

PAYING WITH OUR HEALTH

The Real Cost of Freight Transport in California

**A Ditching Dirty Diesel Collaborative Report
by the Pacific Institute**

in conjunction with

Bay View Hunters Point Community Advocates | Center for Community Action and Environmental Justice | Coalition for Clean Air
East Yard Communities for Environmental Justice | Fresno Metro Ministries | Healthy San Leandro Collaborative
International Longshore and Warehouse Union Local 10 | Long Beach Alliance for Children with Asthma
Merced Alliance for Responsible Growth | Natural Resources Defense Council | Neighborhood House of North Richmond
Shafter Association of Irrigated Residents | West Oakland Environmental Indicators Project | Wilmington Coalition for a Safe Environment

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November 2006

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ABOUT THE PARTNERS

The Ditching Dirty Diesel Collaborative is a Bay Area collaborative of over a dozen environmental justice and health organizations who have been working together since October 2004 to reduce diesel pollution and improve health in environmental justice communities throughout the Bay Area. The Ditching Dirty Diesel Collaborative has three active areas of work: diesel idling, goods movement, and capacity building. The Steering Committee of the Ditching Dirty Diesel Collaborative includes Bayview Hunters Point Community Advocates, BVHP Health and Environmental Task Force of SFDPH, Contra Costa Health Services/Contra Costa Asthma Coalition, Ethnic Health Institute, Healthy San Leandro Collaborative, Natural Resources Defense Council, Neighborhood House of North Richmond, Pacific Institute, Regional Asthma Management and Prevention Initiative, and West Oakland Environmental Indicators Project.

The Pacific Institute, celebrating its 20th anniversary, is an independent, nonprofit center created in 1987 to conduct research and develop solutions to the related problems of environmental protection, economic development, and human health. Our Community Strategies for Sustainability and Justice Program was launched in 1995 to assist communities in addressing critical human health and environmental issues. Our goal is to empower community residents so that they can have a real say in their future. Through our numerous community-based participatory research projects, we have helped community residents to ask questions, conduct research, and develop solutions to advocate for improvements in their quality of life. www.pacinst.org

The Natural Resources Defense Council is a national nonprofit organization of scientists, lawyers, and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has 1.2 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles, and San Francisco. www.nrdc.org

Bay View Hunters Point Community Advocates is dedicated to improving the quality of life of residents of Bayview and Hunters Point in San Francisco, CA through advocacy, information, community organizing, education, and economic development and projects such as the “Alternative Community Energy Project” and the “Windows Project,” which provides outreach and education to residents about pollution issues regarding the Hunters Point Shipyard.

The Center for Community Action and Environmental Justice is a nonprofit organization based in Riverside which brings groups of people together to find opportunities for cooperation, agreement, and problem-solving to build a strong movement for change that recognizes the connections between environmental and worker exploitation, and oppression on the basis of race, gender, sexual orientation, and class. www.ccaej.org

The Coalition for Clean Air is dedicated to restoring clean healthful air to California by advocating for responsible public policy, providing technical and educational expertise, and promoting broad-based community involvement. www.coalitionforcleanair.org

East Yard Communities for Environmental Justice is a nonprofit organization working towards a safe and healthy environment for communities by promoting community participation in making policies and the implementation of environmental justice guidelines for local, state, and federal agencies and industry, through direct democratic decision-making and collective action. www.eastyardcej.org

The Fresno Metro Ministry is an ecumenical and interfaith nonprofit engaged in community problem-solving, advocacy, and community organizing around several primary community issues including environmental justice, hunger and nutrition policy, and access to health care. www.fresnometroministry.org

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The Healthy San Leandro Collaborative was created to improve the quality of life and the quality of air for families in San Leandro, CA, a community heavily impacted by the Oakland Airport and truck thoroughfares. www.wafaa4sanleandro.us

The International Longshore and Warehouse Union (ILWU) Local 10 consists of 1,200 members who are longshore workers at the Port of Oakland, the Port of San Francisco, and several other ports in the Bay Area. www.ilwu.org

The Long Beach Alliance for Children with Asthma is a broad-based community coalition working towards changing the profile of childhood asthma in the cities of Long Beach, Carson, San Pedro, and Wilmington through improved health care delivery and quality, outreach, education, support systems, and living environments and through changes in policy at all levels. www.lbaca.org

The MARG Wal-Mart Action Team is dedicated to protecting our quality of life in Merced by preventing the approval of a Wal-Mart distribution center in our community. www.mercedalliance.org

The Neighborhood House of North Richmond, based in Western Contra Costa County, is a private, nonprofit, multi-service agency, with a long community-based tradition of identifying those in need and establishing the resources to address their problems. www.neighborhoodhouse-online.org

The West Oakland Environmental Indicators Project is a community-based nonprofit organization dedicated to using information to improve the quality of life and health of residents living the community of West Oakland, adjacent to the Port of Oakland, through capacity building, leadership development, and community-based participatory research. www.neip.org

The Wilmington Coalition for a Safe Environment works in the community of Wilmington, CA to mitigate, reduce, and eliminate public exposure and public health impacts caused by air, land, and water pollution generated by the Port of Los Angeles, the Port of Long Beach, international cargo and cruise ships, the petroleum industry, energy sources, and the goods movement transportation industry. www.coalitionfase.org

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EXECUTIVE SUMMARY

The Costs of Freight Transport

Imagine where your DVD player has been. Depending on the brand, it may have been produced in Korea, packaged in China, packed in a shipping container, and freighted across the Pacific Ocean on a ship—and then arrived in Long Beach, where it was unloaded by a crane and placed on a truck, taken to a railyard, then to a distribution center, packed onto another truck, and unpacked at the store, where it landed on a store shelf. The ships, cranes, trucks, trains, distribution centers, and airplanes that move our imports and exports make up a complex system of freight transport in the United States.

In this report we show that pollution from this system of freight transport severely burdens Californians, especially the predominantly low-income people of color living close to freight transport hubs. We present data on the high and often hidden health, economic, and social costs that are not accounted for by the freight transport industry. And we tell the stories of people who live, work, and play near California's freight transport hubs. These Californians write what it feels like to live underneath the shadow of seaport cranes, to wake up each morning to the acrid smell of diesel exhaust, to walk to school amid the rumble of slow-moving trucks, to work in an industry that you know is bad for your health, or to go to bed after a long day of tending to your asthmatic child.

The cost of using cleaner equipment and safer technology is a small fraction of the health costs borne by California residents.

The good news is that there are solutions to clean up the system of freight transport and improve the health of California residents. The cost of using cleaner equipment and safer technology is a small fraction of the health costs borne by California residents. We demonstrate that there is plenty of money in the freight transport system to clean up the diesel pollution and health impacts that are left in the wake of the ships, trucks, and trains delivering products to store shelves. This finding is encouraging: California can have its freight transport industry while protecting the health of its residents.

Since the amount of goods transported through California is projected to nearly quadruple between 2000 and 2020,¹ now is the time to implement a range of practical measures that can ensure that our neighbors, friends, and families can continue to enjoy the benefits of our vibrant

economy while helping all of us breathe easier and live healthier lives.

Summary of Findings

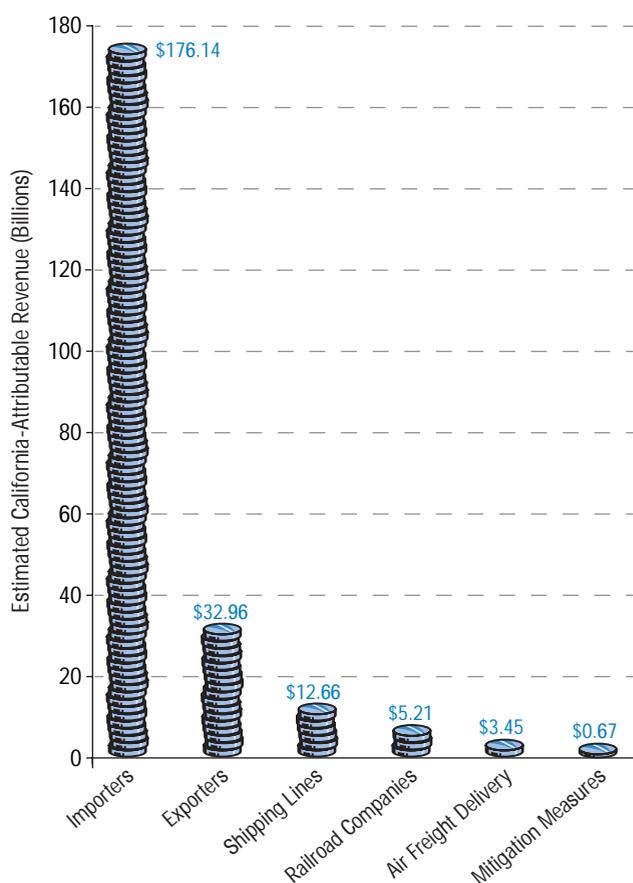
Over the past year, a coalition of community-based organizations and non-governmental organizations came together to develop a plan to improve health in communities suffering from the pollution of freight transport. We wanted to understand how much it would cost to clean up this system, which players were obtaining the benefits of passing on health costs to Californians, and whether the system of freight transport and its beneficiaries could afford to make the necessary changes to protect the health of Californians. Through our research, we found that:

- **Freight transport will cost California residents \$200 billion over the next 15 years in health costs, and most of this is borne by low-income communities of color near freight transport hubs.** The California Air Resources Board (CARB) estimated that freight transport each year causes 2,400 people to die prematurely; 2,830 people to be admitted to the hospital; 360,000 missed workdays; and 1,100,000 missed days of school. The medical and social costs of these impacts are an environmental injustice that affects predominantly low-income communities of color in California.
- **Using cleaner equipment and better technology for freight transport will cost just \$6 to \$10 billion over the next 15 years.** CARB estimates that for every dollar invested in cleaning up pollution from freight transport, \$3 to \$8 in health costs will be saved.
- **The costs of cleaning up pollution are only a fraction of the benefits derived from the transport of freight.** The good news is that if the major corporations benefiting from freight transport through California paid less than a penny for every dollar in revenue, we could clean up the system of freight transport in California. In fact, cleaning up freight transport in California would cost less than a penny for every dollar in estimated California-dependent revenue made by Wal-Mart alone.

- **There is a range of exciting and effective solutions that can ensure that the health of Californians is protected while freight continues to be moved.** Examples include ensuring that companies internalize the costs of doing business, focusing emissions reductions on the most-impacted communities, and involving communities in decision-making around freight transport expansion.

Consider your globe-trotting DVD player: A few cents of its \$100 price tag could lessen the impacts on millions. California could lift the burden off its communities and continue to have a thriving freight transport industry. With exponential growth expected in this industry, it is time for California to do right by its residents.

Figure ES1: Comparison of Estimated California-Dependent Revenue to Health Mitigation Costs



Two Long Beach Mothers

by Oti Nungaray and Adriana Hernandez

Oti Nungaray

RUMBLE, RUMBLE. That's the hum of my community, so close to the nation's largest port complex. The air tickles your throat, but my daughter and I are not laughing. We've been living in Long Beach for ten years. The doctor first diagnosed her with asthma when she was six. It's been traumatizing to watch my child suffer.

Through my involvement with the Long Beach Alliance for Children with Asthma, I've learned about managing my child's asthma, including controlling triggers inside the home. Unfortunately, it's impossible to control the environment outside, when you live next to the largest fixed source of air pollution in greater Los Angeles.



These companies make a lot of money while I spend money on medicine and miss work and my daughter misses school.

I believe there are solutions to these problems. I don't believe industry's claim that reducing pollution will hurt our economy. These companies make a lot of money while I spend money on medicine and miss work and my daughter misses school.

Adriana Hernandez

I LIVE NEAR I-710: a parking lot of nearly 50,000 cargo trucks daily. Next door is Wilmington, an area pockmarked with refineries. We get hit with pollution from all sides. My youngest son was born with a closed trachea and his left vocal cord paralyzed; he still takes speech classes. He also suffered from severe asthma attacks. I had to medicate him and connect him to a breathing machine, feeling desperate that my child couldn't breathe.



