

San Pedro Bay Ports Clean Air Action Plan

Economic Analysis Proposed Clean Truck Program



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John E. Husing, Ph.D.
Economics & Politics, Inc.
961 Creek View Lane
Redlands, CA 92373
(909) 307-9444
john@johnhusing.com
www.johnhusing.com

Thomas E. Brightbill
CGR Management Consultants, LLC
1624 Franklin Street Ste. 911
Oakland, CA 94612
(510) 654-2738
Tbrightbill@cgrmc.com
www.cgrmc.com

Peter A. Crosby
CGR Management Consultants, LLC
1901 Avenue of the Stars
Los Angeles, CA 90067
(310) 553-6837
petecrosby@cgrmc.com
www.cgrmc.com

**San Pedro Bay Ports Clean Air Action Plan
Proposed Clean Truck Program
ECONOMIC ANALYSIS**

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San Pedro Bay Ports Clean Air Action Plan Proposed Clean Truck Program

ECONOMIC ANALYSIS

Executive Summary

In essence, the Clean Truck Program is designed to reduce emissions from the heavy duty trucks involved in port drayage to improve the health of people living in the communities surrounding the ports of Los Angeles and Long Beach. It does this by requiring the Licensed Motor Carriers (LMC) that arrange for the movement of containers to and from the ports to become licensed concessionaires, and from 2008-2012, gradually bring the trucks under their auspices up to 2007 emission standards. During this period, this research found that for a variety of reasons, the port truck driver pay will likely rise from its current median of \$12 an hour to roughly \$20 an hour.

Clean Environment, Strong Economy. If the Clean Truck Program is successful, the Southern California Air Quality Management District estimated that from 2008-2025, it will yield a cumulative economic benefit of \$4.7 to \$5.9 billion due to reductions in premature deaths, lost work time and medical problems. Of this community benefit, 95% would come from 230-1,450 fewer deaths. With the program in place, the ports should be able to move forward with their infrastructure plans. Eventually, this will allow them expand to a capacity of 42.5 million TEUs. By roughly 2025, that will result in the ability of the ports to support 300,000 to 600,000 new jobs that would be lost if that infrastructure cannot be built.

Challenges & Strategies. In the coming years, this analysis found that the port drayage sector will face significant challenges that will put great pressure on port drayage firms. These include the cost of retrofitting or replacing trucks; the Transportation Workers Identification Credential (TWIC) process that will reduce the number of drivers able to enter the port gates; the need for more drivers to handle port growth; and a looming shortage of drivers both locally and nationally. To meet these challenges, several strategies were reviewed. These included the need by LMCs to offer higher pay to lure drivers regardless of whether they work as independent owner operators (IOO) or employees. The use of the existing combination of LMCs and IOOs to meet the challenge of cleaning up the trucking fleet. And, addressing the truck clean-up process by having the LMCs own and clean-up the vehicles and use employee-drivers.

The Dilemma. Regardless of the challenges or the strategies for addressing them, one essential dilemma continually arose in this analysis. As the port drayage sector is currently organized, neither the LMCs nor their IOOs have the financial strength to solve the new challenges facing them. The lack of barriers to entry into the sector has led to ferocious price competition and left them with little bargaining power vis-à-vis the shipping lines and beneficial cargo owners for whom they work. This has left the firms in the sector with low net incomes and little net worth. Thus, the LMCs do not have the internal ability to pay more to IOOs to lure them into the field. Neither do the LMCs or the IOOs have the ability to self-fund the clean-up of the trucking fleet.

In effect, this means that the Clean Truck Program is forced to pressure the weakest links in the supply chain to rapidly clean-up the heavy duty trucks. Ideally, the extra costs imposed on the LMCs and/or IOOs to do so would be passed along to their customers in higher prices. That would mean that the externalities like diesel emissions and poor public health, caused by the acceleration in the use of the international supply chain, would be rapidly paid by the people receiving the goods. Eventually, that will occur. However, because of the weak negotiating power of the port drayage sector, prices will only likely go up when a crisis occurs due to the inability of the LMCs to afford moving the freight. This analysis shows that by the time the transition in prices is over, many of the LMCs will no longer exist.

Where financial institutions have a role to play, such as assisting in fleet investments, most IOOs and LMCs do not have the balance sheets or return on investment or sales to make them candidates for obtaining loans or equity partners. Here, one change that might help the program would be some form of port sponsored loan guarantees. Meanwhile, the Clean Truck Program's phase-in period, as well as the Fleet Modernization Grant Program, do provide some relief. However, neither is sufficient to overcome the fundamental lack of financial power in the current port drayage sector. In the case of the Fleet Modernization Grant Program, the analysis shows that funding will need to be front loaded due to the Transportation Impact Fees (*TIF*) imposed on the LMCs or IOOs. In year one of the 5-year phase-in process, the reduction on profits due to the TIFs on dirty trucks entering the ports would force the LMCs or IOOs to try to retrofit or replace their trucks immediately. All of the grant funds would thus be sought in that first year.

Changing Market Conditions. At its core, the crucial issue facing the port drayage industry is the fact that there are no regulatory or financial barriers to new firms entering the business. That is the reason for the intense competition and the lack of negotiating power that LMCs face in trying to impact the prices paid to them by the economically powerful ocean shipping lines and beneficial cargo owners. This situation appears to be changing because a variety of higher costs from both the marketplace (*e.g., higher wages*) and the Clean Truck Program will likely make it impossible for poorly financed new LMCs to be started. For the same reasons, some of the weaker existing LMCs will also likely leave the business. The LMCs that survive the process will thus be in a stronger bargaining position with their customers. Since the low labor costs and lack of pricing power have been the reasons why national trucking firms have not been involved in the port drayage sector, the changes occurring in the sector will probably encourage national trucking firms to consider being competitors in it.

In creating the rules under which the Clean Truck Program will be implemented, the ports must thus seek to ensure that the program does not so devastate the LMCs that significant shares of port drayage capacity are lost. However, given the weakened state of the sector, it seems almost impossible for the rules to be set in way that none of the players will be hurt.

Research Effort. These conclusions were reached through the following research effort. Step one in the analysis was a survey of 403 truckers at two terminal gates at each of the two ports. In addition, over 50 LMCs were interviewed, mostly one-on-one, and 136 LMCs were surveyed by telephone. A few national trucking firms were interviewed, some that use IOOs and some with employees. In addition, interviews were held with beneficial cargo owners, Teamsters Union officials, ILWU officials, a terminal operator, freight forwarders and LMCs not involved in moving port cargo. Research was reviewed on a wide variety of topics including port security issues, IRS tax codes industry financials, trucking regulations and economic reports. Statistics were compiled on truck driver pay and benefits, truck prices, industrial land costs and multi-modal transportation costs. With this background, five topics were analyzed to understand the impact of market forces, security regulations and the Clean Truck Program.

Structure of Current Industry. First, was the structure of the current industry. It found the LMCs are actually not trucking companies but rather brokers that arrange for the movement of cargo. As such, they do not have a deep base of assets. As indicated above, the intense competition among LMCs has left them with very little pricing power. This has resulted in average returns on their revenues of just 5%. The bulk of their cost is the 70% of revenue they pay, on average, to their IOOs to actually move cargo. The IOOs receive a median gross income of \$75,000, pay \$46,000 in costs and earn a median net income of \$29,000. On an hourly basis,

they average about \$12.00. IOOs are required to have their trucks inspected for safety and maintenance every 90 days with the records maintained by themselves and often their LMCs. The California Highway Patrol is mandated to review these records every two years but only has the budget to reach about half the IOOs and trucking fleets.

Impact of TWIC. A review of the security measures expected from the Department of Homeland Security indicates that drivers with issues of legal work status or those convicted of a long list of crimes will be barred from port entry. Based upon the survey of drivers (*22%: definitely not apply for TWIC*), LMC interviews (*median of 15% of drivers will not qualify*), Homeland Security New York estimate (*50% would be disqualified*) and U.S. Department of Transportation HAZMAT rules (*20% will not qualify*), it was estimated that 15% to 22% of the current port drivers would be barred by the TWIC rules. They will have to be replaced from drivers not currently in the port drayage sector. A look at what is being paid to IOOs in the Inland Empire, and employee drivers and construction workers in Los Angeles County and elsewhere, found that it would take about \$20 an hour to lure new drivers to port drayage. That is a significant increase over the current \$12 an hour. The mathematics found that replacing the 2,500 to 3,700 IOOs with the 16,800 trucks frequently accessing the ports would require a price increase of 24.3%. This also assumes the LMCs used the lack of capacity to raise their returns from 5% to 8%.

For most container movements, the trucking costs are quite small and this increase would take them from \$150 to \$187 on a move near the ports and \$300 to \$373 on a move to the Inland Empire. That is a fraction of the \$2,575 cost of the other modes of transportation involved in a containers journey. On the median \$70,000 value of the goods in a container, the new prices would represent only 0.05% and 0.1% of that value. Meanwhile, given the lack of negotiating power for LMCs, the price will only move up over time. If 50% of customers agreed to an immediate increase and the others agreed in equal shares over six months, LMCs would still be hurt badly. An average smaller LMC's net cash flow loss would be \$126,100, reducing the average owner's equity by 35% from \$362,200 to \$236,100. Larger LMCs would have an average cash flow loss of \$449,000, reducing the average owner's equity by 25% from \$1.77 million to \$1.32 million.

Impact of Clean Truck Program Using LMC:IOO Model. With the ports continuing to grow, by 2012 there will be a need for 3,400 more drivers than today. Combined with the loss due to TWIC, the total need would be 5,900 to 7,100. By 2012, from 42% to 55% of IOOs would be new to port drayage, assuming no retirements or turnover of current drivers. This underscores the need for the \$20 rate to lure new ones. Beyond that extra cost, the LMCs face a TIF for each time an IOO drove a truck not up to 2007 emission standards into the port. If the TIF was \$50, the median annual cost to the LMCs would be \$15,400 (*median 308 trips*). Since LMCs have a median pre-tax profit for each truck under their auspices of \$5,400, they would lose \$10,000 a year on the truck until the IOO retrofitted or replaced it. This would put intensive pressure on the IOO to do so or be forced out of the business.

If the IOO replaces it, a \$20,000 grant from the Fleet Modernization Grant Program would pay for it with no tax consequence to the IOO because the full amount could be written off immediately under IRS Section 179. However with every IOO trying to do this, the grant program would immediately need \$212 million for the 37% of the fleet that can be retrofitted. For new trucks, there are two issues. Each IOO would ask for a grant of \$80,000 from the grant program. That would represent an immediate need of \$850 million in grant funds for the 63% of

the fleet that cannot be retrofitted. Altogether, the first year grant fund need would be \$1.1 billion. Hence the need for it to be frontloaded.

Meanwhile, an IOO would need to borrow \$28,500 to pay the balance due on a \$100,000 tractor plus 8.5% in sales taxes. However, our research suggests that most IOOs are not in a position to have strong credit ratings. In addition, the only collateral they would be able to offer is their \$20,000 interest in the truck. Also, the ports would lien the vehicle for their \$80,000 interest meaning the lender would be in second lien position. Without a port sponsored loan guarantee program, few if any IOOs would be able to get such loans. One alternative would be to have the LMCs increase prices to their customers enough to generate the monies needed to pool funds and assist the LMCs with their \$28,500 financial gap. They would need to increase their prices \$18,000 to cover the 63% share of IOO's needing help. The price increase to cover those funds plus other costs to the LMC and raising their profit margin from 5% to 7% would be 48.6%.

As indicated earlier, trucking costs are quite small and this increase would take them from \$150 to \$223 on a move near the ports and \$300 to \$446 on a move to the Inland Empire. That is a fraction of the \$2,575 cost of the other modes of transportation involved. On the median \$70,000 value of the goods in a container, the new prices would represent only 0.1% and 0.2% of that value. Again, given the lack of negotiating power for LMCs, the price will only adjust upwards over time. If 50% of customers agreed to an immediate increase and the others agreed in equal shares over six months, an average smaller LMC's net cash flow loss would be \$247,000, reducing average owner's equity by 68% from \$362,200 to \$115,200. Larger LMCs would have an average cash flow loss of \$879,600, reducing the average owner's equity by 50% from \$1.77 million to \$888,900.

Impact of Clean Truck Program Using Employee-Drivers & Owned Trucks. The full Clean Truck Program proposal is for the LMCs to acquire trucks from the IOOs and have them retrofitted or replaced. They would be driven by employee-drivers and parked in a truck yard. Each of these three costs affects the price increase they will need.

- While the retrofitting or replacement of trucks was proposed over a five year period, the mathematics of the TIF fees would put the LMCs under pressure to buy and clean-up a fleet immediately. Assuming the Fleet Modernization Grant Program was frontloaded, the cost of the clean-up effort would still be more expensive than for IOOs. First the LMCs would have to acquire trucks to be retrofitted or replaced. Second, they would face tax consequences from the grants since they would be receiving \$20,000 or \$80,000 on several trucks, putting them well over the Section 179 threshold of \$112,000.

For the LMCs, the immediate average cash flow outlay of buying a truck and paying taxes on the \$20,000 grant to retrofit it would be \$39,500. The immediate average cash flow of buying a old truck to salvage, paying \$20,000 for their share of a \$100,000 new vehicle plus \$8,500 in sales taxes, and also paying for the tax consequences of the \$80,000 grant would be \$56,200. If half the fleet involved was retrofitted and half was replaced, the average cost would be \$47,900. As with IOOs, the LMCs lack the financial power to obtain these funds without a port sponsored guarantee program.

- If an LMC is to hire drivers at \$20 per hour for 45 hours a week (*overtime: 1 hour a day*), 50 weeks a year, the cost would be \$46,700. On each driver, the LMC it is assumed to pay \$13,600 in benefits. All of these costs are state mandated except for 90% of the premiums on a medical insurance policy for the driver only. The cost would total

\$60,300. Also, the employee driver has 110 fewer minutes a day of work due to mandated breaks, morning preparation and evening clean-up and time waiting for repairs. Further, they work 60 minutes less a day than IOOs. The time they have available is thus 28% less than the IOOs and there would be a need for extra drivers to make up for the time lost compared to the IOOs. The total cost is thus **\$77,400** to replace the IOOs. Increase in staff overhead due to owning trucks and employing drivers is assumed to be offset by slip-seating and the expanded use of technology such as Radio Frequency Identification and Automatic Vehicle Locators.

- Based upon the cost per truck of acquiring facilities found in markets across the country including Sacramento, it was possible to estimate those costs for Fontana (50%), the Mid-Cities San Gabriel Valley areas (25%) and South Bay (25%). Based upon the assumption that firms would locate in these three areas by the percentages shown, it was determined the cash flow outlay to acquire a facility would be **\$21,300**.

Combined, the employee/truck ownership/yard approach would cost the LMC **\$146,500** per truck. Compared to the costs today, the firm would require a price increase of **80%** to keep itself in the same position, except for an increase from 5% to 6% in its return on sales for taking on these extra burdens.

Even with an 80% increase, trucking costs remain relatively insignificant. This increase would take them from \$150 to \$270 on a move near the ports and \$300 to \$540 on a move to the Inland Empire. That remains a fraction of the \$2,575 cost of the other modes of transportation involved. On the median \$70,000 value of the goods in a container, the new prices would represent only 0.17% and 0.34% of that value. Again, given the lack of negotiating power for LMCs, the price will only adjust upwards over time. If 50% of customers agreed to an immediate increase and the others agreed in equal shares over six months, an average smaller LMC's net cash flow loss would be \$410,000, wiping out the average owner's equity of \$362,200 and leaving the company's equity at -\$47,800 (*bankrupt*). A larger LMC would have an average cash flow loss of \$1.46 million, reducing the average owner's equity by 83% from \$1.77 million to \$308,600.

Changing Conditions. As was discussed earlier, at its core, the crucial issue facing the port drayage industry is the lack of regulatory or financial barriers to new firms entering the business. The result has been intense competition and the lack of LMC negotiating power over the prices paid to them by their far more powerful customers. The higher costs from both the marketplace (*e.g., higher wages*) and the Clean Truck Program will likely make it impossible for poorly financed new LMCs to start and cause weaker LMCs to leave the business. The surviving LMCs will thus be in a stronger bargaining position. Since the low labor costs and lack of pricing power have been the reasons national trucking firms have not been involved in the port drayage, the changes occurring in the sector will encourage them to enter it. Ultimately, the industry will likely be made up of stronger local LMCs and those national firms that enter the market. Together, they should be able to work with ports to use the technologies now available to lower costs and increase productivity in terms of "turn" times and throughput.

Again, the challenge for the Clean Truck Program rules is to create rules that ensure that the program does not so devastate the LMCs to the point that a significant share of port drayage capacity is lost. However, given the sector's weakened state, there are firms and people who will

inevitably be hurt. A very rough estimate puts the losses at 376 mostly smaller LMCs and 1,500 back office workers and 376 owners of small businesses that locally serve the industry.

Summary. At its core, the Clean Truck Program is design to reduce air emissions in a timely fashion yielding an economic benefit to the community of \$4.7 to \$5.9 billion due to a reduction in premature deaths, loss of work and fewer medical problems. Some 95% of this benefit will come from 230-1,450 people not dying. With the program in place, the ports will be in a position to get their infrastructure plans approved. This will allow them to expand to their 42.5 million TEU capacity by the period 2020-2030. The result will be the ability of the ports to support 300,000 to 600,000 new jobs that would be lost if that infrastructure cannot be built.

Unfortunately, there is a cost of attaining these goals. That will be the closure of some LMCs and the loss of some of the non-driving jobs and small businesses involved with them, as well as the closing off of port drayage as a route to upward mobility for some workers. It is the type of choice that has led to the expression, "there is no such thing as a free lunch." It is the reason that economics is often referred to as "the dismal science."

San Pedro Bay Ports Clean Air Action Plan

Analysis: Proposed Clean Truck Program

John E. Husing, Ph.D., Economics & Politics, Inc.
Thomas E. Brightbill, CGR Management Consultants, LLC
Peter A. Crosby, CGR Management Consultants, LLC

1. Background

On November 20, 2006, at a special joint meeting of the Los Angeles Board of Harbor Commissioners and the Long Beach Board of Harbor Commissioners, the San Pedro Bay Ports Clean Air Action Plan (CAAP) was unanimously adopted. In doing so, the Commissioners acknowledged the fact that the Ports “ability to accommodate the projected growth in trade will depend upon their ability to address adverse environmental impacts (*and, in particular, air quality impacts*) that result from such trade. The [CAAP] is designed to develop mitigation measures and incentive programs necessary to reduce air emissions and health risks while allowing port development to continue.”¹

Among the major elements of the CAAP are strategies designed to significantly reduce the emissions from the Heavy Duty Vehicles that move containers in and out of the ports. This effort, known as the Clean Truck Program, has two intertwined objectives:

- Conversion or retrofitting of the truck drayage fleet to cleaner technologies.
- Ensuring that the fleet is maintained at a level to stay clean.

In designing a program to achieve these clean air objectives, the ports have proposed implementation measures that also attempt to address three other concerns:

- One is the fear that the often reported shortage of U.S. truck drivers will ultimately lead to an insufficient number of drivers to haul the growing volume of port containers.
- Related has been the issue of driver compensation since, on average, port truckers appear to be among the lowest paid workers in the supply chain.
- Additionally, there is concern that trucking operations are conducted in a way that enhances port security.

