San Pedro Bay Ports Clean Air Action Plan

**Economic Analysis**

Proposed Clean Truck Program

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# Table of Contents

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Summary</td>
<td>i-v</td>
</tr>
<tr>
<td>1. Background</td>
<td>1</td>
</tr>
<tr>
<td>2. Clean Air &amp; A Growing Economy</td>
<td>3</td>
</tr>
<tr>
<td>3. Port Drayage Motor Carriage: LMC:IOO Model</td>
<td>14</td>
</tr>
<tr>
<td>4. Transportation Workers Identification Credential</td>
<td>24</td>
</tr>
<tr>
<td>5. Clean Truck Program: LMC:IOO Model</td>
<td>42</td>
</tr>
<tr>
<td>6. Clean Truck Program: Truck Ownership/Employee Model</td>
<td>59</td>
</tr>
<tr>
<td>7. Changes In Market Structure</td>
<td>78</td>
</tr>
<tr>
<td>Summary</td>
<td>88</td>
</tr>
<tr>
<td>Appendix A. Driver Survey Methodology &amp; Results</td>
<td>90</td>
</tr>
<tr>
<td>Appendix B. Licensed Motor Carrier (LMC) Survey</td>
<td>94</td>
</tr>
<tr>
<td>Exhibit</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>1. Background</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. Clean Air &amp; A Growing Economy</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Reduction of Diesel Particulate Matter</td>
</tr>
<tr>
<td>2</td>
<td>Reduction of Oxides of Nitrogen Emissions</td>
</tr>
<tr>
<td>3</td>
<td>Cumulative Health Effects, CARB Off-Road Methodology</td>
</tr>
<tr>
<td>4</td>
<td>Cumulative Health Effects, AQMP Emissions Inventory</td>
</tr>
<tr>
<td>5</td>
<td>Port Container Traffic</td>
</tr>
<tr>
<td>6</td>
<td>So. Calif Jobs Directly &amp; Indirectly Supported</td>
</tr>
<tr>
<td>7</td>
<td>Trade Flows Through CA’s Largest Seaports</td>
</tr>
<tr>
<td>8</td>
<td>Summary Economic Impacts</td>
</tr>
<tr>
<td>9</td>
<td>Average Pay Per Worker By Logistics Sector</td>
</tr>
<tr>
<td><strong>3. Port Drayage Motor Carriage, LMC:IOO Model</strong></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>IOO Reported Annual Net Income</td>
</tr>
<tr>
<td>11</td>
<td>LMCs By Number of Drivers</td>
</tr>
<tr>
<td>12</td>
<td>Average Container Turns A Day</td>
</tr>
<tr>
<td>13</td>
<td>Port Trip Distances</td>
</tr>
<tr>
<td>14</td>
<td>LMC Share of Business in Drayage &amp; Share of Drayage Moves</td>
</tr>
<tr>
<td>15</td>
<td>Trucking Company Operating Statistics</td>
</tr>
<tr>
<td><strong>4. Transportation Workers Identification Credential</strong></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Driver Experience</td>
</tr>
<tr>
<td>17</td>
<td>Age of Drivers</td>
</tr>
<tr>
<td>18</td>
<td>Median Employee Pay, Six So. California Counties</td>
</tr>
<tr>
<td>19</td>
<td>Estimated Hourly Rates, Non Employer Trucking Firms</td>
</tr>
<tr>
<td>20</td>
<td>Impact of Price Increase Scenarios On LMC Profitability</td>
</tr>
<tr>
<td><strong>5. Clean Truck Program: LMC/IOO Model</strong></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Truck Retrofit or Replacement Schedule</td>
</tr>
<tr>
<td>22</td>
<td>Forecast of Container volume &amp; Clean Truck Needs</td>
</tr>
<tr>
<td>23</td>
<td>Impact of Price Increase Scenarios on LMC Profitability</td>
</tr>
<tr>
<td>24</td>
<td>Annual Efficiency &amp; Need Trucks</td>
</tr>
<tr>
<td>25</td>
<td>Containers Per High Volume Truck</td>
</tr>
<tr>
<td>26</td>
<td>Share of LMCs With Business Other Than Port Drayage</td>
</tr>
<tr>
<td><strong>6. Clean Truck Program: Trucker Ownership/Employee Model</strong></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Average Trucks To Be Acquired by LMC Size Range</td>
</tr>
<tr>
<td>28</td>
<td>Cost of LMC Fleet Acquisition &amp; Retrofit</td>
</tr>
<tr>
<td>29</td>
<td>Cost of LMC Fleet Purchase of New Trucks</td>
</tr>
</tbody>
</table>
7. Clean Truck Program: National Truck Companies

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>U.S. Asian Trade, Price Adjusted Table, 1990-2005</td>
</tr>
<tr>
<td>42</td>
<td>Two Way Container Volume Table, By Port, 2006 (TEUS)</td>
</tr>
<tr>
<td>43</td>
<td>Financial Condition, Some Major Trucking Firms Table, 2006</td>
</tr>
<tr>
<td>44</td>
<td>Estimated Lost Jobs or Ownership With Consolidation Table</td>
</tr>
<tr>
<td>45</td>
<td>Adults With Formal Educations of High School or Less Graph, Persons 25 &amp; Over, 2005</td>
</tr>
</tbody>
</table>

Appendixes

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Survey</td>
</tr>
<tr>
<td>LMC Telephone Survey</td>
</tr>
</tbody>
</table>
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

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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.”

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.”

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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.”

That report showed the degree to which health risks were inordinately high near the ports and along Southern California’s transportation corridors.

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

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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.\textsuperscript{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.\textsuperscript{7}

\begin{center}
\textbf{Cancers Per Million People, So. California Areas}
\end{center}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{cancers_per_million.png}
\caption{Cancers per million}
\end{figure}

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 (NOx)** 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 (SOx)** 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.

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

\textsuperscript{7} San Pedro Bay Ports Clean Air Action Plan Technical Report, Tables 6-1, 6-2, 6-3, p. 157.
The 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.”

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

- 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.
- 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:

- 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.

- 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 later; or trucks replaced under the Gateway Cities Truck Modernization Program.

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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.
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:

  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:

  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.

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.

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.
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.\(^\text{16}\)

\begin{figure}
\centering
\includegraphics[width=\textwidth]{pollutant_contribution_diagram.png}
\caption{Port of Los Angeles Baseline 2001 & Port of Long Beach Baseline 2002}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{exhibit1_reduction_dpm.png}
\caption{Exhibit 1.-Reduction of Diesel Particulate Matter Emissions With & Without CAAP Heavy Duty Vehicle Control Measures, 2001-2011}
\end{figure}

\[\text{DPM Emissions with Growth, No Control Measures} \rightarrow \text{DPM Emissions with Growth, and CAAP Control Measures} \]

\[\text{Source: San Pedro Bay Ports CAAP Technical Report, Table 6-1}\]

\(^{16}\) 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 \(-81\%\) (\textit{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 \(-61\%\) (\textit{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\%).

![Exhibit 2.-Reduction of Oxides of Nitrogen Emissions](source)

\textbf{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 (\textit{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 (\textit{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 (\textit{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 a strong relationship between ambient particulate 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. 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). The analysis concluded that the truck program would reduce between 230 and 1,450 premature deaths.

<table>
<thead>
<tr>
<th>Health Effect</th>
<th>Avoided Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Premature Death</td>
<td>230</td>
</tr>
<tr>
<td>Hospital Admissions-Respiratory</td>
<td>110</td>
</tr>
<tr>
<td>Hospital Admissions-Cardiovascular</td>
<td>210</td>
</tr>
<tr>
<td>Asthma &amp; Lower Respiratory Symptoms</td>
<td>9,870</td>
</tr>
<tr>
<td>Acute Bronchitis</td>
<td>0</td>
</tr>
<tr>
<td>Work Day Loss</td>
<td>126,790</td>
</tr>
<tr>
<td>Minor Restricted Activity Days</td>
<td>701,790</td>
</tr>
</tbody>
</table>

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)**. 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 with

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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.
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).\(^{20}\)

<table>
<thead>
<tr>
<th>Health Effect</th>
<th>Avoided Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Premature Death</td>
<td>180</td>
</tr>
<tr>
<td>Hospital Admissions-Respiratory</td>
<td>90</td>
</tr>
<tr>
<td>Hospital Admissions-Cardiovascular</td>
<td>160</td>
</tr>
<tr>
<td>Asthma &amp; Lower Respiratory Symptoms</td>
<td>7,570</td>
</tr>
<tr>
<td>Acute Bronchitis</td>
<td>0</td>
</tr>
<tr>
<td>Work Day Loss</td>
<td>97,140</td>
</tr>
<tr>
<td>Minor Restricted Activity Days</td>
<td>486,550</td>
</tr>
</tbody>
</table>

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 units (TEU) passed through them. This included 43.9% of U.S. imported containers and 25.4%  

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\(^{20}\) 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.
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.

<table>
<thead>
<tr>
<th>U.S. Rank</th>
<th>California Port</th>
<th>Total (bi)</th>
<th>Imports (bi)</th>
<th>Exports (bi)</th>
<th>Total: 2000-2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Los Angeles</td>
<td>$148.5</td>
<td>$130.7</td>
<td>$17.8</td>
<td>45.9%</td>
</tr>
<tr>
<td>3</td>
<td>Long Beach</td>
<td>$92.0</td>
<td>$74.8</td>
<td>$17.2</td>
<td>-6.3%</td>
</tr>
<tr>
<td>10</td>
<td>Oakland</td>
<td>$26.9</td>
<td>$18.3</td>
<td>$8.7</td>
<td>7.5%</td>
</tr>
<tr>
<td>29</td>
<td>Port Hueneme</td>
<td>$6.5</td>
<td>$6.4</td>
<td>$0.1</td>
<td>42.3%</td>
</tr>
<tr>
<td>34</td>
<td>San Diego</td>
<td>$4.8</td>
<td>$4.7</td>
<td>$0.1</td>
<td>1.3%</td>
</tr>
<tr>
<td>39</td>
<td>Richmond</td>
<td>$3.6</td>
<td>$3.4</td>
<td>$0.2</td>
<td>32.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Total All California Ports</th>
<th>$289.1</th>
<th>$244.4</th>
<th>$44.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total All U.S. Ports</td>
<td>$948.7</td>
<td>$718.8</td>
<td>$230.0</td>
<td></td>
</tr>
<tr>
<td>L.A.-LB Port Volume</td>
<td>$240.5</td>
<td>$205.5</td>
<td>$35.0</td>
<td></td>
</tr>
<tr>
<td>LA-LB of U.S.</td>
<td>25.4%</td>
<td>28.6%</td>
<td>15.2%</td>
<td></td>
</tr>
<tr>
<td>LA-LB of CA</td>
<td>83.2%</td>
<td>84.1%</td>
<td>78.3%</td>
<td></td>
</tr>
</tbody>
</table>

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).\(^{24}\)

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\(^{22}\) Total All Industry Employment, 2001, CA Employment Development Department, revised in 2006.


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.  

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 forecast 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.

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.

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-

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27 Economic Impact of Southern California’s Ports, 2005, Exhibit 22, p. 16.
port firms. Together, they represented the second largest share of goods movement jobs at 92,294 (Exhibit 9).²⁸

<table>
<thead>
<tr>
<th>Logistics Sector</th>
<th>Average Pay Per Worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rail transportation</td>
<td>$71,871</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>$50,703</td>
</tr>
<tr>
<td>Support activities for transportation</td>
<td>$49,011</td>
</tr>
<tr>
<td>Air transportation</td>
<td>$48,259</td>
</tr>
<tr>
<td>LOGISTICS GROUP</td>
<td>$47,411</td>
</tr>
<tr>
<td>Water transportation</td>
<td>$41,797</td>
</tr>
<tr>
<td>Warehousing and storage</td>
<td>$39,802</td>
</tr>
<tr>
<td>Couriers</td>
<td>$37,136</td>
</tr>
<tr>
<td>Truck transportation</td>
<td>$36,317</td>
</tr>
</tbody>
</table>


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]

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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. 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:

- **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 carrier companies since they are not authorized to provide for-hire services to end users. Under California and federal law, they must conform to all other driver safety rules plus truck safety and maintenance regulations (see safety & maintenance section below). Two recent surveys of IOO

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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.

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.\(^{34}\) 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.


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**Exhibit 10.- IOO Reported Annual Net Income**

San Pedro Bay Ports, Drivers Exceeding 35,000 Miles, 2006

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $10,000</td>
<td>0.0%</td>
</tr>
<tr>
<td>$10-$15,000</td>
<td>7.1%</td>
</tr>
<tr>
<td>$15-$20,000</td>
<td>10.6%</td>
</tr>
<tr>
<td>$20-$30,000</td>
<td>15.3%</td>
</tr>
<tr>
<td>$30-$35,000</td>
<td>16.5%</td>
</tr>
<tr>
<td>$35-$40,000</td>
<td>8.2%</td>
</tr>
<tr>
<td>$40-$50,000</td>
<td>5.9%</td>
</tr>
<tr>
<td>$50-$75,000</td>
<td>36.5%</td>
</tr>
</tbody>
</table>

Source: A Survey Of Drayage Drivers Serving The San Pedro Bay Ports, CGR Management Consultants, LLC
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

<table>
<thead>
<tr>
<th>Driver Range</th>
<th>Share</th>
<th>Cumulative Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 10</td>
<td>21.2%</td>
<td>21.2%</td>
</tr>
<tr>
<td>11 to 25</td>
<td>36.4%</td>
<td>57.6%</td>
</tr>
<tr>
<td>26-75</td>
<td>24.2%</td>
<td>81.8%</td>
</tr>
<tr>
<td>76-250</td>
<td>13.6%</td>
<td>95.5%</td>
</tr>
<tr>
<td>251-1,000</td>
<td>4.5%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Container Turns</th>
<th>Share</th>
<th>Cumulative Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 to 1.9</td>
<td>15.6%</td>
<td>15.6%</td>
</tr>
<tr>
<td>2.0 to 2.4</td>
<td>39.6%</td>
<td>55.2%</td>
</tr>
<tr>
<td>2.5 to 2.9</td>
<td>17.7%</td>
<td>72.9%</td>
</tr>
<tr>
<td>3.0 to 4.0</td>
<td>18.8%</td>
<td>91.7%</td>
</tr>
<tr>
<td>4.0 to 5.0</td>
<td>7.3%</td>
<td>99.0%</td>
</tr>
<tr>
<td>Over 5.0</td>
<td>1.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

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):

![Exhibit 13.-Port Trip Distances, 2007](image)

- 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**

<table>
<thead>
<tr>
<th>Size</th>
<th>Driver &amp; Trucks</th>
<th>Number Firms</th>
<th>Average Drivers</th>
<th>Weighted Drayage</th>
<th>Weighting</th>
<th>Wgt .Firm Distribution</th>
<th>LMCs</th>
<th>Equivalent FT LMCs</th>
<th>Trucks</th>
<th>Median Turns</th>
<th>Containers A Day</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>157</td>
<td>28</td>
<td>5.6</td>
<td>83.1%</td>
<td>23.3</td>
<td>24.6%</td>
<td>246</td>
<td>204</td>
<td>1,143</td>
<td>2.0</td>
<td>2,286</td>
<td>5.1%</td>
</tr>
<tr>
<td>11-25</td>
<td>856</td>
<td>48</td>
<td>17.8</td>
<td>79.4%</td>
<td>38.1</td>
<td>40.3%</td>
<td>403</td>
<td>320</td>
<td>5,709</td>
<td>2.0</td>
<td>11,417</td>
<td>25.4%</td>
</tr>
<tr>
<td>26-75</td>
<td>1,500</td>
<td>32</td>
<td>46.9</td>
<td>76.2%</td>
<td>24.4</td>
<td>25.8%</td>
<td>258</td>
<td>196</td>
<td>9,207</td>
<td>2.0</td>
<td>18,414</td>
<td>41.0%</td>
</tr>
<tr>
<td>76-250</td>
<td>2,469</td>
<td>18</td>
<td>137.2</td>
<td>40.6%</td>
<td>7.3</td>
<td>7.7%</td>
<td>77</td>
<td>31</td>
<td>4,311</td>
<td>2.0</td>
<td>8,623</td>
<td>19.2%</td>
</tr>
<tr>
<td>251 &amp; Up</td>
<td>3,100</td>
<td>6</td>
<td>516.7</td>
<td>25.2%</td>
<td>1.5</td>
<td>1.6%</td>
<td>16</td>
<td>4</td>
<td>2,075</td>
<td>2.0</td>
<td>4,149</td>
<td>9.2%</td>
</tr>
<tr>
<td>Total</td>
<td>8,082</td>
<td>132</td>
<td>61.2</td>
<td>46.2%</td>
<td>94.6</td>
<td>100.0%</td>
<td>1,000</td>
<td>756</td>
<td>22,444</td>
<td>2.0</td>
<td>44,889</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**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 results 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 calculated 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 (FSCSA). 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

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(c) 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. 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.

**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. 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.

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. It thus represents a reasonable upper estimate of performance and profitability for these local operations. Impor-

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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.


tantly, note that the “operating ratio”\textsuperscript{47} indicates that operating costs equaled 99.4\% of revenue for the firms that reported on Form M.

\begin{table}[h]
\centering
\begin{tabular}{|l|c|}
\hline
\textbf{Statistic} & \textbf{Value} \\
\hline
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 \\
\hline
\end{tabular}
\caption{Exhibit 15.-Trucking Company Operating Statistics, 2003 Companies With $3 to $5 Million In Revenue}
\end{table}

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.\textsuperscript{48}

\textbf{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.

\textsuperscript{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.

\textsuperscript{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), 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 resulted in an industry in which neither the typical LMCs or the average IOOs are particularly profitable.

49 See Exhibit 18, p. 32.
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.”

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.”

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

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
7. Unlawful possession, use, sale, distribution, manufacture, purchase...or dealing in an explosive or explosive device
8. Murder

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

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 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 ac-

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53 See Appendix A for the survey methodology and complete results.
counted for 46.3% of the 2006 TEUs. While total randomness was impossible, it is im-
portant 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 Trans-
portation 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 per-
mit, 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?”

<table>
<thead>
<tr>
<th>Surveys Completed: 409</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES: 234 (57.2%)</td>
</tr>
<tr>
<td>MAYBE: 85 (20.8%)</td>
</tr>
<tr>
<td>NO: 90 (22.0%)</td>
</tr>
</tbody>
</table>

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 fre-
quently 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, 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%,

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.
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). 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).

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.” 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.”

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. 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.

**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:

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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.


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.
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:

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.

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


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.