Lots of companies are making lots of money, while we pay for medicines, insurance pays for doctor's visits, and the government pays when children miss school. These companies are selfish to not pay the pennies needed to help reduce this pollution.

In doctor visits, medication costs, and a mother's anguish, increased freight transport in Long Beach costs us too much.



CHAPTER 1 Introduction

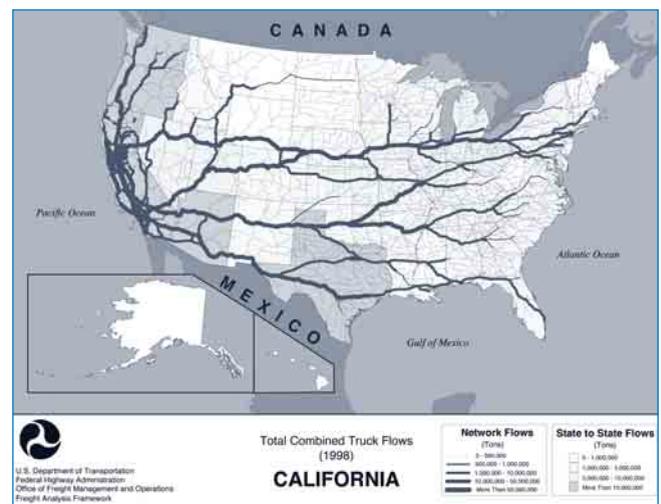
Freight transport is a broad term that applies to the movement of for-sale products from the location of their manufacture or harvest to their final retail destination. U.S. residents all benefit from the availability of imported items in stores, from eating a plum out of season to buying cheaper clothes, sneakers, and electronic items made in Asia.

Many U.S. companies also benefit from being able to ship their goods overseas. Freight transport provides benefits to residents, businesses, and producers living hundreds, even thousands, of miles away. But the health and quality of life costs of freight transport are concentrated in specific areas, particularly the communities living near seaports, airports, railyards, highways, and distribution centers.

A. THE CALIFORNIA PERSPECTIVE

California plays a huge role in the transportation of freight across the United States and the entire world. The amount of goods transported through California is projected to nearly quadruple from 11 million cargo container units in 2000 to 42 million in 2020.² Improving the movement of goods through California was identified as a high priority by Governor Schwarzenegger, and in

Figure 1: Total Combined Truck Flows to/from California, 1998



controversial Draft Framework for Action³ in March 2006, laying out a plan for freight transport capacity expansion, security improvements, and public health protections.

As community organizations and their supporters, we found the State's Goods Movement Action Plan lacked a clear strategy to fund the approaches and technologies needed to clean up pollution from freight transport and protect health. Importers, shippers, and other stakeholders say the cost of preventing the harm caused by freight transport would be too economically burdensome.

The purpose of this report is to 1) identify the health costs generated by the system of freight transport and the communities that are most affected; 2) provide a voice to affected Californians; 3) profile industries benefiting from the freight transport system; and 4) assess whether the costs of implementing measures to protect health truly present an insurmountable barrier to the companies most benefiting from freight transport through California. While the health costs of freight transport to California residents are extreme, the cost of protecting health is relatively small. Businesses benefiting from the system of freight transport have more than enough funds to implement health protective measures without harming their bottom line or the economy.

Sidebar:

Goods Movement versus Freight Transport

When the State of California released its plan to ease the impact of international trade on California's global gateways, it introduced the term "goods movement." This was a new term for many of the residents living near marine ports or railyards, who did not associate the ships belching diesel soot or the trucks idling outside their windows or the trains rumbling through the night with the concept of "goods." The concept of goods movement begs the question: good for whom?

In this report, we choose to use the more traditional term "freight transport," which has a longer history and a clearer definition: the transport of cargo by a commercial carrier via ship, truck, train, or plane. Freight transport is most recognizable as the millions of sealed massive cargo containers making their way on our state's freeways, rail lines, and coastal waters.

B. THE HUBS

The transportation infrastructure that supports the movement of cargo in and out of California is principally comprised of major hubs: seaports, airports, highways, rail lines and railyards, and truck distribution centers. California's eight major seaports transfer containerized cargo, measured in twenty-foot equivalent units (TEUs), from ships to trucks and trains. The average container we see on ships, trucks, or trains is two TEUs in size. In 2004 California's seaports processed over 15 million TEUs, or 42% of all U.S. container trade.⁴ The value of these goods was nearly \$290 billion. Some seaports transfer bulk cargo like coal, cement, crude oil, chemicals, and automobiles, or loose cargo—also called break bulk—like lumber, steel, or newsprint. Appendix 1 lists a table of the major seaports in California, their size, and major materials transferred.

The Ports of Los Angeles and Long Beach are the largest containerized cargo ports in the nation, and import far more containers than they export.^{5,6} The Port of Oakland is the fourth-largest containerized port in the country, and exports slightly more goods than it imports.⁷ The Port of San Francisco primarily handles break bulk commodities and some containerized goods,⁸ while the Port of Richmond primarily handles liquid and dry bulk commodities and automobiles.⁹ The Port of Stockton¹⁰—California's fastest-growing port—handles mostly agricultural goods and bulk commodities, while the Port of Hueneme primarily handles fruit and automobiles.¹¹ Almost all goods are imported and exported on ships that exclusively carry cargo.

Airports are another major hub in the freight transport system, although they are not included as part of the state's assessment of the health impacts of goods movement. While the volume and weight of goods traveling via airports is considerably smaller than those traveling through seaports in California, their value is nearly half that of goods coming in through seaports. The value of all imports and exports through California airports added up to \$128.6 billion in 2004,¹² which does not include the value of goods transported domestically. California's four major cargo airports, Los Angeles, San Francisco, Oakland, and Ontario, moved over 3.7 million metric tons of air freight in 2005.¹³ Cargo is carried by both passenger airplanes and exclusive freight delivery service providers (such as FedEx, UPS, and DHL).

Once goods arrive at seaports and airports, they are transferred onto either trains or trucks. The network of rail lines and highways that crisscross the state is a crucial

component of freight transport. So too are the hubs for these two modes of transportation. Trains rely on railyards for storage and repairs and as coordination sites for operations. Most rail operations in California are through the Burlington Northern Santa Fe Railway and Union Pacific Railroad companies, together operating 14 major railyards in Long Beach, Los Angeles, Oakland, Richmond, Sacramento, and several other cities.¹⁴ Trucks traverse the state on heavily trafficked thoroughfares such as the I-5 corridor through the Central Valley and the I-710 in Southern California. In addition, a number of intermodal facilities throughout the state transfer cargo from truck to train or vice versa. Distribution centers are also a major hub in the system of freight transport, attracting hundreds to thousands of trucks a day to unload, unpack, and upload cargo.

C. SNAPSHOT: A TOY STORY¹⁵

Olive's seventh birthday is weeks away. She has her heart set on a doll she saw at the toy store a few weeks ago, and she has already decided that she will name it Kathy. Before that doll can end up in the dollhouse that adorns Olive's suburban Chicago bedroom, Kathy is going to have to go on a bit of a journey.

Kathy is assembled and packaged in China and packed with 20,000 others into a 40-by-8-foot container. The container

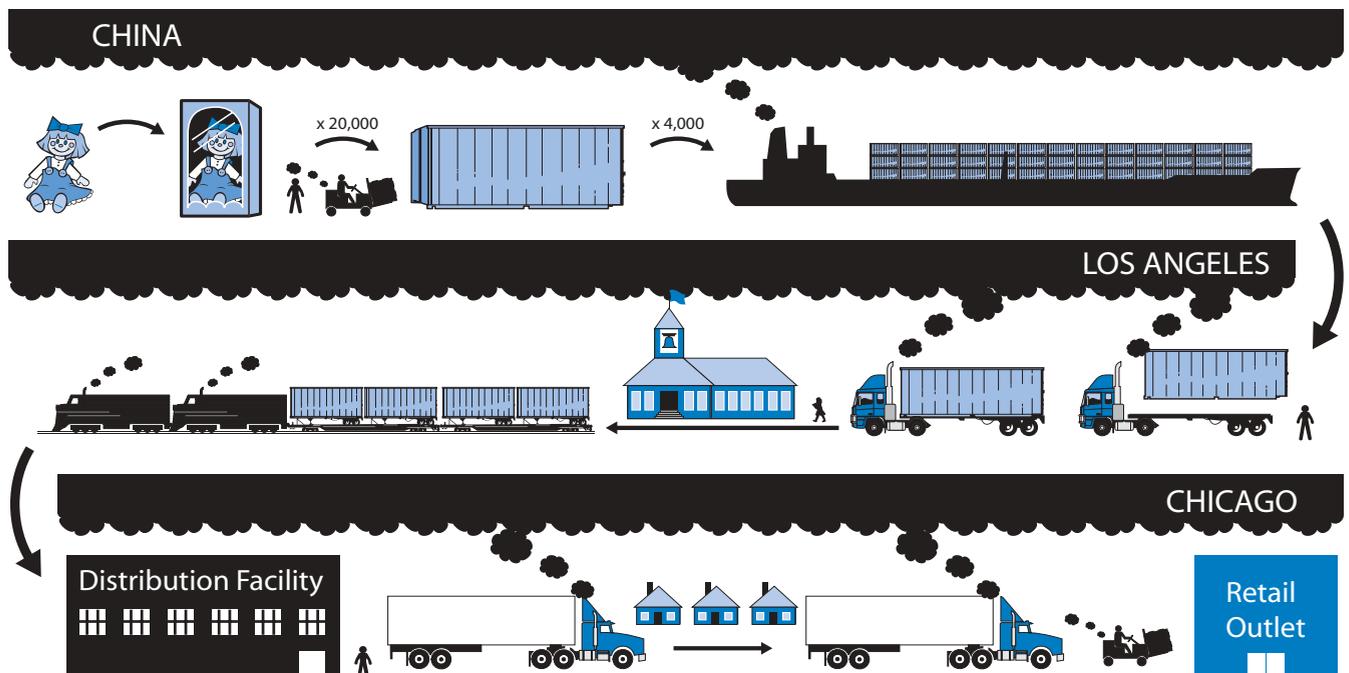
is loaded onto a marine vessel holding 4,000 other containers carrying dolls, shoes, and electronics. Fueled by low-quality bunker fuel, the ship leaves Shanghai and chugs across the Pacific Ocean, belching nitrogen oxides, sulfur oxides, particulate matter, and other pollutants all the way.

Weeks later, Kathy arrives at either the Southern California Port of Los Angeles or Long Beach, which together receive 36% of all U.S. containerized imports. She and the other 20,000 dolls are unloaded by longshore workers. Diesel soot from the ship, the Port's diesel machinery, and the hundreds of idling trucks coats the workers. Olive's doll doesn't get sooty, but the longshoremen will use baby wipes on their hands and faces before they go home.

Kathy takes a ride in the back of a truck to a railyard. On the way she and her friends pass many other children; in fact, the railyard is one-quarter of a mile from schools and homes. Kathy's container is placed on a freight train, pulled by a diesel locomotive. Alternatively, some of the dolls from Kathy's factory are placed on a big-rig truck and sent for repackaging to a mega-warehouse 50 miles from the ports.

After Kathy's train trip, her container is unloaded in a distribution facility. Then, after weeks of being on the move, Kathy finally is trucked to her destination, a big-box retailer in suburban Chicago. By this time, she has traveled more than 8,000 miles, far more than Olive ever could imagine, on diesel-burning conveyances the entire trip.

Figure 2: A Toy Story



Wheezing in West Oakland

by Margaret Gordon

STANDING AT THE WEST OAKLAND BART platform in early September 2005, I looked over the Port of Oakland. A huge vessel stacked with black, red, and gray Lego-like containers was slowly cruising into the port of call.

I've lived in West Oakland for 14 years, yet this was the first time I'd seen a ship come to harbor. When black smoke curled from the top of the ship, the thrill quickly faded. I knew what that black smoke does to the health of West Oakland residents.