As implementation measures for the Clean Truck Program have been discussed, additional considerations have been raised. Importantly, the Transportation Security Administration and U.S. Coast Guard are about to undertake the Transportation Worker Identification Credential (TWIC) program. This effort will likely reduce the supply of drivers eligible to access all U.S. ports as under its draft provisions:

“Workers must provide biographic and biometric information to apply for a TWIC and pay a fee of \$107–\$159 to cover all costs associated with the TWIC program. A TWIC applicant must complete a TSA security threat assessment and will be disqualified from obtaining a TWIC if he or she has been convicted or incarcerated for certain crimes within prescribed time periods, lacks legal presence and/or authorization to work in the United States, has a connection to terrorist activity, or has been determined to lack mental capacity.”²

¹ San Pedro Bay Ports Clean Air Action Plan, Overview, P. 13.

² Transportation Worker Identification Credential (TWIC) Implementation in the Maritime Sector; Department Of Homeland Security, Transportation Security Administration, United States Coast Guard, 2006, p. 18.

In addition, the proposed implementation program has raised numerous issues relative to the economics of the port drayage system. These include, but are not limited to:

- The profitability or lack of profitability of the Licensed Motor Carriers (*LMC*) that currently arrange for the movement of containers to and from the ports.³
- The productivity or lack of productivity of the current business model whereby most containers are hauled by truckers who are Independent Owner Operators (*IOO*) working under contract to LMCs.
- If required, the degree to which LMCs can or cannot successfully transition to becoming companies that own trucks and conduct trucking operations themselves. Most are currently service firms that sell trucking services and arrange container movements. As such, they have balance sheets with few tangible assets. As full scale trucking firms, LMCs would shift to being heavily asset based operations.
- The reasonableness or lack of reasonableness in the share of the revenue received by LMCs that are paid to IOOs for moving containers.
- The level of oversight or lack of oversight on matters including insurance, maintenance, safety, and health status that LMCs exercise over the IOOs that contract to haul containers for them.
- The willingness or lack of willingness of IOOs to become employees of LMCs and the pay, working conditions and lifestyle considerations that influence their views.
- The efficiency or lack of efficiency in the speed at which containers inside the port gates can be loaded once truck drivers arrive outside the gates to pick them up.
- The pricing power or lack of pricing power of LMCs vis-à-vis the shipping lines that assign LMCs a portion of transportation revenues that shipping lines have negotiated with end-users like national retailers. These “store-door” contracts typically encompass the full cost of moving containers from Asia to their final U.S. destinations across combinations of ocean shipping lines, trucking firms and/or railroads.
- The extent to which LMCs of various sizes will or will not have the financial ability to bridge the transition between when the Clean Truck Program increases their gate fees or operating costs and when they can raise their prices to cover these costs.

Also, wider economic issues will likely impact the success of the Port Truck Program. Potentially important among these are:

- The compensation conditions necessary to ensure the availability of a sufficient number of drivers and trucks to move the growing volume of port containers.
- If LMCs are required to own trucking fleets, the terms and conditions under which financial institutions would assist them in acquiring the trucks owned by their IOOs as well as finance the LMCs’ share of replacing these older trucks with new rigs as required by the Clean Truck Program.

³ With reference to port drayage, the term LMC and trucking company will be used interchangeably in this report.

- If the program results in a consolidation in the number of LMCs, the impact that this will have on administrative and support personnel working in the industry as well as the survival of the largely Hispanic small businesses that currently help maintain trucks in the port area (*e.g., repair, tire, electrical, body & fender*).
- The extent to which the fees on non-conforming trucks during the five year transition period to clean vehicles may put some LMCs at such a competitive disadvantage that they cannot survive.

Given the wide variety of economic issues raised by the Clean Truck Program, the Ports of Los Angeles and Long Beach have retained Economics & Politics, Inc. (*Dr. John Husing*) and CGR Management Consultants (*Tom Brightbill, Peter Crosby*) to study the implications of the five iterations of the effort. In sequence, this report looks at:

1. The impact of the introduction of the TWIC program.
2. The added impact of the 5-year program to buy or retrofit trucks to 2007 standards with no other changes in the industry.
3. The further impact of having LMCs become concessionaires with strict obligations to oversee the insurance, safety, and health status of the IOOs working with them as well as to ensure that trucks are replaced or retrofitted to 2007 standards and maintained at that level.
4. The impact of having, instead, the LMCs become concessionaires with the obligation of acquiring trucks from their IOOs, replacing or retrofitting them to 2007 standards, maintaining them, and employing their former IOOs and possibly others as drivers.
5. The added impact on the port drayage sector of large trucking corporations making the decision to become competitors in it.

2. Clean Air & A Growing Economy

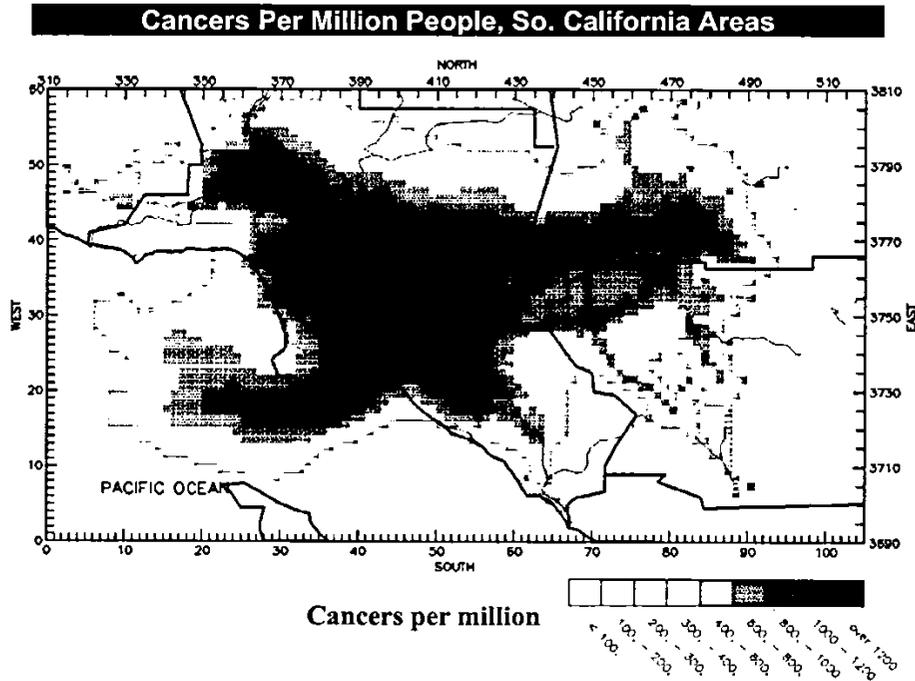
Clean Air Action Plan. The importance of the CAAP adopted by the Ports of Los Angeles and Long Beach was highlighted by the fact that “in 2000, the Southern California Air Quality Management District (*SCAQMD*) released results from its second Multiple Air Toxics Exposure Study, which raised concerns about the impact of emissions from ships, trucks and trains in the vicinity of the Ports and major transportation corridors.”⁴ That report showed the degree to which health risks were inordinately high near the ports and along Southern California’s transportation corridors.⁵

As a result, the overview of the CAAP stated that, “the Ports share the goal of reducing air pollution from existing and future port operations to acceptable regulatory health risk thresholds. The Ports take responsibility to implement the measures in this [CAAP]. The generally accepted health risk threshold for individual proposed projects is a 10 in 1,000,000 additional cancer risk. It is recognized that the standardized modeling used to measure this risk is imperfect. Therefore, the [CAAP] is multi-faceted. The [CAAP] includes stringent San Pedro Bay-wide standards that achieve real emissions reductions; a nested set of implementation strategies; investment in the

⁴ San Pedro Bay Ports Clean Air Action Plan Technical Report, Port of Los Angeles, Port of Long Beach, p. 3.

⁵ Multiple Air Toxics Exposure Study II, March 2000 Southern California Air Quality Management District.

development and integration of new/cleaner technologies into port operations; and creation of a comprehensive monitoring and tracking program that will document progress on all of these elements.”⁶ By its fifth year, the technical report supporting the CAAP calls for the program to achieve annual reductions in three pollutants due to measures affecting ocean going vessels, cargo handling equipment and heavy duty vehicles:⁷



Source: SCAQMD, Multiple Air Toxics Exposure Study II, March 2000

- **Diesel particulate matter (DPM)** released as a result of port operations would be 2,068 tons instead of the 3,898 tons that port growth would have created, a 1,830 ton reduction or -47%.
- **Oxides of nitrogen (NO_x)** emissions would be 23,032 tons instead of the 41,985 tons the growth would have generated, an 18,953 reduction or -45%.
- **Sulfur oxide (SO_x)** emissions would be 8,061 tons instead of the 16,933 tons that would have come from normal growth trends, an 8,872 ton reduction or -52%.

Decreased emissions of this magnitude will result in beneficial side effects for the community. For example, there would be fewer air pollution related illness such as asthma and cancer. That, in turn, would reduce health care costs for families and insurance companies. It would also mean fewer lost work days for workers living in the area. It would mean that vulnerable people who might not have survived in the air basin will, in fact, live full and productive lives.

⁶ San Pedro Bay Ports Clean Air Action Plan Technical Report, Port of Los Angeles, Port of Long Beach, p. 10.

⁷ San Pedro Bay Ports Clean Air Action Plan Technical Report, Tables 6-1, 6-2, 6-3, p. 157.

Clean Truck Program. In the statement by the Presidents of the Los Angeles and Long Beach harbor commissions that prefaced the announcement of the CAAP, it was indicated that:

“A critical initiative in the Plan is a massive effort to deal with the well-recognized problem of heavily polluting trucks driven by underpaid drivers. These trucks produced 10% of Port-related diesel particulate emissions and fully 25% of the NOx emissions. The Ports have identified over 16,000 individual vehicles that make 80% of the trips to and from Port terminals, so cleaning up those vehicles would eliminate a significant portion of Port-related air pollution.”⁸

As proposed, the Clean Truck Program contains five elements. In summary, they include:⁹

- A 5-year program to replace/retrofit to at least 2007 emission standards (0.01 grams per brake horsepower-hour & cleanest NOx when replaced) the 16,800 trucks regularly serving the ports and have them driven by people earning the prevailing wage. [highlighting added]
- A program restricting operation of trucks at the ports that do not meet CAAP clean air standards and imposing fees and transportation charges to pay for cleaner trucks. The charges to be imposed on “shippers” not drivers.
- A program to invite private trucking companies to hire drivers on terms offering incentives and conditions to achieve the CAAP goals while resulting in adequately paid drivers.
- A program to start with infusion of cash from Gateway Cities Program to fund 500 trucks to demonstrate the applicability of new retrofit technologies. The demonstration program is to start in first quarter 2008 with the full 16,800 truck program starting shortly thereafter.
- Ports to issue requests for proposal that will encourage truck fleets of alternatively fueled vehicles like LNG.

Given these instructions from their Commissioners, the port staffs drafted a plan to implement the Clean Truck Program. The following are key elements of it:¹⁰

- Licensed Motor Carriers will be required to pay a nominal fee for a concession giving them the right to have trucks enter the port gates. Application fees will range from \$500-\$2,150 depending on number of trucks with permit fees costing \$150 per truck.¹¹
- Over a 5-year period, concessionaire truck owners will be required to use trucks that the meet EPA 2007 or newer standards; or retrofitted trucks manufactured in 1996 or later; or trucks replaced under the Gateway Cities Truck Modernization Program.

⁸ President's Statements, Final 2006 San Pedro Bay Ports Clean Air Action Plan, Port of Los Angeles, Port of Long Beach, November 20, 2006.

⁹ See footnote, page 3.

¹⁰ Ports of Los Angeles and Long Beach Proposed Clean Trucks Program, April 12, 2007, Explanatory Memorandum.

¹¹ San Pedro Bay Ports Clean Trucks Program, Briefing Paper, ENVIRON International Corporation, July 2007, p. 6

- Concessionaires will scrap and replace the oldest of the 16,800 trucks working in the ports, and retrofit the others with the aid of a port grant program. This will occur over a 5-year period, with progressively more recent non-retrofitted trucks barred from the ports until only those meeting the EPA 2007 standard can enter. During the transition, trucks not meeting that standard will be required to pay a fee each time they enter the gate. The proposed truck phase-out schedule is:¹²

1/1/2008 ban pre-1989 trucks

1/1/2009 ban 1989-1993 trucks

1/1/2010 ban un-retrofitted 1994-1995 trucks

1/2/2011 ban un-retrofitted 1999-2003 trucks

1/1/2012 ban un-retrofitted 2004-2006 trucks

- After a 5-year transition period, concessionaires must own, operate and maintain their truck fleet and employ drivers to deliver drayage services to the ports. The proposed truck ownership and driver employment schedule is:¹³

6/30/2008 20%

6/30/2009 50%

6/30/2010 60%

6/30/2011 80%

6/30/2012 100%

- A truck Fleet Modernization Grant Program will be established to pay up to 80% of replacing an old truck with a new truck and up to 100% of labor and materials for installation of retrofits to qualifying trucks. Only trucks owned by concessionaires that will be driven by employees will be eligible. The program will use funds from the CAAP, Southern California Air Quality Management District (SCAQMD), Truck Impact Fees and possibly State Proposition 1B. Trucks must be installed with automatic vehicle locators (AVL) and Radio Frequency ID (RFID) transponder devices and essentially be used exclusively for port drayage.¹⁴

As indicated by the Presidents of the Boards of Harbor Commissioners of Los Angeles and Long Beach, the objective of the Clean Truck Program is to assist in the reduction in the environmental and health impacts of the operations of the two facilities. Specifically, the ports have estimated that in 2001-2002, Heavy Duty Vehicles accounted for 10% of the Diesel Particulate Matter (DPM), 26% of the nitrogen oxides (NOx) and 1% of the sulfur oxide (SOx) released by the use within the port area.¹⁵

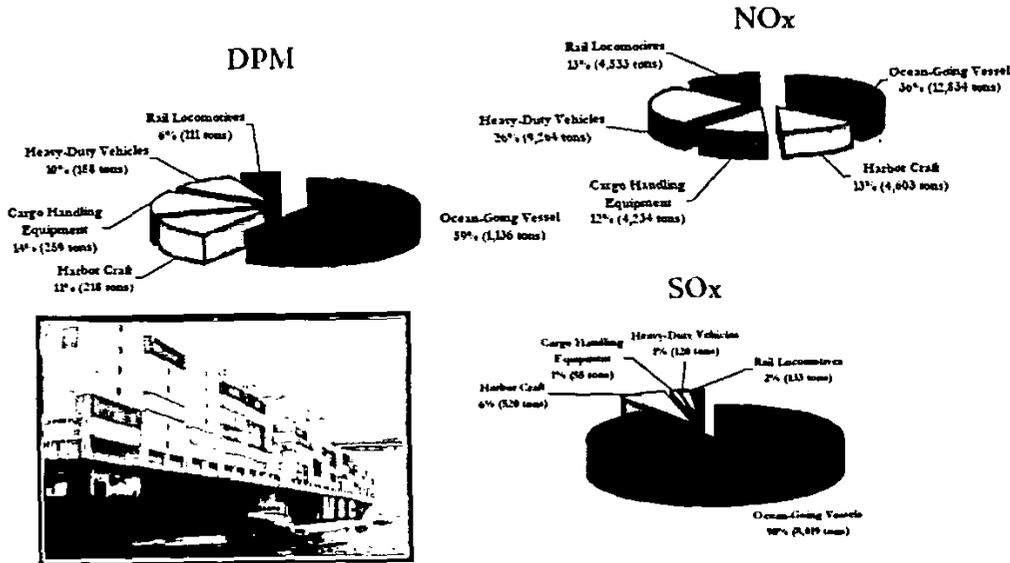
¹² ENVIRON International Corp., July 2007, p. 5.

¹³ Environ Briefing Paper, p. 7-8.

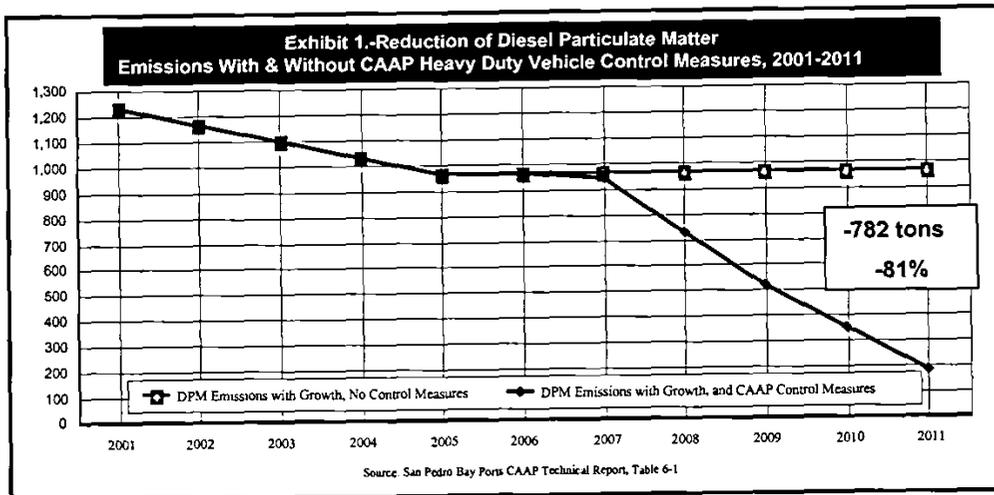
¹⁴ Environ Briefing Paper, p. 7.

¹⁵ San Pedro Bay Ports Clean Air Action Plan Technical Report, Port of Los Angeles, Port of Long Beach, p. 14, from slide prepared by Environmental Management Division, Port of Los Angeles.

Pollutant Contribution by Source

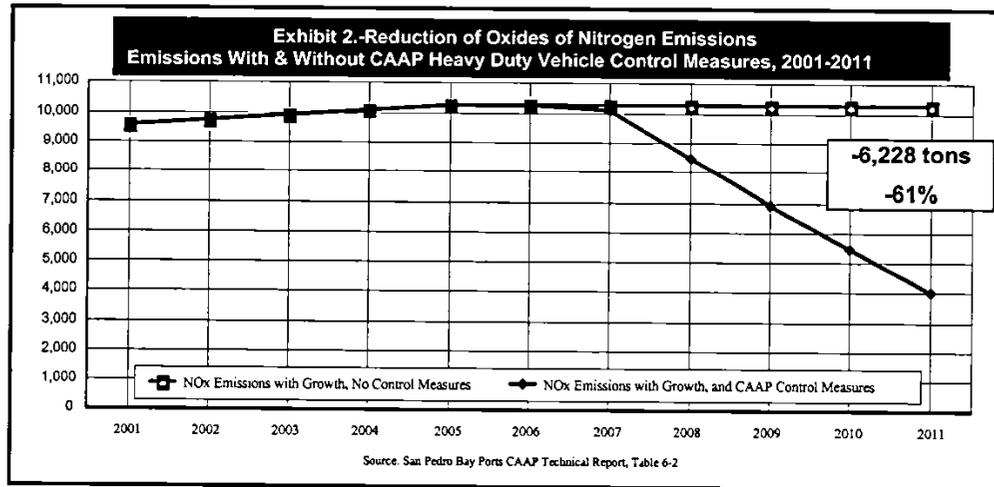


As a result, over five years, the goal of the Clean Truck Program is to seriously reduce DPM and NOx emissions Heavy Duty Vehicles. If the program is implemented as planned, the ports estimate that it would achieve the following reductions by year #5:¹⁶



¹⁶ San Pedro Bay Ports Clean Air Action Plan Technical Report, Tables 6-1, 6-2, 6-3, p. 157.

