Taking a Toll

The High Cost of Health, Environment, and Worker Impacts of the Oakland Port Trucking System

By the **East Bay Alliance for a Sustainable Economy** and **Pacific Institute**

for the **Coalition for Clean & Safe Ports**

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The **East Bay Alliance for a Sustainable Economy (EBASE)** advances economic and social justice by building power and raising standards for working families. EBASE is a member of the Coalition for Clean & Safe Ports.

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The **Pacific Institute** is an Oakland-based independent nonprofit that works to create a healthier planet and sustainable communities. Founded in 1987, we conduct interdisciplinary research and partner with stakeholders to produce solutions that advance environmental protection, economic development, and social equity—in California, nationally, and internationally. Pacific Institute is a member of the Coalition for Clean & Safe Ports.

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The **Coalition for Clean & Safe Ports** is an alliance of environmental, labor, faith, and community organizations working to reform the port trucking industry, reduce harmful emissions, and increase economic benefits for port communities.

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For more information on efforts to address health, environmental, and neighborhood impacts from the Port of Oakland, contact **Aditi Vaidya at 510-893-7106 x324 or Aditi@workingeastbay.org.**

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EXECUTIVE SUMMARY

As the fifth largest container port in the United States, the Port of Oakland is an important hub for the movement of consumer goods in and out of the region, California, and the country. The regional economic benefits of the Port include trade and logistics transactions, business taxes and revenues, and job creation. However, **the economic benefits of the Port are not shared equally among residents, workers, and surrounding communities.** To add to this inequity, some neighborhood residents and workers bear more than their fair share of the "real costs" of the pollution and other impacts created by the movement of container cargo.

This research brief focuses on the public and externalized costs of the health, environmental, and worker impacts related to the Port of Oakland, specifically focusing on port trucks. These public costs—borne by taxpayers, community residents, and workers—include healthcare for uninsured port truck drivers and the environmental health costs shouldered by residents in Oakland. The current trucking system contributes to the regional public cost of neighborhood, worker, and resident health in the following ways:

1. The diesel emissions from port trucks pollute surrounding neighbo rhoods and contribute to premature death, asthma, increased cancer risk, and other diseases. We estimate that **the economic cost to the Bay Area of these health impacts reaches at least $153 million annually.**
2. Additional costs to residential neighborhoods include noise and vibration, reduced pedestrian visibility, lower neighborhood walkability, and increased environmental stress.
3. Without employee status, port truck drivers do not have employer-based health insurance and a majority of drivers and their family-members therefore go without medical coverage. The lack of insurance places a burden on public healthcare facilities—resulting in nearly **$4.5 million in public or charity healthcare costs throughout the Bay Area**.
4. Other costs of Port operations are borne by port truck drivers who face unhealthy working conditions and a lack of workers' compensation when they are injured on the job. Without employee status, port drivers are not protected by occupational safety and health standards or workers' compensation. This results in a greater risk of unhealthy working conditions, with no safety net to cover healthcare costs when drivers are injured on the job.

Trucks at the Port of Oakland are a significant contributor to diesel and non-diesel health impacts in the San Francisco Bay Area. The good news is that for every dollar invested into reducing air pollution from the movement of goods in California, three-to-eight dollars are saved by avoided health impacts. By fixing the broken trucking system, the Port of Oakland has the opportunity to significantly reduce public environmental and health costs.

Specifically, the Port of Oakland must act quickly to:

- **Create a uniform and comprehensive set of standards to minimize environmental, neighborhood, and worker impacts and to maximize local benefits and accountability by any company that does business with the Port of Oakland.** These standards include reducing emission of diesel particulate matter and nitrogen oxides from port trucks, reducing the number of trucks driving through neighborhoods and parked on residential streets, and providing livable wages, health benefits, and employee safety nets such as worker compensation and occupational health and safety protections.
- **Require and enforce adherence to these standards among port trucking companies by shifting port trucking to a concession model with employee status.** The concession model allows the Port to solicit and create operating agreements with companies that do business on their land. Employee status means trucking companies are on a more level playing field when all are expected to provide livable wages, health insurance, safe working conditions, and workers' compensation as well as clean trucks. Through the employee-based concession model, the Port would have the authority to only do business with companies that have replaced dirty trucks, and enforce truck routing and parking to reduce impacts on neighborhoods.

INTRODUCTION

As the fifth largest container port in the United States, the Port of Oakland is an important hub for the movement of consumer goods in and out of the country. The regional economic benefits of the Port include trade and logistics transactions, business taxes and revenues, and job creation. But **these economic benefits are not shared equally among residents and workers. Furthermore, the movement of goods—on diesel-fueled trucks, trains, and ships that cause pollution—results in very high public health costs to residents, workers, and the community.**

The nearly 1,500 trucks operating at the Port of Oakland are a key component of the goods movement system. Every day, thousands of containers are loaded on or off ships at the Port of Oakland and transported by truck. The trucks servicing the Port are driven primarily by non-employee drivers (also known as independent contractor drivers) and are often the oldest and dirtiest trucks on the road. **In 2001, these and other goods movement (also known as freight transportation) trucks in the state generated approximately half of all of California's diesel particular matter (diesel PM) pollution.**[1,2]

This pollution from the movement of goods is concentrated around ports, highways, rail yards, railroad tracks, warehouses, and distribution centers. Low-income communities of color that live, work, play, and learn closest to these hubs are the most likely to experience related health impacts. In the San Francisco Bay Area, these hardest-hit communities are in Alameda County and Contra Costa County and include West Oakland, East Oakland, San Leandro, and Richmond.

Workers in the freight transportation industry, including truck drivers and longshore workers, are also at higher environmental and occupational health risk than the overall population. Port drivers are exposed to serious health and safety risks on the job and go without the worker safety-net programs that protect employees.

Trucks at the Port of Oakland are a significant contributor to diesel and non-diesel health impacts in the San Francisco Bay Area.[3] By fixing the broken trucking system, the Port of Oakland has the opportunity to significantly reduce public environmental and health costs, including the costs of diseases caused by diesel PM. For every dollar invested into the emissions reduction plan, three-to-eight dollars are saved by avoided health impacts.[4] The Port of Oakland has the key opportunity to mitigate the negative environmental impacts on neighboring communities in Oakland and beyond.

What is a Port Truck?

In its most general sense, a port truck can be thought of as a truck that is involved in any way with the movement of consumer goods to or from the Port of Oakland. The California Air Resources Board (CARB) uses the term "drayage" when defining port trucks, and defines these as "diesel-fueled, heavy-duty trucks that transport containers, bulk, and break-bulk goods to and from ports and intermodal rail yards to other locations."

CARB's definition of a drayage truck focuses on those vehicles that actually enter and exit Port (or intermodal rail yard) property. Their calculation of emissions from these vehicles is based on the emissions they generate going to their first stopping or drop-off point after leaving Port property with a cargo container, or the emissions they generate coming from their last stopping or pick-up point before entering the Port to drop-off cargo. These drop-off / pick-up points include transloading facilities, distribution centers, warehouses, and rail yards, which are located in neighborhoods as close as West Oakland, East Oakland, and Richmond, or as far as Fremont and Sacramento. The trucks that are involved beyond those transit points are not included in CARB's definition of port trucks, although they may in fact be hauling cargo destined for or coming from the Port of Oakland. These trucks are considered by CARB to be "domestic" goods movement trucks, and from a regulatory perspective, are covered by a separate "Statewide Truck and Bus" regulation.