![Exhibit 16.-Driver Experience Years of Driving or More, 2007](source: CGR Driver Survey, 2007)
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.
  - TSA is of the belief that its very similar HAZMAT program will eliminate 20% of drivers.
  - 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:

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

<table>
<thead>
<tr>
<th>County</th>
<th>Median Income</th>
<th>LA County Above/Below</th>
<th>Employee Drivers</th>
<th>Driver Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Angeles</td>
<td>$36,858</td>
<td></td>
<td>31,800</td>
<td>43.5%</td>
</tr>
<tr>
<td>Orange</td>
<td>$39,021</td>
<td>-5.5%</td>
<td>8,450</td>
<td>11.6%</td>
</tr>
<tr>
<td>Ventura</td>
<td>$37,752</td>
<td>-2.4%</td>
<td>3,000</td>
<td>4.1%</td>
</tr>
<tr>
<td>San Diego</td>
<td>$40,830</td>
<td>-9.7%</td>
<td>6,750</td>
<td>9.2%</td>
</tr>
<tr>
<td>Inland Empire</td>
<td>$40,206</td>
<td>-8.3%</td>
<td>23,090</td>
<td>31.6%</td>
</tr>
<tr>
<td>So. Calif. (6-Counties)</td>
<td>$38,569</td>
<td>-4.4%</td>
<td>73,090</td>
<td>100.0%</td>
</tr>
<tr>
<td>Non-LA County</td>
<td>$39,887</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(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 Gorgonio: 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. 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 IOOs she interviewed worked an average of 60 hours per week, 50 weeks a year, the median hourly pay was calculated at $12.37. 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. 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 in-

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65 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.

66 Monaco, p. 19.

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. According to the Census Bureau, there were 37,194 such IOOs in Southern California during 2005 (Exhibit 19). 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 1st Qtr. 2007 
Non-Employer Trucking Firms, Southern California

<table>
<thead>
<tr>
<th>Market</th>
<th>Firms</th>
<th>Total Revenue</th>
<th>Average Gross Revenue</th>
<th>Estimated Net Revenue</th>
<th>Estimate Hourly Rate2005</th>
<th>Estimated Hourly Rate 1Q2007</th>
<th>2003-2005 Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Angeles County</td>
<td>22,897</td>
<td>$1,857,664,000</td>
<td>$81,131</td>
<td>$31,409</td>
<td>$12.56</td>
<td>$13.83</td>
<td>8.00%</td>
</tr>
<tr>
<td>Orange County</td>
<td>2,497</td>
<td>$228,418,000</td>
<td>$91,477</td>
<td>$35,414</td>
<td>$14.17</td>
<td>$15.27</td>
<td>6.17%</td>
</tr>
<tr>
<td>San Diego County</td>
<td>2,256</td>
<td>$210,470,000</td>
<td>$93,293</td>
<td>$36,117</td>
<td>$14.45</td>
<td>$15.92</td>
<td>8.08%</td>
</tr>
<tr>
<td>Ventura County</td>
<td>626</td>
<td>$59,727,000</td>
<td>$95,411</td>
<td>$36,937</td>
<td>$14.77</td>
<td>$16.25</td>
<td>7.91%</td>
</tr>
<tr>
<td>Inland Empire</td>
<td>11,174</td>
<td>$1,194,530,000</td>
<td>$106,903</td>
<td>$41,386</td>
<td>$16.55</td>
<td>$18.09</td>
<td>7.37%</td>
</tr>
<tr>
<td>Southern California</td>
<td>37,194</td>
<td>$3,340,339,000</td>
<td>$89,809</td>
<td>$34,768</td>
<td>$13.91</td>
<td>$15.32</td>
<td>8.07%</td>
</tr>
</tbody>
</table>

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, 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

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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/

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.

- 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. 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 Or-

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71 California Workers' Compensation Rate Comparison, California Department of Insurance, 2007.
ganization coverage (PPO). In addition, 75% use plans that require an employee to make a contribution. 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 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).

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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.
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. 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. 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. 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 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

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75 Based upon LMC survey conducted for this report.
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 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. There 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%).

<table>
<thead>
<tr>
<th>Exhibit 20.-Impact of Price Increase Scenarios on LMC Profitability, Per IOO Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Ratios</strong></td>
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<tr>
<td>To IOOs</td>
</tr>
<tr>
<td>Non-IOO Costs</td>
</tr>
<tr>
<td>Pre Tax Margin</td>
</tr>
<tr>
<td>Total</td>
</tr>
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</table>

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

- 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.”

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:

- 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.

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.

78 See footnote 6, page 4.
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:

- 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:

- **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.

**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 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 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

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81 See discussion, pages 8-9 and Exhibits 3-4.
of requiring LMC ownership of the trucks entering the ports 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:\(^{84}\)

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

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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.
found to be entering their facilities in 2005.\textsuperscript{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 (\textit{Exhibit 21}).

\begin{center}
\begin{tabular}{|c|c|c|c|}
\hline
\textbf{Deadline Date} & \textbf{Truck Model Years} & \textbf{Total Trucks Affected} & \textbf{Share of Trucks Affected} \\
\hline
July 1, 2008 & Pre-1989 & 2,999 & 18% \\
July 1, 2009 & 1989-1993 & 4,798 & 29% \\
July 1, 2011 & 1996-2003 & 5,377 & 30% \\
July 1, 2012 & 2004-2006 & 254 & 100% \\
\hline
\textbf{TOTA\textit{L}} & 16,800 & 100% \\
\hline
\end{tabular}
\end{center}

\textbf{Exhibit 21.-Truck Retrofit or Replacement Schedule}

\textit{Ports of Los Angeles & Long Beach. 2008-2012}

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

\textbf{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.\textsuperscript{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 (\textit{Exhibit 22}).\textsuperscript{88}

\begin{center}
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline
\textbf{Year} & \textbf{LA-LB Port TEUs} & \textbf{Containers (1.85 TEU)} & \textbf{On Dock Rail Share} & \textbf{By Rail} & \textbf{By Truck} & \textbf{80\% High Frequency} & \textbf{High Frequency Truck Ratio(1)} & \textbf{Clean Trucks Needed} \\
\hline
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 \\
\hline
\end{tabular}
\end{center}

\textsuperscript{(1) Assuming 2\% per year efficiency increase}

\textbf{Exhibit 22.-Forecast of Container Volume & Clean Truck Needs, 2006-2012}

\textsuperscript{Source: Port of Long Beach Economic Development, Economics & Politics, Inc.}

\textsuperscript{86} see page 15.


\textsuperscript{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 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.
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.\(^8\) 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.\(^9\) 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.\(^9\) 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.\(^9\) 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.\(^9\) By 2012, the Port Clean Truck Program will need the LMC/concessionaires to replace these lost IOOs with new drivers and clean trucks. Adding the estimated 3,400 new drivers and clean trucks needed to handle port growth increases the need to 6,000 to 7,100 to reach the required 2012 level of 20,200:

- For the higher estimate of TWIC losses, there would be 13,100 remaining IOOs and a need for 7,100 new drivers and clean trucks, an increase of 54.5%.
- For the lower estimate of TWIC losses, there would be 14,300 remaining IOOs, and the need for 6,000 new drivers and clean trucks, an increase of 41.5%.

Increases In Driver Pay. At the current rates of pay among port drayage IOOs, these increases in the number of drivers and vehicles are unlikely. In Section 4, it was shown that they are earning a median from $11.60 per hour (CGR) to $12.37 per hour (Dr. Monaco). The alternative sources of drivers make much higher rates of pay:

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\(^8\) San Pedro Bay Long-Term Cargo Forecast, Mercer Management Consulting, July 2001.


\(^9\) Based on reported discussion by five major carriers at University of Denver Masters Degree in Logistics Course.

\(^9\) The forecast does not extend to the issue of driver turnover. It would compound the challenges discussed here.

\(^9\) See Conclusion of Section 4 on page 39.
Non-employee drivers in the Inland Empire, the most likely alternative supply of IOOs, are earning a median of $18.09 an hour and likely would want $20.08 to change to port drayage.

Those Los Angeles County employee-drivers most likely to shift to port drayage will need $16.45 per hour and a benefit package that would bring the total to $21.31 per hour. In the Inland Empire employee-drivers most likely to shift to port drayage will need $17.65 per hour and a benefit package that would bring the total to $22.71 per hour.

Convincing construction workers to change to drayage work would cost roughly $17.33 an hour plus a benefit package that would bring the total to $21.97 per hour. These workers would likely have to acquire commercial driver’s licenses and TWIC cards.

Rates will have to go to roughly $20 per hour to lure new drivers and clean trucks into port drayage. By 2012, they will make up a significant share of the industry. 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.

**LMC Weak Finances & Lack of Pricing Power.** The anticipated increase in labor costs, reemphasizes the difficulty faced by the port drayage industry in that most LMCs spend at least 95% of their revenues on operating costs. If their IOO costs nearly double, they must increase their rates or cease to exist. However, the LMCs have shown little ability to raise their prices given the imbalance of market power between themselves and their ocean shipping and national retail customers.

**Summary.** From these facts, it must be concluded that the port drayage industry is heading for an even more difficult period than described earlier. If the LMCs cannot pay more, they will not be able to go from the 13,100 to 14,300 drivers and trucks left after TWIC to the 20,200 needed to replace those lost to TWIC plus those required to handle port expansion. However, they cannot pay more if they cannot raise their prices, an action that their lack of market power has largely stifled. Here again, the same two general scenarios would appear to apply:

- **Crisis Path.** Most likely is a slowly building crisis as lack of drivers and trucks means containers are not delivered on time. Beneficial cargo owners (retailers, wholesalers, manufacturers, exporters and others) will demand that this occur putting pressure on the ocean lines to pay more to the LMCs to solve the problem. However, since retailers will be unwilling to pay more, the ocean lines will do this very reluctantly allowing the crisis atmosphere to build. Ultimately, the rates paid to LMCs and the IOOs will rise but not without significant ill will and a lot of cargo stacked at the ports. Some shippers will ultimately abandon store-door contracts and switch to using ocean lines for port to port freight movements. They will contract separately with LMC for port truck drayage.

- **Downfield Vision.** Less likely is for the ocean shipping lines, national retailers, and ports to recognize early that lack of supply will be forcing IOO pay and LMC

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94 See Conclusion of Section 4 on page 39.
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 with these firms plus leaders among the LMCs. This might allow a path to be developed so that as the shortage of drivers becomes evident, the pay scales to the IOOs and rates to the LMCs can begin to rise without the crisis.

As with the TWIC analysis, when the LMCs are able to raise their prices, the amount will have important implications for port drayage. As stated there, LMCs normally see 70% of their revenues passing through to IOOs and spend another 25% on other non-IOO costs, leaving them net pre-tax profits of 5.0%. The analysis differs from TWIC, as the LMCs are likely to see their overhead workloads increase over time as port volume increases, driving up their non-IOO operating costs. From 2006-2012, the port volume handled by high volume trucks is expected to increase 35.7% from 5.2 to 7.0 million containers. If 80% of this work was absorbed by existing LMCs and new ones handled 20%, the expansion in activity to a typical existing LMC would be 28.5%. It is assumed their non-IOO costs increase that much going forward.

| Exhibit 23.-Impact of Price Increase Scenarios on LMC Profitability, Per IOO Per Year |
|------------------------------------|---------------------------------|------------------------------------|---------------------------------|
| To IOOs                           | Current Ratios                  | 43.6% Price Increase, Truck Replace & Increase IOO Income to $20/Hour | 48.6% Price Increase, Truck Replace, IOO to $20/Hr, Double LMC Earnings |
|                                  | $75,000                         | $96,000                            | $96,000                         |
| Non-IOO Costs                    | $26,800                         | $34,400                            | $34,400                         |
| Truck Replacement Charge         | $0                               | $18,000                            | $18,000                         |
| Pre Tax Margin                   | $5,400                           | $5,400                             | $10,700                         |
| Total                             | $107,100                        | $153,800                           | $159,200                        |

There is one additional major consideration. Of the 16,800 trucks that the ports anticipate be brought to clean air standards, they estimate that 10,622 will have to be replaced (63%).95 To avoid Transportation Impact Fees, the LMCs will put pressure on their LMCs to replace these trucks as soon as possible. However, it will be difficult if not impossible for many of them to acquire the $28,500 (20% of truck $100,000 price plus $8,500 in sales taxes) in financing they will need to do so (see TIF-IOOs Pay TIF discussion below). The alternative is for the LMCs to try and raise prices to the ocean shipping fleet and/or the beneficial cargo owners to pay for this part of the program. On average, the increase required would be 63.2% of $28,500 or $18,000. With that background, two scenarios appear likely (Exhibit 23):

- If IOO incomes were to reach $20 per hour (50 hours x 50 weeks) or $50,000 a year for an equal effort, there would be no increase in their $46,000 operating costs. They thus would need to receive $96,000 from their LMCs. At 70%, this would require LMC annual revenues of $135,800 per truck. With higher LMCs volume, there would be an assumed increase in non-driver costs to $34,400. That would leave pre-tax profit of $5,400 per truck. However, the LMCs would need to raise another $18,000 to help fund their share of replacement trucks. Thus,

95 Scenario 7, Appendix, San Pedro Bay Ports Clean Air Action Plan Technical Report, p. 27
revenue would have to increase to $153,800 per IOO. **A price increase of 43.6%** would be needed to increase LMC revenues from $107,100 to $158,800 per truck.

- For LMCs to want to stay in port drayage and deal with the extra issues, they might desire to see their thin profit margin double from $5,400 to $10,700 per truck working for them (5% to 7%). The funds going to an IOO would remain at $96,000; their non-driver costs would remain at $34,400. The truck replacement supplement would stay at $18,000. For this to happen, their total revenue would have to go from $107,100 to $159,200 per truck, **a price increase of 48.6%**.

Given the weak profit position of the LMCs, the same logic would appear likely to govern their behavior here as with TWIC case. It they are to gain any market power, a scenario like the second one (**price increase of 48.6%**) would appear to be the minimum acceptable to them. But, it would likely be a tough sell to their customers. However, less would be unacceptable to the LMCs, as it would make them simply conduits for channeling money to their IOOs. According to Moffatt & Nichol data, a 48.6% increase would raise port drayage costs from $150 to $223 per container for trips near the ports and $300 to $446 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 0.1% to 0.2% of the $70,000 median value of a container’s contents.

**Transition.** Again, 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 $247,025 reducing their average owner’s equity from $362,200 to $115,175. Larger IOOs would have average cash flow losses of $896,650, reducing their average owner’s equity by 50% from $1.77 million to $888,900 (See “Transition” page 72 for calculation’s details).

2. **Tracking Devices.** Another aspect of the proposed Clean Truck Program could have the side effect of helping to increase the efficiency of port operations. There will be a requirement that all tractors entering the port gates under the auspices of LMC-concessionaires be equipped with an RFID transponder. These devices will provide the capability to access information on a remote/central server database with a key number. This might include, but not be limited to:

- The LMC’s identification number
- The truck’s identification number
- The truck’s license plate number
- The driver’s license identification number
- The driver’s TWIC identification number
- The cargo container’s identification number

The RFIDs and the corresponding port database related to them will be used to track a wide variety of information such as if a truck is affiliated with an LMC that has paid the fees to be a concessionaire or due to Truck Impact Fee (TIF) requirements, and whether the truck itself has passed its regularly required clean air and maintenance evaluations.
Further, the trucks will be required to have an AVL device. This will allow the ports to know where the trucks are located and help the ports to monitor the geographic provisions of the Fleet Modernization Grant Program (below).

**Economic Implications.** While the RFID and AVL devices will be required to assist the port in managing and monitoring vehicles under the Clean Truck Program, these devices could have the side effect of helping increase the efficiency of port operations. This could help reduce the price increase necessary to allow IOOs to earn more and LMCs to be more profitable. It could do this by increasing the number of containers that each IOO can move in a day (“turns”).

Above, it was shown that in 2006 the ratio of containers handled by high volume trucks (5,172,758) to the number of such vehicles (16,800) was 308 to one. In estimating the number (20,200) needed to handle containers volume in 2012 (7,017,948), efficiency was assumed to increase 2% per year to 347 to one (Exhibit 24). The cumulative efficiency gain for the period was 12.7%. Put another way, on average, frequent or semi-frequent trucks could handle 12.7% more work in 2012. Given a split of the extra revenue between IOOs and LMCs, each could earn a little more without a price increase.

If, however, efficiency were to be increased at 3.0% per year from 2006-2012, the ratio would grow to 368 to one, a cumulative 19.5% increase in the volume of containers each high volume truck could handle would occur in the six year period (Exhibit 25).

Are such increases in efficiency possible? Yes. A study of the increases in productivity by sector in the U.S. economy found that from 2000-2004, the distribution sector’s productivity increased at 3.1% per year. The possibilities for the ports of Los Angeles and Long Beach are that great given the potential efficiency involved in the use of RFID, AVL devices and other technology that can coordinate the location of containers and the timing of truck arrivals. Dr. Anne Goodchild, Assistant Professor of Transportation at the University of Washington indicates, “port appointment systems can be tied to termi-

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96 Modeling Aggregate Productivity at a Disaggregate Level; New results for U.S. sectors and industries, Carol Corrado & Paul Lengermann, Federal Reserve Board; Eric J. Bartelsman, Free University, Amsterdam, J. Joseph Beaulieu, Brevan Howard, Inc. Table 5, July 5, 2006, p. 24.
nal operating systems and real-time sensors (RFID or AVL) to improve terminal operations. For example, during idle periods, RTG crane operators can ready containers to make containers for the next appointments available. Such a system could notify an RTG operator that a truck has arrived at the gate and that he should begin to retrieve the relevant container, reducing truck wait time at the stacks.”

Annual efficiency increases in the neighborhood of 3% compounded would likely be sufficient to keep IOO incomes and LMC profits competitive with other trucking sectors, once they have achieved parity with them. However, as discussed, the difficulty remains that the current low incomes of IOOs will require increases in pay approaching 100% to lure drivers from other sectors into port drayage. Given the thin profit margins on which LMCs operate, they will still require sufficient price increases to make that possible.

For the highly competitive port drayage sector, the very aggressive efficiency increases that this technology has created for major package delivery firms, less than a full container load (LTL) companies and interstate trucking operations are very unlikely to occur.

The problem is the time, training and coordination necessary to create a tightly integrated, relatively error free computer system, given the large number of small LMC/concessionaires, many with limited computer understanding.

3. **Truck Impact Fees (TIF).** Trucks that are not banned from accessing the ports, but do not meet the “clean” trucks standards, will be charged a TIF at the gate for each inbound move or, per the progressive ban, they will be prohibited from entering terminals. The TIF (including an administrative surcharge) will be assessed to the LMC with which the truck is affiliated. The current TIF estimate is between $34 and $54 per inbound-gate move. Once the five-year fleet turnover period is completely funded, the ports will stop collecting the TIF. The fees would be one source of funds for the Fleet Modernization Grant Program designed to help fund retrofits or replacement trucks (see #4).

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ing to the CAAP announcement statement of the two port board presidents, charges like the TIF were “to be to be imposed on ‘shippers’ not drivers.”

**Economic Implications: TIF.** In looking at the TIF, it is important to understand that the fees will be substantial. Under the LMC-IOO business model that currently dominates port drayage, TIF fees would be charged to the LMCs while the non-compliant trucks would be owned by IOOs. If such an IOO made 308 trips per year, the annual cost to its LMC would range from $10,500 to $16,600. Assuming the TIF is set at $50 per inbound trip, near the high end of this range, the annual cost would be $15,400.

As indicated earlier, most LMCs have pre-tax profit margins of 5% or less. Thus, it was estimated that with revenue of $107,100 per truck, the firm could pay the median gross income to its IOOs of $75,000, leaving $26,800 for other expenses and 5% for pre-tax profit of $5,400 (Exhibit 23). However, if the LMC is charged $15,400 a year for TIF because the truck does not yet meet clean air standards, it would lose $10,000 on every truck of this type, unless the TIF is passed on to its customers (Exhibit 26).