- Diesel particulate matter (DPM) released as a result of port operations would be 184 tons instead of the 966 tons that port growth would have created, a 782 ton reduction or -81% (Exhibit 1).
- Oxides of nitrogen (NOx) emissions would be 4,041 tons instead of the 41,985 tons the growth would have generated, a 6,228 reduction or -61% (Exhibit 2).
- Sulfur oxide (SOx) emissions would be seven tons instead of the nine tons that would have come from normal growth trends, a two ton reduction or -22%.



Clean Truck Program: Economic Benefits of Health Impacts. Implementation of the San Pedro Bay Ports Clean Truck Program will reduce particulate air pollution and result in public health improvements. Studies have shown a strong relationship between particulate air pollution and premature deaths, respiratory and cardiovascular illnesses, and other health effects. The South Coast Air Quality Management District (SCAQMD) staff estimated the health benefits from implementation of the Clean Truck Program, as described below. To provide additional confidence for the analyses, benefits were estimated and monetized using two methodologies:

- The first is that used by the California Air Resources Board (CARB) for the health benefit analysis of its recently adopted off-road diesel vehicles rule. This methodology uses health benefit factors developed by CARB applied to the expected emission reductions from the Port Truck Program.
- The second methodology is that used by the SCAQMD in the recently adopted 2007 Air Quality Management Plan (AQMP). This methodology uses air quality model simulations to analyze changes in emissions and resultant ambient pollution levels with implementation of the port truck program.

Both analyses conducted by SCAQMD are limited to health benefits due to reductions of ambient particulate levels. Additional health benefits not quantified in these analyses would be anticipated from reductions in regional ozone levels. In addition, these analyses did not estimate benefits from reductions in localized cancer risks associated with reductions in diesel particulate matter near facilities where trucks operate.

Estimated Value of Health Benefits Using CARB Off-Road Rule Methodology.

Epidemiological studies have shown strong relationship between ambient particular matter (PM) and premature deaths and respiratory and cardiovascular illnesses. CARB has established factors to link emissions of primary and secondary PM to the adverse health effects.¹⁷ These factors have evolved over time to reflect advancements in epidemiological research. These factors also vary by air basin to reflect differences in population densities and composition of pollutants.

Using (1) the most recent port inventory data, (2) the most recent factors that CARB established for the health benefit analysis of its off-road diesel equipment rule and (3) the emissions of primary PM and NOx (*secondary diesel PM*) resulting from the Ports Clean Truck Program, the number of avoided cases for various health effects resulting from implementation of the Port Truck Program was calculated for the period 2008 to 2025 (*Exhibit 3*).¹⁸ The analysis concluded that the truck program would reduce between 230 and 1,450 premature deaths.

Exhibit 3. Cumulative Health Effects, CARB Off-Road Rule Methodology Port Truck Program 2008-2025			
Health Effect	Avoided Cases		
	Low	Mean	High
Premature Death	230	840	1,450
Hospital Admissions-Respiratory	110	180	250
Hospital Admissions-Cardiovascular	210	330	520
Asthma & Lower Respiratory Symptoms	9,870	25,390	40,520
Acute Bronchitis	0	2,100	4,550
Work Day Loss	126,790	149,600	172,380
Minor Restricted Activity Days	701,790	859,460	1,016,650

Source: Southern California Air Quality Management District, 2007

The monetized value associated with the avoided health effects in Exhibit 3 ranges from \$1.7 billion to \$10.1 billion with the **median at \$5.9 billion** (*in 2006 dollars*).¹⁹ The value of avoided premature deaths accounts for approximately 95 percent of the estimated benefit. The estimated value of an avoided death is \$8.2 million for 2007, based on wage premiums for fatality risks of various jobs and risks of accidental deaths. Values for later years are adjusted to account for inflation and growth in real income. These valuations are consistent with the U.S. EPA's economic valuation methodology for health benefit assessments.

Using the same methodology discussed above, the SCAQMD staff also estimated program benefits using the AQMP emissions inventory. Using that inventory, there would be 180 to 1,110 avoided premature deaths due to the Program (*Exhibit 4*). The monetary value associated

¹⁷ California Air Resources Board, Goods Movement Action Plan, Appendix A: Quantification of the Health Impacts and Economic Valuation of Air Pollution from Ports and Goods Movement in California, Sacramento (pp. 61-62), CA, 2006.

¹⁸ California Air Resources Board, Proposed Regulation for In-use Off-road Diesel Vehicles, Appendix C: Health Impacts from Off-road Diesel Vehicles, Sacramento, CA, 2007.

¹⁹ Based on a 3-percent discount rate. If a 7-percent discount rate were used, the range would be from \$1.3 to \$7.8 billion with the median at \$4.5 billion.

with the avoided health effects in Exhibit 2 ranges from \$1.3 billion to \$8 billion with the **median at \$4.7 billion** (in 2006 dollars).²⁰

Exhibit 4. Cumulative Health Effects Using AQMP Emissions Inventory Port Truck Program 2008-2025			
Health Effect	Avoided Cases		
	Low	Mean	High
Premature Death	180	650	1110
Hospital Admissions-Respiratory	90	140	190
Hospital Admissions-Cardiovascular	160	260	400
Asthma & Lower Respiratory Symptoms	7,570	19,440	30,990
Acute Bronchitis	0	1,610	3,470
Work Day Loss	97,140	114,600	132,040
Minor Restricted Activity Days	486,550	595,720	704,530

Source: Southern California Air Quality Management District, 2007

Estimated Value of Health Benefits Using 2007 AQMP Methodology. This method uses air pollution models to analyze changes in pollution levels and used a ratio of air quality improvement from the Port Truck Program to the overall AQMP to calculate benefits. Specifically, regional PM2.5 annual air quality model simulations were conducted to determine the future year (2014) PM2.5 air quality assuming full implementation of the Port Truck Program. The average PM2.5 air quality benefit was then compared to the net air quality improvement presented in the 2007 AQMP PM2.5 attainment demonstration simulation. The percentage of the air quality improvement attributable to the implementation of the port truck program was calculated as the ratio of the two model simulations. This ratio was then used to apportion the PM2.5 health benefits projected in the 2007 AQMP Draft Final Socioeconomic Analysis to estimate the benefits of the proposed program. The benefits were further apportioned throughout the 2008-2025 period to account for the implementation schedule and natural fleet turnover. This methodology relies on the truck emission inventory in the AQMP and is not based on the latest port inventory.

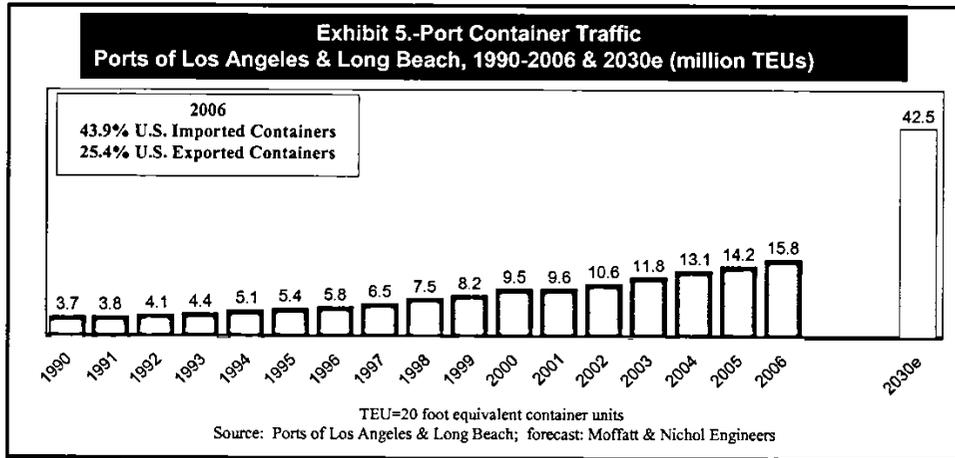
Based on this methodology, the SCAQMD staff estimated benefits from avoided deaths and illnesses to be approximately **\$5.4 billion dollars** during the period from 2008 through 2025. This benefit estimate determined through the AQMP methodology is similar to the results of the analysis using the CARB methodology and AQMP inventories described above in Section II (*i.e.*, median value of \$4.7 billion).

Employment & Economic Impact of Ports. As indicated, the Commissioners of the Ports of Los Angeles and Long Beach are well aware of the need to achieve reductions in air emissions to better the environment and improve the health of people living near the ports and throughout Southern California. At the same time, they understand the vital economic role their facilities play in the economic life of the region and the country. This has been underscored by several reports that have estimated the impact of the ports on Southern California and the nation.

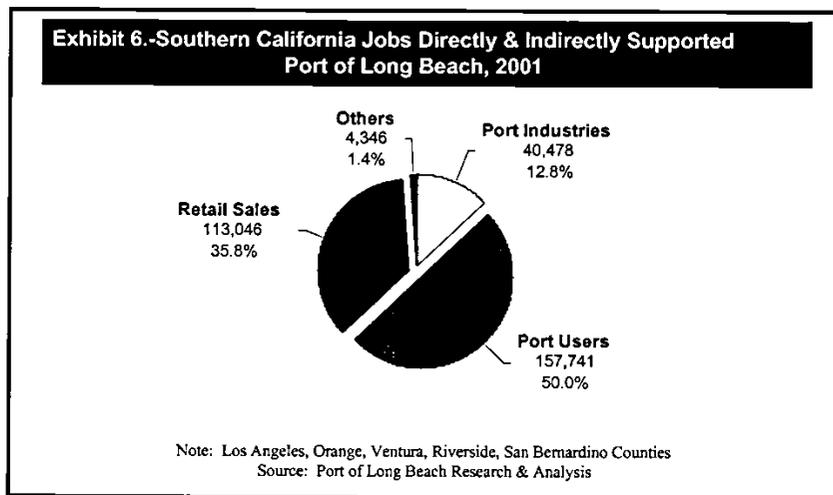
One measure is the share of U.S. containers that the flow through the Ports of Los Angeles and Long Beach. In 2006, the two ports reported that 15.8 million twenty foot equivalent container

²⁰ Based on a 3-percent discount rate. If a 7-percent discount rate were used, the range would be from \$1.1 to \$6.5 billion with the median at \$3.8 billion.

units (TEU) passed through them. This included 43.9% of U.S. imported containers and 25.4% of U.S. exported containers. While market forces are expected to try and take container volume much higher, the infrastructure constrained 2030 consensus forecast puts the volume at 42.5 million TEUs (Exhibit 5). The constraints on this forecast come from the capacity of Southern California's transportation system. This forecast would represent a compound annual increase of 4.48% from 2006-2030, compared to the annualized growth of 8.84% that occurred between 2000-2006. Industry actually sees growth of over 6%, if the infrastructure can handle it.



Meanwhile, there have been numerous studies that have estimated the international trade flowing through the San Pedro Bay ports on various geographic regions:



- For 2001, the staff of the Port of Long Beach estimated that 315,611 jobs in the five Southern California counties (*Los Angeles, Orange, Riverside, San Bernardino, Ventura*) were directly and indirectly supported by their port's activities (Exhibit 6).²¹

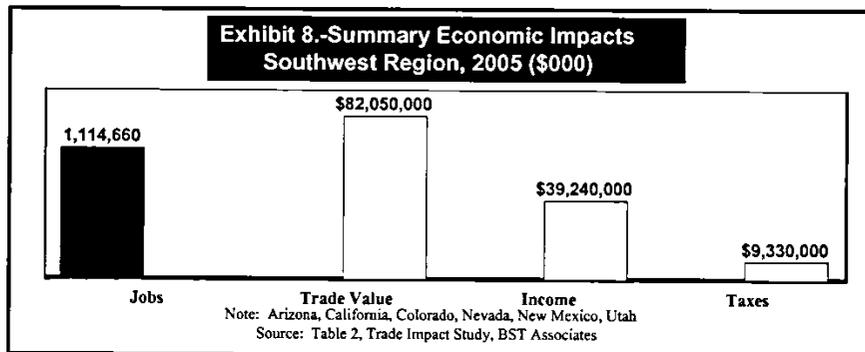
²¹ The Port of Long Beach Economic Impacts, Contributing to the Local, State & National Economies, Economic Impact Five County Region, 2001, Port of Long Beach.

Since recently revised CA Employment Development Department (EDD) data put the area's total 2001 wage and salary employment at 6,852,500,²² the port alone was responsible for one of every 22 jobs (4.6%) in the five county Southern California area.

Exhibit 7.- Trade Flows Through CA's Largest Seaports, 2004					
U.S. Rank	California Port	Total (bi)	Imports (bi)	Exports (bi)	Total: 2000-2004
1	Los Angeles	\$148.5	\$130.7	\$17.8	45.9%
3	Long Beach	\$92.0	\$74.8	\$17.2	-6.3%
10	Oakland	\$26.9	\$18.3	\$8.7	7.5%
29	Port Hueneme	\$6.5	\$6.4	\$0.1	42.3%
34	San Diego	\$4.8	\$4.7	\$0.1	1.3%
39	Richmond	\$3.6	\$3.4	\$0.2	322.2%
Total All California Ports		\$289.1	\$244.4	\$44.7	
Total All U.S. Ports		\$948.7	\$718.8	\$230.0	
L.A.-LB Port Volume		\$240.5	\$205.5	\$35.0	
LA-LB of U.S.		25.4%	28.6%	15.2%	
LA-LB of CA		83.2%	84.1%	78.3%	

Sources: U.S. Census Bureau, Foreign Trade Division

- For 2004, the Public Policy Institute of California reported U.S. Census Bureau data showing that the ports of Los Angeles (\$148.5 billion) and Long Beach (\$92.0 billion) handled a combined \$240.5 billion or 25.4% of the \$948.7 billion in two way trade that passed through all U.S. ports. Their volume also represented 83.2% of the \$289.1 billion in two way trade passing through all of California's ports (Exhibit 7).²³



- For 2005, a study prepared for the Alameda Corridor Transportation Authority and the Ports of Los Angeles and Long Beach by BST Associates found that trade flowing through the ports in 2005 was responsible for 1,114,660 jobs, \$82.1 billion in trade value, \$39.2 billion in income and \$9.3 billion in taxes their Southwestern area: California, Arizona, Colorado, Nevada, New Mexico and Utah (Exhibit 8).²⁴

²² Total All Industry Employment, 2001, CA Employment Development Department, revised in 2006.

²³ California and the Global Economy: Recent Facts and Figures, 2006 Edition, Jon Haverman, Ethan Jennings, Howard Shatz, Public Policy Institute of California, Table 12, p. 25.

²⁴ Trade Impact Study Final Report, BST Associates Market Research & Strategic Planning, July 2007, Table 2, p.8.

- For 2005, the Los Angeles Economic Development Corporation (*LAEDC*) indicated that international trade was directly responsible for 450,100 jobs in the five Southern California counties. Their data included Los Angeles International Airport. This employment represented 6.4% of the 7,016,000 jobs in this area. Unlike the work by the Port of Long Beach, their research did not estimate the jobs that were indirectly created due to spending in the local economy by the people who held these positions.²⁵
- For 2005, a study as part of the Multi-County Goods Movement Action Plan (*MCGMAP*) funded by SCAG, Caltrans, San Diego Association of Governments, and seven county transportation agencies built upon the 450,100 direct trade job estimate of the LAEDC. The MCGMAP study estimated that the port portion of these jobs at 386,000. It was 396,000 jobs if Port Hueneme and Port of San Diego are included.

The MCGMAP study also estimated the indirect 2005 employment that would be supported by the four ports at 344,050 jobs for a total job impact in the seven Southern California counties (*San Diego and Imperial added*) of 740,103. That represented one of every 11 of the 8,416,100 that existed in the seven county area (8.8%). Note, it was conservatively found that each port related job indirectly supported 0.87 jobs in the general economy.

Potential Lost Economic Impact if CAAP Unsuccessful. If port trade reaches the constrained consensus forecasted level of 42.5 million TEUs by 2030, the MCGMAP study found that direct port related employment in Southern California would reach 857,000 jobs, up 461,000. However, if the CAAP fails and sufficient port infrastructure is not built, it will fall short of this level. If the lack of port facilities restricted volume to 2/3rds of the constrained consensus level, only 697,500 direct new jobs would be created. This would mean 159,500 fewer direct jobs by 2030. If lack of facilities restricted volume to 1/3rd of the consensus level, only 542,100 direct new jobs would be created by 2030. Lack of growth would mean 304,900 fewer direct positions.²⁶

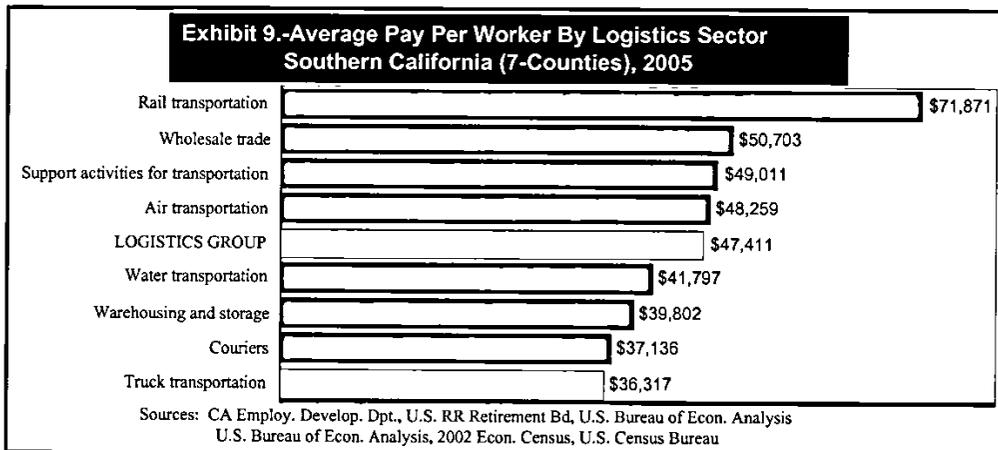
In 2030, if San Pedro Bay port trade reached the constrained consensus forecast of 42.5 million TEUs, the total direct and indirect port related employment would reach 1,601,000, up 861,000 jobs from the 740,000 in 2005. If the failure of the CAAP led to a lack of port infrastructure and volume was restricted to 2/3rds of that constrained forecast, only 1,303,000 total jobs would supported, a gain of 563,000 from 2005. That would represent a **loss of 298,000** direct and indirect jobs that otherwise would have been created. If the failure of the CAAP caused port volume to be restricted to 1/3rd of the constrained consensus level, the total jobs supported would reach 1,013,000, a gain of 273,000 from 2005. That would represent a loss of 588,000 direct and indirect jobs that otherwise would have been created.²⁷

²⁵ International Trade Trends & Impacts, The Southern California Region, 2005 and 2006 Forecast, Los Angeles Economic Development Corporation, Table 5, p.23.