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1. PORT TRUCK EMISSIONS: THE COST OF A REGIONAL HEALTH CRISIS

California residents and workers who suffer under diesel exhaust and other harmful air toxins pay the price with their health for the economic prosperity of shippers and cargo owners, and to ensure the availability of cheap consumer goods nationally. All the while, residents and workers of the neighborhoods closest to freight transportation hubs are exposed to the highest levels of pollution and health risk.

In 2006, CARB released their Emissions Reduction Plan for Ports and Goods Movement in California, which outlined California's efforts to reduce exposure to air pollution and meet new federal air quality standards.

The air pollution generated by the movement of goods in California causes an estimated 3,940 Californians to die prematurely each year.[6] The California Air Resources Board (CARB) estimates that the movement of goods in the state is responsible for 30% of smog-forming nitrogen oxides and 75% of the total diesel PM emissions in California.[7] Trucks are by far the biggest contributor to this diesel pollution, contributing two-thirds of the diesel PM.[8]

Based on data updated in May 2008 from the California Air Resources Board, we estimate that the cost of health impacts of the goods movement industry in California add up to approximately **$34 billion annually.**[9,10] This estimated economic impact is primarily from the cost of premature deaths associated with pollution, but also includes the cost of other health impacts including hospitalization, asthma disease, and missed work and school days.[11]

Using CARB's definition of port trucks and their estimates of statewide health impacts, we conservatively estimate the **Bay Area regional economic valuation** and cost for health impacts associated with port trucks as at least **$153 million per year** (Figure 1).[12]

The cumulative economic value over multiple years is extremely costly, and yet many of these economic and public health costs are preventable. CARB estimates that for every dollar invested into the emissions reduction plan, three-to-eight dollars are saved by avoided health impacts.[13]

Figure 1: Annual Economic Valuation of Health Impacts of Statewide Goods Movement and San Francisco Air Basin Port Trucks

	Statewide, All Goods Movement Sources (# of cases, 2005)	San Francisco Air Basin Port Trucks (# of cases, 2005)	Economic Value Per Case (in 2007 dollars)[15]	San Francisco Air Basin Port Trucks (in 2007 dollars)
Premature Deaths	3,940	18	$8,387,106	$151,000,000
Hospital Admissions (respiratory)	2,000	9	$36,096	$331,000
Hospital Admissions (cardiovascular)	830	4	$43,528	$166,000
Asthma and Other Lower Respiratory Symptoms	62,000	284	$20	$6,000
Acute Bronchitis	5,100	23	$448	$10,000
Work Loss Days	360,000	1,650	$191	$320,000
Minor Restricted Activity Days	3,900,000	17,875	$64	$1,100,000
School Absence Days	1,100,000	5,042	$93	$471,000
Total Cost				**$153,000,000**

Source: *Authors' analysis of CARB data. Subtotals by health impact may not add up to total cost due to rounding. See Appendix B for full description of methodology.*

Our estimate is a very conservative one because it is calculated using CARB's narrow definition of port trucks. The limited port truck definition excludes domestic "goods movement trucks" whose cargo may originate or terminate at the Port of Oakland, but involve travel beyond these short-haul truck trips.[14] Therefore, given the stated limitations of CARB's publicly available data on emissions and health outcomes, the real costs to Bay Area and local communities of disease, premature death, and other health problems from trucking operations associated with the Port of Oakland could be significantly higher.

2. WEST OAKLAND HEALTH RISK ASSESSMENT FINDS HIGHER IMPACTS ON LOCAL NEIGHBORHOODS

Estimating the regional impact of port truck pollution is just one part of the picture of the overall impacts of these heavy duty trucks. The neighborhoods closest to the Port of Oakland, as well as to the highways, distribution centers, and truck repair and parking facilities, not only face the highest exposures to port truck pollution but on average are more vulnerable to the impacts of diesel pollution from a variety of sources. (See also Section 3 and box on uninsured residents.) These neighborhoods include West Oakland, East Oakland, San Leandro, and Richmond. The relative risk faced by these communities is considerably higher than the regional average, and must be the focus of any efforts to reduce port truck health impacts.

However, to date, few local studies on diesel pollution or other truck impacts have been conducted in these communities, with the exception of West Oakland. Here we review the evidence that has emerged regarding the local impact of port trucking operations in the only community that has been closely assessed to date, West Oakland.

As a step toward better understanding the local neighborhood impacts of diesel pollution, CARB conducted a Health Risk Assessment (HRA) for West Oakland to study the health impacts of diesel PM emissions from all sources. CARB divided the sources of diesel PM into three categories or domains: 1) Port of Oakland (Port); 2) Union Pacific Railyard; and 3) "other sources" of diesel pollution in or near the West Oakland community.[16] The health risk assessment evaluated the current and expected future contributions of diesel PM emissions from all sources to specific health risks for people living in West Oakland, using computer models. The final study findings, released in December 2008, show:

- West Oakland residents are exposed to diesel PM concentrations that are almost **three times higher** than average concentrations in the San Francisco Bay Area.
- An overwhelming majority (71%) of the estimated cancer risk due to diesel PM in West Oakland is from on-road, heavy-duty trucks (see Figure 1).
- **Port trucks are estimated to create a risk of 48 excess cancers per million residents in West Oakland.**

Athena Applon
West Oakland Resident

I've been a West Oakland resident for 26 years. I'm really concerned about the air pollution in West Oakland. Looking back at my childhood, I can remember seeing trucks drive down Adeline Street (now prohibited). Trucks were everywhere! Even though there is a designated truck route, you can still see trucks travel throughout the community. Most of the trucks that use the 880 freeway take the Market Street exit, traveling down 5th and/or 7th St. to enter the Port of Oakland. You can walk one or two blocks and witness the truck traffic, along with the black smoke that emanates as they go by.

It seems to me like there is some connection between the poor air quality due to heavy truck traffic and the high asthma rate in West Oakland. Currently my family has at least 20 people who suffer from asthma. Five of them use electric asthma machines and my mother has an oxygen tank at home that stands at least two feet tall. I know there are many causes of asthma, but I can't help but wonder whether there is a relationship between my family members and friends having asthma and the black soot that comes from the trucks that travel in my neighborhood. Until laws are enforced, the health of West Oakland residents will continue to suffer.

While the study provides valuable data, the health risk caused by Port-related trucks is likely underestimated in this health risk assessment due to several uncertainties and limitations in the study.

- First, as described in detail in Appendix C, a portion of the 80% contribution to cancer risk from "other sources" of diesel PM should actually be attributed to trucks moving containers to and from the Port of Oakland. Trucks that move from the Port of Oakland through West Oakland streets before heading onto the freeway are considered by the HRA as part of "other sources" from the community, rather than originating from the Port of Oakland.
- Second, the HRA does not have sufficient data on actual truck traffic in West Oakland neighborhoods, and also does not evaluate truck trips after the first stop, which should also be considered part of port truck activities. This underestimate of emissions that in fact originate from "port trucks," mirrors the underestimate described in Section 1.
- Third, the HRA does not incorporate CARB's updated relative risk factor for premature death.
- Finally, the health impacts of port trucks were only evaluated for a single pollutant: directly emitted fine particulate matter. Diesel exhaust contains hundreds of other chemicals, including forty known toxic air contaminants, as well as significant amounts of nitrogen oxides—which contribute to smog and "secondary" particulate matter, and which was also not evaluated in this assessment.

