since regardless of size each container potentially results in a discrete truck trip.

### Breakdown of Truck vs. Train Trips

CARB estimates that 75% of the POLB and POLA containers are transported by truck, and 100% at the Port of Oakland. CARB cites the source for this information as "conversations with port officials" (p. B-11). Given the importance of these percentages in deriving estimated "trucked imported containers" over the next 14 years (Table 4, p. B-11), CARB should be more specific about sources of this information. CARB's estimates in Table 4 apparently assume that these percentages will stay constant through 2020. The justification for this assumption is unclear, particularly in light of the Ports' efforts to increase the use of on-dock rail. The report should explore this in greater depth, including a discussion of planned improvements to increase on-dock rail at the ports.

### Port Truck Population

The report states that "precise port truck population data were not available as we prepared this report," and describes how CARB staff utilized an "indirect method" derived from Caltrans traffic data. We do not believe that this methodology is very useful. CARB staff should obtain additional, more-accurate information on this important issue before proceeding with any kind

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of port truck regulation. The POLB can assist here. Along with POLA, we continue to work with Starcrest to develop a more precise port truck population database using optical character recognition data from the terminals. We anticipate being able to generate an accurate portrait of how many trucks, and of what vintage, are regularly serving the individual terminals and both ports in general. CARB staff should contact us for the latest details and information.

### **Port Truck Age Distribution**

CARB cites the Starcrest data taken in 2002 and assumes it to be reasonably representative of the current fleet at all three ports. We are concerned that the Starcrest data cited by CARB is not sufficient to characterize a representative type of port fleet. The updated optical character recognition (OCR) data by Starcrest that POLB and POLA are currently sponsoring can assist CARB here, as well.

### **Uncertainty That Dedicated Port Trucks Dominate Container Hauling**

CARB's strategies seem predicated on the assumption that a dedicated, somewhat homogenous fleet of "port trucks" dominates container hauling. This leads to associated mitigation strategies that essentially focus on a "one size fits all" approach. However, emerging information suggests that this conventional wisdom may be an oversimplification. Recent preliminary data from Starcrest using the latest OCR data at seven POLB and POLA terminals indicate that a large number of individual heavy-duty trucks are making relatively few trips to POLB and POLA. Though preliminary, these data may suggest that drayage hauling is not necessarily dominated by older, dedicated port trucks driven by independent owners-operators. It's possible that drayage hauling may be more based on "dynamic opportunism" where Class 8 truckers of all types augment their work load (and income) with periodic trips to pick up (or drop off) containers at the ports. If the early trends in the data hold up, new thinking may be needed by CARB staff to determine the most cost-effective emissions reduction strategies for in-use trucks serving the ports.

### **Port Truck Average Age and Annual VMT**

CARB also cites an analysis performed by Starcrest of older data to determine an average age for port trucks of 12.9 years. CARB notes that port trucks are approximately 0.7 years older than trucks in the overall California fleet. The report states that "unlike the general HHDV truck fleet, where newer trucks accrue more miles per year than older trucks, CARB staff believes that trucks in port service likely drive similar amounts, regardless of age. This results in a much higher average emission factor for this fleet than an age only comparison would suggest." CARB should better explain the logic of this assumption, and its implications to the analysis presented.

CARB uses a "container balancing method" to estimate vehicle-miles traveled (VMT) of container-hauling trucks at the three ports. It is unclear if this method accounts for variability among the ports. The assumed average daily VMT of 66.04 (page A-4) appears low for an average port hauler ( $66.04 \text{ mi/day} * 365 \text{ days} = 24,090 \text{ mi/yr}$ ). The calculated VMT may reflect the mileage of a port hauler that makes short deliveries, but does not appear representative of all port haulers. Experience from the Gateway Cities program indicates that many port truckers who have received awards use their trucks to commute to the ports from outlying areas. CARB should take into account VMT from commuting miles and other driving not directly linked to port container traffic.

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Also, this estimate for average VMT seems disconnected from CARB's estimate on page 26 that "a port truck consumes ~7,000 gallons of fuel annually". 24,090 mile/yr divided by 7,000 gallons/yr yields 3.4 mpg as the average fuel economy for a port truck. This average mpg estimate is 20% to 30% low, based on information provided from dealers and carriers affiliated with the Gateway Cities program. Here, as in other parts of the report, CARB staff has failed to adequately explain or document key assumptions.