²⁶ Economic Impact of Southern California's Ports, 2005, Multi-County Goods Movement Action Plan report, 2007, John Husing, Exhibit 22, p. 16.

²⁷ Economic Impact of Southern California's Ports, 2005, Exhibit 22, p. 16.

A separate MCGMAP study showed that the sectors involved in Southern California's logistics activities had average pay of \$47,411 in 2005. At the low end, truck transportation was at \$36,317. This was the weighted average of \$31,093 for port truck firms and \$38,827 for non-port firms. Together, they represented the second largest share of goods movement jobs at 92,294 (*Exhibit 9*).²⁸



Using their various methodologies, these several reports, from a wide variety of analysts, show that the Ports of Los Angeles and Long Beach are very important assets to the Southern California and U.S. economies. The livelihoods of large numbers of people today and in the future will depend upon their success. Again, this is why the Port Commissioners have indicated that "the [CAAP] is designed to develop mitigation measures and incentive programs necessary to reduce air emissions and health risks *while allowing port development to continue.*"²⁹ [*italics added*]



²⁸ Economic Benefits of the Ports of Los Angeles and Long Beach, Action Plan report, 2007, John Husing, Exhibit 12, p. 2-5 and trucking sector discussion p. 2-1 to p. 2-2.

²⁹ San Pedro Bay Ports Clean Air Action Plan, Overview, P. 13.

3. Port Drayage Motor Carriage: LMC-IOO Model

Container movements to and from the ports of Los Angeles and Long Beach are largely organized by Licensed Motor Carriers (*LMC*). Contrary to the implication of their name, most of these entities are not trucking companies in the common understanding of the term. Rather, they are essentially service companies that contract with either ocean shipping lines or with customs brokers, freight forwarders or beneficial cargo owners (*e.g., national retailers, exporters*) to move containers. To physically transport the cargo, almost all of the LMCs rely upon independent owner operators (*IOOs*) who own trucks and contract with the LMCs to handle their container moves. Below is an explanation of how this system works.

Nationally, there are more than 600,000 for-hire motor carriage companies.³⁰ While port drayage firms are a small segment of this industry, they are not a defined subset of it and no federal or state agency collects specific data on them. While not defined, port drayage motor carriage firms are commonly understood to be companies picking up or dropping off goods at a seaport as part of the nation's ocean based international trade. Today, they are closely associated with the movement of containerized cargo.

Frequency Classification. For most port drayage motor carriers, all or a portion of their business involves hauling cargo through a port gate. A significant number of firms may have some drivers who enter the ports on a regular basis, but have a majority of their business with other types of trucking or logistics services. A few motor carriers may engage in port drayage on a seasonal basis due to the nature of the products they haul (*e.g., agricultural commodities*). Others may serve the port only during peak seasons like Christmas. The San Pedro Bay harbors classify drayage truck operators based upon their frequency of port entry. Of a total of 41,000 trucks doing so in 2005:³¹

- Frequent: More than 7.0 times a week - 7,000 trucks
- Semi-frequent: 3.5 but less than 7.0 times a week – 9,800 trucks
- Infrequent: Less than 3.5 times a week 24,200 trucks

The first two of these categories represent roughly 80% of the port effort and thus are the 16,800 vehicles to be replaced or retrofitted to serious reduce heavy duty vehicle emissions.

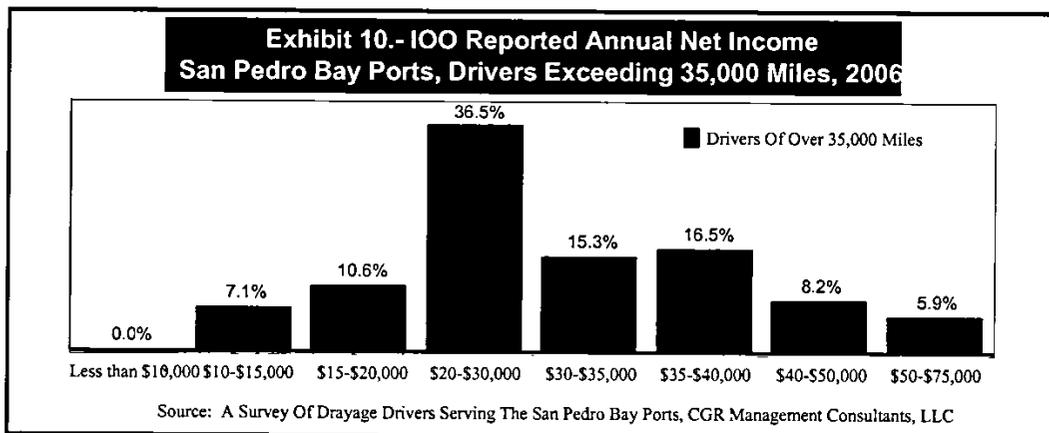
Independent Owner Operators. Port drayage is a very competitive activity. Lack of barriers to entry has created a very competitive port drayage sector. One result has been the creation of a larger number of **independent owner operators** (*IOO*). These entrepreneurial drivers own, maintain and drive their own tractors. In the case of the ports, they contract with an LMC to haul freight for them on a trip-by-trip basis. The IOOs are independent contractors and retain the prerogative of declining any particular load requested by their LMC, not working on a given day, and contracting with more than one LMC at the same time. The IOOs are not motor carriage companies since they are not authorized to provide for-hire services to end users. Under California and federal law, they must conform to all driver safety rules plus truck safety and maintenance regulations (*see safety & maintenance section below*). Two recent surveys of IOO

³⁰ Standard Motor Carriage and Transportation Statistics, Volume.12, Issue 2 reports as of August 2005, there were 613,242 for-hire, U.S. mail and other U.S. interstate motor carriers on file with the Federal Motor Carrier Safety Administration.

³¹ San Pedro Bay Ports Clean Air Action Plan Technical Report, November 2006, p. 57.

drivers have been conducted at the ports of Los Angeles and Long Beach. They have yielded similar results with regards to pay in the industry:

- Dr. Kristen Monaco of California State University Long Beach surveyed drivers as they entered the port gates and found that 2006 median net pay was \$36,550.³² She also found that pay had risen 1.5% per annum from 2003-2006. Applying that rate to her 2006 pay levels yields a 2007 estimated median of \$37,098. Using that figure, and the fact that Dr. Monaco found that the IOOs she interviewed worked an average of 60 hours per week, 50 weeks a year, the median hourly pay was calculated at \$12.37.³³ As entrepreneurs, these drivers do not have paid vacation, employer paid social security, employer paid workers compensation insurance or health insurance.
- CGR interviewed drivers in early 2007 as part of a survey for the Gateway Cities Council of Governments. They were able to partially verify their data with tax returns. Their work found a 2007 median income of \$29,000. The lower annual pay levels appear to be explained by the fact that the drivers cited an average workweek of 50 hours versus 60 hours reported by Dr. Monaco.³⁴ This difference may be accounted for by the fact that CGR interviewed drivers at LMC yard locations and may have captured a higher percentage of short haul drivers waiting to be sent for loads. Using the 50 hour workweek that CGR found the IOOs median hourly earnings of \$11.60. Again, as self-employed workers, they do not have paid vacation, employer paid social security, workers compensation or health insurance.



An important fact emerging from the CGR study was that 14.1% of the IOOs who drove over 35,000 miles netted in excess of \$40,000 a year (*Exhibit 10*). Given their incomes, this group of entrepreneurial drivers are unlikely to be willing to work for less.

³² Incentivizing Truck Retrofitting in Port Drayage: A Study of Drivers at the Ports of Los Angeles and Long Beach, Kristen Monaco, Ph.D., Department of Economics, California State University Long Beach, January 2007, p. 23.

³³ Monaco, p. 19.

³⁴ A Survey of Drayage Drivers Serving the San Pedro Ports, CGR Management Consultants, LLC, March 26, 2007. Available at <http://www.gatewaycog.org/publications>, p. 24 at <http://www.gatewaycog.org/publications>.

Licensed Motor Carriers. Another result of the ease with which firms can enter the port drayage business has been the growth of Licensed Motor Carriers (*LMC*) to an estimated 800-1,200. At the ports of Los Angeles and Long Beach, it is these entities that contract with shippers to move cargo to and from the harbors. They also contract with customs brokers, freight forwarders and end-users to move containers.

As indicated, most LMCs contract with IOOs to actually enter the port gates to pick-up or deliver freight. That said, it is the LMCs that are contractually responsible for port drayage. They must also ensure that the IOOs working with them conform to driver safety rules and meet truck safety and maintenance regulations plus state insurance requirements. On a daily basis, the IOOs working with an LMC report to a dispatcher and are assigned loads. The price the IOOs receive for hauling these loads has been predetermined by agreement and generally depends upon the distance of the haul.

It is industry practice for the formal relationships between the IOOs and the LMCs to be 90-day rotating contracts. Again, as independent contractors, the IOOs have the right to not report for work on any given day, as well as refuse any load, and work for multiple LMCs. However, given the dependence of the IOOs on the LMCs for work and the need by LMCs to keep drivers, the relationships with the well-established LMCs appear to be much stronger and last longer. The most sophisticated LMCs have Automatic Vehicle Locator (*AVL*) devices on the trucks of their IOOs and can identify their locations in real time.

By using IOOs, as opposed to investing in tractors and hiring employee-drivers, the LMCs require little capital investment, minimal administrative staff, and hence low fixed costs. They are thus not traditional trucking firms which have substantial capital invested in their vehicles. The minimal financial investment and low level of staffing required to start an LMC are reasons why so many smaller ones have come into existence (*see pricing power section below*).

It is generally accepted that there are 800-1,200 LMCs providing some level of drayage with the San Pedro Bay ports. Most are located in the greater Los Angeles metropolitan area, though some are located in places like the Central Valley. Locations tend to depend on the share of their business in port drayage, the location of their customers (*e.g., Central Valley for agricultural haulers*) and when and where they were founded. Infrequent callers at the Ports tend to be located farther away. Also, the larger the LMC, the more likely they will engage in a variety of non-drayage operations. For the largest, many of their drivers likely do no port drayage work.³⁵

LMC Size. To ascertain the characteristics of the LMCs serving the ports, two approaches were taken. One was a telephone survey of 136 firms or over 10% of the LMCs. The second was one-on-one and group interviews with over 50 companies. One result of the survey was to ascertain the size of the LMCs classified by total number of drivers, whether they were involved in port drayage work or not.³⁶ It found (*Exhibit 11*):

³⁵ These activities can include non-port related motor carriage, warehousing, transloading, cross docking, sorting and transshipment of goods, logistics management, local delivery of truckload or less than truckload lots or acting as third party logistics firms providing fleets services for a variety of organizations.

³⁶ The LMC phone survey was conducted Monday- Friday, 8am to 5pm. CGR principals and consultants made calls. The contact list was randomly selected from the eModal motor carrier and vendor list for the ports that gave LMC identification, address, contacts person, titles and phone numbers. The contacts were founders, owners, presidents, operations managers, dispatchers, controllers or office managers who registered the LMC with eModal.

- 57.6% had 25 or fewer drivers
- 18.2% had 76 or more drivers
- Median (*half firms above & half below*) number of drivers was 22.1
- The mean, distorted by the influence of larger firms was 61.2

These facts verify that the LMCs serving the ports are predominately smaller firms.

Exhibit 11.-LMCs By Number of Drivers, 2007		
Driver Range	Share	Cumulative Share
1 to 10	21.2%	21.2%
11 to 25	36.4%	57.6%
26-75	24.2%	81.8%
76-250	13.6%	95.5%
251-1,000	4.5%	100.0%
Total	100.0%	

Source: LMC Telephone Survey, CGR Management Services, August 2007

LMC Container Turns. A second result of the survey provided the distribution of average container turns undertaken by an LMC's driver during a day (*Exhibit 12*):

- 39.6% averaged 2.0 to 2.4 turns per day
- 72.9% averaged under 3.0 turns per day, meaning 27.1% averaged 3.0 turns or more
- Median was 2.0 turns per day
- The mean, impact by some more aggressive IOOs, was 2.6 turns per day

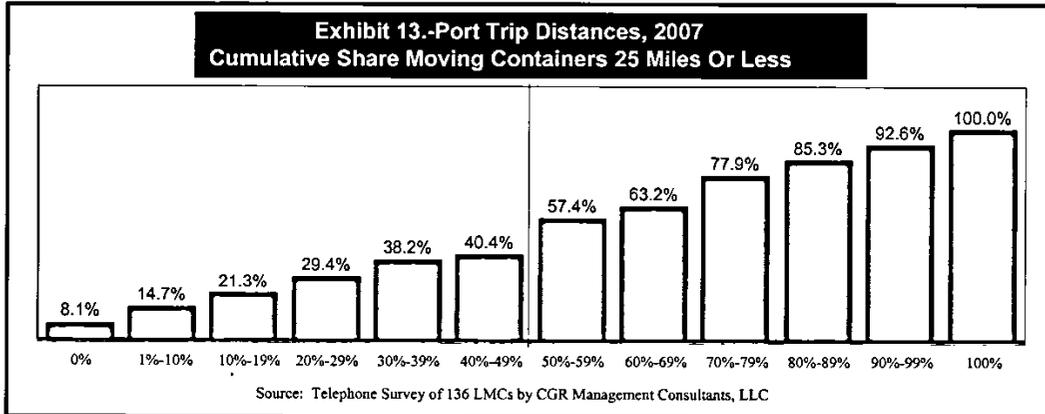
Exhibit 12.-Average Container Turns A Day, 2007		
Container Turns	Share	Cumulative Share
1.0 to 1.9	15.6%	15.6%
2.0 to 2.4	39.6%	55.2%
2.5 to 2.9	17.7%	72.9%
3.0 to 4.0	18.8%	91.7%
4.0 to 5.0	7.3%	99.0%
Over 5.0	1.0%	100.0%
Total	100.0%	

Source: LMC Telephone Survey, CGR Management Services, August 2007

The median number of container turns that drivers are able to make in picking up loads at the ports and bringing them to their destination is 2.0. It is affected by the longer distances that the drivers for some LMCs must drive (*see Length of LMC Trips*). The mean number of container turns was higher at 2.6. It is pulled up because 27.1% drivers are able to make 3.0 or more turns per day. They likely work for the LMCs whose business primarily involves moving containers from the ports to nearby facilities. This measure also is affected by the efficiency of port operations in getting containers on to trucks.

Length of LMC Trips. Given the impact of port truck traffic on congestion near the two harbors and along routes moving inland, another important finding was the share of drayage trips

that were under 25 miles from the ports. This is an indication of the extent to which trucks are primarily moving containers to nearby cross-docks, warehouses or intermodal rail yards, as opposed to moving them longer distances. The more extensive trips would be to places like the Inland Empire with its large base of distribution facilities or cross-country (*Exhibit 13*):



- A cumulative total of 40.4% of LMCs indicated that less than half of their port trips stayed within 25 miles of the harbors.
- For all LMCs, the median share of port drayage conducted within 25 miles of the harbors was 50%, with the other 50% involved container moves of more than 25 miles from the ports (*not shown*).
- The mean share of LMC port drayage within 25 miles of the harbors was nearly the same at 49.4% (*not shown*). On average, 50.6% of LMCs moved containers over 25 miles.

These data suggest that over about half of the port drayage business involves moving containers to locations that are not within the immediate vicinity of the harbors.

Share of LMC Operations In Port Drayage By Size. Depending upon size, LMCs have much different levels of dependency on port drayage for the success of their companies (*Exhibit 14*). To look at this and other issues, the LMCs were classified into five size categories based upon the one-on-one interviews conducted for this project. These categories reflected the underlying business organizations required to handle the amounts of drayage business implied by having access to varying levels of drivers and trucks. The telephone survey provided 132 usable results for gaining an understanding of these five size categories.

A key result showed the extent to which port operations were crucial to the success of LMCs of various sizes. As would be expected, it showed that the smaller an LMC, the greater its dependency upon port drayage work. Thus, for firms with 1-10 trucks, 83.1% of their effort was port drayage. It was 79.4% for those with 11-25 trucks and 76.2% for LMCs with 26-75 trucks. After that, the share of drayage business falls off dramatically. It is only 40.6% for LMCs with 76 to 250 trucks and 25.2% for firms with 251 or more trucks (*Exhibit 14*).

These are important results as they mean that the LMCs that are the largest and likely the strongest financially are the ones able to exercise independence from decision making by the ports, the shipping lines and the beneficial cargo owners like national retailers. The reverse is

the case for the smaller LMCs. They are close to totally reliant upon those entities for their success and survival and are less able to negotiate favorable rates on their own.

Exhibit 14.-LMC Share Of Business In Drayage & Share of Drayage Moves, 2007												
1	2	3	4	5	6	7	8	9	10	11	12	13
Source	Survey	Survey	#3/#4	Data Sheet	Firms Wgtd	Distribute #6	#7*1,000	#8*#5	#9*#4	Exhibit 12	#10*#11	Distribute #12
Size	Driver & Trucks	Number Firms	Average Drivers	Weighted Drayage	Weighting	Wgt.Firm Distribution	LMCs	Equivalent FT LMCs	Trucks	Median Turns	Containers A Day	Market Share
1-10	157	28	5.6	83.1%	23.3	24.6%	246	204	1,143	2.0	2,286	5.1%
11-25	856	48	17.8	79.4%	38.1	40.3%	403	320	5,709	2.0	11,417	25.4%
26-75	1,500	32	46.9	76.2%	24.4	25.8%	258	196	9,207	2.0	18,414	41.0%
76-250	2,469	18	137.2	40.6%	7.3	7.7%	77	31	4,311	2.0	8,623	19.2%
251 & Up	3,100	6	516.7	25.2%	1.5	1.6%	16	4	2,075	2.0	4,149	9.2%
Total	8,082	132	61.2	46.2%	94.6	100.0%	1,000	756	22,444	2.0	44,889	100.0%

Share of Port Drayage by Size of LMCs. An important question addressed in Exhibit 14 is the extent to which the containers moving through the San Pedro Bay ports are handled by LMCs of various sizes. To do so, the number of firms in each size category was weighted by the share of that group's operations that involve port drayage (*column 5*). Note, these calculations did not reduce the number of LMCs, they only showed the distribution of firms based on their estimated involvement in port drayage (*column 7*). That was done by multiplying the weighted shares in each category times the 1,000 LMCs (*mid-point of 800-1,200*) estimated to be operating at the harbors. Of the 1,000, the result estimated the array of firms, weighted by their number of trucks and share of drayage work. The range was 246 in the 1-10 truck group to 16 for those with 251 or more (*column 8*).