The net effect of these uncertainties is that the health risks from diesel pollution that is actually attributable to Port trucking operations in this HRA are significantly underestimated. However, the overall estimate of health risk from all diesel sources is not affected by these uncertainties.

This CARB Health Risk Assessment for diesel pollution in West Oakland provides a snapshot of one community that is disproportionately burdened with the health impacts of port trucking operations. While not as comprehensive, there is evidence that other neighborhoods face similar, disproportionate burdens from freight transportation, much of which is linked to freight transportation in and out of the Port of Oakland. For example, a recent survey of land uses in the Hegenberger Corridor of East Oakland conducted by Communities for a Better Environment found 27 logistics facilities,[17] while a 2001 truck survey completed in West Contra Costa County identified 33 distribution and transportation businesses that generate 4,240 truck trips per weekday.[18]


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3. NEIGHBORHOOD IMPACTS OF TRUCKS BURDEN RESIDENTS

Diesel pollution is just one way port trucks can harm community health and well-being. In communities affected by port trucks—like West Oakland, East Oakland, San Leandro, and Richmond—**a significant number of non-diesel neighborhood impacts**. These impacts include: use of and parking on residential streets, noise, vibration, pedestrian and bicyclist hazards, and blocking lines of vision and casting shadows that can reduce people's sense of safety and discourage walking.

In addition, because there are insufficient facilities for food, fuel, restrooms, repairs, and parking adjacent to the Port, truck drivers are often **forced to drive into the local residential community in search of these necessities.** While this business activity may generate economic benefit for merchants that cater to drivers, the lack of planning and conflicting land uses expose neighborhoods to truck traffic and parking impacts that are detrimental to their health and quality of life. This means an infrastructure of support and retail services for drivers, such as truck repair and maintenance, parking, and shops, are interspersed among homes, schools, parks, and playgrounds in neighborhoods like East Oakland and West Oakland.

Noise, vibration, and visual blight are not just an inconvenience for local residents. An emerging body of evidence indicates that these exposures have serious long-term impacts on the health and economic well-being of families that are exposed to them. Noise from roadway traffic has been linked with an increased risk of heart attacks and the prevalence of heart disease.[19] Noise and vibration also affect children's ability to concentrate, their overall school performance, and their sleeping patterns.[20] One study found that neighborhood-level noise is associated with poorer classroom behavior and reduced mental health in children, such as feeling anxious, sad, or pessimistic.[21]

The presence of trucks on local streets also poses **safety hazards** to people walking or bicycling. Because truck drivers sit higher above street level than car drivers, truck drivers may not be able to easily see pedestrians or cyclists. Trucks loaded with containers making 90-degree turns on narrow streets can swing in very close to sidewalks, posing real hazards to nearby pedestrians, and are especially worrisome for children walking to and from school. Heavy-duty trucks moving through residential neighborhoods also create a **risk of accidents** not found in neighborhoods that have both effectively banned truck traffic and enforced designated truck routes.

Collectively, these individual exposures result in an accumulation of chronic community **environmental stress**, which in turn can have direct health impacts on residents of those communities and ultimately reduce people's resistance to illness and disease. Mothers exposed to higher levels of environmental stress are at greater risk of delivering **low birth-weight** or preterm babies who face higher hurdles in developing to their full physical and learning potential.[22,23,24,25] From 2004 to 2006, about 8.9% of the babies born in West Oakland had low birth weight, higher than the county rate of 7.1%.[26]

While these **non-diesel neighborhood health impacts are much harder to quantify than the direct health impacts of truck-related air pollution, they are nonetheless important contributors to overall community health risks.** As noted by the Alameda County Department of Public Health, "the impact of the concentration of environmental hazards in West Oakland is particularly devastating to residents' health because of their social vulnerability. Due to high poverty levels and the prevalence of other psycho-social stressors, as well as a lack of access to healthcare, West Oakland residents are already at risk for poor health outcomes."[27] Life expectancy in West Oakland from 2000 to 2003 was 71.6 years, which was 7.3 years less than the county as a whole,[28] and 10 years less than residents of the Oakland hills.[29]

The cumulative environmental exposures for people in West Oakland have a life-long and community-wide ripple effect, with grave implications for the economic vitality of the city and for future generations. For example, when children perform poorly in school, they are less likely to reach their full potential and be employed in good jobs as adults. These unwanted and unnecessary health impacts in the region's most vulnerable communities are largely preventable if cargo-carrying trucks are kept off of local streets and away from where communities and children live, play, congregate, and learn.

Uninsured West Oakland Residents Hit Hard by Impacts of Toxic Emissions

West Oakland residents who lack health insurance face multiple burdens, leaving them less able to manage when afflicted by health problems generated from port trucking operations, and simultaneously increasing public healthcare costs in Alameda County. A 2004 pilot survey of 52 households in West Oakland found that 40% of adults and 15% of children in the homes surveyed lacked health insurance.[30]

Most uninsured residents do not receive routine or preventive healthcare that can keep illnesses such as asthma in check. Studies show that people with health insurance are healthier than the uninsured, and that uninsured people are more likely to die a premature death than those who are insured.[31] When uninsured residents do fall ill or when their conditions reach a critical point, they often end up in the emergency room—a much more expensive cost than a routine doctor visit.

Ultimately Alameda County and taxpayers within the county foot the bill for this emergency care. The average charge for a hospital stay in Alameda County is $17,890 for adults and $8,720 for children.[32]

4. THE PUBLIC COST OF HEALTHCARE FOR UNINSURED TRUCK DRIVERS

Shippers and retailers reap billions of dollars in profits each year. And while port drivers are a critical link in the global trade and the international goods movement industry, drivers at the Port of Oakland make an average of $10.69 an hour and struggle on the cusp of poverty. Because the majority of port truck drivers are not employees of trucking companies, most have to pay for their own truck maintenance, insurance, and fuel costs, and do not have the resources to pay for healthcare or prescriptions out-of-pocket.[33]

A majority (83%) of the nearly 1,500 local short-haul drivers at the Port of Oakland are not employee drivers and are instead independently contracted.[34] As such, drivers do not have access to benefits conferred by being an employee, such as health benefits. As a consequence, port drivers and their families are forced to rely on costly emergency services or use public healthcare programs such as Medical. Therefore, another cost of business operation currently paid for by the public is healthcare for truck drivers and their families. Note here that the costs reflected here include *all* medical costs for uninsured truck drivers and their families, and not simply the costs associated with goods movement, diesel emissions, or air quality as referenced in the $153 million cost in Figure 1.

In a recent East Bay Alliance for a Sustainable Economy survey of local port truck drivers, 772 drivers—nearly two-thirds (62%)—report having no health insurance at all.[35] This issue affects not only the port drivers themselves, but also the estimated 1,600 spouses and children of these uninsured truck drivers.