### Exhibit 26.-Impact of TIF On Pre-Tax LMC Profit

<table>
<thead>
<tr>
<th></th>
<th>Revenue &amp; Net Current LMC Pay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenue</td>
<td>$107,100</td>
</tr>
<tr>
<td>Pre-Tax Profit</td>
<td>$5,400</td>
</tr>
<tr>
<td>TIF @ $50</td>
<td>$15,400</td>
</tr>
<tr>
<td>Post-TIF Profit (Loss)</td>
<td>($10,000)</td>
</tr>
</tbody>
</table>

Since the financial viability of the LMCs will not allow them to absorb TIF costs of this magnitude, they will be under enormous pressure to only use IOOs whose vehicles meet clean air standards. Alternatively, the LMCs will have to seek to have the ocean shipping lines or beneficial cargo owners pay the fees.

**IOOs Pay TIF.** In the first case, the LMCs would indicate to those IOOs with trucks that have not yet met the clean air standards that the TIF will be deducted from their normal drayage rates. One result would be for the IOOs to quickly try to access the Fleet Modernization Grant Program:

- **Retrofit.** Those IOOs whose trucks qualify for retrofit will want that done as soon as possible under the Fleet Modernization Grant Program. This would require the ports to give them access to it for 100% of the estimated $20,000 cost of such work. Given the anticipated volume of such requests, the question arises as to whether the grant program will be able to fund all such early requests (see discussion under Fleet Modernization Grant Program section below).

- **Purchase.** Those IOOs whose trucks need to be replaced will want to quickly do so using the Fleet Modernization Grant Program. Here, the ports must give them access to it for the 80% share of such a purchase or about $80,000. Again, the

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100 LMC survey found that the average driver handled 308 containers per year. See discussion, p. 24.

101 Paul Lewis, President, Boerner Truck Center of Huntington Park, a big retrofitter, quoted about $20,000 depending upon which vendor and make and year of tractor. Port of Los Angeles supplied a similar figure, $19,500.
IOOs ability to acquire these funds will depend on whether the program has sufficient money to handle the volume of such requests. It will also depend upon whether the IOOs can obtain financing for their share of the truck purchase.\textsuperscript{102}

This last issue requires a look at a typical IOO’s finances. If one receives an $80,000 grant for a new truck, it would face no tax liability as the full cost is immediately deductible under IRS Section 179.\textsuperscript{103} However, the IOO would have to borrow $20,000 for their share of the price plus $8,500 for Los Angeles County sales taxes unless they can access other sources of funds. For loans of this size, lenders typically want FICO credit scores of at least 660, with a desire for over 700. Nationally, 73\% of credit applicants exceed 650 and 58\% are above 700.\textsuperscript{104} Given the average IOO’s modest income, it can be reasonably assumed that most have FICO scores well below these averages. Compounding this difficulty is the likelihood that the ports would place liens against trucks for their 80\% stake in them. A lender would thus be in second position for an IOO’s 20\% share in the event of a repossession. Few would want to do so. Most IOOs would thus not qualify and would likely leave port drayage unless an alternative for funding truck replacement could be found.

\textbf{Note:} Discussions with major lenders indicated an interest in pursuing IOO financing via a structure including port guarantees to limit a lender’s potential losses. Terms might involve the lender and ports allocating profits and losses from repossessions over the grant program’s life. Rates would be about 10\%.

At the moment, it appears unlikely that the Fleet Modernization Grant Program will have early access to the funds necessary to finance the IOO grants needed for the volume of retrofits and truck purchases that will likely occur if the TIF is introduced and this scenario unfolds. In addition, without a guarantee program, there appears to be little chance that lenders will assist those IOOs needing new trucks to purchase them.

\textbf{Customers Pay TIF.} The other option is for the LMCs to raise rates to ocean shipping lines and/or beneficial cargo owners. However, as has been stated, the highly competitive nature of port drayage gives LMCs relatively little bargaining power compared to their large customers. The one scenario under which LMCs can impose higher rates is when their own profitability or the viability of their IOOs begins to cause one or both to stop handling port drayage. That would set off the “crisis path” in which the ocean lines and/or beneficial cargo owners would face the choice of either paying higher rates or seeing their cargo anchored in San Pedro Bay. Given the known financial condition of LMCs and IOOs, plus the fact that TIF will start at a time certain, it could be that ocean lines and/or national retailers will accept the inevitability of such a crisis and move to avoid it by accepting contracts in which the TIF rates can be passed on. In either case,

\textsuperscript{102} The $100,000 tractor price is the within the range for 2007 Freightliner Columbia tractors found on-line. It is also the figure used by the ports. There would be an 8.5\% sales tax for purchases in Los Angeles County, 7.75\% in Orange, Riverside and San Bernardino counties.

\textsuperscript{103} IRS Code Section 179 allows $112,000 in equipment purchases to be immediately written off.

\textsuperscript{104} http://www.myfico.com
that option was included in the discussion of the price increases needed by LMCs to ensure sufficient capacity to move containers through the ports (*Exhibit 23, page 48*).

**Economic Implications: Dray-Offs.** Meanwhile, a second potential impact of the TIF would be to change the way in which LMCs organize their operations. As long as they remain under intense cost and profit pressures, LMCs can be expected to seek ways to keep costs down for themselves and possibly their IOOs. One potential method would be to bifurcate their businesses between drayage involving ports and intermodal rail yards and container movements involving neither. This could lead to “dray-offs” whereby inbound cargo is moved from the ports by an IOO whose tractor is clean air compliant, while outside the gates it is interchanged to one that is not. For out-bound cargo, containers could be transported to near the gates by an IOO with an unapproved tractor and then interchanged to one with an approved vehicle.

Rules could be promulgated to ban such practices but they face enforcement difficulties. Beyond the problem of uncovering the use of this process, there is the fact that it is already common to transfer long distance loads from IOOs with tractors specializing in port drayage and IOOs that make long distance runs. Also, some LMCs already use one group of drivers to move containers from the ports to their yards. Later, another group of drivers takes them to their final Southern California destinations. Further, it is common place for sea-going forty foot containers to be moved to a cross-dock where goods are transferred to a 53 foot landside container which another tractor hauls from there either to an intermodal yard or cross-country. It will be a challenge to sort out when these are normal practices and when they are used to skirt clear air rules.

4. **Fleet Modernization Grant Program.** As stated, the Ports intend to establish a grant program to fund the retrofit and/or replacement of the drayage fleet using funds allocated through the port CAAP, SCAQMD, $400 million in State Proposition 1B bond funds (*if available*), and the TIF. Below, it is shown that the TIF will likely yield roughly $160 million less than anticipated. Grant funds from the program would only be available to approved concessionaires, and by extension in this section, to the IOOs working under their auspices. Trucks that qualify for retrofit technology will be awarded grants covering up to 100% of the labor and materials for that installation. In general, an older truck must be turned in and scrapped to qualify for a new replacement truck. In that case, grants would cover up to 80% of the purchase.105 The implications of this program for IOOs were outlined above (#3). To maximize their investment in the grant program, the ports are considering requiring those accessing the program to agree to use their vehicles exclusively for port drayage and to make a minimum number of port trips per week. This represents a difficulty as the destinations and frequencies of trips are controlled by the shipping lines and beneficial cargo owners not the IOOs and LMCs.

**Economic Implications: Insufficient Funds.** For the Fleet Modernization Grant Program, the most important economic consideration is whether it will be funded to the extent necessary to complete its mission in a timely manner. The TIF logic explained above concluded that under the LMC-IOO model, there would be a rapid demand for funds to immediately retrofit or replace IOO trucks. This would be exciting from a clean

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air perspective since the program would be generating demand for clean vehicles much faster than called for by the truck retrofit and replacement schedules. However, this beneficial result could be frustrated by the insufficiency of funds for this to occur. The odd result would be for the grant program’s lack of funds to leave IOOs out of compliance, with TIF costs being imposed that would generate the money to clean-up the trucks, only later. In the meantime, LMCs and IOOs would most likely absorb some portion of the TIF, reducing their incomes.

Here, the difficulty stems from the manner in which the Fleet Modernization Grant Program is to be funded. The $400 million (22% of budget) in Proposition 1B funds have not yet been allocated to it. Meanwhile, the phase-in process for the Clean Truck Program was shown earlier (Exhibit 21 above). Using it, the grant program assumes that of the trucks that would be subject to the TIF, there are 5,959 that can ultimately be retrofitted. Of those: 564 would be retrofitted in year one; 3,118 in year two; and 2,274 in year three. Until they are retrofitted, the truck owners are assumed to pay the TIF at $50 per in-bound move for an average of 308 trips or $15,400. It is also assumed that these trucks are retrofitted at the end of each year as shown in the grant plan.

Of the $1.2 billion of revenue in the Fleet Modernization Grant Program, $209,779,000 or 17.4% is anticipated to come from the $15,400 per year in TIFs that will be paid by the owners of trucks that can be retrofitted, until the retrofit is completed (Exhibit 27). The fees for trucks to be retrofitted by the end of year 1 would pay $15,400; those at the end of year 2 would pay $30,800; and those at the end of year 3 would pay $46,200. This will be done while waiting to receive a grant for a free retrofit.

### Exhibit 27.-TIF Revenues From Trucks To Be Retrofitted, $50 Per Trip

<table>
<thead>
<tr>
<th>Period Retrofitted</th>
<th>Vehicles</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>TIF Before Retrofit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>564</td>
<td>$8,685,000</td>
<td>$0</td>
<td>$0</td>
<td>$8,685,000</td>
</tr>
<tr>
<td>Year 2</td>
<td>3,118</td>
<td>$48,017,000</td>
<td>$48,017,000</td>
<td>$0</td>
<td>$96,034,000</td>
</tr>
<tr>
<td>Year 3</td>
<td>2,274</td>
<td>$35,020,000</td>
<td>$35,020,000</td>
<td>$35,020,000</td>
<td>$105,060,000</td>
</tr>
<tr>
<td><strong>Total TIF ($)</strong></td>
<td>5,959</td>
<td><strong>$91,722,000</strong></td>
<td><strong>$83,037,000</strong></td>
<td><strong>$35,020,000</strong></td>
<td><strong>$209,779,000</strong></td>
</tr>
</tbody>
</table>

### Economics of Self Retrofit In Lieu Of TIF

<table>
<thead>
<tr>
<th>TIF Paid</th>
<th>Self Retrofit</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>$15,400</td>
<td>$16,800</td>
</tr>
<tr>
<td>Year 2</td>
<td>$30,800</td>
<td>$16,800</td>
</tr>
<tr>
<td>Year 3</td>
<td>$46,200</td>
<td>$16,800</td>
</tr>
</tbody>
</table>

Source: Scenario 7, Technical Appendix to San Pedro Bay Ports Clean Air Action Plan, CGR Management Consultants, LLC

However, since it is estimated that a truck owner can self-retrofit for $16,800 by avoiding the cost of port administrative and incentive fees, this would not make sense. True, the truck owner that retrofits by the end of year 1 would end up $1,400 better off than

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106 Technical Appendix to the CAAP, Scenario 7, p 27. The estimates are actually stated for FY 2006/07, 2007/08 and 2008/09. We are treating them as years 1, 2 and 3 of the plan respectively as obviously planned actions will vary from the dates shown in the Appendix.

107 See footnote 100.

108 Cost details shown in the Appendix to the 2006 San Pedro Bay Ports Clean Air Action Plan Technical Report, p. 27.
paying for a self-retrofit. However, those that would be retrofitted by the end of years 2 and 3 would, respectively, be worse off by $14,000 and $29,400.

The LMCs or IOOs will seek to avoid these costs for two reasons. First, the TIF is not fixed and may be increased to generate sufficient funding for the program. Second, it is more economical for owners to retrofit their vehicles themselves and avoid the TIF entirely. Thus, any owner with a truck planned for retrofit in years 2 or 3 who can borrow $16,800 at any interest rate below 74% will gain economically by retrofitting their trucks in year 1. Assuming that at least 80% of the owners of such trucks do so, the Fleet Modernization Grant Program will be reduced by about $160 million or 8.9% of its estimated budget. Combined with the Proposition 1B funds, this analysis means 31.1% of the program’s funding may be in jeopardy.

**Economic Implications: Exclusivity.** In reviewing the potential economic impact of the exclusivity requirement, it is important to understand the degree to which the LMCs serving the ports are engaged in non-port work. Here, the survey of 136 LMCs conducted for this report is informative. It found that the share of LMCs that had at least some business with non-port related customers was 72%. Importantly, for 19% (one in five), non-port business involved 50% or more of their operations (Exhibit 28). These figures are not surprising given the need to locally transport goods within Southern California’s $945 billion economy. However, for these firms, flexibility in the use of the IOOs with whom they work is vital to the efficiency of their operations and, thus, their profitability.

<table>
<thead>
<tr>
<th>Share of LMCs With Business Other Than Port Drayage</th>
<th>Ports of Los Angeles &amp; Long Beach, 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>4%</td>
</tr>
<tr>
<td>10%</td>
<td>4%</td>
</tr>
<tr>
<td>20%</td>
<td>4%</td>
</tr>
<tr>
<td>30%</td>
<td>4%</td>
</tr>
<tr>
<td>40%</td>
<td>4%</td>
</tr>
<tr>
<td>50%</td>
<td>4%</td>
</tr>
<tr>
<td>60%</td>
<td>4%</td>
</tr>
<tr>
<td>70%</td>
<td>4%</td>
</tr>
<tr>
<td>80%</td>
<td>4%</td>
</tr>
<tr>
<td>90%</td>
<td>4%</td>
</tr>
<tr>
<td>100%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Source: Telephone Survey of 136 LMCs by CGR Management Consultants, LLC

If accessing the Fleet Modernization Grant Program requires numerous IOOs to work exclusively in port drayage, it will create practical problems for the multifunctional LMCs that use them. For example, an LMC might normally have an IOO dray a port container to a customer, pick up a non-port related load there and move it elsewhere before coming home. If the IOO could not perform the second haul, it would have to return empty (bob-tail). Meanwhile, a non-port related IOO would have to bobtail out to the customer to move the second load. Situations like this would be inefficient and costly to the LMCs and eventually their customers. They would also increase the volume of truck trips on Southern California’s roads and increase emissions. The exclusive use provision could
also be a significant factor for smaller LMCs who lose a major port drayage customer. Since it would be presumably known that the LMC has received a grant with an exclusive use restriction, their options for replacing the lost business would be limited and their rate negotiation ability curtailed.

5. **Clear Air Device Maintenance.** Another aspect of the Clean Truck Program would be the requirement that concessionaire/LMCs have a maintenance program for all trucks operating under their auspices whether their own or belonging to IOOs. The program must ensure that there is adherence to manufacturer’s recommended maintenance schedules for vehicles and retrofit devices, and that records are maintain providing evidence of compliance. It also bars tampering in anyway with emission control devices. The program further requires that there be a facility specific maintenance plan.

**Economic Implications: Maintenance Oversight.** The Clean Truck Program will clearly give the ports a vested interest in ensuring that once vehicles used for port drayage meet clean air standards, they stay that way. The requirement that there be a facility specific maintenance plan seems to imply that they are considering going into the on-site inspection business to ensure that this occurs. This would be a costly undertaking and use funds that might better be applied to other purposes such as helping to clean-up more vehicles. This is particularly true given that the California Highway Patrol is already charged under California law with annually inspecting every terminal in the state in a two-year cycle (*CHP’s BIT program*).\(^{109}\) Those inspections are being undertaken for the sake of truck safety. However, it would appear to be a small step to have the CHP’s jurisdiction expanded to include looking at vehicles and inspecting records to ensure that air quality maintenance is also being routinely performed. Here, the difficulty is the fact that the CHP has been underfunded for its BIT responsibilities and is currently only inspecting about one-half of the terminals required. Here, the ports, the CHP and the LMCs might develop a program to ensure that the IOOs working with the port are among those reached each year.

In addition, since all tractors accessing the ports will have RFID devices, it would seem to be relatively inexpensive for the ports to set up stations inside the terminal gates to which tractors could periodically be diverted for a rapid emission check. The fact that a vehicle is to be out of compliance would be entered on the computer record for the vehicle. The next time a vehicle with that RFID entered the gates, it could be rechecked and barred from future entry until it has been brought into compliance.

At its core, the Clean Truck Program is designed to modernize the fleet of heavy duty vehicles involved in port drayage. Given the high cost of retrofitting or replacing the vehicles plus the relatively weak financial condition of most LMCs and IOOs, the program proposes a phase-in period and Fleet Modernization Grant Program to ease the cash flow burden. Ultimately, it is the expressed desire of the ports that “shippers” not drivers pay for the clean-up program. It is assumed here that this means a combination of the ocean shipping lines and/or the beneficial cargo owners (*mostly national retailers*). The program attempts to bring this about through the marketplace. TIF costs are imposed on LMCs vehicles under whose auspices IOOs are bringing trucks that do not meet clean air standards through the port gates. Since neither the LMCs or the

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\(^{109}\) See footnote 38, page 21.
IOOs can afford the TIF costs, the LMCs will logically attempt to raise drayage rates to offset both the higher costs they must pay to attract an expanded labor supply and offset the Clean Truck Program’s costs. Given their relative lack of negotiating power vis-à-vis their customers, this will not happen without the threat or actual occurrence of a port drayage crisis. However, given the current economics of the LMCs and IOOs, this would appear to be the path by which the Clean Truck Program will eventually be funded.
6. Clean Truck Program: Truck Ownership/Employee Model

In considering how to carry out the Clean Truck Program, the ports of Los Angeles and Long Beach have proposed major changes in the manner in which Southern California’s port drayage industry is organized. Their intent was outlined by the two port commission presidents in their instructions to their staff upon the announcement of the CAAP. They expressed a desire that:

a. “The Ports undertake a 5-year, focused effort to replace or retrofit the entire fleet of over 16,000 trucks that regularly serve our Ports with trucks that at least meet the 2007 control standards and that are driven by people who at least earn the prevailing wage.” [italics added]

b. “The Ports establish within their respective districts a program that restricts the operation of trucks that do not meet the clean standards established in the Plan. Further, that we impose a system of fees and transportation charges to raise the necessary funds to pay for the cleaner trucks. These fees would be imposed on “shippers”, and not on the drivers.” [italics added]

c. “The Ports will invite private enterprise trucking companies to hire the drivers on terms that offer the proper incentives and conditions to achieve the Clean Air Action Plan goals while resulting in adequately paid drivers.” [italics added]

d. “The Ports begin this program with an infusion of cash to the Gateway Cities Program that would fund a 500-truck program that will demonstrate the applicability of new retrofit technologies. This demonstration program will be activated in the 1st quarter of 2007, and the full 16,800-truck program will be rolled out shortly after.” [110]

To carry out these instructions, the ports have proposed to use their tariff authority to require that the LMCs become the concessionaires with the exclusive right to have trucks working under their auspices enter the port terminals. Under the program, LMCs would be required to:

- Obtain port concession licenses, LMCs would pay a one time application fee and annual renewal fees of about $5,000.
- Meet as yet undefined balance sheet levels and insurance requirements to ensure industry stability.
- Acquire ownership of the trucks operating under their auspices according to a strict 5-year time schedule.
- Have their trucks retrofitted or replaced to 2007 clean air standards according to a strict 5-year time schedule.
- Ensure that all requirements created as part of any grant or loan programs to clean the trucks are fulfilled since the Fleet Modernization Grant Program would only grant funds to retrofit or replace trucks owned by concessionaires.
- Pay fees (TIF) for trucks entering the port gates under their auspices that are not up to the 2007 clean air standard during the 5-year transition period.
- Ensure that their trucks are maintained in a manner that keeps them clean once they have been replaced or retrofitted.