Since none of the categories of LMCs was found to be 100% dedicated to port drayage, it was necessary to calculate the number of full-time equivalent firms in each group, by reducing the 1,000 firms using the shares of drayage found in each size category. Thus, for the 246 LMCs allocated to the 1-10 group, only 83.1% of their effort was in port drayage. They are thus acting like 204 companies totally involved in drayage (*column 9*). In each category, the average number of trucks and drivers was determined by the survey (*column 4*). Using those averages, the total number of trucks in each group was calculated (*column 10*). Above (*Exhibit 12*), it was shown that each truck in the drayage industry can make a median of 2.0 turns a day. Using that factor with the number of trucks estimated in each category allows an estimate of the number of containers each group is capable of processing per day (*column 12*). By size category, the resulting shares of the port drayage business were (*column 13*):

1-12 trucks 5.1%
 11-25 trucks 25.4%
 26-75 trucks 41.0%
 76-250 trucks 19.2%
 251 or more 9.2%

Note, these calculations are an estimate of the capability of each size category of LMCs if the number of trucks and drivers that define that category are always in use. Clearly, this is not the case. Some IOO drivers only work part time. The volume of containers has seasonal ebbs and

flows. In addition, the number of containers that can be handled by each size group is overestimated to the extent that moving the goods in one container may take as many as three trucking operations. One might take a container to an LMC's yard. A second one might move it from there to a cross-dock so goods can be transferred from a sea to a landside container. A third might move the landside container from there to an intermodal railyard. The distributions above thus assume that these considerations affect all five of the size categories equally. To the extent they do not, there would be a change in the relative importance of the various groups.

That said, the conclusion is that at the ports of Los Angeles and Long Beach, the bulk of port drayage capacity among mid-sized and smaller firms with 71.5% of the business handle by firms with from 1-75 trucks.

Safety & Maintenance. While market activities in the trucking industry are not regulated, safety is. Since 2000, firms in interstate commerce, including those in port drayage, are subject to audits of their driver logs, truck insurance, safety and maintenance records by the U.S. Department of Transportation (*DOT*) through its Federal Motor Carrier Safety Administration (*FMCSA*). However, the agency's staffing level has meant that these regulatory efforts have been limited. Thus, in 2006, FMCSA conducted just 10,353 compliance reviews nationally out of an industry with over 700,000 registered motor carriers or under 2%.³⁷

In California, trucking firms are more vigorously regulated by the California Highway Patrol (*CHP*) through its Biannual Inspection Program (*BIT*)³⁸: "Under the program, all motor carrier (*truck*) operators are required to have their truck "terminals" inspected by CHP every 25 months to ensure that the operator is in compliance with state laws and regulations designed to promote highway safety. A terminal is the location where the vehicles are garaged and maintained. According to CHP, as of July 2006 about 68,000 terminals had enrolled in the program. These terminals range in size from one truck (*owner-operator*) to more than 100 trucks."³⁹

"During the inspection, CHP inspectors check the physical condition of a sample of the trucks and trailers in a given terminal, as well as review the maintenance and driver records (*including vehicle inspection reports,*⁴⁰ *repair records, and time cards for drivers*) for compliance with state laws and regulations ... The Governor's [FY2008] budget request[ed] an increase of \$7.7 million and 71.5 positions to enable CHP to double its terminal inspections from about 18,000 to 37,000 annually ... The department currently inspects only about one-half of the terminals required to be inspected in a given year."⁴¹

³⁷ Motor Carrier Safety: the FMCSA's Oversight of High-Risk Carriers, Opening Statement, Hon. Peter DeFazio's, House Transportation & Infrastructure Committee, Subcommittee on Highways and Transit Hearing, July 11, 2007.

³⁸ California Vehicle Code Section 34501.12 requires any person or organization directing the operation of certain trucks or trailers to participate in an inspection program conducted by the California Highway Patrol (CHP). The law requires the CHP to inspect California truck terminals every two years.

³⁹ Analysis of the 2007-08 Budget Bill: Transportation, California Highway Patrol (2720), California Legislative Analysts Office.

⁴⁰ California Vehicle Code 34505.5(a) a truck operator must have vehicle safety inspections every 90-day conducted by qualified inspectors. California Vehicle Code Section 34505.5(e) requires that inspection records be maintained for two years.

⁴¹ Analysis of the 2007-08 Budget Bill: Transportation, California Highway Patrol (2720).

The most sophisticated LMCs maintain detailed copies of the truck safety and maintenance inspection records as well as driver licenses, physical examinations, driving time logs and insurance of the IOOs that work with them. They do so as it is in their financial and liability interest to ensure that their IOOs are in compliance with state laws. They also assist the CHP by arranging for truck inspections of their IOOs. Many of the sophisticated LMCs have contracts with consulting firms such as National Safety Compliance to assist them with records management and in dealing with the DOT and CHP.⁴² Interviews with smaller LMCs (0-20 IOOs) did not reveal similar record keeping for their IOOs. Reduced formal oversight is perhaps to be expected given the small sizes and cost burden of their non-driving office staffs.⁴³

Profitability. Nationally, the motor carriage industry is relatively unprofitable due to its competitive nature, with “operating ratios” showing that costs absorb well over 90% of revenues. The industry is competitive at all levels. For example, the largest 50 national companies hold less than 30% of the market.⁴⁴ Large publicly held motor carriage companies are the most profitable. However, these big firms are not comparable to port drayage carriers because of the average length of their hauls, breadth of their services and the fact that only a very small number engage in drayage at any of the major ports. Interestingly, all of the publicly traded motor carriage companies are classified as “small capitalization” companies by Wall Street criteria.

Port Drayage LMCs Estimated Profiles. Of the 800 to 1,200 LMCs estimated to be involved with moving cargo at the San Pedro Bay ports, it was shown that only 18.1% have over 75 employees (*Exhibit 11*). Over half, 57.6%, have 25 or fewer drivers and trucks with 21.2% having 10 or less. Container drayage at the San Pedro Bay ports is not an activity in which well known firms are generally involved.

Industry statistics indicate that motor carriage firms of all types have average revenues of \$120,000 to \$150,000 per driver (*IOO or employee*). This suggests that LMCs with 25 drivers can be expected to have revenues in the range of \$3.0 to \$3.5 million annually. DOT requires trucking firms with annual revenues over \$3 million to file a Form M comprehensive annual financial report. Exhibit 15 provides highlights from those entities filing Form M nationally that had revenues between \$3 and \$5 million in 2003, the latest year available.⁴⁵

Based on interviews for this analysis and other reports on the San Pedro Bay ports, the firms reported in Exhibit 15 are generally larger than the typical local drayage LMC.⁴⁶ It thus represents a reasonable upper estimate of performance and profitability for these local

⁴² David Raslowsky, President (949)472-0645; cell (714)308-8476 draslowsky@nsc.com <http://www.ncs2000.com>

⁴³ A discussion of the likely pattern of office staff hiring, based on cost was held with Terry Klenske, Chairman of San Bernardino County's Workforce Investment Board and President of Dalton Trucking, a firm with 150 trucks. He indicated that trucking firms can only afford to add certain functions as they reach size thresholds. From 0-25 trucks, dispatch and accounts receivable are added; after 25 trucks, specialists in regulatory compliance, human resources and accounts payable begin to be added.

⁴⁴ First Research Industry Profile, “Motor carriage” updated June 2007. <http://www.firstresearch.com>

⁴⁵ Motor Carrier Annual Reports 2003 for Class I and II Carriers. American Trucking Association, ISBN 0-88711-424-5. Data cited is for TL General Freight carriers with revenues between \$3 and \$5 million.

⁴⁶ A Survey of Drayage Drivers Serving the San Pedro Ports, CGR Management Consultants LLC, March 26, 2007. Available at <http://www.gatewaycog.org/publications>. Incentivizing Truck Retrofitting in Port Drayage: A Study of Drivers at the Ports of Los Angeles and Long Beach, Kristen Monaco, Ph.D., Department of Economics, California State University Long Beach, January 2007.

operations. Importantly, note that the “operating ratio”⁴⁷ indicates that operating costs equaled 99.4% of revenue for the firms that reported on Form M.

Exhibit 15.-Trucking Company Operating Statistics, 2003 Companies With \$3 to \$5 Million In Revenue	
Statistic	Value
Average Total Operating Revenues	\$4,109,000
Operating Ratio	99.4%
Average Net Operating Income (pretax)	\$24,425
Return on Capital	2.19%
Return on Owners Equity	5.29%
Total Assets	\$1,347,000
Accounts Receivable included in Total Assets	\$413,000
Total Owners Equity or Capital	\$362,200
Average number of drivers (32) and support employees (4)	36

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, Form M, 2003 as reported by the American Trucking Association.

This implies that a significant number of companies in this category had operating losses for the reporting year. Note also that for smaller firms, many owner expenses like automobiles and meals likely cause their true business costs to be somewhat overstated. Still, these data are consistent with the roughly 5% operating ratios orally reported by local LMCs during the interviews for this project. The \$128,000 revenue per driver reported (*\$4.1 million/32 estimated average drivers*) is in line, though lower, than the overall industry experience cited earlier.⁴⁸

Assets & Financing Power. Adjusting the average total assets (*\$1,347,000*) for accounts receivable (*\$413,000*), the average Form M reporting firm had just \$934,000 in assets such as trucks, furniture, fixtures, leasehold improvements or computer systems. This low investment level means that the use of IOOs, whose trucks would not be reported on Form M, is central to their operations.

Meanwhile, the modest amount of owner’s equity or capital (*\$362,200*) indicates a limited ability to buy new equipment without external financing. This low level of equity, as well as the low returns on equity (5.29%) and capital (2.19%), also represent significant hurdles to their ability to borrow or attract new capital. Given these facts, personal owner guarantees would be expected on any significant new debts or leases and the interest rates would likely be high, given the risk of lending to firms with low capitalization and profitability.

⁴⁷ The operating ratio is commonly used to describe financial results of operations. It is total operating expenses divided by total operating revenue. Pre-tax profit as a percent of revenues is 1 minus the operating ratio. Thus lower operating ratios represent more profitable operations.

⁴⁸ In addition to the 188 carriers reporting \$3 to \$5 million revenue on Form M for 2003, CGR also examined the data for 67 carriers that reported “container” hauling as one of their top three lines of business. This classification includes all types of container hauling and is not exclusive to drayage (*port*) movements. These carriers are substantially larger with average revenues of \$14.6 million and a Net Operating Income before tax of \$398,400 for an Operating Ratio of 97.3% or a pre-tax operating profit of 2.7% of operating revenues. These firms, however, tend to have multiple lines of business beyond trucking per se and earn almost as much from non-trucking activities. As a result, the average income after taxes is \$517,800. They also have a more leveraged capital structure which results in a higher return on owner’s equity. The relatively low amount of owner’s equity, \$1.8 million, clearly indicates that these carriers employ mostly IOOs and do not own any substantial number of tractors.

Pricing Power. One reason LMCs have thin financials, as well as the relatively low average pay of IOOs (\$31,000 vs. \$38,600 median for Southern Californian employee-drivers),⁴⁹ is the lack of pricing power of LMCs versus ocean shipping lines and beneficial cargo owners. Annually, some of shipping lines meet and establish rates that they will charge to beneficial cargo owners, like national retailers, to move their cargo from its point of origination to its final destination. The ocean lines can do so as they have limited anti-trust immunity. While these agreements are often honored in the breach, ocean carriers tend to assign a portion of their “store-door” contract revenues to the process of hauling containers between the ports and nearby locations. This portion of the store-door rate is revenue to the LMCs that provide the drayage. Given the intense LMC competition, the shippers are generally able to find a firm willing to move their freight at the rate they want to pay. There is thus limited LMC pricing power under this arrangement.

Some end-users contract with the shipping lines to have their cargo moved only to the ports. These beneficial cargo owners take responsibility for arranging with LMCs to have their containers delivered to their facilities. Here, the LMCs have some ability to negotiate rates and may also be able to contract for higher margin services beyond just transporting containers.

However, while the market power of the shipping lines is quite strong, that of the LMCs is very weak due to the extreme competitiveness of the port drayage industry. This is one result of deregulation and the resulting practice of using of IOOs. As indicated, it has meant that LMCs are essentially service companies that arrange to move freight and contract with IOOs to physically transport it. This has made it relatively easy for entrepreneurs to form new LMCs since the capital investment required to begin is minimal. Often, this occurs when a dispatcher breaks away from an established LMC and takes along personal relationships with a few IOOs and several customers. The result has been the formation of a large number of thinly financed small competitors. There is a widely held belief in the port drayage industry that even at quite low price levels, shipping lines can almost always find an LMC willing to contract to move a container.

LMC:IOO Model Summary. The port drayage business is quite entrepreneurial and very competitive in its current mode of operation. Currently, the industry is largely organized with LMCs obtaining business from shipping lines, brokers, freight forwarders and beneficial cargo owners while relying upon IOOs to physically move the cargo. It appears that about two-thirds of the containers moved through the ports of Los Angeles and Long Beach are handled by LMCs with 75 or fewer drivers and trucks. This partially results from the fact that the larger LMCs tend to have their operations less concentrated in port drayage, with the reverse also true. While a good deal of port drayage activity is carried out near the harbors, some of 40.4% of the LMCs indicated that less than half of their port trips are within a 25 mile radius of the ports. Port efficiency is important to the LMCs and their drivers, as any increase in the number of containers handled in a day per truck increases their potential income. Today, the median such “turns” is 2.0. That translates to a rate of 308 containers per year by the average drayage driver.

The relationship between LMCs and IOOs is a close one, with the most sophisticated LMCs maintaining detailed records on their IOOs. These include records on the legally mandated requirements that the IOOs must follow such as licensing, physical examinations, driving time logs and insurance as well as records on the 90-day safety and maintenance check-ups that must be performed on their vehicles. The intensive competition, plus lack of pricing power, has

⁴⁹ See Exhibit 18, p. 32.

resulted in an industry in which neither the typical LMCs or the average IOOs are particularly profitable.

4. Transportation Workers Identification Credential

As indicated earlier, the Transportation Security Administration (*TSA*) and U.S. Coast Guard will eventually undertake the Transportation Worker Identification Credential (*TWIC*) program. This effort will reduce the supply of drivers eligible to access all U.S. ports as under its provisions:

“A TWIC applicant must complete a TSA security threat assessment and will be disqualified from obtaining a TWIC if he or she has been convicted or incarcerated for certain crimes within prescribed time periods, lacks legal presence and/or authorization to work in the United States, has a connection to terrorist activity, or has been determined to lack mental capacity.”⁵⁰

Thus, a key provision of Code of Federal Regulations (*CFR*) 1572.105 indicates with regards to residency status that “a [TWIC] applicant applying for a security threat assessment must be:

1. A citizen of the United States who has not renounced or lost his or her United States’ citizenship; or
2. A lawful permanent resident of the United States, as defined in section 101(a)(20) of the Immigration and Nationality Act (8 U.S.C. 1101); or
3. An individual who is: (i) in lawful nonimmigrant status and possesses valid evidence of unrestricted employment authorization; or (ii) a refugee admitted under 8 U.S.C. 1157 and possesses valid evidence of unrestricted employment authorization; or (iii) an alien granted asylum under 8 U.S.C. 1158, and possesses valid evidence of unrestricted employment authorization.”⁵¹

Also, those with the following convictions will be disallowed a TWIC card (*CFR 1572.103*):⁵²

1. Espionage or conspiracy to commit espionage
2. Sedition or conspiracy to commit sedition
3. Treason or conspiracy to commit treason
4. A federal crime of terrorism (*18 U.S.C. 2332(g)*) or comparable State law
5. A crime involving a TSI (*transportation security incident*). Note: A transportation security incident is a security incident resulting in a significant loss of life, environmental damage, transportation system disruption, or economic disruption in a particular area. The term "economic disruption" does not include a work stoppage or other employee-related action not related to terrorism and resulting from an employer-employee dispute.
6. Improper transportation of a hazardous material under 49 U.S.C. 5124 or a comparable state law

⁵⁰ Transportation Worker Identification Credential (TWIC) Implementation in the Maritime Sector; Department Of Homeland Security, Transportation Security Administration, United States Coast Guard, 2006, p. 18.

⁵¹ Code of Federal Regulations, Chapter XII, (10-1-06 Edition) p 396.

⁵² TWIC Enrollment Port Brief, Lockheed Martin and Deloitte Consulting LLP, June 6, 2007, p.11-12.

7. Unlawful possession, use, sale, distribution, manufacture, purchase...or dealing in an explosive or explosive device
8. Murder
9. Threat or maliciously conveying false information knowing the same to be false, concerning the deliverance, placement, or detonation of an explosive or other lethal device in or against a place of public use, a state or government facility, a public transportation system, or an infrastructure facility
10. Certain Racketeer influenced and Corrupt Organizations Act violations where one of the predicate acts consists of one of the permanently disqualifying crimes
11. Attempt to commit the crimes in items (1)-(4)
12. Conspiracy or attempt to commit the crimes in items (5)-(10)
13. Convictions for (1)-(4) are not eligible for a waiver

Also denied would be those convicted within 7 years, or released from incarceration within 5 years or indicted or with wants or warrants associated with:

1. Unlawful possession, use, sale, manufacture, purchase, distribution or dealing in a firearm or other weapon
2. Extortion
3. Dishonesty, fraud, or misrepresentation, including identity fraud and money laundering (*except welfare fraud and passing bad checks*)
4. Bribery
5. Smuggling
6. Immigration violations
7. Distribution, possession w/intent to distribute or importation of a controlled substance
8. Arson
9. Kidnapping or hostage taking
10. Rape or aggravated sexual abuse
11. Assault with intent to kill
12. Robbery
13. Fraudulent entry into a seaport
14. Lesser violations of the RICO (*Racketeer Influenced and Corrupt Organizations*) Act
15. Conspiracy or attempt to commit crimes listed on this page

Driver Survey Reaction When the TWIC program is instituted, it will lead to some reduction in the supply of drivers and hence the trucks available for port drayage. A first cut of this impact can be estimated from CGR's Port Truck survey that was conducted for this report.⁵³

Altogether, 409 drivers were surveyed orally, mostly in Spanish. They were interviewed in line sitting in their trucks, at food trucks or at terminal operators' check-in/check-out areas. Surveys were administered at lunch (46.7%), in the evening (49.1%) and in the morning (4.2%). Two Port of Los Angeles terminals were used (*Evergreen & China*

⁵³ See Appendix A for the survey methodology and complete results.

Shipping) for 221 of the surveys or 54.0%. In 2006, the port accounted for 53.7% of the San Pedro Bay TEUs. Two Long Beach terminals accounted for 188 surveys (*California United Terminal & Long Beach Container Terminal*) or 46.0%. In 2006, the port accounted for 46.3% of the 2006 TEUs. While total randomness was impossible, it is important to note that CGR results were consistent with the 2006 survey work by Dr. Kristen Monaco of California State University (CSU) Long Beach (*Dr. Monaco*):⁵⁴

- Mean and median age (39 *Dr. Monaco*; 42 *CGR*)
- Mean years driving (8.7 *Dr. Monaco*; 8.6 *CGR*)
- Mean truck year (1995 *Dr. Monaco*; 1995 *CGR*)
- Median truck year (1996 *Dr. Monaco*; 1996 *CGR*)
- Share of employee drivers (17% *Dr. Monaco*; 15% *CGR*)
- Interviewee rejection rate (35% *Dr. Monaco*, 2004; 27% *CGR*)

For the TWIC portion of this analysis, the key question on the Port Truck survey was:

“The federal government Department of Homeland Security will soon require a Transportation Worker Identification Certificate “TWIC” card for everyone who enters a port. This card will be required to enter a port and pick up or drop off a container. To receive a TWIC card, you must be either a US citizen, or have a green card, or a legal work permit, and pass a security test AND you must not have any felony (*serious crime*) convictions within 7 years or prison time within 5 years. Given these conditions to obtain the TWIC card, how likely are you to apply for one?”