I live less than a mile from the Port in a second-floor apartment along a main thoroughfare for trucks traveling between the Port and the freeway. Three years ago, I was standing in my bedroom with my window open. A truck was parked outside, idling. I started coughing and choking. Within two minutes, I was having an asthma attack. Without my inhalers I could have ended up in the emergency room.

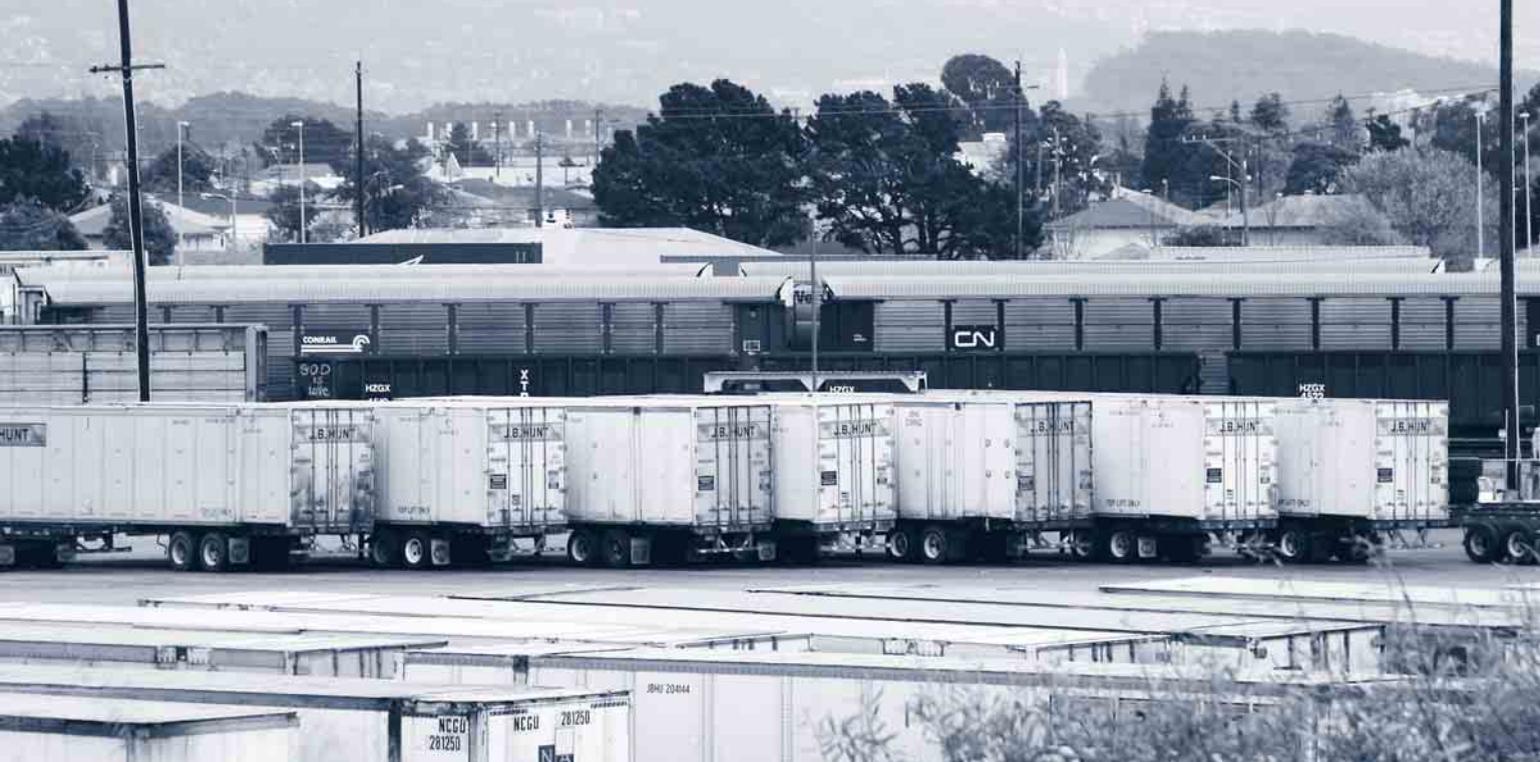
I was standing in my bedroom with my window open. A truck was parked outside, idling. I started coughing and choking. Within two minutes, I was having an asthma attack.

Many of my neighbors have similar stories. West Oakland children are seven times more likely to be hospitalized for asthma than the average child in California. A 2004 West Oakland Community Health Collaborative health survey found that 64% of children in the survey area did not have a regular place to go for medical care. Almost 40% of adults surveyed did not have health coverage — an alarming number considering the health threats presented by excessive diesel truck fumes.

Freight transport will become a bigger problem as the Port expands exponentially. While many benefit from cheaper goods, West Oakland residents pay with more trucks, ships, and trains. Plans for Port expansion are fairly specific, but there are no plans to protect the health of Oakland residents. Until the Port develops a strategy that includes greater profits *and* clean air, I will pack my inhaler wherever I go.

Increased freight transport in West Oakland is costing me and my neighbors in asthma attacks, emergency room visits, and unsafe streets.





CHAPTER 2

The Problem with Freight Transport

A. HEALTH IMPACTS

Freight transport in California is powered almost exclusively by diesel engines, many of which are old and dirty. The diesel trucks, trains, ships, and equipment used to move goods around the state emit numerous pollutants. Diesel exhaust is a major source of both diesel particulate matter (PM) and nitrogen oxides (NOx) pollution. In all, diesel exhaust can contain an estimated 450 different chemicals, 40 of which are listed by the California Environmental Protection Agency as toxic air contaminants that are dangerous to health even at extremely low levels. There is no level at which these pollutants are considered safe.¹⁶

Freight transport contributes significantly to ambient air pollution in California. In 2005, freight transport activity (excluding air cargo) contributed about 30% of the total statewide NOx emissions and a stunning 75% of all diesel PM emissions in the state.¹⁷ Diesel particulate matter—microscopic particles produced by combustion—is among the most toxic air pollutants. Sometimes diesel particles can be seen as black soot coming out of diesel vehicles, but most of the time the particles are so small they cannot be seen by the naked

Because diesel soot is so small, it can carry toxic chemicals deep into the lungs where our bodies have a harder time removing them.

eye. Particulate matter is categorized in terms of the size of individual particles—particles referred to as PM₁₀ have a diameter of 10 microns (a millionth of a meter) or smaller, while PM_{2.5} particles are 2.5 microns or smaller in diameter. Most diesel particulate matter, about 80-95%, is less than 1 micron in size or about 60-100 times smaller than the width of a human hair.¹⁸ Many other toxic substances in diesel exhaust can also attach onto diesel particles. Because diesel PM is so small, it can carry toxic chemicals deep into the lungs where our bodies have a harder time removing them. The ultrafine particles are so small they can also enter the bloodstream directly, where toxins on those particles may have direct contact with body tissues.¹⁹

Diesel exhaust is associated with a long list of health problems. These include early death (from effects on the cardiopulmonary system, lung cancer, and infant mortality), respiratory problems (including asthma and bronchitis), heart attacks, and reduced birth weight and premature birth.²⁰ Of all air pollutants, diesel exhaust poses the greatest cancer risk to Californians. The South Coast Air Quality Management District estimates that 70% of all airborne cancer risk comes from breathing diesel exhaust.²¹ Each year in California, freight transport causes 2,400 people to die prematurely; 2,830 people to be admitted to the hospital; 360,000 missed workdays; and 1,100,000 missed days of school.²²

Many studies have shown that diesel exhaust can irritate the nose, sinuses, throat, and eyes; damage the respiratory system; and potentially cause or aggravate allergies.^{23,24}



Diesel exhaust leads to inflammation of the airways that may cause or worsen asthma and increase the frequency and severity of asthma attacks.²⁵ Children are at particular risk from air pollution. Their lungs are still developing and their airways are narrower than those of adults, and they often play outdoors during the day and thus may have greater exposure. Studies have shown that children raised in heavily polluted areas have reduced lung capacity, prematurely aged lungs, and an increased risk of bronchitis and asthma compared to children living in less-polluted areas. Air pollution created by diesel exhaust has also been implicated in pregnancy outcomes, including reduced birthweight and premature delivery.²⁶

B. ENVIRONMENTAL JUSTICE COMMUNITIES

Freight Transport Hubs

Diesel pollution is significantly higher where the freight transport industry is concentrated around seaports, airports, highways, railyards, and truck distribution centers and thoroughfares. Numerous studies show that diesel pollution is highest within 500-1,000 feet of sources like freeways.²⁷ This means that those California residents living closest to hubs in the freight transportation system are at greatest risk.

Transportation hubs are “magnet sources” of pollution. Although the physical buildings that comprise these facilities do not generate significant quantities of pollution by themselves, the overall facility attracts large numbers of vehicles that collectively produce very large amounts of air pollution. As a result, these hubs effectively become large stationary sources of pollution. Numerous modeling and monitoring studies have confirmed the disproportionate risk faced by residents living near hubs in the freight transport system.

- **Seaports.** A recent California Air Resource Board (CARB) study of diesel pollution from port terminals in Los Angeles and Long Beach concluded that cancer risks associated with the terminals alone exceeded 500 in a million.²⁸ This risk level is 500 times higher than what is considered acceptable by the federal government and does not include elevated risks from thousands of diesel trucks serving the ports. Cancer risks attributable to port terminal pollution remained elevated, at 50 per million, as far as 15 miles away from the terminals. The CARB study also estimated a number of non-cancer health impacts from the two ports for nearby neighborhoods, including 67 premature deaths and 41 hospital admissions for respiratory and cardiovascular causes in 2005 alone.
- **Railyards.** Locomotives are incredibly polluting, for several reasons. Emission standards for rail engines lag far behind those for trucks and other diesel engines. To make matters worse, many locomotives tend to be very old, predating the first standards. Union Pacific operates almost 500 switching locomotives that are on average 30 years old.²⁹ A 2004 CARB health risk assessment of a large railyard in Roseville, a suburb of Sacramento, found very high cancer risks from diesel exhaust within 1,000 feet of the facility.³⁰ Air monitoring done by the South Coast Air Quality Management District in the



City of Commerce, which is home to two major railyards, showed high levels of elemental carbon (used as an indicator of diesel exhaust), translating to cancer risks of 2,000 per million,³¹ more than 2,000 times that which is considered acceptable by the federal government.

- **Distribution Centers.** CARB modeling has found that diesel pollution from distribution centers can also greatly elevate cancer risks to nearby residents.³² In 2001, the South Coast Air Quality Management District conducted air monitoring in Mira Loma, a community with a concentration of distribution centers, showing greatly elevated PM₁₀ levels compared to elsewhere in the area. They discovered levels of elemental carbon (an indicator of diesel exhaust) that translated to cancer risks of about 1,600 per million, similar to railyards described above.³³
- **Freeways and Heavy Trucking Corridors.** Dozens of studies have shown adverse health impacts among people who live, work, study, or play close to high-traffic roadways. CARB air quality and risk analyses show elevated cancer risks near freeways.³⁴ Impacts appear to be worst near roadways with heavy diesel truck traffic, and children are particularly vulnerable.³⁵ Findings from recent studies demonstrate that asthma symptoms increase with proximity to roadways,³⁶ and those living within 650 feet of heavy-traffic and heavy-truck-volume roadways experienced increased asthma

Richmond Parkway: *A Lousy Neighbor*

by Lee Jones



NORTH RICHMOND HAS always been an industrial wasteland, and goods movement has broadened its scope. I bought a home in North

Richmond in 1999 after I retired. My home lies just a few blocks from the Chevron oil refinery and the Richmond Parkway. I can see the train tracks and yard from my back door. With the increased truck and train traffic the air pollution has reached unimaginable heights. I see and hear the trucks all day and all night, and thousands pass by my home everyday.

I see and hear the trucks all day and all night.