• Maintain detailed records on truck maintenance and safety work as required by the CHP’s BIT program and DOT, plus records on inspection and maintenance of clean air equipment.
• Have a facility where their trucks are parked when not in use as well as where they can be maintained and inspected.
• Use only employee-drivers to operate their trucks according to a strict 5-year schedule, with preference given to drivers who have a history of involvement in port drayage.
• Maintain employee records, oversee drivers logs and health examination schedules and ensure that drivers have TWIC and other appropriate licensing.
• Require drivers to not park the LMC’s trucks on nearby city streets and to only use defined routes in driving through communities in the port area.
• Install RFIDs and AVLs on their trucks.

Below the major elements of the Clean Truck Program are described together with commentary on their economic implications. For brevity, where the results are the same as the analysis of the Clean Truck Program under the LMC:IOO model in Section 5, reference is made to the appropriate material discussed there.

1. **Acquiring Trucking Fleet Ownership & Meeting Clean Air Standards.** As indicated, LMC/concessionaires will be required to own the vehicles accessing the ports under their licenses and bring these vehicles up to clean air standards. Since most do not currently have trucking fleets, that aspect of the requirement will represent a fundamental shift in their business model from being service firms with relatively thin balance sheets to being trucking companies with significant investment in vehicle assets.

**Vehicle Prices.** For purposes of this analysis, it is assumed that $11,500 is the average price of pre-1996 tractors and $32,200 is the average for subsequent models. New 2007 tractors are estimated to cost $100,000.111 In both cases, the LMC would have to pay Los Angeles County’s 8.5% sales taxes on their purchases. Given these figures, there are a variety of issues associated with the increased capital needs that would result from the requirement for concessionaires to own their tractors:

• **Retrofit.** For an LMC, the least expensive option would be to acquire post-1995 tractors from their IOOs who would then become employees. The vehicles could then be retrofitted to meet clean air standards using the proposed Fleet Modernization Grant Program. Under the most favorable assumption, that program would be fully funded and able to pay 100% of all retrofits. The funds that LMCs would need for this option in the first year would then be the price of acquiring the tractors, the sales taxes, and the first year’s income tax liability on the grant funds.112

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111 The existing tractor prices are averages developed from the offering prices of Freightliner tractors listed for sale www.commercialtractortrader.com. New truck prices are from several on-line sources and the ports.

112 Grants to acquire or retrofit trucks would likely be considered taxable income to the recipient and subject to state and federal income taxes. Depending on the recipient’s taxable status, this would create a need for cash to pay the income taxes in the year when the grant is received. The amount of tax paid will potentially be offset in future years by the depreciation deductions and the eventual recovery of the asset’s salvage value. The critical issue is grant re-
It is assumed that the LMCs will follow this strategy for 50% of their fleets. In fact, only 34% of the port drayage fleet is post-1995 vehicles. Given the lower cost of retrofitting versus buying trucks, 50% is used in the belief that the LMCs will argue strenuously to be allowed to buy other post-1995 tractors in SCAQMD’s air basin.

The 50% factor is used to determine the fleet purchases required by LMCs in various size groups. Among small and mid-sized LMCs, these ranged from six trucks for firms in the 1-10 range, to 47 for those in the 26-75 range. Given that LMCs of 76-250 trucks only devote 40.6% of their operations to port drayage, their average fleet size of 137 was reduced to a port fleet requirement of 56 trucks. For LMCs with 251 or trucks, port drayage was 25.2% of their activity. Their average fleet of 517 was reduced to a need for port operations of 130 trucks.

Note: This approach means that the larger LMCs will likely find it in their interest to bifurcate their operations, reserving part of their fleets exclusively for the port drayage work. The balance of their operations could continue using IOOs with their existing trucks, possibly subject to CARB’s proposed rules.

In each LMC size category, it is assumed that the firms will fill 50% of their truck needs by buying and retrofitting post-1995. The number will range from 3 for firms with 1-10 trucks, to 65 for the largest firms (Exhibit 29).

<table>
<thead>
<tr>
<th>Size Range</th>
<th>Average Trucks</th>
<th>Purchase &amp; Retrofit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>11-25</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>26-75</td>
<td>47</td>
<td>24</td>
</tr>
<tr>
<td>76-250</td>
<td>56</td>
<td>28</td>
</tr>
<tr>
<td>251 &amp; Up</td>
<td>130</td>
<td>65</td>
</tr>
</tbody>
</table>

Source: Exhibit 14 as adjusted

- To acquire a used tractor that can be retrofitted, an LMC must pay $32,200 or $34,937 with sales tax. The $20,000 to retrofit the vehicle would be paid by the port grant program. However, an income tax liability would be created. This would be the $20,000 grant less the first of five years of depreciation at 20%. It would be taken against 80% of the purchase price to allow for salvage value. The tax would thus be 32% of $14,410 or $4,611. The total cost in year one would be $39,548 (Exhibit 30).

- For LMCs in the 1-10 range, the average expenditure (rounded) to buy and retrofit trucks would be $119,000. It would be $356,000 for firms of 11-25 trucks and $949,000 for those with 26-75 trucks. Among larger LMCs, those with 76-250 recipients’ ability to meet the cash flow requirements. Another potential factor is the applicability of IRS code Section 179 that would allow “small businesses” to write off the entire grant under certain circumstances. When applicable it would completely eliminate the federal income tax consequences of the proposed grants.

113 See Exhibit 21, page 45.
114 Proposed CARB regulations may restrict the use of the existing IOO fleet but would not impact the independent contractor status of IOOs.
trucks would need to spend $1,107,000 for trucks they would use exclusively in port drayage. It would be $2,571,000 for those with 251 or more.

<table>
<thead>
<tr>
<th>Exhibit 30.-Cash Flow, LMC Fleet Acquisition &amp; Retrofit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Acquiring a Used Tractor</td>
</tr>
<tr>
<td>Sales Taxes in Los Angeles County @ 8.5%</td>
</tr>
<tr>
<td>Purchase Cost</td>
</tr>
<tr>
<td>Retrofit Cost</td>
</tr>
<tr>
<td>Fleet Modernization Grant</td>
</tr>
<tr>
<td>Value of depreciation deduction @ 20% of .80 of price</td>
</tr>
<tr>
<td>Taxable Income</td>
</tr>
<tr>
<td>Income tax @ 32%</td>
</tr>
<tr>
<td>Total Cash Required in Acquisition Year</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Fleet Size</th>
<th>Avg. Trucks</th>
<th>Cash Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>3</td>
<td>$118,645</td>
</tr>
<tr>
<td>11-25</td>
<td>9</td>
<td>$355,934</td>
</tr>
<tr>
<td>26-75</td>
<td>24</td>
<td>$949,157</td>
</tr>
<tr>
<td>76-250</td>
<td>28</td>
<td>$1,107,350</td>
</tr>
<tr>
<td>251 &amp; Up</td>
<td>65</td>
<td>$2,570,635</td>
</tr>
</tbody>
</table>

- **New Trucks.** For LMCs, the more expensive option would be to acquire pre-1996 trucks from their IOOs who would become employees. These vehicles could then be turned in for scrapping in exchange for grants to help buy new trucks under the proposed Fleet Modernization Grant Program. Under the most favorable assumption, that program would be fully funded and able to pay 80% of the purchase price. The cost of this option to the LMCs would be the prices of the old tractors, sales taxes on the $100,000 for new trucks plus a $20,000 investment in them, and any income tax liability on the grant funds. 116 It is assumed that LMCs will fill their truck needs by using this strategy for 50% of their vehicle needs.

  - To acquire a used tractor to be turned in for scrapping, the price would be $11,500. The new truck would cost $100,000 with $20,000 paid by the LMC plus $8,500 paid in sales tax. The $80,000 grant program would create an income tax liability. This would be the grant value less $17,700 for the first of five years of depreciation at 20%. 117 It would be calculated against 80% of the $108,500 purchase price to allow for salvage value. The tax would thus be 32% of $51,140 or $16,365. The total cash required in year one would be $56,256 (Exhibit 31).

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115 Assumes the LMC exceeds the limits of the Section 179 deduction as do all of the following examples.

116 Again the tax liability is incurred in the year in which the grant is received and may be offset by other factors, such as operating losses, normal depreciation or Section 179 depreciation. In the subsequent four years, the LMC would have depreciation deductions and no grant income and, hence, lower taxable income.

117 For tax purposes, trucks are depreciated over five years. The depreciable amount is the total purchase price, $108,500 less an estimated salvage value of $20,000 or $17,700 per year. In addition there would be a first year deduction for the cost of acquiring the old truck to be scrapped.
For LMCs in the 1-10 range, the average expenditures (rounded) to buy new trucks would be $168,000. It would be $506,000 for firms of 11-25 trucks and $1,294,000 for those with 26-75 trucks. Among larger LMCs, those with 76-250 trucks would need to spend $1,575,000 for trucks they would use in port drayage. It would be $3,656,000 for those with 251 or more.

### Exhibit 31.-Cash Flow, LMC Fleet Purchase Of New Trucks

| Cost of Acquiring a Used Tractor to Scrap | $11,500 |
| Cost of New Tractor                     | $20,000 |
| Sales Taxes @ 8.5%                      | $8,500  |
| **Purchase Cost**                       | **$40,000** |
| Fleet Modernization Grant               | $80,000 |
| Value of depreciation deduction @ 20%   | ($17,700) |
| Scrap Value of Used Tractor             | ($11,500) |
| Net Taxable Income                      | $50,800 |
| Income tax at @ 32%                     | $16,256 |
| **Total Cost**                          | **$56,256** |

<table>
<thead>
<tr>
<th>Total Fleet Size</th>
<th>Avg. Trucks</th>
<th>Cash Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>3</td>
<td>$168,768</td>
</tr>
<tr>
<td>11-25</td>
<td>9</td>
<td>$506,304</td>
</tr>
<tr>
<td>26-75</td>
<td>23</td>
<td>$1,293,888</td>
</tr>
<tr>
<td>76-250</td>
<td>28</td>
<td>$1,575,168</td>
</tr>
<tr>
<td>251 &amp; Up</td>
<td>65</td>
<td>$3,656,640</td>
</tr>
</tbody>
</table>

- **Total Cost of Fleet Creation.** If the LMCs in the various size ranges are to continue operating at their current capacities, assuming they can fund 50% of a fleet under the retrofit provisions of the Fleet Modernization Grant Program and 50% under its salvage and replacement scenarios, the amount of average capital that must be raised by LMCs would vary by size (rounded): $288,000 for LMCs in the 1-10 range, $863,000 for firms averaging 11-25 trucks, and $2,243,000 for those with 26-75 trucks. Among larger LMCs, those with 76-250 trucks would need to spend an average of $2,683,000 for trucks they would use in port drayage. It would be $6,227,000 for those with 251 or more (Exhibit 32). In each case, the cost per truck would be the average of $39,548 (retrofit) and $56,256 (new) or $47,902.

### Exhibit 32.-Average Cash Flow for LMC Fleet Creation

<table>
<thead>
<tr>
<th>Total Fleet Size</th>
<th>Avg. Trucks</th>
<th>Cash Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>6</td>
<td>$287,413</td>
</tr>
<tr>
<td>11-25</td>
<td>18</td>
<td>$862,238</td>
</tr>
<tr>
<td>26-75</td>
<td>47</td>
<td>$2,243,045</td>
</tr>
<tr>
<td>76-250</td>
<td>56</td>
<td>$2,682,518</td>
</tr>
<tr>
<td>251 &amp; Up</td>
<td>130</td>
<td>$6,227,275</td>
</tr>
</tbody>
</table>

**Financing.** It will likely be difficult for LMCs to finance these fleet purchases. It was shown earlier that the financial strength of mid-sized port drayage LMCs with average revenues of $3 million to $5 million was reflected in data published on Form M balance.
sheets for U.S. trucking firms.\textsuperscript{118} Given the estimated $107,100 in LMC revenue per IOO,\textsuperscript{119} these ranges are reflective of firms with 28-50 trucks. LMCs of this size and smaller operate an estimated 71.5\% of the capacity of the port drayage industry.\textsuperscript{120}

Form M showed that on average U.S. trucking firms with $3 to $5 million in revenue had owner’s equity of $362,200. That means that few if any of the mid-sized or smaller LMCs that dominate the San Pedro Bay’s port drayage sector have the internal financing to undertake the required truck purchases and retrofits described above. In addition, their low levels of equity plus low returns on equity (5.29\%) and capital (2.19\%) represent significant hurdles to borrowing or attracting new capital.

For many LMCs, personal owner guarantees would thus be required for any significant new debts or leases. The interest rates would likely be high, given the risk of lending to firms with low capitalization and profitability. For the owners of the weakest LMCs, low FICO credit scores may be an issue in obtaining credit.

Compounding this difficulty would be the fact that the LMCs would have to borrow $56,256 to finance each new $100,000 truck, or fund that amount from other sources. However, their equity in the vehicle would only be $20,000 in the first year. The port grant program would be the primary lien holder on the vehicle to ensure that title did not transfer without their approval. A lender would thus have a secondary position on just $20,000 of a truck’s value for a loan of $56,256 and be in second position for the balance if there was a default.

Based on these factors and discussions with several large financial organizations, it appears that the most expeditious financing structure would be to have a portion of the ports contribution to the Clean Truck Program be used as a guarantee in a structured financing arrangement that could cover all LMCs in the program. Terms might involve the lender and ports allocating profits and losses from repossessions over the grant program’s life with lending rates of about 10\%. Lacking such an overall financing framework, it should be expected that many LMCs will have difficulties arranging financing on a timely basis, a problem that would impede their ability to comply with the Clean Truck Program. In that case, they would have to attempt to pass the extra cost on to the ocean shipping lines and/or beneficial cargo owners via higher rates.

\textbf{Risk, Fixed Costs and Peaking.} For LMCs, the acquisition of tractors will immediately increase their fixed cost of operations due to licensing fees, insurance and capital carrying costs. The firms would face these costs whether or not the vehicles were in revenue service. This problem will be compounded by the difficulty and cost of trying to balance their employment levels with fluctuations in their volumes (see \#3 Employees Replace IOOs). The risk of this situation will likely cause LMCs to try to get by with fewer vehicles and drivers and aim for more consistent business levels. This will particularly be an issue for mid-sized and smaller LMCs where idle trucks and employees can quickly cut into profits. As indicated, such firms represent over 70\% of port drayage capacity. A

\begin{itemize}
  \item See discussion on pages 23-24 and balance sheet data in Exhibit 15.
  \item See Exhibit 20, page 41.
  \item See discussion on page 20 and data in Exhibit 14.
\end{itemize}
side effect of the higher fixed costs of truck ownership and having employee drivers would thus be to reduced flexibility of LMCs to deal with peak container volumes.

**Full Service Leasing.** Another possible route to finance LMC trucking fleets could be through a comprehensive port leasing program. One leasing firm indicated that their mass truck purchases would allow them to lease a $104,139 Freightliner tractor to LMCs for $1,680 per month ($14,000 a year) plus $350 a month ($4,200 per year) for maintenance, a total cost of $2,030 per month ($24,360 a year). This would require the ports to invest $655 million to buy down the cost of the trucks and cover a loss pool. That would be instead of needing the ports to invest an estimated $1.8 billion for the Fleet Modernization Grant Program. If the ports were to spend $823 million further buying down the program’s capital cost, while allowing for the loss pool, trucks could be leased to LMCs for $1,151 per month plus $350 for maintenance, a total of $1,501 or $18,012 per year.

A lease program approach would have the advantage of causing the scarce funds available for the Fleet Modernization Grant Program to go further. It would also provide new vehicles and consistent maintenance. It would also offer a way around the difficulties that LMCs appear to face in being able to finance the acquisition of their fleets. And, it would alleviate LMCs from having to create maintenance organizations.

However, in the long run, a leasing program like this would be more expensive to the LMCs. They would be spending $14,000 to $20,000 a year for five years for the trucks or $69,000 to $101,000 in five years. That is much more than the one time cost of $39,548 for acquiring a retrofitted truck or $56,256 for a new one. It is also far more than IOOs are currently spending for the trucks being used on behalf of the LMCs today. In addition, the LMCs might be able to maintain their vehicles for under the $4,200 per year. The greatest difficulty with the leasing approach is that it would be in perpetuity, where the Fleet Modernization Grant Program is designed to end in five years.

An important consideration may be the fact that a comprehensive leasing program run through the ports would create cost elements known to the entire harbor community. To the extent that these costs are above those historically faced by the LMCs, this might make it easier for them to verify at least a part of the basis upon which they are demanding higher prices from ocean carriers or beneficial cargo owners.

**Transition.** The logical conclusion of this analysis is that cash flows in the years when LMCs acquire trucks will be under serious strain. For many, survival will depend on how fast they can improve their cash flows by charging higher rates to the ocean shipping lines or beneficial cargo owners. Three other considerations will impact the speed at which they will need to have this occur. First, from 2008-2012, the Clean Truck Plan sets deadlines by which trucks of varying vintages must be replaced or retrofitted to clean air standards if they are to access the ports. Despite this phase-in process, LMCs will be under great pressure to make the transition almost immediately due to the requirement that they pay a TIF penalty each time an unclean truck under their auspices accesses the harbors. Second, the cash flow pressures on LMCs will be amplified by the requirement

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121 The February 2007 CGR survey of IOOs found that 20% had truck payments averaging $879 a month or $10,548 per year (maintenance not included). The other 80% reported owning their tractors outright.

122 See Exhibit 21 p. 45.
that they increase their share of employee-drivers to specified thresholds over a 5-year period. Third, there will be the requirement that LMC/concessionaires maintain truck yard facilities where vehicles can be parked, repaired and inspected. After these issues have been discussed, the economic implications of the speed at which LMCs might be able to raise shipping rates will be discussed.

2. **Truck Impact Fees.** Section 5 included a detailed discussion of the fact that during the 5-year transition period, the LMCs will be assessed a TIF estimated at $34 to $54 each time a truck under their auspices that has not yet met clean air standards enters a port. Using a $50 TIF level, the estimated cost was $15,400 per truck (*assuming 308 trips per year*). It was shown that such a fee would cause an LMCs to annually lose $10,000 using such a truck as, at 5%, their net pre-tax profit averaged only $5,400 per truck. Even if they were able to raise prices to double their profit to $10,800, the loss would still be $4,700 on each truck. Their financial viability will not allow them to absorb these TIF costs for very long. They will be under great strain to acquire and clean up trucks as fast as possible. The TIF will thus mean that the cash flow pressures discussed above would likely hit most LMCs early in the Clean Truck Program. Similarly, the Fleet Modernization Grant Program would need to be funded much earlier than proposed.