The public healthcare safety-net programs serve as de facto subsidies for industries and employers who fail to provide affordable healthcare for their workers.[36] A 2004 study found the total public cost of healthcare for uninsured workers nationally was $45 billion, up from $31 billion in 1999.[37] In California alone, the taxpayer cost of public safety net programs for workers in the transportation sector is nearly $500 million.[38]

Based on EBASE's calculations for the Bay Area, the public cost for uninsured port truck drivers and their families to access healthcare amounts to nearly **$4.5 million** a year (Figure 2). Drivers who suffer from chronic health problems, described below, are left stranded when they are ill or have workplace injuries.

Health benefits are only the start of the benefits drivers at the Port of Oakland would be entitled to if they became employees. Without employee status, drivers lack access to all of the benefits conferred to employees, including regular wages, workers' compensation, and health benefits.

Figure 2: Public Costs for Uninsured Port Truck Drivers and Their Families (2007)

	Estimated Lack of Coverage	Total Uninsured	Cost Per Person	Total Public Cost (rounded)
Drivers	62%	772	$1,728	$1,330,000
Spouses	53%	463	$1,728	$800,000
Children	60%	1,136	$2,042	$2,320,000
Total		**2,371**		**$4,450,000**

Source: *EBASE analysis of 2007 port truck driver surveys and cost per person from Kominski et al, May 2005. Total may not add up due to rounding. See Appendix C for an explanation of the methodology.*

5. DRIVER OCCUPATIONAL SAFETY AND HEALTH AND LACK OF WORKERS' COMPENSATION

The low rates of healthcare coverage for truck drivers and their subsequent high dependence on public and emergency healthcare coverage is exacerbated by the fact that driving trucks is one of the most dangerous occupations in the United States. According to the U.S. Department of Labor, truck drivers have the highest on-the-job fatality rates in the country: 940 deaths per 100,000 workers in 2006 compared to the general worker average of 3.9 deaths per 100,000 workers.[39] This is largely attributable to highway motor vehicle crashes, and is also in part because many drivers are forced to drive for long hours to meet delivery schedule deadlines—especially driving at night, during bad weather, or under poor road conditions.[40]

There is also evidence that non-employee truck drivers have a relatively low life expectancy. While not a random sample, a study of deceased members of the Owner-Operator Independent Drivers Association (OOIDA) found the average life expectancy is 55.7 years,[41] versus 78 years in the overall population.[42]

Working 11 hours a day in a harsh and stressful environment puts drivers at risk for exhaustion and strain. Ongoing job strain—defined as high job demands but low freedom to make decisions, poor job security, and little-to-no occupational mobility—takes a toll on physical and mental health.[43,44,45] A worker's ability to control the pace of his or her work has a significant effect on his or her ability to manage work-related stress. Workers with a high level of stress and low ability to control workplace demands are 50 percent more likely to suffer heart attacks.[46]

Non-Employee Drivers Lack Occupational Safety, Health, and Workers' Compensation Protections

Independent contractors are not protected by the occupational safety and health standards that are designed to prevent workers from workplace hazards. Nor are they covered by the workers' compensation system when they are hurt or become sick as a result of workplace exposures.

Workers' compensation is an insurance system for people who are hurt at work. The system is funded by employer contributions rather than by the public. All employers must provide workers' compensation coverage for employees. The worker's compensation system was created as a way to ensure that the private sector employers who benefit from an employee's work pay into an insurance system that takes care of employees when they are hurt on the job. Without this workers' compensation system, injured workers would rely on private medical insurance, taxpayers, or lawsuits to pay for each on-the-job injury.

As non-employees, port truck drivers are not covered by the worker's compensation system. When those in an industry as hazardous as truck driving do not have workers' compensation insurance, they have few options when they are injured on the job. Uninsured port drivers are either forced to pay for medicine and expenses out of pocket—an unrealistic option for drivers earning an average $10.69 an hour—or rely on the publicly financed healthcare system. Such conditions place a burden on the public to foot the bill for the cost of a broken trucking system.

Basic worker safety nets and standards—like workers' compensation, occupational health and safety regulations, sick days and disability coverage, and health benefits—are crucial for reducing the cost for injuries and supporting healthy workers.

Other chronic health risks for truck drivers include injury due to carrying heavy loads and ergonomic factors caused by inadequate seating and extended driving over bumpy roads. Ergonomic factors can often lead to chronic musculoskeletal disorders. Furthermore, the Port of Oakland is serviced by older trucks that break down more often, leaving drivers at increased risk of injury while making repairs or while changing tires.[47]

The result of multiple health and safety concerns on the job means drivers suffer from serious and chronic injuries and health problems. In a survey conducted by EBASE in 2007, almost half of all truck drivers (45%) reported one or more work-related injuries in the past year. Drivers reported such ailments as back pain, hearing loss, nausea, dizziness, and chronic headaches.[48]

Truck drivers also face health risks from workplace exposure to high levels of diesel exhaust. The concentrated diesel pollution at the Port and inside the cab of their trucks exposes drivers to long-term risks of such respiratory diseases as lung cancer.[49] In a review of over 30 human epidemiological studies, CARB found that long-term occupational exposures (for all occupations) to diesel exhaust were associated with a 40% increase in the relative risk of lung cancer. [50] **A study conducted by the Natural Resources Defense Council last year found that black carbon levels—used as an indicator of diesel exhaust—were at least 10 times higher inside trucks serving the Port of Oakland** than the background level of 0.3 micrograms per cubic meter found in residential areas of Oakland.[51]

Under the current trucking system, drivers cannot realistically afford to upgrade to cleaner, safer trucks and improve their overall pay and working conditions—leaving them dangerously vulnerable when injuries or other health problems occur on the job. Port truck drivers' status as non-employees puts them at considerably higher risk for health problems and injury,[52,53] without the workplace safety nets afforded to employees. Poor working conditions endanger not only the drivers but also the public at large who share the road with workers who are overworked, underpaid, and facing numerous workplace hazards and stress factors.

Muhammad Asif
Oakland Port Truck Driver

I started driving a truck as an independent contractor at the Port of Oakland in 2002. Typically, I delivered food from China to a warehouse in Modesto or computers to San Jose. As an independent contractor, I am responsible for paying all my expenses such as purchase and maintenance of my truck, fuel, registration, and insurance. Most of us drivers barely make enough money to cover our expenses. I would usually take home less than $5 an hour. I am constantly in debt. My employer did not provide health insurance, and I could not afford to buy it for me or my wife.

Working at the Port is very difficult. We are paid by the load, not by the hour. We often wait in line as long as four hours to pick up a load. While we wait, we don't get paid. We're always in a rush to pick up and deliver loads. I often worked up to 10 hours a day. It's very stressful. While waiting in line, trucks idle and we breathe diesel fumes. I developed respiratory problems.

Last year I became very ill. My stomach filled with fluid and became extremely swollen. I was in great pain, and I had trouble breathing and walking. I found out I have liver disease. I'm now on a waiting list for a liver transplant. At the time of the diagnosis, I did not have health insurance. Because my income was so low, I qualified for Medi-Cal.