Surveys Completed: 409

YES: 234 (57.2%) I will definitely apply
MAYBE: 85 (20.8%) I may or may not apply
NO: 90 (22.0%) I definitely will not apply

If the “Maybe” responses were distributed in the same proportion as the “Yes” or “No” answers, the shares would have been:

YES: 295 (72.2%)
NO: 114 (27.8%)

CGR interviewed the surveying interviewers to understand the unwritten strength of the reactions that were given in answering this question. The interviewers said that those who answered either “Yes” or “No” on whether they would apply for a TWIC card were firm in their responses. The hesitant ones ranked themselves in the “Maybe” category. It is also important to note that to the extent the survey was random, it gives heavier weight to drivers who go through the gates frequently versus those who do so less often. This is an important consideration when considering the impact of TWIC on the ability of the ports to handle future cargo volumes.

LMC Views. The research for this analysis also involved interviewing nearly 70 companies most of which were LMCs. They ranged in size to several with under five trucks to the largest,

⁵⁴ Incentivizing Truck Retrofitting in Port Drayage, A Study of Drivers at the Ports of Los Angeles & Long Beach, Kristen Monaco, Ph.D., CA State University Long Beach, January 2007 p. 18 and powerpoint p. 4.

Cal Cartage, with nearly 1,000 trucks. In the course of these sessions, the firms were asked what share of their IOOs they expected to lose as a result of TWIC. Most indicated that they anticipated losing 10% or less of their own IOOs but expected the sector to lose from 0% to 20%, with most estimating about 15%. Interestingly, almost all were of the opinion that someone else's firm would lose the bulk of these people.

There appear to be two main reasons why the LMCs expect the driver loss rates from TWIC to be lower than was found in the driver's survey. In part, it is due to a belief in their own drivers because they know them. In part, it is because an IOO must have Class "A" license. To get one, they must present social security and residency documentation to the California Department of Motor Vehicles (*DMV*).⁵⁵ In recent years, DMV has tightened the documentation process and the LMCs seem to believe that this has likely weeded out most of the industry's undocumented workers. However, they acknowledge that there are likely LMCs whose IOOs have not been as carefully checked as their own.

Meanwhile, several LMCs acknowledged a lack of understanding about the potential impact of the TWIC law's numerous felony provisions. Those requirements go far beyond those required to gain a Class "A" driver's license. For that reason, they recognize that there are an unknown number of IOOs who might not be able to get a TWIC card. This appears to be the main reason for the range of 0% to 20%.

Florida's Experience. Today, one state has a port access process similar to TWIC. Specifically:

Section 311.125, F.S., requires public, active Florida ports to use a Uniform Port Access Credential card (*FUPAC*) to control port access and enhance port security. This section of statute further requires that the system be designed to conform, as closely as possible, to criteria established by the United States Transportation Security Administration for a Transportation Worker Identification Card (*TWIC*).⁵⁶

Apparently, "Florida has credentialed over 100,000 port workers throughout the state. This means that the FBI and [Florida Department of Law Enforcement] have conducted extensive background checks."⁵⁷ This process is not a centralized one and there are no public data on the number of people rejected by the processes. However, rejections are reported to the Florida Department of Law Enforcement. According to Nevin Smith of that agency, "hundreds have been rejected for jobs since early 2001 because of criminal pasts."⁵⁸ Calls to the Port of Miami found that for that single facility, 292 of 37,236 or 1% of people who applied for FUPAC cards were rejected.⁵⁹ Most of these were in the program's first year. Since that time, few have been rejected as unqualified workers know better than to apply. The Florida experience is helpful in showing the share of people rejected by the system. It does not, however, provide any insight regarding the greater question of workers who chose not to apply for port access.

⁵⁵ Driver License and Identification (ID) card Information, CA DMV http://www.dmv.ca.gov/dl/dl_info.htm
Requirement includes social security card plus birth date verification and legal presence in the U.S. requirements.

⁵⁶ Project Number 2008-378, Florida Senate Interim Work Plan 2008 Session.

⁵⁷ Congressional Record, U.S. Rep. Kathy Castor, quoted in June 2007 Report of Florida Legislative Committee on Intergovernmental Relations.

⁵⁸ Job Cuts Feared Over Port Security ID, NewsMax.com Wires Friday, April 21, 2006.

⁵⁹ Interview with James Maes, Assistant Director for Security, Port of Miami, (305) 215-9804.

Other Reports. There has been a lot written about the TWIC program in the news media. Often these views have been alarmist. Thus, the Wall Street Journal reported that:

Unauthorized workers often carry false Social Security numbers or work under the names of others. But bosses at the area's dozens of trucking companies say they're not in the position to verify whether documents provided by employment-seeking immigrants are authentic. Such undocumented drivers account for as many as half of the port-trucking work force nationwide, estimates Michael H. Belzer, professor of industrial relations at Wayne State University. By comparison, more than 50 percent of crop workers are undocumented, according to the U.S. Labor Department.⁶⁰ [*underlining added*]

After a briefing on TWIC in Alabama, the state's Press Register reported that:

"It has to do with our labor force and potential reduction of our labor force simply because of the cost of the card, the time it takes to get a card, and the qualifications for people to get a card," said Michael Douglas, managing partner at Premier Bulk Stevedoring LLC ... There was nothing definitive, other than sitting and waiting on the inevitable," he said. "I could see my workforce being reduced by 30 percent to 40 percent for people who don't qualify or don't want to pay \$140 for a work card." [*underlining added*]

In 2006, ABC News reported that:

"The Department of Homeland Security recently investigated the New York and New Jersey ports, and found stunning gaps in security. The new DHS report, obtained by ABC News, shows that of the 9,000 truckers checked, nearly half had evidence of criminal records. More than 500 held bogus driver's licenses, leaving officials unsure of their real identities."⁶¹ [*underlining added*]

Meanwhile, TSA has estimated that in its first year of implementation, the agency's HAZMAT regulation could mean a 20% reduction in the pool of qualified HAZMAT drivers.⁶² Significantly, the qualifications for a HAZMAT driver's license endorsement are very similar to those required by TWIC.⁶³ Also, in March 2006, the Pew Research Center Project issued a report on undocumented workers. It found that 8% or 576,000 were employed in the transportation and material handling sector where they represented 7% of all workers.⁶⁴

TWIC Driver Losses. Given this review of what is known and unknown about the impact of TWIC, it is clear that this report must tread carefully when deciding upon the program's likely impact on the loss of drivers and trucks on the drayage industry at the ports of Los Angeles and Long Beach. The following assumption is therefore made:

⁶⁰ Port security plan could slow deliveries, thin ranks of low-wage workers, Wall Street Journal October 17, 2006.

⁶¹ Criminal Records, Bogus Licenses Among Truckers at Key U.S. Port, Thousands of Port Truckers Go Unscreened, Yet Many Have Criminal Records, ABC News, March 7, 2006.

⁶² The U.S. Truck Driver Shortage, Analysis and Forecast, Global Insight, May 2005, p.33.

⁶³ Security Threat Assessment for Individuals Applying for a Hazardous Materials Endorsement for a Commercial Drivers License; Final Rule, Federal Register, May 5, 2003.

⁶⁴ The Size and Characteristics of the Unauthorized Migrant Population in the U.S., 2005, Pew Research Center Project, Pew Hispanic Center, March 7, 2006, p. 10-11.

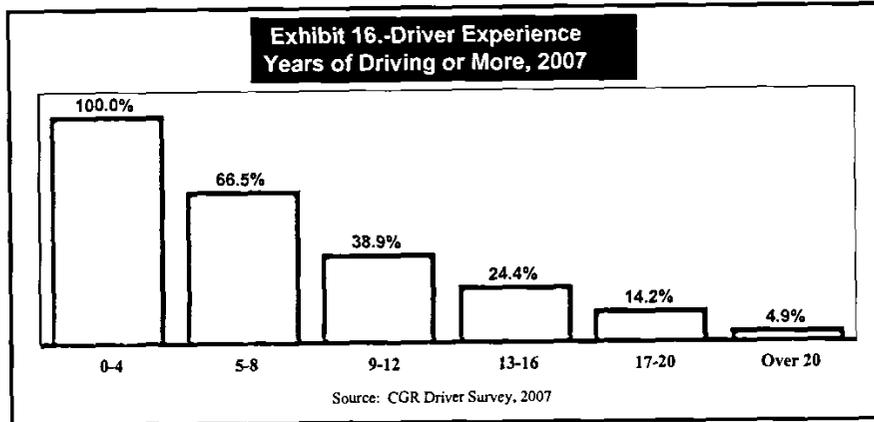
Given the driver's survey result that 22.0% indicated that "I will definitely not apply," and the belief by most of the LMCs that their own losses would be under 10% but that the industry's losses would be higher, the assumption here will be a loss from 15% to 22% of the current drivers most frequently arriving at the ports.

The rationale behind using the upper limit of 22.0% was as follows:

- The driver's survey methodology was consistent with that of Dr. Kristen Monaco and is valid in terms of giving a good picture of port drivers. Also, the survey was heavily weighted in favor of those drivers most frequently coming to the ports since on a random basis they were the most likely to be in line and thus included in the survey.
- The interview with the interviewers found that they felt that the 22.0% of drivers indicating they would definitely not apply was a strongly held opinion. No reasons for not applying were given. Speculation could run from understanding that their own prior legal issues would prevent them being approved for a TWIC's card, to concern that the documentation they had previously used to obtain driving licenses may be questioned. In these cases, the driver's position would likely not change when the reality of the program occurs.

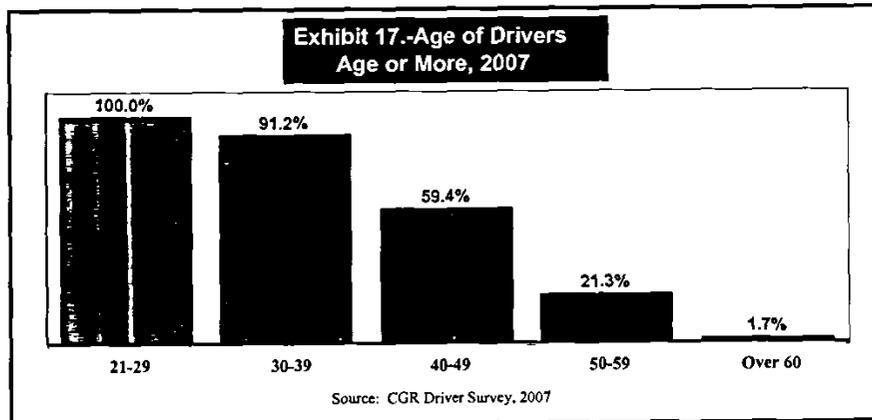
On the other hand, the negative reaction could simply have been one of not wanting to have "Big Brother" looking over their shoulders. Truckers, after all, are a notoriously independent group. In that case, when TWICs becomes required, economic necessity may cause them to reconsider.

- There are three rationales for not going up to the 27.8% that would include an allocation of the "Maybes." These drivers were unsure. Though some will no doubt break to the "No" side with more information, not including them allows room for error for drivers who said "No" but might reconsider once the reality of the program sets in.
- The very aggressive assessments of the TWIC impact found in the news are worrisome. The first two of the three reports cited appear based more upon speculation than hard evidence. However, the situation found by Homeland Security in New York-New Jersey appears to be based upon solid evidence about truck driver arrest histories. It gives rise to speculation that independent trucking is one sector of the economy where people with arrest records can find good jobs. However, TWIC would bar them from port drayage.
- The TSA's belief that its HAZMAT regulation would eliminate 20% of drivers is also a reason for using this upper limit.



The rationale behind using the lower limit of 15.0% was as follows:

- The average drayage driver has been driving for 8.6 years according to the CGR trucker survey. More importantly, the survey found 66.5% have been driving for five or more years (*Exhibit 16*). They are thus not new to the drayage industry. In addition, the drivers are not young. Their average age is 41.6 years old. Again, more importantly, 91.2% are 30 years or older and 59.7% are over 40 years of age (*Exhibit 17*).



These facts mean that the vast majority of the drivers have been licensed and have undergone license renewals for a considerable length of time. They are believed by their LMCs to be unlikely to run into issues of legal documentation. It also means that, in many cases, there have been long term relationships between the IOOs and the LMCs for whom they work. These facts are the reasons why the LMCs appear to believe that their drivers will be able to qualify for TWIC cards.

- Despite having those facts in evidence, the reason for using 15.0% as the lower limit, and not a lower figure, are threefold:
 - Criminal records have not barred some drivers from being licensed but would eliminate them from port drayage.

- o TSA is of the belief that its very similar HAZMAT program will eliminate 20% of drivers.
- o The Pew study that found 7% of trucking and material handling jobs are held by undocumented workers.

Using the 15% to 22% range, the significance of the implementation of TWIC can be estimated for the port drayage industry. Currently, there are roughly 16,800 trucks that the ports find passing through the gates on a frequent or semi-frequent base to haul containers. It is these trucks that the ports particularly wish to see replaced or retrofitted to 2007 standards. The calculations of the potential environmental and health benefits of the Clean Truck Program are based upon the ability of the program to do so. However, if TWIC knocks out 15% to 22% of these drivers, assuming they keep their trucks, the impact would be to lose 2,520 to 3,696 vehicles from the program:

- $16,800 \times 15\% = \underline{2,520}$ to $16,800 \times 22\% = \underline{3,696}$

Here, there would be two effects:

- To meet its goals, the ports would have to find a way to clean up roughly 2,500 to 3,700 other trucks that are impacting the air basin managed by the SCAQMD.
- With no increase in efficiency, the industry would have to replace these trucks and drivers to continue moving the same volume of containers through the ports.

Replacing Trucks. With some trucks diverted to non-drayage work because their owners either do not qualify for TWIC cards, or opted out of applying for them, the ports would need to find and clean-up 2,520 to 3,696 other trucks, not currently used in frequent or semi-frequent port drayage. Some could come from IOOs that are currently infrequently serving the ports. Others might be owned by drivers who might choose to start serving the ports. In either case, this would lead to the same net clear air effect on the basin and the harbor area. It would, however, appear to require some rethinking of the rules under which trucks would be eligible for subsidized replacement or retrofitting.

Replacing Drivers. A more difficult issue would appear to be that of replacing the drivers who frequently or semi-frequently serve the ports and would be lost due to the implementation of the TWIC program. Here, the relative pay of employee drivers in Southern California's various counties, as well as the relationship between the pay of employee drivers and IOOs, is relevant.

Exhibit 18.- Median Employee Pay, Six So. California Counties Truck Drivers, Heavy or Tractor Trailer, 1st Qtr. 2007				
County	Median Income	LA County Above/ Below	Employee Drivers	Driver Share
Los Angeles	\$36,858		31,800	43.5%
Orange	\$39,021	-5.5%	8,450	11.6%
Ventura	\$37,752	-2.4%	3,000	4.1%
San Diego	\$40,830	-9.7%	6,750	9.2%
Inland Empire	\$40,206	-8.3%	23,090	31.6%
So. Calif. (6-Counties)	\$38,569	-4.4%	73,090	100.0%
Non-LA County	\$39,887	-7.6%		

		IOO Above/Below 6-County Median		
IOOs – Dr. Monaco ¹	\$37,098	-3.8%		
IOOs - CGR ¹	\$29,000	-24.8%		

(1) IOO data for Monaco was for 2006. It was increased 1.5% for 2007 estimates.

Source: CA Employment Development Department Occupation Employment Survey, 2007; CGR Management Consultants; Kristen Monaco, Ph.D. CSU Long Beach

In examining these issues, the best available data on employee-driver pay scales is from the California Employment Department (EDD) through its Occupational Employment Survey (OES). For first quarter 2007, EDD found that there were 73,090 workers in the Southern California region's six major counties (*Los Angeles, Orange, San Diego, Riverside, San Bernardino, Ventura*) working in OES category 533032: Truck Drivers Heavy or Tractor Trailer. These drivers earn wages and salaries. IOOs are not included (*Exhibit 18*).

EDD: Employee-Driver Pay. As a group, the median pay of heavy truck drivers in Southern California (*one-half above/one-half below*) was \$38,569 based upon a 40 hour workweek, 52 weeks a year. By county, Los Angeles had the largest number of drivers (31,800; 43.5%) and the lowest median (\$36,858) pay. The Inland Empire had the second largest number of drivers (23,090; 31.6%) and the second highest median (\$40,206) pay, just under San Diego County (\$40,830). Looking only at firms not in Los Angeles County, their median pay was \$39,887.

Using the median, Los Angeles County's employee-drivers earn 2.4% to 9.7% *less* than drivers in the suburban counties. It is likely that the trucking firms in the county are more heavily involved in short haul work than firms located in the suburban counties. This is the case given the fact that the ports of Los Angeles and Long Beach are in the county as is 989 million square feet (54.8% of Southern California's 1,803 million square feet) of mostly older industrial space to which goods are often brought. The same is also true due to its several intermodal rail yards. In addition, the county is centrally located with regards to the region's consumer and other markets.

On the other hand, it seems likely that the higher pay that exists in the suburban counties is occurring because as a share of their trucking sectors, firms in those areas are proportionately more involved in long haul work. This would be most likely in relatively higher paying Inland Empire which contains 377 million square feet of relatively new distribution space (20.9% of Southern California total) and is the location of the passes in and out of Southern California (*Cajon: I-15 & San Geronio: I-10*). Note: Los Angeles County and the Inland Empire represent 75.7% of the industrial space in Southern California and have 75.1% of the heavy truck employee-drivers.

Surveys: IOO Pay. Meanwhile, as indicated in early 2007, CGR Management Consultants and Dr. Kristen Monaco of CSU Long Beach issued reports that estimated the net income of IOOs:

- Dr. Monaco surveyed drivers as they entered the port gates and found that 2006 median net pay was \$36,550.⁶⁵ She also found that pay had risen 1.5% per annum from 2003-2006. Applying that rate to her 2006 pay levels yielded a 2007 estimated median of \$37,098. Using that figure, and the fact that Dr. Monaco found that the

⁶⁵ Incentivizing Truck Retrofitting in Port Dravage: A Study of Drivers at the Ports of Los Angeles and Long Beach, Kristen Monaco, Ph.D., Department of Economics, California State University Long Beach, January 2007, p. 23.

IOOs she interviewed worked an average of 60 hours per week, 50 weeks a year, the median hourly pay was calculated at **\$12.37**.⁶⁶ As entrepreneurs, these drivers do not have paid vacation, employer paid social security, employer paid workers compensation insurance or health insurance.

- CGR interviewed drivers in early 2007 and partially verified their data with tax returns. They found a 2007 median income of \$29,000. The lower annual pay levels appear to be explained by the fact that the drivers cited an average workweek of 50 hours versus 60 hours for Dr. Monaco.⁶⁷ This difference may be accounted for by the fact that they were interviewed at LMC locations and may have been short haul drivers waiting to be sent for loads. Using the 50 hour workweek, CGR found the IOOs median hourly earnings of **\$11.60**. Again, as self-employed workers, they do not have paid vacation, employer paid social security, workers compensation or health insurance. Note: For drivers recording 35,000 or more miles, the CGR work found that 14.1% earned \$40,000 to \$75,000. For these IOOs, average compensation is \$16 to \$30 per hour.