3. **Employees Replace IOOs.** According to the proposed Clean Truck Program, LMC-concessionaires will be required to use progressively larger shares of employee-drivers on a trip weighted basis (*Exhibit 33*). In hiring drivers, they will be required to give preference to people with a past history of providing port drayage services.\(^{123}\)

<table>
<thead>
<tr>
<th>Date</th>
<th>Share of Employee Drivers Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 30, 2008</td>
<td>20%</td>
</tr>
<tr>
<td>June 30, 2009</td>
<td>40%</td>
</tr>
<tr>
<td>June 30, 2010</td>
<td>60%</td>
</tr>
<tr>
<td>June 30, 2011</td>
<td>80%</td>
</tr>
<tr>
<td>June 30, 2012</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Employee Payroll Cost.** As LMC employees, workers would need to make a basic wage rate that is the same as that needed to attract workers to the industry due to TWIC and the expansion of port operations. That was estimated at $20 per hour.\(^{124}\) It is assumed this is paid for:

- 1,800 hours a year (*40 hours a week, 45 weeks*)
- 80 hours per year of vacation pay (*40 hours, 2 weeks*)
- 80 hours per year for holidays (*10 federal holidays, 8 hours a day*)
- 40 hours per year personal time like sick leave (*40 hours, 1 week*)
- 2,000 hours x $20.00 = **$40,000**

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\(^{123}\) Discussion Draft, Minimum Concession Requirements, San Pedro Bay Ports Clean Air Action Plan, June 2007

\(^{124}\) See discussions, page 39 and page 47.
The other 80 hours of a normal 52 week a year schedule, the driver is assumed to be idle (2 weeks, 40 hours) due to fluctuations in business conditions. In addition, during the 45 weeks when the employee is working, an average of 1.0 hours of overtime or 225 hours is assumed at the California 150% rate for time over eight hours per day:

- $20.00 \times 1.5 = $30.00 \text{ per hour} \times 225 \text{ hours} = $6,750$
- Total wage compensation would be $40,000 + $6,750 = $46,750

**Employee Benefit Cost.** In addition, the LMC must pay a variety of benefits for employees.\(^{125}\) California requires state disability insurance at 0.6%:

- $46,750 \times 0.6\% = $1,683$

The state also requires unemployment insurance and a contribution to the workforce investment board. The combined rate is 3.6% on a maximum of $7,000 of payroll:

- $7,000 \times 3.6\% = $252$

In addition, there is California’s workers compensation insurance requirement. 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.\(^{126}\)

- $46,750/100 = 467.50 \times 8.63 = $4,035$

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)*.\(^{127}\) In addition, 75% use plans that require an employee to make a contribution.\(^{128}\) To cover a single person, the 2007 PPO rate had an average cost of $4,505 per year with the employees typically paying $491 (10.7%). The employer cost:

- $4,595 \text{ per year} - $491 \text{ by employee} = $4,014$

Under federal law, the employer must also pay a 50% portion of the social security taxes on an employee. The employer’s share is 7.65% of the payroll:

- $46,750 \times 7.65\% = $3,576$

**Employee Wage & Benefit Cost.** Given the financial pressures operating on LMCs, it is assumed that they do not pay either the family rate for medical insurance nor do they make contributions to an employee retirement plan when they first move into hiring employees instead of using IOOs. Total cost for a typical future LMC employee would be:

- Combined benefit package: $13,560

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\(^{125}\) The non-payroll cost factors were discussed thoroughly in Section 4 *(TWIC)* of this report. See page 35.

\(^{126}\) *California Workers' Compensation Rate Comparison*, California Department of Insurance, 2007.

\(^{127}\) *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.

Total wage compensation: **$46,750**
Total employee cost: **$60,310** for 2,225 hours ($27.11/hour)
Current median IOO net earnings are $29,000 for 2,426 hours ($11.95/hour)
LMC employee would costs $65,914 to draw sufficient drivers to offset TWIC and port expansion, **2.08 times** IOO current net earnings ($29,000).

**Time Available.** Workforce rules and work practices vary between employees and IOOs. Employees are paid for time spent on tasks that IOOs do as part of their businesses. During an average day, IOOs were found to work an average of 10 hours or 600 minutes. Employee-drivers are assumed to work eight straight time hours and one hour overtime, a total of nine hours or 540 minutes. However, they actually only have 430 of those minutes available since several functions absorb 110 minutes of their time:
- 20 minutes required for work breaks under California law
- 30 minutes, pre-trip preparation, inspection, fueling
- 30 minutes, for average wait time during the year for minor maintenance
- 30 minutes, post-trip clean-up and log book

The 430 minutes available to employee-drivers would be **28.3%** less than the 600 minutes available to IOOs. Thus, future employee-drivers would cost an LMC some 2.08 times higher than today’s IOOs during the time they are working but actually have 28.3% less of that time available. Allowing for that fact, the hourly cost of a future employee-driver is thus **2.67 times higher** than today’s IOO driver.

**Non-Driver Operating Costs, Slip-Seating, Technology.** The LMCs must incur the cost of operating trucks under the employee model. Those costs include:
- Fuel and fuel taxes estimated at 40,000 miles per year, $3.00 per gallon with tractors averaging 5 miles per gallon: **$24,000**
- Average interest payments on loan payments for truck giving equal weight to retrofit and purchase scenarios: **$2,511**
- Tire costs were estimated at $0.04 per mile for 40,000 miles or **$5,600**
- Maintenance was estimated at $0.10 per mile for 40,000 miles or **$4,000**
- Licenses, taxes and permits (not port concessionaire) estimated at **$1,000**

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130 LMC hourly rate ($23.60) to assure labor force would be 2.48 times IOO current average hourly rate ($11.95).
131 45.3 Rest Periods, Enforcement Policies And Interpretations Manual, Division of Labor Standards Enforcement. Section 12 of each of the Orders) provides: (A) Every employer shall authorize and permit all employees to take rest periods … at the rate of 10 minutes net rest time per 4 hours or major fraction thereof.
132 Annual Miles from A Survey Of Drayage Drivers Serving The San Pedro Bay Ports, CGR Management Consultants, p. 13; California cost of diesel per gallon from Energy Information Agency; miles per gallon from CGR.
133 See Cost of LMC Fleet Purchase of New Trucks, Exhibit 30, page 62.
134 Estimated cost per mile by TCI Truck Leasing.
Liability, accident, physical damage, cargo insurance estimated at $9,000\textsuperscript{135}

For each truck, the LMC is spending $42,111\textsuperscript{135}

Under the IOO system, the drivers pay these types of costs out of the $75,000 in gross income payments made to them by LMCs. These costs will be higher under the LMC employee model due to higher insurance coverage, paid maintenance work and larger loans. In addition, most of today’s LMCs would incur the extra cost of the staff to handle the management of organizations that own trucks and employ drivers. This would include people: carrying out driver recruitment, background checks and supervision; payroll and benefits compliance; driver safety, TWIC, health, log book and licensing oversight; port security and clean air compliance; office and truck software and hardware functions; yard security and clean-up.

However, these higher costs will be partially or completely offset by two changes in port drayage operating procedures. The first is the fact that slip-seating (more than one driver per truck) will be possible for some of the trucks operated by the LMCs. This would most likely apply to the 50% of drayage trips that are within 25 miles of the ports.\textsuperscript{136} It would be less likely to apply to the 50% of trips that go farther away. Where slip-seating is a factor, the fixed costs of the vehicle (insurance [$9,000], interest payments [$2,511], fees & permits [$1,000]) are spread across more than one driver, effectively lowering the impact of the LMCs cost differential in operating a truck fleet.

Also, with the Clean Truck Program, there will be the potential of greatly increasing the average number of container “turns” per truck per day for drivers, particularly those with shorter runs, due to the universal adoption of technologies like RFID and AVL. This creates the potential for the real time integration of port terminals, LMC headquarters, warehouses, cross-docks and intermodal facilities, together with onboard truck computers and locator devices. During this project’s interview process, this potential was brought up separately by some of the larger LMCs, the ILWU, engineering analyst Anne Goodchild, the Teamsters, terminal operators and major national firms.\textsuperscript{137}

Given that the truck operations and non-driver employee costs, on the one hand, and the capabilities of added efficiency via slip-seating and technology, on the other, move in opposite directions, the assumption is made that they will roughly balance. Neither is therefore quantified. In particular, this assumption is made due to the time, training and coordination necessary to create a tightly integrated, relatively error free computer system, given the large number of small LMC/concessionaires, many with limited computer understanding.

**Total Labor Cost Increase By LMC Size.** For the five LMC size categories used in this analysis, it is next necessary to use the wage and benefit information above to identify the

\textsuperscript{135} Overdrive Partners in Business Manual, co-written by American Truck Business Services, for a program sponsored by Freightliner Trucks and Castrol, 2006 edition. $1 million primary liability insurance ($5,000); $1 million in non-trucking-use liability insurance ($450); physical damage insurance ($2,400); cargo insurance ($1,000).

\textsuperscript{136} See discussion of median trip distances on page 19.

\textsuperscript{137} Over 50 local LMCs were interviewed one-on-one; ILWU interviewed August 24, 2007; for Dr. Goodchild, see footnote 91, page 46; Teamsters interviewed August 8, 2007; discussions held with Yellow-Roadway on August 28, 2007; UPS part of a group of interviews on July 25, 2007, Schneider National in mid-July 2007.
change in costs that will take place in moving from using IOOs to hiring employee-drivers (Exhibit 34). To summarize, the future average employee-driver will earn $46,750 per year working 2,000 hours of straight time and 225 hours of overtime. The basic hourly rate of $20 will be necessary to draw drivers to port drayage. Voluntary and legally mandated benefits will have estimated annual costs of $13,560 per employee. Total annual cost will thus be $60,310. To absorb their work load, the average employee-driver will have 28.3% less time than the average IOO. This will create a need for more employee-drivers. Meanwhile, $29,000 is the net median earnings of today’s IOOs. Finally, the extra non-labor costs facing LMCs, and the change in productivity from activities like slip seating and adopting technology are treated as offsetting one another.

<table>
<thead>
<tr>
<th>Category</th>
<th>Average Size</th>
<th>Annual Wages</th>
<th>Annual Benefits</th>
<th>Annual Labor Cost</th>
<th>Availability Factor</th>
<th>Extra Workers</th>
<th>Total Labor Cost</th>
<th>IOO Model</th>
<th>Increased Labor Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>6</td>
<td>$280,500</td>
<td>$81,359</td>
<td>$361,859</td>
<td>$102,527</td>
<td>2</td>
<td>$464,386</td>
<td>$174,000</td>
<td>$290,386</td>
</tr>
<tr>
<td>11-25</td>
<td>18</td>
<td>$841,500</td>
<td>$244,078</td>
<td>$1,085,578</td>
<td>$307,580</td>
<td>5</td>
<td>$1,393,159</td>
<td>$522,000</td>
<td>$871,159</td>
</tr>
<tr>
<td>26-75</td>
<td>47</td>
<td>$2,197,250</td>
<td>$637,315</td>
<td>$2,834,565</td>
<td>$803,127</td>
<td>13</td>
<td>$3,637,692</td>
<td>$1,363,000</td>
<td>$2,274,692</td>
</tr>
<tr>
<td>76-250</td>
<td>56</td>
<td>$2,618,000</td>
<td>$759,354</td>
<td>$3,377,354</td>
<td>$956,917</td>
<td>16</td>
<td>$4,334,271</td>
<td>$1,624,000</td>
<td>$2,710,271</td>
</tr>
<tr>
<td>251 &amp; Up</td>
<td>130</td>
<td>$6,077,500</td>
<td>$1,762,787</td>
<td>$7,840,287</td>
<td>$2,221,415</td>
<td>37</td>
<td>$10,061,702</td>
<td>$3,770,000</td>
<td>$6,291,702</td>
</tr>
</tbody>
</table>

Sources: Annual wage factor discussion, p.65-66; annual benefits discussion, p.66, availability factor discussion, p.77.

In each case, it will cost LMCs 2.08 times more in wages and benefits for their employee-drivers, but the amount of time available for their workforces will be 28.3% less. Thus, for example, companies in the 26-75 truck range would have an average total wage and benefit bill of $2.83 million for 47 trucks with one driver each. However, they will need 28.3% more workers to get the work done. That adds $803,000 in cost or the equivalent of 13 drivers. The total cost to operate the 47 trucks would thus be $3.64 million. That contrasts with $1.36 million using IOOs, a $2.27 million difference. The cost of future employees will be thus be 167% higher than costs of using today’s IOOs.

4. **Truck Yard Facilities.** Under the Clean Truck Program, LMC/concessionaires “must agree to provide off-street parking for port drayage trucks when not in service,” and they must “prepare a facility specific maintenance plan for all trucks under their concession agreement.” 138 [*italics added*] To identify the potential cost of buying and building yards, data was acquired on the cost per truck of facilities recently built by Penske Truck Leasing in Sacramento California, Lakeland Florida and Springfield Missouri. The facilities included parking, offices and truck repair bays. Two facts are evident. First, California property is much more expensive than property in other states (Exhibit 35). Second, less space per truck is used in California, probably for that reason. The key findings from these data are that in Sacramento, there was 581 square feet of space used per truck and the cost per truck was $15,496.

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138 Minimum Concession Requirements, Discussion Draft, San Pedro Bay Clean Air Action Plan, June 2007
Exhibit 35.-Cost Of Truck Yard Space, 2007, Various Markets

<table>
<thead>
<tr>
<th></th>
<th>Sacramento, CA</th>
<th>Lakeland, FL</th>
<th>Springfield Mo.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres</td>
<td>10</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Square Feet per Acre</td>
<td>43,560</td>
<td>43,560</td>
<td>43,560</td>
</tr>
<tr>
<td>Square Feet Per Site</td>
<td>435,600</td>
<td>348,480</td>
<td>304,920</td>
</tr>
<tr>
<td>Trucks</td>
<td>750</td>
<td>550</td>
<td>400</td>
</tr>
<tr>
<td>Square Feet per Truck</td>
<td>581</td>
<td>634</td>
<td>762</td>
</tr>
<tr>
<td>Cost</td>
<td>$9,000,000</td>
<td>$6,000,000</td>
<td>$5,000,000</td>
</tr>
<tr>
<td>Cost Per Truck</td>
<td>$15,496</td>
<td>$9,470</td>
<td>$6,559</td>
</tr>
</tbody>
</table>

Source: Penske Truck Leasing

Given those facts, data was used from Grubb & Ellis to determine the relative cost of industrial space per square foot a month between Sacramento and three Southern California locations. This was used as an index of the relative cost that would exist per truck to create such space. It was determined that if cost in Sacramento (McClellan, I-80) was $15,496 per truck, in South Bay near the ports it would be 70.3% higher or $26,385. The cost in either the Mid-City area north of the ports or in the San Gabriel Valley would be 54.1% more or $23,872. Inland Empire space in Fontana would cost 11.9% more or $17,346 (Exhibit 36).

Exhibit 36.-Cost Of Truck Yard Space, 2007, California Markets

<table>
<thead>
<tr>
<th>County or Area</th>
<th>Site</th>
<th>Cost per Truck</th>
<th>Industrial Space per Square Foot/Mo.</th>
<th>Cost Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sacramento</td>
<td>McClellan/I80</td>
<td>$15,496</td>
<td>$0.37</td>
<td>0.0%</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>South Bay</td>
<td>$26,385</td>
<td>$0.63</td>
<td>70.3%</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>MidCity/San Gabriel</td>
<td>$23,872</td>
<td>$0.57</td>
<td>54.1%</td>
</tr>
<tr>
<td>Inland Empire</td>
<td>Fontana</td>
<td>$17,346</td>
<td>$0.41</td>
<td>11.9%</td>
</tr>
</tbody>
</table>

Source: Industrial space from Grubb & Ellis, calculations Economics & Politics, Inc.

Depending upon where an LMC decided to locate its facilities, this leads to a wide range of potential truck yard costs to them. For instance, for LMCs of 26-75 trucks, the average number of trucks is 47 vehicles. The costs would be $817,243 in Fontana, $1.12 million in Mid-Cities/San Gabriel Valley, $1.24 million in the South Bay area and $1.06 million if they spread 50% inland and 25% in the two Los Angles County areas (Exhibit 37). In fact, many LMCs will find it difficult to locate ample land except in the Inland Empire because industrial space in Los Angeles County is already heavily used. That is reflected in its 1.8% industrial space vacancy rate, the tightest in the U.S. It is thus assumed that 50% of the space is located in the Inland Empire and 25% each in the two Los Angeles County markets. The weighted average cost would thus be **$21,237 per truck**.

Exhibit 37.-Yard Costs By LMC Size, So. California Areas, 2007

<table>
<thead>
<tr>
<th>LMC Size Category</th>
<th>Per Truck</th>
<th>Fontana</th>
<th>Mid-Cities/S. Gabriel</th>
<th>South Bay</th>
<th>Weighed Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>6</td>
<td>$104,074</td>
<td>$143,232</td>
<td>$158,309</td>
<td>$127,422</td>
</tr>
<tr>
<td>11-25</td>
<td>18</td>
<td>$312,221</td>
<td>$429,696</td>
<td>$474,927</td>
<td>$382,266</td>
</tr>
<tr>
<td>26-75</td>
<td>47</td>
<td>$815,243</td>
<td>$1,121,985</td>
<td>$1,240,088</td>
<td>$1,059,105</td>
</tr>
<tr>
<td>76-250</td>
<td>56</td>
<td>$971,354</td>
<td>$1,336,833</td>
<td>$1,477,552</td>
<td>$1,261,913</td>
</tr>
<tr>
<td>251 &amp; Up</td>
<td>130</td>
<td>$2,254,928</td>
<td>$3,103,362</td>
<td>$3,430,031</td>
<td>$2,760,812</td>
</tr>
</tbody>
</table>

Economic Analysis: Proposed Clean Truck Program 71
5. Economic Implications of LMCs Owning Trucks, Hiring Workers, Buying Yards.

If future LMCs become concessionaires and must fulfill the requirements of the Clean Truck Program outlined in this section, the pressure on their cash flows will rise substantially over the current situation. Specifically, they will be required to buy and retrofit or replace trucks, pay a TIF each time an unclean trucks under their auspices enters the ports during the 5-year transition period, find and hire more expensive workers, and obtain yards to park and maintain their vehicles.

The combination of the cash flow needed to pay for these requirements (rounded) would average $879,000 for LMCs of 1-10 trucks, $2.64 million for those with 11-25 trucks and $6.89 million if they have 26-75 trucks. Among the largest firms, the costs would average $8.21 million for firms with 76-250 trucks and $19.05 million for those with over 250 trucks (Exhibit 38). Importantly, these increases assume that the LMCs have access to a fully funded Fleet Modernization Grant Program to purchase and retrofit or replace all of their vehicles. (Note: Labor cost factor includes pay, benefits and extra workers)

Exhibit 38.-Extra Cost of Clean Truck Program to LMCs, By Size

<table>
<thead>
<tr>
<th>Per Truck</th>
<th>Truck Clean-Up</th>
<th>Labor Cost</th>
<th>Yard</th>
<th>Total Cost</th>
<th>IOO Model</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>$287,413</td>
<td>$464,386</td>
<td>$127,422</td>
<td>$879,221</td>
<td>$450,000</td>
<td>$429,221</td>
</tr>
<tr>
<td>11-25</td>
<td>$862,238</td>
<td>$1,393,159</td>
<td>$382,666</td>
<td>$2,637,663</td>
<td>$1,350,000</td>
<td>$1,287,663</td>
</tr>
<tr>
<td>26-75</td>
<td>$2,251,399</td>
<td>$3,637,692</td>
<td>$998,140</td>
<td>$6,887,231</td>
<td>$3,525,000</td>
<td>$3,362,231</td>
</tr>
<tr>
<td>76-250</td>
<td>$2,682,518</td>
<td>$4,334,271</td>
<td>$1,189,273</td>
<td>$8,206,063</td>
<td>$4,200,000</td>
<td>$4,006,063</td>
</tr>
<tr>
<td>251 &amp; Up</td>
<td>$6,227,275</td>
<td>$10,061,702</td>
<td>$2,760,812</td>
<td>$19,049,789</td>
<td>$9,750,000</td>
<td>$9,299,789</td>
</tr>
</tbody>
</table>

Sources: Exhibit 31 (buy & retrofit or replace trucks), Exhibit 33 (wage, benefits, time), Exhibit 36 (yards)

Using today’s IOOs, the firms in these categories are currently paying an average of $75,000 for each IOO they are using. Deducting that amount from the costs for the average future LMC in each of the five size categories, shows that for firms in the 0-10 category, the average increased cash outflow (rounded) would be $429,000. It would be $1.29 million for those with 11-25 trucks and $3.36 million for those with 26-75 trucks. Among larger firms, the average increased cash outflow would be $4.01 million for LMCs with 76-250 trucks and $9.30 million for those with 251 or more.