Inside the Port terminals, there are no convenient, clean restroom facilities, no nutritious food, and no drinking water, which makes my liver problem worse. The diesel fumes in combination with the medicine I am taking make me drowsy. I have not been able to work. My doctor told me to stop driving at the Port. Now, I don't know how I'm going to make a living and support my family.


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CONCLUSION AND RECOMMENDATIONS

Changes to the existing trucking system at the Port of Oakland, with more stringent emission standards for all trucks engaged in goods movement, are critical first steps toward reducing community and worker health risks and public health costs. In December 2007, CARB passed a port truck regulation which will require all trucks doing business at any of California's ports and intermodal rail yards to meet stringent air quality standards and diesel emissions reductions by January 1, 2010. This rule would transform the trucking fleet from the current old polluting trucks to the newer and cleaner trucks. The CARB regulations are the first set of state regulations to apply to port trucks since this industry was deregulated in the 1980's.

However, even given the current statewide regulations, **unless there is transformation of the port trucking industry structure itself it will be difficult for the Port of Oakland to enforce the more stringent emissions standards set by CARB.** Specifically, the financial costs of paying for new trucks or installing and maintaining pollution control technologies simply cannot be borne by port drivers who do not currently command a high enough price to cover their costs.

Although there are taxpayer-funded public subsidies and incentives available to offset some of the costs of cleaning up or replacing trucks in order to meet the new standards, such grants do not cover the complete cost or ongoing maintenance—forcing drivers into deeper debt. Furthermore, relying on public funding to address the freight transport industry's inherent costs of meeting statewide emission regulations is unsustainable and unfairly perpetuates the cost burdens on individual drivers, rather than internalizing these costs into the logistics industry.

While it is a critical step toward reducing the public health impacts of diesel pollution caused by port trucks, the CARB port trucking regulation is not enough. It is outside of CARB's direct jurisdiction, but within the Port's responsibility, to address the much broader range of community and worker health impacts caused by port trucking operations.

Therefore, our recommendations for reducing the worker and community health costs of port trucking operations are two-fold:

1) **Create a uniform and comprehensive set of standards to minimize environmental, neighborhood, and worker impacts and to maximize local benefits and accountability by any company that does business with the Port of Oakland.**

The environmental and neighborhood impact standards proposed by members of the Coalition for Clean & Safe Ports include reducing diesel exposure and non-diesel health risk for drivers, longshore workers, and community residents. The standards address reduction in engine emissions and truck replacement, reducing neighborhood impacts such as truck parking, idling, and pass-through, and ensuring greater pedestrian safety. Specifically, the following policies and practices related to environment and neighborhood impacts are examples of the standards that the Port of Oakland can require trucking companies to meet in order to do business with the Port:

- Mandate the use of *truck routes* rather than local roads.
- Provide *overnight parking* in designated lots rather than on the street.
- *Eliminate idling* and ensure compliance with the state's *anti-idling* regulation.
- Develop and implement practices to *protect pedestrian safety* in all areas of truck transit.

The Coalition for Clean & Safe Ports recognizes that local hire requirements for trucking companies ensure a more equitable distribution of benefits from port trucking operations as well as helps reduce environmental impacts. Specifically, drivers who live closer to where they work and businesses that are operated locally help reduce emissions by shortening commutes—thereby reducing the added air pollution contributed by those getting to and from work.

Additionally, because the Coalition places a high priority on the development and growth of responsible trucking companies that treat workers with respect and use less polluting trucks, it recognizes the advantage and potential of supporting small, local businesses to do business with the Port. Local businesses are rooted in the surrounding communities that have generally suffered the negative environmental impacts and have not profited from the positive economic impacts generated by the Port.

Both small business and local hire provisions increase the transparency and accountability of businesses doing business with the Port of Oakland to local neighborhoods, a critical aspect of attaining and maintaining high environmental and community health standards. When port trucking companies are based locally and hire locally, they have a relationship with and accountability to local residents and neighborhoods that large out-of-state companies do not have.

Finally, drivers who are employees rather than contracted drivers will benefit from improved working conditions. As employee drivers, they have the opportunity for improved wages, health insurance coverage, workers' compensation and health and safety protections, and other workplace requirements and benefits.

2) Require and enforce adherence to these standards among port trucking companies by shifting port trucking to a concession model with employee status.

As a result of de-regulation in the trucking industry in the 1980's, port truck drivers are mostly independently contracted and not employee drivers. This means port truck drivers do not currently have a direct relationship with the Port of Oakland. The status of drivers as non-employees also produces competition among drivers that reduces their ability to command a high enough price to cover the real costs of upgrading their equipment, purchasing new vehicles, or doing the required maintenance.

By creating a direct relationship with trucking companies via a concession model, the Port will have the power to enforce industry-wide standards that all port trucking companies and their drivers would have to meet in order to do business with the Port. The concession model allows the Port to **solicit and create operating agreements with companies that do business on their land. In these agreements, the Port would have the authority to set environment, neighborhood, and worker standards** as well as coordinate private sector activities and generate revenue.

Instead of attempting to manage thousands of individual drivers, the concession model means the Port would work with a discrete and manageable number of companies to monitor and enforce the conditions of the concession agreement. This model also allows trucking companies to negotiate prices with their customers (primarily international shipping lines) to cover the actual real costs of meeting these standards. This ensures that trucking companies as well as other actors in the goods movement industry do their part to coordinate, replace, and maintain clean trucks in the long run.

However, a concession model alone is not sufficient to ensure that port trucks are upgraded and maintained. Drivers themselves must be employees with the benefits and safety nets that come with employee status. Trucking companies need an even playing field so that they can set fair prices for moving containers based on their real costs. **Companies that contract with port drivers rather than hiring drivers as employees are continuing to pass the real costs of doing business to taxpayers and individual drivers**—costs such as health insurance, workers' compensation insurance, and investing in clean equipment.

By changing port trucking to a concession-agreement-based employee model, **the new strategy shifts the responsibility of investing in and maintaining cleaner trucks off of port drivers and onto trucking firms and their "upstream" customers**—international shipping lines, retail corporations, and other owners of the goods moved through the Port.

In the long run, the concession-agreements would require that trucking firms continue to invest in newer technology and provide ongoing maintenance. Many of the current environmental, healthcare, and public health costs that are borne by residents, workers, and the public at large would then be shifted to the trucking industry. For port drivers, it means the opportunity for improved income stability, employer-based healthcare, and workplace health and safety.

The Port of Oakland cannot modernize and position itself for sustainable growth over the next decade if it ignores the conditions exacerbated by the current port trucking system. **With sobering statistics such as 18 premature deaths annually in the Bay Area associated with port trucks, and at a health impact cost of over $154 million a year, the Port must act now.** Implementation of the recommendations presented in this memo—more stringent emission standards and an improved trucking system that allows the Port to enforce truck emissions reduction practices—will reduce the healthcare costs borne by the public, residents, and drivers. These measures to change the current system for port trucking could tangibly improve health conditions for drivers and residents in Oakland and beyond, and ultimately and most importantly, save countless lives.