Net IOO Income To Draw Replacement Drivers. With this background, it is possible to comment about the potential for replacing the loss of port drivers due to TWIC through various sources. There would appear to be four potential sources of new drivers:

1. IOOs not involved in port drayage

One potential source of new port drayage drivers would be IOOs located in Southern California that are not currently involved in port drayage. Here, non-employer firms in NAICS code 484 (*truck transportation*) are the relevant companies (*IOOs*). Primarily, they were identified by the U.S. Census Bureau using Schedule "C" tax filings with the U.S. Internal Revenue Service.⁶⁸ According to the Census Bureau, there were 37,194 such IOOs in Southern California during 2005 (*Exhibit 19*).⁶⁹ Of these IOOs, 91.6% were located in either Los Angeles County (22,897; 61.6%) and the Inland Empire (11,174; 30.0%).

Exhibit 19.-Estimated Hourly Rates, 2005 to 1 st Qtr. 2007 Non-Employer Trucking Firms, Southern California							
Market	Firms	Total Revenue	Average Gross Revenue	Estimated Net Revenue	Estimate Hourly Rate 2005	Estimated Hourly Rate 1Q2007	2003-2005 Rate
Los Angeles County	22,897	\$1,857,664,000	\$81,131	\$31,409	\$12.56	\$13.83	8.00%
Orange County	2,497	\$228,418,000	\$91,477	\$35,414	\$14.17	\$15.27	6.17%
San Diego County	2,256	\$210,470,000	\$93,293	\$36,117	\$14.45	\$15.92	8.08%

⁶⁶ Monaco, p. 19.

⁶⁷ A Survey of Drayage Drivers Serving the San Pedro Ports, CGR Management Consultants LLC, March 26, 2007. Available at <http://www.gatewaycog.org/publications>, p. 24 at <http://www.gatewaycog.org/publications>.

⁶⁸ Non-employer Statistics data originate from administrative records of the Internal Revenue Service (IRS). Data are primarily comprised of sole proprietorship businesses filing IRS Form 1040, Schedule C, although some of the data is derived from filers of partnership and corporation tax returns that report no paid employees. These data undergo complex processing, editing, and analytical review at the Census Bureau to distinguish non-employers from employers, correct and complete data item.

⁶⁹ Non-employer Statistics, 2005 transportation and warehousing Census Bureau, for Southern California's counties. <http://www.census.gov/epcd/nonemployer/>

Ventura County	626	\$59,727,000	\$95,411	\$36,937	\$14.77	\$16.25	7.91%
Inland Empire	11,174	\$1,194,530,000	\$106,903	\$41,386	\$16.55	\$18.09	7.37%
Southern California	37,194	\$3,340,339,000	\$89,809	\$34,768	\$13.91	\$15.32	8.07%

Source: Non-employer Statistics, 2005 Transportation & Warehousing, NAICS 484 Truck Transportation, U.S. Census Bureau

The 2005 gross revenues for these IOOs averaged \$89,809. Using the 38.7% ratio of median gross income to median gross revenues for IOOs found by CGR in their 2007 study,⁷⁰ it is estimated that these IOOs had net revenues of \$34,768 in 2005. Assuming 50 hours per week for 50 weeks of work, the estimated hourly rate was \$13.91 in 2005. Based upon the rate of increase found in revenues found by the Census Bureau of 8.07%, the first quarter 2007 rate is an estimated \$15.32.

Many of these IOOs are likely to be currently serving the ports of Los Angeles and Long Beach. That is probably the reason that the estimated hourly rate in Los Angeles County, \$13.83, was much less than the rate in the suburban counties. For instance, in the Inland Empire, where the second largest share of these firms is located, the estimated rate was \$18.09 or 30.8% higher.

To lure some of these IOOs into port drayage, it must be assumed that their pay would have to be sufficiently above their current earnings to make a change worthwhile. Given the very blue collar nature of the Inland Empire's economy, and the fact that it has the second largest number of IOOs, it would be the most likely source for drawing the bulk of such additional firms.

Analysis: If a firm in the Inland Empire could earn a net of \$5,000 more in port drayage than its current business, that would seem like a sufficient incentive to make a change. Such a boost would require an average 2007 net income increase of 11% from \$45,233 (*50 hours a week, 50 weeks a year at \$15.32*) to \$50,208. This would represent an hourly net of \$20.08. A rate of that magnitude or higher would appear needed to cause inland based IOOs to consider port drayage work.

2. Los Angeles County employee-drivers

If port drayage firms are to lure drivers performing other functions in Los Angeles County, they must tap into a pool of some 31,800 heavy truck employee-drivers working in that area. As indicated, by comparison to drivers in other Southern California counties, those in Los Angeles County make less money. This would appear to indicate that many are already working in some form of short haul trucking. Their hourly compensation can be derived as follows:

- With the median at \$36,858, the hourly rate being paid to these drivers was \$17.72 per hour based upon the 40 hours a week, 52 weeks a year used by EDD's in its calculations (*2080 hours*). This can be assumed to be 2000 hours of work (*40 hours x 50 weeks*) and 80 hours of paid vacation (*40 hours x 2 weeks*). **Vacation pay** is thus worth \$0.68 per hour.
- In 2007, employers must pay half of the **social security tax** for their employees or 7.65% on income up to \$92,000. That represents \$1.36 per hour based upon the median pay of \$17.72.

⁷⁰ A Survey of Drayage Drivers Serving the San Pedro Ports, CGR Management Consultants LLC, March 26, 2007. Available at <http://www.gatewaycog.org/publications>, p. 24.

- Employers must pay California state disability insurance (SDI) and unemployment insurance including a workforce investment board rate. The SDI rate is 0.6%. For the median rate of \$17.72 per hour, that amounts to \$0.11 per hour. The combined unemployment insurance and WIB rate is 3.6% to a maximum of \$7,000 or an average of \$0.12 per hour for 2,080 hours a year.
- Employers must also pay workers compensation insurance. The 2007 rate assumed here is \$8.63 per \$100 of payroll. That is a modest rate for truckers (*job code 7219*) quoted by Hartford Insurance Co. of the Midwest and picked from a wide array of rates identified by the California Department of Insurance.⁷¹ That rate represents \$1.53 per hour based upon the \$17.72 median pay.
- Also, drivers are likely to receive some medical insurance. According to the 2007 Health Benefits Survey by Kaiser Family Foundation, 64% of companies with three to 199 employees that provide health insurance do so through Preferred Provider Organization coverage (PPO).⁷² In addition, 75% use plans that require an employee to make a contribution.⁷³ To cover a single person, the 2007 PPO rate had an average cost of \$4,505 per year with the employees typically paying \$491 (10.97%) and employer paying \$4,014 (89.1%). This benefit would be worth \$1.93 per hour based on 2,080 hours per year.

Combining the \$17.72 median hourly rate with vacation pay, employer's social security contribution, SDI, unemployment & WIB, workers compensation insurance and health benefits would mean that the average heavy duty truck driver in Los Angeles County is effectively earning median pay of **\$22.76** an hour. This breaks down to \$17.72 per hour, full pay for two weeks of vacation, plus \$5.04 in benefits. The full package is worth almost double exactly the **\$11.01 to \$11.60** an hour that Dr. Monaco and CGR found in interviewing IOOs.

Analysis: If the workers estimated to be lost to the ports from the introduction of TWIC are to be replaced, some drivers will likely have to be lured away from other heavy truck driving functions in Los Angeles County. At the median, these workers are earning roughly double what those serving the ports are making. Since 50% of workers earn less than the median of \$17.72 per hour plus \$5.04 in benefits (**\$22.76**), a rate sufficient to lure them into port drayage would be necessary.

According to EDD, the bottom 25% of the Los Angeles County's heavy truck drivers (7,900) earn \$15.17 per hour or less. That would put the bottom 37.5% (11,925) earning an estimated **\$16.45** per hour or less. Using calculations similar to those above, that rate would be worth **\$21.27** per hour to a worker including \$4.83 in benefits. That combined package should be sufficient to lure some of the 11,925 workers making *less than* that into port drayage from the county's general trucking industry. At 40 hours a week, 52 weeks a year, their annual pay would be \$34,306, sufficient for a household with a part time second wage earner to

⁷¹ California Workers' Compensation Rate Comparison, California Department of Insurance, 2007.

⁷² Among Firms Offering Health Benefits, Percentage of Covered Workers in Firms Offering the Following Plan Types, by Firm Size, 2006, Health Benefits Survey, Kaiser Family Foundation, Exhibit 4-4, p. 53.

⁷³ Average Annual Premiums for Covered Workers for Single Coverage, by Plan Type and Firm Size, 2006, Health Benefits Survey, Kaiser Family Foundation, Exhibit 6-4, p. 63.

reach the middle class income threshold for a family (\$40,000 to \$60,000). The full package would be \$44,246 in salary and benefits.

3. Long haul drivers who might be willing to convert to port drayage work

If port drayage firms are to lure drivers from the other major trucking market, the Inland Empire, they must tap into a pool of some 23,090 heavy truck employee-drivers working in that area. As indicated, by comparison to drivers in Los Angeles County, these drivers make more money. This could mean that many are involved in long haul trucking since, as stated, the two main routes through the mountains and into Southern California are located in the area. Their hourly compensation can be derived as follows:

- With the median at \$40,206, the hourly rate being paid to these drivers was \$19.33 per hour based upon the 40 hours a week, 52 weeks a year used by EDD (2080 hours). That was \$1.61 per hour or 9.1% more than pay in Los Angeles County (\$17.72). Again, this can be assumed to be 2,000 hours of work (40 hours x 50 weeks) and 80 hours of paid vacation (40 hours x 2 weeks). **Vacation pay** is thus worth \$0.74 per hour.
- In 2007, the employer paid **social security tax** at 7.65% represents \$1.48 per hour based upon the median pay of \$19.33.
- The employer must pay California **SDI** at 0.6%. For the median rate of \$19.33 per hour, that amounts to \$0.12 per hour. The combined **unemployment insurance and WIB** rate is 3.6% to a maximum of \$7,000 or an average of \$0.12 per hour for 2,080 hours a year.
- Using the same **workers compensation insurance rate** of \$8.63 per \$100 of payroll cited earlier, the benefit is worth \$1.67 per hour based upon the \$19.33 median pay.
- Allowing for the same **medical insurance** benefit discussed earlier with the employer paying \$4,014 for 89.1% of the cost of a PPO plan, the benefit would be worth \$1.93 per hour at 2,080 hours per year.

Combining the \$19.33 median hourly rate with vacation pay, employer's social security contribution, SDI, unemployment & WIB, workers compensation insurance and health benefits would mean that the average heavy duty truck driver in the Inland Empire is effectively earning median pay of **\$24.64** an hour. This breaks down to \$19.33 per hour, full pay for two weeks of vacation, plus \$5.31 in benefits. The full package is worth 8.3% more than the Los Angeles County combined rate of \$22.76. It is also well over double the **\$11.01 to \$11.60** an hour that Dr. Monaco and CGR found in their surveys.

Analysis: If the workers estimated to be lost to the ports from the introduction of TWIC are to be replaced, some drivers will likely have to be lured away from other heavy truck driving functions in the Inland Empire. At the median, these workers are earning well over double what those serving the ports are making. Since 50% of workers earn less than the median of \$19.33 per hour plus \$5.35 in benefits (\$24.68), a rate sufficient to lure some into port drayage would be necessary.

According to EDD, the bottom 25% of the Inland Empire's heavy truck drivers (5,773) earn \$15.96 per hour or less. That would put the bottom 37.5% (8,656) earning an estimated **\$17.65 or less**. Using calculations similar to those above,

that rate would be worth **\$22.67** per hour to a worker including \$5.03 in benefits. That combined package should be sufficient to lure some of the 8,656 workers making *less than* that into port drayage from the inland region's general trucking industry. At 40 hours a week, 52 weeks a year, their annual pay would be \$36,702, again sufficient for a household with a part time second wage earner to reach the middle class income threshold for a family (*\$40,000 to \$60,000*). The full package would be \$47,163 in salary and benefits.

4. Construction worker who might be willing to convert to port drayage work

It could be that port drayage firms will have to lure workers from other segments of the economy to make up for those estimated to be lost because of TWIC. Generally, it is felt that workers in the construction industry are the most logical ones to approach given their blue collar orientation and educational levels.⁷⁴ In Southern California, EDD estimated that there were 442,060 workers in construction occupations in first quarter 2007. Their hourly compensation can be derived as follows:

- The median hourly rate being paid to these workers was \$20.16 per hour based upon the 40 hours a week, 52 weeks a year used by EDD (*2080 hours*). This can be assumed to be 2000 hours of work (*40 hours x 50 weeks*) and 80 hours of paid vacation (*40 hours x 2 weeks*). **Vacation pay** is thus worth \$0.78 per hour.
- In 2007, the employer paid **social security tax** at 7.65% represents \$1.54 per hour based upon the median pay of \$20.16.
- The employer must pay California **SDI** at 0.6%. For the median rate of \$20.16 per hour, that amounts to \$0.12 per hour. The combined **unemployment insurance and WIB** rate is 3.6% to a maximum of \$7,000 or an average of \$0.12 per hour for 2,080 hours a year.
- Using an average **workers compensation insurance rate** for construction of \$6.50 per \$100 of payroll cited earlier, the benefit is worth \$1.31 per hour based upon the \$20.16 median pay.
- Allowing for the same **medical insurance** benefit discussed earlier with the employer paying \$4,014 for 89.1% of the cost of a PPO plan, the benefit would be worth \$1.93 per hour at 2,080 hours per year.

Combining the \$20.16 median hourly rate with vacation pay, employer's social security contribution, SDI, unemployment & WIB, workers compensation insurance and health benefits would mean that the average construction worker in Southern California is effectively earning median pay of \$25.18 an hour. This breaks down to \$20.16 per hour, full pay for two weeks of vacation, plus \$5.02 in benefits. This pay is also well over double the **\$11.01 to \$11.60** an hour that Dr. Monaco and CGR found in interviewing IOOs.

Analysis: If the workers estimated to be lost to the ports from the introduction of TWIC are to be replaced, some workers will likely have to be lured away from other occupations, with construction firms being the likely target. At the median, these workers are earning well over double what those serving the ports are making.

⁷⁴ The U.S. Truck Driver Shortage: Analysis and Forecast, Global Insight, May 2005, p. 30.

Since 50% of workers earn less than the median of \$20.16 per hour plus \$5.02 in benefits (\$25.18), a rate sufficient to lure some of them into port drayage would be necessary.

According to EDD, the bottom 25% of the Southern California's construction workers (110,515) earn \$14.50 per hour or less. That would put the bottom 37.5% (165,773) earning an estimated **\$17.33 or less**. Using calculations similar to those above, that rate would be worth **\$21.94** per hour to a worker including \$4.61 in benefits. That combined package should be sufficient to lure some of the 165,773 workers making *less than* that into port drayage from the Southern California's construction industry. At 40 hours a week, 52 weeks a year, their annual pay would be \$36,047, again sufficient for a household with a part time second wage earner to reach the middle class income threshold for a family (\$40,000 to \$60,000). The full package would be \$45,629 in salary and benefits.

Conclusion. If the TWIC program's criminal background and undocumented worker provisions result in a reduction of between 15% and 22% of the 16,800 drivers currently making frequent or semi-frequent trips through the gates of the ports of Los Angeles and Long Beach, there would be the loss of from 2,520 to 3,696 drivers. There would also be the loss of their trucks:

- The ports would need to find and clean-up 2,520 to 3,696 other trucks, not currently used in frequent or semi-frequent port drayage. This may require some rethinking of the rules under which trucks would be eligible for subsidized replacement or retrofitting.
- The ports would need to find 2,500 to 3,700 drivers. Here, the issue is one of income. Currently, the bulk of the work is being done by IOOs whose 2007 hourly rate has been estimated by Dr. Monaco at **\$12.37** per hour and CGR at **\$11.60** per hour. These drivers do not have paid vacation, employer paid social security, workers compensation or health insurance.
- To replace these drivers, there are essentially four possibilities:
 - In Southern California, there were 39,450 non-employer trucking companies in 2005. In Los Angeles County, where most are likely port drayage IOOs, the estimated 2007 average hourly net income was **\$13.83**. The second largest share was in the Inland Empire where the 2007 rate was estimated at \$18.09. It is the most likely source of additional port drayage IOOs. If an IOO in that area could earn \$5,000 more in port drayage, that would seem a sufficient incentive to shift. The area's average 2007 net income would have to rise about 11% from \$45,233 to \$50,208. This would mean a net rate of **\$20.08 an hour**.
 - In Los Angeles County, there are some 31,800 employee-drivers with many already doing short haul work. Of this group, the bottom 37.5% (11,925 drivers) earn an estimated **\$16.45** per hour or less. They also likely have vacation pay, employer's social security contribution, SDI, unemployment insurance, workers compensation insurance and possibly limited health benefits. The full package is worth **\$22.80 an hour**. Rates in this ballpark will likely be necessary to draw some of these drivers into port drayage work.
 - In the Inland Empire, there are some 23,090 employee-drivers with many likely involved in long haul work. Of this group, the bottom 37.5% (8,659 drivers) earn

an estimated \$17.65 per hour or less. They also likely have vacation pay, employer's social security contribution, SDI, unemployment insurance, workers compensation insurance and possibly limited health benefits. The full package is worth **\$22.71 an hour**. Rates at this level will likely be necessary to draw these drivers into port drayage work.

- In Southern California's construction industry, there are some 442,060 blue collar workers. The trucking industry often looks to them as a potential source of drivers. Of this group, the bottom 37.5% (*165,773 workers*) earn an estimated \$17.33 per hour or less. They also likely have vacation pay, employer's social security contribution, SDI, unemployment insurance, workers compensation insurance and possibly limited health benefits. The full package is worth **\$21.97 an hour**. Rates at this level will likely be necessary to draw some of these workers into port drayage work.

Note: In each case, it would appear that replacing a significant loss of port drayage drivers will require incomes nearly double the roughly **\$11.00-\$12.00 per hour** currently being earned by IOOs without benefits. The rates will have to move up to roughly **\$20 per hour**. As this occurs, the existing IOOs would not work for less than the newer drivers entering the field. The general pay level of all IOOs would thus move up to these higher levels.

This anticipated increase in the labor cost for LMCs again brings two other key elements of the port drayage industry into sharp focus:

- It was shown that the operating costs of LMCs are very high with most seeing 70% of their revenue going to IOOs and 95% or more needed to cover all operating costs.⁷⁵ If the cost of their IOOs goes up 100%, most LMCs must raise their rates or cease to exist.
- However, there is a distinct lack of pricing power for the LMCs vis-à-vis the ocean shipping lines and beneficial cargo owners like the national retailers. To date, this market relationship has kept LMC profits very low and meant that they have essentially seen no price increase for a lengthy period of time.