Soot collects on the sides of my house from the diesel trucks running on the parkway. When I participated in an indoor air study, my home had three times more black soot than the home in Lafayette that was tested, and it was the highest in the test. My monitor went through the roof showing the dramatic difference in air quality for the residents of North Richmond who live on a freeway and residents in neighboring town and cities. We need change here, and we don't have time to wait.

hospitalizations.³⁷ A recent Bay Area study showed links between elevated levels of pollution and health impacts, including asthma and bronchitis, among children within 1,000 feet downwind of freeways, despite “good overall regional air quality,”³⁸ while a study of children in San Diego showed that those living within 550 feet of heavy traffic experienced increased medical visits.³⁹ Several air monitoring studies conducted along major truck routes have found black carbon levels translating to cancer risks of 1,200 to 3,700 per million.⁴⁰

- **Airports.** While little data on air pollution and health risks from airport activity is available, it is widely agreed that airports are a significant source of pollution, including many air toxics. In fact, a U.S. EPA study of a Chicago airport found it to be one of the largest local sources of air toxics such as benzene and formaldehyde.⁴¹ In addition to the poorly regulated emissions from airplanes themselves—which contribute significant quantities of NOx and volatile organic chemicals—the ground transportation required to carry goods to and from airports adds to local air pollution.



higher than statewide averages; however, exact statistics are unknown.

Impacted Communities

The “My Stories” peppered throughout this report provide a human face to the freight movement system throughout California. These are the stories that go untold in the race to expand the flow of cargo through California communities. By telling their own stories, communities impacted by freight transport seek to redress decades of disproportionate impacts so that they will no longer bear the health burden of freight transport, while gaining very few of its benefits.

The communities that are profiled here, representing some but not all affected residents, are from all over California,

Table 1 summarizes diesel particulate matter concentrations near major hubs in the freight transport system, and shows that these are 1.5 to 4 times higher than the State of California average, clearly showing a disproportionate impact. The diesel PM levels in Table 1 are calculated based on levels of black carbon or elemental carbon (both are surrogates for diesel PM) measured near concentrated freight activity areas in various studies. People living near freight transport-related facilities face elevated cancer risks of up to 3,700 in a million, more than six times higher than the statewide average from exposure to diesel PM. The rates of other health impacts near these types of sources are also likely to be much

Table 1

Diesel Particulate Matter Levels Measured Near High-Exposure Locations, Compared to Statewide Average Levels ⁴²					
	Trucking Corridors ⁴³	Railyards ⁴⁴	Distribution Centers ⁴⁵	Port Terminal ⁴⁶	State of California Average ⁴⁷
Diesel Particulate Matter (micrograms per cubic meter, µg/m ³)	3 – 9	3 – 5	4	~5 (on-site)	2
Associated Cancer Risk Levels	1,200 – 3,700 in a million	1,300 – 2,000 in a million	~1,600 in a million	Not Calculated	600 in a million

from the South Coast to the Central Valley and the Bay Area. Beyond their shared role as the dumping ground for freight transport pollution, they share some other common characteristics. As shown in Table 2 below, these impacted communities are all low-income communities, with an average median income less than 70% of the State of California average. Nearly four out of five residents in these communities are people of color, and they are often less likely to have access to health care. With little political power to make changes, these communities are subsidizing California’s system of freight transport.

To achieve environmental justice, we must eliminate the unfair burden borne by low-income communities of color that prop up the freight movement industry. The industry is quite capable of standing on its own and paying for cleaner technologies, instead of standing on the backs of California’s poor and minority communities.

C. IMPACTS ON LABOR

In addition to the people living side by side with freight transport pollution hubs, another group of people faces equally high exposure. The dockworkers responsible for loading and unloading ships at port, the drivers who haul cargo from port to destination, the railroad workers on the many trains that chug along rail lines, and countless other workers often face the highest exposure to diesel

exhaust and other job-related health and safety hazards. The health effects on these workers are more under-compensated expenses in the freight transport industry.

CARB notes that “over 30 human epidemiological studies have investigated the potential carcinogenicity of diesel exhaust. These studies, on average, found that long-term occupational exposures to diesel exhaust were associated with a 40 percent increase in the relative risk of lung cancer.”⁴⁸ Researchers trying to understand the health impacts of diesel exposure first studied railroad workers. They chose railroad workers because their on-the-job exposures are so high, and because the rates of lung cancer were also unusually high. Several studies have documented the link between railroad workers exposed to diesel exhaust on the job and lung cancer.^{49,50} The U.S. EPA has noted “typical” exposure levels for railroad workers of 39 to 191 $\mu\text{g}/\text{m}^3$, considerably higher than the California statewide average of 2 $\mu\text{g}/\text{m}^3$.⁵¹



Table 2

Summary of Communities Profiled in This Report				
Community Name	Zip Code	Major Hubs	Median Income	Percent People of Color
Bayview/Hunters Point—San Francisco, CA	94124	Port of San Francisco	\$37,146	94.6
Commerce, CA	90040	Railyards	\$35,205	95.4
Fresno, CA	93637	Distribution centers	\$37,043	60.9
Huntington Park, CA	90255	Major truck route	\$30,375	97.2
Long Beach, CA	90802	Port of Long Beach	\$25,860	66.2
Merced, CA	95340	Wal-Mart	\$32,573	60.6
Mira Loma, CA	91752	Distribution centers	\$37,110	50.9
Richmond, CA	94801	Port of Richmond, Railyards	\$33,962	87.2
Shafter, CA	93263	Railyards, Distribution centers	\$29,466	69.4
West Oakland, CA	94607	Port of Oakland	\$21,124	93.0
Wilmington, CA	90744	Port of Los Angeles	\$30,259	92.8
Average			\$31,829	78.9
California Average			\$47,493	53.3

Source: U.S. Census, 2000.

Surrounded in San Leandro

by Wafaa Aborashed



THE DAVIS WEST Neighborhood is surrounded by pollution magnets. To the west: the ever-expanding Oakland Airport, the railroad, and

numerous industrial businesses. To the south: big-box stores and cargo distribution centers. To the east: I-880. To the north: we are downwind from all the activities coming from West and East Oakland.

Our children have to fight with truck traffic to get home from school everyday.

For one young neighborhood child, pollution is not the only concern. “I get out of school knowing that I have to fight to get home ... I almost got hit just the other day.” She has to sprint to avoid the trucks on Davis Street. “I have asthma attacks every now and then when I reach my home.”

We need to reduce air pollution and make our streets more livable. And we need solutions now, not in 2025.

Heavy-duty truck traffic on streets designed for passenger car use increases the risk of collisions with other vehicles and pedestrians.

Dockworkers and truck drivers are two other high-risk groups. One Swedish study found that dockworkers exposed to the highest levels of diesel exhaust were 1½ to 3 times more likely to develop lung cancer than workers exposed to little or no diesel exhaust.⁵² Several studies have found excess lifetime cancer risk for truck drivers—some as high as 10 times above what the Occupational Safety & Health Administration considers to be acceptable risk levels.⁵³ Other studies have found that long-haul truck drivers with the longest driving records are 1½ to nearly 2 times as likely as workers not exposed to diesel exhaust to develop lung cancer during their lives.⁵⁴

D. OTHER COMMUNITY IMPACTS

Air pollution is just one of the ways that freight transport affects human health. A host of other factors either directly or indirectly impacts the health and well-being of people living near freight transport facilities and infrastructure. While seaports and airports often have direct connections to and from local highways, trucks often use local streets to bypass traffic or cut down on travel time. Many ports lack sufficient space for drivers to park their trucks, so they often must resort to parking overnight on local streets, reducing pedestrian visibility and an overall sense of safety in a community. Heavy-duty truck traffic on streets designed for passenger car use also increases the risk of collisions with other vehicles and pedestrians—not to mention the wear and tear on these roads that can damage private vehicles. And anyone who has ever heard a truck rumbling along at low speeds can attest to how loud these vehicles can be.

The presence of railroad tracks, railyards, truck distribution centers, and large trucks on local streets (whether parked or moving)—and the noise from these vehicles—discourages people from taking walks in their neighborhood or visiting their local parks—both important forms of exercise that help people maintain healthy body weights. Recent studies validate the common-sense idea that residents of pedestrian-friendly



members of the state's Goods Movement Action Plan Integrating Workgroup included a comprehensive description of other community impacts.⁶⁰ This should serve as a foundation for further analysis and integration of these concerns into cost estimates and mitigation projects related to freight transport.

E. SNAPSHOT: THE HIDDEN COSTS OF IMPORTED GRAPES

In order for consumers to enjoy grapes out of season, those grapes make a very long journey, traveling almost 6,000 miles from the vine to your refrigerator, and creating a lot of pollution along the way.

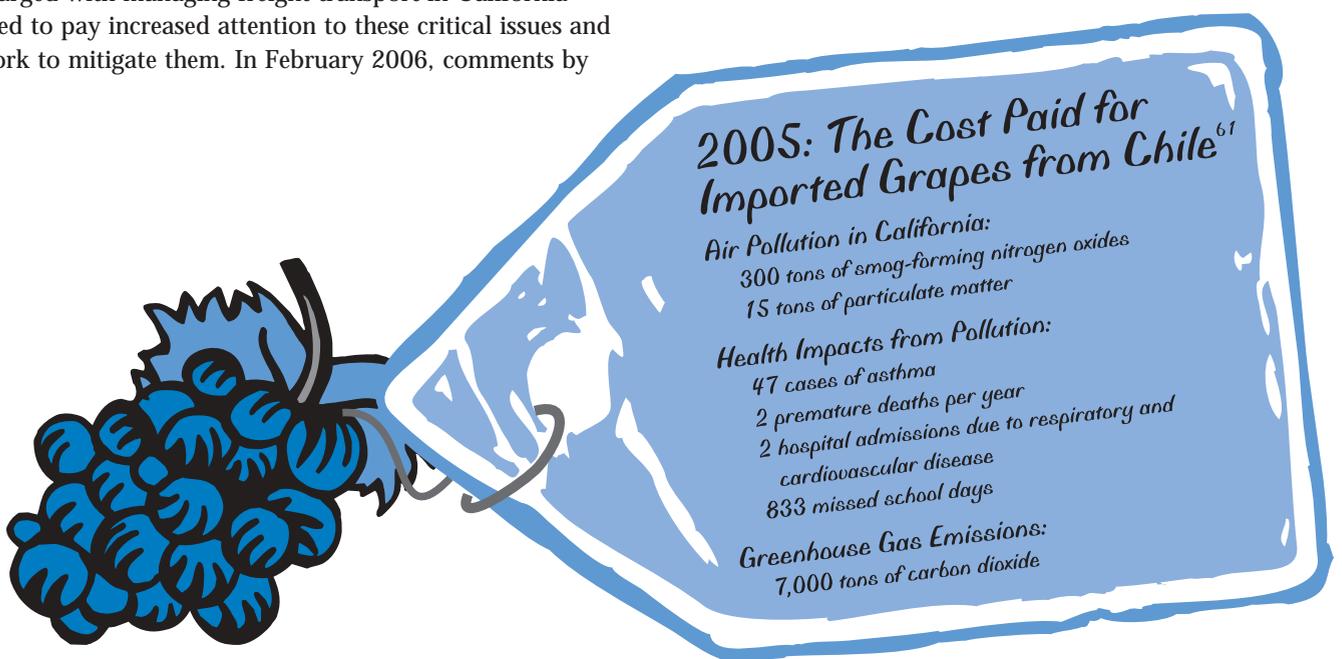
For example, grapes that are grown in Chile are transported by truck to the port of Valparaiso, where they are loaded onto cargo ships to make the 5,500-mile journey to California, most likely to the Port of Los Angeles. Then the grapes are transported by truck across California to local supermarkets or are transported to a local truck distribution center, where they are loaded onto other trucks that deliver them to retail stores all over the nation.

In 2005, the transport of grapes from Chile to California using trucks and cargo ships resulted in the release of hundreds of tons of pollutants that contribute to poor air quality and global warming, as shown below.

neighborhoods are less likely to be overweight.⁵⁵ Various studies have cited the link between noise and increased risk of heart attacks;⁵⁶ increases in overall stress levels; and impacts on children's mental health,⁵⁷ reading comprehension,⁵⁸ and school performance.⁵⁹ One study that found a link between sleep disturbance and noise specifically cites air, rail, and road traffic as a problem.