### Port Truck Population Growth

CARB assumes that half of future TEU growth expectations will be delivered by the current fleet and half by new port trucks. CARB should identify where this assumption comes from, and if the factor applies to all three ports, across all future years.

### Port Truck Driver Economic Profile

On page 12, CARB cites data derived from the Gateway Cities fleet modernization program about the income and economic state of port truckers. This is anecdotal information gathered by the program administrator, as just one part of the process to establish baseline mileage for Gateway applicants. CARB staff should have corroborated such information from sources such as the carrier companies and the California Trucking Association. Based on testimony by CTA at CARB's recent Goods Movement hearing in Long Beach, no attempt was made to do.

### Cost of Replacement Trucks

In general, CARB's pricing structure for used (replacement) trucks seems low, although we realize there is considerable variability (depending on truck make/model, extra features, mileage, etc.). For example, under CARB's Strategy 1, the cost of a 10-year-old replacement truck is estimated to be \$16,000. This is based on a used truck price distribution profile compiled by surveying the market. Our cursory review of websites such as Truckpaper.com, along with anecdotal information from the Gateway Cities fleet modernization program, suggest that the value of a 1997 truck today would be roughly 12% to 30% higher than assumed by CARB. We recommend that CARB revisit its assessment of prices for used (replacement) trucks. This is very important since CARB assumes that only the differential cost between a 10 year-old truck and a "newer than normal" truck will be included in the replacement strategy cost.

One important cost assumption by CARB is that 62% of the available replacement trucks will be equipped with sleeper cabs, and the remaining 38% will have day cabs. Experience with more than 400 replacement trucks under the Gateway Cities fleet modernization program suggests that the percentage of sleeper cabs should be significantly higher. Most port truckers prefer trucks with sleepers, but more importantly, it can be hard to find a used 1994 or newer Class 8 truck without a sleeper cab. Converting a sleeper to a non-sleeper is sometimes requested, but it is costly. We recommend that CARB staff query at least five used truck dealers near the three ports to get a more realistic estimate of used truck costs in general, and specifically how prevalent sleeper cabs have become in the used Class 8 truck market.

### Emissions Factors

Under the existing Carl Moyer program, CARB uses 21.39 g/mi NOx and 1.249 g/mi PM for pre-1987 trucks. In the proposed Port Truck strategies, CARB uses 24.0 and 3.11 g/mi NOx and PM, respectively. The weighted fleet emission rates used in the CARB report are 22.21 g/mi NOx and 1.77 g/mi PM. These emission factors come from a new version of California's EMFAC model that is currently under development. The emission factors are based on composite

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emission rates at 500,000 baseline miles and are undergoing further review (p. A-3). CARB should clearly explain why emission factors in all categories for the proposed Port Truck strategies are so much different than those used in the Carl Moyer Program. (Further discussion of the potential implications is provided below.)

Also, CARB staff used linear regression to calculate weighted fleet emission rates for the years 2010-2020 (p. A-8). This approach assumes that fleet-wide emissions continue to decrease at a constant rate during this time period. The CARB report assumes that the reduction in emission rates (g/mi) would be proportional to the reductions in total emissions, assuming constant miles traveled. The appropriateness of using such assumptions should be further discussed.

### Cost Effectiveness Methodology and Calculations

It is unclear why CARB uses a method for determining cost effectiveness that is so different from the new statewide fleet modernization source category under the Carl Moyer Program. The latter methodology has been adopted by the Gateway Cities program, and is being considered for adoption by other existing truck replacement programs (Port of Oakland). Examples of differences in CARB's proposed "Port Truck" methodology compared to its recently released Moyer methodology include the following:

- The CARB analysis uses a capital recovery period of 10 years, based on the assumption that replacement trucks will continue to be used for port drayage for at least that long (p. B-7). This differs from the 5-year capital recovery period allowed for "targeted" vocations such as port hauling under the new Carl Moyer fleet modernization source category, as well as the Gateway Cities fleet modernization program. As CARB has noted, Class 8 trucks are typically retired from line-haul duty for short-haul applications when they reach 500,000 to 750,000 miles. It may be unrealistic to assume that future replacement trucks will last 10 years beyond that point. In practice, it may be very difficult – even with leverage such as built-in contractual clauses or loan payback considerations – to ensure that truckers with newer and more reliable trucks actually stay in the port drayage vocation for 10 years.
- The cost effectiveness formula used in CARB's analysis allows for comparison among the three strategies, but it does not seem consistent with other similar programs. For example, the Port Truck analysis uses a discount rate of 5% for cost effectiveness calculations, whereas the most recent Carl Moyer Program guidelines use a 4% discount rate (p. B-7). Assuming a 10 year project life and 5% discount rate, the capital recovery factor used in the CARB report is 0.1295. The CRF for fleet modernization under the Moyer Program is approximately 0.225. If CARB had used the Moyer CRF of 0.225, the result (all else being equal) would be much higher annualized costs and cost effectiveness. CARB should clarify why these two discount rates differ, and justify not using with the Moyer version.
- Annualized costs are brought back into the present value 2005 year costs using a 7% discount rate (B-8). Consistency with other CARB programs should be discussed.
- The other major component for calculating cost effectiveness is annual emissions reductions. Direct comparison between the emission factors CARB used in the Port Truck report and the Carl Moyer Program is complicated by the fact that different model year ranges are assumed to have the same emission factors. For instance, the Port Strategy

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report groups 1988 - 1993 MYs into one category, while Moyer has different emission factors for model years 1987 - 1990 and 1991 - 1993. Comparing emission factors, it is clear that Moyer emission factors for all model year trucks are considerably lower than those used by CARB in the Port Truck report. NOx emission factors are 7% to 61% lower, and PM emission factors are 41% to 76% lower. The impact of these differences on emissions reductions and cost effectiveness depends on the exact replaced and replacement truck model years. Replacing a Pre-1987 truck with a MY 2007 truck under the Port Truck methodology has the following emissions benefit: 14.83 g/mi NOx and 3.02 g/mi PM. Using Moyer emissions factors, these benefits would be 15.03 g/mi NOx and 1.22 g/mi PM. Thus, for this fleet modernization scenario, the emissions benefit using Moyer factors would be approximately 1% greater for NOx and 60% lower for PM. However, there are many other scenarios, which may have different results. CARB should clarify and justify why it used EFs other than those in its recently approved Moyer program for fleet modernization.

- CARB separately considered NOx and PM reductions in determining the cost effectiveness for each of the three port truck strategies. In some scenarios, the emission benefits of NOx or PM are assumed to be negligible. It is unclear if this assumption is reasonable, based on what is known about uncertainty/variability of in-use emission factors. CARB should better explain how and why certain costs and/or benefits were split up between NOx and PM reductions.

#### Other Issues and Questions

- It is unclear why CARB staff has allowed MY 1994 to 1998 replacement trucks. These MY trucks are equipped with "consent decree" engines known to be among the worst for having high in-use NOx emissions factors. Existing fleet modernization programs such as the Gateway Cities have already moved away from allowing MY 1994-1998 trucks, in recognition that significantly greater NOx reductions<sup>2</sup> can be achieved by requiring replacement vehicles that are MY 2000 or newer. The POLB is in discussion with POLA about a potential joint San Pedro Bay fleet modernization program; preliminary thinking is to seek even greater benefits by requiring replacement trucks that are MY2004 and newer.
- If MY 1994-1998 trucks are to be allowed, CARB should require that their engines receive a mandatory low-NOx "reflash" to help reduce in-use NOx emissions. Inexplicably, the CARB report does not even discuss this issue, which has been the subject of a major CARB campaign in the recent past.
- CARB staff did not adequately address if there will be sufficient numbers of used replacement trucks under the sweeping proposed fleet modernization program. At a minimum, CARB staff should have contacted a representative sample of used truck dealerships to discuss this. Also, CARB staff did not adequately address how prices in the used truck market will be affected by the likelihood of a large increase in product demand.
- The report contains no discussion about whether the aftertreatment industry will be able to produce and install enough DPF systems under the proposed program. The port truck

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<sup>2</sup> Quantification depends heavily on which NOx emission factors are applied. NOx EFs under EMFAC are currently undergoing major changes.

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retrofit efforts will be implemented over a similar time period when many types of heavy-duty diesel vehicles will be subject to BACT provisions under CARB rules. At a minimum, CARB should include an analysis of how the expected demand for DPF product and services will impact vendor resources. This should include discussion about whether there will be enough facilities to service DPF systems, including removal of ash as a hazardous waste. The Manufacturer of Emissions Control Association (MECA) could assist CARB with such an assessment (e.g., by polling its member companies).