Again, today’s IOOs are paid a gross income of $75,000 to handle the equivalent of the labor and truck ownership for LMCs. This requires total LMC revenue per IOO of $107,100 (Exhibit 20, page 41 & column 1, Exhibit 39). To allow the average IOO’s net income to reach the estimated $20 per hour needed to attract more drivers due to TWIC and expanded port volumes, it was also shown that IOO gross incomes must reach $96,000 (Exhibit 23, page 48). That and other changes meant that their annual revenue per truck would have to rise to $159,200 from today’s $107,100, requiring a price increase of 48.6% (column 2, Exhibit 39).

To replace what is now supplied by IOOs, most future LMCs would have to buy and retrofit or replace trucks using their share of costs from the Fleet Modernization Grant Program (average: $47,902 per truck). As they would have trouble financing this cost, it would need to become part of their rate calculation. They would have to hire workers and pay wages and benefits in a tighter labor market plus use more workers for the same volume ($77,398 per truck), and open a facility to park and maintain trucks ($21,237 per
truck). The combined cost of these functions (rounded) would be $146,500. If LMC profits stayed the same as the case in which they had doubled to $10,700, and other costs remained at $34,400 (non-operating staffing increases are assumed to be offset by efficiency gains), then revenue per truck would have to rise to $191,700, a level substantially above average for the trucking industry including long haul trucking.

That would require prices to the ocean shipping lines or beneficial cargo owners to increase 80.0% compared to today’s use of IOOs. It would be 20.4% higher than the price required under the IOO model, to raise IOO net income to $20 per hour, pay for truck replacement costs not covered by the grant program, and increase the LMCs profit from $5,400 to $10,700 per truck (5% to 6%). According to Moffatt & Nichol data, an 80% increase would raise port drayage costs from $150 to $270 per container for trips near the ports and $300 to $540 to the Inland Empire. These fees are still minor compared to the $2,575 in costs for other portions of a container’s journey. These higher costs would represent just 0.17% to 0.34% of the $70,000 median value of a container’s contents.

<table>
<thead>
<tr>
<th>Labor, Truck, Facility</th>
<th>Using Current IOOs</th>
<th>48.6% Price Increase, Truck Replace, IOO to $20/Hr, Double LMC Earnings</th>
<th>80.0% Price Increase, Truck Replace, Pay Employees &amp; LMC Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$75,000</td>
<td>$96,000</td>
<td>$146,500</td>
</tr>
<tr>
<td>Other Costs</td>
<td>$26,800</td>
<td>$34,400</td>
<td>$34,400</td>
</tr>
<tr>
<td>Truck Replacement Charge</td>
<td>$0</td>
<td>$18,000</td>
<td>$0</td>
</tr>
<tr>
<td>Pre Tax Margin</td>
<td>$5,400</td>
<td>$10,700</td>
<td>$10,700</td>
</tr>
<tr>
<td>Total Annual Revenue</td>
<td>$107,100</td>
<td>$159,200</td>
<td>$191,700</td>
</tr>
<tr>
<td>Price Increase</td>
<td>48.6%</td>
<td>80.0%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Exhibit 23 (Current IOO & IOO with 100% Pay Gain), medium sized factors from Exhibit 36

**Impact of TIF.** As discussed, each time a truck not up to clean air standards enters a port gate, it will cost its LMC a TIF. Assuming a fee of $50 and a median of 308 trips a year, the annual cost would be $15,400 per truck. It was shown earlier, that LMC’s average pre-tax profit margin is 5% or $5,400. If they must pay $15,400 a year in TIF because a truck is not yet up to clean air standards, their annual loss on the vehicle would be $10,000. Even with the 53.2% price increase postulated to help the LMC greatly increase the pay of their drivers, help finance replacement trucks and double their own profits to $10,800, the $15,400 TIF would leave them with an annual loss of $4,600. The typical LMC will realize that it cannot survive if it is paying the TIF and will seek to acquire and retrofit or replace trucks as fast as possible. Here, the difficulties with the Fleet Modernization Grant Program will come into play in that 31% of its funding is questionable given attempts to avoid the TIF and whether Proposition 1B funds will be forthcoming.

**Transition.** Given this analysis, there appears to be two paths along which the Clean Truck Program might take the port drayage industry. The key in both cases is the fact that there is not enough money in the combination of the LMCs and IOOs to fund the clean-up effort as well as the labor supply changes implied by TWIC, port growth and the associated change to employee-drivers. The Fleet Modernization Grant Program and the truck and employee phase-in processes will help, but the mathematics of the TIF and the resources available to the grant program will likely mean that LMCs will be forced to try and clean up their vehicles and thus move to an employee model faster than funds will be available to lower their costs of doing so.
At its core, this means that a full scale Clean Truck Program will depend upon the speed with which the LMCs can alleviate their cash flow problems by increasing prices to the ocean shipping lines and/or the beneficial cargo carriers. As indicated, the increase must be on the order of the 80% discussed above. Here, they will meet stiff resistance. Again, the two potential paths cited earlier come into play:

- **Crisis Path.** Ocean shipping lines will have difficulty finding LMCs to move their cargo and delivery deadlines will rapidly slip. Beneficial cargo owners will demand on-time delivery putting pressure on the shipping lines to pay more to the LMCs to solve the problem. However, since retailers will be unwilling to pay more, the shipping lines will do so very reluctantly allowing the crisis to build. Ultimately, the rates paid to LMCs and the IOOs will rise under the employee/truck ownership model but not before there has been serious disruption in the supply chain and the potential reallocation of trucks and drivers to non-port business. Some beneficial cargo owners will abandon store-door contracts and switch to only using ocean lines to transport cargo to the ports. They will have to contract separately with the LMCs to move their containers to their facilities.

- **Downfield Vision.** Less likely is for the ocean shipping lines, terminal operators, beneficial cargo owners and ports to recognize early that the pending driver shortage and the Clean Truck Program are about to put the LMCs under severe cash flow pressures. If the major players wish this to forestall a crisis, a meeting of minds might be formulated whereby increases in rates are negotiated between the players and leaders among the LMCs. This might allow the financial crunch to be solved without the crisis.

However, even under favorable circumstances, it is likely that the transition period will be one in which a good deal of the capacity of the port drayage industry will be financially unable to continue operating. An example using relatively optimistic assumptions shows the reason for this:

At the moment when LMCs feel they must raise prices because of the pending increases in pressure on their cash flows, it is assumed that ocean shipping lines and beneficial cargo owners representing 50% of their revenues agree to the new rates in advance. In those cases, the LMCs can raise their new prices to reflect the increases in their cash needs as soon as the costs are incurred.

Assume that the remaining 50% of LMC customers only agree to the new rates in equal proportions over the ensuing six months. At the end of that period, the LMCs current prices and revenues will represent full recovery of all of their new costs, and their profits will be back to their pre-transition level. By that time, however, the LMCs will have accumulated substantial losses during the “catch up” period. Customers following this path will likely be those that have contractual rate agreements that allow them to resist price increases based on those contracts terms. Most, but not all, store-door contracts reference the ocean carrier’s tariffs including the local drayage cost with the tariffs generally changeable on 30 days notice.

In particular, shippers will resist the LMC price increases due to their size (80%) and the fact that LMCs will be asking for them based on projected, not historical costs, and that a calculation of this nature is often subject to error. For a shipper of 200 containers a week (10,400 a year), an 80% cost increase would raise the cost of an average dray of $300 per container to $540. Their total cost would go from $3.1 million to $5.6 million a year, up $2.5 million. Any corporation would delay such an increase as long as possible and explore other options, even if the resulting increase in the cost for a single item at the retail level would be insig-
nificant. The LMC’s price increase would only be acceptable to such an organization if no clear, lower cost alternative is available. Corporations will take time to satisfy themselves that this is the case.

For purposes of the analysis, seasonality is ignored and it is assumed that LMCs will earn their revenues evenly over the six month period in which the second half of its customers are gradually agreeing to price increases. The resulting impact of delays varies according to the size of the LMCs. Two are considered. One has Form M\textsuperscript{139} revenue of $3 to $5 million a year (average of $4.1 million). The other has Form M revenue of $14.6 million a year. These are larger firms that include container hauling as one of their three primary lines of business.

<table>
<thead>
<tr>
<th>Exhibit 40.-Impact Of Delays In Price Increases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Owner’s equity pre-transition</td>
</tr>
<tr>
<td>Accumulated loss at breakeven</td>
</tr>
<tr>
<td>Owner’s equity at the end of the transition loss period</td>
</tr>
</tbody>
</table>

Despite the fact that 50% of an LMC’s clients (ocean shipping lines, beneficial cargo owners) are assumed to be willing to immediately accept a substantial price increase, and the balance agree to do so equally over a six month period, the analysis shows both the smaller and the larger LMCs ending the transition period in serious financial difficulty:

- The smaller firm had owner’s equity before the transition period of $362,200. During the transition, the firm has cumulative loses of $410,000. The owner’s equity is wiped out, falling to a negative $47,800. The firm is bankrupt.
- The larger firm had owner’s equity before the transition period of $1,768,600. During the transition, the firm has cumulative loses of $1,460,000. Here, the owner’s equity has fallen by 82.6% to $308,600.

In effect, even under relatively optimistic assumptions about the ability of an LMC to raise prices, the transition period will pose very significant financial risk. To the average LMC considering making what amounts to a transition from its current role as a service firm arranging container deliveries, to a new role as an asset-based trucking operation, this analysis has real world implications. It indicates that for both small and large LMCs, there is the risk of the destruction of their firms and possibly bankruptcy. For those that survive, the question arises as to how they would recoup the accumulated loss created during the transition period.

**Economic Implications of the Transition Period.** The pressures on the cash flows of the LMCs, and the impact of not having the ability to instantaneously gain acceptance of price increases to deal with them, leads to several conclusions:

- The Clean Truck Plan strategy appears to be relying upon pressure on the cash flows of LMCs to ultimately force the ocean shipping lines and beneficial cargo carriers to participate in helping to reduce emissions at the ports by paying higher prices that would be used to clean up the trucking fleet. However, the data strongly suggest that the weak fi-

\textsuperscript{139} U.S. Department of Transportation requires trucking firms with annual revenues over $3 million to file a Form M comprehensive annual financial report. See page 23.
nancial strength of the LMCs will not allow most of them to survive the transition period to higher prices, even under relatively favorable conditions.

- The existence of this financial risk, or even the perception of it, will undoubtedly cause some LMCs to shift from port drayage to other trucking or logistics activities. Some may elect to withdraw from port drayage or even trucking. Already, among the over 50 LMCs that participated in one-one-one and group interviews, several indicated that they are currently planning or are in the process of re-directing their businesses to non-port drayage activities. Some indicated that they would dispose of their businesses, rather than risk transition to an employee-based concessionaire model.

- Recognizing their lack of financial staying power, and given their historic inability to quickly adjust their prices, LMCs will logically attempt to minimize the higher costs from the concessionaire’s employee requirements. One identified strategy would be to split their companies into two entities. One would become the concessionaire and essentially act as a container shuttle service with a yard as close to the ports as possible. The second would be responsible for moving containers from there to their final destinations using IOOs with their existing tractors. This strategy would most likely be followed by larger LMCs with significant non-port business. The survey of 136 LMCs revealed that 26% had less than 60% of their business concentrated in drayage.

This strategy would effectively reduce the number of tractors involved in drayage by concentrating “pure” drayage operations into a smaller number of tractors and employee-drivers. It would reduce the number of IOOs who would have to become employees and keep a number of tractors in service that are now anticipated to be replaced or retrofitted. Those tractors, however, could be expected to spend less time close to the ports and more time hauling containers to final customer destinations.

- A result of the truck retrofitting and replacement program, as well as the employee-driver mandate, IOOs would be divided into two categories. Those with tractors that can be retrofitted would be favored as employees since the only cost of doing so would be the purchase price since the grant program would retrofit them. Those IOOs with tractors that must be replaced would likely be avoided as employees since the concessionaire would have to buy their tractor, pay another $20,000 for a replacement tractor and likely incur an income tax liability on the replacement grant. Some of these workers will have to leave the port drayage sector.

**Dilemma.** At the end of each chain of logic in this report, there has been the same dilemma. Regardless of the challenges (*TWIC, port growth, looming driver shortages, cleaner trucks*) or the strategies for addressing them (*higher pay, LMC:IOO, employee drivers, LMC truck ownership*), neither the LMCs nor the IOOs ultimately have the internal financial strength to solve the riddles facing the port drayage sector. Simultaneously, they lack the ability to raise their prices to force their customers to do so. 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 equity partners or loans, without some

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140 In addition, there may be income tax liability on the Ports’ contribution for the retrofit device.

141 This continues to assume new tractors with 2007 engines cost $100,000 and the Clean Truck Program pays for 80%.
form of port sponsored guarantees. While the Clean Truck Program’s phase-in period and the Fleet Modernization Grant Program could provide some relief, neither appears sufficient to overcome the fundamental lack of financial power in the port drayage sector. It appears that the Fleet Modernization Grant Program’s funding will need to be front loaded due to the TIF pressures for IOOs or LMCs to quickly retrofit or purchase replacement trucks.

It is this financial weakness and the desire for survival that stands at the root of the way that the LMCs can be expected to react to the Clean Truck Program’s various features. As each aspect of the program threatens to add to their cash flow pressures, it brings an immediate attempt to seek ways to minimize it. Hence, reactions occur such as pursuing non-port lines of business, dividing fleets, finding ways to continue relying on IOOs, or favoring drivers with newer vehicles.

At its core, the problem for the port drayage industry is one of negotiating power. The LMCs cannot raise their prices in a timely fashion because they do not have the power to do so. Any strategy that needs them to be able to do so will fail. The contrast between the LMCs and their customers is stark. The LMCs are very small highly entrepreneurial firms with little financial power, who daily face survival under a system of brutal competition in a highly disorganized sector. They face shipping lines and beneficial cargo owners that are large corporations with strong financial statements, who face limited numbers of competitors and operate within well organized industries. This difficulty even extends to the technology that could be a route to greater success for the port drayage firms. Thus, the information systems that have allowed major trucking operations like UPS to become highly efficient and cost effective rely upon the universal adoption and installation of compatible hardware and software systems operated by people trained in the use of common protocols.
7. Changes In Market Structure

Together, TWIC, the imminent growth of the ports, the need to reduce port related emissions, and the Clean Truck Program appear very likely to cause the port drayage industry to undergo two important changes. The first is the increase in pay per hour that will be required to lure drivers from other trucking sectors into port drayage. This change will be market driven and stem from the need to both fill the driver positions lost due to enhanced port security as well as those gained because of port growth. This adjustment will arrive at a time when the aging of the trucking industry’s labor force and the rates of driver turnover are already putting upward pressures on driver incomes nationally.

A second change will be the increase in fixed costs, operating costs and cash flows that LMCs will face as they become concessionaires and respond to the Clean Truck Program. Together, these adjustments will make it difficult for new, poorly financed LMCs to be formed. They will also probably cause a share of the existing port drayage LMCs to be unable to continue in the business.

As firms react to these changes in the cost of running their operations, the result will likely be reduced competition within the port drayage sector. The result will be an increase in the price negotiating power of the LMCs that remain. Also, these changes should increase the interest that national trucking firms are already showing in entering the business.

Pay Scales. It has been estimated that LMCs will have to pay $46,750 in annual driver income (IOOs or employees) if they are to lure new people into Southern California’s port drayage sector. As indicated, this higher rate will be necessary due to TWIC and port volume. One impact will be to narrow the gap between the pay of port drayage drivers and those drivers working for national trucking companies, whether they are unionized and not. To cite five examples:

- Schneider National indicates that its drivers now earn a median of $54,500 based upon those with three or more years of experience earning $40,000 to $60,000, plus the firm’s decision to boost pay another $4,500 due to the driver shortage.  
- Yellow Transportation pays its drivers $22.21 per hour. Straight time, that represents $46,200 per year. With an average of one hour a day of overtime, the rate would be $54,526.
- UPS pays its drivers $27.34 per hour. Straight time, that represents $56,900 per year. With an average of one hour a day of overtime, the rate would be $67,100.
- JB Hunt pays an average of $50,000.
- FedEx Ground pays $40,000 to $70,000, with most drivers earning $50,000-$55,000.

Sources:

143 My Yellow.com, Drivers Wanted, http://www.myyellow.com/
144 Fact Sheet, Driving Success: Why the UPS Model For Managing 103,500 Drivers Is A Competitive Advantage, UPS http://pressroom.ups.com/mediakits/factsheet/
145 Data from the websites for these firms.
The narrowing of the pay gap between major trucking firms and those that are working in port drayage will increase the probability that national firms will choose to compete in the sector since their higher pay scales have been a main reason why they are not currently doing so.

**Barriers To Entry & Competitiveness.** Many of the LMCs interviewed in the process of this study indicated that the lack of minimum financial or regulatory barriers to starting an LMC has led to intense competition that has left them with little or no ability to exert control over their prices. The result has financially weakened nearly every firm in the business. Simultaneously, the ferocious competition and lack of pricing power that have characterized port drayage is cited by major trucking companies as another reason they are not currently in the market. In such an atmosphere, they cannot make money.