These other community impacts are a key part of the overall quality of life impacts from freight transport. Because these impacts have not yet been adequately characterized and quantified, this report does not go into depth on these very important issues. State agencies charged with managing freight transport in California need to pay increased attention to these critical issues and work to mitigate them. In February 2006, comments by

Figure 3: The Cost Paid for Imported Grapes from Chile



A Day in the Life of a Longshore Worker

by John M. Castanho

ARRIVE AT THE PORT OF OAKLAND just before 8 AM, passing a line of 20-40 trucks waiting to enter the terminal. The smell of diesel exhaust is as familiar to a longshoreman as the smell of salt air is to a sailor.

I change into my work gear, and proceed to the dock. A black smoke-belching tugboat leads the cargo ship to the pier, billowing white smoke that blows inland. Gangs of longshoremen, 20 to 60 in all, commence the day's arduous work. We begin unlashng the containers. The black matter from the ship's smokestacks coats the containers and the ship's deck where I will be working. The "black snow" looks like soot inside a chimney. It will be rubbed into my coveralls and boots. It will stick to the perspiration on my skin.



The smell of diesel exhaust is as familiar to a longshoreman as the smell of salt air is to a sailor.

When the workday ends, I am wringing wet with sweat. Removing my work gear, I pull a box of baby wipes from my trunk. The less of this stuff I bring home, the less my wife and children will come into contact with. In one wipe of my face, large, dark smudges cover the sheet. If this is on my face, my hands, my clothes, and my boots, how much of it entered my lungs today? I have a good paying job, and I'm in good shape, but how much will working in this environment shorten my life?

I have worked in this industry for over 20 years. My father was a longshoreman for 21 years before dying at the age of 45 from asbestosis and throat cancer. Today's longshoremen are exposed to different sorts of carcinogenic substances that need to be eliminated. With ports expanding, the problems of asthma, cancer, and circulatory diseases will only worsen.

In unanswered questions, blackened baby wipes, and lost loved ones, goods movement is costing me and my fellow longshoremen.

The author is currently a longshoreman working at C and H Sugar Refinery in Crockett. He worked at the Port of Oakland for 20 years.



CHAPTER 3

Impact Costs in Dollars and Cents

Four percent of all deaths in California are attributable to air pollution, costing the state \$70 billion per year.⁶² In their Emissions Reduction Plan for Ports and Goods Movement, CARB calculated that pollution from freight transport was estimated to cost **\$19.5 billion** in the year 2005. If nothing is done to clean up the freight transport system, it will cost California **\$200 billion** between now and 2020.⁶³

The annual cost of the health effects attributable to PM and ozone pollution from freight transport in California is summarized in Table 3. At least half of these health effects are caused directly by PM in the areas closest to ports, railyards, and freeways. Although the cost estimates given for multiple health endpoints, including things like the cost of missed school and work days and health care costs, are in the hundreds of millions, the costs of premature deaths far outranks all other health effects.⁶⁴

In addition, Table 3 does not include many known health effects from freight transport sources of PM and ozone that are currently too difficult to quantify. These include myocardial infarction (heart attack), chronic bronchitis, onset of asthma, premature birth, low birth weight, and reduced lung function growth in children.⁶⁶ This estimate also does not include all sources of pollution related to freight transport, including air cargo operations. Thus, the annual cost of \$19.5 billion is a conservative figure.

Table 3

Annual (2005) Health Effects of PM and Ozone Pollution from Freight Transport in California ⁶⁵		
Health Outcome ^A	Cases per Year	2005 Valuation (\$ Millions)
Premature Death ^B	2,400	19,000
Hospital Admissions (respiratory causes)	2,000	67
Hospital Admissions (cardiovascular causes)	830	34
Asthma and Other Lower Respiratory Symptoms	62,000	1.1
Acute Bronchitis	5,100	2.2
Work Loss Days	360,000	65
Minor Restricted Activity Days	3,900,000	230
School Absence Days	1,100,000	100
Total	NA	19,499

Source: California Air Resources Board, March 2006.

- ^A Does not include the contributions from particle sulfate formed from SO_x emissions, which is being addressed with several ongoing emissions, measurement, and modeling studies.
- ^B Includes cardiopulmonary- and lung cancer-related deaths.

Trucks, Trains, Illness, and Commerce

by Sylvia Betancourt

I GREW UP IN THE City of Commerce, just east of Los Angeles, between two very large and active railyards. Everyday, we hear the perpetual beeping and rumbling of the trains, so much so that my ears are constantly ringing. Our community is also intersected by the diesel truck-clogged I-710 and pockmarked by a number of industrial toxic facilities.

Growing up, I always felt that something was wrong with living near such massive industry, smelling diesel in the air. I saw friends and neighbors diagnosed with cancer and pass away, but I didn't fully understand the connection with our environment.

I saw friends and neighbors diagnosed with cancer and pass away, but I didn't fully understand the connection with our environment.

A few years ago, the government proposed to expand the I-710 — which already saw 47,000 diesel cargo truck trips per day — to accommodate increased truck traffic resulting from projected port growth. That was the last straw. I became a volunteer with East Yard Communities for Environmental Justice and connected the dots between truck and train emissions and illnesses.

My parents worked hard to secure a home for our family, but the trucks and trains are taking a toll on our lives. My father was a truck driver and a member of the Teamsters Union, so I clearly understand that truck drivers are feeling the impacts along with our community. Unhealthy air where we work and where we live is a violation of a basic right.

It was only a matter time before one of our family members was diagnosed with cancer. My brother's father-in-law lost his battle with throat cancer in February of this year. Breathing clean air is essential for life.

We're not lobbyists, but we are determined to ensure that the community determines its own fate. Railroads and shipping companies need to take responsibility for how their operations impact their workers and their neighbors. Tax money, health, and quality of life should not be a tradeoff.





CHAPTER 4

Plenty to Go Around: Paying to Clean Up Freight Transport

While many people suffer a disproportionate burden of the health and environmental costs from freight transport, a relative few big business and logistics-related industries rely on easy access to these transportation hubs to support their business operations. These businesses include the shipping industries that carry goods to and from California ports, the air freight delivery companies, the truck and train transporters of consumer goods within and out of the state, and the retailers that sell these goods in stores across the United States. By failing to cover their full costs of business, these companies' profits are being subsidized by the health and well-being of the predominantly low-income communities that bear the brunt of freight transport's environmental impacts.

Equitable markets require that all the costs of producing a product are covered by the producer. In economics this is called "cost internalization," or internalizing external costs.⁶⁷ A company internalizes its cost when it installs a pollution filter or pays to clean up an accidental spill. If an individual pollutes a stream that he shares with his neighbor, then the individual receives the benefits of being able to pollute (externalizing his costs), while his neighbor

Companies' profits are being subsidized by the health and well-being of low-income communities.

bears the cost of not having fish or clean water. Externalizing costs onto those who do not benefit from the transaction involves privatizing a benefit while socializing resulting costs onto the community.⁶⁸

Externalizing costs is the fundamental problem with the movement of goods through California. This is also sometimes called the "tragedy of the commons," where each individual actor pursuing his own self interest will destroy the commons that all share together. In this conundrum, no one actor can institute cleaner technology without being priced out of the market by his competitors who do not implement cleaner technology.

There are two solutions to the tragedy of the commons problem in market economies. To the extent that any one actor has market power (the ability to set prices for



costs of mitigating the impacts of freight transport are a mere drop in the bucket (or rather drop in the ocean) when we take a close look at the overall value of goods being moved through California’s ports, and at the revenue and profits brought in by these companies. In the same way that a company’s revenue is used to pay for the costs of raw materials, worker salaries, financing for capital, and (increasingly high) CEO salaries, companies benefiting from freight transport through California should pay for the health costs of moving goods. This can be done by a minor increase in prices (still keeping them below competitors’ prices), a minor reduction in rates of return (still keeping profit rates above those of competitors), lower compensation for high-paid corporate officers, or any number of other options. Not only should companies benefiting from freight transport pay the full costs of moving goods, these companies are making more than enough in revenue and profits to cover these costs without it being a financial burden.

goods), it can lead the market in implementing and requiring cleaner technology by their suppliers, thus solving the tragedy of the commons. For example, Nike and other sector leaders led efforts to address the widespread use of child labor in the production of apparel and footwear. A market leader such as Wal-Mart, whose revenue is equal to the combined revenue of the next nine largest importers, holds the potential solution to the freight transport system’s pollution problem.

The second solution to the tragedy of the commons is that in a more competitive market, the government will need to intervene so that all players can internalize their costs, or clean up their pollution, together.

There is plenty of money in the system of freight transport to pay for the costs of mitigating impacts. In fact, the

This report focuses on the revenue of five types of companies:

- Top retail importers of containerized goods into the United States
- Top exporters of containerized goods from the U.S.
- Top railroad companies in the state of California
- Major shipping lines doing business at California ports
- Major air freight delivery companies in the U.S.

Table 4 summarizes the total 2005 revenue and net income for all of these companies. Revenue are the sales from all operations of these companies, while net income (also known as net profit) is income remaining after all

Table 4

2005 Revenue and Net Income of Freight Transport Industries Nationwide		
Sector	2005 Revenue (\$ Billions)	2005 Net Income (\$ Billions)
Top 10 Importers	625.9	24.5
Top 10 Exporters	363.8	21.2
Top 3 Air Freight Delivery	105.5	8.2
Shipping Lines*	104.2	8.9
Top 2 Railroad Companies	26.6	2.6
Total	1,226.0	65.4

Source: Hoover’s Online (<http://www.hoovers.com>) July 2006.
*2004 Data.

corporate expenses (including salaries, taxes, and depreciation) are subtracted. These revenues exceeded \$1.2 trillion in 2005, while net profit was \$65.4 billion. It should be noted that the average net profit margin for the companies that reported both revenue and net income was 6.5%, well above the 3.1% average for all NASDAQ companies.⁶⁹

As a point of comparison, the cost to implement all the mitigation measures CARB proposed in its Goods Movement Emission Reduction Plan ranges from \$6 billion to \$10 billion for the entire state between now and 2020, or between \$400 million and \$667 million per year. A comparison of revenue to cost of mitigation measures is provided in Chapter 5.

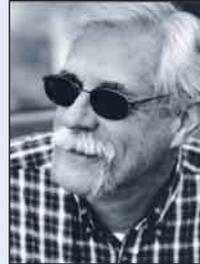
A. CORPORATE IMPORTERS

The ships, trucks, airplanes, and locomotives involved in freight transport are carrying the cargo of large corporate importers. The companies importing the largest volumes of containerized goods through U.S. seaports have names familiar to most Americans, including Wal-Mart, Target, and Home Depot. As shown in Table 5, the total revenue for these companies in 2005 was over \$625 billion. Wal-Mart's total revenue (\$312 billion) is equal to the revenue of the next nine importers combined. The net profit of all these companies combined added up to \$24.5 billion, of which Wal-Mart accounted for nearly half, or \$11.2 billion. These companies together imported 2.6 million containers into the United States, considerably less than the 7.4 million imported through all California ports.⁷⁰ Consequently, the total revenue of these 10 companies is likely an underestimate of the total revenue of all companies importing containerized cargo through California ports.

Data on retail importers of goods just through California ports is not available. Because of the large number of intermediaries between the shipping lines and the ultimate retail destination of goods carried by cargo containers, there is no publicly available information on which retail users are using which ports in California, or the volume of their trade through those ports. This list also does not include end users of non-containerized cargo such as automobiles, dry bulk products, liquid bulk products, or break bulk products.

Merced's Potential 230-Acre Neighbor

by Kyle Stockard



I LIVE IN MERCED, along Highway 99 in California's Central Valley. Wal-Mart recently proposed a 230-acre distribution center, right next to Merced's residential

neighborhoods. It would have a warehouse the size of 24 football fields; parking for 1,600 trailers, 300 tractors, and up to 850 passenger vehicles; and 400 loading dock doors.

27,000 new truck trips and 2,150 new passenger vehicles would increase the risk of life-threatening accidents, road damage, and asthma.