2 PARKING
8AM TO 6PM
MON THRU FRI
EXCEPT VEHICLES WITH
AREA B PERMITS
FLXZ 434864
T768082
SSAT-POOL
FLEXI
-VAN
LEASING
FLEXI
-VAN

APPENDIX A: COALITION FOR CLEAN & SAFE PORTS ENVIRONMENT AND NEIGHBORHOOD IMPACT PROPOSED STANDARDS FOR PORT TRUCKING EMPLOYERS

September 29, 2008

Section I. Engine Emissions and Truck Replacement

A. Reduce emission of diesel particulate matter (PM) and oxides of nitrogen (NOx)

1. Trucks with pre-1994 model year engines must be scrapped by July 1, 2009, and replaced with trucks that meet or exceed 2007 CARB engine standards.
2. All 1994-2003 engine trucks must be retrofitted, with controls that reduce PM by 85% or more, by July 1, 2009.
3. All 2004-2006 engine trucks must be retrofitted, with controls that reduce PM by 85% or more, by December 31, 2009.
4. Trucks with pre-2007 model year engines must be scrapped by December 31, 2012, and replaced with trucks that meet or exceed 2007 CARB engine standards.
5. Twenty-five percent (25%) of the trucks serving the terminals must reduce greenhouse gas (GHG) emissions by at least 15% by December 31, 2008, 50% by 2010, and 75% by 2012.

B. Truck Replacement and Scrapping

1. Trucking companies must participate in an aggressive and user-friendly outreach and public relations program to educate drivers on options for replacing trucks as defined by the Port of Oakland and the Social Justice Committee.
2. Trucking companies must work with the Port of Oakland to compensate one of two parties: either the individual driver or a qualified concessionaire licensed motor carrier (LMC) which has purchased the truck from a driver or already owns a qualifying truck. Individual drivers must demonstrate that they are employees of a qualified concessionaire LMC.
3. Trucking companies must work with the Port of Oakland and the Social Justice Committee to set up a structure to entice drivers to take part in the scrappage program by ensuring fair compensation for their trucks. Specifically,
    - For a base rate, use the National Automobile Dealer Association (N.A.D.A.) value for the trucks or the value needed to be paid off on the loan, whichever is greater.
    - Provide an additional premium equal to 10% of the N.A.D.A. value of the truck, on top of the base rate described above.
    - Establish an absolute minimum level of compensation to any participating driver or LMC, regardless of the value of the loan or the N.A.D.A. value, to guarantee the oldest, dirtiest, and least financially valuable trucks are scrapped.
4. Trucking companies must work with the Port of Oakland and the Social Justice Committee to determine certified salvage yards in Northern Coast able to handle the influx of trucks to be scrapped.
5. When hiring an owner/operator in possession of a truck which does not qualify, due to age and/or physical condition, the LMC shall aid in straight buy-out of the vehicle with support from the Port of Oakland truck replacement fund.

Section II. Reducing Neighborhood Impacts of Port-related Trucks Operations.

A. Truck Routing

1. Trucking companies must ensure all drivers are aware of existing routes and affirm that drivers take routes where they exist, and stay off local streets and non-truck routes.
2. Trucking companies must abide by all state and local laws and ordinances to minimize health and environmental impacts of truck routing on communities affected by Port operations.
3. Trucking companies must install and use both Global Positioning System (GPS) and radio frequency identification (RFID) tags on all trucks.
4. Trucking companies must work with impacted residents, community, labor, environmental and advocacy organizations, the Social Justice Committee, the Port of Oakland, and the City of Oakland to develop a driver education program regarding truck routing and neighborhood impacts within two months of hire and on a biannual basis thereafter.
5. Trucking companies must work with the Port of Oakland, local law enforcement, and the Social Justice Committee to create a department and dedicated staff to document and file complaints from port-adjacent community members (and members of communities around port drayage corridors and routes) about trucks violating local laws or causing a nuisance in their neighborhoods.

B. Truck Parking

1. Trucking companies must provide evidence showing that all trucks are utilizing off-street parking outside residential neighborhoods when not in service to minimize environmental and health impacts to residents.
2. Trucking companies must comply with all local ordinances and regulations and ensure that trucks are not parked in neighborhoods in any residential area regardless of zoning.
3. Trucking companies must provide evidence that they are complying with the parking component of the Port of Oakland Truck Management Plan.

C. Truck Idling

Trucking companies must participate in an annual training with the Bay Area Air Quality Management District (BAAQMD) on the state idling law, certifying that each driver is aware of the following:

- Idling for more than five minutes is prohibited within borders
- Starting January 1, 2008, Sleeper berth trucks will no longer be allowed to idle for more than five minutes.
- No idling for any reason is permitted within 100 feet of any residential area.
- Violators may be fined up to $1000 per day and may face possible criminal charges.

D. Pedestrian Safety

Trucking companies must work with Port of Oakland (or any entity designated by the Port) and other regional multi-agency collaborations to ensure pedestrians are safe.

Section III. Implementation and Enforcement

RECOMMENDATIONS

Social Justice Committee

To monitor and enforce the Environmental Standards, the Social Justice Committee, similar to that of the Maritime Aviation Project Labor Agreement (MAPLA) program, will participate in determining compliance/noncompliance and initiate penalties and/or negotiate alternative solutions to maintain adherence to the policy. Trucking companies must work with the Social Justice Committee to comply with the policy.

The Social Justice Committee will:

1. Have designated seats for environmental, community, labor, and other groups (as voting members).
2. Include government agency and inter-agency representatives (as non-voting members) including CARB Enforcement; CARB Regulatory Representatives; BAAQMD; City of Oakland Traffic Enforcement/Commercial Vehicles Department; Alameda County Health Department. Representatives of County Supervisors (esp. 880 Corridor representatives); City of Oakland Public Works Department; Representatives from Mayor's Office.
3. Set violations, penalties, grievances, compliance, and monitoring.
4. Be funded by funds from contracts with the Port of Oakland.

The following are monitoring and enforcement mechanisms that should be put in place:

1. The Port of Oakland must contract with a third party to implement and oversee day-to-day monitoring and enforcement of this policy.
2. The 3rd-party contractor will work with the Port of Oakland and the Social Justice Committee to develop a clear scope of work.
3. The 3rd-party contractor will report to Social Justice Committee regularly.
4. All GPS, RFID, and geo-fencing tracking data as well as truck emissions audits and reports of trucking company violations must be made accessible to the public.
5. Truck emissions audits and reports should include GHG emission levels.
6. No excess truck idling shall occur while waiting to enter terminals or waiting within terminals. Each terminal shall have a designated employee to facilitate expeditious processing of trucks, containers, and chassis through the terminal. Each terminal shall implement a processing system such that truck drivers may stop in a designated area to turn their engines off and await further instructions or services (i.e. implement deli style take-a-number systems or approaches similar to rental car return areas). Any terminal causing a driver to wait more than one hour shall provide a designated sheltered area for those drivers.