Though the fundamental intent of the Clean Truck Program is to reduce air emissions at the San Pedro Bay ports, one of its unintended effects may be to significantly reduce competition in the port drayage sector. This is the case as the program directly and indirectly creates financial thresholds over which firms must climb to enter or stay in the business. These may come in several forms depending upon final decisions about the structure of the program:

- **Annual Concession fee.** It was shown above that the average LMC is making $5,400 in pre-tax profit per truck. One suggestion has been a flat fee of $5,000 per LMC. For a 10 truck firm, that would amount to $500 per truck or 9.3% of pre-tax profit. It would be 4.6% of pre-tax profit. Another is for an annual fee of $150 per truck. For all firms that would amount to 2.8% of pre-tax profit.146

- **Transportation Impact Fees.** The level of TIFs could represent a significant barrier to the continued operation of smaller LMCs that cannot immediately bring tractors under their auspices up to clean truck standards. Calculations at a $50 TIF showed it would annually cost a firm an average of $15,400 for each truck that has not been retrofitted or replaced. That would be sufficient to wipe out the equivalent of three times the firm’s pre-tax profit for any affected vehicle.147

- **TWIC.** The need for LMCs to pay higher incomes to lure truckers into becoming IOOs in the port drayage industry due to the losses because of TWIC will put significant cash flow pressures on the existing smaller LMCs. The firms will need a 24.6% increase in prices to handle increasing the pay of IOOs to $20 per hour. If they cannot raise their prices in a timely manner to pay the extra amounts, the financial difficulties imposed by the transition process will come into play.148

- **TWIC and Port Expansion & IOO Help on Clean Truck Financing.** The need for LMCs to pay higher incomes to lure truckers into becoming IOOs in the port drayage industry will put significant cash flow pressures on the existing smaller LMCs. The firms will need a 48.6% increase in prices to handle increasing the pay of IOOs to $20 per hour plus assist them to raise funds to retrofit their trucks. Again, if they cannot raise their

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146 See LMC requirements page 59 and Briefing Paper, San Pedro Bay Clean Truck Program, ENVIRON International Corp., p. 6.

147 See Exhibit 26, page 52.

148 See Exhibit 20, page 41.
prices in a timely manner to pay the extra amounts, the difficulties imposed by the transition process will come into play or more so.\(^{149}\)

- **TWIC, Port Expansion, Employee Requirement & Clean Truck Financing.** The possibility that LMCs will be required to both pay higher incomes to lure truckers into the port drayage industry plus pay benefits and buy and retrofit or replace trucks on top of that would put even greater strain on them. The firms will need an 80% increase in prices to handle this combination of increases in their costs.\(^{150}\) If they cannot raise their prices in a timely manner to pay the extra amounts, the extreme difficulties imposed by the transition process will come into play.\(^{151}\)

These various scenarios would have three impacts that would benefit the long term competitiveness of the stronger LMCs as well as the willingness of large national firms to enter Southern California’s port drayage business:

- The concessionaire fee, and in particular the TIF level, would tend to make it difficult for smaller LMCs to enter the market and would likely cause some to have to leave it.

- The increased pay scales needed to lure drivers into becoming either IOOs or employees would increase the cost of conducting business as an LMC. If the firms cannot rapidly pass these extra costs on to their customers via higher prices, many will be forced to leave the sector. Simultaneously, as shown, these pay increases would eliminate part or all of the labor cost disadvantage that national companies would be under in entering the sector. It would be partial if the LMC:IOO structure is retained, as benefits would not be part of the package. It would be total under the LMC:employee-driver structure with benefits included.

- The need to raise prices to assist IOOs in buying new trucks or to help LMCs in buying and retrofitting or replacing trucks would put pressure on the cash flows of the LMCs. If they cannot rapidly raise prices to generate this cash, many will be forced to leave the sector with the smaller firms being the most vulnerable. Also, to the extent that price increases do occur, the result would be to further eliminate the competitive disadvantages that national firms would face in entering port drayage.

In creating the rules under which the Clean Truck Program will be implemented, the ports must 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. The result will thus be to reduce the competition faced by those LMCs that survive the transition. That, in turn, will increase their bargaining power vis-à-vis the ocean shipping lines and beneficial cargo owners. At the same time, since the cost of cleaning-up the trucking fleet will increase the prices paid for drayage, the Clean Truck Program will probably encourage national trucking firms to enter the market.

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\(^{149}\) See Exhibit 23, page 48.  
\(^{150}\) See Exhibit 39, page 73  
\(^{151}\) See Exhibit 40, page 75
Economic Analysis: Proposed Clean Truck Program

Powerful Market. The difficulties facing the port drayage sector raise the question as to why either the stronger LMCs or national trucking corporations would want to remain in it. The reason begins with a single fact. The increase in the volume of trade moving through the ports of Los Angeles and Long Beach, and, for that matter, through most other major American ports, is a direct reflection of the increasing competitiveness and growth of the world economy. As such, involvement in the port drayage business represents a tie into one of the most aggressively growing segments of the U.S. economy in both the long and short terms. This is particularly true with regards to Asia where trade increased 16-fold from 1990-2005 and 2.5 times from 2000-2005 (Exhibit 41). The compound growth of two-way Asian trade from 2000-2005 was 6.29%, despite the national recession in 2001.

| Exhibit 41.-U.S.-Asian Trade, Price Adjusted, 1990-2005 |
|-----------------|-----------|-----------|------------------|------------------|
| China   | $15,237   | $100,018  | $245,462        | 16.1             | 2.5               |
| Japan   | $89,684   | $146,479  | $138,091        | 1.5              | 0.9               |
| Korea   | $18,485   | $40,308   | $43,780         | 2.4              | 1.1               |
| Taiwan  | $22,666   | $40,503   | $34,838         | 1.5              | 0.9               |
| Malaysia| $5,272    | $25,568   | $33,703         | 6.4              | 1.3               |
| Thailand| $5,289    | $16,385   | $19,892         | 3.8              | 1.2               |
| India   | $3,197    | $10,687   | $18,808         | 5.9              | 1.8               |
| Singapore| $9,801   | $19,178   | $15,118         | 1.5              | 0.8               |
| Indonesia| $3,341   | $10,367   | $12,017         | 3.6              | 1.2               |
| Philippines| $3,884  | $13,935   | $9,248          | 2.4              | 0.7               |
| Other   | $7,477    | $17,846   | $27,600         | 3.7              | 1.5               |
| Asia    | $184,332  | $441,274  | $598,557        | 16.1             | 2.5               |

2000-2005: 6.29%
1990-2005: 8.17%

Source: U.S. Census Bureau, U.S. Trade in Goods, Imports & Exports

Involvement at the ports of Los Angeles and Long Beach is particularly enticing since it is the complex most directly tied to Asian trade, and because they are, by far, the largest such complex in the U.S. In 2006, they handled 37.8% of U.S.’s two way trade, nearly triple the volume of New York and well above the combined share of the 114 other ports starting with Oakland, the seventh largest (Exhibit 42).

| Exhibit 42.-Two Way Container Volume, By Port, 2006 (TEUs) |
|-----------------|-----------|-----------|-----------|
| Port            | TEUs      | Share of U.S. |
| Los Angeles, CA | 5,633,666 | 20.5%     |
| Long Beach, CA  | 4,756,609 | 17.3%     |
| New York, NY    | 3,628,747 | 13.2%     |
| Savannah, GA    | 1,580,925 | 5.8%      |
| Charleston, SC  | 1,493,285 | 5.4%      |
| Norfolk, VA     | 1,409,733 | 5.1%      |
| Other 114 U.S. Ports | 8,970,461 | 32.7%     |
| Total           | 27,473,426| 100.0%    |

Source: Port Import Export Reporting Service (PIERS), collected from Vessel
For the LMCs that are able to stay in the business, and any national firms that choose to join them, the fact remains that they will be operating in conjunction with the key facilities in one of America’s strongest sector.

**National Firms.** As they are potentially key players in Southern California’s port drayage sector, it is necessary to understand the point of view of national trucking firms. During the interview process, direct contact was made with YRC Logistics (Yellow Worldwide affiliate), Schneider National and UPS. There was also an indirect contact from BNSF Logistics, the railroad company’s trucking arm. In each case, the firms indicated an interest in doing business at the ports of Los Angeles and Long Beach. However, each also expressed reservations due to the impossibility of succeeding in the market as long as the lack of barriers to entry means that no drayage firm will have the market power to negotiate favorable prices with the ocean shipping lines and beneficial cargo owners.

**Financial Strength.** A look at financial information on three national trucking firms that were interviewed shows that they have substantial economic strength (*Exhibit 43*):

- **Yellow Worldwide** is a trucking corporation that had $9.9 billion in revenue in 2006. The full company has a total of 60,000 employees. Historically, the company has been known as an LTL carrier. In Southern California, its two major cross-docks are in the Inland Empire. YRC Transportation President Michael Smid has clearly indicated his firm’s interest in becoming involved in port drayage in Southern California to supplement their international supply chain operations. In 2006, Yellow Worldwide’s return on equity was 12% that year and it has a market capitalization of $1.7 billion.

- **Schneider National** had 2006 revenue of $3.5 billion and a total of 22,300 employees. Since it is the country’s largest privately held trucking firm, its return on equity is unknown. The firm recently acquired cross-dock and deconsolidation center operator American Port Services in 2005 in order to “enhance door-to-door import service.” American Port Services had a leased facility nine miles from the ports of Los Angeles and Long Beach to deal with Asian imported trade.¹⁵²

<table>
<thead>
<tr>
<th>Company</th>
<th>2006 Revenue (000)</th>
<th>Drivers</th>
<th>After Tax Net Margin (5 yr Avg.)</th>
<th>ROE 5 yr Avg.</th>
<th>Market (Billion) Capitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schneider National</td>
<td>$3,500,000</td>
<td>22,300</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>UPS</td>
<td>$47,547,000</td>
<td>87,033</td>
<td>9.22%</td>
<td>24.1%</td>
<td>$52.5</td>
</tr>
<tr>
<td>JB Hunt</td>
<td>$3,328,000</td>
<td>17,150</td>
<td>4.94%</td>
<td>19.2%</td>
<td>$4.1</td>
</tr>
<tr>
<td>Yellow Transportation</td>
<td>$9,919,000</td>
<td>9,809</td>
<td>2.21%</td>
<td>12.0%</td>
<td>$1.7</td>
</tr>
</tbody>
</table>

¹⁵² Schneider Logistics to Acquire American Port Services, Logistics Today, June 27, 2005
special equipment, and oversized cargo.\textsuperscript{153} The parent company had 2006 revenue of $47.5 billion and employs 428,000 people. Its return on equity was 20.4% in 2004 and its market capitalization is $52.5 billion.

Should such firms decide to become players in the port drayage industry, they certainly have the financial power to invest in and maintain the types of trucks required by the Clean Truck Program. However, to date, the lack of pricing power in the port drayage sector has kept them out of the sector. However, if that changes, they will likely become competitors in it.

**Technology.** As has been discussed, one of the difficulties faced by today’s highly competitive but unorganized port drayage sector is its inability to gain the efficiency and cost benefits of the information systems that have been developed for the trucking industry. This is the case due to the inability of the weaker LMCs to install the necessary hardware and software systems on the trucks working with them, and most importantly, to have their staffs trained to consistently and accurately use them. This technology is being adopted by large national trucking firms and is significantly increasing the efficiency of their supply chains and lowering the cost of their operations. The technology comes in five forms:\textsuperscript{154}

- **Gateway Facilitation.** This is the technology most frequency discussed at the ports. Devices such as RFIDs allow driver identification and verification, non-intrusive inspections, compliance facilitation, weigh-in-motion, and electronic toll payments.

- **Intelligent Freight Technologies Asset Tracking.** This technology allows a trucking company to track tractors, trucks, chassis, trailers, containers and shipments/cargo as well as to monitor driver adherence to routes.

- **On-Board Status Monitoring.** This technology allows drivers to monitor vehicle operating parameters, cargo and freight condition, as well as detect intrusion or tampering, plus it permits remote locking and unlocking, automated hazmat placarding, and provides driver emergency call buttons.

- **Network Status Information.** This technology allows for congestion alerts and avoidance, carrier scheduling and support and first responder to support in cases of safety, homeland security, and traditional law enforcement incidents.

- **Freight Status Information.** These systems include web-based freight portals for intermodal data exchange, establishing data standards, hosting web based services, and the standardized transfer of electronic freight information.

Some of this technology is inexpensive but requires training and standardized uses of it to be effective. Other systems are more expensive and can only be afforded by companies able to make a serious commitment to them. Meanwhile, the more comprehensive and interrelated the uses of these systems, the greater companies will benefit from the efficiency and cost reductions they can supply. Today, the ferocity of competition and unorganized condition of the port drayage industry reduces the ability of the most advanced systems to be used. For that reason, if the level


\textsuperscript{154} The Reach of Intelligent Freight Technologies, Freight Management & Operations, Federal Highway Administration, http://ops.fhwa.dot.gov/freight/intermodal/freight_tech_story/
of competition in the port drayage industry is moderated, it is probable that the remaining LMCs and any national firms in the market can be organized to use these technologies more intensively.

**Economic Implication of The Increased Use of Technology.** There will be several side effects if it becomes common place for port drayage firms to have systems of the kind described:

- It will allow the significant gains in the efficiency of cargo throughput that have been so intensely desired by the myriad of companies dependent upon the ports.
- Greater numbers of “turns” would increase the profits of the remaining LMCs.
- Since large trucking firms are generally already adept at using these systems, their knowledge and experience would represent a competitive advantage. It would also increase the likelihood of their entering the port drayage sector.
- It will provide the technological framework to assist with the enhancing of port security for the cargo and the people accessing them.

**Transition.** As has been discussed, it appears that the LMCs will soon face a variety of cost increases, some driven by the marketplace with others dependent upon the form that the Clean Truck Program eventually takes. These will include:

- Fees for concession applications and renewals as well as for TIFs under the Clean Truck Program.
- Wage increases due to the need to lure drivers into port drayage because of TWIC and port growth. There may also be the need to add workers due to the reduced time available to each driver in the event of an employee-driver mandate.
- If employee-drivers are required, labor costs would rise due to the need to pay employee benefit costs.
- Costs that will be incurred to retrofit or replace trucks. These will be higher or lower depending on whether or not the Fleet Modernization Grant Program is fully funded.

Combined, these factors will make it very difficult for new, marginally financed LMCs to be formed. Also, some of the weaker LMCs currently in the port drayage market will probably not be able to continue in the business. This will expand the negotiating power of those LMCs that are left when they approach their customers with adjustments in their rates.

Simultaneously, it is likely that the national trucking companies will begin to make a serious effort to penetrate the San Pedro Bay port drayage sector. This is particularly true, given the need and desire by the trucking industry to increase their footprint within international supply chain management. Southern California’s port drayage activities are of particular importance to them due to huge size and rapid growth of the ports of Los Angeles and Long Beach, the role that they play with regards to Asia trade, and the experience that firms will gain as they work to expand their port drayage activities nationally.

A national viewpoint is necessary to understand how this penetration would probably unfold. Of late, Wall Street investment firms have become very aggressive in seeking situations where mergers and acquisitions can allow corporate value to be created in a sector. This occurs as the breadth of control by firms with strong management teams expands, operations reach the critical
mass required for technologies that raise efficiency and lower costs, and increased market share provides firms with greater negotiating power over prices.

Generally, the strategy that equity firms have followed is to partner with an established corporation that is noted for its strong management. The financial players will fund the mergers or acquisitions within a targeted sector in return for just over or under 50% of the deal. Their funds will be used to acquire targeted firms and the corporation will manage the larger venture that results. Over four or five years, if the process is successful, the stronger resulting operation will create greater value and be reflected in higher stock prices. At that point, the equity partners will cash out and move on to other situations.

There are, of course, variations on this theme. A corporation with strong net worth or borrowing power may undertake this process on its own. Or, an equity firm may attempt to form new corporate entities by creating management teams from scratch. However, the essential results for a targeted sector will be the same. There will be larger entities, more power in the hands of the selected management teams, a greater use of information and other technologies, fewer competitors, greater negotiating power for the remaining firms and fewer workers, and a narrower market for the sector’s suppliers and service providers.

In the case of Southern California’s port drayage industry, this process will be somewhat different than the norm. First, it will be regarded in financial circles as the test case for undertaking this process nationally. This is the case since the very rapid increase in volumes at the ports of Los Angeles and Long Beach are the precursor to what will eventually occur throughout the country. Second, the firms to be acquired or combined are much smaller than is typical of mergers and acquisition deals. This is the true, because until now, large corporations have generally not been involved in port drayage.

Since national players are not known entities in Southern California’s port drayage business, any firms attempting to enter the industry will start by seeking to acquire a few local LMCs. This will give them access to knowledgeable staffs with institutional understanding about the operation of the sector. It will also give them access to the contractual arrangements these LMCs have with ocean shipping lines and/or beneficial cargo owners. Gradually, those firms (and their IOOs) who qualify and choose to make the transition will be integrated into the operations of the parent company.

Such a process will not start until the point at which national trucking firms have a degree of confidence that changes in the marketplace are making it impossible for new small competitors to get started by using their willingness to undercut prices. It may also depend upon the extent to which increases in costs, for the reasons cited earlier, cause some of the existing LMCs to exit the market. In both cases, the key for the entry of national firms will be changes in the port drayage business that will allow the remaining competitors to begin to exert some control over their prices in negotiation with ocean shipping lines and beneficial cargo owners.

**Economic Implications.** There will be both positive and negative implications of the anticipated changes in the structure of Southern California’s port drayage sector:

- **Pricing.** As the transition occurs, the firms remaining in the market, both local and national, will have greater negotiating power. This will give them a stronger ability to have their prices more quickly reflect their costs and desired profit levels. From the standpoint of the ports, the prices paid by ocean shipping lines and beneficial cargo owners will more completely reflect the cost of dealing with externalities, such as increased conges-
tion and emissions, that have resulted from the rise of international supply chain management. The port communities will benefit as these changes will eventually mean that the trucking fleet will be brought up to clean air standards.

However, some of the customers of the port drayage industry will see the increased cost of port drayage in Southern California as detrimental to their operations. The ports of Los Angeles and Long Beach will thus experience cargo diversion as the elasticity of cargo pricing causes shipping lines and beneficial cargo owners to transfer their shipments to other facilities. That will remain an issue until the conditions that have first appeared in Southern California spread to other ports across the nation.

- **Consolidation.** Ultimately, the marketplace, possibly abetted by the Clean Truck Program, will make it difficult for new small LMCs to enter the port drayage sector and encourage some LMCs to leave. Those local LMCs and national corporations that remain will likely have the strongest balance sheets and better management. Both will gain from having greater control over the market conditions impacting businesses. The ports will benefit as they will be working with an industry that is better organized, has greater financial flexibility and is more able to implement technological systems that will allow for greater port throughput. The remaining firms will also have the financial wherewithal to upgrade their trucks on a regular basis and assist in security oversight of freight and people accessing the harbors. Their larger size will mean that programs such as the CHP’s BIT program will be more likely to provide safety record audits, driver records review, maintenance checks and, possibly, adherence to clean air standards.

For four groups, however, there will be downsides to this process:

- Consolidation will mean that some of the LMCs will either be forced out of port drayage or out of business altogether. Some of the owners of these firms will end up working in management for the remaining drayage firms. Some will work as LMCs outside of port drayage. Others will need alternative jobs or ventures. This last situation will primarily apply to those who own the smaller LMCs.

- Among IOOs, those that are able to bring their trucks up to clean air standards will maintain their relationships with their existing LMCs, or if those fail, they will end with the surviving companies. In the short term, they will remain entrepreneurs. Depending upon the form that the Clean Truck Program takes, over time, some will become employee-drivers, some may be able to remain IOOs in port drayage, and others will be forced to work as IOOs outside of port drayage.

Those IOOs that cannot clean-up their trucks will either be forced to become employee-drivers or to work as IOOs outside of the sector. Whether they can become port drayage employee-drivers will depend upon their ability to qualify under TWIC and meet the hiring standards of the remaining firms. Given the shortage of trucks drivers, it is doubtful that they will end up unemployed.