Within a mile are three schools, and a fourth is planned for directly next to the facility. The distribution center would add about 27,000 new truck trips and 2,150 new passenger vehicles to our roads every month. This level of traffic would increase the risk of life-threatening accidents, road damage, and asthma and other health risks caused by air pollution. It's not too late for Merced. The more people know, the more they are opposed to a distribution center being built in our neighborhood.

Life in the Diesel Death Zone

by Jesse N. Marquez



LIVE IN THE Hispanic community of Wilmington in the shadow of the Ports of Los Angeles and Long Beach. When I wake up in the morning I do not smell

the fresh clean ocean air or see beautiful blue skies that are only a distant childhood memory. Instead I smell tons of diesel exhaust from ships, cargo trains, and over 45,000 diesel trucks, and see a deadly brown smog cloud

When I wake up in the morning I do not smell the fresh clean ocean air or see beautiful blue skies that are only a distant childhood memory.

looming overhead. Almost every family I know has someone suffering from asthma, respiratory health problems, lung disease, or cancer. Our community is located in what is now called the “Diesel Death Zone.” Six people die prematurely every day so that Wal-Mart, Nike, K-Mart, and others can make billions in profits. In 2001 we created the Wilmington Coalition for a Safe Environment to fight for our right to a clean and healthy environment, where the benefits of international trade are shared by all communities.

B. CORPORATE EXPORTERS

Although the United States is widely known to have a large and sustained trade deficit—the country imports substantially more than it exports—there are numerous profitable companies exporting goods and materials to foreign countries. Like importers, exporters do not need to factor community and health impacts into the cost of exporting their products through seaports. Wastepaper, timber, chemical, and industrial agricultural corporations utilize the country’s freight transport infrastructure to export significant quantities of product through California’s ports each year. The Port of Oakland is a net exporter of goods, and the Ports of Los Angeles and Long Beach export large volumes of goods as well. Listed in Table 6, the revenue of the top 10 corporate exporters of containerized goods from the U.S. totaled \$364 billion in 2005, while net income (profits) added up to \$21.2 billion.

C. INTERNATIONAL AND DOMESTIC SHIPPING

Shipping companies own and operate the large ships that carry as many as 6,000 to 8,000 containers across the ocean, ensuring that containers leaving China or Guatemala arrive in the U.S. and vice versa. These ships produce a tremendous amount of pollution. Regulatory oversight of pollution from shipping has fallen between the cracks—defeated by confusion over jurisdictional authority and a strong industry lobby. While a patchwork of international, federal, state, and local rules applies to various pollution sources related to freight transport, most are weak and poorly enforced.⁷¹ Further, while other diesel sources have been heavily regulated with multiple rounds of increasingly stringent emission standards, the engines propelling international ships (ocean-going vessels) are only bound by one relatively lax emission standard through an international treaty, which does not cover particulate emissions.⁷² While a recent BlueWater Network lawsuit against the U.S. EPA established that the agency has jurisdiction to adopt emission standards for all marine vessels regardless of country of origin, the U.S. EPA has yet to exercise this authority.

The fact that ships are highly underregulated bolsters profits, as the true cost of doing business is not fully taken into account. The names of these shipping companies are emblazoned on the sides of shipping containers being transported across the state by truck and train; Table 7 lists the 2004 revenue and net profit data for 11 of these shipping companies. This list includes major companies

Table 5

Revenue and Net Income for Top Importers of Containerized Goods into the U.S., 2005			
Company	2005 TEUs Imported	2005 Revenue (\$ Millions)	2005 Net Income (\$ Millions)
Wal-Mart Stores	695,000	312,427	11,231
Target Corporation	371,000	52,620	2,408
The Home Depot	335,000	81,511	5,838
Sears Holdings Corp.	240,000	49,124	858
Dole Food Company	169,700	5,871	134*
Lowe's Company	163,000	43,243	2,771
Costco Wholesale Corp	160,000	52,935	1,063
LG International Corp.	127,100	6,217*	77*
Philips Electronic, N.A.	125,000	**	**
Chiquita Brands Intl.	112,300	3,904	131
Ikea International A/S	100,000	18,089	**
Total	2,598,100	625,941	24,511

Source for TEU data: "Special Report: Top 100 Importers and Exporters." Journal of Commerce (May 29, 2006):16A – 48A.

Source for financial data unless noted below: Hoover's Online (<http://www.hoovers.com>) July 2006.

*Data for 2004, most recent data available for these companies.

**Private company for which relevant financial data is not publicly available.

Table 6

Revenue and Profits for Top U.S. Exporters of Containerized Goods, 2005				
Company	2005 TEUs	Headquarters	2005 Revenue (\$ Millions)	2005 Net Profit (\$ Millions)
America Chung Nam, Inc.	244,400	CA	505 ^A	**
Weyerhaeuser Company	163,200	WA	22,629	733
E.I. du Pont de Nemours & Company	98,000	DE	28,491	2,053
Cargill, Inc.	78,400	MN	71,100	2,100
Koch Industries, Inc.	72,600	KS	80,000	**
International Paper Co.	68,200	TN	24,097	1,100
Dow Chemical Co.	65,400	MI	46,307	4,515
ExxonMobil Chemical Co.	62,300	TX	27,781 ^B	3,428 ^B
MeadWestvaco Corp.	61,500	VA	6,170	28
Cellmark Group	60,800	Sweden	**	**
Procter & Gamble Company	60,700	OH	56,741	7,257
TOTAL	1,035,500		363,821	21,214

Source for TEU data: "Special Report: Top 100 Importers and Exporters." Journal of Commerce (May 29, 2006):16A – 48A.

Source for financial data unless noted below: Hoover's Online (<http://www.hoovers.com>) July 2006.

**These are private companies for which net profit and/or total revenue data is not available.

^A Revenue data for America Chung Nam is from 2004, latest year for which data is available. Source for America Chung Nam revenue: Nusbaum, David. "L.A.'s 100 largest private companies: ranked by 2004 revenue." Los Angeles Business Journal (October 24, 2005).

^B Data for ExxonMobil is for 2004, latest year available.

that lease land at the Port of Los Angeles, Port of Long Beach, or Port of Oakland. It also includes all the members of the Transpacific Alliance, an industry association of shipping companies serving the Asia-U.S. route.⁷³ Because two of these companies have no revenue or profit data available, the total revenue for these companies is an underestimate.

D. RAIL

The U.S. rail system serves both passenger and freight carriers, with freight far outweighing passenger transport.

There are currently 20,000 freight and 400 passenger locomotives operating in the United States,⁷⁴ and these locomotives make their way across the country on approximately 140,000 miles of track. The freight transport industry is using rail at an increasing rate. Some of the nation's largest railroads plan to expand their infrastructure to accommodate the increased demand for their services in moving goods across the country. In California, the rail companies are expanding infrastructure to accommodate the growth in trade. For example, Burlington Northern Santa Fe (BNSF) has proposed a major new switching yard in Southern California—just 200 yards from an elementary school.⁷⁵

Table 7

2004 Revenue and Net Income for Top Shipping Companies			
Shipping Line	Headquarters	2004 Revenue (\$ Millions)	2004 Net Income (\$ Millions)
A.P. Moller-Maersk A/S	Copenhagen	30,421	4,464
China Ocean Shipping (Group) [COSCO]	Beijing	17,459 *	**
Nippon Yusen Kaisha (NYK)	Tokyo	13,236	330
Mitsui O.S.K. Lines	Tokyo	9,440	524
Kawasaki Kisen Kaisha, Ltd. ("K" Line)	Tokyo	6,860	314
APL Limited (Subsidiary of Neptune Orient)	Singapore	6,545	943
Hanjin Shipping Co, Ltd.	Seoul	5,921	617
Orient Overseas (parent company of OOCL)	Hong Kong	4,140	670
Evergreen Marine Corporation Ltd.	Taiwan	4,080	378
Hapag-Lloyd Container Line	Hamburg	3,671	386
Yang Ming	Taiwan	2,452	306
China Shipping (Group) Company	China	**	**
Hyundai Merchant Marine Company (HMM)	Seoul	**	**
TOTAL		104,225	8,932

Source for financial data: Hoover's Online (<http://www.hoovers.com>) July 2006.

*Revenue for COSCO is for 2005.

**No revenue or profit data available.

Table 8

2005 Revenue and Net Income for Top Railroad Companies in California			
Railroads	Headquarters	2005 Revenue (\$ Millions)	2005 Net Income (\$ Millions)
Union Pacific Railroad Corp	NE	13,578	1,026
Burlington Northern Santa Fe	TX	12,987	1,531
TOTAL		26,565	2,557

Source for financial data: Hoover's Online (<http://www.hoovers.com>) July 2006.



Rail is often hailed as a cleaner alternative to trucks. While a single train can replace up to 250 truck trips, locomotives are expected to pollute more than trucks by 2015,⁷⁶ since emission standards for locomotives lag far behind those for trucks.⁷⁷ Like trucks, diesel trains emit NOx and fine particulate matter. By 2030 the U.S. EPA estimates that, without new controls, locomotives and ships will contribute about 27% of NOx and 45% of fine diesel particulate matter (PM_{2.5}) emissions from mobile sources.⁷⁸

In California, two companies—BNSF Corporation and Union Pacific Railroad Corporation—comprise virtually the entire rail industry. The revenue for these two companies alone in 2005 was \$26.6 billion, while their profits totaled \$2.6 billion.

E. AIR FREIGHT DELIVERY COMPANIES

Although it is frequently left out of discussions and planning for freight transport growth, air cargo plays a significant role in California's freight transport industry, and it is growing at unprecedented rates. California's four major cargo airports—Los Angeles, San Francisco, Oakland, and Ontario—handled over 3.7 million metric tons of cargo in 2005, much of it high-value products such as electronic circuits, aircraft equipment, and apparel. Although the total volume is less than the total volume of goods transported through the state's seaports, the movement of goods via airports does present a serious health concern for the cities that host these four airports. Additionally, these airports are in or near densely populated central urban locations, which means their impacts affect more people.

Hopscotch Along Hwy. 99

by Carolina Simunovic



Margarita Guzman

AT RECESS, THE students at Fresno's Addams Elementary have a clear view of Highway 99, two distribution centers, and plenty of diesel trucks. It's no coincidence that Addams

Elementary ranks third among all Fresno Unified School District schools for student asthma rates.

It's no coincidence that we rank third among all Fresno schools for student asthma rates.

Parent leaders created Comité ASMA: Addams for Health and a Better Environment to focus on industrial pollution surrounding their children's school.

"We are already suffering from the large number of polluting facilities located in our community" says Tony Diaz, the committee's coordinator.

"We are bombarded with diesel exhaust and other air pollution from Highway 99, the railroad, and two large distribution centers."

Margarita Guzman, the committee's president, worries about increasing truck traffic and rail cargo along the 99 Corridor. "Our children are suffering and can't breathe; the last thing this community needs is more pollution."

Air cargo is transported in two ways: by freight delivery and all-cargo carriers, or in the cargo hold of passenger airlines. By weight, the majority of goods that come in and out of California's airports are on all-cargo planes.

We include in our analysis the total revenue and profits for three major air freight delivery companies operating in the United States: FedEx, UPS, and DHL, all of which have operations in California airports.

Table 9

2005 Revenue and Net Income for Major Air Freight Delivery Companies Nationwide			
	Headquarters	2005 Revenue (\$ Millions)	2005 Net Income (\$ Millions)
UPS	GA	42,581	3,870
DHL	Belgium	33,524 *	2,899
FedEx	TN	29,363	1,449
TOTAL		105,468	8,218

Source: Hoover's Online (<http://www.hoovers.com>) July 2006.

*Revenue data for DHL is from 2004.

Sidebar:

Fueling Freight Transport: A Multi-Billion Dollar Industry

From the ships that bring containerized goods to and from California's seaports, to the thousands of cargo-carrying airplanes that take off and land in California's airports each day, to the trucks and trains that move goods from these ports to their final destination—the freight transport industry is dependent on oil-derived fuels. Consequently, the corporations that refine and sell oil to fuel freight transport through California profit significantly from the movement of goods through California.

Although an analysis of the proportion of fuel corporation profits that is attributable to freight transport in California is beyond the scope of this project, data on annual sales and profits of the top five oil companies in the United States are presented in Table 10 for comparison purposes.