APPENDIX B: METHODOLOGY FOR ECONOMIC VALUATION CALCULATION OF HEALTH IMPACTS AND DISEASE ASSOCIATED WITH PORT TRUCKS IN THE GOODS MOVEMENT INDUSTRY

We estimated the economic valuation of health impacts by air basin by starting with CARB's statewide estimates of health impacts (from premature death to school absence days) from all goods movement sources of pollution. We then adjusted the estimated costs of these impacts down to San Francisco regional air-basin level impacts, then to truck impacts (versus all sources), and finally to one specific type of truck, port trucks. We use a multiplier or an adjustment factor for each of these adjustments, described below, which we then combined into a single multiplier. While this methodology and its assumptions detailed below introduce uncertainty to our regional estimates, it is the best approximation given available published data.

We use this model to estimate San Francisco regional air basin health impacts from one particular source of goods movement pollution, port trucks, for 2005, and adjust the 2005 economic valuation per case to 2007 dollars.

The first "regional" multiplier (B1 in the table below) estimates the number of premature deaths associated with all sources of goods movement pollution in the air basin versus statewide. (CARB ERP, March 2006. Appendix A-73, Table A-13: Basic-Specific Mortality Effects Associated with Ports and Goods Movement). This multiplier is the CARB estimate of the number of premature death cases in the San Francisco Bay Area air basin divided by the number of total premature deaths in the state. We use only premature deaths (rather than all impacts) in this ratio because premature death accounts for 99% of the estimated economic valuation of all of the health outcomes in CARB's Goods Movement Emissions Reduction Plan.

The second "source" multiplier (B2 below) estimates the contribution of trucks versus other sources of pollution problems, including rail, ships, and other contributors to harmful emissions. (CARB ERP, March 2006. Appendix A-74, Table A-14: Mortality Effects Associated with Ports and Goods Movement: Contributions of Source Categories). This multiplier is the CARB estimate of the number of premature deaths that are caused by goods movement trucks divided by the number of total premature deaths in the state.

The third and last "port truck" multiplier (B3 below) is an adjustment to account for the relative contribution of port trucks among all goods movement trucks. (CARB ERP, March 2006. Appendix A-51, Table A-6-c). This multiplier is the port truck emissions divided by all truck goods movement emissions in the Bay Area (domestic and international long-haul trucks). This third "port truck" multiplier is confirmed by data from CARB estimating vehicle miles traveled by Port of Oakland trucks, within all heavy-duty diesel trucks traveling in the San Francisco air basin. Note that this third "port truck" multiplier measures only diesel PM and reflects 2001 data, while the other multipliers measure diesel PM as well as ozone and draws on 2005 data, and it is used here since it is the most recent data available.

Figure A1 is the same as Figure 1 in the report, with the added description of the three multipliers used and an added column with the combined multiplier. While the combined multiplier is for all ports within the San Francisco air basin, we assume that the Port of Oakland generates the vast majority of those emissions.

The economic value per case of each health impact is based on CARB's estimated value of one case in 2005 (CARB 2006, Table I - 10, pg 10; here, column D). CARB estimates the value of one case for all health impacts except hospital admissions using U.S. EPA compiled survey estimates of how much people are collectively willing to pay to reduce their risk of a certain health outcome (such as premature death)—a value they then adjust for real income growth, income elasticity, and inflation. CARB's estimated economic costs for hospital admissions are the direct cost of illness plus costs such as time lost from productive activity. CARB calculated work-day loss using California wage data. (See CARB 2006. Pg 10 and Appendix A-66.)

Our calculation of the number of premature deaths attributable to fine particulate matter from goods movement is based on CARB's May 2008 draft new methodology for estimating premature deaths from fine particulate matter. Our calculation found that the estimated number of premature deaths was nearly 70% higher than initially calculated, rising from 2,160 to 3,700 premature deaths caused by fine particulate matter from goods movement (CARB ERP, Methodology for Estimating Premature Deaths Associated with Long-term Exposures to Fine Airborne Particulate Matter in California, May 2008. Pg 37, Table 6). When added to CARB's estimate of 240 cases of premature death caused by ozone from goods movement (which is reasonable to assume did not change since 2005 since the 2008 CARB adjustment was for the calculation of premature death from fine PM only), the total number of cases of premature death caused by goods movement pollution in California adds up to over 3,900 cases (column A in Figure A1). While the new estimated numbers of cases are still in draft form from CARB and are still undergoing peer review as of publication of this report, these calculations are based on the latest draft data made available by CARB.

Figure A1: Calculations for Annual Economic Value of Statewide Goods Movement and San Francisco Air Basin Port Trucks*
*(*Port of Oakland makes up a large part of Bay Area Emissions.)*

	Statewide, All Goods Movement Sources (A)	Combined Multiplier (B)	San Francisco Bay Air Basin Port Trucks (2005) (C=A*B)	Economic Value per Case (2007 dollars) (D)	San Francisco Air Basin Port Trucks Total Cost (Rounded) (C*D)
Premature Deaths	3,940	0.0046	18	$8,387,106	$151,000,000
Hospital Admissions (respiratory)	2,000	0.0046	9	$36,096	$331,000
Hospital Admissions (cardiovascular)	830	0.0046	4	$43,528	$166,000
Asthma and other Lower Respiratory Symptoms	62,000	0.0046	284	$20	$6,000
Acute Bronchitis	5,100	0.0046	23	$448	$10,000
Work Loss Days	360,000	0.0046	1,650	$191	$320,000
Minor Restricted Activity Days	3,900,000	0.0046	17,875	$64	$1,100,000
School Absence Days	1,100,000	0.0046	5,042	$93	$471,000
Total Cost	**$34,000,000,000**	**0.0046**			**$153,000,000**

Calculation of the Multipliers used above are as follows:

Regional Multiplier: 2005 (B1)	**0.0917**	**Combined Multiplier (B = B1*B2*B3)**	**0.0046**
Source Multiplier: 2005 (B2)	**0.6250**	**Total Statewide, All Sources (Rounded) (A*D)**	**$34,000,000,000**
Port Truck Multiplier: 2001 (B3)	**0.0800**		

All of the other (than premature death) health impacts are based on CARB's original 2005 estimates in Goods Movement Emissions Reduction Plan (published in 2006; here column A).

While the new methodology in 2008 did not calculate new estimates for non-death health outcomes in California due to the goods movement, we continued to use the cases per year for 2005 (published in 2006; here column A). For this study, this is the closest approximation given available data because premature death accounts for 99% of the estimated economic valuation per case of all of the health outcomes measured by the U.S. EPA and CARB.

Because the assumptions and multipliers used introduce uncertainty, estimates are rounded to the first two or three significant digits and may not add up exactly due to this rounding.

Thank you to Jon Zerolnick and Kyle Arnone from the Los Angeles Alliance for a New Economy (LAANE) for sharing their methodology and data interpretation from previous reports and calculations. Thank you also to CARB staff for sharing explanations of published data.

APPENDIX C: WEST OAKLAND EMISSIONS INVENTORIES

There is limited data on port trucking operations and truck trips on local residential streets. As a result, the methodology used by CARB for the West Oakland Diesel Health Risk Assessment assumed that port trucks enter and leave Port property exclusively via freeway ramps closest to the Port, and that port trucks have very limited travel through neighborhood streets. **In reality, port trucks regularly use local West Oakland streets for a variety of reasons** – e.g., to avoid freeway traffic; to access repair and maintenance facilities, restaurants, and restrooms; and, at times, to park their cabs. For example, a University of San Francisco study of truck emissions in West Oakland neighborhoods found that, in an average day (24-hour period), 360 trucks crossed the 10th and Market intersection, in the heart of West Oakland and surrounded by residences.[54]

Furthermore, trucks traveling at **low speeds with starts-and-stops on residential streets in West Oakland generate more pollution**, much closer to where people live and breathe, than do trucks traveling at freeway speeds on local freeways. The assumption that port trucks enter and leave Port property exclusively via freeway ramps closest to the Port does not account for additional port truck travel through the community and associated pollution from slow travel. As a result, this unaccounted travel likely resulted in the underestimate of total emissions and risks attributed to trucks that service the Port.