- Among the non-driving staffs of the LMCs, those working for firms that survive the port drayage consolidation will maintain their current positions and likely will be joined by others as the LMC expands. Those that work for firms that leave port drayage but continue acting as LMCs should also retain their jobs. The difficulty will be those who work for firms that go out of business. These will
primarily be the smallest LMCs. Some will find work with national firms entering the sector. Others will need alternative employment.

- Today’s port drayage industry is serviced by a host of small firms that provide supplies, maintenance service and office functions. They include vendors such as fuel stations, tire shops, truck parts suppliers and used truck sales. Small shops provide safety checks, engine and transmission repair, brakes alignment and replacement, tire repair, reconditioning of pneumatic air systems, welding and electrical work. Service firms often act as outside accountants, bookkeepers, insurance representatives or lawyers.

As the port drayage industry consolidates, many of the functions performed by these small businesses will be performed in-house by the remaining LMCs and national trucking firms. Some of the owners of these firms will be able to continue in their existing roles. Others will be hired on to the staffs of the expanded firms remaining in the industry. However, some will be forced to look for other work.155

The magnitude of the loss of work by LMC owners forced out of business, the back office personnel who lose jobs, and entrepreneurs who lose businesses, at best, can be very roughly quantified. This is done under a worst case scenario:

- Based upon the LMC survey, the number in each size range was estimated (1).
- The share of LMCs that would end up with the owner ultimately needing alternative work was very roughly estimated with the share varying by size (2). The resulting number was estimated at 376 (3).
- The LMC survey allowed an estimate of the average number of back office staff working within LMCs in each size range (4).
- That permitted an estimate of the total number of back office staff at 4,273 (5).
- The shares of back office workers who might lose their jobs and not find alternative work in the growing portions of the port drayage sector were roughly estimated at 50% of those in LMCs that end-up with difficulties (6). This yielded a back office staff loss of 751 jobs (7).

<table>
<thead>
<tr>
<th>Exhibit 44.-Estimated Lost Jobs or Ownership With Consolidation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>0-10</td>
</tr>
<tr>
<td>11-25</td>
</tr>
<tr>
<td>26-75</td>
</tr>
<tr>
<td>76-250</td>
</tr>
<tr>
<td>251 &amp; Up</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

- It was very roughly estimated that for every LMC to go out of business, one other small firm in the community would as well, with the owner needing alternative employment, yielding 376 (8).
- The total job loss due to consolidation was thus very roughly estimated at 1,504 (9). This estimate is, of course, dependent upon the three rough factors used in the calculation. However, it probably gives a reasonable order of magnitude as to the job losses that the community will feel due to consolidation.

Note: The LMC owners who go out of the business and the back office personnel who lose jobs are the reason that one component of the Clean Truck Program requires concessionaires to participate in a referral program for filling employee vacancies via a workforce development program consistent with existing city efforts. Currently, this program has not been conceived as providing an outlet for small business owners impacted by any consolidation process.

Beyond numbers, the consolidation process will have one other ramification. Today, Southern California faces a very difficult issue in that 44.0% of its adult population has not had a single class beyond high school (Exhibit 45). The share is 47.8% in Los Angeles County.

These data strongly imply that the region’s economy has a need for jobs that provide upward economic mobility for a significant share of the region’s workforce. The port drayage sector has been one industry in which a large number of people in this category have found work, be it as IOOs, owners of LMCs, back office personnel or owners of small businesses supporting the industry. Here, consolidation will have two impacts. First, it will close off the ability of small entrepreneurs to enter this field and reduce the number already in it. Second, it will eliminate some of the jobs currently in the sector.

Summary

At its core, the Clean Truck Program is design to reduce air emission 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 with reduced health risk to the community. 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 and global trade capacity 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.”
Appendix A

Driver Survey Methodology and Results

As part of this analysis, 409 port drayage truck drivers were surveyed. The survey was conducted inside both Ports while drivers were waiting outside terminal gates or were at lunch trucks parked outside the terminal gates. The survey locations, days of the week and general times of day are shown below.

<table>
<thead>
<tr>
<th>Location – Port and Terminal</th>
<th>Day of the Week</th>
<th>Time of Day – (N)oon or Beginning of (E)vening shift</th>
<th>Number of completed surveys</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port of Los Angeles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evergreen Terminal</td>
<td>Thursday</td>
<td>N</td>
<td>46</td>
<td>11.2</td>
</tr>
<tr>
<td>Evergreen Terminal</td>
<td>Thursday</td>
<td>E</td>
<td>36</td>
<td>8.8</td>
</tr>
<tr>
<td>Evergreen Terminal</td>
<td>Tuesday</td>
<td>N</td>
<td>19</td>
<td>4.6</td>
</tr>
<tr>
<td>Evergreen Terminal</td>
<td>Tuesday</td>
<td>E</td>
<td>57</td>
<td>13.9</td>
</tr>
<tr>
<td>Evergreen Terminal</td>
<td></td>
<td></td>
<td>158</td>
<td>38.6%</td>
</tr>
<tr>
<td>China Shipping Terminal</td>
<td>Tuesday</td>
<td>N</td>
<td>39</td>
<td>9.5</td>
</tr>
<tr>
<td>China Shipping Terminal</td>
<td>Tuesday</td>
<td>E</td>
<td>24</td>
<td>5.9</td>
</tr>
<tr>
<td>China Shipping Terminal</td>
<td></td>
<td></td>
<td>63</td>
<td>15.4%</td>
</tr>
<tr>
<td>Total Port of Los Angeles</td>
<td></td>
<td></td>
<td>221</td>
<td>54.0%</td>
</tr>
<tr>
<td>Port of Long Beach</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California United Terminals</td>
<td>Thursday</td>
<td>N</td>
<td>55</td>
<td>13.4</td>
</tr>
<tr>
<td>California United Terminals</td>
<td>Thursday</td>
<td>E</td>
<td>40</td>
<td>9.8</td>
</tr>
<tr>
<td>California United Terminals</td>
<td>Wednesday</td>
<td>N</td>
<td>29</td>
<td>7.1</td>
</tr>
<tr>
<td>California United Terminals</td>
<td></td>
<td></td>
<td>124</td>
<td>30.3%</td>
</tr>
<tr>
<td>Long Beach Container Terminal</td>
<td>Tuesday</td>
<td>E</td>
<td>44</td>
<td>10.8</td>
</tr>
<tr>
<td>Long Beach Container Terminal</td>
<td>Wednesday</td>
<td>N</td>
<td>17</td>
<td>4.2</td>
</tr>
<tr>
<td>Long Beach Container Terminal</td>
<td>Wednesday</td>
<td>N</td>
<td>3</td>
<td>.7</td>
</tr>
<tr>
<td>Long Beach Container Terminal</td>
<td>Friday</td>
<td>N</td>
<td>64</td>
<td>15.6%</td>
</tr>
<tr>
<td>Total Port of Long Beach</td>
<td></td>
<td></td>
<td>188</td>
<td>46.0%</td>
</tr>
</tbody>
</table>

The survey was conducted by on-site by bi-lingual interviewers as drivers became available in their trucks or at the lunch wagon. We attempted to interview drivers based on their sequence of arrival at the terminal waiting line. This was not practical, however, for those drivers interviewed at the lunch wagon. Approximately 20% of the surveys were conducted at the lunch wagon. A $10 participation incentive was paid for all drivers who participated. A copy of the survey questionnaire used by the interviewers is reproduced at the end of this Appendix.

The frequency at which individual drivers arrive at the terminals is a function of the nature of their hauls. As an example, drivers who are involved in hauling containers from the Ports to the Intermodal rail yards, a distance of some 6 miles have much shorter driving times as compared to drivers delivering containers to Riverside County. These drivers can be expected to be in the line to enter a terminal more frequently compared to the “longer” haul drivers.

As a result, the drivers available to participate in the survey were reflective of the frequency of which they visit the Ports and the results are proportionate to the calling frequency of the drivers. However, the survey was not a true random survey, as it can be assumed that not all drayage
drivers were working at the terminals where the survey was conducted and hence there was not an equal probability of all drivers being selected. Also we did not conduct surveys at all Port terminals. We do not, however, consider these practical limitations to be material.

The key results of the survey are shown below along with the number of respondents to the various questions in parenthesis.

**Driver Demographics**

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Average</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Age (409)</td>
<td>41</td>
<td>42</td>
</tr>
<tr>
<td>Years of Experience (409)</td>
<td>8.6</td>
<td>7</td>
</tr>
</tbody>
</table>

**Survey Responses**

<table>
<thead>
<tr>
<th>Employment Status (409)</th>
<th>Number</th>
<th>Percent of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOOs</td>
<td>349</td>
<td>85.3%</td>
</tr>
<tr>
<td>Employee</td>
<td>60</td>
<td>14.7%</td>
</tr>
</tbody>
</table>

**TWIC Application – IOOs Respondents only (349)**

<table>
<thead>
<tr>
<th>Application</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will Apply</td>
<td>201</td>
<td>57.6%</td>
</tr>
<tr>
<td>Will Not Apply</td>
<td>76</td>
<td>21.8%</td>
</tr>
<tr>
<td>May/May Not Apply</td>
<td>72</td>
<td>20.6%</td>
</tr>
</tbody>
</table>

**TWIC Application – Respondents Currently Employed (60)**

<table>
<thead>
<tr>
<th>Application</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will Apply</td>
<td>33</td>
<td>55.0%</td>
</tr>
<tr>
<td>Will Not Apply</td>
<td>14</td>
<td>23.3%</td>
</tr>
<tr>
<td>May/May Not Apply</td>
<td>13</td>
<td>21.7%</td>
</tr>
</tbody>
</table>

**IOOs Respondents Willing To Become An Employee (349)**

<table>
<thead>
<tr>
<th>Willing To Become Employee</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>68</td>
<td>19.5%</td>
</tr>
<tr>
<td>No</td>
<td>110</td>
<td>31.5%</td>
</tr>
<tr>
<td>May/May Not</td>
<td>169</td>
<td>48.4%</td>
</tr>
<tr>
<td>Other Responses</td>
<td>2</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

**IOOs Respondents Willing to Sell Tractor if Employed (334)**

<table>
<thead>
<tr>
<th>Willing to Sell Tractor</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>205</td>
<td>61.4%</td>
</tr>
<tr>
<td>No</td>
<td>129</td>
<td>38.6%</td>
</tr>
</tbody>
</table>

**Expected Hourly Compensation of IOO Respondents to Become Employees (345)**

<table>
<thead>
<tr>
<th>Compensation</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>$15 to $20</td>
<td>48</td>
<td>13.9%</td>
</tr>
<tr>
<td>$21 to $25</td>
<td>68</td>
<td>19.7%</td>
</tr>
<tr>
<td>$26 to $35</td>
<td>119</td>
<td>34.5%</td>
</tr>
<tr>
<td>$36 to $50</td>
<td>98</td>
<td>28.4%</td>
</tr>
<tr>
<td>Over $50</td>
<td>12</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

**Average IOO Salary Expectation (345)**

- Average: $33
- Median: $30

**Notes**

1. Percentage may not add to 100.0% due to rounding.
2. In cases where respondents answered in annual compensation expectations, we converted the expected annual compensation to an hourly rate by dividing by 2,080. Otherwise hourly responses were used.
To allow for uncertainty in driver responses, Yes, No and Maybe answers were permitted for the questions about applying for the TWIC credential (referred to as a card for survey purposes – see the interviewer questionnaire at the end of this appendix) and their willingness to become an employee. To estimate the number who can likely be expected to either apply or not apply for TWIC and become or not become employees, the ratio of yes and no answers can be used to allocate the “maybe” answers. For IOOs there were 201 Yes responses (72.6%) to the intent to apply for TWIC and 76 No’s (21.8%). Allocating the 72 “maybe” responses on those percentages results in total estimated Yes response of 253 or 72.5% and 96 No’s or 27.5%. It is interesting to note that the percentage of drivers who indicated they would not apply for TWIC is slightly higher for employees (23.3%) than it is for IOOs (21.8%).

Based on 16,800 frequent and semi-frequent port drayage drivers, the survey data equates to an estimated loss of 27.9% or 4,687 drivers when the requirement to have a TWIC credential to enter the Ports without an escort becomes effective.

To further estimate the impact of TWIC in conjunction with the potential requirement to have the IOOs become employees, we analyzed the combined response of the IOOs who responded that they would definitely apply for TWIC and would definitely be willing to become employees, i.e. they answered Yes to applying for TWIC and Yes to becoming an employee. 53 of 349 IOOs, or 15.2%, answered yes to those two questions.
Driver Survey

An Oral Survey. This survey is anonymous. Do not record any personal information.
How old are you? ____ Years. How many years have you been hauling port containers? ____ Years

1. Are you an independent owner operator who owns your own tractor? ____ OR are you an employee
   of trucking company (licensed motor carrier) and drive a company tractor ____ (Please indicate by
   checking one).

2. If you own your own tractor, what year is it? _______(enter the model YEAR of the tractor)

3. What is the zip code (or city) where you normally park your truck at night or when it is no being
   used? ____________ What is the zip code (or city) where you live? ___________

4. 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 con-
   ditions to obtain the TWIC card, how likely are you to apply for one? (Mark with an X what is the
   driver’s answer)
   _____YES, I will definitely apply_____ MAYBE I will apply_____ NO, I definitely will not apply

5. There is a proposal to have all owner operators who serve the Ports become employees of Port li-
   censed trucking concessions. As an employee, in addition to your pay, you would receive fringe
   benefits such as overtime, health insurance, paid vacations, paid holidays, and paid sick time, pension
   retirement, etc. Also as an employee the company would provide a company tractor and would not
   need to own or supply a tractor.
   
   a. Are you willing to become an employee of a trucking company? (Mark with an x what you
      prefer about the possibility of becoming an employee.)
      _____YES _____ MAYBE Depends on what I could earn ____ Definitely NO _____Other response:

   b. Would you be willing to sell your tractor after you became an employee? ____ YES ____ NO

6. For me to become an employee, I would expect to be paid a base wage of $_________ per
   hour (fill inthe hourly wage rate you expect), and/or annual wages of $_________ per year
Appendix B
Licensed Motor Carrier (LMC) Survey

As part of this analysis, a survey of 136 port drayage LMCs was conducted. Based on an estimated population of 1,000 LMCs, this represents a 13.6% sample. Companies were selected from those in the eModal database. Companies were selected as potential survey respondents using a systematic random selection method. eModal is an open system that allows anyone to register. It is also designed to support operations at various ports. As a result, it includes numerous entries from entities outside the Southern California area and can include multiple entries for the same LMC.

Based on a random start, every tenth name entry on the eModal list of 4,000 companies was selected. If the listing was based out of state another candidate was selected and called, using a specific “next company” methodology. If company indicated it did not provide port container drayage services it was excluded from the survey and the method described above was used to select a replacement. Respondents at the individual LMCs were limited to owners, executives and dispatchers. A copy of the survey instrument is provided at the end of this appendix.

Survey Results

LMC Size

LMC was measured by the total number of drivers used. As defined total drivers includes any combination of IOOs and employee drivers. The average number of total drivers in the sample was 30.2 with a median of 15. The size distribution is shown below:

156 eModal, is an information link for a “Port Community System,” www.emodal.com.
Involvement in Port Container Drayage

The survey asks respondents to estimate the percentage of work or business that is port container drayage. Other questions ask the percentage of work or business from other activities to assure that the total estimated percentage of the various lines of business totaled to 100%. The distribution of the estimated percentage of business from port container drayage (PCD) is shown below.

<table>
<thead>
<tr>
<th>LMC % Involvement in PCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
</tr>
<tr>
<td>5%</td>
</tr>
<tr>
<td>10%</td>
</tr>
<tr>
<td>15%</td>
</tr>
<tr>
<td>20%</td>
</tr>
<tr>
<td>25%</td>
</tr>
<tr>
<td>30%</td>
</tr>
<tr>
<td>1 to 10%</td>
</tr>
<tr>
<td>11 to 19%</td>
</tr>
<tr>
<td>20 to 29%</td>
</tr>
<tr>
<td>30 to 39%</td>
</tr>
<tr>
<td>40 to 49%</td>
</tr>
<tr>
<td>50 to 59%</td>
</tr>
<tr>
<td>60 to 69%</td>
</tr>
<tr>
<td>70 to 79%</td>
</tr>
<tr>
<td>80 to 89%</td>
</tr>
<tr>
<td>90 to 99%</td>
</tr>
<tr>
<td>100%</td>
</tr>
</tbody>
</table>

The average LMC surveyed reported 72% of their business was port container drayage related. The median percentage reported was 80%.

As you can see by the chart, there is a significant number of LMC serving the ports that derive the majority of their business from non-port sources. Only 49% of the respondents indicated they conducted 80% or more of their business in port drayage activities. Pure (100%) port drayage companies constitute only 28% of the respondents.

Haul Distance

The extent to which LMCs conduct their operations in close proximity to the port is an important consideration. To explore this parameter of LMC operations, respondents were asked to estimate the percentage of container hauls that were to destinations within 25 miles of the ports.

The respondents indicate that an average of 49% of the port containers are delivered to destinations that are within a 25 mile radius of the Ports. The distribution of the percentages reported is shown below.
As shown only some 21% of LMCs operate 80% or more of their business within 25 miles of the ports. For 22% of the LMCs, having a haul less than 25 miles is a reasonably rare event occurring on 19% of the time or less.

**Round Trips Per Day**

The number of round trips per day, or “turns” a driver can make affects his productivity, which in the case of an IOO directly affects his compensation. In the case of an employee driver, it affects the LMC’s labor costs. LMC respondents were asked to estimate the number of turns per day their port container drivers average. The average number of turns reported was 2.6 with a median of 2.0. The lower median value is congruent with the fact that many of the smaller LMCs are known to dominate the very short haul segment of the drayage business (port to rail yards, etc.) and the distribution of LMCs by size. The distribution of responses is shown below:
LMC were asked to estimate the total average waiting time experienced by their drivers. There were 96 responses that averaged 2.2 hours and had a median of 2.0 hours. The distribution of reported total waiting time is shown below.
LMC Telephone Survey

1. Date:_______ Interviewer initials:_______ eModal list sequence number _________

2. Does your company provide port container hauling services? (circle one): YES  NO

*If the answer to question 2 is NO, thank the person and select the next carrier in accordance with the instructions provided. This does not count as a completed survey.*

*If answer to question 2 is YES, continue with survey.*

3. What % of your company’s work or business is port container drayage? ________%

4. What % of your company’s business is other transportation work that is not port container drayage ________%

5. What % of your company’s business is other work besides transportation?

___________%

(for example: Warehousing)

(Note to interviewer: The answers to Questions 3, 4, and 5 should total to 100%)

6. What % of your container hauls are less than 25 miles one way, gate to destination? ________ %

7. What is the range of the # of port drayage Independent Owner Operators you use?

___________

(low-high)

What is the # of employee drivers you have? ____________

Total range # of port drivers? ______________

8. How many “turns” or round trips does each of your port drayage container drivers average per day? __________

9. What average total waiting time in line and inside the gate per container pickup and/or delivery do your port container drivers experience? __________

10. How many tractors does your company own? _______tractors

11. Are there other companies in your ownership "family" YES NO

If yes, how many? __________

How many total port drayage drivers does your entire company family use? __________

Names of companies in “family” of companies:

a.______________________     d.______________________

b.______________________     e.______________________

c.______________________      f.______________________