Oil company revenue and profits far outweigh revenue and profits in other freight transport industries. The top 5 oil companies made two times more revenue, and over four times the profit, of the top 10 importers.



Table 10

2005 Revenue and Net Income for Five Largest U.S. Fuel Companies, 2005		
Company	2005 Revenue (\$ Millions)	2005 Net Income (\$ Millions)
ExxonMobil	370,680	36,130
BP	245,486	19,642
Shell	306,731	26,261
Chevron	198,200	14,099
ConocoPhillips	183,364	13,529
TOTAL	1,304,461	109,661

Source of financial data: Hoovers Online (<http://www.hoovers.com>) July 2006.

Source of Top 5 Company Names: <http://www.gravmag.com/oil2.html>.

Not the Bad Guy: One Man's Struggle to Work and Breathe

by Nelson Montoya



I CAME TO THE United States from Colombia 25 years ago. I have been a truck driver for 22 years, transporting commercial products to and from the

ports of Los Angeles and Long Beach. My truck is a 20-year-old, heavy-duty diesel-fueled 18-wheeler. Truckers barely benefit from freight transport. Many have to work longer hours than are legal just to make as much as the average worker with a high school diploma — just under

I have heard that diesel produces cancer and respiratory illness. But like many other drivers, I do not have insurance to pay for preventive care.

\$30,000. I would like to go to the doctor to have a general check-up, especially of the lungs, since I have heard that diesel produces cancer and respiratory illness. But like many other truck drivers, I do not have insurance to pay for preventive health care. I need to have better equipment, a modern truck that will contaminate less. Shipping companies should provide modern equipment — this will benefit the drivers, the community, and the environment.

Adapted from Coalition for Clean Air Fall 2005 Newsletter



F. TRUCKING INDUSTRY

Port trucking, also called drayage, is a specific segment in the trucking industry that involves the first segment of transportation from the marine port to a railyard or distribution center or directly to retailers or manufacturers. Truckers work through small carriers or brokers to contract with cargo owners or shipping lines to make their deliveries.

Port truckers were significantly affected by deregulation of the industry in 1980, which led to a higher percentage of independent owner-operators who are in turn prevented from organizing for higher wages or benefits due to anti-trust provisions. A 2005 hearing of the California Assembly Committee on Labor and Employment documented that of the 11,000 short-haul truck drivers working in the Los Angeles area, 87% are owner-operators. Port drivers must pay for fueling, insurance, maintenance, taxes, and other fees, and are paid by the load rather than hourly. Numerous trucker strikes throughout the country have demonstrated the difficult working conditions and low pay associated with drayage trucking. Testimony of several truckers during the Assembly hearing exemplified adverse working conditions of truckers who are being squeezed by stagnant wages, increasing turn times at ports, and increased fuel costs. One Oakland driver testified that he works an average of 11 to 13 hours per day. Nearly half of that time can be spent waiting in line at port terminals. He brings home \$20,000 to \$25,000 a year, with no benefits.⁷⁹ Revenue and profit data cannot be presented because individual owner-operators, rather than companies, dominate drayage trucking in California.

Once-Rural Riverside County

by Penny Newman

I'VE BEEN A RESIDENT of the rural community of Glen Avon/Mira Loma for more than 41 years. Located next to Highway 60 and Interstate 15, our unincorporated area is the target of industrial development of massive warehouses and distribution centers. The expansion of goods imported into the ports of Los Angeles and Long Beach has created a demand for rail hauling of goods that has led to the expansion of the Union Pacific railyard — now the largest auto distribution center in the world.



In five years, our sleepy, agriculturally based community turned into a major industrial park. More than 120 warehouses have replaced cow pastures and vineyards. Our mountain views have been replaced by looming cement monoliths. The Union Pacific is now directly next to our high school. Hundreds of trucks park and idle 20 feet from the athletic fields where our children play.

Hundreds of trucks park and idle 20 feet from the athletic fields where our children play.

The Inland Valleys of Riverside and San Bernardino have long had high levels of smog pollution, but recently the main focus has turned to particulate matter (PM). The World Health Organization (WHO) ranked us fourth in the world in PM pollution, after Jakarta, Indonesia; Calcutta, India; and Bangkok, Thailand. According to researchers at USC, the children in our communities have the slowest lung growth and weakest lung capacity of all children studied in Southern California. Asthma and other respiratory ailments are prevalent. Cancer risk from freight transport is 1,500 times the Environmental Protection Agency's "acceptable" risk levels.

With this development, our streets and rural roads have become danger zones. Residents must compete with semi trucks for space on the same roads. Horse riders navigate trails that now wind through industrial areas. Children who once enjoyed the open fields now are confined to their own backyards for recreation.

We greatly fear the prediction that freight transport will increase exponentially. Our families simply can't take any more.



CHAPTER 5

Public Costs and Private Revenue, in Perspective

How much will it cost to clean up the freight transport system in California, and who can pay for it? CARB proposed a package of roughly 30 mitigation measures that are estimated to reduce diesel PM and NOx by a respective 77% and 64% by 2020.⁸⁰ These measures are aimed at reducing air pollution emissions from cargo ships, commercial harbor craft, cargo handling equipment, trucks, and locomotives. The total cost to implement all of the CARB-recommended measures by the year 2020 is \$6 to \$10 billion (in 2005 dollars).⁸¹ If these measures are implemented, CARB estimates that for every \$1 invested in cleaning up pollution from freight transport, \$3 to \$8 in health costs will be saved.⁸² Numerous other estimates of mitigation costs have been made by the No Net Increase Task Force for the Port of Los Angeles and the recently released San Pedro Bay Ports Clean Air Action Plan. We will use the CARB mitigation cost estimate because it provides a statewide mitigation number.

To pay the full costs of doing business, companies must pay to mitigate health costs from their operations. To put the cost of the mitigation measures proposed by CARB in

For every \$1 invested in CARB's recommended measures, California could save \$3 to \$8 in health costs.

perspective, we do two comparisons. First, we compare these mitigation costs to the revenue of companies benefiting from freight transport. Then, we compare mitigation costs to the total value of imported and exported goods traded in California.

Table 11 below compares mitigation measures to “estimated California-dependent revenue,”⁸³ which has been scaled down from total revenue in proportion to California's economic or freight transport activity. The intent here is to compare the total cost of mitigation to a ballpark estimate of the portion of companies' revenue dependent on California's freight transport infrastructure. Because only the top companies are profiled in each category, this is most likely an underestimate of the industry's ability to pay.

Compared to the vast revenue earned by companies that depend on California’s freight transportation system, the cost of measures to protect health from the harmful impacts of this system is miniscule. Table 12 compares the total cost of implementing mitigation measures by the year 2020 to the estimated annual revenue derived from freight transport through California.

The cost of implementing all of CARB’s proposed mitigation measures is less than a third of a penny for every dollar in revenue that is derived from freight transport through California.

It should be noted that the revenue of the largest importer, Wal-Mart, dominates the total estimated revenue of companies relying on freight transport through California. In fact, the cost of implementing measures to protect Californians’ health is just about a penny per dollar of Wal-Mart’s estimated California freight transport-dependent revenues.⁸⁹

Another way to put mitigation costs in perspective is to compare them to the total value of imported and exported goods moving through California, estimated to be \$456.8 billion in 2004.⁹⁰ The cost of implementing all of CARB’s proposed mitigation measures is equal to less than a fifth

Table 11

Estimation of the Proportion of Total Revenue for Companies That Depends on Freight Transport through California		
Sector	Total 2005 Revenue (\$ Billions)	Estimated California-Dependent Revenue (\$ Billions)
Importers	625.9	176.1 ⁸⁴
Exporters	363.8	33.0 ⁸⁵
Shipping	104.2	5.2 ⁸⁶
Rail	26.6	3.5 ⁸⁷
Air Freight Delivery	105.5	12.7 ⁸⁸
TOTAL	1,226.0	230.5

Table 12

Comparison of Freight Transport-Dependent Industry Revenue to Cost of CARB Mitigation Measures		
2005 Estimated California-Dependent Revenue for Corporations Benefiting from Freight Transport	Annual Costs (in 2005 Dollars) of Mitigation Measures (Upper Estimate)	Mitigation Costs per Dollar of Estimated California-Dependent Industry Revenue
\$231 billion	\$0.667 billion	\$0.0029

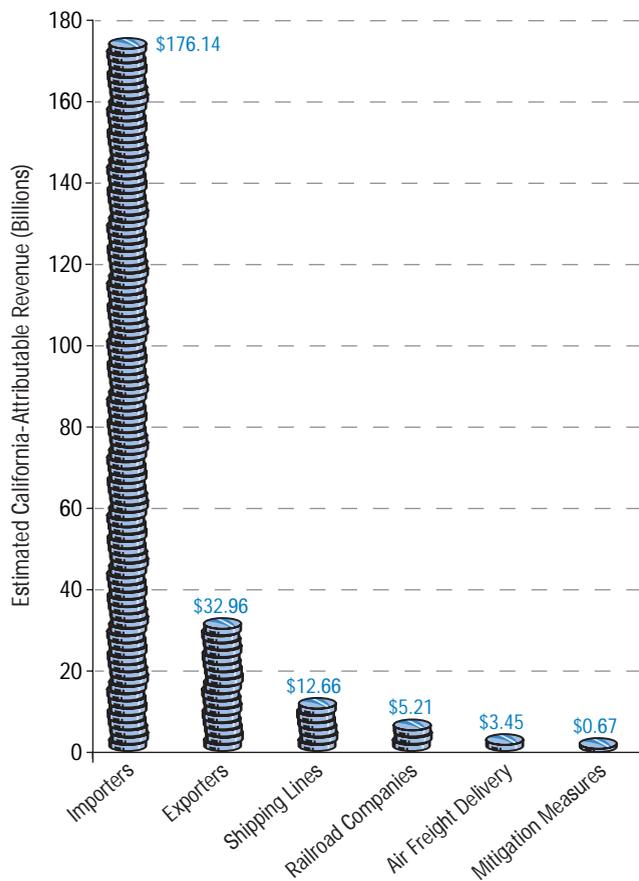
Table 13

Comparison of Value of Goods Transported Through California to Cost of CARB Mitigation Measures		
2005 Estimated Value of Imported/Exported Goods Transported through California	Annual Costs (in 2005 Dollars) of Mitigation Measures (Upper Estimate)	Mitigation Costs per Dollar Value of Goods Imported and Exported through California
\$457 billion	\$0.667 billion	\$0.0015

of a penny for every dollar's worth of import/export goods moving through California each year. This calculation does not include the value of goods that only move domestically through California. Including these goods would considerably drop mitigation costs relative to total value of goods.

Whether looking at the revenue of companies that are most benefiting from freight transport through California or at the total value of goods moving through California, the cost of protecting the health of California's communities is considerably less than a penny per dollar.

Figure 4: Comparison of Estimated California-Dependent Revenue to Health Mitigation Costs



Container Fees Add Pennies to the Cost of a DVD

Container fees are one means of paying for measures to protect health from the impacts of freight transport. A \$30 container fee would add mere pennies to the cost of a DVD player (based on DVD box dimensions of 415mm x 88mm x 365mm and an internal volume of 28m³ for a twenty-foot equivalent container), assuming the entire cost of the fee was passed on to the consumer.

Source: Coalition for Clean Air Fact Sheet.

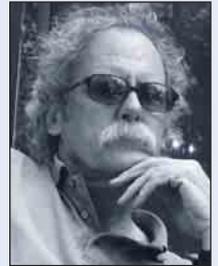
<http://www.coalitionforcleanair.org/pdf/factsheets/SB760-8-8-06.pdf>

Whether looking at companies' revenue or the total value of goods, the cost of protecting the health of California's communities is considerably less than a penny per dollar.

Freight Transport around Shafter, California

by Tom Frantz

I HAVE LIVED IN SHAFTER, a small city northwest of Bakersfield, for 50 years. I am a teacher and third-generation farmer. In 1997, Shafter acquired nearly 5,000 acres of farmland to develop the International Trade and Transportation Center (ITTC), located along the Santa Fe rail line and 7th Standard Road. In 2001, Target selected the ITTC for its new 1.7 million-square-foot distribution center.