From these facts, it must be concluded that the port drayage industry is heading for a difficult period. If the LMCs cannot pay more, they will not be able to replace the 2,500 to 3,700 drivers and trucks lost due to TWIC. However, they cannot pay more if they cannot raise their prices. To date, they have shown little ability to do so. The question becomes: how will prices be raised? Here, there appear to be two general scenarios, one likely and one unlikely:

- **Crisis Path.** The most likely path is for a crisis to build as a lack of drivers and trucks due to TWIC means that some containers cannot be moved from the ports in a timely fashion. Retailers will see delivery delays and demand that shipping lines get the cargo to them on time. That will pressure the ocean lines to raise what they are paying to LMCs to get the job done. They will be reluctant to do so since the retailers will be unwilling to pay more for deliveries. The crisis will thus build. Ultimately, the rates paid to LMCs and by them to the IOOs will start to rise but not until a lot of cargo is left unmoved and ill will is created. As store-door contracts come due, some retailers may renegotiate to have the ocean lines only move freight to the ports and use their own

⁷⁵ Based upon LMC survey conducted for this report.

resources or negotiate directly with LMCs to move the containers to their final destination.

- **Downfield Vision.** A less likely path is for the ocean shipping lines, national retailers, and the ports to recognize early on that the loss of drivers due to TWIC will be forcing IOO pay and LMC rates to increase. If the major players wish this to occur outside of a crisis atmosphere, a meeting of minds might begin to be formulated whereby these players, as well as leaders among the LMCs, begin to develop sufficient downfield vision so that as an imminent driver shortage becomes evident, the pay scales to the IOOs and rates to the LMCs can begin to rise. That might eliminate decision making in a crisis context.

Eventually, when prices are raised, the amount will again have important implications for the port drayage sector. LMCs normally see 70% of their revenues passing through to IOOs, and have seen another 25% of their revenues going to other costs, giving them net pre tax profits of 5.0%. When prices rise, three types of scenarios appear likely (*Exhibit 20*):

- CGR's 2007 survey of IOOs found that that the net income of IOOs was 38.7% of their median income.⁷⁶ The \$29,000 net median income in that study came from a median of \$75,000 in gross income paid to them by their LMCs. That meant IOOs had \$46,000 in operating costs. With LMCs estimated to be paying 70% of their revenues to IOOs, their revenues from clients were \$107,100 per driver. As LMC profits average 5%, they had a pre-tax profit of \$5,400 per IOO, leaving \$26,800 for their non-driver expenses.
- If IOO are to reach \$20 per hour, incomes would be \$50,000 (*50 weeks, 50 hours*) for an equal effort. Their operating costs of \$46,000 would not change. This would require that they receive \$96,000 from their LMCs. That implies an increase in LMC revenues to \$137,100 per each IOO, given that 70% is passed on to their drivers. **This would represent a 29.4% price increase.** Raising prices would not increase LMCs non-driver costs of \$26,800, so their pre-tax profit would rise to \$14,400 per driver, a 2.7-fold increase.
- If LMCs were to raise their prices 24.6%, annual revenue would rise to \$133,500 per driver, the \$101,000 gross income they would need to pay the IOOs to bring their net incomes to \$50,000 would be the same. Their \$26,800 in non-driver costs would also remain the same. That would double their pre-tax profit to \$10,700 per IOO (*5% to 8%*).

Exhibit 20.-Impact of Price Increase Scenarios on LMC Profitability, Per IOO Per Year								
	Current Ratios		29.4% Price Increase IOO Income to \$20/Hr.		24.6% Price Increase To yield Some Extra LMC Profit		24.3% Price Increase Keeps LMC Profit The Same	
To IOOs	\$75,000	70.0%	\$96,000	70.0%	\$96,000	71.9%	\$96,000	74.9%
Non-IOO Costs	\$26,800	25.0%	\$26,800	19.5%	\$26,800	20.1%	\$26,800	20.9%
Pre Tax Margin	\$5,400	5.0%	\$14.4	10.5%	\$10,700	8.0%	\$5,400	4.2%
Total	\$107,100	100.0%	\$137.1	100.0%	\$133,500	100.0%	\$128,100	100.0%

Source: Economics & Politics Inc. & CGR Management Consultants, LLC

⁷⁶ A Survey of Drayage Drivers Serving the San Pedro Ports, CGR Management Consultants LLC, March 26, 2007. Available at <http://www.gatewaycog.org/publications>, p. 24.

- If IOOs were to receive the \$96,000 gross income needed for their net incomes to reach \$50,000, but LMC profits were to stay at \$5,400 per driver, then the LMCs would have to **raise their prices 19.5%**. Annual revenue would then be \$128,100 per IOO. Of that amount: \$96,000 would go to IOOs and \$26,800 to non-driver costs, leaving LMC pre-tax profit unchanged at \$5,400 per driver.

Given the weak profit position of the LMCs today, if they gain any market power, a scenario like the second of these three examples (**24.6% price increase**) would appear to be the minimum acceptable to them. The first would be a tough sell to the ocean shipping lines and beneficial cargo owners. However, the last option would be unacceptable to the LMCs as it would make them nothing more than conduits for channeling money to their IOOs. According to Moffatt & Nichol's data a 24.6% increase would raise port drayage costs from \$150 to \$187 per container for trips near the ports and \$300 to \$373 to the Inland Empire. This fee is still minor compared to the \$2,575 in costs for other portions of a container's journey. These higher costs would represent just 0.05% to 0.1% of the \$70,000 median value of a container's contents.

Transition. Assuming optimistically that LMCs could pass 50% a price increase of this magnitude immediately to their customers in higher prices, but the other 50% only agreed to the increase in equal shares over six months (*8.3% per month*), cash flow difficulties in the transition would impact the LMCs. For an average smaller IOOs, they would have a net cash flow loss of \$126,075 reducing their average owner's equity from \$362,200 to \$236,125. Larger IOOs would have average cash flow losses of \$448,950, reducing their average owner's equity from \$1.77 million to \$1.32 million (See "*Transition*" page 72 for calculation's details).

5. Clean Truck Program: LMC:IOO Model

At its core, the Clean Truck Program of the ports of Los Angeles and Long Beach is a major element of the CAAP. As discussed in the introduction, its central purpose is to significantly reduce the emissions from the Heavy Duty Vehicles that move containers in and out of the ports. It intends to do so, first, by converting or retrofitting the truck drayage fleet to cleaner technologies according to a strict schedule, and second, by ensuring that the fleet is maintained in a manner that keeps it clean.

As requested by the ports, this section of the analysis isolates the impact of the Clean Air Program's clean air provisions from other considerations. It thus examines the impact of converting, retrofitting and maintaining a clean trucking fleet serving the harbors. It delays an in-depth discussion of changes in the business model until Section 6 below.

Goal. In speaking directly about the goal of cleaning-up the Heavy Duty Trucks serving the ports, a portion of the preface to the CAAP announcement by the presidents of the Los Angeles and Long Beach harbor commissions stated:

These trucks produced 10% of Port-related diesel particulate emissions and fully 25% of the NOx emissions. The Ports have identified over 16,000 individual vehicles that make 80% of the trips to and from Port terminals, so cleaning up those vehicles would eliminate a significant portion of Port-related air pollution."⁷⁷

⁷⁷ President's Statements, Final 2006 San Pedro Bay Ports Clean Air Action Plan, Port of Los Angeles, Port of Long Beach, November 20, 2006; complete paragraph on page 5 of this report.

Among the five elements of the Clean Truck Program, portions of three of them called for measures to replace and retrofit those trucks that most often enter the port gates:⁷⁸

- A 5-year program to replace/retrofit to at least the 2007 emission standards for the 16,800 trucks regularly serving the ports
- A program restricting operation of trucks at the ports that do not meet CAAP clean air standards and imposing fees and transportation charges to pay for cleaner trucks. The charges to be imposed on “shippers” not drivers.
- A program to start with infusion of cash from Gateway Cities Program to fund 500 trucks to demonstrate the applicability of new retrofit technologies. The demonstration program is to start in first quarter 2008 with the full 16,800 truck program starting shortly thereafter.

Given these instructions from their commissions, the port staffs drafted a plan to implement the Clean Truck Program. The following are the key elements for cleaning the vehicles:⁷⁹

- Over a 5-year period, concessionaire truck owners will be required to use trucks that meet EPA 2007 or newer standards; or retrofitted trucks manufactured in 1996 or newer; or trucks replaced under the Gateway Cities Truck Modernization Program.
- Concessionaires will scrap and replace the oldest of the 16,800 trucks working in the ports, and retrofit the others with the aid of a port-sponsored grant subsidy. This will occur over a 5-year period, with progressively more recent non-retrofitted trucks barred from the ports until only those meeting the EPA 2007 standard can enter (*Exhibit 16*). During the transition, vehicles not meeting that standard will be required to pay a fee each time they enter the gate.

If the Clean Truck Program is implemented as planned, the ports estimate that it would achieve the following reductions by year #5:⁸⁰

- **Diesel particulate matter** released by port operations would be 184 tons instead of the 966 tons that port growth would have created, a 782 ton reduction or -81%.
- **Oxides of nitrogen** emissions would be 4,041 tons instead of the 41,985 tons the growth would have generated, a 6,228 reduction or -61%.
- **Sulfur oxide** emissions would be seven tons instead of the nine tons that would have come from normal growth trends, a two ton reduction or -22%.

Again, the SCAQMD was thus asked to estimate the economic value of the externalities resulting from eliminating air borne emissions. The estimate ranged from \$4.7 billion to \$5.9 billion largely through the prevention of premature deaths.⁸¹

LMCs Become Concessionaires. In examining the impact of these provisions of the Clean Truck Program, it is assumed that LMCs will be the “concessionaires” held responsible for

⁷⁸ See footnote 6, page 4.

⁷⁹ Explanatory Memorandum, Ports of Los Angeles and Long Beach Proposed Clean Trucks Program, April 2007.

⁸⁰ San Pedro Bay Ports Clean Air Action Plan Technical Report, Tables 6-1, 6-2, 6-3, p. 157.

⁸¹ See discussion, pages 8-9 and Exhibits 3-4.

clean-up of the trucking fleet. For the vehicles moving containers for them, the LMCs are the entities that must:

- Ensure that trucks are replaced or retrofitted to 2007 standards.
- Pay extra fees for trucks entering the port gates that are not up to the 2007 standard during the 5-year transition period.
- Ensure that the trucks are maintained in a manner that keeps them clean once they have been replaced or retrofitted.
- Ensure that devices like RFIDs and AVLS are on the trucks entering the port gates.
- Ensure that all requirements created as part of any grant or loan programs to clean the trucks are fulfilled.

In this section, it is assumed that the LMCs will be required to fulfill these obligations whether they own the trucks or not, and whether they employ the people driving them or not. The discussion of requiring LMC ownership of the trucks entering the port gates and employing their drivers are the changes in the business model that will be examined in Section 6.

Below the five major elements of the Clean Truck Program are described together with commentary on their economic implications.

1. **Cleaning Up Heavy Duty Trucks.** To initially change the nature of trucking fleet serving the ports, tractors entering the gates will be required to either have engines meeting 2007 on-road standards or trucks with 1996 or newer engines, retrofitted with a California Air Resources Board (CARB) verified level 3 device with at least a 25% NOx reduction.⁸² The ports have specified that the trucks meeting these rules may include:⁸³
 - Trucks that meet the U.S. Environmental Protection Agency's (EPA) 2007 and subsequent model year standards for on-road heavy-duty diesel engine emissions.
 - Trucks retrofitted with CARB verified diesel emission control strategy (VDECS) devices that achieve 85% or greater DPM reduction and 25% or greater NOx reduction.
 - Trucks replaced through the Gateway Cities Truck Modernization Program.

Meanwhile for trucks working outside of the harbor gates, CARB has paralleled the port proposals by proposing regulations to reduce DPM and NOx emissions from heavy-duty trucks transporting cargo to and from the ports and intermodal rail facilities within a 50 mile radius of the harbors. CARB's proposal indicates that in Southern California this radius extends as far inland as Burlington Northern Santa Fe's (BNSF) San Bernardino facility in the Inland Empire. Nearer the ports, it also includes several intermodal facilities. If adopted, these rules would mean that trucks involved with either the ports or the intermodal rail yards would have to meet clean air standards:⁸⁴

⁸² Discussion Draft, Minimum Concession Requirements, San Pedro Bay Ports Clean Air Action Plan, p.1.

⁸³ Briefing Paper, San Pedro Bay Ports Clean Trucks Program, ENVIRON International Corp., July 2007, p. 4.

⁸⁴ Regulation to Control Emissions from In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks, Air Resources Board Draft Regulation Order July 6, 2007.

Together, these rules would mean that IOOs with tractors not corresponding to port or CARB rules would be limited to moving containers that touch neither the ports nor the intermodal rail yards. This would almost eliminate them from most of the international container movement business. The ports would bar LMCs from using these IOOs to enter the port gates. Outside the gates, CARB's rules would bar LMCs from using them on any move involving the region's intermodal rail yards.

To implement the Clean Truck Program, the ports have proposed a detailed phase-in schedule. "Beginning July 1, 2008 the ports will deny access to older trucks according to a 'progressive ban' on trucks of a certain model year, where the model year requirement becomes more stringent with time."⁸⁵ This process will occur over five years ending in 2012. The goal of the program is to clean-up the 16,800 heavy duty trucks which the ports have identified as accessing the gates on a frequent (7,000; over 7 times a week) or semi-frequent (9,800; 3.5-7 times a week) basis. This was from a total of 41,000 trucks found to be entering their facilities in 2005.⁸⁶ The schedule would affect 18% to these vehicles in 2008; 47% by 2009; 67% by 2010; 99% by 2011 and the small balance by 2012 (*Exhibit 21*).

Exhibit 21.-Truck Retrofit or Replacement Schedule Ports of Los Angeles & Long Beach. 2008-2012					
Deadline Date	Truck Model Years	Total Trucks Affected		Share of Trucks Affected	
July 1, 2008	Pre-1989	2,999	2,999	18%	18%
July 1, 2009	1989-1993	4,798	7,797	29%	47%
July 1, 2010	1994-1995	3,372	11,169	20%	67%
July 1, 2011	1996-2003	5,377	16,546	32%	99%
July 1, 2012	2004-2006	254	16,800	2%	100%
TOTAL		16,800		100%	

Source: San Pedro Bay Ports Clean Trucks Program, Briefing Paper, ENVIRON International Corp., 2007

Economic Implications. As indicated, the purpose of the Clean Truck Program is to clean up the 16,800 trucks classified as being used frequently or semi-frequently in port drayage during 2006. During that year, Los Angeles and Long Beach harbors processed a combined 15,760,000 TEUs. Assuming 1.85 TEUs per container, that represented 8,519,000 containers. Of these, 24.1% were handled by on-dock rail or 2,053,000 containers. That left 6,466,000 containers to be moved by truck. The ports have estimated that 80% of these containers were moved by trucks entering the gates frequently or semi-frequently.⁸⁷ They thus handled 5,172,758 containers. Given that 16,800 trucks were identified as most often entering the port gates, their ratio to the volume they handled was one truck per 308 containers (*Exhibit 22*).⁸⁸

⁸⁵ San Pedro Bay Ports Clean Trucks Program, Briefing Paper, ENVIRON International Corp., 2007, p.5.

⁸⁶ see page 15.

⁸⁷ San Pedro Bay Ports Clean Air Action Plan Technical Report, November 2006, page 57.

⁸⁸ The port's estimate of 16,800 trucks to handle 5.2 million containers implies one truck per 308 containers. For 50 weeks a year, 5 days a week, that implies an average of just 1.23 turns per truck per day. That is below the 2.0 median found in the CGR survey of LMCs. However, not every one of the 16,800 trucks will work 250 days a year in port drayage given the fact that IOOs often perform hauls outside of the field, some workers take extra time off

Exhibit 22.-Forecast of Container Volume & Clean Truck Needs, 2006-2012								
Year	LA-LB Port TEUs	Containers (1.85 TEU)	On Dock Rail Share	By Rail	By Truck	80% High Frequency	High Frequency Truck Ratio ⁽¹⁾	Clean Trucks Needed
2006	15,760,000	8,519,000	24.1%	2,053,000	6,466,000	5,172,758	308	16,800
2010	19,694,000	10,645,000	25.0%	2,661,000	7,984,000	6,387,243	333	19,165
2012	22,354,000	12,083,000	27.4%	3,311,000	8,772,000	7,017,948	347	20,239
2015	26,344,000	14,240,000	31.0%	4,414,000	9,826,000	7,860,480	368	21,362

(1) Assuming 2% per year efficiency increase

Source: Port of Long Beach Economic Development, Economics & Politics, Inc.

Forecast. Looking forward, the San Pedro Bay port volume forecast is for 19.7 million TEUs in 2010 and 26.3 million TEUs in 2015.⁸⁹ Using a straight line interpolation of these data, the Port of Long Beach's economic staff has estimated the 2012 volume at 22,354,000 TEUs. That is the year the Clean Truck Program is to be in full operation. At 1.85 TEUs per container, it translates into 12,083,000 containers. By 2012, a straight line interpolation of the anticipated growth in containers handled by on-dock rail puts it at 27.4% or 3,311,000 containers.⁹⁰ That leaves 8,772,000 containers to be moved by truck, of which 7,017,948 would be handled by high volume IOOs.

Needed Drivers & Trucks. To forecast the number of frequent or semi-frequent trucks needed to move this higher volume, an assumption is necessary about the change in the ratio of these trucks to that volume. It is required to allow for the gradual increase in the efficiency of port operations. Given that no dramatic increase has occurred in recent years, it is assumed that the ratio will increase at 2% per year.⁹¹ By 2012, that would put it at one frequent or semi-frequent truck to 347 containers. In 2012, the Clean Truck Program would thus need 20,239 drivers and clean trucks to handle 80% of port volume (7,017,948). Rounding to 20,200, that would be 3,400 more than the 16,800 in 2006.

Note: To test the sensitivity of this assumption, a 0% per year gain in efficiency would require 22,800 clean trucks or 2,600 more than the 20,200 needed at 2%. A 4% per year gain in efficiency, would require 18,000 or 2,200 less than the 20,200 needed at 2%.

TWIC & Port Growth.⁹² Here, the difficulties imposed on the ports by the TWIC program must be restated. As estimated, from 15% to 22% of existing IOOs providing frequent or semi-frequent port drayage will either not qualify or not apply for a TWIC card. They will represent a loss of 2,500 to 3,700 of the existing IOOs, leaving 13,100 to 14,300 still serving the harbors.⁹³ By 2012, the Port Clean Truck Program will need the LMC/concessionaires to replace these lost IOOs with new drivers and clean trucks.

and some containers must be handled multiple times. In addition, Exhibit 14 showed that no classification of LMCs works exclusively in the port drayage, with rates running from a low of 25.2% among the large LMCs to 83.1% for the smallest ones. The 1.23 turn ratios implied in the port data is thus not incompatible with 2.0 median.

⁸⁹ San Pedro Bay Long-Term Cargo Forecast, Mercer Management Consulting, July 2001.

⁹⁰ On-dock shares from "San Pedro Bay Ports Rail Study Update", Parsons, Dec. 2006.

⁹¹ Based on reported discussion by five major carriers at University of Denver Masters Degree in Logistics Course.

⁹² The forecast does not extend to the issue of driver turnover. It would compound the challenges discussed here.

⁹³ See Conclusion of Section 4 on page 39.