In a 2003 emissions inventory of diesel sources in West Oakland that integrated four studies of diesel pollution sources specifically in West Oakland,[55] the Pacific Institute very conservatively estimated port truck emissions is 125 pounds of diesel PM per day (or 20.6 tons per year), comprising **17% of the total diesel PM emissions** estimate (740.7 pounds per day) for West Oakland (see Figure 3). The studies consisted of two developed for the Port[56,57]; one for City of Oakland Environmental Services Division[58]; and one for the Pacific Institute.[59]

APPENDIX D: PUBLIC COST OF HEALTHCARE FOR THE UNINSURED TRUCK DRIVERS

In the estimate of public costs of healthcare for the uninsured, the out-of-pocket expenses are subtracted from the overall spending on uninsured to get a truer value of public costs. The methodology for this calculation used both surveys of port truck drivers and county-wide estimates for the public cost of healthcare for the uninsured.

First, we estimated the cumulative spending by county on uninsured and the number of uninsured people from the following source: Kominski, Gerald F., Dylan H. Roby, and Jennifer R. Kincheloe. *Cost of Insuring California's Uninsured.* UCLA Health Policy Brief. May 2005.

Seventy-eight percent (78%) of port truck drivers live in the nine-county San Francisco Bay Area, and therefore we assume that the uninsured drivers also access healthcare services in the same geographic area.

We then calculated an average cost per person to pay for the uninsured in the nine-county Bay Area by dividing the total spending by indirect spending and indirect subsidies for healthcare per year ($1.6 billion) by the total number of uninsured people (721,000). This yielded a total of $2,234 average cost per person per year spent on the uninsured.

Since we wanted to isolate the public costs, we then subtracted the statewide average out-of-pocket expenses per year for uninsured adults ($506) and uninsured children ($192). This resulted in an average per-uninsured annual cost of $1,728 per adult and $2,042 per child.

We then multiplied these costs per uninsured adult and child to the estimated number of uninsured port truck drivers, spouses, and children based on EBASE's 2007 survey of port truck drivers. The survey found that 62% of truck drivers were uninsured, 53% of spouses were uninsured, and 60% of children were uninsured or relying on publicly funded insurance.

ENDNOTES

[1] Drawn from California Air Resources Board (CARB) (2006) "Quantification of the Health Impacts and Economic Valuation of Air Pollution From Ports and Goods Movement in California." *Appendix A in Emission Reduction Plan for Ports and Goods Movement.* April 20, 2006:14. http://www.arb.ca.gov/planning/gmerp/march21plan/appendix_a.pdf

[2] California Air Resources Board, 2006. *Emissions Reduction Plan for Ports and Goods Movement in California.* April 20, 2006. Table 1, p.ES-3, and Figure II-2, p.15. Figure II-2 illustrates that goods movement is responsible for 75% of all diesel particulate matter pollution in California, while Table 1 indicates that trucks are responsible for 66% of this portion generated by goods movement, leading to the conclusion that goods movement trucks are responsible for 50% of all diesel PM pollution generated in California.

[3] The estimated diesel PM emissions from trucks at the Port of Oakland are over 10 times higher than those at the other Bay Area ports combined. CARB. 2008. *Regulation to Control Emissions from In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks. Appendix B, Emissions Estimation Methodology for On-Road Diesel-Fueled Heavy-Duty Drayage Trucks at California Ports and Intermodal Rail Yards.* Compare drayage truck diesel PM emissions estimates in Tables III-9 (Port of Oakland) and III-15 (other ports in San Francisco Bay Area).

[4] CARB, 2006, Pg ES-12.

[5] *Facts About Drayage Truck Regulations: Reducing emissions from goods movement in California.* California Air Resources Board, February 7 2008. Available: https://secure.cascadesierrasolutions.org/downloads/css_library/drayagetruckfactsheet.pdf.

[6] CARB reports 3,700 premature deaths due to diesel PM, plus an original 240 premature deaths due to ozone reported in 2006. See Appendix B for more on the methodology of this calculation.

[7] CARB, 2006. *Emissions Reduction Plan for Ports and Goods Movement in California.* April 20, 2006. Figure II-2, p.15.

[8] CARB, 2006. Table 1, P.ES-3.

[9] This statewide calculation of economic valuation of health outcomes related to goods movement is calculated using two variables: 1) estimated number of cases of premature deaths from the CARB ERP, Methodology for Estimating Premature Deaths Associated with Long-term Exposures to Fine Airborne Particulate Matter in California, May 2008. Pg 37, Table 6; and 2) estimated economic valuation, inflated to 2007 dollars, for other health outcomes from CARB. *Emission Reduction Plan for Ports and Goods Movement in California*. March 2006. Pg 10, Table I-5: "Values for Health Effects per Case of Mortality, Hospital Admissions, and Minor Illnesses (2005 dollars)."

[10] The methodology CARB uses to arrive at the economic value per case of premature death is derived from EPA studies of survey recipients' "willingness to pay" to avoid a health outcome. While these are technically theoretical values, it is the closest approximation of the "cost" of these health outcomes due to diesel PM.

[11] Missed school and work days, as well as minor restricted activity days, have an economic cost due to overall lost productivity and an estimate of the parents lost wages. Hospital admissions estimates include the cost of illness plus "associated costs such as loss of time for work, recreation, and household production." CARB, 2008. Appendix A-66. See Appendix B for further explanation.

[12] See Appendix B for more information on methodology.

[13] CARB, 2006, Pg ES-12.

[14] The broader "goods movement" definition of trucks could be responsible for an estimated 92% of all truck emissions. (Based on CARB's 2008 calculations from heavy heavy trucks except the single-unit trucks in the *Statewide Truck and Bus Regulations*, Appendix G, P:G-63, Table 26.)

[15] CARB, 2006 (Table I-10, pg 10).

[16] California Air Resources Board. 2008. *Diesel Particulate Matter Health Risk Assessment for the West Oakland Community.* December 5, 2008.. Available on-line at http://www.arb.ca.gov/ch/communities/ra/westoakland/documents/westoaklandreport.pdf. Our estimated population of West Oakland is approximately 22,000 residents.

[17] Communities for a Better Environment. Cumulative Impacts in East Oakland: Findings from a community-based mapping study. September 2008. Available: http://www.cbecal.org/pdf/cumulative_impacts_finalFULL.pdf.

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[33] EBASE's survey of Port of Oakland drivers found that their median driver wage is $10.69 an hour, well below the $17 an hour necessary to cover basic monthly necessities in the Bay Area. Only 12% of port drivers make more than this survival wage. EBASE, 2007.

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