My community has always been dusty in the summer and fall, and hazy in the winter. We now have severe ozone problems in the summer and deadly ammonium nitrate problems in the winter. Our air quality is considered to be among the worst in the country. We need the new distribution and intermodal transportation sites to implement the best-available pollution controls and efficiency standards.

Many of my high school students' absences are attributable to illnesses from bad air. Many experience headaches when the air is heavy with pollutants.

Breathing problems are almost a year-round topic of conversation in Shafter. After my 50th birthday, I developed asthma problems that were unknown in my youth. Many of my high school students' absences are attributable to illnesses from bad air. Many experience headaches when the air is heavy with pollutants. A recent study concluded that the cost of pollution above federal standards in the Valley—in terms of absences from work, health care costs, and premature deaths—is over \$3 billion. Increased freight transport through the Valley will only increase our problems.

Like most of my Shafter neighbors, I depend on 7th Standard to get into Bakersfield. It is heavy with truck traffic, and increased rail crossings back up this traffic even worse. Planned improvements to the 7th Standard are sorely due. But small country roads are also seeing a big increase in truck traffic. These roads are deteriorating under this increase in trucks.

In diminished health, missed school and work days, and impacts to our roads and our community, increased freight transport in Shafter is costing me and my neighbors.



CHAPTER 6

Recommendations

FAIR ECONOMIC COSTS

1. Companies must internalize the costs of doing business.

Equitable markets require that all production costs are covered by the company. Externalizing costs onto those who do not benefit from the transaction involves privatizing a benefit while socializing resulting costs onto the community. Importers, shippers, rail companies, and other industries must pay the full costs of moving goods through California, including the health costs from pollution that are borne by California residents. There are numerous ways that the industries that are causing the pollution can pay the full costs of doing business:

- Importers, exporters, and shippers should be required to pay a charge for each container that comes into or leaves California, which could be used to fund cleaner equipment and technologies to reduce pollution.
- A container charge should be combined with a method to require importers of non-containerized cargo (e.g., cars and crude oil) as well as air cargo to pay a charge for the pollution caused by their operations.

Importers, shippers, rail companies, and other industries must pay the full costs of moving goods through California, including the health costs from pollution that are borne by California residents.

- New infrastructure that is created to ease the movement of goods should require a percentage of funds be used to mitigate community impacts resulting from the construction and use of the infrastructure.

2. California must accurately measure and analyze these costs.

The State of California's subsidy to the freight transport industry yields numerous costs on its citizens. These costs



need to be accurately measured and analyzed. As identified above, health costs are an essential part of the analysis. The actual cost to California taxpayers and insurance ratepayers due to freight transport needs to be evaluated. Ultimately, California taxpayers will pay for the uninsured Californians affected by freight transport morbidity. Insured Californians affected by freight transport will end up driving up health insurance costs for others.

There is also a significant impact from the expansion of freight transport infrastructure on housing costs and real estate values adjacent to freight transport hubs. These have not yet been characterized and require significant study. Environmental costs of freight transport, including ecological impacts and impacts on the built environment, have also not been adequately characterized.

COMMUNITY-FOCUSED SOLUTIONS

3. Impacted communities should be at the center of decision making on the growth and expansion of freight transport.

Too often, the residents that are most affected by the movement of goods through California have been the least able to participate in and make decisions about the expansion of freight transport in the state. It is critical that impacted communities are at the center of decision-making about freight transport. The families surrounding California's railyards, seaports, airports, and distribution centers are bearing the burden of freight traffic without any of its benefits.

Communities should have access to all needed information surrounding freight transport, including the companies involved, how they are benefiting, and what decisions affecting the expansion of freight transport are being made. Residents should be provided funding to be able to participate in key decision-making bodies around freight transport. Meaningful participation means that these communities have equal decision-making power where decisions are made and are not simply involved to satisfy legal requirements while their pleas are ignored.

4. People should be separated from freight transport industry operations.

Living near freight transport operations is a health risk. Yet, land use conflict near freight transport industries is intensifying. While freight transport hubs seek to expand closer to residential areas, city councils throughout the state are approving new housing within 500 feet of major sources of diesel pollution, in clear violation of the CARB land-use guidelines.⁹¹

To protect community health, the CARB land-use guidelines should be made into regulation that ensures that residential areas are buffered from freight operations. To ensure that those with the power to make decisions on land-use are armed with the right information, CARB should do a statewide education and advocacy campaign to city planning departments, city councils, and planning commissions to alert them to the significant health impacts of residential proximity to diesel sources. Impacted communities should have a central voice in determining land-use decisions in and around their communities. Over time, residential areas should be separated from industrial

and freight transport activities through a buffer zone that strictly prevents expansion of one into the other.

5. Incorporate environmental justice principles and analysis in freight transport planning.

Freight transport in California disproportionately affects low-income and people-of-color communities and is an environmental justice issue at a regional and statewide scale. As shown in Table 2, all of the impacted communities profiled in this report are low-income, predominantly people-of-color communities. All California state agencies with a commitment to environmental justice should consider the impacts of freight transport expansion on exacerbating environmental injustice in the state. The Environmental Justice Principles created at the 1990 People of Color Summit should be utilized in conducting planning at the state and local levels. Environmental justice tools such as the precautionary principle and cumulative impact analysis must be used to mitigate community impacts from freight transport.

COMMON-SENSE REGULATION

6. Hubs in the freight transport system should be regulated like factories.

While seaports and other hubs in the system of freight transport effectively serve as large fixed sources of pollution, they are not regulated as such. A factory with a smoke stack is typically far more regulated than a seaport, airport, railyard, or truck thoroughfare, even though these freight transport hubs may cause more pollution. Freight transport hubs serve as magnet sources for pollution, drawing ships, trains, and trucks to them. These mobile sources collect and serve as large fixed sources of pollution. These freight transport hubs, including seaports, airports, railyards, distribution centers, and truck thoroughfares, should be regulated as fixed sources and be required to use the best available control technologies.

7. Focus emissions reductions on the most impacted communities.

The most significant and deadly impacts of freight transport occur at a very local level. For example, diesel emissions are 90 times higher per square mile in West

Trucks on My Street

by Brian Beveridge



I LIVE IN SOUTH PRESCOTT, less than half a mile from the Port of Oakland. Despite all of the streets in our little neighborhood being posted to prohibit trucks over 4½

tons, the signs are routinely ignored by truck drivers and the Oakland Police Department.

We have at least one pedestrian death each year due to trucks using our streets as part of their commercial operations.

My trucker neighbors regularly bring their heavy-duty diesel trucks home with them. They occasionally find curb space for the tractors. More often the truck is double-parked on the street, often with trailers attached. A 50-foot trailer is a wall of steel, impossible for drivers to see around when approaching an intersection. Children playing in the street are at risk of being run down. We have at least one pedestrian death each year due to trucks using our streets as part of their commercial operations.

Drivers' training should introduce the idea of community or environmental health. More so, our leaders should better balance the community's fiscal and physical health.

Oakland and over 40 times higher per square mile in West Contra Costa County than the California average.⁹² When the state and freight transport industries commit to reductions in diesel emissions, these emissions reductions need to be targeted in the communities that bear the largest disproportionate impact from freight movement. CARB's proposed 85% reduction in freight transport emissions should be translated to a demonstrable 85% reduction in emissions in impacted communities like Wilmington, Oakland, and Mira Loma; these reductions should not be averaged reductions over the entire state.

8. Include mitigation funding with all new infrastructure projects.

Every new infrastructure project should have a significant portion of funds be applied toward the mitigation of community impacts from the construction and operation of the new infrastructure. Proposed ballot initiatives that provide bond funding for infrastructure investments should be required to allocate a substantial portion of project funds to mitigate community impacts from the new infrastructure. There also needs to be a clear recognition of the damaging impacts to community health and safety that current infrastructure has already caused, and efforts to redress these impacts must be sought.

9. The cleanest and most efficient technologies should be used in all cases. Many existing technologies can already provide significant reductions in diesel pollution.

In all cases, the cleanest available technology should be used. The costs of freight transport are significant, and they are borne in health costs to California taxpayers and residents. Purchasing the cleanest technology available is a small fraction of the costs of premature death and illness in California. Clean technologies that already exist but have not been fully utilized include shoreside power for ships, lower emission rail technologies such as the Green Goat hybrid locomotive, and vehicle exhaust controls such as diesel particulate filters.

The freight transport industry also needs to evaluate new transportation methods, moving beyond dated 20th century technology. The logistical challenges involved with moving ever more cargo through California call for new technology to avoid paving over the entire state with twenty-lane freeways. For example, Shanghai employs an

The freight transport industry needs to move beyond dated 20th century technology.

elevated magnetic levitation train from the airport to the city. California must explore and invest in such promising new technologies.

10. Subject all final project plans for freight transport expansion to legitimate CEQA review.

The development of a statewide Goods Movement Action Plan should not be used to preclude the requirement for legitimate review of all new infrastructure projects as required under the California Environmental Quality Act (CEQA). Environmental Impact Reports should be developed and mitigation accomplished for every proposed infrastructure project independently and as an entire system to account for systemwide impacts.



CHAPTER 7 Conclusion

The most profitable corporations in the world are making money at the expense of some of California's most vulnerable communities. While many suffer from the health and community impacts of freight transport through California's seaports, airports, rail lines, and highways, a relatively few large business and logistics-related industries rely on easy access to these transportation hubs to support their business operations. Claims that there is not enough money in the industry to cover the unpaid health, environment, and social costs ring hollow. Implementing the recommendations proposed by the California Air Resources Board would cost a fraction of a penny per dollar of these corporations' revenue.

In this paper we have demonstrated the severe costs of freight transport, in dollars, illnesses, and personal perspectives. We have also shown the way to avert these costs—by requiring that the companies most benefiting from access to California's freight transport to cover the cost of their pollution. The health of California as a whole—and its most vulnerable residents in particular—demands it.

Implementing the recommendations proposed by the California Air Resources Board would cost a fraction of a penny per dollar of these corporations' revenue.

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$$\text{Dose Inhaled} = \frac{(C_{air})(DBR)(A)(EF)(ED)(1 \times 10^{-6})}{AT}$$

Parameter	Definition	Value
Dose Inhaled	Dose through inhalation (mg/kg/day)	
C _{air}	Concentration in air (µg/m³)	(1.38)(BC)
DBR	Daily breathing rate (L/kg body weight-day or L/kg-day)	393 (represents the 95th percentile, or high end*)
A	Inhalation absorption factor	1 (currently used for all substances included in CARB's Hot Spots program)
EF	Exposure frequency (day/year)	350 days/year
ED	Exposure duration (years)	70 years
AT	Averaging time period over which exposure is averaged, in days	25,550 days (70 years)
1 x 10 ⁻⁶	Micrograms to milligrams conversion (10 ⁻³ mg/µg), liters to cubic meters conversion (10 ⁻³ m³/l)	

* This risk assessment does not account for the fact that exposure is higher during infant and childhood years due to much higher breathing rates and other factors; therefore, the high end of adult breathing rates was selected.

- Cancer Risk Potency Factor for diesel PM = 3.0 x 10⁻⁴ per µg/m³ or 1.1 per mg/kg-day
- Cancer Risk (chances per million) = Dose Inhaled (mg/kg-day) x Cancer Potency (mg/kg-day)⁻¹ (1x10⁶)

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 Black carbon and elemental carbon measurements were converted to diesel PM concentrations per the following method:
 Black carbon to elemental carbon = 1.32
 Elemental carbon to diesel exhaust particulate = 1.56
 Amount of elemental carbon in the air from diesel sources = 0.67 as documented in: STAPPA/ALAPCO, Cancer Risk from Diesel Particulate: National and Metropolitan Area Estimates for the United States, March 15, 2000.
 Concentration in the Air = (BC)(1.32)(1.56)(0.67) µg/m³ diesel PM,
 where black carbon and elemental carbon levels are measured in µg/m³.
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